City of Corpus Christi

Inner Harbor Desalination Plant

TPDES Application (WQ0005289000)

Submitted 1/22/2020

(1) Permit Application

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

TCEQ INDUSTRIAL WASTEWATER PERMIT APPLICATION

INDUSTRIAL ADMINISTRATIVE REPORT

Complete and submit this checklist with the application.

APPLICANT NAME: City of Corpus Christi

PERMIT NUMBER: WQ000

Check Y for each of the following items included in this application. If an item was not included, check N.

	Y	N		Y	N
Administrative Report 1.0	☒	☐	Worksheet 8.0	☐	☒
Administrative Report 1.1	☒	☐	Worksheet 9.0	☐	☒
SPIF	☒	☐	Worksheet 10.0	☐	☒
Core Data Form	☒	☐	Worksheet 11.0	☐	☒
Technical Report 1.0	☒	☐	Worksheet 11.1	☐	☒
Worksheet 1.0	☐	☒	Worksheet 11.2	☐	☒
Worksheet 2.0	☐	☒	Worksheet 11.3	☐	☒
Worksheet 3.0	☐	☒	Original USGS Map	☒	☐
Worksheet 3.1	☐	☒	Affected Landowners Map	☒	☐
Worksheet 3.2	☐	☒	Landowner Disk or Labels	☒	☐
Worksheet 3.3	☐	☒	Flow Diagram	☒	☐
Worksheet 4.0	☒	☐	Site Drawing	☐	☒
Worksheet 4.1	☐	☒	Original Photographs	☒	☐
Worksheet 5.0	☐	☒	Solids Management Program	☐	☒
Worksheet 6.0	☒	☐	Water Balance	☒	☐
Worksheet 7.0	☒	☐			

For Commission Use Only:
Segment Number: _____ County: _____ Expiration Date: _____
Proposed/Current Permit Number: _____ Region: _____

INDUSTRIAL ADMINISTRATIVE REPORT 1.0

The following information **is required** for **all** applications for TPDES permits and TLAPs.

1. TYPE OF APPLICATION AND FEES (Instructions, Page 21)

a. Permit No.: WQ000 Expiration Date:

EPA ID No.: TX0

b. Check the box next to the appropriate application type.

- ☒ New TPDES permit
- ☐ Major amendment with renewal
- ☐ Renewal with changes
- ☐ Minor amendment without renewal
- ☐ Stormwater only discharge
- ☐ New TLAP permit
- ☐ Major amendment without renewal
- ☐ Renewal without changes
- ☐ Minor modification without renewal

c. If applying for an **amendment** or **modification** of a permit, describe the request in detail:

d. Application Fee

Check the box next to the amount submitted for the application fee:

EPA Classification	New	Major Amendment (With or Without Renewal)	Renewal (With or Without Changes)	Minor Amendment/ Minor Modification (Without Renewal)
Minor facility not subject to EPA categorical effluent guidelines (*40 CFR Parts 400-471*)	☒ $350	☐ $350	☐ $315	☐ $150
Minor facility subject to EPA categorical effluent guidelines (*40 CFR Parts 400-471*)	☐ $1,250	☐ $1,250	☐ $1,215	☐ $150
Major facility	N/A *	☐ $2,050	☐ $2,015	☐ $450

* All facilities are designated as minors until formally classified as a major by EPA.

e. Payment Information:

Mailed Check or money order number: 477802

Check or money order amount: $350.00

Named printed on check or money order: City of Corpus Christi

ePAY Voucher number:

Copy of voucher attached? ☐ Yes **Attachment:**

2. APPLICANT INFORMATION (Instructions, Pages 21-22)

a. Facility Owner (Owner of the facility must apply for the permit.)

- Provide the legal name of the entity (applicant) applying for this permit: City of Corpus Christi

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

- If the applicant is currently a customer with the TCEQ, provide the Customer Number, which can be located using the TCEQ's Central Registry Customer Search[1]: **CN**600131858

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

  Mr. ☒ Ms. ☐ First/Last Name: Peter Zanoni

  Title: City Manager Credential:

b. Co-applicant Information

- Provide the legal name of the co-applicant applying for this permit, if applicable: N/A

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

- If the co-applicant is currently a customer with the TCEQ, provide the Customer Number, which can be located using the TCEQ's Central Registry Customer Search: **CN**N/A

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

  Mr. ☐ Ms. ☐ First/Last Name:

  Title: Credential:

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

c. Core Data Form

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

Attachment: A

3. APPLICATION CONTACT INFORMATION (Instructions, Page 22)

If the TCEQ needs additional information regarding this application, who should be contacted?

a. Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 78415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

Check one or both: ☒ Administrative Contact ☐ Technical Contact

[1] http://www15.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

b. Mr. ☐ Ms. ☒ First/Last Name: Katie Leatherwood Credential: P.G.

Organization Name: Freese and Nichols, Inc. Title: Environmental Scientist

Mailing Address: 4055 International Plaza, Suite 200 City/State/ZIP Code: Fort Worth, TX 76109

Phone No.: (817) 735-7503 Fax No.: (817) 735-7492 E-mail: katie.leatherwood@freese.com

Check one or both: ☐ Administrative Contact ☒ Technical Contact

Attachment:

4. PERMIT CONTACT INFORMATION (Instructions, Page 22)

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

a. Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 76415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

b. Mr. ☐ Ms. ☐ First/Last Name: Credential:

Organization Name: Title:

Mailing Address: City/State/ZIP Code:

Phone No.: Fax No.: E-mail:

Attachment:

5. BILLING CONTACT INFORMATION (Instructions, Page 22)

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

Provide the complete mailing address where the annual fee invoice should be mailed and the name and phone number of the permittee's representative responsible for payment of the invoice.

Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX 78415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

6. DMR/MER CONTACT INFORMATION (Instructions, Page 22)

Provide the name and mailing address of the person delegated to receive and submit DMRs or MERs.

Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 78415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

DMR data must be submitted through the NetDMR[2] system. An electronic reporting account can be established once the facility has obtained the permit number.

7. NOTICE INFORMATION (Instructions, Pages 23-24)

a. Individual Publishing the Notices

Mr. ☐ Ms. ☒ First/Last Name: Rebecca Huerta Credential:

Organization Name: City of Corpus Christi Title: City Secretary

Mailing Address: P.O. Box 9277 City/State/ZIP Code: Corpus Christi, TX 78469

Phone No.: (361)826-3105 Fax No.: (361)826-3113 E-mail: citysecretary@cctexas.com

b. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package (only for NORI, NAPD will be sent via regular mail)

☐ E-mail:

☐ Fax:

☒ Regular Mail (USPS)

Mailing Address: P.O. Box 9277 City/State/ZIP Code: Corpus Christi, TX 78469

c. Contact in the Notice

Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

d. Public Place Information

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

Public building name: La Retama Central Library Location within the building: Reference Shelf

Physical Address of Building: 805 Comanche

City: Corpus Christi County: Nueces

e. Bilingual Notice Requirements:

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

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

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

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

   ☒ Yes ☐ No

[2] https://www.tceq.texas.gov/permitting/netdmr

If **no**, publication of an alternative language notice is not required; **skip to** Item 8 (REGULATED ENTITY AND PERMITTED SITE INFORMATION.)

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

   ☒ Yes ☐ No

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

   ☐ Yes ☒ No

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

   ☐ Yes ☒ No

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

8. REGULATED ENTITY AND PERMITTED SITE INFORMATION (Instructions Pages 24-25)

If the site of your business is part of a larger business site, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search the TCEQ's Central Registry[3] to determine the RN or to see if the larger site may already be registered as a regulated site:

If the site is found, provide the assigned RN and the information for the site to be authorized through this application below. The site information for this authorization may vary from the larger site information.

a. TCEQ issued Regulated Entity Number (RN): **RN**

b. Name of project or site (the name known by the community where located): Inner Harbor Desalination Plant

c. Is the location address of the facility in the existing permit the same?

   ☐ Yes ☒ No

d. If the facility is located in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County, additional information concerning protection of the Edwards Aquifer may be required.

e. Owner of treatment facility: City of Corpus Christi

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

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

   Mr. ☐ Ms. ☐ First/Last or Organization Name: Flint Hills Resources

   Mailing Address: 8125 Up River Road City/State/ZIP Code: Corpus Christi, TX 78409

   Phone No.: (361) 242-5336 Fax No.: E-mail: Roger.TenNapel@fhr.com

   If not the same as the facility owner, there must be a long-term lease agreement in effect for at least six years. In some cases, a lease may not suffice - see instructions. **Attachment:** B

g. Owner of effluent TLAP disposal site (if applicable):

   Mr. ☐ Ms. ☐ First/Last or Organization Name: N/A

[3] http://www15.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch

Mailing Address: City/State/ZIP Code:

Phone No.: Fax No.: E-mail:

If not the same as the facility owner, there must be a long-term lease agreement in effect for at least six years. **Attachment**:

h. Owner of sewage sludge disposal site (if applicable):

Mr. ☐ Ms. ☐ First/Last or Organization Name: City of Corpus Christi

Mailing Address: 2525 Hygeia Street City/State/ZIP Code: Corpus Christi, TX 78415

Phone No.: 361-826-2489 Fax No.: 361-826-1971 E-mail:

If not the same as the facility owner, there must be a long-term lease agreement in effect for at least six years. **Attachment**:

(This information is required only if authorization is sought in the permit for sludge disposal on property owned or controlled by the applicant.)

9. TDPES DISCHARGE/TLAP DISPOSAL INFORMATION (Instructions, Pages 25-28)

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

☐ Yes ☒ No

b. Attach an **original** full size USGS Topographic Map (or an 8.5"×11" **reproduced** portion for renewal or amendment applications) with all required information. Check the box next to each item below to confirm it has been included on the map.

- ☒ One-mile radius and three-miles downstream information
- ☒ Applicant's property boundaries
- ☒ Treatment facility boundaries
- ☒ Labeled point(s) of discharge and highlighted discharge route(s)
- ☐ Effluent disposal site boundaries
- ☐ All wastewater ponds
- ☒ Sewage sludge disposal site
- ☐ New and future construction
- ☒ Attachment: C

c. Is the location of the sewage sludge disposal site in the existing permit accurate?

☐ Yes ☐ No ☒ N/A

If **no**, or a **new** application, please give an accurate description: Cefe Valenzuela Landfill, 2397 County Road 20, Robstown, TX, 78380

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

☐ Yes ☐ No ☒ N/A

If **no**, or a **new or amendment** applications, provide an accurate description: To Corpus Christi Inner Harbor, Segment No. 2484

e. City nearest the outfall(s): Corpus Christi

f. County in which the outfalls(s) is/are located: Nueces County

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

☐ Yes ☒ No

If **yes**, indicate by a check mark if: ☐ Authorization granted ☐ Authorization pending

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

Attachment:

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

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

☐ Yes ☐ No ☒ N/A

If **no**, or if this a **new or amendment** application, provide an accurate description:

j. City nearest the disposal site:

k. County in which the disposal site is located:

l. Disposal Site Latitude: Longitude:

m. For **TLAPs**, describe how effluent is/will be routed from the treatment facility to the disposal site: N/A

n. For **TLAPs**, identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: N/A

10. MISCELLANEOUS INFORMATION (Instructions, Page 28)

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

☒ Yes ☐ No

If **yes**, list each person: The City's Administrative Contact, Esteban "Steve" Ramos, is currently employed by the City of Corpus Christi as the Water Resource Manager. Mr. Ramos previously worked for the TCEQ before joining the public-sector at the City of Corpus Christi. He reviewed the application as prepared by Freese and Nichols, Inc. on behalf of the City.

b. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following:

- Acct. No.:
- Amt. due:

c. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following:

- Enforcement Order No.:
- Amt. due:

11. SIGNATURE PAGE (Instructions, Page 29)

Permit No: WQ000

Applicant Name: City of Corpus Christi

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): Peter Zanoni

Signatory title: City Manager

Signature: _____ Date: January 17, 2020
(Use blue ink)

Subscribed and Sworn to before me by the said Peter Zanoni

on this 17th day of January, 2020.

My commission expires on the 7th day of September, 2021.

Miles K Risley
Notary Public

MILES K. RISLEY
Notary Public, State of Texas
Comm. Expires 09-07-2021
Notary ID 3603452

[SEAL]

Nueces
County, Texas

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

INDUSTRIAL ADMINISTRATIVE REPORT 1.1

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

1. AFFECTED LANDOWNER INFORMATION (Instructions, Pages 30-32)

a. Attach a landowners map or drawing, with scale, as applicable. Check the box next to each item to confirm it has been provided.

- ☒ 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 (e.g., irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property.
- ☐ The property boundaries of all landowners surrounding the applicant's property boundaries where the effluent disposal site is located.
- ☐ The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners within one-quarter mile of 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 (e.g., sludge surface disposal site or sludge monofill) is located.

Attachment: D

b. Check the box next to the format of the landowners list:

☐ Readable/Writeable CD ☒ Four sets of labels

c. ☒ Check this box to confirm a separate list with the landowners' names and mailing addresses cross-referenced to the landowners map has been attached.

Attachment: D

d. Provide the source of the landowners' names and mailing addresses: Nueces County Appraisal District

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):

2. ORIGINAL PHOTOGRAPHS (Instructions, Page 32)

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.

Attachment: D

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING 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 33)

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

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

The following applies to all applications:

1. Permittee Name: City of Corpus Christi

2. Permit No.: WQ000 EPA ID No.: TX0

3. Address of the project (location description that includes street/highway, city/vicinity, and county): Southeast corner of the intersection of Nueces Bay Boulevard and West Broadway Street, Corpus Christi, Nueces County, Texas.

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

   First/Last Name: Esteban "Steve" Ramos Title: Water Resource Manager
   Credential:

   Organization Name: City of Corpus Christi

   Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 78415

   Phone No.: 361-826-3294 Fax No.: 361-826-1889 E-mail: estebanr2@cctexas.com

5. List the county in which the facility is located: Nueces County

6. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property: N/A

7. 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: To Corpus Christi Inner Harbor, Segment No. 2484

8. 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.)

   Attachment: E

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

   Attachment: N/A

10. 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

11. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features): Currently approximately 12 acres will be disturbed at the plant site. One intake structure and one discharge diffuser will be constructed in the canal (Corpus Christi Inner Harbor, Segment No. 2484).

12. Describe existing disturbances, vegetation, and land use: Currently, one parcel is residential land use with one house present. The remaining parcels are undeveloped with trees and shrubs.

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

13. List construction dates of all buildings and structures on the property: Quarter 4, 2021

14. Provide a brief history of the property, and name of the architect/builder, if known: The property was originally a residential neighborhood. During the 1990s and 2000s, the property was redeveloped with only one residence remaining.

WATER QUALITY PERMIT

PAYMENT SUBMITTAL FORM

Use this form to submit the Application Fee, if mailing the payment.

- Complete items 1 through 5 below.
- Staple the check or money order in the space provided at the bottom of this document.
- Do not mail this form with the application form.
- Do not mail this form to the same address as the application.
- Do not submit a copy of the application with this form as it could cause duplicate permit entries.

Mail this form and the check or money order to:

BY REGULAR U.S. MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, Texas 78711-3088

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, Texas 78753

Fee Code: WQP **Permit No: WQ000**

1. Check or Money Order Number: 477802
2. Check or Money Order Amount: $ 350.00
3. Date of Check or Money Order: 01/16/2020
4. Name on Check or Money Order: City of Corpus Christi
5. APPLICATION INFORMATION

   Name of Project or Site: Inner

   Physical Address of Project or Site: Inner Harbor

   If the check is for more than one application, attach a list which includes the name of each Project or Site (RE) and Physical Address, exactly as provided on the application.

Staple Check or Money Order in This Space

TECHNICAL REPORT 1.0
INDUSTRIAL

The following information **is required** for all applications for a TLAP or an individual TPDES discharge permit.

For additional information or clarification on the requested information, refer to the Instructions for Completing the Industrial Wastewater Permit Application[1] available on the TCEQ website.

If more than one outfall is included in the application, provide applicable information for each individual outfall. **If an item does not apply to the facility, enter N/A** to indicate that the item has been considered. Include separate reports or additional sheets as **clearly cross-referenced attachments** and provide the attachment number in the space provided for the item the attachment addresses.

NOTE: This application is for an industrial wastewater permit only. Additional authorizations from the TCEQ Waste Permits Division or the TCEQ Air Permits Division may be needed.

1. FACILITY/SITE INFORMATION (Instructions, Pages 34-35)

a. Describe the general nature of the business and type(s) of industrial and commercial activities. Include all applicable SIC codes (up to 4).

The Inner Harbor Desalination Plant will provide an additional water source and produce fresh water for distribution through the City of Corpus Christi's existing distribution system. The Inner Harbor Plant is expected to be developed for two phases with an initial 34 MGD phase and a final 51 MGD phase.

b. Describe all wastewater-generating processes at the facility.

The treatment process will take raw seawater and produce potable water. Four treatment processes will generate waste streams. The reverse osmosis process contributes 85% of the waste flow, dissolved air flotation contributes 1.5% of the waste flow, strainer backwash water will account for 4.5% of the waste flow, and microfiltration backwash water will contribute 9% of the waste flow.

[1] https://www.tceq.texas.gov/permitting/wastewater/industrial/TPDES_industrial_wastewater_steps.html

c. Provide a list of raw materials, major intermediates, and final products handled at the facility.

Materials List

Raw Materials	Intermediate Products	Final Products
Seawater	None	Drinking Water

Attachment:

d. Attach a facility map (drawn to scale) with the following information:

- Production areas, maintenance areas, materials-handling areas, waste-disposal areas, and water intake structures.
- The location of each unit of the WWTP including the location of wastewater collection sumps, impoundments, outfalls, and sampling points, if significantly different from outfall locations.

Attachment: F

e. Is this a new permit application for an existing facility?

☐ Yes ☒ No

If **yes**, provide background discussion:

f. Is/will the treatment facility/disposal site be located above the 100-year frequency flood level.

☒ Yes ☐ No

List source(s) used to determine 100-year frequency flood plain: FEMA Flood Map- 4854640166C

If **no**, provide the elevation of the 100-year frequency flood plain and describe what protective measures are used/proposed to prevent flooding (including tail water and rainfall run-on controls) of the treatment facility and disposal area:

Attachment: F

g. For **new** or **major amendment** permit applications, will any construction operations result in a discharge of fill material into a water in the state?

☒ Yes ☐ No ☐ N/A (renewal only)

h. If **yes** to Item 1.g, has the applicant applied for a USACE CWA Chapter 404 Dredge and Fill permit?

☐ Yes ☒ No

If **yes**, provide the permit number:

If **no**, provide an approximate date of application submittal to the USACE: January 2021

2. TREATMENT SYSTEM (Instructions, Page 35)

a. List any physical, chemical, or biological treatment process(es) used/proposed to treat wastewater at this facility. Include a description of each treatment process, starting with initial treatment and finishing with the outfall/point of disposal.

Produced wastewater will not be treated prior to discharge. The waste streams will be generated by pretreatment, membrane filtration, and desalination processes. The waste streams from these processes will be blended for discharge through Outfall 001.

b. Attach a flow schematic **with a water balance** showing all sources of water and wastewater flow into the facility, wastewater flow into and from each treatment unit, and wastewater flow to each outfall/point of disposal.

Attachment: G

3. IMPOUNDMENTS (Instructions, Pages 35-37)

Does the facility use or plan to use any wastewater impoundments (e.g., lagoons or ponds?)

☐ Yes ☒ No

If **no**, proceed to Item 4. If **yes**, complete **Item 3.a** for **existing** impoundments and **Items 3.a - 3.e** for **new or proposed** impoundments. **NOTE:** See instructions, Pages 35-37, for additional information on the attachments required by Items 3.a – 3.e.

a. Complete the table with the following information for each existing, new, or proposed impoundment:

Use Designation: Indicate the use designation for each impoundment as Treatment (**T**), Disposal (**D**), Containment (**C**), or Evaporation (**E**).

Associated Outfall Number: Provide an outfall number if a discharge occurs or will occur.

Liner Type: Indicate the liner type as Compacted clay liner (**C**), In-situ clay liner (**I**), Synthetic/plastic/rubber liner (**S**), or Alternate liner (**A**). **NOTE:** See instructions for further detail on liner specifications. If an alternate liner (A) is selected, include an attachment that provides a description of the alternate liner and any additional technical information necessary for an evaluation.

Leak Detection System: If any leak detection systems are in place/planned, enter **Y** for yes. Otherwise, enter **N** for no.

Groundwater Monitoring Wells and Data: If groundwater monitoring wells are in place/planned, enter **Y** for yes. Otherwise, enter **N** for no. Attach any existing groundwater monitoring data.

Dimensions: Provide the dimensions, freeboard, surface area, storage capacity of the impoundments, and the maximum depth (not including freeboard). For impoundments with irregular shapes, submit surface area instead of length and width.

Compliance with 40 CFR Part 257, Subpart D: If the impoundment is required to be in compliance with 40 CFR Part 257, Subpart D, enter **Y** for yes. Otherwise, enter **N** for no.

Date of Construction: Enter the date construction of the impoundment commenced (mm/dd/yy).

Impoundment Information

Parameter	Pond #	Pond #	Pond #	Pond #
Use Designation: (T) (D) (C) or (E)				
Associated Outfall Number				
Liner Type (C) (I) (S) or (A)				
Alt. Liner Attachment Reference				
Leak Detection System, Y/N				
Groundwater Monitoring Wells, Y/N				
Groundwater Monitoring Data Attachment				
Pond Bottom Located Above The Seasonal High-Water Table, Y/N				
Length (ft)				
Width (ft)				
Max Depth From Water Surface (ft), Not Including Freeboard				
Freeboard (ft)				
Surface Area (acres)				
Storage Capacity (gallons)				
40 CFR Part 257, Subpart D, Y/N				
Date of Construction				

Impoundment Information

Parameter	Pond #	Pond #	Pond #	Pond #
Use Designation: (T) (D) (C) or (E)				
Associated Outfall Number				
Liner Type (C) (I) (S) or (A)				
Alt. Liner Attachment Reference				
Leak Detection System, Y/N				
Groundwater Monitoring Wells, Y/N				
Groundwater Monitoring Data Attachment				
Pond Bottom Located Above The Seasonal High-Water Table, Y/N				
Length (ft)				
Width (ft)				
Max Depth From Water Surface (ft), not including freeboard				
Freeboard (ft)				
Surface Area (acres)				
Storage Capacity (gallons)				
40 CFR Part 257, Subpart D, Y/N				
Date of Construction				

Attachment:

The following information (**Items 3.b – 3.e**) is required only for **new or proposed** impoundments.

b. For new or proposed impoundments, attach any available information on the following items. If attached, check **yes** in the appropriate box. Otherwise, check **no** or **not yet designed**.

i. Liner data

☐ Yes ☐ No ☐ Not yet designed

ii. Leak detection system or groundwater monitoring data

☐ Yes ☐ No ☐ Not yet designed

iii. Groundwater impacts

☐ Yes ☐ No ☐ Not yet designed

NOTE: Item b.iii is required if the bottom of the pond is not above the seasonal high-water table in the shallowest water-bearing zone.

Attachment:

For TLAP applications: Items 3.c – 3.e are **not required**, continue to Item 4.

c. Attach a USGS map or a color copy of original quality and scale which accurately locates and identifies all known water supply wells and monitor wells within ½-mile of the impoundments.

Attachment:

d. Attach copies of State Water Well Reports (e.g., driller's logs, completion data, etc.), and data on depths to groundwater for all known water supply wells including a description of how the depths to groundwater were obtained.

Attachment:

e. Attach information pertaining to the groundwater, soils, geology, pond liner, etc. used to assess the potential for migration of wastes from the impoundments or the potential for contamination of groundwater or surface water.

Attachment:

4. OUTFALL/DISPOSAL METHOD INFORMATION (Instructions, Pages 38-39)

Complete the following tables to describe the location and wastewater discharge or disposal operations for each outfall for discharge operations and for each point of disposal for TLAP operations.

If there are more outfalls/points of disposal at the facility than the spaces provided, copies of pages 6 and/or numbered accordingly (i.e., page 6a, 6b, etc.) may be used to provide information on the additional outfalls.

For TLAP applications: Indicate the disposal method and each individual irrigation area **I**, evaporation pond **E**, or subsurface drainage system **S** by providing the appropriate letter designation for the disposal method followed by a numerical designation for each disposal area in the space provided for **Outfall** number (e.g. **E1** for evaporation pond 1, **I2** for irrigation area No. 2, etc.).

Outfall Latitude and Longitude

Outfall Number	Latitude-decimal degrees	Longitude-decimal degrees
001	Between 27.814 and 27.8145	Between -97.4195 and -97.418

Outfall Location Description

Outfall Number	Location Description
001	Diffuser(s) 200 to 500 feet from channel edge

Description of Sampling Points (if different from Outfall location)

Outfall Number	Description of Sampling Point
001	At start-of-pipe to diffuser(s)

Outfall Flow Information – Permitted and Proposed

Outfall Number	Permitted Daily Avg Flow (MGD)	Permitted Daily Max Flow (MGD)	Proposed Daily Avg Flow (MGD)	Proposed Daily Max Flow (MGD)	Anticipated Discharge Date (mm/dd/yy)
001 – Initial	N/A	N/A	34	41	2021
001 - Ultimate	N/A	N/A	51	62	unknown

Outfall Discharge – Method and Measurement

Outfall Number	Pumped Discharge? Y/N	Gravity Discharge? Y/N	Type of Flow Measurement Device Used
001	Y	N	TBD

Outfall Discharge – Flow Characteristics

Outfall Number	Intermittent Discharge? Y/N	Continuous Discharge? Y/N	Seasonal Discharge? Y/N	Discharge Duration (hrs/day)	Discharge Duration (days/mo)	Discharge Duration (mo/yr)
001	N	Y	N	24	30	12

Wastestream Contributions

Outfall No.: 001

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Reverse Osmosis Brine Discharge	45.00	85
Clarifier – Dissolved Air Flotation Treatment	0.83	1.5
Strainer Backwash	2.47	4.5
Microfiltration Media Filter Backwash	4.79	9

Outfall No.:

Contributing Wastestreams	Volume (MGD)	% of Total Flow

Outfall No.:

Contributing Wastestreams	Volume (MGD)	% of Total Flow

Attachment:

5. BLOWDOWN AND ONCE-THROUGH COOLING WATER DISCHARGES (Instructions, Page 39)

a. Does the facility use/propose to use any cooling towers which discharge blowdown or other wastestreams to the outfall(s)?

☐ Yes ☒ No

NOTE: If the facility uses or plans to use cooling towers, Item 12 **is required**.

b. Does the facility use or plan to use any boilers that discharge blowdown or other wastestreams to the outfall(s)?

☐ Yes ☒ No

c. Does or will the facility discharge once-through cooling water to the outfall(s)?

☐ Yes ☒ No

NOTE: If the facility uses or plans to use once-through cooling water, Item 12 **is required**.

d. If **yes** to Items 5.a, 5.b, **or** 5.c, attach the SDS with the following information for each chemical additive.

- Manufacturers Product Identification Number
- Product use (e.g., biocide, fungicide, corrosion inhibitor, etc.)
- Chemical composition including CASRN for each ingredient
- Classify product as non-persistent, persistent, or bioaccumulative
- Product or active ingredient half-life
- Frequency of product use (e.g., 2 hours/day once every two weeks)
- Product toxicity data specific to fish and aquatic invertebrate organisms
- Concentration of whole product or active ingredient, as appropriate, in wastestream.

Attach a summary of this information in addition to the submittal of the SDS for each specific wastestream and the associated chemical additives and specify which outfalls are affected.

Attachment:

e. Cooling Towers and Boilers

If **yes** to either Item 5.a **or** 5.b, complete the following table.

Cooling Towers and Boilers

Type of Unit	Number of Units	Dly Avg Blowdown (gallons/day)	Dly Max Blowdown (gallons/day)
Cooling Towers			
Boilers			

6. STORMWATER MANAGEMENT (Instructions, Pages 39-40)

Are there any existing/proposed outfalls which discharge stormwater associated with industrial activities, as defined at *40 CFR § 122.26(b)(14)*, commingled with any other wastestream?

☐ Yes ☒ No

If **yes**, briefly describe the industrial processes and activities that occur outdoors or in some manner which may result in exposure of the activities or materials to stormwater:

7. DOMESTIC SEWAGE, SEWAGE SLUDGE, AND SEPTAGE MANAGEMENT AND DISPOSAL (Instructions, Page 40)

a. Check the box next to the appropriate method of domestic sewage and domestic sewage sludge treatment or disposal. Complete Worksheet 5.0 or Item 7.b if directed to do so.

☒ Domestic sewage is routed (i.e., connected to or transported to) to a WWTP permitted to receive domestic sewage for treatment, disposal, or both. **Complete Item 7.b**.

☐ Domestic sewage is disposed of by an on-site septic tank and drainfield system. **Complete Item 7.b**.

☐ Domestic and industrial treatment sludge **ARE commingled** prior to use or disposal.

☐ Industrial wastewater and domestic sewage are treated separately, and the respective sludge **IS NOT commingled** prior to sludge use or disposal. **Complete Worksheet 5.0**.

☐ Facility is a POTW. **Complete Worksheet 5.0**.

☐ Domestic sewage is not generated on-site.

☐ Other (e.g., portable toilets), specify and **Complete Item 7.b**:

b. Provide the name and TCEQ, NPDES, or TPDES Permit No. of the waste-disposal facility which receives the domestic sewage/septage. If hauled by motorized vehicle, provide the name and TCEQ Registration No. of the hauler.

Domestic Sewage Plant/Hauler Name

Plant/Hauler Name	Permit/Registration No.
Broadway WWTP – City of Corpus Christi	WQ0010401-005

8. IMPROVEMENTS OR COMPLIANCE/ENFORCEMENT REQUIREMENTS (Instructions, Page 40)

a. Is the permittee currently required to meet any implementation schedule for compliance or enforcement?

☐ Yes ☒ No

b. Has the permittee completed or planned for any improvements or construction projects?

☐ Yes ☒ No

c. If **yes** to either 8.a **or** 8.b, provide a brief summary of the requirements and a status update:

9. TOXICITY TESTING (Instructions, Page 41)

Have any biological tests for acute or chronic toxicity been made on any of the discharges or on a receiving water in relation to the discharge within the last three years?

☐ Yes ☒ No

If **yes**, identify the tests and describe their purposes:

Additionally, attach a copy of all tests performed which **have not** been submitted to the TCEQ or EPA.

Attachment:

10. OFF-SITE/THIRD PARTY WASTES (Instructions, Page 41)

a. Does or will the facility receive wastes from off-site sources for treatment at the facility, disposal on-site via land application, or discharge via a permitted outfall?

☐ Yes ☒ No

If **no**, proceed to Item 11. If **yes**, provide responses to Items 10.b through 10.d below.

b. Attach the following information to the application:

- List of wastes received (including volumes, characterization, and capability with on-site wastes).
- Identify the sources of wastes received (including the legal name and addresses of the generators).
- Description of the relationship of waste source(s) with the facility's activities.

Attachment:

c. Is or will wastewater from another TCEQ, NPDES, or TPDES permitted facility commingled with this facility's wastewater after final treatment and prior to discharge via the final outfall/point of disposal?

☐ Yes ☐ No

If **yes**, provide the name, address, and TCEQ, NPDES, or TPDES permit number of the contributing facility and a copy of any agreements or contracts relating to this activity.

Attachment:

d. Is this facility a POTW that accepts/will accept process wastewater from any SIU and has/is required to have an approved pretreatment program under the NPDES/TPDES program?

☐ Yes ☐ No

If **yes**, **Worksheet 6.0** of this application **is required**.

11. RADIOACTIVE MATERIALS (Instructions, Pages 41-42)

a. Are/will radioactive materials be mined, used, stored, or processed at this facility?

☐ Yes ☒ No

If **yes**, use the following table to provide the results of one analysis of the effluent for all radioactive materials that may be present. Provide results in pCi/L.

Radioactive Materials Mined, Used, Stored, or Processed

Radioactive Material	Concentration (pCi/L)

b. Does the applicant or anyone at the facility have any knowledge or reason to believe that radioactive materials may be present in the discharge, including naturally occurring radioactive materials in the source waters or on the facility property?

☐ Yes ☒ No

If **yes**, use the following table to provide the results of one analysis of the effluent for all radioactive materials that may be present. Provide results in pCi/L. Do not include information provided in response to Item 11.a.

Radioactive Materials Present in the Discharge

Radioactive Material	Concentration (pCi/L)

12. COOLING WATER (Instructions, Pages 42-43)

a. Does the facility use or propose to use water for cooling purposes?

☐ Yes ☒ No

If **no**, stop here. If **yes**, complete Items 12.b thru 12.f.

b. Cooling water is/will be obtained from a groundwater source (e.g., on-site well).

☐ Yes ☐ No

If **yes**, stop here. If **no**, continue.

c. Cooling Water Supplier

i. Provide the name of the owner(s) and operator(s) for the CWIS that supplies or will supply water for cooling purposes to the facility.

Cooling Water Intake Structure(s) Owner(s) and Operator(s)

CWIS ID				
Owner				
Operator				

ii. Cooling water is/will be obtained from a Public Water Supplier (PWS)

☐ Yes ☐ No

If **no**, continue. If **yes**, provide the PWS Registration No. and stop here:

iii. Cooling water is/will be obtained from an Independent Supplier

☐ Yes ☐ No

If **no**, proceed to Item 12.d. If **yes,** contact the Industrial Permits Team to determine what application materials are required. Attach copies of the correspondence with the TCEQ and any required application materials, as stipulated in the correspondence with the TCEQ.

Attachment:

d. 316(b) General Criteria

i. The CWIS(s) have or will have a cumulative design intake flow of 2 MGD or greater

☐ Yes ☐ No

ii. At least 25% of the total water withdrawn by the CWIS is/will be used exclusively for cooling purposes on an annual average basis

☐ Yes ☐ No

iii. The facility withdraws/proposes to withdraw water for cooling purposes from surface waters that meet the definition of Waters of the United States in *40 CFR § 122.2*.

☐ Yes ☐ No

If **no**, provide an explanation of how the waterbody does not meet the definition of Waters of the United States in *40 CFR § 122.2*:

If **yes** to all three questions in Item 12.d, the facility is subject to 316(b). Proceed to Item 12.f.

If **no** to any of the questions in Item 12.d, the facility does not meet the minimum criteria to be subject to the full requirements of 316(b). Proceed to Item 12.e.

e. The facility is **not subject** to 316(b) **and uses/proposes to use cooling towers**.

☐ Yes ☐ No

If **yes**, stop here. If **no**, complete Worksheet 11.0, Items 1(a), 1(b)(i-iii) and (vi), 2(b)(i), and 3(a) to allow for a determination based upon BPJ.

f. Phase I vs Phase II Facilities

i. Existing facility (Phase II)

☐ Yes ☐ No

If **yes**, complete Worksheets 11.0 through 11.3, as applicable. Otherwise, continue.

ii. New Facility – (Phase I)

☐ Yes ☐ No

If **yes**, check the box next to the facility's compliance track selection, attach the requested information, and complete Worksheet 11.0, Items 2 and 3, and Worksheet 11.2:

☐ Track I - AIF greater than 2 MGD, but less than 10 MGD
- Attach information required by *40 CFR §§ 125.86(b)(2)-(4)*.

☐ Track I - AIF greater than 10 MGD
- Attach information required by *40 CFR § 125.86(b)*.

☐ Track II
- Attach information required by *40 CFR § 125.86(c)*.

Attachment:

NOTE: Item 13 is required only for existing permitted facilities.

13. PERMIT CHANGE REQUESTS (Instructions, Pages 43-44)

a. Is the facility requesting a **major amendment** of an existing permit?

☐ Yes ☒ No

If **yes**, list each request individually and provide the following information: 1) detailed information regarding the scope of each request and 2) a justification for each request. Attach any supplemental information or additional data to support each request.

b. Is the facility requesting any **minor amendments** to the permit?

☐ Yes ☒ No

If **yes**, list and discuss the requested changes.

c. Is the facility requesting any **minor modifications** to the permit?

☐ Yes ☒ No

If **yes**, list and discuss the requested changes.

WORKSHEET 4.0
RECEIVING WATERS

This worksheet **is required** for all TPDES permit applications.

1. DOMESTIC DRINKING WATER SUPPLY (Instructions, Page 74)

a. There is a surface water intake for domestic drinking water supply located within 5 (five) miles downstream from the point/proposed point of discharge.

☐ Yes ☒ No

If **no**, stop here and proceed to Item 2. If **yes**, provide the following information:

i. The legal name of the owner of the drinking water supply intake:

v. The distance and direction from the outfall to the drinking water supply intake:

b. Locate and identify the intake on the USGS 7.5-minute topographic map provided for Administrative Report 1.0.

☐ Check this box to confirm the above requested information is provided.

2. DISCHARGE INTO TIDALLY INFLUENCED WATERS (Instructions, Page 74)

If the discharge is to tidally influenced waters, complete this section. Otherwise, proceed to Item 3.

a. Width of the receiving water at the outfall: Approximately 1,000 feet

b. Are there oyster reefs in the vicinity of the discharge?

☐ Yes ☒ No

If **yes**, provide the distance and direction from the outfall(s) to the oyster reefs:

c. Are there sea grasses within the vicinity of the point of discharge?

☐ Yes ☒ No

If **yes**, provide the distance and direction from the outfall(s) to the grasses:

3. CLASSIFIED SEGMENT (Instructions, Page 74)

The discharge is/will be directly into (or within 300 feet of) a classified segment.

☒ Yes ☐ No

If **yes**, stop here. It is not necessary to complete Items 4 and 5 of this worksheet or Worksheet 4.1.

If **no**, complete Items 4 and 5 and Worksheet 4.1 may be required.

4. DESCRIPTION OF IMMEDIATE RECEIVING WATERS (Instructions, Page 75)

a. Name of the immediate receiving waters:

b. Check the appropriate description of the immediate receiving waters:

☐ Lake or Pond
- Surface area (acres):
- Average depth of the entire water body (feet):
- Average depth of water body within a 500-foot radius of the discharge point (feet):

☐ Man-Made Channel or Ditch
☐ Stream or Creek
☐ Freshwater Swamp or Marsh
☐ Tidal Stream, Bayou, or Marsh
☐ Open Bay
☐ Other, specify:

If **Man-Made Channel or Ditch** or **Stream or Creek** were selected above, provide responses to Items 4.c – 4.g below:

c. For **existing discharges**, check the description below that best characterizes the area **upstream** of the discharge.

For **new discharges**, check the description below that best characterizes the area **downstream** of the discharge.

☐ Intermittent (dry for at least one week during most years)
☐ Intermittent with Perennial Pools (enduring pools containing habitat to maintain aquatic life uses)
☐ Perennial (normally flowing)

Check the source(s) of the information used to characterize the area upstream (existing discharge) or downstream (new discharge):

☐ USGS flow records
☐ personal observation
☐ historical observation by adjacent landowner(s)
☐ other, specify:

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

e. 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**, describe how:

f. General observations of the water body during normal dry weather conditions:

Date and time of observation:

g. The water body was influenced by stormwater runoff during observations.

☐ Yes ☐ No

If **yes**, describe how:

5. GENERAL CHARACTERISTICS OF WATER BODY (Instructions, Page 75)

a. Is the receiving water upstream of the existing discharge or proposed discharge site influenced by any of the following (check all that apply):

☐	oil field activities	☐	urban runoff
☐	agricultural runoff	☐	septic tanks
☐	upstream discharges	☐	other, specify:

b. Uses of water body observed or evidence of such uses (check all that apply):

☐	livestock watering	☐	fishing	☐	picnic/park activities
☐	non-contact recreation	☐	industrial water supply	☐	other, specify:
☐	domestic water supply	☐	irrigation withdrawal		
☐	contact recreation	☐	navigation		

c. Description which best describes the aesthetics of the receiving water and the surrounding area (check only one):

☐ **Wilderness:** outstanding natural beauty; usually wooded or un-pastured area: water clarity exceptional

☐ **Natural Area:** trees or native vegetation common; 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

WORKSHEET 6.0
INDUSTRIAL WASTE CONTRIBUTION

This worksheet **is required** for all applications for publicly-owned treatment works (POTWs).

For an explanation of the terms used in this worksheet, refer to the General Definitions on pages 4-12 and the Definitions Relating to Pretreatment on pages 13-14 of the Instructions.

1. ALL POTWS (Instructions, Page 80)

a. Complete the following table with the number of each type of industrial users (IUs) that discharge to the POTW and the daily average flows from each.

Industrial User Information

Type of Industrial User	Number of Industrial Users	Daily Average Flow (gallons per day)
CIU	0	
SIU - Non-categorical	0	
Other IU	0	

b. In the past three years, has the POTW experienced treatment plant interference?

☐ Yes ☒ No

If **yes**, identify the date(s), duration, nature of interference, and probable cause(s) and possible source(s) of each interference event. Include the names of the IU(s) that may have caused the interference:

c. In the past three years, has the POTW experienced pass-through?

☐ Yes ☒ No

If **yes**, identify the date(s), duration, pollutants passing through the treatment plant, and probable cause(s) and possible source(s) of each pass-through event. Include the names of the IU(s) that may have caused the pass-through:

d. Does the POTW have, or is it required to develop, an approved pretreatment program?

☐ Yes ☒ No

If **yes**, answer all questions in Item 2 and skip Item 3.

If **no**, skip Item 2 and answer all questions in Item 3 for each significant industrial user and categorical industrial user.

2. POTWS WITH APPROVED PRETREATMENT PROGRAMS OR THOSE REQUIRED TO DEVELOP A PRETREATMENT PROGRAM (Instructions, Pages 80-81)

a. Have there been any substantial modifications to the POTW's approved pretreatment program that have not been submitted to the Approval Authority (TCEQ) for approval according to *40 CFR § 403.18*?

☐ Yes ☐ No

If **yes**, include an attachment which identifies all substantial modifications that have not been submitted to the TCEQ and the purpose of the modifications.

Attachment:

b. Have there been any non-substantial modifications to the POTW's approved pretreatment program that have not been submitted to the Approval Authority (TCEQ)?

☐ Yes ☐ No

If **yes**, include an attachment which identifies all non-substantial modifications that have not been submitted to the TCEQ and the purpose of the modification.

Attachment:

c. List all parameters measured above the MAL in the POTW's effluent monitoring during the last three years:

Effluent Parameters Measured Above the MAL

Pollutant	Concentration	MAL	Units	Date

Attachment:

d. Has any SIU, CIU, or other IU caused or contributed to any other problems (excluding interference or pass-through) at the POTW in the past three years?

☐ Yes ☐ No

If **yes**, provide a description of each episode, including date(s), duration, description of problems, and probable pollutants. Include the name(s) of the SIU(s)/CIU(s)/other IU(s) that may have caused or contributed to any of the problems:

3. SIGNIFICANT INDUSTRIAL USER AND CATEGORICAL INDUSTRIAL USER INFORMATION (Instructions, Pages 81-82)

POTWs that **do not** have an approved pretreatment program **are required** to provide the following information for each SIU and CIU:

a. Mr. or Ms.: Zero SIU and CIUs First/Last Name:

Organization Name: SIC Code:

Phone number: Email address:

Physical Address: City/State/ZIP Code:

Attachment:

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

Attachment:

c. Provide a description of the principal products(s) or service(s) performed:

d. Flow rate information

Flow rate information

Effluent Type	Discharge (gallons per day)	Discharge Frequency (continuous, batch, or intermittent)
Process wastewater		
Non-process wastewater		

e. Pretreatment Standards

i. Is the SIU or CIU subject to technology-based local limits as defined in the application instructions?

☐ Yes ☐ No

ii. Is the SIU subject to categorical pretreatment standards?

☐ Yes ☐ No

If **yes**, provide the category and subcategory or subcategories in the SIUs Subject To Categorical Pretreatment Standards table.

SIUs Subject To Categorical Pretreatment Standards

Category in 40 CFR	Subcategory in 40 CFR	Subcategory in 40 CFR	Subcategory in 40 CFR	Subcategory in 40 CFR

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

☐ Yes ☐ No

If **yes**, provide a description of each episode, including dates, duration, description of problems, and probable pollutants, and include the name(s) of the SIU(s)/CIU(s) that may have caused or contributed to the problem(s):

WORKSHEET 7.0
STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES

This worksheet **is required** for all TPDES permit applications requesting individual permit coverage for discharges consisting of **either**: 1) solely of stormwater discharges associated with industrial activities, as defined in *40 CFR § 122.26(b)(14)(i-xi)*, **or** 2) stormwater discharges associated with industrial activities and any of the listed allowable non-stormwater discharges, as defined in the MSGP (TXR05000), Part II, Section A, Item 6.

Discharges of stormwater as defined in *40 CFR § 122.26 (b)(13)* are not required to obtain authorization under a TPDES permit (see exceptions at *40 CFR §§ 122.26(a)(1)* and *(9)*). Authorization for discharge may be required from a local municipal separate storm sewer system.

1. APPLICABILITY (Instructions, Page 83)

Do discharges from any of the existing/proposed outfalls consist either 1) solely of stormwater discharges associated with industrial activities **or** 2) stormwater discharges associated with industrial activities and any of the allowable non-stormwater discharges?

☒ Yes ☐ No

If **no**, stop here. If **yes**, proceed as directed.

2. STORMWATER OUTFALL COVERAGE (Instructions, Page 84)

List each existing/proposed stormwater outfall at the facility and indicate which type of authorization covers or is proposed to cover discharges.

Authorization coverage

Outfall	Authorized Under MSGP	Authorized Under Individual Permit
001	☒	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

If **all** existing/proposed outfalls which discharge stormwater associated with industrial activities (and any of the allowable non-stormwater discharges) are **authorized under the MSGP**, **stop** here.

If **seeking authorization** for any outfalls which discharge stormwater associated with industrial activities (and any of the allowable non-stormwater discharges) **under an individual permit**, **proceed**.

NOTE: The following information is required for each existing/proposed stormwater outfall for which the facility is seeking individual permit authorization under this application.

3. SITE MAP (Instructions, Page 84)

Attach a site map or maps (drawn to scale) of the entire facility with the following information.

- the location of each stormwater outfall to be covered by the permit
- an outline of the drainage area that is within the facility's boundary and that contributes stormwater to each outfall to be covered by the permit
- connections or discharge points to municipal separate storm sewer systems
- locations of all structures (e.g. buildings, garages, storage tanks)
- structural control devices that are designed to reduce pollution in discharges of stormwater associated with industrial activities
- process wastewater treatment units (including ponds)
- bag house and other air treatment units exposed to stormwater (stormwater runoff, snow melt runoff, and surface runoff and drainage)
- landfills; scrapyards; surface water bodies (including wetlands)
- vehicle and equipment maintenance areas
- physical features of the site that may influence discharges of stormwater associated with industrial activities or contribute a dry weather flow
- locations where spills or leaks of reportable quality (as defined in *30 TAC § 327.4*) have occurred during the three years before this application was submitted to obtain coverage under an individual permit
- processing areas, storage areas, material loading/unloading areas, and other locations where significant materials are exposed to stormwater (stormwater runoff, snow melt runoff, and surface runoff and drainage)

☐ Check the box to confirm all the above information was provided on the facility site map(s).

Attachment:

4. FACILITY/SITE INFORMATION (Instructions, Pages 84-85)

a. Provide the area of impervious surface and the total area drained by each stormwater outfall requested for authorization by this permit application.

Impervious Surfaces

Outfall	Area of Impervious Surface (include units)	Total Area Drained (include units)

b. Provide the following local area rainfall information and the source of the information.

Wettest month:

Average rainfall for wettest month (total inches):

25-year, 24-hour rainfall (inches):

Source:

c. Attach an inventory, or list, of materials currently handled at the facility that may be exposed to precipitation. **Attachment:**

d. Attach narrative descriptions of the industrial processes and activities involving the materials in the above-listed inventory that occur outdoors or in some manner that may result in exposure of the materials to precipitation or runoff (see instructions for guidance). **Attachment:**

e. Describe any BMPs and controls the facility uses/proposes to prevent or effectively reduce pollution in stormwater discharges from the facility:

5. LABORATORY ACCREDITATION CERTIFICATION (Instructions, Page 85)

Effective July 1, 2008, all laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification* with the following general exemptions:

a. The laboratory is an in-house laboratory and is:
   i. periodically inspected by the TCEQ; or
   ii. located in another state and is accredited or inspected by that state; or
   iii. performing work for another company with a unit located in the same site; or
   vi. performing pro bono work for a governmental agency or charitable organization.

b. The laboratory is accredited under federal law.

c. The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.

d. The laboratory supplies data for which the TCEQ does not offer accreditation.

Review *30 TAC Chapter 25* for specific requirements. The following certification statement shall be signed and submitted with every application. See Instructions, Page 32, for a list of approved signatories.

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

_____

(Signature)

6. POLLUTANT ANALYSIS (Instructions, Pages 85-88)

a. Provide the date range of all sampling events conducted to obtain the analytical data submitted with this application (e.g., 05/01/2018-05/30/2018):

b. ☐ Check the box to confirm all samples were collected no more than 12 months prior to the date of application submittal.

c. Complete Table 17 as directed on page 90 of the Instructions.

Table 17 Pollutant Analysis for Outfall No.:

Pollutant	Grab Sample* Maximum (mg/L)	Composite Sample** Maximum (mg/L)	Grab Sample* Average (mg/L)	Composite Sample** Average (mg/L)	Number of Storm Events Sampled	MAL (mg/L)
pH (standard units)	(max)	—	(min)	—		—
Total suspended solids						—
Chemical oxygen demand						—
Total organic carbon						—
Oil and grease						—
Arsenic, total						0.0005
Barium, total						0.003
Cadmium, total						0.001
Chromium, total						0.003
Chromium, trivalent						—
Chromium, hexavalent						0.003
Copper, total						0.002
Lead, total						0.0005
Mercury, total						0.000005
Nickel, total						0.002
Selenium, total						0.005
Silver, total						0.0005
Zinc, total						0.005

* Taken during first 30 minutes of storm event
** Flow-weighted composite sample

d. Complete Table 18 as directed on pages 90-92 of the Instructions.

Table 18 Pollutant Analysis for Outfall No.:

Pollutant	Grab Sample* Maximum (mg/L)	Composite Sample** Maximum (mg/L)	Grab Sample* Average (mg/L)	Composite Sample** Average (mg/L)	Number of Storm Events Sampled

Pollutant	Grab Sample* Maximum (mg/L)	Composite Sample** Maximum (mg/L)	Grab Sample* Average (mg/L)	Composite Sample** Average (mg/L)	Number of Storm Events Sampled

* Taken during first 30 minutes of storm event
** Flow-weighted composite sample

Attachment:

7. STORM EVENT DATA (Instructions, Page 88)

Provide the following data for the storm event(s) which resulted in the maximum values for the analytical data submitted:

Date of storm event:

Duration of storm event (minutes):

Total rainfall during storm event (inches):

Number of hours the between beginning of the storm measured and the end of the previous measurable storm event (hours):

Maximum flow rate during rain event (gallons/minute):

Total stormwater flow from rain event (gallons):

Provide a description of the method of flow measurement or estimate:

Attachment A

Core Data Form

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 600131858		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	00/01/2019

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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

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

City of Corpus Christi

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

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☒ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

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

13. Independently Owned and Operated?
☒ Yes ☐ No

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

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

15. Mailing Address:

P.O. Box 9277

City	Corpus Christi	State	TX	ZIP	78469	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	estebanr2@cctexas.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(361) 826-2489		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Inner Harbor Desalination Plant

23. Street Address of the Regulated Entity: *(No PO Boxes)*	[redacted]
24. County	[redacted]

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Southeast corner of the intersection of Nueces Bay Boulevard and West Broadway Street

26. Nearest City	**State**	**Nearest ZIP Code**
Corpus Christi	TX	78401

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
27	48	27.673	97	25	5.231

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4941		221310	

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

Seawater desalination

34. Mailing Address:	**P.O. Box 9277**							
	City	**Corpus Christi**	**State**	**TX**	**ZIP**	**78469**	**ZIP + 4**	
35. E-Mail Address:	**estebanr2@cctexas.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(361) 826-2489		( ) -

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

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

SECTION IV: Preparer Information

40. Name:	Katie Leatherwood	**41. Title:**	Environmental Scientist

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(817) 735-7503		(817) 735-7492	katie.leatherwood@freese.com

SECTION V: Authorized Signature

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

Company:	[redacted]	**Job Title:**	Environmental Scientist
Name *(In Print)* **:**	[redacted]	**Phone:**	[redacted]
Signature:	[redacted]	**Date:**	[redacted]

Attachment B

Property Ownership Information

Placeholder for Long-Term Lease Agreement

Real estate negotiations are ongoing with Flint Hills Resources for the proposed plant site. The City will provide a copy of the final executed long-term lease agreement and deed-recorded easement to the TCEQ upon their execution.

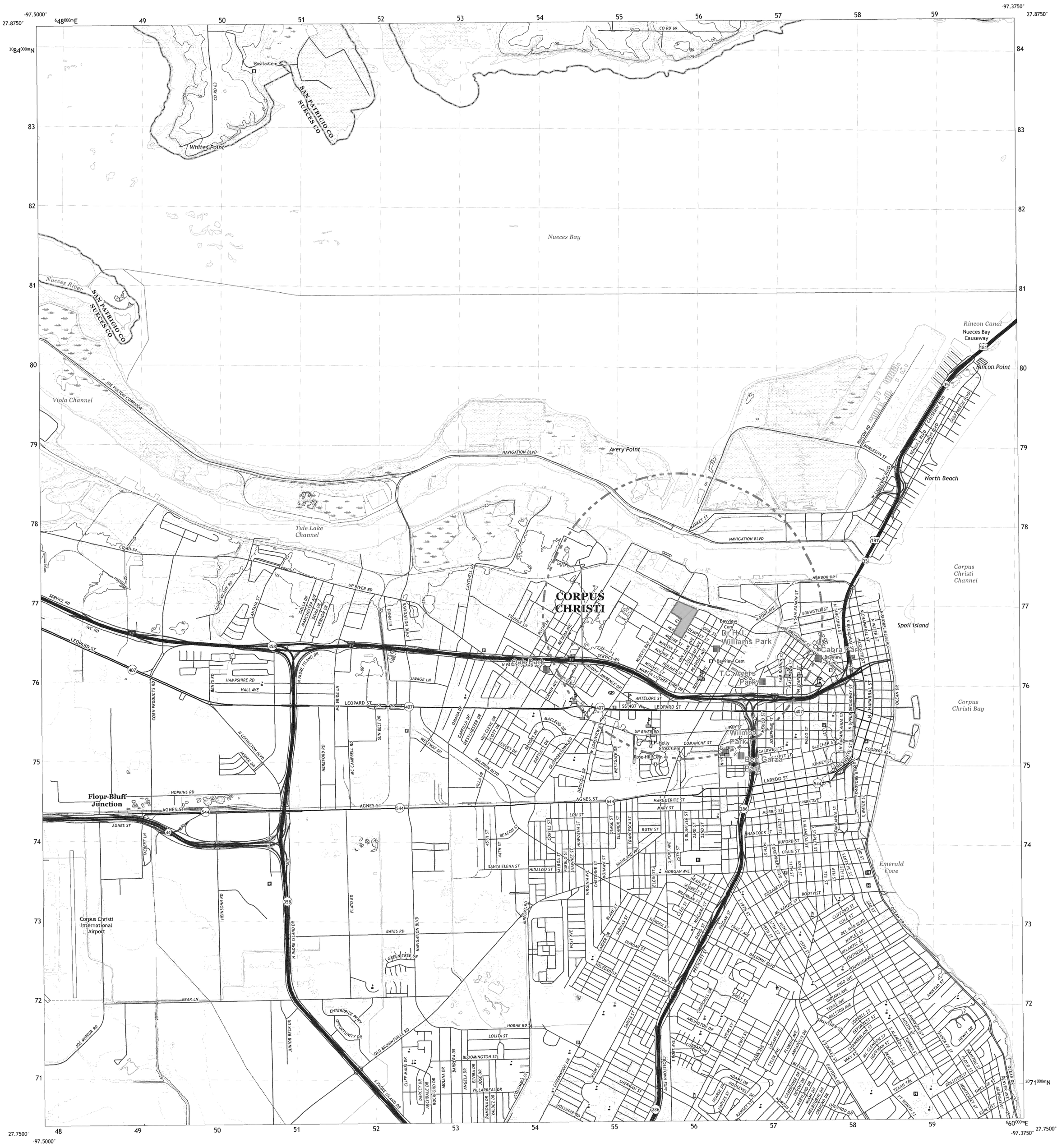
Attachment C

USGS Topographic Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

CORPUS CHRISTI QUADRANGLE
TEXAS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2016 - December 2016
Roads.....U.S. Census Bureau, 2015 - 2018
Names.....GNIS, 1979 - 2018
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2012
Boundaries.....Multiple sources; see metadata file 2016 - 2017

Wetlands.....FWS National Wetlands Inventory 2004 - 2006

MN
GN
3°32' 63 MILS
0°44' 13 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PR
Grid Zone Designation 14R

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

TEXAS
QUADRANGLE LOCATION

1 Odem
2 Taft
3 Gregory
4 Annaville
5 Portland
6 Petronila NE
7 Oso Creek NW
8 Oso Creek NE
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

CORPUS CHRISTI, TX
2019

FREESE AND NICHOLS
FREESE AND NICHOLS, INC
4055 International Plaza, Suite 200
Fort Worth, TX 76109 - 4895
Phone - (817) 735 - 7300

N W E S
0 1,000 2,000 4,000 6,000 Feet

CITY OF CORPUS CHRISTI
Seawater Desalination

Project Location on
2019 USGS Topographic Base
Corpus Christi Quad

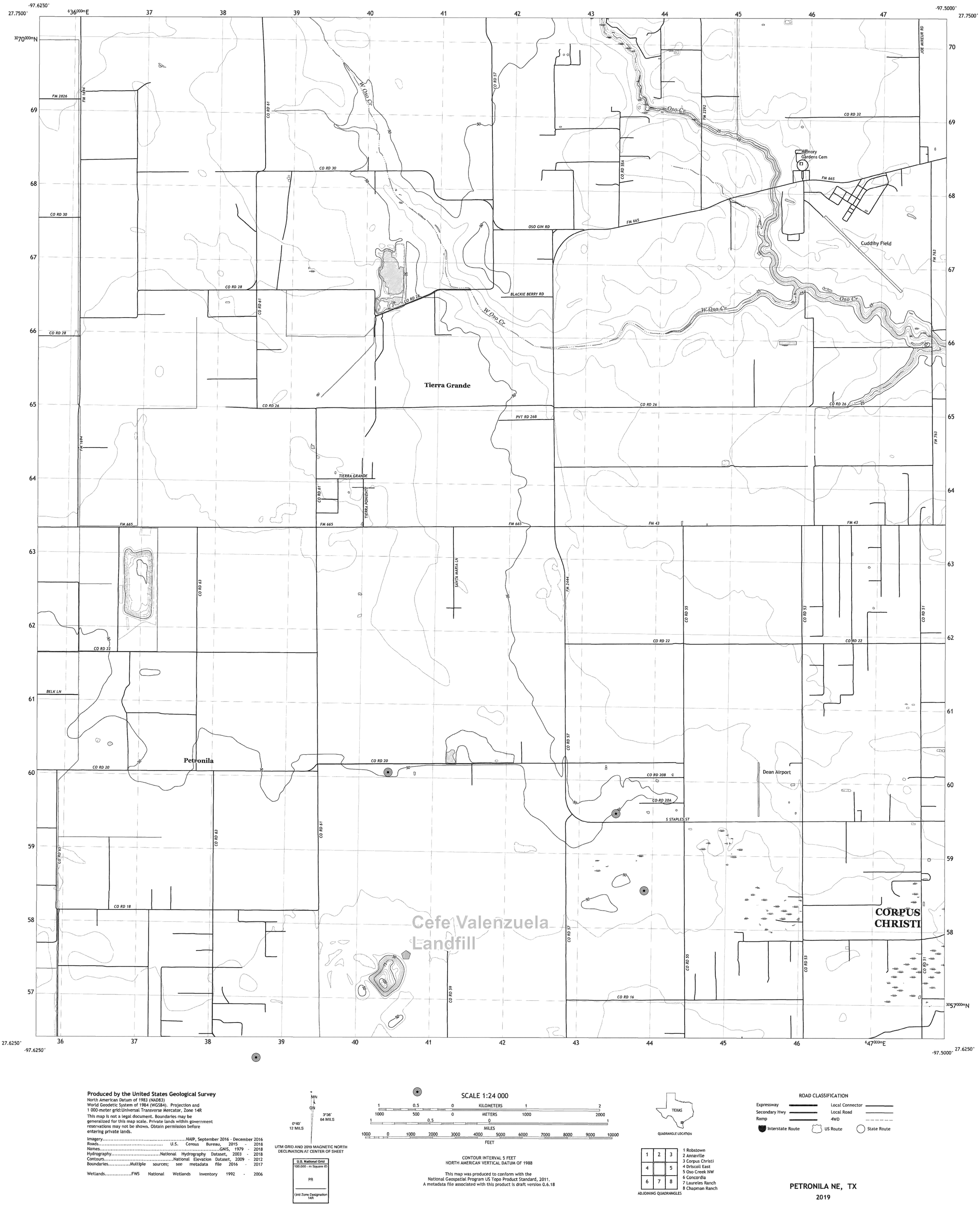
Applicant's Facility Boundary
Proposed Property Boundary
TWDB Well Locations
Schools
1 Mile Buffer
Discharge Pipeline
Discharge Diffuser Array Area
Discharge Diffuser Ports

1
Figure

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

PETRONILA NE QUADRANGLE
TEXAS - NUECES COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP,	September 2016 - December 2016
Roads	U.S. Census Bureau,	2015 - 2018
Names	GNIS,	1979 - 2018
Hydrography	National Hydrography Dataset,	2003 - 2018
Contours	National Elevation Dataset,	2009 - 2012
Boundaries	Multiple sources; see metadata file	2016 - 2017
Wetlands	FWS National Wetlands Inventory	1992 - 2006

MN
GN
3°36'
64 MILS
0°40'
12 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000-m Square ID
PR
Grid Zone Designation
14R

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Robstown
2 Annaville
3 Corpus Christi
4 Driscoll East
5 Oso Creek NW
6 Concordia
7 Laureles Ranch
8 Chapman Ranch
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

PETRONILA NE, TX
2019

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FREESE AND NICHOLS, INC
4055 International Plaza, Suite 200
Fort Worth, TX 76109 - 4895
Phone - (817) 735 - 7300

N W E S
0 1,000 2,000 4,000 6,000 Feet

CITY OF CORPUS CHRISTI
Seawater Desalination

Disposal Site on
2019 USGS Topograpic Base
Petronila NE Quad

TWDB Well Locations
Cefe Valenzuela Landfill

1
Figure

Attachment D

Affected Landowner Map

Landowner List and Labels

Original Photographs

Affected Landowners Map

CITY OF CORPUS CHRISTI
TPDES Permit Application

FN PROJECT NO.	COR18488
DATE CREATED	4/20/2020
DATUM & COORDINATE SYSTEM	NAD83 State Plane (feet) Texas North Central
FILE NAME	Affected Landowners_ InnerHarbor_Fig 2
PREPARED BY	ANM

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4055 International Plaza Suite 200
Fort Worth, Texas 76109-4895
(817) 735-7300

2

FIGURE

Corpus Christi Inner Harbor
(Segment 2484)

See Figure 2a

1:10,000
0 250 500 1,000 1,500 Feet
1 inch equals 833.33 feet

N W E S

- Applicant's Facility Boundary
- Proposed Property Boundary
- Affected Landowner Propety Boundaries
- Discharge Pipeline
- Discharge Diffuser Array Area
- Discharge Diffuser Ports
- One Mile Downstream of Discharge Point
- 1/2-Mile Buffer of Discharge Point
- Property Owned by Nueces County Navigation District

Path: H:\ENVIRONMENTAL\Working\TPDES\Affected Landowners_ InnerHarbor_Fig 2.mxd

CITY OF CORPUS CHRISTI

TPDES Permit Application

Affected Landowners Map - Inset

FN PROJECT NO.	COR18488
DATE CREATED	4/23/2020
DATUM & COORDINATE SYSTEM	NAD83 State Plane (feet) Texas North Central
FILE NAME	Affected Landowners_InnerHarbor_Fig 2a Inset
PREPARED BY	ANM

FREESE AND NICHOLS
4055 International Plaza Suite 200
Fort Worth, Texas 76109-4895
(817) 735-7300

Applicant's Facility Boundary

Proposed Property Boundary

Discharge Pipeline

Affected Landowner Propety Boundaries

1:2,400

0 200 400 Feet

1 inch equals 200 feet

N W E S

2a

FIGURE

Path: H:\ENVIRONMENTAL\Working\TPDES\Affected Landowners_ InnerHarbor_Fig 2a Inset.mxd

Cross-Referenced Landowner List

1 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

2 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

3 Florez Elida Gonzalez
6342 N Washam Dr
Corpus Christi, TX 78414-3644

4 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

5 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

6 Nieto Felipe Robert W
1806 Palm Drive
Corpus Christi, TX 78407

7 Patricia Washington
6715 Path Way Ct
Katy, TX 77449-1449

8 Liliana Rodriquez
1222 Crescent Cir
Corpus Christi, TX 78412-3520

9 Williams Gaaries Charles
3751 Wilson Drive
Corpus Christi, TX 78408-3351

10 Newbill Elaine and Anthony D Newbill
3368 Cape May Ct.
Dumfries, VA 22026-2199

11 Rodela Rosalinda
PO Box 7252
Corpus Christi, TX 78467-7252

12 Clay Johnny H III Tr/Of
1924 Palm Drive
Corpus Christi, TX 78407

13 Cantu Guadalupe Pizana
2006 Palm
Corpus Christi, TX 78407

14 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

15 Electric Transmission Texas LLC
PO Box 16428
Columbus, OH 43216-6428

16 Nueces Bay WLE LP
1780 Hughes Landing Blvd Ste 800
Spring, TX 77380-4021

17 Texas Cement Company
3811 Turtle Creek Blvd
Dallas, TX 75219-4487

Original Photographs
August 1, 2019

Photo 1- Photo pointing south towards the proposed discharge location.

Photo 2- Photo showing north of proposed discharge location.

Original Photographs
August 1, 2019

Photo 3- Photo showing northwest of proposed discharge location.

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N
W E
S

City of Corpus Christi

Seawater Desalination Plant

Photograph Plot Map

FN JOB NO	COR18468
FILE NAME	PhotoPlotMap_InnerH.mxd
DATE	1/15/2020
SCALE	1:8,000
DESIGNED	ANM
DRAFTED	02905

4

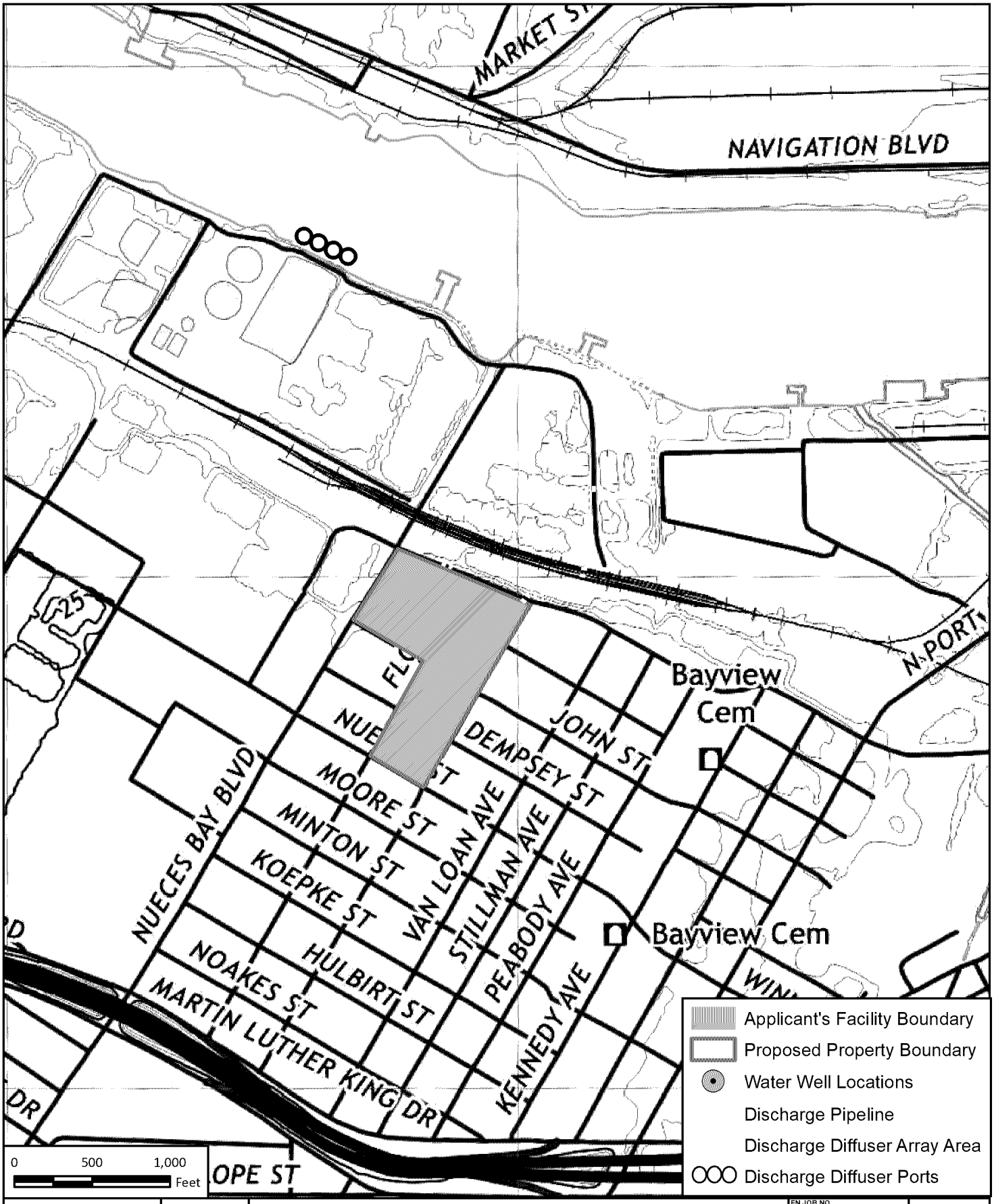
FIGURE

Path: H:\ENVIRONMENTAL\Working\TPDES\PhotoPlotMap_InnerH.mxd

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

Attachment E

SPIF Map



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City of Corpus Christi

Seawater Desalination Plant

SPIF Topographic Map

FN JOB NO	COR18468
FILE NAME	SPIF_Nueces Bay Blvd Site.mxd
DATE	2/26/2020
SCALE	1:10,000
DESIGNED	ANM
DRAFTED	02905

FIGURE 3

Path: H:\ENVIRONMENTAL\Working\TPDES\SPIF_Nueces Bay Blvd Site.mxd

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

Attachment F

Site Map

FEMA Map

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N W E S

City of Corpus Christi

Seawater Desalination Plant

Facility Map

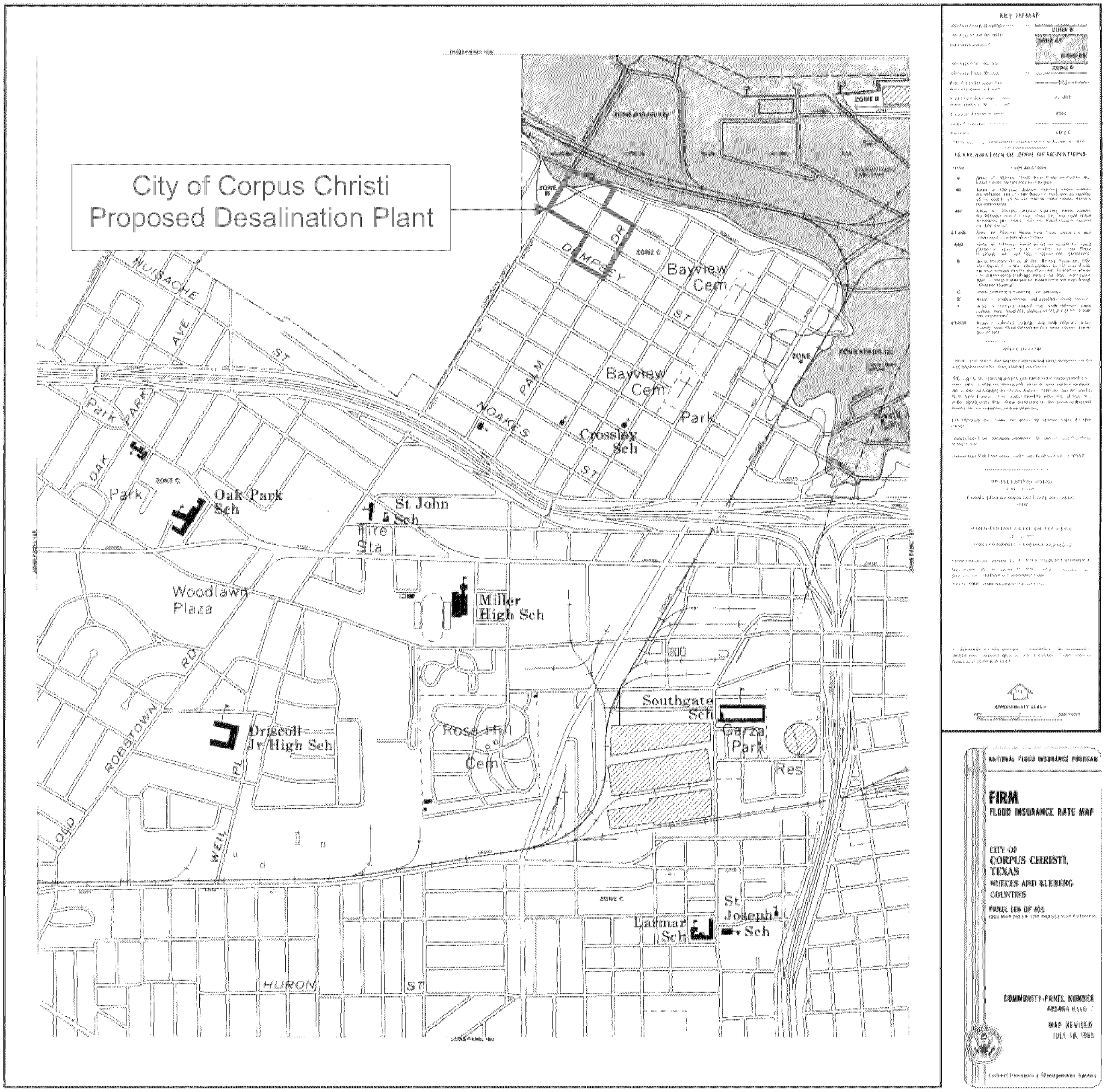
FN JOB NO	COR18468
FILE NAME	FacilityMap_NuecesBay.mxd
DATE	2/26/2020
SCALE	1:5,388
DESIGNED	ANM
DRAFTED	02905

4

FIGURE

Path: H:\ENVIRONMENTAL\Working\TPDES\FacilityMap_NuecesBay.mxd

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

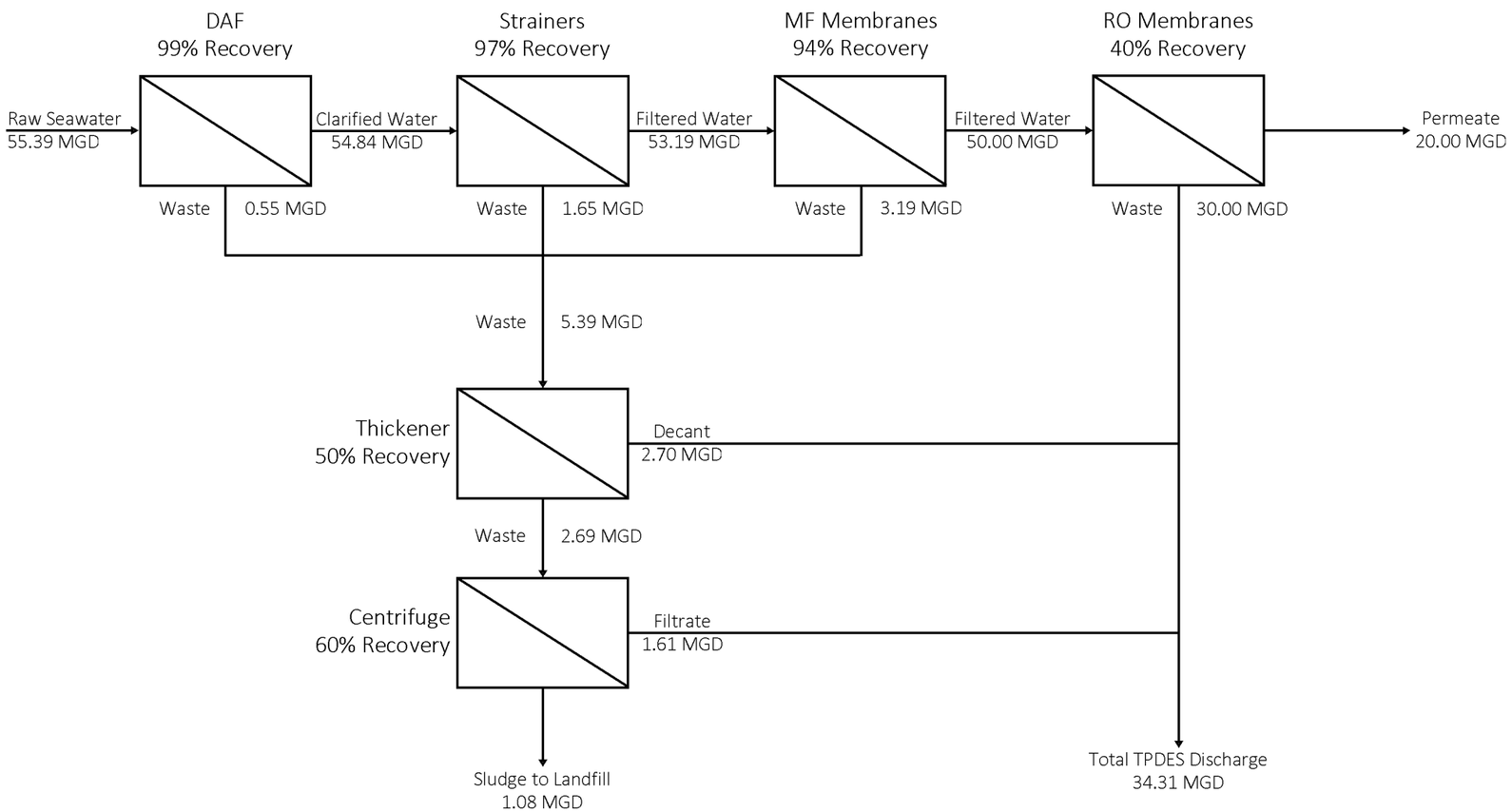

City of Corpus Christi
Proposed Desalination Plant
HUISACHE
AVE
ST
PARK
PARK
OAK
Park
Oak Park
Sch
St John
Sch
Fire
Sta
DEMPSEY
DR
Bayview
Cem
ST
Bayview
Cem
PALM
NOAKES
ST
Crossley
Sch
Park
Woodlawn
Plaza
Miller
High Sch
RD
ROBSTOWN
Driscoll
Jr High Sch
PL
WEIL
OLD
Rose Hill
Cem
Southgate
Sch
Garza
Park
Res
St
Joseph
Sch
Lamar
Sch
HURON
ST
ZONE C
KEY TO MAP
EXPLANATION OF ZONE DESIGNATIONS
FIRM
FLOOD INSURANCE RATE MAP
CITY OF
CORPUS CHRISTI,
TEXAS
NUECES AND KLEBERG
COUNTIES
COMMUNITY-PANEL NUMBER
MAP REVISED

Attachment G

Flow Schematics

Water Balance Sheets

City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Process Flow Diagram - Expanded 20 MGD Plant

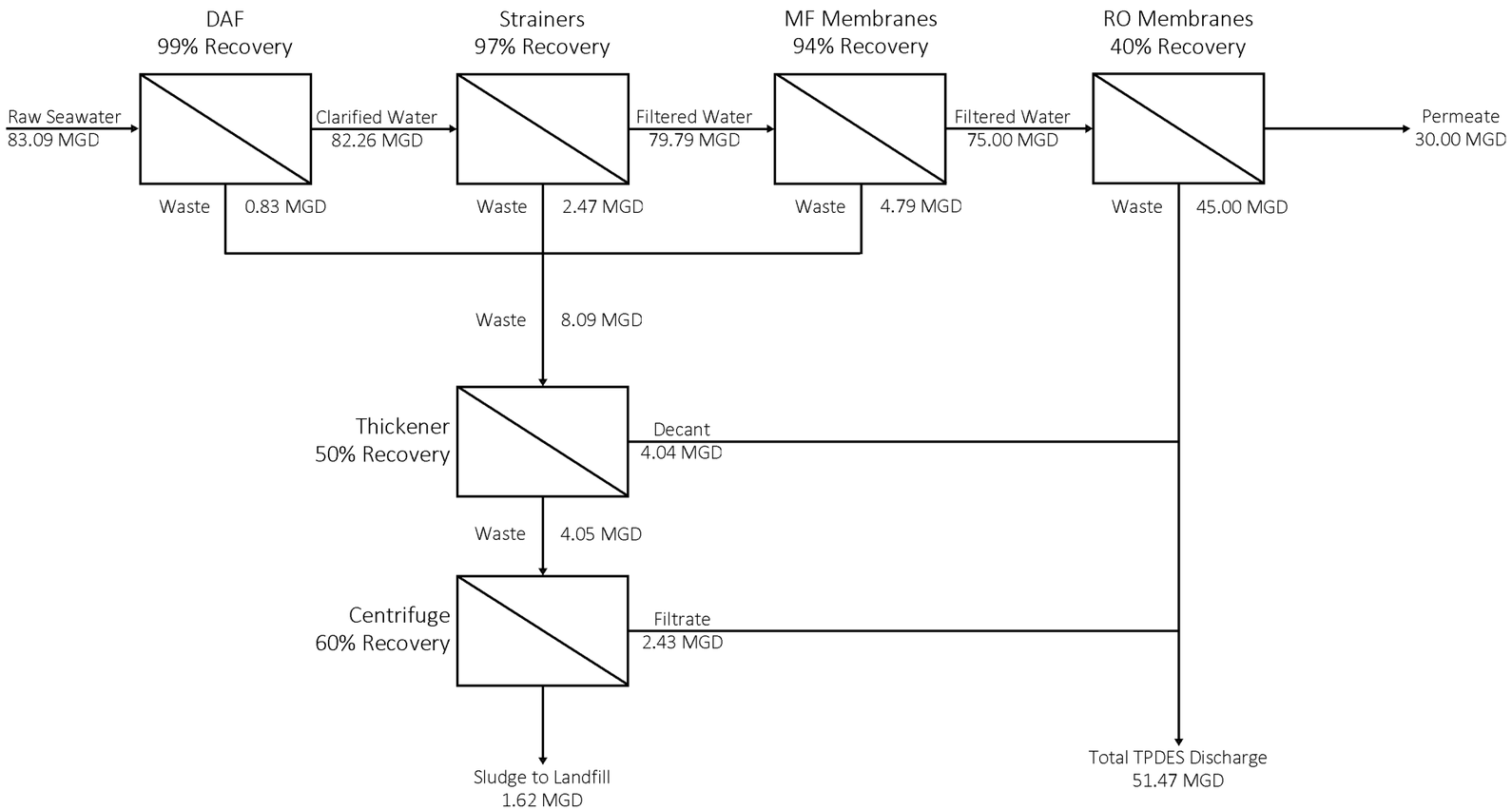


City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Water Balance Sheet - Initial 34 MGD Plant

Date of Revision:	11/26/2019			
Design Process	Manufacturer or approved equal	Design paramters	Recovery	
Submerged fine self-cleaning screen	Johnson	2.0 mm openings; velocity < 0.5 fps	100%	
Rapid Mixer	Lightening	G value 1,000/sec	100%	
Clarifier-Diisolved Air Flotation	Xylem	10 gpm/sf	99%	
Strainer self-claening	Arkal Filtration	300 micron discs	97%	
Microfiltration membranes	PALL, Inc.	Microza	94%	
Cartridge Filters	Lenntech	5 microns	100%	
Reverse Osmosis	Dow Film-Tec Seawater	8 gfd	40%	
Carbon dixiode addition		pH < 6.5	100%	
Calcite filters (alkalinity)		pH > 8.3	100%	
Chlorination / ammonia		Chloramine < 4 mg/l	100%	
Claerwell Stoarge				
High Service Pump Station				
Solids Thickener				
Centifuge				
Solids to landfill (daily cover)				
Water Balance:				55.39 MGD
Clar-DAF sludge			99.00%	54.84 MGD
Strainer backwash			97.00%	53.19 MGD
MF Membranes Backwash			94.00%	50.00 MGD
RO permeate recovery			40.00%	
RO Brine reject			60.00%	
Decant (supernatant) thickner			50.00%	
Centrifuge filtrate return			60.00%	

Raw Water Total Feed:		
Permeate	**20**	**MGD**
RO Feed Water	50.00	MGD
Total Raw Water Feed	**55.39**	**MGD**
TPDES Discharge :		
RO Brine discahrge	30.00	MGD
Clar-DAF	0.55	MGD
Strainer	1.65	MGD
MF Backwash	3.19	MGD
Sub-total	5.39	MGD
Thickener Decant	2.70	MGD
Centrifuge filtrate	1.62	MGD
Total Discharge: RO Brine + Thickener/Centrifuge Return	**34.31**	**MGD**
Maximum Daily Discharge	**120.00%**	
Maximum Daily Discharge	**41.17**	**MGD**
Sludge Disposal to landfill	1.08	MGD

City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Process Flow Diagram - Ultimate 30 MGD Plant



City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Water Balance Sheet - Ultimate 51 MGD Plant

Date of Revision:	11/26/2019			
Design Process	Manufacturer or approved equal	Design paramters	Recovery	
Submerged fine self-cleaning screen	Johnson	2.0 mm openings; velocity < 0.5 fps	100%	
Rapid Mixer	Lightening	G value 1,000/sec	100%	
Clarifier-Diisolved Air Flotation	Xylem	10 gpm/sf	99%	
Strainer self-claening	Arkal Filtration	300 micron discs	97%	
Microfiltration membranes	PALL, Inc.	Microza	94%	
Cartridge Filters	Lenntech	5 microns	100%	
Reverse Osmosis	Dow Film-Tec Seawater	8 gfd	40%	
Carbon dixiode addition		pH < 6.5	100%	
Calcite filters (alkalinity)		pH > 8.3	100%	
Chlorination / ammonia		Chloramine < 4 mg/l	100%	
Claerwell Stoarge				
High Service Pump Station				
Solids Thickener				
Centifuge				
Solids to landfill (daily cover)				

Water Balance:		83.09 MGD
Clar-DAF sludge	99.00%	82.25 MGD
Strainer backwash	97.00%	79.79 MGD
MF Membranes Backwash	94.00%	75.00 MGD
RO permeate recovery	40.00%	
RO Brine reject	60.00%	
Decant (supernatant) thickner	50.00%	
Centrifuge filtrate return	60.00%	

Raw Water Total Feed:		
Permeate	**30**	**MGD**
RO Feed Water	75.00	MGD
Total Raw Water Feed	**83.09**	**MGD**
TPDES Discharge :		
RO Brine discahrge	45.00	MGD
Clar-DAF	0.83	MGD
Strainer	2.47	MGD
MF Backwash	4.79	MGD
Sub-total	8.09	MGD
Thickener Decant	4.04	MGD
Centrifuge filtrate	2.43	MGD
Total Discharge: RO Brine + Thickener/Centrifuge Return	**51.47**	**MGD**
Maximum Daily Discharge	**120.00%**	
Maximum Daily Discharge	**61.76**	**MGD**
Sludge Disposal to landfill	1.62	MGD

Attachment H
Supplemental Information

Ambient Background Flow Velocity Report

Water Quality Characterization Protocol and Report

MEMORANDUM

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800 N. Shoreline Blvd., Suite 1600N + Corpus Christi, Texas 78401 + 361-561-6500 + FAX 817-735-7491 www.freese.com

SUBJECT: Background and Tidal Current Velocity Studies

DATE: 1/15/2020

PROJECT: City of Corpus Christi Seawater Desalination

Purpose

Understand ambient water velocities, tidal influence, and hydrodynamics in the Inner Harbor Ship Channel and La Quinta Channel. This will be accomplished by partnering with the Texas Water Development Board (TWDB) to borrow Acoustic Doppler Current Profiler (ADCP) instruments and with land-owners to deploy those instruments in the vicinity of proposed seawater desalination plant outfall locations. Ambient velocity and hydrodynamics data will be incorporated into the concentrate diffusion modeling in order to more appropriately predict concentrate diffusion in the receiving water bodies.

Instrumentation

SonTek SL 500 Series (side-looker ADCP) (https://www.sontek.com/sontek-sl-series). To measure direction and velocity of flow in the Inner Harbor Channel and La Quinta Channel up to 400 feet from the instrument location. Instruments are on loan from the TWDB.

- Weight – 14 pounds
- Mounting dimensions: 14 inches wide by 9 inches high
- External power source required

Protocol

ADCPs will be deployed in the vicinities of the proposed outfall locations. One instrument will be installed in the La Quinta Channel at a depth of 15 feet and one will be installed in the Inner Harbor Ship Channel at a depth of 21 feet. The instruments will be deployed once and retrieved after 3-6 months of data collection.

The ADCPs will be configured to record data in 10 cells along the instrument's beam. Each cell is approximately 11-meters long. Data points will be logged as averages of current direction and velocity in each cell for 5 minutes out of every 15-minute interval.

Effort-to-Date

The Freese and Nichols Team performed site assessments of proposed outfall locations on both the Inner Harbor Ship Channel and La Quinta Channel. Prior to ADCP deployment, the Team ran transects with a down-looking ADCP (SonTek RiverSurveyor) to record snapshots of the channel bathymetry and current velocities and directions.

One ADCP was installed in the La Quinta Channel on November 13, 2019. Data were downloaded on December 20, 2019 and provided to Plummer Associates for incorporation into the concentrate diffusion modeling parameters. Modeling is ongoing.

Coordination with the landowner is ongoing for the outfall on the Inner Harbor Ship Channel. The ADCP will likely be installed in February at this location. As data are collected and retrieved from the instrument, they will be incorporated into the concentrate diffusion model for the proposed outfall on the Inner Harbor Ship Channel.

Path Forward

After the completion of the ambient velocity study, a summary report will be provided to TCEQ. Data will be incorporated into the modeling for both Inner Harbor and La Quinta Channel concentrate diffusion.

MEMORANDUM

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TO: Steve Ramos

CC: Dan Grimsbo

FROM: Jason Cocklin, P.E.

SUBJECT: Seawater Desalination Source Water Characterization TM

DATE: August 30, 2019

PROJECT: Seawater Desalination

Seawater Desalination Source Water Characterization

Duration: 1 year

To characterize seawater that will potentially be used as a raw water source for a proposed seawater desalination facility, Freese and Nichols, Inc. (FNI) developed a year-long sampling plan, with water quality samples to be collected twice monthly, monthly, or quarterly depending on the parameter. The City will contract with a lab to collect samples from two (2) preferred intake locations corresponding to two preferred sites for the proposed desalination facility. Parameters and sampling frequencies are provided in Table 1.

Table 1: Seawater Source Water Characterization Sampling Parameters and Frequencies

Parameter	Units	MCL	Sampling Frequency
Inorganics 30 TAC 290.104			
Antimony	mg/L	0.006	Monthly
Arsenic	mg/L	0.01	Monthly
Asbestos	mg/L	7 million fibers/liter (longer than 10 µm)	Monthly
Barium	mg/L	2	Monthly
Beryllium	mg/L	0.004	Monthly
Cadmium	mg/L	0.005	Monthly
Chromium	mg/L	0.1	Monthly
Cyanide	mg/L	0.2 (as free Cyanide)	Monthly
Fluoride	mg/L	4	Monthly
Mercury	mg/L	0.002	Monthly
Nitrate	mg/L	10 (as Nitrogen)	Monthly
Nitrite	mg/L	1 (as Nitrogen)	Monthly
Nitrate + Nitrite (Total)	mg/L	10 (as Nitrogen)	Monthly
Perchlorate	mg/L	0.056 (MCL proposed by EPA; currently in comment period)	Monthly

Selenium	mg/L	0.05	Monthly
Thallium	mg/L	0.002	Monthly
Secondary Consituent 30 TAC 290.105			
Aluminum (Total)	mg/L	0.05 to 0.2	Monthly
Chloride	mg/L	300	Monthly
Color (true)	color units	15	Monthly
Copper	mg/L	1.0	Monthly
Corrosivity	Langlier index	Non-Corrosive	Monthly
Fluoride	mg/L	2.0	Monthly
Foaming Agents	mg/L	0.5	Monthly
Hydrogen sulfide	mg/L	0.05	Monthly
Iron (Total)	mg/L	0.3	Monthly
Manganese	mg/L	0.05	Monthly
Odor	TON	3 TON	Monthly
pH	units	> 7.0	Monthly
Silver	mg/L	0.1	Monthly
Sulfate	mg/L	300	Monthly
Total Dissolved Solids	mg/L	1,000	Monthly
Zinc	mg/L	5.0	Monthly
Synthetic Organics 30 TAC 290.107			
Alachlor	mg/L	0.002	Quarterly
Atrazine	mg/L	0.003	Quarterly
Benzopyrene	mg/L	0.0002	Quarterly
Carbofuran	mg/L	0.04	Quarterly
Chlordane	mg/L	0.002	Quarterly
Dalapon	mg/L	0.2	Quarterly
Dibromochloropropane	mg/L	0.0002	Quarterly
Di(2-ethylhexyl)adipate	mg/L	0.4	Quarterly
Di(2-ethylhexyl)phthalate	mg/L	0.006	Quarterly
Dinoseb	mg/L	0.007	Quarterly
Diquat	mg/L	0.02	Quarterly
Endothall	mg/L	0.1	Quarterly
Endrin	mg/L	0.002	Quarterly
Ethylene dibromide	mg/L	0.00005	Quarterly
Glyphosate	mg/L	0.7	Quarterly
Heptachlor	mg/L	0.0004	Quarterly
Heptachlor epoxide	mg/L	0.0002	Quarterly
Hexachlorobenzene	mg/L	0.001	Quarterly
Hexachlorocyclopentadiene	mg/L	0.05	Quarterly

Lindane	mg/L	0.0002	Quarterly
Methoxychlor	mg/L	0.04	Quarterly
N-Nitrosodimethylamine (NDMA)	mg/L	Emerging contaminant	Quarterly
Oxamyl (Vydate)	mg/L	0.2	Quarterly
Pentachlorophenol	mg/L	0.001	Quarterly
Picloram	mg/L	0.5	Quarterly
Polychlorinated biphenyls (PCBs)	mg/L	0.0005	Quarterly
Simazine	mg/L	0.004	Quarterly
Toxaphene	mg/L	0.003	Quarterly
2,3,7,8-TCDD (Dioxin)	mg/L	3×10^{-8}	Quarterly
2,4,5-TP	mg/L	0.05	Quarterly
2,4-D	mg/L	0.07	Quarterly
Volatile Organics 30 TAC 290.107			
1,1-Dichloroethylene	mg/L	0.007	Quarterly
1,1,1-Trichloroethane	mg/L	0.2	Quarterly
1,1,2-Trichloroethane	mg/L	0.005	Quarterly
1,2-Dichloroethane	mg/L	0.005	Quarterly
1,2-Dichloropropane	mg/L	0.005	Quarterly
1,2,4-Trichlorobenzene	mg/L	0.07	Quarterly
Benzene	mg/L	0.005	Quarterly
Carbon tetrachloride	mg/L	0.005	Quarterly
cis-1,2-Dichloroethylene	mg/L	0.07	Quarterly
Dichloromethane	mg/L	0.005	Quarterly
Ethylbenzene	mg/L	0.7	Quarterly
Monochlorobenzene	mg/L	0.1	Quarterly
o-Dichlorobenzene	mg/L	0.6	Quarterly
para-Dichlorobenzene	mg/L	0.075	Quarterly
Styrene	mg/L	0.1	Quarterly
Tetrachloroethylene	mg/L	0.005	Quarterly
Toluene	mg/L	1	Quarterly
trans-1,2-Dichloroethylene	mg/L	0.1	Quarterly
Trichloroethylene	mg/L	0.005	Quarterly
Vinyl chloride	mg/L	0.002	Quarterly
Xylenes (total)	mg/L	10	Quarterly
Radionuclide 30 TAC 290.108			
Gross Alpha Particle Activity	pCi/L	15	Quarterly
Beta Particle and Photon	pCi/L	40 CFR §141.66(d)	Quarterly

Radioactivity			
Radium-226	pCi/L	*	Quarterly
Radium-228	pCi/L	*	Quarterly
Combined Radium 226 + 228	pCi/L	*sum ≤ 5	Quarterly
Uranium	µg/L	30	Quarterly
Radon-222	pCi/L	300 MCL or 4,000 AMCL	Quarterly
Microbial 30 TAC 290.109			
Coliform, Fecal	MPN/100 mL		Twice monthly
Coliform, Total	MPN/100 mL		Twice monthly
Cryptosporidium	oocysts/sample volume		Twice monthly
Enterococci	CFU/100 mL	35 CFU/100 mL	Twice monthly
Giardia	cysts/sample volume		Twice monthly
Heterotrophic Plate Count	CFU/mL		Twice monthly
Plankton Community			
Comb Jellies and other large plankton			Twice monthly
Membrane Parameters			
Algae Count	count/mL		Monthly
Alkalinity, Total as $CaCO_3$	mg/L		Monthly
Aluminum (Dissolved)	mg/l		Monthly
Ammonia (as N)	mg/L		Monthly
Ammonium (NH_4)	mg/L		Monthly
Bicarbonate	mg/L		Monthly
Boron	mg/L	2.4 Recommended by World Health Organization	Monthly
Bromide	mg/L		Monthly
Calcium	mg/L		Monthly
Carbon Dioxide	mg/L		Monthly
Cesium	mg/L		Monthly
Conductivity	µmhos/cm		Monthly
Dissolved Organic Carbon	mg/L		Monthly
Dissolved Oxygen	mg/L		Monthly
Hardness, Total as $CaCO_3$	mg/L		Monthly
Iron (Dissolved)	mg/l		Monthly
Lead	mg/L	0.015 Action Level	Monthly
Magnesium	mg/L		Monthly
Oil and Grease	mg/L		Monthly
Oxidation Reduction Potential (ORP)	mV		Monthly

Phosphorus, Total	mg/L		Monthly
Potassium	mg/L		Monthly
Salinity (Field)			Monthly
Silica, Total (Colloidal)	mg/L		Monthly
Silica, Reactive			Monthly
Silica, Dissolved	mg/L		Monthly
Silicon, Total	mg/L		Monthly
Silt Density Index			Monthly
Sodium	mg/L	EPA is currently listing sodium on their Candidate Contaminant List to be regulated. The World Health Organization recommends a threshold of 200 mg/L for sodium.	Monthly
Strontium	mg/L		Monthly
Temperature	°F	$< 90^0$ F	Monthly
Tin	mg/L		Monthly
Total Petroleum Hydrocarbon (TPH)	mg/L	5	Monthly
Total Organic Carbon	mg/L	Reduction 30 TAC 290.112 (b)(1)	Monthly
Total Suspended Solids	mg/L		Monthly
Turbidity	NTU	0.5 combined; 0.3 individual can never exceed 5 NTU	Twice monthly, to coincide with microbial testing
UV254	nm wavelength		Monthly

Seawater Desalination Regulated Water Quality Sampling Schedule

Tentative Dates	Sampling Event			Date Sampled
	Half-Monthly	Monthly	Quarterly	
	HM-1	M-1	Q-1	August 29, 2019
	HM-2			September 13, 2019
	HM-3	M-2		October 2, 2019
	HM-4			October 17, 2019
	HM-5	M-3		November 4, 2019
	HM-6			November 19, 2019
	HM-7	M-4	Q-2	December 9, 2019
	HM-8			6 Jan, 2020
20-24 Jan, 2020	HM-9	M-5		
3-7 Feb, 2020	HM-10			
17-21 Feb, 2020	HM-11	M-6		
2-6 Mar, 2020	HM-12			
16-20 Mar, 2020	HM-13	M-7	Q-3	
30 Mar - 3 Apr, 2020	HM-14			
13-17 Apr, 2020	HM-15	M-8		
27-30 Apr, 2020	HM-16			
11-15 May, 2020	HM-17	M-9		
25-29 May, 2020	HM-18			
8-12 Jun, 2020	HM-19	M-10	Q-4	
22-26 Jun, 2020	HM-20			
6-10 Jul, 2020	HM-21	M-11		
20-24 Jul, 2020	HM-22			
3-7 Aug, 2020	HM-23	M-12		
17-21 Aug, 2020	HM-24			

(2) TCEQ Correspondence

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March 13, 2020

Ms. Velma Fuller
Water Quality Division (MC-148)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: Response to TCEQ Comments
Application for Proposed Permit No. WQ0005289000 (EPA I.D. No. TX0139874)
Applicant: City of Corpus Christi (CN600131858)
Site: Inner Harbor Desalination Plant (RN110940152)

Dear Ms. Fuller:

The City of Corpus Christi and Freese and Nichols, Inc. (FNI) received a letter from the Texas Commission on Environmental Quality (TCEQ) dated February 14, 2020, that requested a written response to address comments regarding the application to obtain Wastewater Permit No. WQ0005289000. On behalf of the applicant, City of Corpus Christi, FNI offers the following responses to the TCEQ comments.

1. ***Core Data Form, Section 2.c on page 3 of the administrative report: The location description given does not meet Texas Commission on Environmental Quality (TCEQ) standards. The description must include the direction and distance in feet or miles from a road intersection. Please provide a more accurate description of the facility's location.***

   A revised Core Data Form is included in Attachment A, East Broadway Street has also been corrected to West Broadway Street.

2. ***Section 8.f on page 6 of the administrative report: TCEQ acknowledges that the applicant is currently negotiating a lease agreement with Flint Hills Resources. Please be aware that a lease agreement (in effect for at least six years) must be provided before the application can be declared administratively complete. Please submit such documents with your response to this letter.***

   The City received confirmation from TCEQ Staff (Laura Mitchell) that the City's other application in process, which is also still negotiating a lease agreement, will be deemed administratively complete and the application moved forward to technical review. The City is aware that a lease agreement must be provided to TCEQ before issuance of the permit.

3. ***USGS Topographic Map, Section 9.b on page 7 of the administrative report: Thank you for submitting a USGS map: however, the map is not sufficient because the facility and point of discharge were not shown and labeled, and the discharge route was not shown. Please provide a new original USGS 7.5 minute topographic map showing and labeling the: applicant's property boundary, treatment plant boundary within the applicant's boundary, point of discharge (indicate it with a dot, X, or arrow), the highlighted discharge route (using a light-colored***

highlighter) for three stream miles downstream from the point of discharge or until the effluent reaches a classified segment, an area of not less than one mile in all directions from the facility, and a scale. If necessary, provide an additional map to show the one-mile radius. Additionally, the discharge point does not appear to be located on the facility property (according to other maps submitted with the application). If the point of discharge is not located within the facility boundary, please clarify how the discharge reaches the point of discharge (e.g., via pipeline).

A revised USGS map that includes the applicant's property boundary, facility boundary, discharge location via a diffuser array, and discharge pipelines have been included in Attachment B. The point of discharge is located in Corpus Christi Inner Harbor. This was confirmed using the TCEQ Surface Water Quality (Segments) Viewer (https://www.tceq.texas.gov/gis/segments-viewer).

4. ***Section 9.h on page 8 of the administrative report: According to the USGS maps, it appears that Nueces County may be downstream of the point of discharge. All counties located within 100 statute miles downstream of the discharge point must be provided. Please confirm all counties within 100 miles downstream of the discharge point and submit a revised page (if applicable).***

   A revised page 8 of the administrative report listing Nueces County is included in Attachment C.

5. ***Industrial Administrative Report 1.1, Section 1.a on page 10 of the administrative report: Thank you for submitting a landowner map, however, additional clarification is required to ensure all potentially affected landowners have been identified. Please address the following:***

   a. ***It appears not all affected landowners have been identified. Enclosed is a copy of the landowners map provided with the application. Please identify and provide the mailing address of the property owners of the marked tracts.***

      A revised Landowner Map has been included in Attachment D.

   b. ***I was unable to locate landowner 41 on the map. Please confirm there is a property numbered 41.***

      After review of TCEQ's *Instructions for Completing Domestic Wastewater Permit Applications* pages 42 and 43, FNI determined the landowner labeled 41 is not required to be notified.

   c. ***The discharge route was not highlighted, and the applicant's property boundary was not labeled. I cannot assume the facility boundary and applicant's property boundary are the same. Please submit a revised map showing: the applicant's complete property boundaries, location of the treatment facility within the applicant's property boundary, the distance the buffer zone falls into adjacent properties and the property boundaries of any landowners located within the buffer zone, the property boundaries of all landowners surrounding the applicant's property, point of discharge, highlighted discharge route for one mile downstream from the point of discharge, the property boundaries of all landowners surrounding the point of discharge and adjacent to the discharge route for one mile downstream, and a scale.***

      A revised Landowner Map depicting the proposed point of discharge, labeled "Discharge Diffuser Array Area" and "Discharge Diffuser Ports" is included in Attachment D. The

point of discharge for one mile downstream is highlighted and the surrounding property boundaries are included.

d. Along with a revised landowners map, please also submit a revised landowners list and mailing labels, with reflect any additional landowners. The labels should be in all caps and not contain punctuation.

A revised landowner list and mailing labels are included in Attachment D.

6. Supplemental Permit Information Form (SPIF), item 3 on page 12 of the administrative report: Please update the location of the facility to reflect the revised location description.

A revised Supplemental Permit Information Form (SPIF) listing an updated location is included in Attachment E.

7. Outfall Flow Information, Section 4 on page 6 of the technical report: The proposed daily average flow indicated in the table (17, 34, and 51 MGD) do not match the information provided in Section 1.a of the technical report (10, 20, and 30 MGD). Please provide clarification on the proposed flow, and which numbers are correct. This information much be verified because it is listed in the public notice.

The daily average flows indicated in Section 4, page 6, Outfall Flow Information, are the three phases of flow rates for the discharge. However, unlike wastewater treatment plants, the capacity of a seawater desalination plant is defined based on its product water flow rate. The plant capacities defined in Section 1.a of the technical report are production capacities. The two numbers are related by the system's overall recovery rates. For instance, a 10 MGD plant (production capacity) may divert 37 MGD through the intake, produce 10 MGD of drinking water, and discharge 17 MGD at the outfall. All references to the production flows have been revised in the application to reflect the corresponding discharge flows.

In addition, the City plans to design the desalination plant to initially produce 20 MGD rather than 10 MGD; therefore, the references to discharge flows and phases have been revised to show an Interim I Phase discharge of 34 MGD and a Final Phase discharge of 51 MGD. Copies of the pages and attachments that were revised are included in Attachment F.

8. The following is a portion of the Notice of Receipt of Application and Intent to Obtain a Water Quality Permit which contains information specific to your application. Please read it carefully and indicate if it contains any errors or omissions.

APPLICATION. City of Corpus Christi, P.O. Box 9277, Corpus Christi, Texas 78469, which owns a seawater desalination plant, has applied to TCEQ for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000 (EPA I.D. No. TX0139874) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of (pending response) gallons per day. The facility will be located at the intersection of East Broadway Street and Nueces Bay Boulevard (pending response), in Nueces County, Texas 78401. The discharge route will be from the plant site (pending response) directly to Corpus Christi Bay. TCEQ received this application on January 22, 2020. The permit application is available for viewing and copying at La Retama Central Library, 805 Camanche Street, Corpus Christi, Texas. 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://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.418055%2C27.8075&level=12

Further information may also be obtained from City of Corpus Christi at the address stated above or by calling Mr. Esteban Ramos at (361) 826-2489.

The portion of the Notice of Receipt of Application and Intent to Obtain a Water Quality Permit provided does contain errors. The address for the City and Mr. Esteban Ramos' phone number were wrong in the permit application. Below is a corrected portion of the Notice of Receipt of Application and updated pages from the administrative report are included in Attachment G.

APPLICATION. City of Corpus Christi, 1201 Leopard Street, Corpus Christi, Texas 78469, which owns a seawater desalination plant, has applied to TCEQ for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000 (EPA I.D. No. TX0139874) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 51,000,000 gallons per day. The facility will be located at the intersection of West Broadway Street and Nueces Bay Boulevard, in Nueces County, Texas 78401. The discharge route will be from the plant site via pipeline directly to Corpus Christi Bay. TCEQ received this application on January 22, 2020. The permit application is available for viewing and copying at La Retama Central Library, 805 Camanche Street, Corpus Christi, Texas. 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://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.418055%2C27.8075&level=12

Further information may also be obtained from City of Corpus Christi at the address stated above or by calling Mr. Esteban Ramos at (361) 826-3294.

The City of Corpus Christi also received an email from Jaspinder Singh, TCEQ, on February 6, 2020 requesting information related to a preliminary technical review of the permit application. In response to this email, FNI provides the following information.

1. ***Technical Report 1.0: Item 1 (d), Attachment F- Please be advised to provide attachment F, Facility Map, upon completion.***

   A proposed facility map is included in Attachment H.

Please feel free to contact Mr. Ramos or me for additional information as necessary.

Sincerely,

Katie Leatherwood, P.G.
Freese and Nichols, Inc.

cc: Mr. Esteban Ramos, City of Corpus Christi
File COR18468

ATTACHMENT A

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 600131858		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	00/01/2019

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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

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

City of Corpus Christi

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

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☒ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

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

13. Independently Owned and Operated?
☒ Yes ☐ No

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

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

15. Mailing Address:

P.O. Box 9277

City	Corpus Christi	State	TX	ZIP	78469	ZIP + 4	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	estebanr2@cctexas.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(361) 826-2489		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Inner Harbor Desalination Plant

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

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	Southeast corner of the intersection of Nueces Bay Boulevard and West Broadway Street

26. Nearest City	State	Nearest ZIP Code
Corpus Christi	TX	78401

27. Latitude (N) In Decimal:			28. Longitude (W) In Decimal:		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
27	48	27.673	97	25	5.231

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
4941		221310	

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

Seawater desalination

34. Mailing Address:	P.O. Box 9277							
	City	Corpus Christi	State	TX	ZIP	78469	ZIP + 4	
35. E-Mail Address:	estebanr2@cctexas.com							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(361) 826-2489		( ) -

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

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

SECTION IV: Preparer Information

40. Name:	Katie Leatherwood	41. Title:	Environmental Scientist

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(817) 735-7503		(817) 735-7492	katie.leatherwood@freese.com

SECTION V: Authorized Signature

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

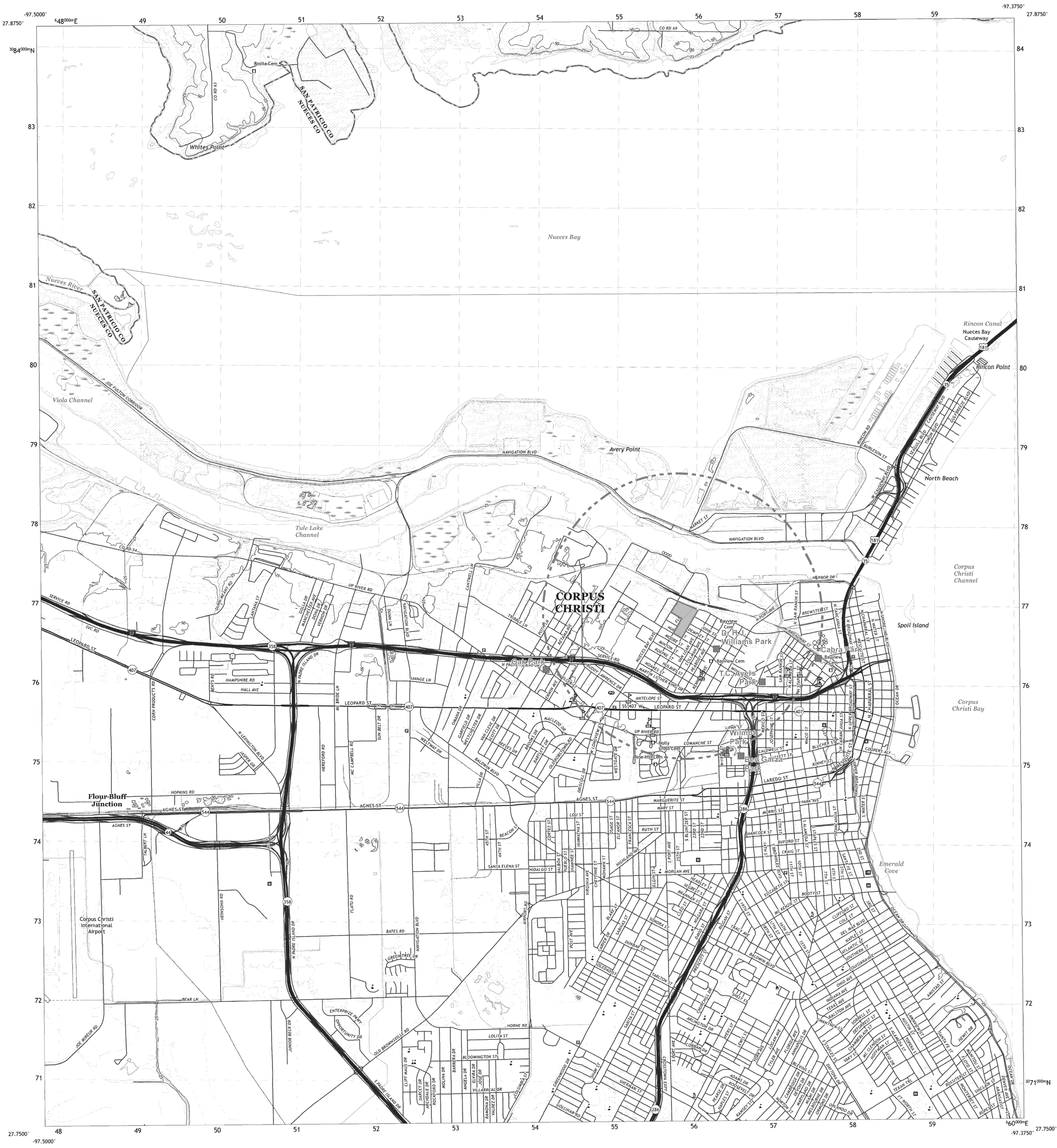
Company:	Freese and Nichols, Inc.	Job Title:	Environmental Scientist
Name(*In Print*) :	Katie Leatherwood	Phone:	(817) 735-7503
Signature:	Katie Leatherwood	Date:	3/13/2020

ATTACHMENT B

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

CORPUS CHRISTI QUADRANGLE
TEXAS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 14R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2016 - December 2016
Roads.....U.S. Census Bureau, 2015 - 2018
Names.....GNIS, 1979 - 2018
Hydrography.....National Hydrography Dataset, 2003 - 2018
Contours.....National Elevation Dataset, 2012
Boundaries.....Multiple sources; see metadata file 2016 - 2017

Wetlands.....FWS National Wetlands Inventory 2004 - 2006

MN
GN
3°32' 63 MILS
0°44' 13 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PR
Grid Zone Designation 14R

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 MILES 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

TEXAS
QUADRANGLE LOCATION

1 Odem
2 Taft
3 Gregory
4 Annaville
5 Portland
6 Petronila NE
7 Oso Creek NW
8 Oso Creek NE
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

CORPUS CHRISTI, TX
2019

FREESE AND NICHOLS
FREESE AND NICHOLS, INC
4055 International Plaza, Suite 200
Fort Worth, TX 76109 - 4895
Phone - (817) 735 - 7300

N W E S
0 1,000 2,000 4,000 6,000 Feet

CITY OF CORPUS CHRISTI
Seawater Desalination

Project Location on
2019 USGS Topographic Base
Corpus Christi Quad

Applicant's Facility Boundary
Proposed Property Boundary
TWDB Well Locations
Schools
1 Mile Buffer
Discharge Pipeline
Discharge Diffuser Array Area
Discharge Diffuser Ports

1
Figure

ATTACHMENT C

If **yes**, indicate by a check mark if: ☐ Authorization granted ☐ Authorization pending

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

Attachment:

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

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

☐ Yes ☐ No ☒ N/A

If **no**, or if this a **new or amendment** application, provide an accurate description:

j. City nearest the disposal site:

k. County in which the disposal site is located:

l. Disposal Site Latitude: Longitude:

m. For **TLAPs**, describe how effluent is/will be routed from the treatment facility to the disposal site: N/A

n. For **TLAPs**, identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: N/A

10. MISCELLANEOUS INFORMATION (Instructions, Page 28)

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

☒ Yes ☐ No

If **yes**, list each person: The City's Administrative Contact, Esteban "Steve" Ramos, is currently employed by the City of Corpus Christi as the Water Resource Manager. Mr. Ramos previously worked for the TCEQ before joining the public-sector at the City of Corpus Christi. He reviewed the application as prepared by Freese and Nichols, Inc. on behalf of the City.

b. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following:

- Acct. No.:
- Amt. due:

c. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following:

- Enforcement Order No.:
- Amt. due:

ATTACHMENT D

Corpus Christi Inner Harbor
(Segment 2484)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46

Applicant's Facility Boundary
Proposed Property Boundary
1/2-Mile Buffer of Discharge Point
One Mile Downstream of Discharge Point
Discharge Pipeline
Discharge Diffuser Array Area
Discharge Diffuser Ports
Property Owned by Nueces County Navigation District
Adjacent Landowner Propety Boundary

1:10,000
0 250 500 1,000 1,500 Feet
1 inch equals 833.33 feet

N W E S

CITY OF CORPUS CHRISTI
TPDES Permit Application

Affected Landowners List

FN PROJECT NO. COR18488
DATE CREATED 3/2/2020
DATUM & COORDINATE SYSTEM NAD83 State Plane (feet) Texas North Central
FILE NAME Affected Landowners_ Nueces Bay Blvd Site_Updated
PREPARED BY ANM

FREESE NICHOLS
FREESE AND NICHOLS
4055 International Plaza Suite 200
Fort Worth, Texas 76109-4895
(817) 735-7300

2
FIGURE

Path: H:\ENVIRONMENTAL\Working\TPDES\Affected Landowners_ Nueces Bay Blvd Site_Updated.mxd

Cross-Referenced Landowner List

1 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

2 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

3 Dorado Transportation
9101 Up River Road
Corpus Christi, TX 78409-3213

4 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

5 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

6 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

7 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

8 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

9 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

10 Cantu Guadalupe Pizana
2006 Palm
Corpus Christi, TX 78407

11 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

12 Clay Johnny H III Tr/Of
1924 Palm Drive
Corpus Christi, TX 78407

13 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

14 Rodela Rosalinda
PO Box 7252
Corpus Christi, TX 78467-7252

15 Newbill Elaine and Anthony D Newbill
3368 Cape May Ct.
Dumfries, VA 22026-2199

16 Williams Gaaries Charles
3751 Wilson Drive
Corpus Christi, TX 78408-3351

17 Liliana Rodriquez
1222 Crescent Cir
Corpus Christi, TX 78412-3520

18 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

19 Patricia Washington
6715 Path Way Ct
Katy, TX 77449-1449

20 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

21 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

22 Nieto Felipe Robert W
1806 Palm Drive
Corpus Christi, TX 78407

23 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

24 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

25 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

26 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

27 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

28 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

29 Florez Elida Gonzalez
6342 N Washam Dr
Corpus Christi, TX 78414-3644

30 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

31 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

32 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

33 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

34 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

35 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

36 Union Pacific Railroad
1400 Douglas St
Omaha, NE 68179-1001

37 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

38 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

39 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

40 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

41 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

42 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

43 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

44 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

45 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

46 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

FLINT HILLS RESOURCES
PO BOX 3755
WICHITA, KS 67201-3755

DORADO TRANSPORTATION
9101 UP RIVER ROAD
CORPUS CHRISTI, TX 78409-3213

PORT OF CORPUS CHRISTI AUTHORITY
222 POWER STREET
CORPUS CHRISTI, TX 78401-1529

CANTU GUADALUPE PIZANA
2006 PALM
CORPUS CHRISTI, TX 78407

CLAY JOHNNY H III TR/OF
1924 PALM DRIVE
CORPUS CHRISTI, TX 78407

JOHNSON NORMAN
1510 PALM DRIVE
CORPUS CHRISTI, TX 78407

RODELA ROSALINDA
PO BOX 7252
CORPUS CHRISTI, TX 78467-7252

NEWBILL ELAINE AND ANTHONY D NEW
3368 CAPE MAY CT.
DUMFRIES, VA 22026-2199

WILLIAMS GAARIES CHARLES
3751 WILSON DRIVE
CORPUS CHRISTI, TX 78408-3351

LILIANA RODRIQUEZ
1222 CRESCENT CIR
CORPUS CHRISTI, TX 78412-3520

PATRICIA WASHINGTON
6715 PATHWAY CT
KATY, TX 77449-1449

NIETO FELIPE ROBERT W
1806 PALM DRIVE
CORPUS CHRISTI, TX 78407

FLOREZ ELIDA GONZALEZ
6342 N WASHAM DR
CORPUS CHRISTI, TX 78414-3644

CITGO REFINING AND CHEMICALS
PO BOX 4689
HOUSTON, TX 77210-4689

UNION PACIFIC RAILROAD
1400 DOUGLAS ST
OMAHA, NE 68179-1001

AMERICAN CHROME AND CHEMICAL
3800 BUDDY LAWRENCE
CORPUS CHRISTI, TX 78407-1900

NUECES CO NAVIGATION DISTRICT
PO BOX 1541
CORPUS CHRISTI, TX 78403

ATTACHMENT E

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING 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 33)

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

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

The following applies to all applications:

1. Permittee Name: City of Corpus Christi

2. Permit No.: WQ000 EPA ID No.: TX0

3. Address of the project (location description that includes street/highway, city/vicinity, and county): Southeast corner of the intersection of Nueces Bay Boulevard and West Broadway Street, Corpus Christi, Nueces County, Texas.

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

   First/Last Name: Esteban "Steve" Ramos Title: Water Resource Manager
   Credential:

   Organization Name: City of Corpus Christi

   Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 78415

   Phone No.: 361-826-3294 Fax No.: 361-826-1889 E-mail: estebanr2@cctexas.com

5. List the county in which the facility is located: Nueces County

6. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property: N/A

7. 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: To Corpus Christi Inner Harbor, Segment No. 2484

8. 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.)

   Attachment: E

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

   Attachment: N/A

10. 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

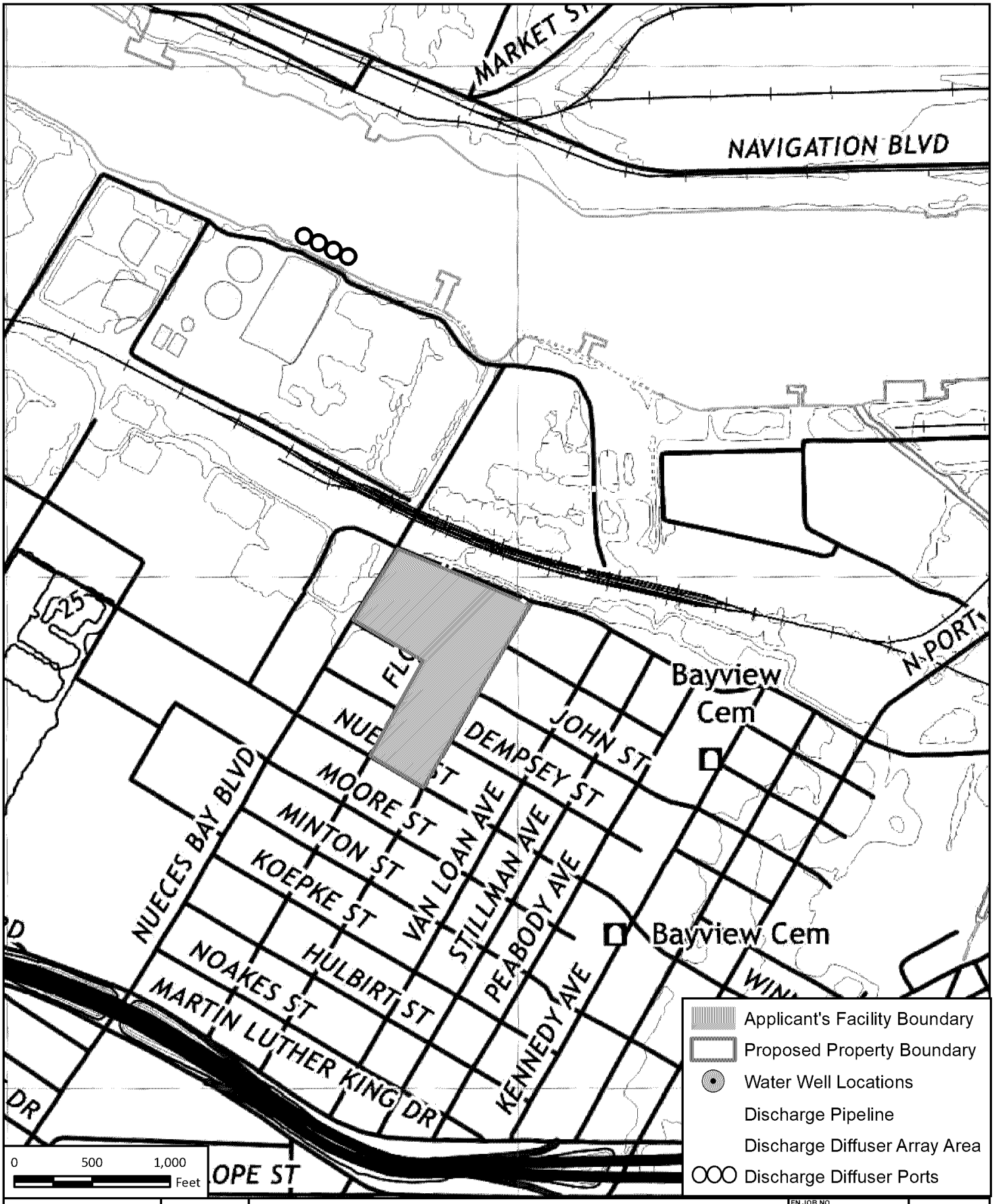
11. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features): Currently approximately 12 acres will be disturbed at the plant site. One intake structure and one discharge diffuser will be constructed in the canal (Corpus Christi Inner Harbor, Segment No. 2484).

12. Describe existing disturbances, vegetation, and land use: Currently, one parcel is residential land use with one house present. The remaining parcels are undeveloped with trees and shrubs.

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

13. List construction dates of all buildings and structures on the property: Quarter 4, 2021

14. Provide a brief history of the property, and name of the architect/builder, if known: The property was originally a residential neighborhood. During the 1990s and 2000s, the property was redeveloped with only one residence remaining.



FREESE AND NICHOLS
FREESE AND NICHOLS, INC
4055 International Plaza, Suite 200
Fort Worth, TX 76109 - 4895
Phone - (817) 735 - 7300

City of Corpus Christi

Seawater Desalination Plant

SPIF Topographic Map

FN JOB NO	COR18468
FILE NAME	SPIF_Nueces Bay Blvd Site.mxd
DATE	2/26/2020
SCALE	1:10,000
DESIGNED	ANM
DRAFTED	02905

FIGURE 3

Path: H:\ENVIRONMENTAL\Working\TPDES\SPIF_Nueces Bay Blvd Site.mxd

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

ATTACHMENT F

TECHNICAL REPORT 1.0
INDUSTRIAL

The following information **is required** for all applications for a TLAP or an individual TPDES discharge permit.

For additional information or clarification on the requested information, refer to the Instructions for Completing the Industrial Wastewater Permit Application[1] available on the TCEQ website.

If more than one outfall is included in the application, provide applicable information for each individual outfall. **If an item does not apply to the facility, enter N/A** to indicate that the item has been considered. Include separate reports or additional sheets as **clearly cross-referenced attachments** and provide the attachment number in the space provided for the item the attachment addresses.

NOTE: This application is for an industrial wastewater permit only. Additional authorizations from the TCEQ Waste Permits Division or the TCEQ Air Permits Division may be needed.

1. FACILITY/SITE INFORMATION (Instructions, Pages 34-35)

a. Describe the general nature of the business and type(s) of industrial and commercial activities. Include all applicable SIC codes (up to 4).

The Inner Harbor Desalination Plant will provide an additional water source and produce fresh water for distribution through the City of Corpus Christi's existing distribution system. The Inner Harbor Plant is expected to be developed for two phases with an initial 34 MGD phase and a final 51 MGD phase.

b. Describe all wastewater-generating processes at the facility.

The treatment process will take raw seawater and produce potable water. Four treatment processes will generate waste streams. The reverse osmosis process contributes 85% of the waste flow, dissolved air flotation contributes 1.5% of the waste flow, strainer backwash water will account for 4.5% of the waste flow, and microfiltration backwash water will contribute 9% of the waste flow.

[1] https://www.tceq.texas.gov/permitting/wastewater/industrial/TPDES_industrial_wastewater_steps.html

Outfall Latitude and Longitude

Outfall Number	Latitude-decimal degrees	Longitude-decimal degrees
001	Between 27.814 and 27.8145	Between -97.4195 and -97.418

Outfall Location Description

Outfall Number	Location Description
001	Diffuser(s) 200 to 500 feet from channel edge

Description of Sampling Points (if different from Outfall location)

Outfall Number	Description of Sampling Point
001	At start-of-pipe to diffuser(s)

Outfall Flow Information – Permitted and Proposed

Outfall Number	Permitted Daily Avg Flow (MGD)	Permitted Daily Max Flow (MGD)	Proposed Daily Avg Flow (MGD)	Proposed Daily Max Flow (MGD)	Anticipated Discharge Date (mm/dd/yy)
001 – Initial	N/A	N/A	34	41	2021
001 - Ultimate	N/A	N/A	51	62	unknown

Outfall Discharge – Method and Measurement

Outfall Number	Pumped Discharge? Y/N	Gravity Discharge? Y/N	Type of Flow Measurement Device Used
001	Y	N	TBD

Outfall Discharge – Flow Characteristics

Outfall Number	Intermittent Discharge? Y/N	Continuous Discharge? Y/N	Seasonal Discharge? Y/N	Discharge Duration (hrs/day)	Discharge Duration (days/mo)	Discharge Duration (mo/yr)
001	N	Y	N	24	30	12

City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Water Balance Sheet - Initial 34 MGD Plant

Date of Revision:	11/26/2019			
Design Process	Manufacturer or approved equal	Design paramters	Recovery	
Submerged fine self-cleaning screen	Johnson	2.0 mm openings; velocity < 0.5 fps	100%	
Rapid Mixer	Lightening	G value 1,000/sec	100%	
Clarifier-Diisolved Air Flotation	Xylem	10 gpm/sf	99%	
Strainer self-claening	Arkal Filtration	300 micron discs	97%	
Microfiltration membranes	PALL, Inc.	Microza	94%	
Cartridge Filters	Lenntech	5 microns	100%	
Reverse Osmosis	Dow Film-Tec Seawater	8 gfd	40%	
Carbon dixiode addition		pH < 6.5	100%	
Calcite filters (alkalinity)		pH > 8.3	100%	
Chlorination / ammonia		Chloramine < 4 mg/l	100%	
Claerwell Stoarge				
High Service Pump Station				
Solids Thickener				
Centifuge				
Solids to landfill (daily cover)				
Water Balance:				55.39 MGD
Clar-DAF sludge			99.00%	54.84 MGD
Strainer backwash			97.00%	53.19 MGD
MF Membranes Backwash			94.00%	50.00 MGD
RO permeate recovery			40.00%	
RO Brine reject			60.00%	
Decant (supernatant) thickner			50.00%	
Centrifuge filtrate return			60.00%	

Raw Water Total Feed:		
Permeate	**20**	**MGD**
RO Feed Water	50.00	MGD
Total Raw Water Feed	**55.39**	**MGD**
TPDES Discharge :		
RO Brine discahrge	30.00	MGD
Clar-DAF	0.55	MGD
Strainer	1.65	MGD
MF Backwash	3.19	MGD
Sub-total	5.39	MGD
Thickener Decant	2.70	MGD
Centrifuge filtrate	1.62	MGD
Total Discharge: RO Brine + Thickener/Centrifuge Return	**34.31**	**MGD**
Maximum Daily Discharge	**120.00%**	
Maximum Daily Discharge	**41.17**	**MGD**
Sludge Disposal to landfill	1.08	MGD

City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Water Balance Sheet - Ultimate 51 MGD Plant

Date of Revision:	11/26/2019			
Design Process	Manufacturer or approved equal	Design paramters	Recovery	
Submerged fine self-cleaning screen	Johnson	2.0 mm openings; velocity < 0.5 fps	100%	
Rapid Mixer	Lightening	G value 1,000/sec	100%	
Clarifier-Diisolved Air Flotation	Xylem	10 gpm/sf	99%	
Strainer self-claening	Arkal Filtration	300 micron discs	97%	
Microfiltration membranes	PALL, Inc.	Microza	94%	
Cartridge Filters	Lenntech	5 microns	100%	
Reverse Osmosis	Dow Film-Tec Seawater	8 gfd	40%	
Carbon dixiode addition		pH < 6.5	100%	
Calcite filters (alkalinity)		pH > 8.3	100%	
Chlorination / ammonia		Chloramine < 4 mg/l	100%	
Claerwell Stoarge				
High Service Pump Station				
Solids Thickener				
Centifuge				
Solids to landfill (daily cover)				

Water Balance:		83.09 MGD
Clar-DAF sludge	99.00%	82.25 MGD
Strainer backwash	97.00%	79.79 MGD
MF Membranes Backwash	94.00%	75.00 MGD
RO permeate recovery	40.00%	
RO Brine reject	60.00%	
Decant (supernatant) thickner	50.00%	
Centrifuge filtrate return	60.00%	

Raw Water Total Feed:		
Permeate	**30**	**MGD**
RO Feed Water	75.00	MGD
Total Raw Water Feed	**83.09**	**MGD**
TPDES Discharge :		
RO Brine discahrge	45.00	MGD
Clar-DAF	0.83	MGD
Strainer	2.47	MGD
MF Backwash	4.79	MGD
Sub-total	8.09	MGD
Thickener Decant	4.04	MGD
Centrifuge filtrate	2.43	MGD
Total Discharge: RO Brine + Thickener/Centrifuge Return	**51.47**	**MGD**
Maximum Daily Discharge	**120.00%**	
Maximum Daily Discharge	**61.76**	**MGD**
Sludge Disposal to landfill	1.62	MGD

ATTACHMENT G

2. APPLICANT INFORMATION (Instructions, Pages 21-22)

a. Facility Owner (Owner of the facility must apply for the permit.)

- Provide the legal name of the entity (applicant) applying for this permit: City of Corpus Christi

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

- If the applicant is currently a customer with the TCEQ, provide the Customer Number, which can be located using the TCEQ's Central Registry Customer Search[1]: **CN**600131858

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

  Mr. ☒ Ms. ☐ First/Last Name: Peter Zanoni

  Title: City Manager Credential:

b. Co-applicant Information

- Provide the legal name of the co-applicant applying for this permit, if applicable: N/A

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

- If the co-applicant is currently a customer with the TCEQ, provide the Customer Number, which can be located using the TCEQ's Central Registry Customer Search: **CN**N/A

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

  Mr. ☐ Ms. ☐ First/Last Name:

  Title: Credential:

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

c. Core Data Form

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

Attachment: A

3. APPLICATION CONTACT INFORMATION (Instructions, Page 22)

If the TCEQ needs additional information regarding this application, who should be contacted?

a. Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 78415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

Check one or both: ☒ Administrative Contact ☐ Technical Contact

[1] http://www15.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

b. Mr. ☐ Ms. ☒ First/Last Name: Katie Leatherwood Credential: P.G.

Organization Name: Freese and Nichols, Inc. Title: Environmental Scientist

Mailing Address: 4055 International Plaza, Suite 200 City/State/ZIP Code: Fort Worth, TX 76109

Phone No.: (817) 735-7503 Fax No.: (817) 735-7492 E-mail: katie.leatherwood@freese.com

Check one or both: ☐ Administrative Contact ☒ Technical Contact

Attachment:

4. PERMIT CONTACT INFORMATION (Instructions, Page 22)

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

a. Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 76415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

b. Mr. ☐ Ms. ☐ First/Last Name: Credential:

Organization Name: Title:

Mailing Address: City/State/ZIP Code:

Phone No.: Fax No.: E-mail:

Attachment:

5. BILLING CONTACT INFORMATION (Instructions, Page 22)

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

Provide the complete mailing address where the annual fee invoice should be mailed and the name and phone number of the permittee's representative responsible for payment of the invoice.

Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX 78415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

6. DMR/MER CONTACT INFORMATION (Instructions, Page 22)

Provide the name and mailing address of the person delegated to receive and submit DMRs or MERs.

Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Mailing Address: 2726 Holly Road City/State/ZIP Code: Corpus Christi, TX, 78415

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

DMR data must be submitted through the NetDMR[2] system. An electronic reporting account can be established once the facility has obtained the permit number.

7. NOTICE INFORMATION (Instructions, Pages 23-24)

a. Individual Publishing the Notices

Mr. ☐ Ms. ☒ First/Last Name: Rebecca Huerta Credential:

Organization Name: City of Corpus Christi Title: City Secretary

Mailing Address: P.O. Box 9277 City/State/ZIP Code: Corpus Christi, TX 78469

Phone No.: (361)826-3105 Fax No.: (361)826-3113 E-mail: citysecretary@cctexas.com

b. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package (only for NORI, NAPD will be sent via regular mail)

☐ E-mail:

☐ Fax:

☒ Regular Mail (USPS)

Mailing Address: P.O. Box 9277 City/State/ZIP Code: Corpus Christi, TX 78469

c. Contact in the Notice

Mr. ☒ Ms. ☐ First/Last Name: Esteban "Steve" Ramos Credential:

Organization Name: City of Corpus Christi Title: Water Resource Manager

Phone No.: (361)826-3294 Fax No.: (361)826-1889 E-mail: estebanr2@cctexas.com

d. Public Place Information

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

Public building name: La Retama Central Library Location within the building: Reference Shelf

Physical Address of Building: 805 Comanche

City: Corpus Christi County: Nueces

e. Bilingual Notice Requirements:

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

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

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

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

   ☒ Yes ☐ No

[2] https://www.tceq.texas.gov/permitting/netdmr

ATTACHMENT H

FREESE AND NICHOLS
FREESE AND NICHOLS, INC
4055 International Plaza, Suite 200
Fort Worth, TX 76109 - 4895
Phone - (817) 735 - 7300

N W E S

City of Corpus Christi

Seawater Desalination Plant

Facility Map

FN JOB NO	COR18468
FILE NAME	FacilityMap_NuecesBay.mxd
DATE	2/26/2020
SCALE	1:5,388
DESIGNED	ANM
DRAFTED	02905

4

FIGURE

Path: H:\ENVIRONMENTAL\Working\TPDES\FacilityMap_NuecesBay.mxd

NAD 1983 StatePlane Texas South Central FIPS 4204 Feet

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Practical results
Outstanding service

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April 3, 2020

Ms. Velma Fuller
Water Quality Division (MC-148)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: Response to TCEQ Comments
Application for Proposed Permit No. WQ0005289000 (EPA I.D. No. TX0139874)
City of Corpus Christi (CN600131858) Inner Harbor Desalination Plant (RN110940152)

Dear Ms. Fuller:

The City of Corpus Christi and Freese and Nichols, Inc. (FNI) received an email from the Texas Commission on Environmental Quality (TCEQ) dated March 30, 2020, that requested a written response to address comments regarding the application to obtain Wastewater Permit No. WQ0005289000. On behalf of the applicant, City of Corpus Christi, FNI offers the following responses to the TCEQ comment.

1. ***Industrial Administrative Report 1.1, Section 1.a on page 10 of the administrative report: Thank you for submitting a landowners map; however, it appears not all potentially affected landowners have been identified. Enclosed is copy of the landowners map provided with the response. Please identify the property owners of the marked tracts and submit a revised map showing: the applicant's complete property boundaries, location of the treatment facility within the applicant's property boundary, the distance the buffer zone falls into adjacent properties and the property boundaries of any landowners located within the buffer zone, the property boundaries of all landowners surrounding the applicant's property, point of discharge, highlighted discharge route for one mile downstream from the point of discharge, the property boundaries of all landowners surrounding the point of discharge and adjacent to the discharge route for one mile downstream, and a scale. A revised landowners list and mailing labels, which reflect any additional landowners, will also be required. The labels should be in all caps and not contain punctuation.***

   A revised Landowner Map depicting potentially affected landowners, as well as an updated landowner cross reference list and mailing labels are included in Attachment A.

Please feel free to contact Mr. Ramos (estebanr2@cctexas.com) or me (katie.leatherwood@freese.com) for additional information as necessary.

Sincerely,

Katie Leatherwood, P.G.
Freese and Nichols, Inc.

cc: Mr. Esteban Ramos, City of Corpus Christi

Attachment

Attachment A

Cross-Referenced Landowner List

1 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

2 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

3 Dorado Transportation
9101 Up River Road
Corpus Christi, TX 78409-3213

4 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

5 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

6 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

7 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

8 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

9 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

10 Cantu Guadalupe Pizana
2006 Palm
Corpus Christi, TX 78407

11 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

12 Clay Johnny H III Tr/Of
1924 Palm Drive
Corpus Christi, TX 78407

13 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

14 Rodela Rosalinda
PO Box 7252
Corpus Christi, TX 78467-7252

15 Newbill Elaine and Anthony D Newbill
3368 Cape May Ct.
Dumfries, VA 22026-2199

16 Williams Gaaries Charles
3751 Wilson Drive
Corpus Christi, TX 78408-3351

17 Liliana Rodriquez
1222 Crescent Cir
Corpus Christi, TX 78412-3520

18 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

19 Patricia Washington
6715 Path Way Ct
Katy, TX 77449-1449

20 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

21 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

22 Nieto Felipe Robert W
1806 Palm Drive
Corpus Christi, TX 78407

23 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

24 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

25 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

26 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

27 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

28 Johnson Norman
1510 Palm Drive
Corpus Christi, TX 78407

29 Florez Elida Gonzalez
6342 N Washam Dr
Corpus Christi, TX 78414-3644

30 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

31 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

32 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

33 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

34 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

35 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

36 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

37 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

38 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

39 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

38 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

39 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

40 Union Pacific Railroad
1400 Douglas St
Omaha, NE 668179-1001

41 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

42 Citgo Refining and Chemicals
PO Box 4689
Houston, TX 77210-4689

43 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

44 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

45 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

46 Flint Hills Resources
PO Box 3755
Wichita, KS 67201-3755

47 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

48 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

49 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

50 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

51 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

52 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

53 Port of Corpus Christi Authority
222 Power Street
Corpus Christi, TX 78401-1529

54 Texas Cement Company
3811 Turtle Creek Blvd
Dallas, TX 75219-4487

55 Texas Cement Company
3811 Turtle Creek Blvd
Dallas, TX 75219-4487

56 Texas Cement Company
3811 Turtle Creek Blvd
Dallas, TX 75219-4487

57 Texas Cement Company
3811 Turtle Creek Blvd
Dallas, TX 75219-4487

58 Nueces Bay WLE LP
1780 Hughes Landing Blvd Ste 800
Spring, TX 77380-4021

59 Electric Transmission Texas LLC
PO Box 16428
Columbus, OH 43216-6428

60 Electric Transmission Texas LLC
PO Box 16428
Columbus, OH 43216-6428

61 Nueces Co Navigation District
PO Box 1541
Corpus Christi, TX 78403

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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

PROPOSED PERMIT NO. WQ0005289000

APPLICATION. City of Corpus Christi, 1201 Leopard Street, Corpus Christi, Texas 78401, which will own a seawater desalination plant, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000 (EPA I.D. No. TX0139874) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 51,000,000 gallons per day. The facility will be located at the southeast corner of the intersection of Nueces Bay Boulevard and West Broadway Street, in Nueces County, Texas 78401. The discharge route will be from the plant site via pipe directly to Corpus Christi Inner Harbor. TCEQ received this application on January 22, 2020. The permit application is available for viewing online at https://www.cctexas.com/government/city-secretary/agendas/misc. 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://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.418055%2C27.8075&level=12

The application is subject to the goals and policies of the Texas Coastal Management Program and must be consistent with the applicable Coastal Management Program goals and policies.

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. 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 City of Corpus Christi at the address stated above or by calling Mr. Esteban Ramos at 361-826-3294.

Issuance Date: May 22, 2020

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November 29, 2021

Mr. Jaspinder Singh
Water Quality Division (MC-148)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Re: Application for Proposed Permit No. WQ0005289000 (EPA I.D. No. TX0139874)
Permit Application Attachment G Update
Applicant: City of Corpus Christi (CN600131858)
Site: Inner Harbor Desalination Plant (RN110940152)

Dear Mr. Singh:

Freese and Nichols, Inc. (FNI), on behalf of the City of Corpus Christi, is providing materials to replace Attachment G of the original application for Wastewater Permit No. WQ0005289000 for the Inner Harbor Desalination Plant. The updated flow schematics and water balance sheets reflect minor revisions to quantity and quality information regarding sludge produced. The proposed plant flow is not affected as a result of the update to the provided materials.

Please feel free to contact me for additional information as necessary.

Sincerely,

Katie Leatherwood, P.G.
Freese and Nichols, Inc.

cc: Mr. Esteban Ramos, City of Corpus Christi
File COR20596

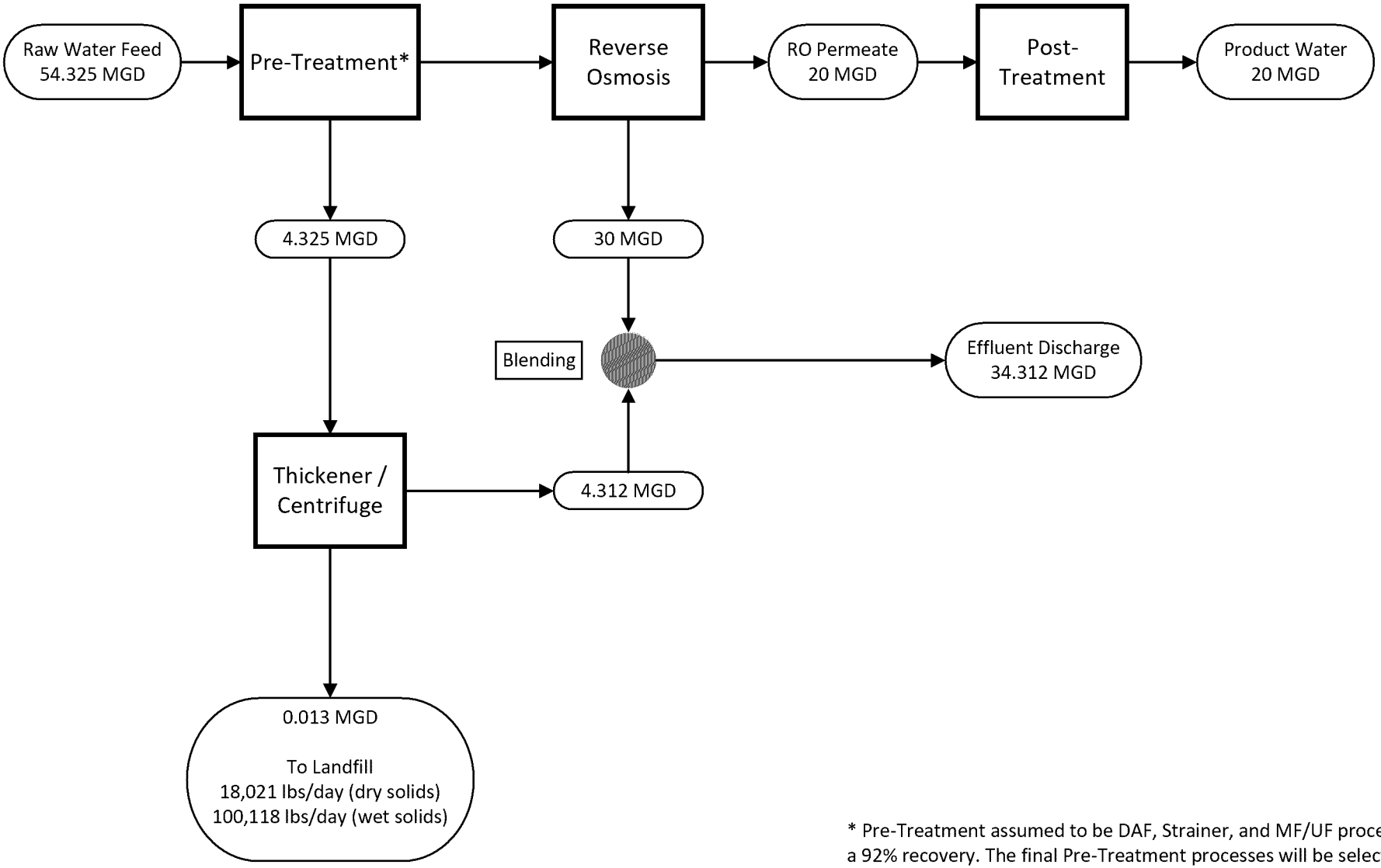
Attachments

Attachment G

Inner Harbor Plant

Flow Schematics
Water Balance Sheets

City of Corpus Christi Inner Harbor Seawater Desalination
20 MGD Water Production / RO Recovery 40%
Water Balance Flow Chart



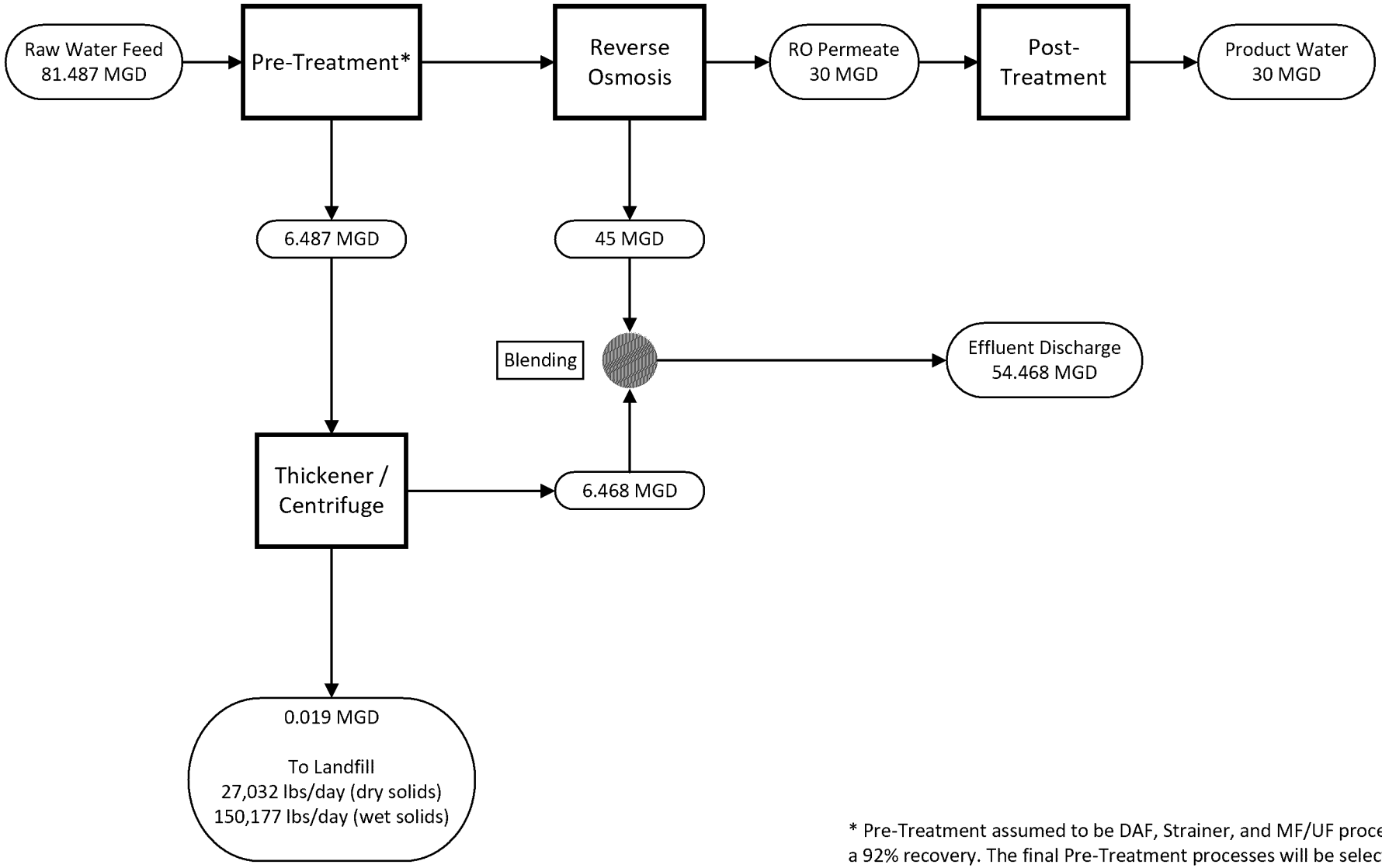
* Pre-Treatment assumed to be DAF, Strainer, and MF/UF processes with a 92% recovery. The final Pre-Treatment processes will be selected by the General Contractor to achieve a recovery ≥ 92%

City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Water Balance Sheet - Expanded 20 MGD Plant

Date of Revision:	11/18/2021			
Design Process	Manufacturer or approved equal	Design parameters	Recovery	
Submerged fine self-cleaning screen	Johnson	2.0 mm openings; velocity < 0.5 fps	100%	
Rapid Mixer	Lightening	G value 1,000/sec	100%	
Clarifier-Dissolved Air Flotation	Xylem	10 gpm/sf	98.00%	
Strainer self-cleaning	Arkal Filtration	300 micron discs	98.86%	
Microfiltration membranes	PALL, Inc.	Microza	95.00%	
Cartridge Filters	Lenntech	5 microns	100%	
Reverse Osmosis	Dow Film-Tec Seawater	8 gfd	40%	
Carbon dioxide addition		pH < 6.5	100%	
Calcite filters (alkalinity)		pH > 8.3	100%	
Chlorination / ammonia		Chloramine < 4 mg/l	100%	
Clearwell Storage				
High Service Pump Station				
Solids Thickener				
Centrifuge				
Solids to landfill (daily cover)				
Water Balance:				54.32 MGD
Clar-DAF sludge			98.00%	53.24 MGD
Strainer backwash			98.86%	52.63 MGD
MF Membranes Backwash			95.00%	50.00 MGD
RO permeate recovery			40.00%	
RO Brine reject			60.00%	
Decant (supernatant) thickener			60.00%	
Centrifuge filtrate return			99.25%	

Raw Water Total Feed:		
Permeate	**20**	**MGD**
RO Feed Water	50.00	MGD
Raw Water Feed Annual Average	**54.325**	**MGD**
Raw Water Maximum Daily Peak /Average Ratio	**120.00%**	
Raw Water Maximum Daily	**65.19**	**MGD**
TPDES Discharge :		
RO Brine discharge	30.00	MGD
Clar-DAF	1.09	MGD
Strainer	0.61	MGD
MF Backwash	2.63	MGD
Sub-total	4.325	MGD
Thickener Decant	2.59	MGD
Centrifuge filtrate	1.72	MGD
Total thickener/centrifuge discharge	4.312	MGD
Total Discharge: RO Brine + Thickener/Centrifuge Return	**34.312**	**MGD**
Maximum Daily Discharge	**120.00%**	
Maximum Daily Discharge	**41.17**	**MGD**
Sludge Disposal to landfill	0.013	MGD

City of Corpus Christi Inner Harbor Seawater Desalination
30 MGD Water Production / RO Recovery 40%
Water Balance Flow Chart



* Pre-Treatment assumed to be DAF, Strainer, and MF/UF processes with a 92% recovery. The final Pre-Treatment processes will be selected by the General Contractor to achieve a recovery ≥ 92%

City of Corpus Christi
Proposed Inner Harbor Desalination Plant
Water Balance Sheet - Ultimate 30 MGD Plant

Date of Revision:	11/18/2021			
Design Process	Manufacturer or approved equal	Design parameters	Recovery	
Submerged fine self-cleaning screen	Johnson	2.0 mm openings; velocity < 0.5 fps	100%	
Rapid Mixer	Lightening	G value 1,000/sec	100%	
Clarifier-Dissolved Air Flotation	Xylem	10 gpm/sf	98.00%	
Strainer self-cleaning	Arkal Filtration	300 micron discs	98.86%	
Microfiltration membranes	PALL, Inc.	Microza	95.00%	
Cartridge Filters	Lenntech	5 microns	100%	
Reverse Osmosis	Dow Film-Tec Seawater	8 gfd	40%	
Carbon dioxide addition		pH < 6.5	100%	
Calcite filters (alkalinity)		pH > 8.3	100%	
Chlorination / ammonia		Chloramine < 4 mg/l	100%	
Clearwell Storage				
High Service Pump Station				
Solids Thickener				
Centrifuge				
Solids to landfill (daily cover)				
Water Balance:				81.49 MGD
Clar-DAF sludge			98.00%	79.86 MGD
Strainer backwash			98.86%	78.95 MGD
MF Membranes Backwash			95.00%	75.00 MGD
RO permeate recovery			40.00%	
RO Brine reject			60.00%	
Decant (supernatant) thickener			60.00%	
Centrifuge filtrate return			99.25%	

Raw Water Total Feed:		
Permeate	**30**	**MGD**
RO Feed Water	75.00	MGD
Raw Water Feed Annual Average	**81.487**	**MGD**
Raw Water Maximum Daily Peak /Average Ratio	**120.00%**	
Raw Water Maximum Daily	**97.78**	**MGD**
TPDES Discharge :		
RO Brine discharge	45.00	MGD
Clar-DAF	1.63	MGD
Strainer	0.91	MGD
MF Backwash	3.95	MGD
Sub-total	6.487	MGD
Thickener Decant	3.8925	MGD
Centrifuge filtrate	2.5755	MGD
Total thickener/centrifuge discharge	6.468	MGD
Total Discharge: RO Brine + Thickener/Centrifuge Return	**51.468**	**MGD**
Maximum Daily Discharge	**120.00%**	
Maximum Daily Discharge	**61.76**	**MGD**
Sludge Disposal to landfill	0.019	MGD

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April 10, 2023

Gregg Easley
Manager, Water Quality Assessment Section, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle,
Austin, TX 78753

Re: City of Corpus Christi TPDES Permit Application No. WQ0005289000
Response to the Request for Information (RFI)

Dear Mr. Easley:

On **December 1, 2022** the Texas Commission on Environmental Quality (TCEQ) made a request for information (RFI) to assist in their review of the City of Corpus Christi's (CoCC's) TPDES permit application **WQ 0005289000** for the Inner Harbor seawater desalination plant (RFI letter attached as Appendix D). The City and its team met with TCEQ on **January 12, 2023** to discuss the RFI responses. The CORMIX modeling and the related RFI responses have been updated based on the feedback received from TCEQ. Please consider this report as a formal response to the RFIs presented on the TCEQ letter of December 1, 2022.

If there are any questions or if you would like additional information, please feel free to contact me at katie.leatherwood@freese.com or 817-735-7503.

Sincerely,

Katie Leatherwood
Environmental Scientist
Freese and Nichols, Inc.
801 Cherry Street, Suite 2800
Fort Worth, Texas 76102

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APPENDICES

1.00 RFI #1 SALINITY CUMULATIVE EFFECT

RFI #1: Cumulative effects of concentrated saline discharges in estuarine environments can increase the overall salinity of the bay. Increased salinity tends to lower dissolved oxygen levels and can negatively affect sensitive aquatic species in the area. Please address the effects of the discharge on the salinity gradient within the surrounding estuaries, including the Nueces Bay region. Please consider the cumulative effects of this proposed discharge along with other permitted desalination facilities in the vicinity which include issued TPDES permit number WQ0005019000 (Corpus Christi Polymers, LLC) and WQ0005253000 (Port of Corpus Christi Harbor Island desalination plant discharge), which was approved for issuance by our Commissioners on September 22, 2022.

1.01 RFI #1 RESPONSE

A. General - Salinity regulations of 30 TAC Chapter 307:

1. Concentrations and the relative ratios of dissolved minerals such as chloride, sulfate, and total dissolved solids must be maintained such that existing, designated, presumed, and attainable uses are not impaired.
2. ***Salinity gradients*** in estuaries must be maintained to support attainable estuarine dependent aquatic life uses. Numerical salinity criteria for Texas estuaries have not been established because of the high natural variability of salinity in estuarine systems, and because long-term studies by state agencies to assess estuarine salinities are still ongoing. Absence of numerical criteria must not preclude evaluations and regulatory actions based on estuarine salinity, and careful consideration must be given to all activities that may detrimentally affect salinity gradients.
3. Table 1-1 shows the data for the environmental water quality standards as per 30 TAC Chapter 307 for the Inner Harbor – Segment 2484.

Table 1-1 Environmental Water Quality Standards 30 TAC Chapter 307

Water Quality Parameter	**Inner Harbor – Segment 2484**
Aquatic Life Use	Intermediate
Dissolved Oxygen Criteria (mg/l)	3.0 mean/ 2.0 minimum
Habitat	Moderately diverse
Species Assemblage	Some expected species
Sensitive Species	Vary low
Diversity	Moderate
Species Richness	Moderate
Trophic Structure	Moderately imbalanced
Indicator Bacteria Enterococci (CFU/100 ml)	35
pH range	6.5 – 9.0
Temperature	95 ^{0}F
Oyster Water	No

B. Salinity Gradient:

Cumulative effects of concentrated saline discharges in estuarine environments can increase the overall salinity of the bay. Increased salinity tends to lower dissolved oxygen levels and can negatively affect sensitive aquatic species in the area. **Please address the effects of the discharge on the salinity gradient within the surrounding estuaries, including the Nueces Bay region.**

1. Response for effects of discharge on the salinity gradient of proposed TPDES Inner Harbor permit application WQ 0005289000 on the surrounding estuaries of Inner Harbor (segment 2484), Nueces Bay (segment 2482) and Corpus Christi Bay (segment 2481) as follows:
2. Effects of the discharge on the salinity gradient within Inner Harbor: Modeling performed for the proposed discharge TPDES permit application WQ0005289000 using Cornell Mixing Zone Expert System (CORMIX version 12.01.0) resulted in the following salinity increases for each of the mixing zones. The information from CORMIX modeling results of City of Corpus Christi Inner Harbor permit application WQ0005289000 are shown on Table 1-2.
3. TCEQ provided the Inner Harbor QUAL-TX model to the Project Team after the 1/12/2023 meeting. The effects of Corpus Christi Polymers, LLC permit WQ0005019000 using QUAL-TX modeling to supplement the CORMIX results (Table 1-2) for the Inner Harbor is shown in Table 1-3. Table 1-3 cumulative salinity effects for Corpus Christi Polymers, LLC WQ0005019000 were based on the same discharge effluent concentrations as was used for the Inner Harbor WQ0005289000 modeling. It should be noted that the Corpus Christi Polymers, LLC WQ0005019000 discharge is through an open pipe with no diffuser. If the dense heavy brine discharge does not mix as with a diffuser and remains as a thin dense brine layer along the bottom of the channel the results in Table 1-3 would have less salinity increase at the mixing zones than shown. Therefore, the salinity results shown on Table 1-3 are theoretical and responsive to the RFI but not to be used for permitting purposes.
4. A detailed discussion on the application of the QUAL-TX modeling is presented in section 2.01.

Table 1-2 CORMIX Modeling Results for Inner Harbor Desalination Permit Application WQ0005289000

Inner Harbor blended discharge salinity: ZID *Area = 7,854 sf* MX *Area = 125,664 sf* HHMZ *Area = 502,656 sf*

Water Production/ Discharge (MGD)	Existing Ambient Average Salinity (ppt)	Effluent Salinity (ppt) **40% Recovery**	Percent Effluent ZID	Increase in salinity (ppt) ZID	Percent salinity increase ZID	Discharge blended average salinity (ppt) ZID	Percent Effluent MZ	Increase in salinity (ppt) MZ	Percent salinity increase MZ	Discharge blended average salinity (ppt) MZ	Percent Effluent HHMZ	Increase in salinity (ppt) HHMZ	Percent salinity increase HHMZ	Discharge blended average salinity (ppt) HHMZ
20/34.31	31.59	49.9	8.30%	1.52	4.82%	33.11	5.92%	1.09	3.43%	32.68	4.60%	0.84	2.67%	32.43
30/51.47	31.59	49.9	8.04%	1.47	4.66%	33.06	5.73%	1.05	3.32%	32.64	4.45%	0.82	2.58%	32.41
Water Production/ Discharge (MGD)	Existing Ambient Average Salinity (ppt)	Effluent Salinity (ppt) **50% Recovery**	Percent Effluent ZID	Increase in salinity (ppt) ZID	Percent salinity increase ZID	Discharge blended average salinity (ppt) ZID	Percent Effluent MZ	Increase in salinity (ppt) MZ	Percent salinity increase MZ	Discharge blended average salinity (ppt) MZ	Percent Effluent HHMZ	Increase in salinity (ppt) HHMZ	Percent salinity increase HHMZ	Discharge blended average salinity (ppt) HHMZ
20/23.45	31.59	58.4	8.80%	2.36	7.47%	33.95	8.80%	2.36	7.47%	33.95	4.88%	1.31	4.14%	32.90
30/35.17	31.59	58.4	8.28%	2.22	7.03%	33.81	8.28%	2.22	7.03%	33.81	4.58%	1.23	3.89%	32.82

ZID – Zone of Initial Dilution; MZ – Mixing Zone; HHMZ – Human Health Mixing Zone

Table 1-3 CORMIX Modeling Results WQ0005289000 + QUAL-TX Modeling CC Polymers WQ0005019000

Inner Harbor blended discharge salinity: ZID *Area = 7,854 sf* MX *Area = 125,664 sf* HHMZ *Area = 502,656 sf*

Water Production/ Discharge (MGD)	Existing Ambient Average Salinity (ppt)	Effluent Salinity (ppt) **40% Recovery**	Percent Effluent ZID	Increase in salinity (ppt) ZID	Percent salinity increase ZID	Discharge blended average salinity (ppt) ZID	Percent Effluent MZ	Increase in salinity (ppt) MZ	Percent salinity increase MZ	Discharge blended average salinity (ppt) MZ	Percent Effluent HHMZ	Increase in salinity (ppt) HHMZ	Percent salinity increase HHMZ	Discharge blended average salinity (ppt) HHMZ
20/34.31	31.59	49.9	11.64%	2.13	6.75%	33.72	9.26%	1.70	5.37%	33.29	7.94%	1.46	4.61%	33.05
30/51.47	31.59	49.9	10.81%	1.98	6.27%	33.57	8.50%	1.56	4.93%	33.15	7.22%	1.32	4.19%	32.91
Water Production/ Discharge (MGD)	Existing Ambient Average Salinity (ppt)	Effluent Salinity (ppt) **50% Recovery**	Percent Effluent ZID	Increase in salinity (ppt) ZID	Percent salinity increase ZID	Discharge blended average salinity (ppt) ZID	Percent Effluent MZ	Increase in salinity (ppt) MZ	Percent salinity increase MZ	Discharge blended average salinity (ppt) MZ	Percent Effluent HHMZ	Increase in salinity (ppt) HHMZ	Percent salinity increase HHMZ	Discharge blended average salinity (ppt) HHMZ
20/23.45	31.59	58.4	12.25%	3.28	10.40%	34.87	9.73%	2.61	8.26%	34.20	8.33%	2.23	7.07%	33.82
30/35.17	31.59	58.4	11.14%	2.99	9.46%	34.58	8.76%	2.35	7.44%	33.94	7.44%	2.00	6.32%	33.59

ZID – Zone of Initial Dilution; MZ – Mixing Zone; HHMZ – Human Health Mixing Zone

5. Effects of the discharge on the salinity gradient within **Nueces Bay** region:

The Inner Harbor segment 2484 is connected to the Nueces Bay segment 2482 through the Nueces Bay Power Station (NBPS) which takes cooling water from the Inner Harbor and discharges into Nueces Bay, permit WQ0001244000 effluent requirements are shown in Table 1-4. Using a mass balance analysis, Table 1-5, the proposed Inner Harbor discharge WQ0005289000 would increase the long-term ambient salinity at the Nueces Bay Power Station intake by 0.38 ppt. The NBPS salinity discharge into Nueces Bay would be further diluted by the volume of water in Nueces Bay. There would be minimal effects on the salinity gradient within Nueces Bay.

Table 1-4 Nueces Bay Power Station Permit Requirements

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS — Outfall Number 001

1. During the period beginning upon the date of permit issuance and lasting through the date of permit expiration, the permittee is authorized to discharge once-through cooling water and previously monitored effluent subject to the following effluent limitations:

The daily average flow of effluent shall not exceed 500 million gallons per day (MGD). The daily maximum flow shall not exceed 605 MGD.

Effluent Characteristics	Discharge Limitations					Minimum Self-Monitoring Requirements	
	Daily Average		Daily Maximum		Single Grab	Report Daily Average and Daily Maximum	
	lbs/day	mg/L	lbs/day	mg/L	mg/L	Measurement Frequency	Sample Type
Flow	500 MGD		605 MGD		N/A	Continuous [1]	Record
Temperature [2]	100 °F [3]		106 °F [3]		N/A	Continuous	Record
Total Residual Chlorine [4]	N/A	N/A	84	0.2	0.2	1/week	Grab [5]
Dissolved Oxygen [6]	N/A	N/A	N/A	2.0 (min)	N/A	Continuous	Record
Total Zinc [7]	Report	N/A	N/A	N/A	N/A	1/week	Grab
Total Zinc [8]	61.5 [9]	N/A	N/A	N/A	N/A	1/week	Grab

[1] Calculated hourly from calibrated pump curve.
[2] See Other Requirement Nos. 4 and 9.
[3] See Other Requirement No. 12.
[4] See Other Requirement No. 5.
[5] Samples shall be representative of periods of chlorination.
[6] See Other Requirement No. 10.
[7] Effective beginning upon date of permit issuance and lasting until April 10, 2020.
[8] Effective beginning on April 11, 2020.
[9] Limitation is a 12-month rolling average, based on the average daily loading for the previous 12 calendar months.

2. The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units and shall be monitored 1/week, by grab sample.

3. There shall be no discharge of floating solids or visible foam (see Other Requirement No. 11) in other than trace amounts and no discharge of visible oil. There shall be no discharge of foam other than trace amounts, unless condenser vents are opened for increased dissolved oxygen concentrations at Outfall 001. Upon closure of events, foaming shall subside within 24 hours.

4. Effluent monitoring samples shall be taken at the following location: at Outfall 001, at the end of the discharge canal (end Pier) where commingled effluents are discharged.

Table 1-5 Nueces Bay Power Station Intake Long-term Ambient Salinity Increase

Cross-sectional modeled area Inner Harbor	772 ft. x 41 ft. = 31,652 ft^2
Ambient incoming average velocity	0.0363 m/s = 0.1190 fps
Background ambient average flow	Velocity x area = 0.1190 ft/sec x 31,652 ft^2 = 3,768.61 cfs = 2,436.07 MGD
Ambient Inner Harbor salinity	31.59 ppt
30 MGD permeate @ 50 % Recovery, Discharge flow	35.17 MGD
30 MGD permeate @ 50 % Recovery, Discharge concentrate	58.4 ppt
Salinity mixture: Mass balance	$\frac{35.17\ MGD\ x\ 58.4\ ppt + 2{,}436.07\ MGD\ x\ 31.59\ ppt}{(35.17\ MGD + 2{,}436.07\ MGD)}$ = 31.97 ppt
Increase in Nueces Bay Power Station intake salinity, ppt	Salinity mixture 31.97 ppt – Ambient Salinity 31.59 ppt = 0.38 ppt
Increase in Nueces Bay Power Station intake salinity, %	$\frac{31.97\ ppt - 31.59\ ppt}{31.59\ ppt}$ = 1.2 %

6. Effects of the discharge on the salinity gradient within **Corpus Christi Bay** (segment 2481): Using a mass balance analysis for the proposed Inner Harbor discharge WQ0005289000 effects on Corpus Christi Bay the analysis can be divided into three mass balance equations:

- Tidal Dispersion (Equation No. 1)

  C_a = CC Bay ambient average salinity = 31.59 ppt (Table 1-5)

Table 1-6 TECQ surface water quality monitoring station No. 13430 Salinity Data

Historical ambient Salinity	**Inner Harbor**
TCEQ Surface Water Quality Monitoring Station	No. 13430
Period of Record	1988-2015
Mean salinity	31.59 ppt
Maximum salinity	41.7 ppt
Minimum salinity	17.4 ppt
Maximum annual average salinity	35.0 ppt
Number of data points	566
Standard Deviation	4.62

Q_e = Estuary inflow = 565.6 MGD[1]

[1]Longley, W.L. ed. 1994. ""Freshwater inflows to Texas bays and estuaries: ecological relationships and methods for determination of needs." Texas Water Development Board and Texas Parks and Wildlife Department, Austin, TX. 386 pp.

Longley report page 26 table 4.1.1. Nueces estuary mean inflow is 52,800 ac.ft./month; 633,600 ac.ft./year = 565.6 MGD.

Q_{td} = Tidal dispersion, MGD

C_e = Estuary inflow TDS = 0.431 ppt (TCEQ IP 2010 Appendix Segment 2102 Nueces River)

C_g = Gulf of Mexico TDS = 35 ppt (the salinity of the gulf is subject to wide variations. In the open gulf the average salinity is about 35 parts per thousand).

Mass flow balance equation:

$$C_a = \frac{Q_e \, x \, C_e + Q_{td} \, x C_g}{Q_e \, + Q_{td}}$$

Solve for Q_{td} = tidal dispersion = $\frac{C_a \, x \, Q_e - Q_e \, x \, C_e}{C_g - C_a}$ **- Equation No.1**

Tidal dispersion = $\frac{31.59 \; ppt \; x \; 565.6 MGD - 565.6 \; MGD \; x \; 0.431 \; ppt}{35 \; ppt - 31.59 \; ppt}$ = 5,168.1907 MGD

- CC Bay salinity mixture with desalination plant discharge, No return flow – Equation No. 2

C_m = CC Bay salinity mixture with desalination plant discharge, no return flow

Q_d = Desalination Plant Production, permeate = 30 MGD (Final phase)

$$\mathbf{C_m = \frac{Q_e \, x \, C_e \; + Q_{td} \, x \, C_g \; + \; Q_d \, x \, C_g}{Q_e \; + \; Q_{td}}} \; \textbf{– Equation No. 2}$$

$$C_m = \frac{565.6 \; MGD \; x \; 0.431 \; ppt + 5{,}168.1907 \; x \; 35 \; ppt + 30 \; MGD \; x \; 35 \; ppt}{565.6 \; MGD + 5{,}168.1907 \; MGD} = 31.7731 \text{ ppt}$$

Salinity increase, No return flow = 31.7731 ppt – 31.59 ppt = **0.1831 ppt**

- CC Bay salinity mixture with desalination plant discharge, with return flow – Equation No. 3

Q_r = return flow estimated at 60 % of desalination plant production permeate, MGD

C_r = return flow TDS concentration estimated at 5,500 mg/l (Flint Hills Resources as a typical discharger)

$$C_m = \frac{Q_e \, x \, C_e + Q_{td} \, x \, C_g + 40\% Q_d \, x \, C_g + 60\% Q_d \, x C_r}{Q_e \; + \; Q_{td}} \; \textbf{Equation No. 3}$$

$C_m = \frac{565.6\ MGD\ x\ 0.431\ ppt + 5{,}168.1907\ x\ 35\ ppt + 0.4x30\ MGDx\ 35\ ppt + 0.6x30MGDx5.5ppt}{565.6\ MGD + 5{,}168.1907\ MGD} = 31.6805$ ppt

Salinity increases with return flow = 31.6805 ppt – 31.59 ppt = **0.0905 ppt**

There would be minimal effects on salinity gradient in Corpus Christi Bay.

C. Cumulative Effects of Proposed and Permitted Desalination Discharges:

RFI #1 Portion - "Please consider the cumulative effects of this proposed discharge along with other permitted desalination facilities in the vicinity which include issued TPDES permit number WQ0005019000 (Corpus Christi Polymers, LLC) and WQ0005253000 (Port of Corpus Christi Harbor Island desalination plant discharge), which was approved for issuance by our Commissioners on September 22, 2022."

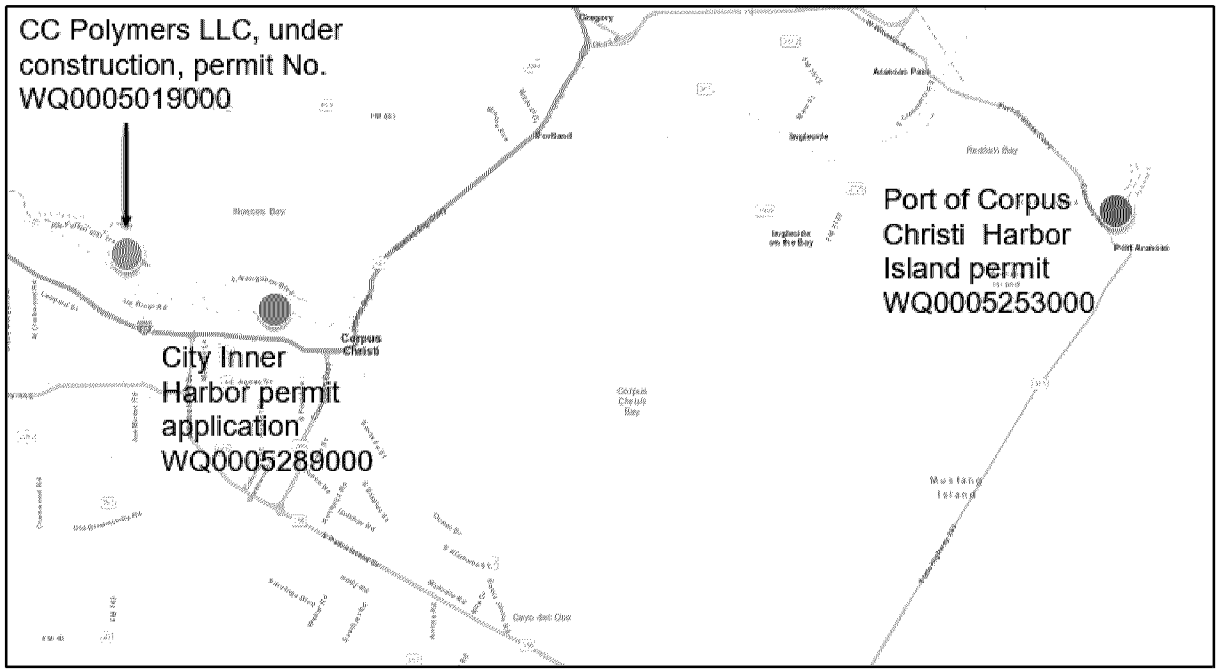

Figure 1-1 Proposed Desalination Discharge locations in the vicinity

1. Cumulative effects of Corpus Christi Polymers, LLC TPDES permit WQ0005019000: The Corpus Christi Polymers, LLC discharge is located approximately 5.5 miles upstream of the proposed Corpus Christi Inner Harbor discharge location (Figure 1-1). TCEQ provided the Inner Harbor QUAL-TX model which was used to supplement the CORMIX modeling. TCEQ provided the Inner Harbor QUAL-TX model to the Project Team after the 1/12/2023 meeting. The effects of Corpus Christi Polymers, LLC permit WQ0005019000 using QUAL-TX modeling to supplement the CORMIX results (Table 1-2) for the Inner Harbor is shown in Table 1-3. Table 1-3 cumulative salinity effects for Corpus Christi Polymers, LLC WQ0005019000 were based on the same effluent concentrations as was used for the Inner Harbor WQ0005289000 modeling. It should be noted that the Corpus Christi Polymers, LLC

WQ0005019000 discharge is through an open pipe with no diffuser. If the dense heavy brine discharge does not mix as with a diffuser and remains as a thin dense brine layer along the bottom of the channel the results in Table 1-3 would have less salinity increase at the mixing zones than shown. Therefore, the salinity results shown on Table 1-3 are theoretical and responsive to the RFI but not to be used for permitting purposes.

A detailed discussion on the application of the QUAL-TX modeling is presented in section 2.01.

2. Cumulative effects of Port of Corpus Christi Harbor Island TPDES permit WQ005253000: The Port of Corpus Christi is located approximately 21 miles downstream of the proposed Corpus Christi Inner Harbor permit application WQ0005289000. The TPDES permit WQ0005253000 was issued on December 20,2022 with the following effluent requirements shown in Table 1-7.

Table 1-7 Port of Corpus Christi Harbor Island permit requirements

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS — Outfall Number 001

1. During the period beginning upon the date of permit issuance and lasting through the date of permit expiration, the permittee is authorized to discharge water treatment wastes [1] subject to the following effluent limitations:

The daily average flow of effluent shall not exceed 95.6 million gallons per day (MGD). The daily maximum flow shall not exceed 110 MGD.

Effluent Characteristics	Discharge Limitations					Minimum Self-Monitoring Requirements	
	Daily Average		Daily Maximum		Single Grab	Report Daily Average and Daily Maximum	
	lbs/day	mg/L	lbs/day	mg/L	mg/L	Measurement Frequency	Sample Type
Flow	95.6 MGD		110 MGD		N/A	Continuous	Totalizer
Total Suspended Solids	Report	Report	Report	Report	N/A	1/day	Grab
Total Dissolved Solids	Report	Report	Report	Report	N/A	1/day	Grab
Chloride	Report	Report	Report	Report	N/A	1/day	Grab
Sulfate	Report	Report	Report	Report	N/A	1/day	Grab

2. The pH must not be less than 6.0 standard units nor greater than 9.0 standard units and must be monitored 1/day by grab sample.

3. There must be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples must be taken at the following location: At Outfall 001, following commingling of all wastewater and prior to discharging into Corpus Christi Bay.

MIXING ZONES

The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum dilution of 8.9 percent effluent at the edge of the chronic aquatic life mixing zone. The chronic aquatic life mixing zone at Outfall 001 is defined as a 553-foot by 227-foot rectangle that is centered on the diffuser with the longer edge extending along the diffuser barrel. This area is approximately equal to the area of a 200-foot radius circle. Chronic toxic criteria apply at the edge of the chronic aquatic life mixing zone.

The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum dilution of 5.4 percent effluent at the edge of the human health mixing zone. The human health mixing zone at Outfall 001 is defined as a volume within a 1,053-foot by 477-foot rectangle centered on the diffuser with the longer edge along the diffuser barrel. This area is approximately equal to the area of a 400-foot radius circle.

The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum dilution of 14.6 percent effluent at the edge of the zone of initial dilution (ZID). The ZID is defined as a 184-foot by 43-foot rectangle that is centered on the diffuser barrel with the longer edge extending along the diffuser barrel. This area is approximately equal to the area of a 50-foot radius circle.

We do not have the actual model runs or a TCEQ QUAL-TX model used to establish the mixing zones percent effluent parameters. The effects of the Port of Corpus Christi Harbor Island permit WQ0005253000 according to permit effluent conditions would be 14.6% effluent at the zone of initial dilution (ZID) at 43 ft. from the diffuser; 8.9% effluent at the aquatic life mixing zone (ALMZ) at 277 ft. from the diffuser and 5.4% effluent at the Human Health mixing Zone (HHMZ) at 477 ft. from the diffuser.

The cumulative effects on the Port of Corpus Christi Harbor Island permit WQ0005253000 on the City of Corpus Christi Inner Harbor permit application WQ0005289000, which is located approximately 21 miles upstream, would be minimal.

2.00 RFI #2 SALINITY FAR-FIELD EFFECTS

RFI #2: The diffuser report previously submitted by the applicant lacks information regarding far-field effects and whether these effects were taken into consideration in the Corpus Christi Inner Harbor Channel including potential re-entrainment of those higher salinity waters from upstream occurring during the outgoing tidal period. A QUAL-TX model is sometimes used in TCEQ diffuser reviews, if available, to supplement CORMIX analyses in tidal channels and canals such as the Corpus Christi Inner Harbor to determine whether a higher base percent effluent 'starting point' attributable to a specific discharger may be appropriate to include in (add to) the percent effluent values calculated by CORMIX. Please provide detailed information to address expected far-field effects from this discharge as discussed above and address in detail the expected effect of the proposed discharge on ambient salinities in the surrounding estuaries and bay system and include consideration of salinity contributions from TPDES permit numbers WQ0005253000 and WQ0005019000.

2.01 RFI #2 RESPONSE

A. RFI Portion A:

Salinity Far-Field Effects QUAL-TX model to supplement CORMIX analysis:

1. The Corpus Christi Polymers, LLC permitted discharge WQ0005019000 is located approximately 5.5 miles upstream of the proposed City of Corpus Christi Inner Harbor discharge location (Figure 2-1).
2. Per the TCEQ recommendation, the Project Team utilized the QUAL-TX model of the Corpus Christi Inner Harbor to evaluate a base percent effluent (Base Eff%) that reflects the amount of residual effluent percent from CC Polymers, LLC ("CCP") permit WQ0005019000. The base percent is added to the percent effluent values calculated by CORMIX the City of Corpus Christi ("CoCC") desalination ("desal") discharge to account for the combined effects of desalination discharges in the Inner Harbor.
3. Following the 1/12/2023 meeting, TCEQ staff provided the Project Team with the latest QUAL-TX model of the Corpus Christi Inner Harbor. This model simulated permitted discharges and diversion along the Harbor. A map of the permittees is shown in Figure 2-2. Major dischargers with permitted flows > 1 MGD are denoted by yellow triangle symbols. Diversions are denoted by white circle symbols. The Project Team noted that the model did not include the intake diversion to the City of Corpus Christi ("CoCC") desal plant despite including the CCP intake. To fill this gap, the Project Team added the CoCC Desal diversion in the refinement of the QUAL-TX model.

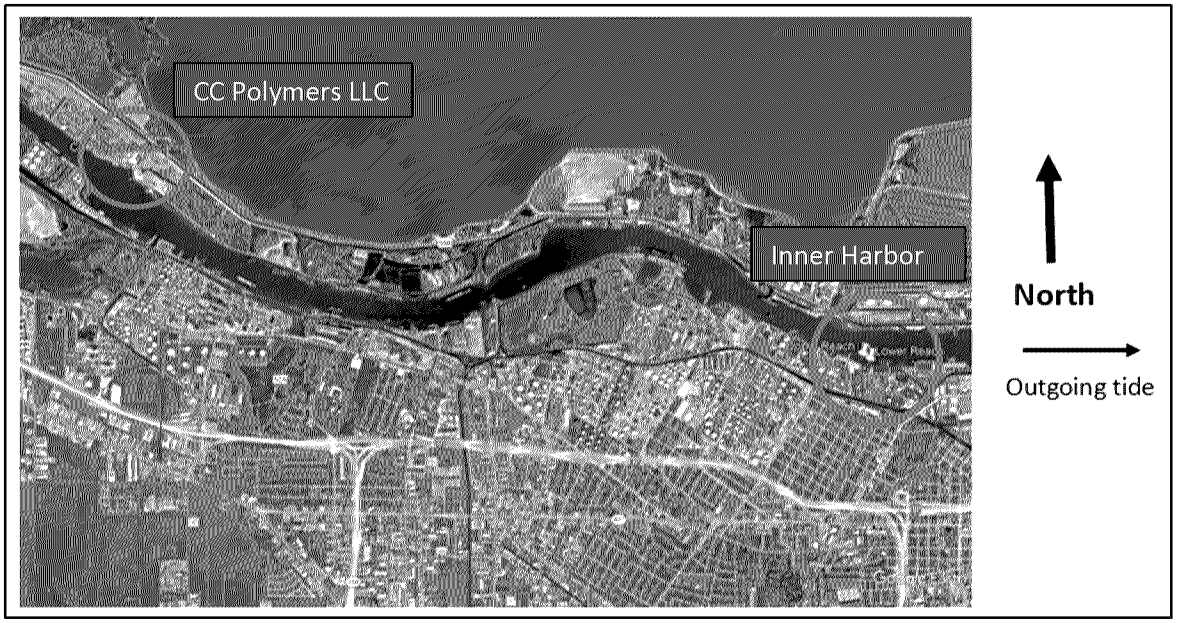

Figure 2-1 CC Polymers LLC and CoCC Inner Harbor Desal Discharge Locations

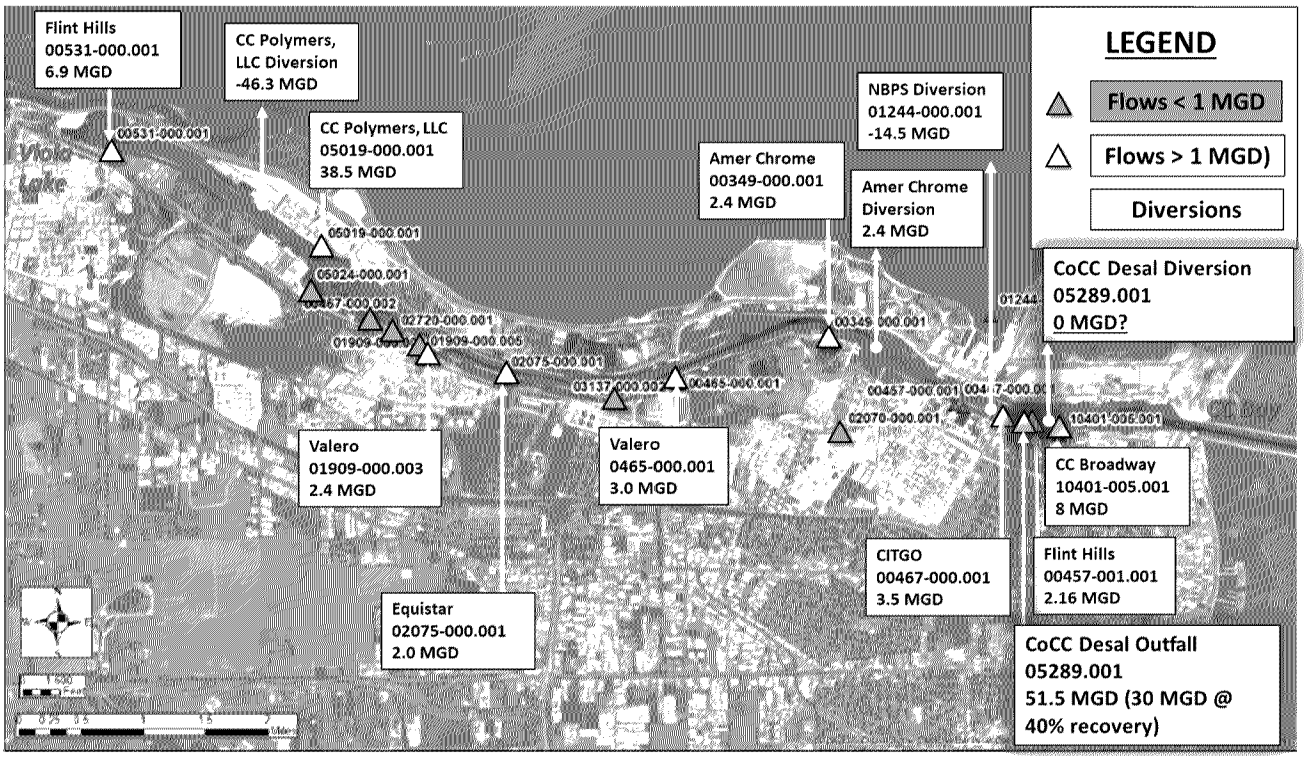

Figure 2-2. Permittees in the Corpus Christi Inner Harbor QUAL-TX Model.

4. To demonstrate how QUAL-TX was used to develop the Base Effluent %, the following example is shown using diversion and discharge rates associated with CoCC Desal operating at 30 MGD production rate and 40% recovery rate. The associated intake rate is 81.5 MGD and the discharge rate is 51.5 MGD.

5. The channel flow predicted by the refined QUAL-TX model is shown in Figure 2-3. The right y-axis provides the scale for channel flow values. The mid-point of the axis is the zero-flow line which denotes no flow in the channel. Channel flow values above zero means flow is moving towards Corpus Christi Bay (CC Bay). Channel flow values below zero flow means flow is moving inland towards Viola Lake. The channel flow is impacted by various discharges and diversions along the Inner Harbor. Large discharges such as the CCP and CoCC desal discharges can push the flow towards CC Bay and result in positive channel flow. One the other hand, large diversions such as the CCP intake, Nueces Bay Power Station (NBPS) and CC Desal Intake can pull the flow inland towards Viola Lake and results in negative channel flow.

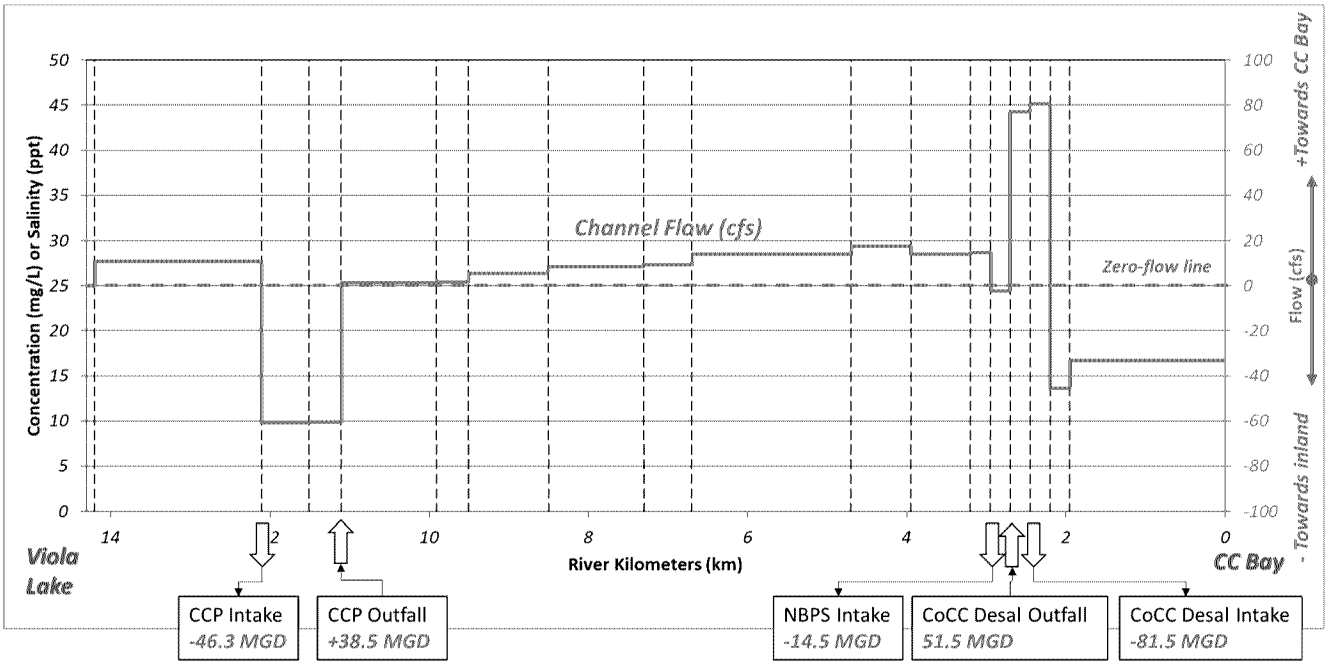

Figure 2-3. Predicted channel flows in Inner Harbor under CC Desal operation at 30 MGD production rate and 40% recovery rate

6. The CCP Effluent % is simulated in the QUAL-TX model as a conservative material. At the end of the CCP pipe, but prior to contact with the Inner Harbor, the CCP Effluent % is 100%. Immediately below the CCP outfall, the CCP discharge mixes with the Inner Harbor water resulting in an initial CCP Eff% of 17.95% (see Figure 2-4). As the CCP effluent travels towards CC Bay, it attenuates further due to interaction with other discharges, diversions, and tidal exchanges with CC Bay. When the effluent reaches the CoCC desal intake, the CCP Effluent % declines to 2.86%. This CCP Eff% is used as the Base Eff% for the 30 MGD @ 40% recovery rate scenario.

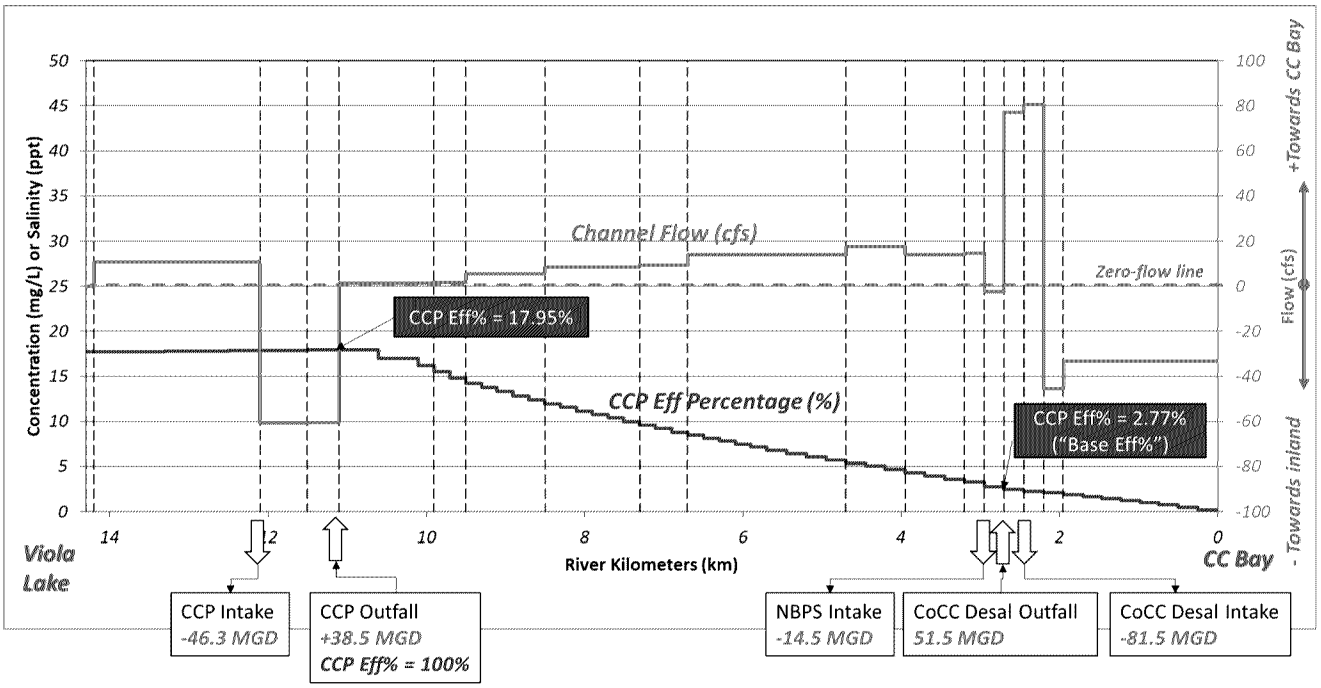

Figure 2-4. Predicted CCP Eff% in Inner Harbor (CC Desal operation at 30 MGD production rate and 40% recovery rate).

7. The CCP Effluent % simulation is performed for the other CoCC Desal operating scenarios and the results are shown in Table 2-1. The highest Base Effluent % is 3.34% and the lowest is 2.86%. These Base Eff% are subsequently added to the updated CORMIX Eff% described in the response to RFI #3.

Table 2-1. Base Eff% from various CoCC desal operating scenarios.

Production Capacity	Recovery Rate	Discharge Rate	Intake Rate	Base Eff% (CCP Eff% at CoCC Desal Outfall)
20 MGD	40%	34.3 MGD	54.3 MGD	3.34 %
	50%	23.4 MGD	43.4 MGD	3.45 %
30 MGD	40%	51.5 MGD	81.5 MGD	2.77 %
	50%	35.2 MGD	65.2 MGD	2.86 %

B. RFI Portion B:

"Please provide detailed information to address expected far-field effects from this discharge as discussed above and address in detail the expected effect of the proposed discharge on ambient salinities in the surrounding estuaries and bay system and include consideration of salinity contributions from TPDES permit numbers WQ0005253000 and WQ0005019000".

1. Effect of the proposed discharge on ambient salinity in Inner Harbor: A mass balance analysis was presented in Table 1-5 where the long-term ambient salinity was increased by the proposed discharge in to the Inner Harbor by 0.38 ppt. TCEQ provided the Inner Harbor QUAL-TX model which was used to supplement the CORMIX modeling. TCEQ provided the Inner Harbor QUAL-TX model to the Project Team after the 1/12/2023 meeting. The effects of Corpus Christi Polymers, LLC permit WQ0005019000 using QUAL-TX modeling to supplement the CORMIX results (Table 1-2) for the Inner Harbor is shown in Table 1-3. Table 1-3 cumulative salinity effects for Corpus Christi Polymers, LLC WQ0005019000 were based on the same effluent concentrations as was used for the Inner Harbor WQ0005289000 modeling. It should be noted that the Corpus Christi Polymers, LLC WQ0005019000 discharge is through an open pipe with no diffuser. If the dense heavy brine discharge does not mix as with a diffuser and remains as a thin dense brine layer along the bottom of the channel the results in Table 1-3 would have less salinity increase at the mixing zones than shown. Therefore, the salinity results shown on Table 1-3 are theoretical and responsive to the RFI but not to be used for permitting purposes.
2. Effects of proposed discharge on ambient salinity in Nueces Bay: Table 1-3 presented the ambient salinity increase in the inner Harbor due to the proposed discharge resulting in an increase in salinity of 0.38 ppt which would be the increase of ambient salinity at the intake of the Nueces Bay Power Station which transfers water from the Inner Harbor to Nueces Bay. The increase of ambient salinity in Nueces Bay would be less than the 0.38 ppt salinity increase at the Nueces Bay Power Station intake due to the dilution of the Nueces Bay Power Station discharge in to the volume of the Nueces Bay. There would be minimal expected effects of the proposed discharge on ambient salinities in Nueces Bay.
3. Effects of proposed discharge on ambient salinity in Corpus Christi Bay: The response to RFI #1 B.3 presented an analysis of the proposed discharge effects on long term ambient salinity in Corpus Christi Bay which resulted in an ambient salinity increase of 0.0905 ppt with return flows considered and without return flows the ambient salinity increase was estimated to be 0.1831 ppt. The Corpus Christi Polymers, LLC discharge cumulative effects was added to as a base effluent to the CORMIX modeling and presented in Table 1-3 with supplemental analysis of the TCEQ Inner Harbor QUAL-TX model. TCEQ provided the Inner Harbor QUAL-TX model to the Project Team after the 1/12/2023 meeting. The effects of Corpus Christi Polymers, LLC permit WQ0005019000 using QUAL-TX modeling to supplement the CORMIX results (Table 1-2) for the Inner Harbor is shown in Table 1-3. Table 1-3 cumulative salinity effects for Corpus Christi Polymers, LLC WQ0005019000 were based on the same effluent concentrations as was used for the Inner Harbor WQ0005289000 modeling. It should be noted that the Corpus Christi Polymers, LLC WQ0005019000 discharge is through an open pipe with no diffuser. If the dense heavy brine discharge does not mix as with a diffuser and remains as a thin dense brine layer along the bottom of the channel the results in Table 1-3 would have less salinity increase at the mixing zones than shown. Therefore, the salinity

results shown on Table 1-3 are theoretical and responsive to the RFI but not to be used for permitting purposes.

4. The effects of the Port of Corpus Christi Harbor Island permit WQ0005253000 according to permit effluent conditions would be 14.6% effluent at the zone of initial dilution (ZID) at 43 ft. from the diffuser; 8.9% effluent at the aquatic life mixing zone (ALMZ) at 277 ft. from the diffuser and 5.4% effluent at the Human Health mixing zone (HHMZ) at 477 ft. from the diffuser. Far-field effects at 21 miles beyond the human health mixing zone would be minimal.

3.00 RFI #3 AMBIENT VELOCITY FOR CORMIX MODEL

RFI #3: The diffuser report indicates that the ambient velocity component used in the applicant's CORMIX modeling was derived from data obtained via a substantial data collection effort. However, the value used in the applicant's modeling is an overall long-term net average value derived using an approach that averaged opposing incoming (calling them negative) and outgoing (calling them positive) 'along-channel' tidal velocities, essentially resulting in a near-zero net tidal velocity (0.0057 meters/second). While this metric may be useful for some types of analysis, it is not a meaningful velocity value in the context of a CORMIX diffuser analysis. It is also not clear if CORMIX will produce reliable predictions at that low of an ambient velocity input. Please provide the corresponding average value of the observed incoming tidal velocities and (as a separate value) the average value of the observed outgoing tidal velocities. 'Cross channel' velocities may also need to be considered; however, that is left up to your discretion.

3.01 RFI #3 RESPONSE

Following TCEQ guidance, velocity data collected from the long-term Acoustic Doppler Current Profiler (ADCP) monitoring in Inner Harbor were separated into two groups: incoming tide and outgoing tide.

- The average incoming tidal velocity is 3.63 cm/s or 0.036 m/s
- The average outgoing tidal velocity is 3.81 cm/s or 0.038 m/s.

Both these velocities are higher than the net tidal velocity of 0.0057 m/s and thus minimize potential issues with CORMIX simulating at low velocities. Figure 3-1 provides illustration of incoming and outgoing tides in relation to diffuser discharge and mixing zones. These velocities are incorporated into the updated CORMIX model.

Predicted effluent percentages from CORMIX (CORMIX Effluent%) for incoming and outgoing tide scenarios are provided in Table 3-1 and Table 3-2*Table 3-1*. Per the response to RFI#2, a base effluent percentage (Base Eff%) was added to the CORMIX Eff% to account for contributions from other desalination dischargers in the Inner Harbor. The Total Eff% is calculated per the equation below.

Total Effluent% = Base Effluent% + CORMIX Effluent% (from CORMIX)
where:

- Base Effluent% = Residual effluent from other desalination dischargers in Inner Harbor (calculated from QUAL-TX)
- CORMIX Effluent% = Eff% from CoCC desalination after mixing with ambient background flow (calculated from CORMIX)

Total Eff% are also provided in Table 3-1 and Table 3-2Table 3-1.

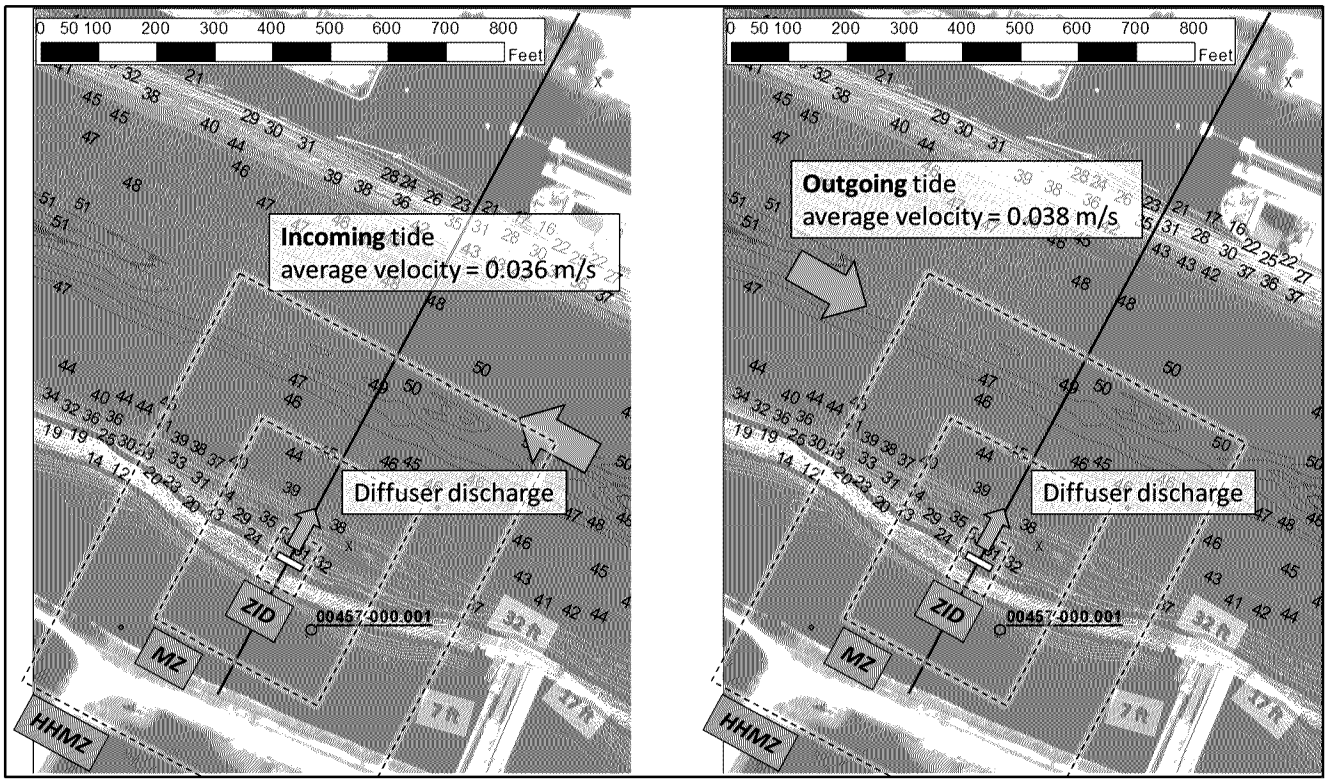

Figure 3-1. Illustration of incoming and outgoing tides in relation to diffuser discharge and mixing zones.

Table 3-1. Predicted Effluent Percentages from CORMIX for Incoming Tide Scenarios

					Incoming Tide						
Prod. Capacity	Recovery Rate	Effluent Discharge	Base Eff% from QUAL-TX	CORMIX Eff% at ZID	**Total Eff% at ZID**	**Meets ZID C.D.*?**	CORMIX Eff% at MZ	**Total Eff% at MZ**	**Meets ZID C.D.*?**	CORMIX Eff% at HHMZ	Total Eff% at HHMZ
20 MGD	40%	34.3 MGD	3.34	8.25	**11.59**	**Y**	5.88	**9.22**	**Y**	4.57	7.91
	50%	23.4 MGD	3.45	8.71	**12.16**	**Y**	6.21	**9.66**	**Y**	4.82	8.27
30 MGD	40%	51.5 MGD	2.77	8.02	**10.79**	**Y**	5.72	**8.49**	**Y**	4.44	7.21
	50%	35.2 MGD	2.86	8.24	**11.1**	**Y**	5.87	**8.73**	**Y**	4.56	7.42

** C.D. = Critical Dilutions specified in White Paper (FNI, 2020).*

Table 3-2. Predicted Effluent Percentages from CORMIX for Outgoing Tide Scenarios

					Outgoing Tide						
Prod. Capacity	Recovery Rate	Effluent Discharge	Base Eff% from QUAL-TX	CORMIX Eff% at ZID	**Total Eff% at ZID**	**Meets ZID C.D.*?**	CORMIX Eff% at MZ	**Total Eff% at MZ**	**Meets ZID C.D.*?**	CORMIX Eff% at HHMZ	Total Eff% at HHMZ
20 MGD	40%	34.3 MGD	3.34	8.30	**11.64**	**Y**	5.91	**9.26**	**Y**	4.60	7.94
	50%	23.4 MGD	3.45	8.81	**12.26**	**Y**	6.28	**9.73**	**Y**	4.88	8.33
30 MGD	40%	51.5 MGD	2.77	8.04	**10.81**	**Y**	5.73	**8.50**	**Y**	4.45	7.22
	50%	35.2 MGD	2.86	8.28	**11.14**	**Y**	5.90	**8.76**	**Y**	4.58	7.44

** C.D. = Critical Dilutions specified in White Paper (FNI, 2020).*

Total Eff% are compared with the critical dilutions specified in the FNI White Paper (FNI, 2020) as follows:

- At 40% recovery rate, the critical dilutions at the ZID and MZ are 38% and 13% respectively.
- At 50% recovery rate, the critical dilutions at the ZID and MZ are 56% and 18% respectively.

Total Eff% from all discharge scenarios meet the critical dilutions criteria at the ZID and MZ.

4.00 RFI #4 DISTANCE FROM SHORELINE

RFI #4: The diffuser setup screenshot included in the report indicates that both ends of the diffuser barrel (oriented parallel to the shoreline) are located at (or modeled as) 21 feet from the near shoreline (i.e., 'Distance to 1st endpoint' and 'Distance to 2nd endpoint'). However, aerial imagery and graphs included in the diffuser report indicate that the diffuser will be located greater than 200 feet from the shoreline. The approach documented in the report is different from how the Water Quality Assessment Team would typically set up a CORMIX model for analysis of a diffuser discharge. A truncated modeled shoreline distance may be appropriate in some circumstances to 'schematize' the modeled channel dimensions to comply with CORMIX methodology. However, using a presumed distance of 21 feet, when schematics and aerial imagery show the distance to shoreline as closer to 250 feet, seems inappropriate, especially without explanation or justification. Please provide further explanation regarding why using a 'distance from shore' of 21 feet in the model setup is appropriate, and please also indicate what the actual distance from the 'true shoreline' will be.

4.01 RFI #4 RESPONSE

Additional bathymetry data were collected by City of Corpus Christ in the Inner Harbor to capture the bottom elevations near the south shore. The data were combined with the bathymetry data within the navigational channel and shown in Figure 4-1. While aerial imagery shows the distance between the diffuser pipe and the shoreline to be around 200 feet, much of this area comprises of a very shallow shelf that is 7 feet below mean tide level.

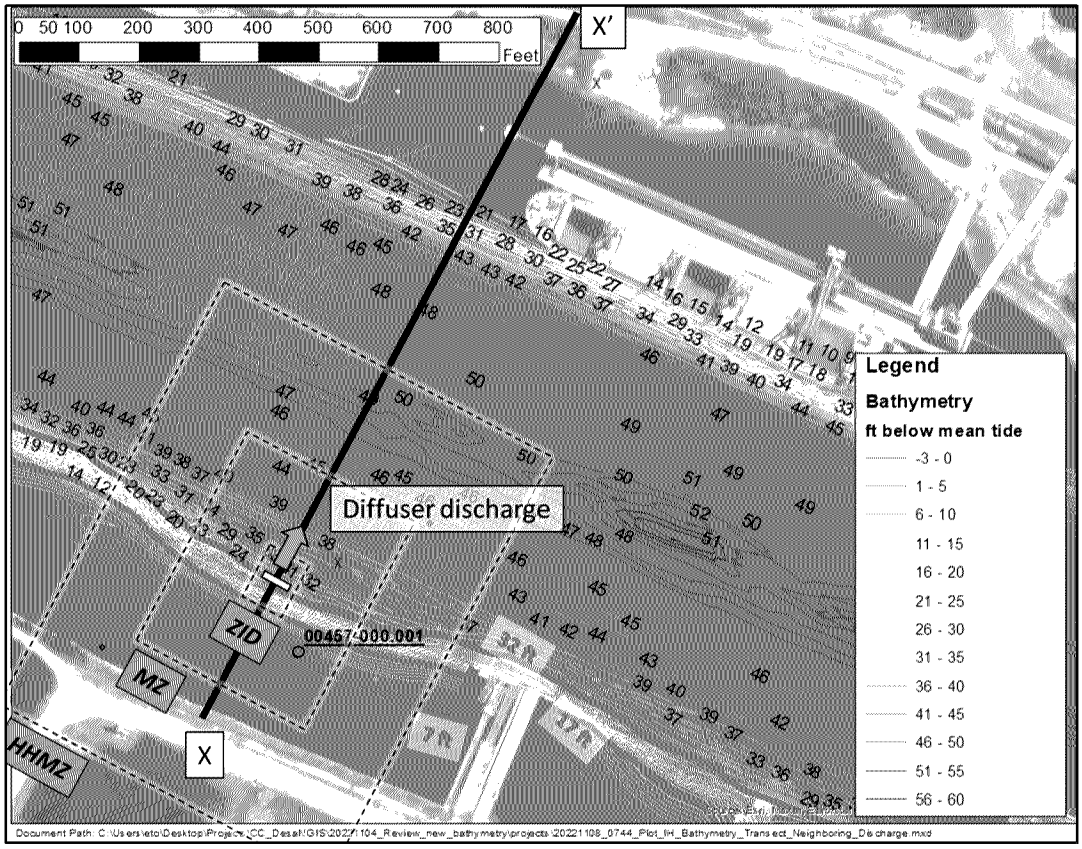

Figure 4-1. Bathymetry in vicinity of the Inner Harbor Desalination Discharge.

A cross-sectional profile along X to X' is provided in Figure 4-2. The Inner Harbor has a general "U shape" with most of the water in the deeper region within the navigational channel. The shallow shelf only comprises a small fraction of the total cross-sectional area.

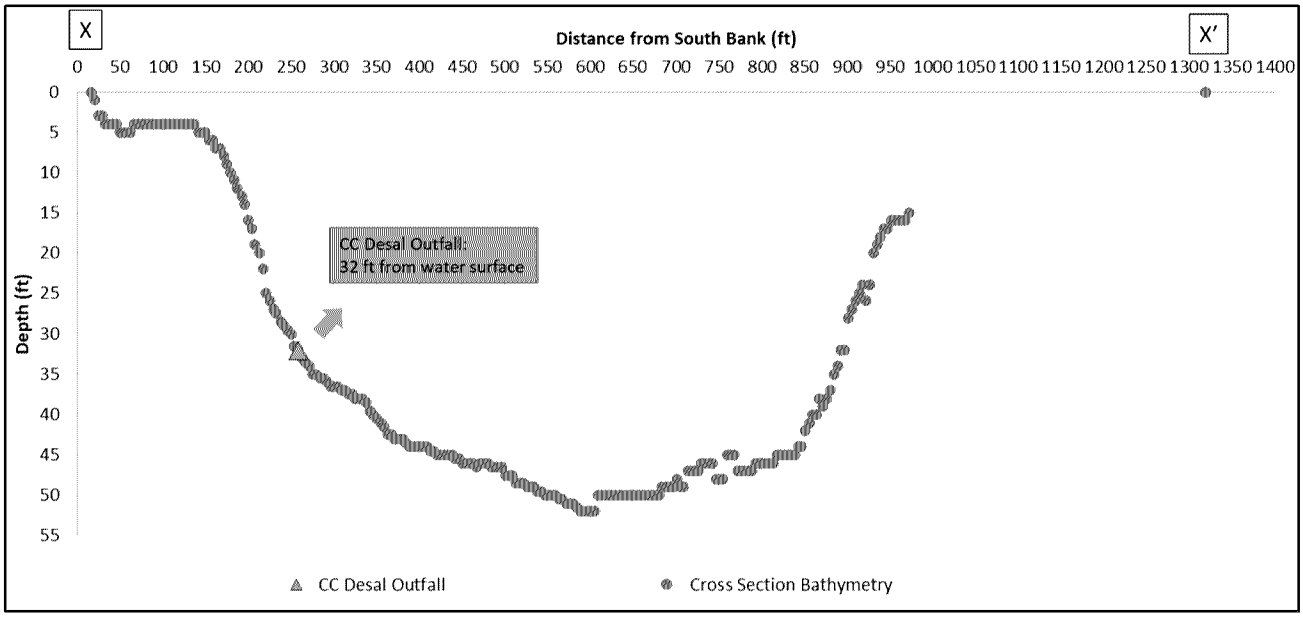

Figure 4-2. Cross-sectional profile in the vicinity of the proposed diffuser discharge.

The proposed CoCC desal diffuser will be located at a depth of 32 feet in the deeper region and below the shallow shelf. It is expected the desal effluent will mix and interact primarily with water in the deeper region and less so with water in the shallow shelf area.

In the CORMIX software, channel cross sections are schematized as rectangles. Therefore, a more appropriate distance would be the distance from the diffuser to the "bank" of the navigational channel. We define this bank to be the middle of the steep sloping region of the channel which is around the 17-foot contour. Figure 4-3 shows the schematization of the Inner Harbor cross section in CORMIX as a rectangle.

Using this definition, the diffuser to bank distance is 58 feet. The width of the schematized channel is 772 feet. The depth of the schematized channel of 41 feet is calculated by taking the actual cross-sectional area within the schematized region and dividing it by the schematized width.

In the previous CORMIX modeling, the 21-foot bank distance was based on a coarser set of bathymetry data. The previous set of bathymetry data only had contour lines within the navigational channel and hence we identified the diffuser-to-bank distance as the distance from the proposed diffuser to the southernmost contour line. With the addition of recent bathymetry data, a more appropriate distance of 58 feet was derived as shown above. The new distance is incorporated into the updated CORMIX model to generate the results shown previously in Table 3-1 and Table 3-2Table 3-1. Updates to the bank distance did not impact compliance with the critical dilutions criteria.

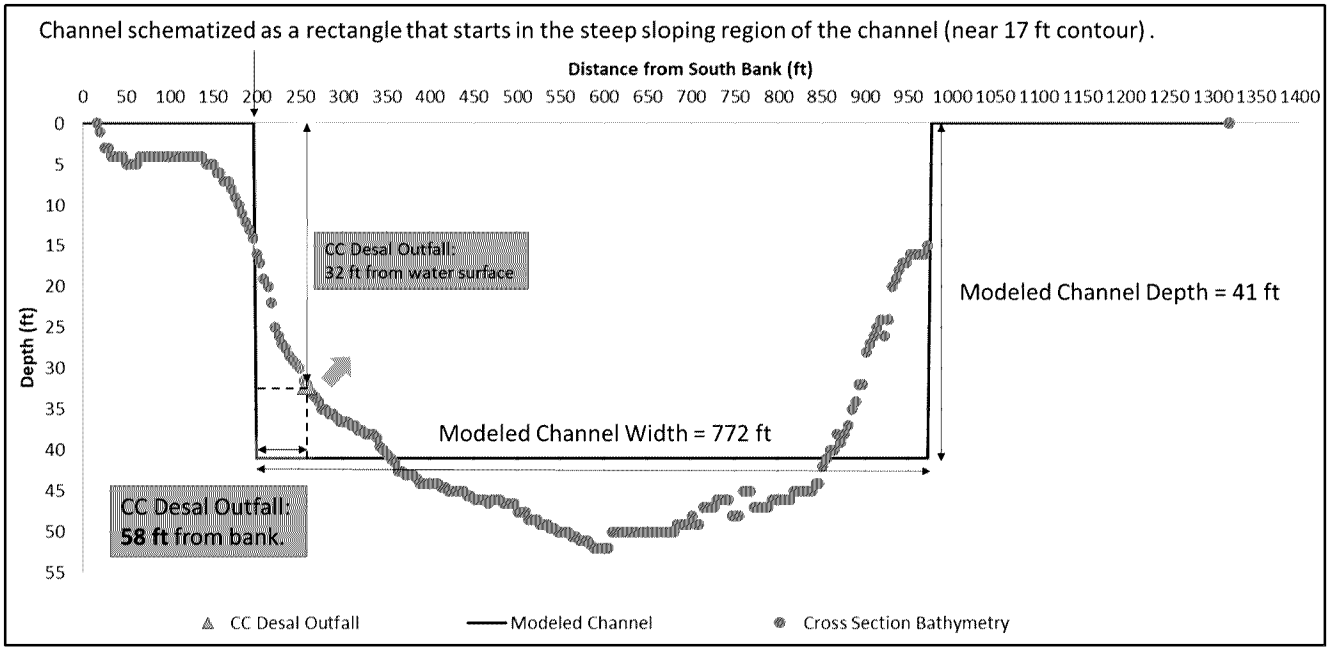

Figure 4-3. Schematization of the Inner Harbor cross section in CORMIX.

5.00 RFI #5 CHANNEL SCHEMATIZATION FOR MODELING

RFI #5: It is unclear whether the channel bottom depths represented on the report maps and in the depth representations in the report's graph schematic just reflect a lack of depth data in the portion of the channel outside of the navigational channel or if these indicate a steep drop-off just shoreward of the proposed outfall location. As this information may play a role in the schematization of the channel for modeling purposes or in other components of the modeling setup, please clarify whether the channel bottom drops sharply at this point into the navigational channel portion of the Inner Harbor, with the channel bottom being dramatically shallower shoreward of this point, or if there is just a lack of depth data available for this area nearer to the shoreline.

5.01 RFI #5 RESPONSE

Based on the latest bathymetry data, the diffuser-to-bank distance and the dimensions of channel have been updated. As discussed in the RFI #4 response, the side of the rectangular schematization of the Inner Harbor channel now reflects locations where a sharp drop-off is observed in bottom elevation. For more details on the schematization, please refer to the response to RFI #4.

6.00 RFI #6 FLINT HILLS DIFFUSER DISCHARGE AND OVERLAPPING MIXING ZONES

RFI #6: The diffuser report states that the plume from this discharge will always be negatively buoyant and that it will not interact with the positively buoyant plume from the nearby Flint Hills (WQ0000457000) diffuser discharge, which would otherwise potentially represent an overlapping mixing zone situation. The report includes a schematic said to represent the conceptual Flint Hills diffuser configuration, with that discharge shown as being located **2.5 meters below the water surface** and **5.25 meters above the channel bottom**, with the maximum height of the Corpus Christi discharge plume extending up to about 4.5 meters below the surface (therefore, below the Flint Hills plume). The schematic of the Flint Hills diffuser configuration that was included in the Flint Hills application materials (2016) shows the discharge being located at **5.25 meters below the water surface** and **2.5 meters above the channel bottom** (i.e., within the depth range of the Corpus Christi discharge plume). The latter scenario is the diffuser configuration that has been used by both Mark Rudolph and Katie Cunningham in previous CORMIX reviews of the Flint Hills permit. Please see both schematics in the attachments. Overlapping mixing zones appear to still be a potential issue, so the mixing zones of the proposed Corpus Christi discharge will be truncated as necessary to prevent any such overlap.

6.01 RFI #6 RESPONSE

In the mixing zone evaluation of the diffuser report, the evaluated Flint Hills diffuser discharge depth of 2.5 meters below the water surface was based on an earlier version of the CORMIX modeling report prepared by Dr. James Miertschin (Miertschin, 2016a). This report was subsequently updated with a revised depth of 5.25 m (Miertschin, 2016b). However, the Project Team only received this later version report from TCEQ in January, 2023.

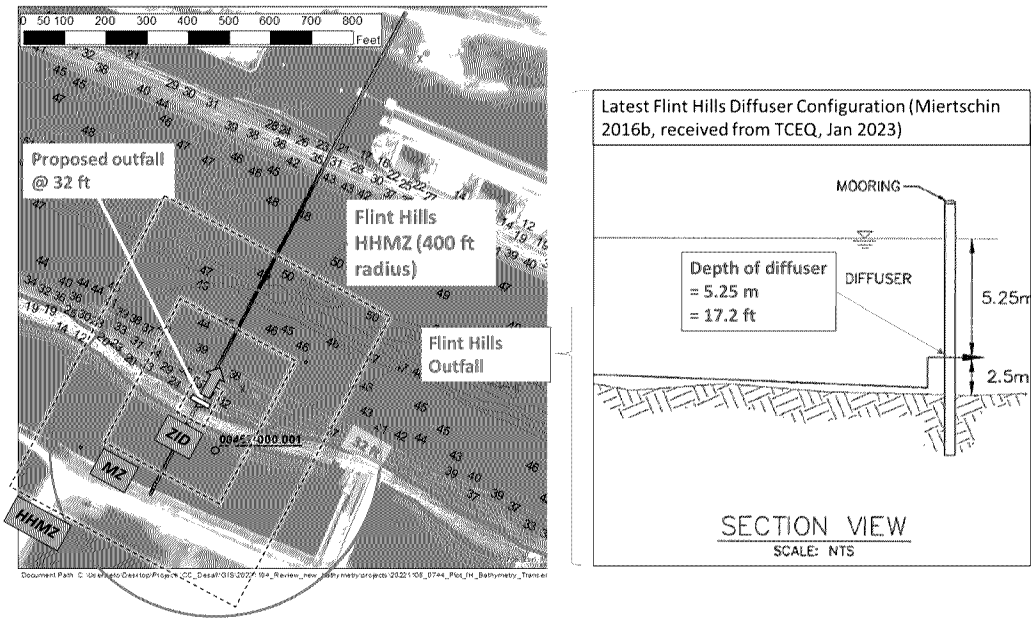

Figure 6-1. Illustration of Corpus Christi desalination outfall and Flint Hills outfall mixing zone (left) and updated Flint Hills discharge depth of 5.25 m (17.2 ft) (right).

Figure 6-1 provides an illustration of CoCC desalination outfall and Flint Hills outfall mixing zone (left) and updated Flint Hills discharge depth of 5.25 m (17.2 ft) (right).

The Project Team reviewed the revised Flint Hills CORMIX report and found that even with the updated depth of 5.25 m (17.2 ft), the Flint Hills outfall is still considerably higher in elevation than the CoCC diffuser depth of 10 m (32 ft). Based on the effluent densities and ambient densities provided in the Flint Hills modeling report, the Flint Hills effluent is positively buoyant. On the other hand, the CoCC effluent is expected to be negatively buoyant due to it consisting primarily of reverse osmosis reject water. An illustration of the Flint Hills and CC desalination outfalls along the cross section of the Inner Harbor is provided in Figure 6-2.

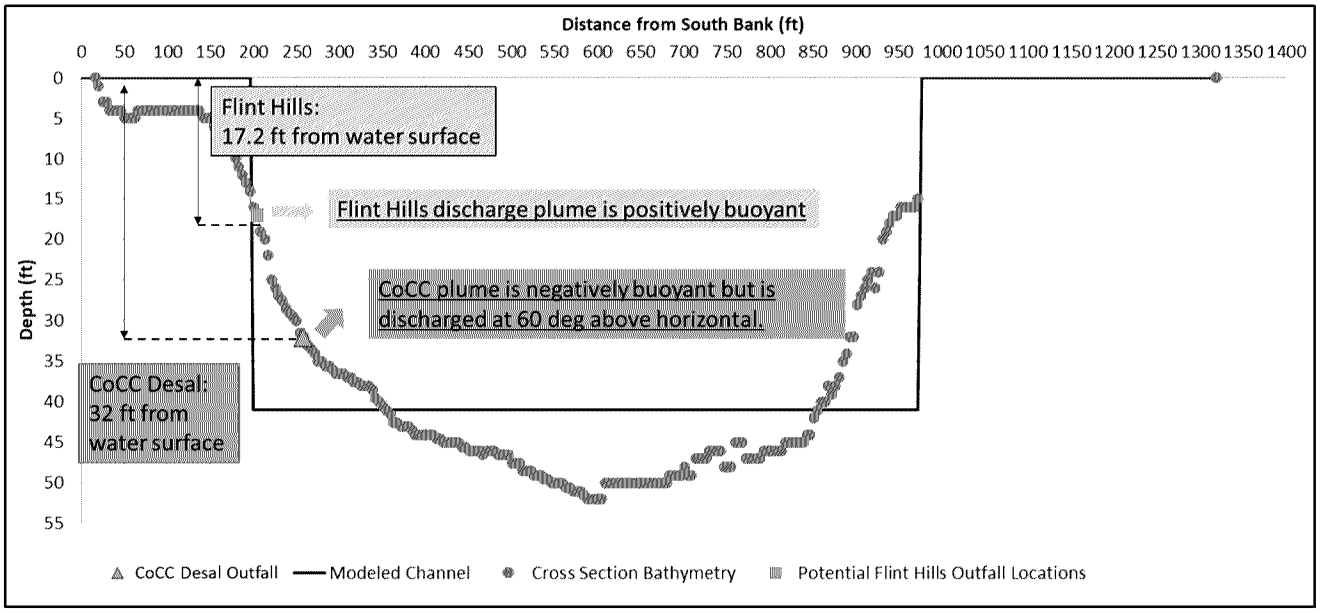

Figure 6-2. Location of the Flint Hills and CC desalination outfalls along the cross section of the Corpus Christi Inner Harbor.

The CoCC diffuser ports are angled 60 degrees above horizontal, which provides some initial upward movement of CoCC plume. However, CORMIX results show that the centerline of the CoCC discharge only rises initially from a depth of 32 feet to a depth of 29.5 feet, and then descends further downstream. At a depth of 29.5 feet, a minimum vertical distance of at least 11.3 feet is projected between the Flint Hills and CoCC Desal plume centerlines. At the point of maximum rise, the concentration of the CoCC plume centerline is already diluted to an effluent percentage of 8.8% or less. An illustration of the paths of the two discharge path centerlines is illustrated in Figure 6-3. The paths of these two plumes are essentially divergent. Due to the minimal vertical overlap between the two plumes, truncation of mixing zones is not advised.

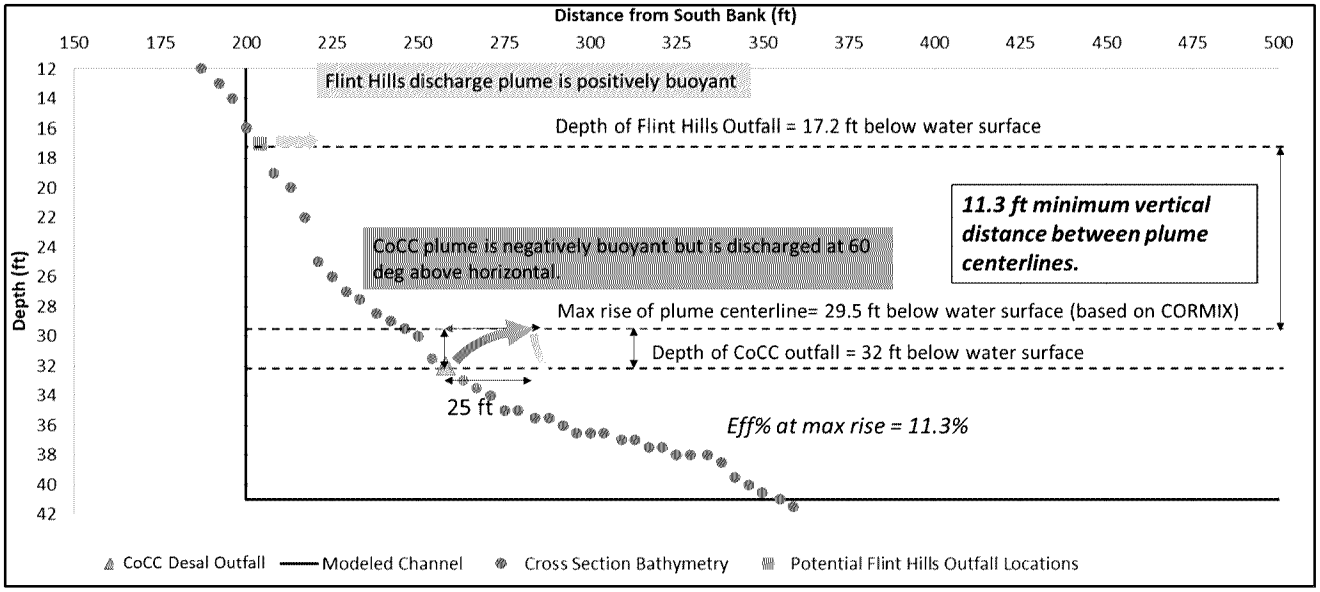

Figure 6-3. Illustration of the paths of the Flint Hills and Corpus Christi Desalination Discharge Plume Centerlines.

7.00 RFI #7 LIMITING EFFLUENT PERCENTAGE

RFI #7: The diffuser report indicates a Limiting Effluent Percentage approach concerning effluent percentage predictions from CORMIX. Our understanding is that the analysis as described is using the lowest percent effluent scenarios predicted by CORMIX, rather than the highest percent effluent scenarios which are used to define critical conditions in standard CORMIX analyses of diffuser discharges. The proposed approach has not been used in the TCEQ reviews of other TPDES desalination discharge permit applications to date and would set a precedent that deviates considerably from TCEQ's established CORMIX modeling analysis procedures for diffuser discharges. TCEQ protocols require a higher percentage of effluent for development of appropriate effluent limits or for calculating applicable values for permit-related parameters other than salinity. Please explain and demonstrate how the proposed approach is conservative and appropriate in your view so that we can consider its applicability in our own review of the permit application.

Please note, the applicant has the right to take a non-standard approach different from TCEQ's analysis to assist in supporting its position that a permit will be protective and, more specifically for a discharge of this nature, in assessing potential salinity impacts of a proposed desalination facility discharge. In the event of a contested case hearing, supplemental analyses performed by an applicant may provide additional perspective on the assessment of potential environmental impacts.

7.01 RFI #7 RESPONSE

Usage of the limiting effluent percentage (LE%) is a conservative measure that makes sure that CORMIX results stay within the range of physically possible dilution values. LE% is determined by the ratio of the effluent flow to the sum of effluent and background flow. Essentially, it represents the Eff% that would be achieved when there is complete mixing between the effluent and the background flow. Therefore, it would not be possible to achieve an Eff% lower than the LE%. The CORMIX software issues a warning that any predicted Eff% lower than the LE% is unreliable. As such, our conservative approach is to consider any predicted Eff% lower than the LE% to be at the LE%.

This interpretation method does not cause adjustment of the Eff% to artificially meet the critical dilution criteria. Rather, it prevents unreasonably low Eff% values from being used for comparison with the criteria and reduces the risk of false-positive results.

As mentioned in RFI #2, the background flow in the CORMIX modeling in the diffuser report was quite low due to the use of the net average background velocity. The resulting range of LE% was between 6.0% and 12.2%. The LE% was put as a constraint on the Eff% predictions in some of the previous production scenarios.

With the separation of CORMIX into incoming and outgoing tide scenarios, the background flows have increased as shown in the response to RFI #3. LE% have decreased and the updated range is between 0.9% to 2.1%. Since all the Eff% at the ZID, MZ and HHMZ are greater than the LE%, the LE% no longer have a constraining effect of the CORMIX results (see Table 7-1 and Table 7-2).

Table 7-1. Predicted Effluent Percentages Compared with Limiting Effluent Percentages (LE%) from CORMIX for Incoming Tide Scenarios.

			Incoming Tide						
Production Capacity	Recovery Rate	Effluent Discharge	Limiting Effluent Percentage (LE%)	CORMIX Eff% at ZID	Constrained by LE%?	CORMIX Eff% at MZ	Constrained by LE%?	CORMIX Eff% at HHMZ	Constrained by LE%?
20 MGD	40%	34.3 MGD	1.4	8.25	N	5.88	N	4.57	N
	50%	23.4 MGD	1.0	8.71	N	6.21	N	4.82	N
30 MGD	40%	51.5 MGD	2.1	8.02	N	5.72	N	4.44	N
	50%	35.2 MGD	1.4	8.24	N	5.87	N	4.56	N

Table 7-2. Predicted Effluent Percentages Compared with Limiting Effluent Percentages (LE%) from CORMIX for Outgoing Tide Scenarios.

			Outgoing Tide						
Production Capacity	Recovery Rate	Effluent Discharge	Limiting Effluent Percentage (LE%)	CORMIX Eff% at ZID	Constrained by LE%?	CORMIX Eff% at MZ	Constrained by LE%?	CORMIX Eff% at HHMZ	Constrained by LE%?
20 MGD	40%	34.3 MGD	1.3	8.3	N	5.91	N	4.6	N
	50%	23.4 MGD	0.9	8.8	N	6.28	N	4.88	N
30 MGD	40%	51.5 MGD	2.0	8.04	N	5.73	N	4.45	N
	50%	35.2 MGD	1.4	8.28	N	5.90	N	4.58	N

8.00 RFI #8 SOURCE WATERBODY CHARACTERIZATION STUDY

RFI #8: A source waterbody characterization study was being conducted on the receiving water bodies, per an email submitted in March 2020. Please submit the source waterbody characterization study and any other pertinent information not previously submitted.

8.01 RFI #8 RESPONSE

A. Source Water Characterization 12-Month Sampling:

The City of Corpus Christi compiled a listing of raw water characterization parameters to be tested for approximately a 12-month period at the proposed desalination plant intake site. The list of parameters was submitted for review to TCEQ and adjusted based on discussions with TCEQ. The 12-month testing program commenced on August 29, 2019 and completed on September 30, 2020. The sampling protocol is presented in Appendix A and the water quality results from the 12-month testing program are provided in Appendix B.

B. Turbidity Study:

In addition to this, a turbidity and suspended solids analysis was also conducted on November 12, 2021 to study the impact of the ship traffic on the intake water turbidity, total suspended solids and silt density index. The sampling protocol and the results from this study are provided in Appendix C.

9.00 RFI #9 BIOMONITORING REQUIREMENTS

RFI #9: The newly approved (with stipulations) desalination permit for the Port of Corpus Christi (WQ0005253000) included biomonitoring requirements to ensure that water quality is maintained and to ensure the protection of sensitive aquatic species. Is the applicant proposing biomonitoring requirements for this proposed facility?

9.01 RFI #9 RESPONSE

A. Biomonitoring Comments:

The City's application, like its overall desal project, has beneficial attributes that make it different than other proposed desal applications. If after review of the City's application, TCEQ staff believes that a biomonitoring protocol would be appropriate for this specific facility, the City is open to reviewing such proposed protocol.

APPENDIX A

SOURCE WATER CHARACTERIZATION SAMPLING PROCEDURES MEMO

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Seawater Desalination Source Water Characterization Sampling Procedures Memo

1.0 Introduction and Purpose

The City of Corpus Christi (CoCC) and the Freese and Nichols (FNI) teams conducted a 1-year source water characterization sampling to get sufficient information on the source water quality for the Seawater Desalination project. TCEQ will review the source water quality data before it can provide the Source Water Approval, which will be required for the procurement of the project. This document describes the sampling plan that was used to conduct the 1-year source water characterization water quality sampling.

This plan describes field and laboratory parameters and sampling methods which the sampling crew used to ensure proper sample handling and data management.

2.0 Sample Location

The sampling locations are shown on Figure 1. These samples were taken at one location in the Inner Harbor Channel, Figure 2, and one within the La Quinta Channel, Figure 3. Table 1 identifies the approximate geographic location and name of each sampling location. The water depth at normal elevation is approximately 50 feet (ft) in the Inner Harbor and 48 ft in the La Quinta Channel.

Figure 1 Seawater Desalination Sampling Locations

Figure 2 Inner Harbor Sampling Location

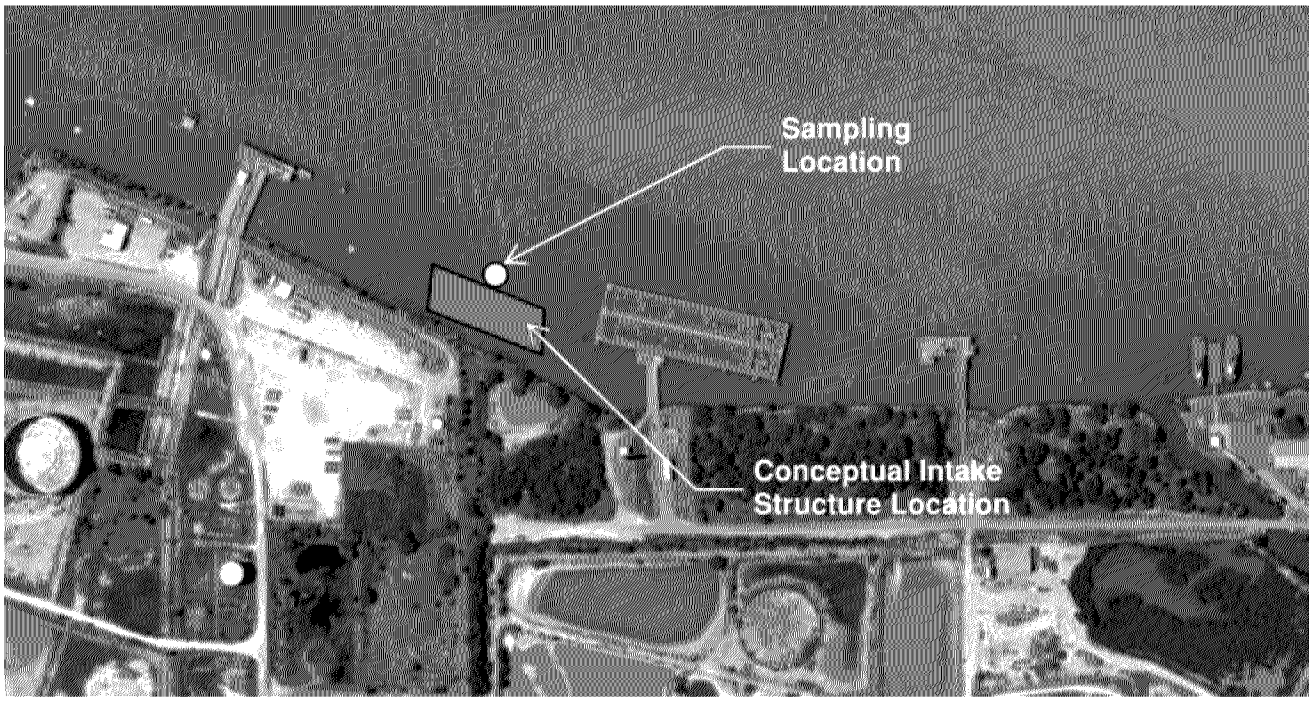

Figure 3 La Quinta Sampling Location

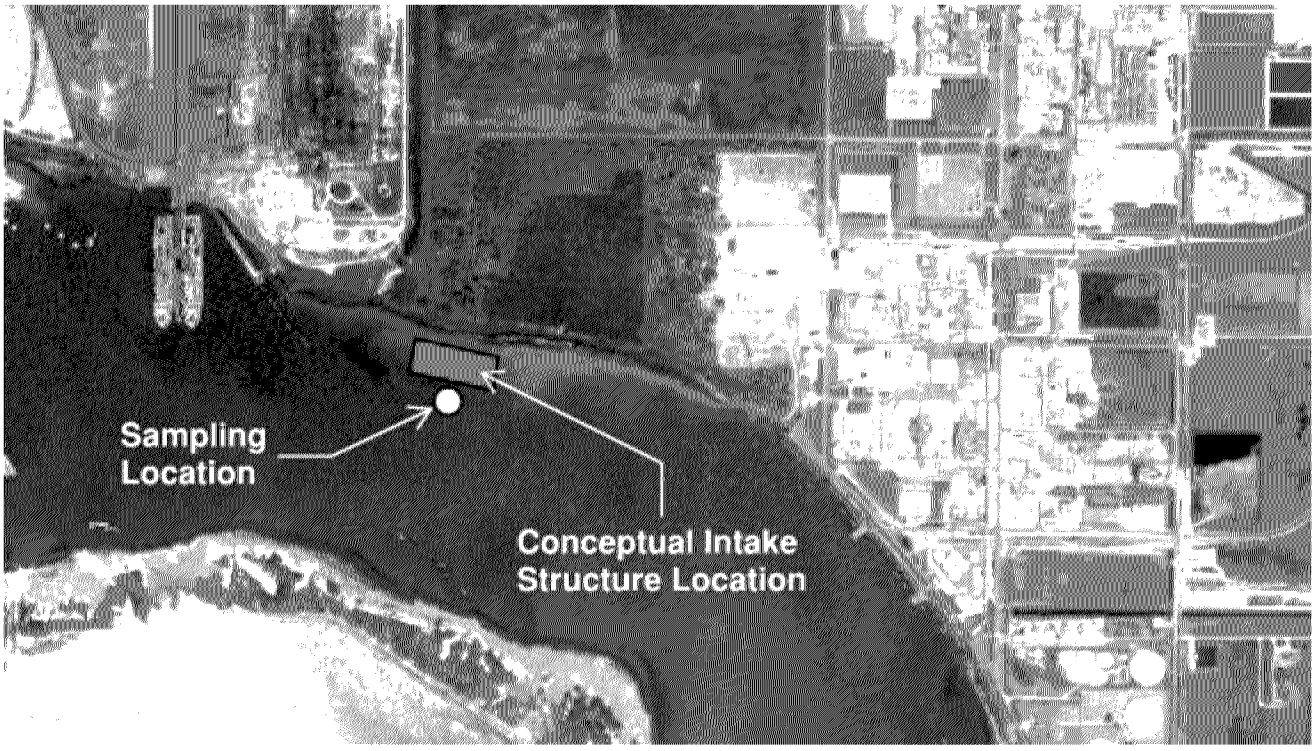

Table 1 Approximate Sampling Locations Coordinates

Location	X Coordinate	Y Coordinate
Inner Harbor	27.812361	-97.413394
La Quinta	27.876508	-97.256561

3.0 Field and Laboratory Parameters

The list of field-measured parameters and the parameters collected for lab analysis are provided in Attachment A. Water samples for lab analysis were collected from each location at a depth of 20 ft below the surface. Samples were collected according to the protocols in this document and submitted to the city's lab for analysis. Field parameters were collected with a calibrated water quality meter. The field parameters included temperature, pH, specific conductivity, dissolved oxygen (DO), and salinity.

4.0 Schedule

The schedule for field sampling is outlined in Table 2. Three types of sampling events were conducted based on the frequency of samples collected for different parameters – Quarterly, Monthly, and Biweekly. Measurements and samples collected during biweekly events were also collected during all monthly and quarterly sample events. When weather conditions were unsafe, sampling events were rescheduled to the next available date, within 1 week of the scheduled sample event when possible. Sampling in the Inner Harbor Channel was conducted in the morning followed by La Quinta Channel sampling in early afternoon to ensure adequate time for same-day sample delivery to the lab.

Table 2 Sampling Schedule

Sampling Event			Date Sampled
Biweekly	Monthly	Quarterly	
BW-1	M-1	Q-1	August 29, 2019
BW-2			September 13, 2019
BW-3	M-2		October 2, 2019
BW-4			October 17, 2019
BW-5	M-3		November 4, 2019
BW-6			November 19, 2019
BW-7	M-4	Q-2	December 9, 2019
BW-8			January 6, 2020
BW-9	M-5		February 5, 2020
BW-10			February 18, 2020
BW-11	M-6		March 3, 2020
BW-12			March 18, 2020
BW-13	M-7	Q-3	April 22, 2020
BW-14			May 6, 2020
BW-15	M-8		May 20, 2020

BW-16			June 3, 2020
BW-17	M-9		June 17, 2020
BW-18			July 1, 2020
BW-19		Q-4	July 15, 2020
BW-20	M-10		July 29, 2020
BW-21	M-11		August 12, 2020
BW-22			August 25, 2020
BW-23	M-12		September 8, 2020
BW-24			September 30, 2020

** Gray cells indicate the sampling events/parameters missed or rescheduled*

5.0 Sampling Methods

5.1 Sampling Preparation

An equipment list is provided in Attachment B. Coordination with the lab was started one week prior to the sampling event to ensure adequate time for sample container preparation and to enough time to work around any potential issues that arise. Sample containers were picked up from the lab one day prior to the sampling event or early morning on the day of the event. The field team had most of the sample bottles with label information filled in prior to sampling.

The water quality meter was calibrated less than 24 hours before the start of sampling as described in Section 6.2. The meter was post calibrated within 1 day of completion of the sample event.

Since the sample locations were in open water, a global positioning unit (GPS) was used to locate the sample sites. The GPS had an accuracy of approximately 1 meter. The sample location were chosen in the general vicinity of the possible intake location. The GPS had the geographic coordinates loaded prior to each sampling event.

5.2 Laboratory

The City of Corpus Christi lab served as the contracting lab and appointed Analysis/Pace Analytical lab for the parameters that were not covered by the City lab. This lab provided the following prior to each sampling event:

- Sample containers with labels and preservatives where required
- Chain of custody forms
- Ice chests for sample storage

Other labs subcontracted were –EMSL and QuanTEM Laboratories,

The field team provided the lab with label information, including sample date, sample identification numbers, and a contact name in advance of the sample event, and the lab included this information on the labels and the chain of custody.

5.3 Sample Procurement

Sampling was conducted by boat with at least two field staff. Sample stations were located using GPS. When available, a field computer was used to record data. Data documentation/saving was verified before departing from the sample location.

5.3.1 Preservation of Samples and Time Constraints

The City of Corpus Christi water quality lab prescribed that all samples to be thermally

preserved before taking custody. Microbial samples carried a time constraint of 6 hours, while Cryptosporidium samples were required to be filtered within 48 hours of collection. Water quality samples were delivered to the lab immediately after collection, to insure samples could be analyzed within the specified time constraints.

5.3.2 Sampling for Laboratory Analysis

Water samples for laboratory analysis were collected at a depth of 20 ft using a Teflon Kemmerer sampler. Prior to sampling, the sampler was rinsed three times with ambient water at the sample location before the sample was collected. When collecting the sample at depth with the discrete sampler, the rope was gently raised and lowered (less than 1 foot) to ensure no airspace interferes and a representative sample was obtained.

Samples were poured (unfiltered) into bottles provided by the lab. Specific instructions from the lab concerning preservatives and sample bottle airspace were noted. Some sample containers included preservative and typically had a tape seal. Care was taken not to spill the preservative or overfill the sample bottles to prevent any contamination. Direct or indirect contact with the sample stream was avoided.

Sample bottles were not opened until the sample was ready to be filled, so that the amount of time the sample containers are exposed to the air is minimized. In addition, care was taken not to touch the inside of the bottles or lids. Sunscreen and insect repellent being potential contaminants, best management practices and techniques of water quality sampling were used to prevent contact with foreign substances. All samples were placed on ice in an ice chest immediately after collection. Due to the strict holding times for bacteria, samples were delivered to the lab within required holding times.

5.4 Field Data Requirements

Care was taken to maintain the data waterproof or in electronic format. Information required for each field event include:

- Date
- Sample time
- Sampling Location
- Measurement depth(s)
- Water temperature (degrees Celsius [°C]), salinity (ppt), specific conductance (µS/cm), pH (standard units [s.u.]), and DO (milligrams per liter [mg/L])

5.5 Sampling Boat

The boat and the captain for the sampling events were provided by the Harte Research Institute. The coordination with the Inner Harbor Channel Security was managed by the boat captain.

6.0 Quality Assurance

The labs assured the quality of their sample analysis and reporting in accordance with the National Environmental Laboratory Accreditation Conference (NELAC)/regulatory guidelines.

Laboratory quality assurance and control information was obtained when results were presented and included in data management.

6.1 Chain of Custody

Chain of custody forms were obtained from the lab in advance of sampling. Samples remained in possession of the field sampling crew until the samples were delivered to the lab. Completeness of the form(s) was verified prior to relinquishing the samples to the lab. A signature from lab personnel was obtained prior to leaving the facility.

6.2 Water Quality Meter

In order to ensure reliability of readings, the instrument is calibrated each morning prior to sampling and at any time during the day following a reading that may be unusual or exceeding physical standards.

The temperature sensor is factory-calibrated and no adjustment is necessary but accuracy can be checked with a NIST (National Institute of Standards and Technology) certified thermometer, if inaccurate readings are suspected.

Specific conductance and pH standards used for calibration were within the expected ranges for Corpus Christi Bay. For specific conductance, the conductivity sensor requires a 2-point calibration. These points may be "0" and another standard value which was 50,000 in our case. Calibration for pH included a 2 point calibration. pH 7 and pH 10 buffers were used to successfully calibrate and check for inaccurate readings of the pH sensors.

The dissolved oxygen sensor is calibrated by exposing the DO sensor to 100% oxygen and insuring the data on the screen corelates this reading. A current barometric pressure reading was used during each calibration.

While the readings stabilized, readings displayed on the Hydrolab were analyzed to make sure they fall within acceptable limits. Recalibration of the sensors was completed if any parameters were exceeding the following:

- Dissolved oxygen: Greater than 100% saturation
- pH: Values less than 6.5 or greater than 9.0
- Specific conductance: Values greater than 10 times or less than 1/10 the standard used for calibration

Post calibration was conducted soon after sampling as practicable, but no longer than 1 day after sampling.

6.3 Data Management

Upon completion of sampling, all paper field records and chain-of-custody forms were reviewed to help ensure there are no data gaps or errors.

All water quality data were entered into an Excel spreadsheet. All data entered were checked for data entry errors. Data quality was assessed by comparing entered data to original data or by comparing results with measurement criteria to determine whether to accept, reject, or qualify the data. These spreadsheets were updated after receipt of each data analysis by the lab.

7.0 Safety

Safety was first and foremost for the field sampling crew. Some of the greatest risks to the field crew were traveling to the site, inclement weather while traveling or while on the water, and boating traffic (particularly during the summer). Ship traffic can cause rapid and extreme changes in water level, which was considered when navigating or anchoring the boat. Sampling personnel was aware of these rapid changes to avoid losing their balance and falling or falling overboard.

Prior to sampling, the weather forecast was observed. When conditions were not safe, the sampling event was rescheduled to the next available date during which conditions were more favorable.

The sample locations were generally protected from high winds; however, care was taken when procuring samples due to unforeseen wind gusts, and when waves generated by sustained winds sometimes made sampling difficult. Sampling in the rain was avoided.

Sampling was performed only during daylight hours. During the summer, sampling was conducted early in the day before boat traffic and waves from boats interfered with sampling. The sampling boat was equipped with personal floatation devices for each crew member, a throw cushion, fire extinguisher, horn/whistle, and all other equipment required under Texas boating laws.

8.0 Communication protocol

The data collected for this project was considered client confidential, unless otherwise specified, and has not been distributed outside the project team without the client's permission. CJ Sellers (FNI) managed the field data collection effort. Marisa Juarez, City of Corpus Christi, managed the lab analysis. Table 3 lists the contact information of the FNI staff involved in sample collection.

Table 3 Staff Contact Information

Name	Number	Responsible Role
Marisa Juarez	361-826-1201	City Lab Manager (CoCC)
Crystal Ybanez	361-826-1289	Water Quality Manager (CoCC)
Crandon Sellers	337-378-7994	Environmental Scientist (FNI)
Andrew Labay	512-667-4275	Environmental Scientist (FNI)
David Buzan	512-947-5411	Environmental Scientist (FNI)
Aaron Petty	832-257-9415	Environmental Scientist (FNI)
Jason Cocklin	361-561-6508	Project Manager (FNI)
Dhruv Deshmukh	361-844-8121	Engineer In Training (FNI)

Attachment A
Field and Laboratory Analysis

Field Sampling Chart

Water Quality Parameter	Depth
Temperature	20 ft
Specific conductivity	20 ft
pH	20 ft
Dissolved Oxygen	20 ft
Salinity	20 ft

Laboratory Analysis Chart

Parameter	Units	Sampling Frequency	Analysis Method
Inorganics 30 TAC 290.104			
Antimony	mg/L	Monthly	EPA 6010B
Arsenic	mg/L	Monthly	EPA 6010B
Asbestos	mg/L	Monthly	EPA 600/R-94/134
Barium	mg/L	Monthly	EPA 6010B
Beryllium	mg/L	Monthly	EPA 6010B
Cadmium	mg/L	Monthly	EPA 6010B
Chromium	mg/L	Monthly	EPA 6010B
Cyanide	mg/L	Monthly	SM 4500 CN-E
Fluoride	mg/L	Monthly	SM 4500-F-C, EPA 300
Mercury	mg/L	Monthly	EPA 7470A
Nitrate	mg/L	Monthly	EPA 353.2
Nitrite	mg/L	Monthly	EPA 353.2
Nitrate + Nitrite (Total)	mg/L	Monthly	EPA 353.2
Perchlorate	mg/L	Monthly	EPA 6850
Selenium	mg/L	Monthly	EPA 6010B
Thallium	mg/L	Monthly	EPA 6010B
Secondary Constituent 30 TAC 290.105			
Aluminum (Total)	mg/L	Monthly	EPA 6010B
Chloride	mg/L	Monthly	EPA 300.0,
Color (true)	color units	Monthly	SM 2120B
Copper	mg/L	Monthly	EPA 6010B
Fluoride	mg/L	Monthly	SM 4500-F-C, EPA 300
Foaming Agents (Surfactants)	mg/L	Monthly	SM5540C
Hydrogen Sulfide	mg/L	Monthly	SM 4500 S-F

Iron (Total)	mg/L	Monthly	EPA 6010B
Manganese	mg/L	Monthly	EPA 6010B
Odor	TON	Monthly	SM 2150B
pH	units	Monthly	SM 4500 H+B
Silver	mg/L	Monthly	EPA 6010B
Sulfate	mg/L	Monthly	EPA 300.0
Total Dissolved Solids	mg/L	Monthly	SM 2540C
Zinc	mg/L	Monthly	EPA 6010B
Synthetic Organics 30 TAC 290.107			
Alachlor	mg/L	Quarterly	EPA 625
Atrazine	mg/L	Quarterly	EPA 625
Benzopyrene	mg/L	Quarterly	EPA 625
Carbofuran	mg/L	Quarterly	EPA 624
Chlordane	mg/L	Quarterly	EPA 625
Dalapon	mg/L	Quarterly	EPA 615
Dibromochloropropane	mg/L	Quarterly	EPA 624
Di(2-ethylhexyl)adipate	mg/L	Quarterly	EPA 625
Di(2-ethylhexyl)phthalate	mg/L	Quarterly	EPA 625
Dinoseb	mg/L	Quarterly	EPA 615
Diquat	mg/L	Quarterly	EPA 549.2
Endothall	mg/L	Quarterly	EPA 625
Endrin	mg/L	Quarterly	EPA 625
Ethylene dibromide	mg/L	Quarterly	EPA 624
Glyphosate	mg/L	Quarterly	EPA 547
Heptachlor	mg/L	Quarterly	EPA 625
Heptachlor epoxide	mg/L	Quarterly	EPA 625
Hexachlorobenzene	mg/L	Quarterly	EPA 625
Hexachlorocyclopentadiene	mg/L	Quarterly	EPA 625
Lindane	mg/L	Quarterly	EPA 625
Methoxychlor	mg/L	Quarterly	EPA 625
N-Nitrosodimethylamine (NDMA)	mg/L	Quarterly	EPA 625
Oxamyl (Vydate)	mg/L	Quarterly	EPA 625
Pentachlorophenol	mg/L	Quarterly	EPA 625
Picloram	mg/L	Quarterly	EPA 625
Polychlorinated biphenyls (PCBs)	mg/L	Quarterly	EPA 608
Simazine	mg/L	Quarterly	EPA 625
Toxaphene	mg/L	Quarterly	EPA 625
2,3,7,8-TCDD (Dioxin)	mg/L	Quarterly	EPA 625
2,4,5-TP (Silvex)	mg/L	Quarterly	EPA 615
2,4-D	mg/L	Quarterly	EPA 615
Volatile Organics 30 TAC 290.107			
1,1-Dichloroethylene	mg/L	Quarterly	EPA 624

1,1,1-Trichloroethane	mg/L	Quarterly	EPA 624
1,1,2-Trichloroethane	mg/L	Quarterly	EPA 624
1,2-Dichloroethane	mg/L	Quarterly	EPA 624
1,2-Dichloropropane	mg/L	Quarterly	EPA 624
1,2,4-Trichlorobenzene	mg/L	Quarterly	EPA 624
Benzene	mg/L	Quarterly	EPA 624
Carbon tetrachloride	mg/L	Quarterly	EPA 624
cis-1,2-Dichloroethylene	mg/L	Quarterly	EPA 624
Dichloromethane	mg/L	Quarterly	EPA 624
Ethylbenzene	mg/L	Quarterly	EPA 624
Monochlorobenzene	mg/L	Quarterly	EPA 624
o (1,2) -Dichlorobenzene	mg/L	Quarterly	EPA 624
para (1,4) -Dichlorobenzene	mg/L	Quarterly	EPA 624
Styrene	mg/L	Quarterly	EPA 624
Tetrachloroethylene	mg/L	Quarterly	EPA 624
Toluene	mg/L	Quarterly	EPA 624
trans-1,2-Dichloroethylene	mg/L	Quarterly	EPA 624
Trichloroethylene	mg/L	Quarterly	EPA 624
Vinyl chloride	mg/L	Quarterly	EPA 624
Xylenes (total)	mg/L	Quarterly	EPA 624
Radionuclide 30 TAC 290.108			
Gross Alpha Particle Activity	pCi/L	Quarterly	EPA 900
Beta Particle and Photon Radioactivity	pCi/L	Quarterly	EPA 901
Radium-226	pCi/L	Quarterly	EPA 903.1
Radium-228	pCi/L	Quarterly	EPA 904
Uranium	µg/L	Quarterly	ASTM D5174-97
Radon-222	pCi/L	Quarterly	SM 7500RnB-07
Microbial 30 TAC 290.109			
Coliform, Fecal	MPN/100 mL	Twice monthly	SM 9222D
Coliform, Total (only presence)	MPN/100 mL	Twice monthly	SM 9223B
Cryptosporidium	oocysts/sample volume	Twice monthly	EPA 1623.1
Enterococci	MPN/100 mL	Twice monthly	Enterolert
Giardia	cysts/sample volume	Twice monthly	EPA 1623.1
Heterotrophic Plate Count	CFU/mL	Twice monthly	SM 9215B
Membrane Parameters			
Algae Count	count/mL	Monthly	M603
Alkalinity, Total as $CaCO_3$	mg/L	Monthly	SM 2320B
Aluminum (Dissolved)	mg/L	Monthly	EPA 6010B
Ammonia (as N)	mg/L	Monthly	EPA 350.1
Ammonium (NH_4)	mg/L	Monthly	SM 4500

Bicarbonate	mg/L	Monthly	SM2320B
Boron	mg/L	Monthly	EPA 6010B
Bromide	mg/L	Monthly	EPA 300.0
Calcium	mg/L	Monthly	SM 3500 Ca B
Carbon Dioxide	mg/L	Monthly	SM 4500-CO2 D
Cesium	mg/L	Monthly	EPA 6020
Conductivity	µmhos/cm	Monthly	EPA 120.1, EPA 9050 (Pace)
Dissolved Organic Carbon	mg/L	Monthly	SM 5310C
Dissolved Oxygen	mg/L	Monthly	Not listed
Hardness, Total as $CaCO_3$	mg/L	Monthly	SM2340C
Iron (Dissolved)	mg/l	Monthly	EPA 6010B
Lead	mg/L	Monthly	EPA 6010B
Magnesium	mg/L	Monthly	EPA 6010B
Oil and Grease	mg/L	Monthly	EPA 1664B
Phosphorus, Total	mg/L	Monthly	EPA 365.1
Potassium	mg/L	Monthly	EPA 6010B
Silica, Total (Colloidal)	mg/L	Monthly	Calc from Si
Silica, Dissolved	mg/L	Monthly	EPA 200.7, Calculated from Si (Pace)
Silicon, Total	mg/L	Monthly	EPA 200.7
Silt Density Index		Monthly	ASTM D4189
Sodium	mg/L	Monthly	EPA 6010B
Strontium	mg/L	Monthly	EPA 6010B
Temperature	°F	Monthly	Not listed
Tin	mg/L	Monthly	EPA 6010B
Total Petroleum Hydrocarbon (TPH)	mg/L	Monthly	TX 1005
Total Organic Carbon	mg/L	Monthly	SM 5310C
Total Suspended Solids	mg/L	Monthly	SM 2540D
Turbidity	NTU	Twice monthly	SM 2130B
UV254	nm wavelength	Monthly	SM 5910B

Attachment B
List of Equipment

Boat	Quantity / Description
Anchor Rope Length	80 feet of triple twisted line
Number of Anchors	One aluminum Danforth anchor
Personal Floatation Devices	5 total automatic inflation type V PFDs
Fire Extinguisher	1 marine type dry chemical fire extinguisher, U.S.C.G. Type B:C, Size I
Horn/Whistle	1 of each marine safety whistle and 8 oz. marine compression horn
Marker Buoy	Not a standard on the boat. Several polyballs, bumpers, and crab floats were present if needed
Graph/Depth Finder	Garmin GPS unit. Depth finder is a 10 ft PVC pole

Laboratory	Quantity / Description
Ice Chests	4-6
Sample Bottles	5-30
Labels	5-15
Chain of Custody Form	2

Sampling:	Quantity / Description
Teflon Kemmerer Bottle and Rope	1
Hydrolab Water Quality Meter	1
50 Meter Cable	1
GPS	1
Mobile Camera/Phone	3
Ice	2-4 bags
Pencils and markers	2

Miscellaneous:	Quantity / Description
Water	2-4 bottles
Sunscreen	N/A
Pen and Pencils	2
Flashlight / Headlamps	1
First aid kit	1

APPENDIX B

SOURCE WATER QUALITY SAMPLING DATA (RESULTS)

QUARTERLY SAMPLING RESULTS

Parameter	Units	MCL	Quarter 1	Quarter 2	Quarter 3	Quarter 4
			29-Aug-19	9-Dec-19	22-Apr-20	15-Jul-20
Synthetic Organics 30 TAC 290.107						
Alachlor	mg/L	0.002	<0.01[1]		< 0.00019	<0.00021
Atrazine	mg/L	0.003	< 0.00005	< 0.01[1]	< 0.000095	< 0.00011
Benzopyrene	mg/L	0.0002	< 0.005[1]	< 0.001[1]	< 0.000095	< 0.00011
Carbofuran	mg/L	0.04	< 0.001		< 0.0009	< 0.00090
Chlordane	mg/L	0.002	< 0.0001	< 0.0005	< 0.00019	<0.00021
Dalapon	mg/L	0.2	< 0.002	< 0.002	< 0.001	< 0.001
Dibromochloropropane	mg/L	0.0002	< 0.00005	< 0.005[1]	< 0.000019	< 0.00002
Di(2-ethylhexyl)adipate	mg/L	0.4	<0.01		< 0.0015	< 0.0017
Di(2-ethylhexyl)phthalate	mg/L	0.006	< 0.005	<0.003	< 0.0019	< 0.0021
Dinoseb	mg/L	0.007	< 0.0004	< 0.002	< 0.0002	< 0.00020
Diquat	mg/L	0.02			< 0.0004	< 0.00081
Endothall	mg/L	0.1	<0.01		< 0.009	< 0.0090
Endrin	mg/L	0.002	< 0.00002	< 0.00005	< 0.0000095	< 0.000011
Ethylene dibromide (1,2-Dibromoethane)	mg/L	0.00005	< 0.00005		< 0.0000096	<0.000010
Glyphosate	mg/L	0.7			< 0.006	< 0.006
Heptachlor	mg/L	0.0004	< 0.00001	< 0.00005	< 0.00005	< 0.00005
Heptachlor epoxide	mg/L	0.0002	< 0.00001	< 0.00005	< 0.00005	< 0.00005
Hexachlorobenzene	mg/L	0.001	< 0.0005	< 0.00005	< 0.00005	< 0.00005
Hexachlorocyclopentadiene	mg/L	0.05	< 0.01	< 0.01	< 0.01	< 0.01
Lindane	mg/L	0.0002	< 0.00002	< 0.00005	< 0.000019	< 0.000021
Methoxychlor	mg/L	0.04	< 0.0002	< 0.00005	< 0.000095	< 0.00011
N-Nitrosodimethylamine (NDMA)	mg/L		< 0.01	< 0.01	< 0.01	< 0.01
Oxamyl (Vydate)	mg/L	0.2	<0.01		< 0.002	< 0.002
Pentachlorophenol	mg/L	0.001	< 0.0005	< 0.01[1]	< 0.00004	< 0.00004
Picloram	mg/L	0.5	<0.01		< 0.0001	< 0.0001
Polychlorinated biphenyls (PCBs)	mg/L	0.0005	< 0.0001	< 0.0005	< 0.000095	< 0.00011
Simazine	mg/L	0.004	<0.01		< 0.000067	< 0.000075
Toxaphene	mg/L	0.003	< 0.0003	< 0.0005	< 0.00095	< 0.0011
2,3,7,8-TCDD (Dioxin)	mg/L	3×10^{-8}	< 0.01[1]		< 0.01[1]	< 0.01[1]
2,4,5-TP (Silvex)	mg/L	0.05	< 0.00008	< 0.002	< 0.0002	< 0.0002
2,4-D	mg/L	0.07	< 0.0004	< 0.002	< 0.0001	< 0.00010
Volatile Organics 30 TAC 290.107						
1,1-Dichloroethylene	mg/L	0.007	< 0.001	< 0.001	< 0.001	< 0.001
1,1,1-Trichloroethane	mg/L	0.2	< 0.001	< 0.001	< 0.001	< 0.001
1,1,2-Trichloroethane	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloroethane	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichloropropane	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001
1,2,4-Trichlorobenzene	mg/L	0.07	< 0.001	< 0.001	< 0.001	< 0.001
Benzene	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001
Carbon tetrachloride	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001
cis-1,2-Dichloroethylene	mg/L	0.07	< 0.001	< 0.001	< 0.001	< 0.001
Methylene Chloride (Dichloromethane)	mg/L	0.005	< 0.002	<0.005	<0.005	< 0.005
Ethylbenzene	mg/L	0.7	< 0.001	< 0.001	< 0.001	< 0.001
Monochlorobenzene	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001
o (1,2) -Dichlorobenzene	mg/L	0.6	< 0.001	< 0.001	< 0.001	< 0.001
para (1,4) -Dichlorobenzene	mg/L	0.075	< 0.001	< 0.001	< 0.001	< 0.001
Styrene	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethylene	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	mg/L	1	< 0.001	< 0.001	< 0.001	< 0.001
trans-1,2-Dichloroethylene	mg/L	0.1	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethylene	mg/L	0.005	< 0.001	< 0.001	< 0.001	< 0.001

LEGEND:

Data Not Available

Invalid result / No Result

NOTES:

[1] MAL exceeded MCL due to sample dilution for the analysis

[2] No regulatory standard for MCL

[3] Data is inconsistent with field measurements.

[4] Inconsistent / Unrealistic value

[5] 40 CFR §141.66(d)

[6] 300 MCL or 4,000 AMCL

[7] MCL proposed by EPA; currently in comment period

[8] * indicates: µS/cm. ** indicates: µmhos/cm

Parameter	Units	MCL	Quarter 1	Quarter 2	Quarter 3	Quarter 4
			29-Aug-19	9-Dec-19	22-Apr-20	15-Jul-20
Vinyl chloride	mg/L	0.002	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes (total)	mg/L	10	< 0.003	< 0.003	< 0.003	< 0.003
Radionuclide 30 TAC 290.108						
Gross Alpha Particle Activity	pCi/L	15	33.4	-463	-11.6	5.32
Beta Particle and Photon Radioactivity	pCi/L	[5]	275	-349	151	163
Radium-226	pCi/L		0.0548	0.25	0.786	0.393
Radium-228	pCi/L		0.641	0.576	0.269	2.01
Combined Radium 226 + 228	pCi/L	5	0.696	0.826	1.06	2.403
Uranium	µg/L	30	2.41	2.79	3.26	2.54
Radon-222	pCi/L	[6]			9.7	-0.2

LEGEND:

Data Not Available

Invalid result / No Result

NOTES:

[1] MAL exceeded MCL due to sample dilution for the analysis

[2] No regulatory standard for MCL

[3] Data is inconsistent with field measurements.

[4] Inconsistent / Unrealistic value

[5] 40 CFR §141.66(d)

[6] 300 MCL or 4,000 AMCL

[7] MCL proposed by EPA; currently in comment period

[8] * indicates: µS/cm. ** indicates: µmhos/cm

MONTHLY SAMPLING RESULTS

Parameter	Units	MCL	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
			29-Aug-19	2-Oct-19	4-Nov-19	9-Dec-19	5-Feb-20	3-Mar-20	22-Apr-20	20-May-20	17-Jun-20	29-Jul-20	12-Aug-20	8-Sep-20
Inorganics 30 TAC 290.104														
Antimony	mg/L	0.006	< 0.002	< 0.002	<0.005	< 0.01 [1]	0.0478	< 0.05[1]	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Arsenic	mg/L	0.01	0.00704	0.00416	<0.50[1]	< 0.01	0.00287	< 0.05[1]	0.00198	0.00263	0.00302	0.00374	0.00367	0.00357
Asbestos (fiber longer than 10 µm)	MFL	7	0.5	< 0.25	1.01	< 0.17	< 0.17	< 1.7	< 0.51	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Barium	mg/L	2	0.0583	0.0589	0.065	0.0813	0.13	0.0646	0.0464	0.0564	0.0664	0.0704	0.0785	0.0769
Beryllium	mg/L	0.004	< 0.002	< 0.004	<0.50[1]		< 0.001	< 0.01[1]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.005[1]
Cadmium	mg/L	0.005	< 0.001	< 0.001	<0.001	< 0.002	< 0.001	< 0.01[1]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Chromium	mg/L	0.1	0.00208	< 0.002	<0.003	< 0.01	0.0029	< 0.05	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Cyanide (as free CN)	mg/L	0.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoride	mg/L	4	0.94	< 6.25[1]	0.14		0.5	0.71	0.62	0.28	1.02	0.43	0.31	0.57
Mercury	mg/L	0.002	< 0.0002	< 0.0002	<0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Nitrate (as Nitrogen)	mg/L	10	0.24	< 6.25	< 6.25		< 50	0.09	< 0.2	0.22	<0.2	< 0.02	0.23	0.23
Nitrite (as Nitrogen)	mg/L	1	< 3.1[1]	< 6.25[1]	< 6.25[1]		< 50[1]	0.06	< 0.2	<0.02	<0.2	< 0.02	< 0.02	0.13
Nitrate + Nitrite (Total) (as Nitrogen)	mg/L	10	< 3.34	< 12.5[1]	< 12.5[1]		< 100[1]	0.15	< 0.4	< 0.24	<0.4	< 0.04	< 0.25	0.36
Perchlorate	mg/L	0.056 [7]	< 0.4[1]	< 4[1]	< 4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]	< 0.4[1]
Selenium	mg/L	0.05	0.00304	0.00451	<0.005	< 0.01		< 0.05	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Thallium	mg/L	0.002	< 0.001	< 0.001	0.00053	< 0.01[1]	< 0.02[1]	< 0.05[1]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.005
Secondary Consituent 30 TAC 290.105														
Aluminum (Total)	mg/L	0.05 to 0.2	0.254	0.211	8.4	1.77	1.94	1.01	0.688	0.27	0.587	0.595	1.68	0.41
Chloride	mg/L	300	19853	20448	18162		16930	17129	15584[4]	17057	27873	16472	18379	19185
Color (true)	color units	15	45	6	8		2	8	15	17	22	3	10	12
Copper	mg/L	1.0	0.0131	< 0.002	0.0021	< 0.01	< 0.02	< 0.05	0.00117	0.0904	0.0479	0.00266	0.00215	0.00203
Fluoride	mg/L	2.0	0.94	< 6.25[1]	0.14		0.5	0.71	0.62	0.28	1.02	0.43	0.31	0.57
Foaming Agents (Surfactants)	mg/L	0.5	1.57	0.939	0.511	0.412	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hydrogen sulfide	mg/L	0.05	< 0.02	< 0.02	< 0.02	< 0.02	< 2.5[1]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	<0.2
Iron (Total)	mg/L	0.3	0.192	0.169	0.15	1.52	1.67	0.684	0.402	0.183	0.31	0.477	1.02	0.255
Manganese	mg/L	0.05	0.0172	0.0185	0.011	0.0819	0.0321	< 0.05	0.0127	0.019	0.019	0.05	0.0326	0.0161
Odor	TON	3 TON	40	8	67		13	40	40	40	29	4	7	7
pH (Pace Lab)	s.u.	> 7.0	8	8	8.1	8	8	8.1	8.2	8.1	7.9	8	8.2	8.1
pH (CoCC Lab)	s.u.	> 7.0	8.08	7.83	8.3		8.14	8	8.22	8.05	8.41	8.22	8.19	8.06
Silver	mg/L	0.1	< 0.001	< 0.001	<0.0005	< 0.005	< 0.001	< 0.025	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sulfate	mg/L	300	2605	2773	2410		2602	2702	2354	2095	6503	2228	2371	2506
Total Dissolved Solids (Pace Lab)	mg/L	1000	41700	36500	36800	33200								
Total Dissolved Solids (CoCC Lab)	mg/L	1000	37384	35736	15666[4]		30124	29574	15889[4]	30692	30793	33044	33123	35072
Zinc	mg/L	5.0	0.00893	< 0.005	<0.005	< 0.05	0.0136	< 0.25	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Membrane Parameters														
Algae Count	count/mL		29	12	42	12	11	46	221	137	35	218	46	151
Alkalinity, Total as $CaCO_3$	mg/L		135	131	132		144	148	141	138	135	135	135	142
Aluminum (Dissolved)	mg/l		0.0744		0.0037	< 0.2	< 0.1	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ammonia (as N)	mg/L		< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	< 0.2	< 0.2
Ammonium (NH_4)	mg/L								< 0.1	0.13	0.11	0.16	< 0.1	< 0.1
Bicarbonate	mg/L		120	130	132	141	176	116	122	132	110	118	266	100
Boron	mg/L	[2]	4.2	4.87	3.5	3.81		4.09	3.9	3.94	3.81	4.13	4.23	6.14
Bromide	mg/L		72.1	68	64.6		43.2	42.6	56.6	48.5	50	89	74	96
Calcium	mg/L		960	2685	641		720	880	505	842	441	521	1463	601
Carbon Dioxide	mg/L		109	113	118	127	158	104	109	118	104	106	101	90
Cesium	mg/L		< 0.001	< 0.001		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01
Conductivity (Pace Lab)	[8]		25000*	30000*	25000*	24000*	32800**	46600**	48700**	47600**	46500**	49700**	50400**	54000**

Parameter	Units	MCL	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
			29-Aug-19	2-Oct-19	4-Nov-19	9-Dec-19	5-Feb-20	3-Mar-20	22-Apr-20	20-May-20	17-Jun-20	29-Jul-20	12-Aug-20	8-Sep-20
Conductivity (CoCC Lab)	µmhos/cm		49200	50600	47800		40800	41800	43100	41800	41400	50400	46600	51900
Dissolved Organic Carbon	mg/L		0.49	0.59	0.4		0.45	< 0.3	0.32	0.32	0.45	0.4	0.24	1.5
Dissolved Oxygen (Pace Lab)	mg/L		8.8	8.8	8.8	8.1	9.1	8.4						
Dissolved Oxygen (CoCC Lab)	mg/L		5.97	7.46	9.54[3]		9.71[3]	9.52[3]	8.7	8.08	6.39	8.11	6.8	6.24
Hardness, Total as $CaCO_3$	mg/L		6600	7000	5800		6300	6000	5800	5500	5900	6700	6500	7000
Iron (Dissolved)	mg/l		0.0587	0.0238	0.15	< 0.1	< 0.1	< 0.1	0.219	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Lead (Action Level)	mg/L	0.015	< 0.002	< 0.002	<0.005	< 0.005	0.739[4]	< 0.025	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	<0.01
Magnesium	mg/L		1438	1607			1120	1160						1300
Oil and Grease	mg/L		8	< 3	< 3		< 5.1	< 3.0	< 3	6	<3	< 5.2	< 5.3	< 5.2
Phosphorus, Total	mg/L		< 0.2	< 0.2	0.24		0.075	< 0.2	< 0.1	< 0.2	0.3	< 0.2	0.19	< 0.2
Potassium	mg/L		368	342	<500	346	335	355	306	309	318	363	377	390
Salinity	ppt			18.37[3]	15.07[3]									
Silica, Total (Colloidal)	mg/L		4.71	6.79	5.8			4.5	7.71	6.47	7.58	37.2	14.9	7.7
Silica, Dissolved	mg/L		4.71	6.79	<107			2.55	1.65	3.13	4.19	4.39	4.21	4.11
Silicon, Total	mg/L		2.2	3.17	2.7	7.24	2	2.1	3.6	3.02		17.4	7	3.6
Silt Density Index			0.36	0.3	0.43		0.24	0.32	0.37	0.35	0.46			0.33
Sodium	mg/L		11000	9970	10000	8550	8900	9630	8860	8860	8400	9870	10500	9530
Strontium	mg/L		7.77	7.45	5.9	6.7	7.24	6.75	7.24	6.71	7.02	7.81	8.14	7.52
Temperature	°F	< 90^0 F	77	50.36	57.2		64.76	69.98	60.98	57.56	60.26	65.3	62.06	62.6
Tin	mg/L		< 0.002	< 0.002	<0.05		0.00115	< 0.25	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
Total Petroleum Hydrocarbons (TPH)	mg/L	5							< 0.89	< 0.9	< 0.92	< 0.91	< 0.92	<0.89
Total Organic Carbon	mg/L	[2]	0.56	0.61	0.5		0.55	0.47	0.8	0.35	1.67	0.38	0.28	1.2
Total Suspended Solids	mg/L		23	19	14		38	14	22	12	39	113	137	31
UV254	cm-1		0.07	0.078	0.054		0.074	0.08	0.08	0.073	0.066	0.075	0.074	0.064

LEGEND:

Data Not Available
Invalid result / No Result

NOTES:

[1] MAL exceeded MCL due to sample dilution for the analysis
[2] No regulatory standard for MCL
[3] Data is inconsistent with field measurements.
[4] Inconsistent / Unrealistic value
[5] 40 CFR §141.66(d)
[6] 300 MCL or 4,000 AMCL
[7] MCL proposed by EPA; currently in comment period
[8] * indicates: µS/cm. ** indicates: µmhos/cm

EVERY TWO WEEKS SAMPLING RESULTS

Parameter	Units	MCL	Biweekly 1	Biweekly 2	Biweekly 3	Biweekly 4	Biweekly 5	Biweekly 6	Biweekly 7	Biweekly 8	Biweekly 9	Biweekly 10	Biweekly 11	Biweekly 12
			29-Aug-19	13-Sep-19	2-Oct-19	17-Oct-19	4-Nov-19	19-Nov-19	9-Dec-19	6-Jan-20	5-Feb-20	18-Feb-20	3-Mar-20	18-Mar-20
Microbial 30 TAC 290.109														
Coliform, Fecal	CFU/100 mL		143	176	2	1	2	< 1		3	1	8	12	5
Coliform, Total (only presence)	MPN/100 mL		Present	Present	Present	Present	Present	Present		Present	Present	Present	Present	Present
Cryptosporidium	cysts/L		<1	<1	<1	<1	<1	<1		<1	<1	<1	<1	<1
Enterococci	MPN	35 CFU/100 mL	1120	310	242	563	10	19		34	21	13	35	72
Giardia	cysts/L		<1	<1	<1	<1	<1	<1		<1	<1	<1	<1	<1
Heterotrophic Plate Count	CFU		90	36	53	34	21	7		22		15	19	5
Membrane Parameters														
Turbidity	NTU		9	6.3	9.6	20	6	3.2		10	14	6.6	6.1	10

Parameter	Units	MCL	Biweekly 13	Biweekly 14	Biweekly 15	Biweekly 16	Biweekly 17	Biweekly 18	Biweekly 19	Biweekly 20	Biweekly 21	Biweekly 22	Biweekly 23	Biweekly 24
			22-Apr-20	6-May-20	20-May-20	3-Jun-20	17-Jun-20	1-Jul-20	15-Jul-20	29-Jul-20	12-Aug-20	25-Aug-20	8-Sep-20	30-Sep-20
Microbial 30 TAC 290.109														
Coliform, Fecal	CFU/100 mL		2	1	2	31	31	104	5	25	4	252	5.2	5
Coliform, Total (only presence)	MPN/100 mL		Absent	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
Cryptosporidium	cysts/L		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Enterococci	MPN	35 CFU/100 mL		40	<10.0	1031	242	261	431	750	106	1468	461	263
Giardia	cysts/L		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Heterotrophic Plate Count	CFU		17	14	23	55	8	7	3.5	37	6	222	21	13
Membrane Parameters														
Turbidity	NTU		4.4	14.5	5.21	12.5	5.5	10	4.6	28	21	12	7.3	6

LEGEND:

Data Not Available

Invalid result / No Result

NOTES:

[1] MAL exceeded MCL due to sample dilution for the analysis

[2] No regulatory standard for MCL

[3] Data is inconsistent with field measurements.

[4] Inconsistent / Unrealistic value

[5] 40 CFR §141.66(d)

[6] 300 MCL or 4,000 AMCL

[7] MCL proposed by EPA; currently in comment period

[8] * indicates: µS/cm. ** indicates: µmhos/cm

APPENDIX C

TURBIDITY AND TSS SAMPLING PROTOCOL AND RESULTS

Turbidity-Sediment Sampling Protocol Memorandum

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SUBJECT: Inner Harbor Plant Turbidity-Sediment Sampling Protocol

DATE: 10/7/2021

PROJECT: CoCC Seawater Desalination

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1. Introduction / Purpose:

As a part of the new source approval request for the CoCC Seawater Desalination Inner Harbor Plant, TCEQ recommended including a Turbidity-Sediment Assessment Study. This study will consist of on-site measurements of Turbidity (NTU) and sample collection for laboratory analysis of Total Suspended Solids (TSS) (mg/L) and Silt Density Index (SDI) during normal conditions and disturbance events caused by ship traffic. This memorandum will describe the protocol to conduct the sampling for this Turbidity-Sediment Study.

2. Coordination Before the Sampling Event:

a. *Sampling Location and Depth:* The location for sampling will be in the vicinity of the proposed intake structure. Table 1 displays the upstream and downstream limits for the intake location.

Table 1 Intake Location Limits

Intake Limits	Latitude	Longitude
Upstream	27.812342	-97.414444
Downstream	27.811553	-97.412778

All the samples and measurements will be taken at the proposed depth of the intake (20 feet below the water surface). The samples and measurements will be taken at approximately 100 feet from the shore, in the region where the general water depth ranges from 25-30 feet. Care will be taken to maintain the location of the boat through the sampling event.

b. *Water Quality Parameters:* The following parameters will be analyzed as a part of this study:
   i. Turbidity (On-Site Measurement)
   ii. Total Suspended Solids (Lab Analysis)
   iii. Silt Density Index (Lab Analysis)

For additional reference, on-site measurements will also be taken for temperature, pH, dissolved oxygen, conductivity and salinity. Weather conditions will also be noted for air temperature, rainfall and wind direction using historical weather report for the sampling event day. The sampling day will be chosen such that it is not immediately after a major rainfall event to avoid the potential impact of the precipitation on turbidity and TSS.

c. *Scheduling:* It would be beneficial to schedule the sampling event on a day when considerable ship traffic is expected so that sufficient samples can be collected. Hence, the day for the sampling event will be decided using the forecast provided by Marine Traffic Website / App". The same app will also be used for monitoring the ship traffic during the

sampling. As the holding time for TSS is 7 days and as there are no holding time requirements for SDI, the sampling event can be conducted on any work day from Monday to Friday. The time of the sampling event can be determined based on the time of the day when heavier ship traffic is forecasted.

d. *Site Access Coordination:* In order to access the Inner Harbor channel, which is a restricted area to the general public, appropriate coordination will be required with the Inner Harbor Security in advance of the sampling date as well as before entering the channel. Appropriate coordination with the Inner Harbor Security will be required to obtain permission to access the sampling location.

e. *Lab Coordination:* The details regarding the number of sample bottles required will need to be coordinated with the Lab in advance of the sampling event. As the exact number of ship traffic will not be known, a tentative number of maximum samples has been decided - thirty six 1-L sample bottles and twelve 1-Gallon Bladders. In case there is more ship traffic than predicted, repetitive sampling during subsequent events will be avoided. For example, if multiple ships with the same size and loading condition pass, only the first of such type will be considered for the sampling. The Corpus Christi Lab will be notified at least a week before the sampling date for the preparation of the required sample bottles.

f. *Equipment Required:* Table 2 describes the equipment required for the sampling along with relevant details.

Table 2 Equipment for the Turbidity-Sediment Sampling

Equipment	Description	Provided By
Boat	A boat to accommodate 4 individuals, sample bottles, ice chests and the sampling equipment. Other items to be available include anchor, personal floatation devices, fire extinguisher, horn/whistle, polyballs/bumpers/crab floats, first-aid kit, GPS unit and VHF.	HRI
Ice Chests	*4-5 for sample bottles and 1-2 for ice bags*	Corpus Christi Water Lab
Sample Bottles	Thirty Six 1-L sample bottles and Twelve 1-Gallon Bladders	Corpus Christi Water Lab
Chain of Custody	1	Corpus Christi Water Lab
Discrete Depth Sampler	1 Sampler with minimum 30 feet rope	FNI
Turbidity Probe	1 with 100 feet cable	FNI
Laptop / Tablets	1 tablet for the turbidity probe and 1 laptop for the ship traffic monitoring	FNI
Mobile Phone / Camera	3-5	FNI
Walkie Talkie / VHFs	1	FNI
Binoculars	1 pair	FNI
Ice	4-6 Ice Bags (20 lbs)	FNI
Pencils and Markers	2-3	FNI
Waterproof Paper	Rite in the Rain paper to be used for databook	FNI

Other Personal Items	Drinking water bottles, sunscreen, sunglasses, hat, suitable gear, and other items as required.	Individuals

3. Sampling Process:

The following procedure will be observed to conduct the sampling:

a. *Sampling Preparation:* The turbidity meter will be calibrated 24 hours prior to the sampling event as per the procedure described in section 4.b of this memo. In addition, the lab will be notified a week prior to the sampling event to schedule the times for sample bottles pickup and drop-off times, and to coordinate for the chain of custody form. If it is decided to start the sampling in the early hours of the morning, the sample bottles will be picked up a day prior to the sampling date. The field team will also provide the Lab information on the number of sample bottles required, and labels including the sample identification number, date, time, and location.

b. *Sample and Field Data Collection:* The field team will travel to the sampling location using GPS. The TSS and SDI sampling goal is to monitor the effects of the passage of three to four ships and at least two tugboats or barges. The turbidity measurements will be taken for all the vessels that pass throughout the duration of the sampling. The turbidity measurements and sample collections will be performed according to the steps listed below:

i. Five to ten minutes before the arrival of a vessel, one vertical profile of water quality including turbidity will be measured at 5 foot intervals from 1 foot below the surface to 5 feet above the bottom and one sample each for TSS & SDI will be collected at 20 feet depth.
ii. Immediately after the stern of a vessel to be monitored passes, one vertical profile of water quality including turbidity will be measured at 5 foot intervals from 1 foot below the surface to 5 feet above the bottom and one TSS sample will be collected at 20 feet depth.
iii. Every 5 minutes for 20 minutes after the vessel passes, a TSS sample will be collected at a depth of 20 feet. A turbidity profile measurement will be taken at 5 foot intervals from 1 foot below the surface to 5 feet above the bottom, at 10 minutes and 20 minutes after vessel passage.
iv. A sample for SDI will be collected 5-10 minutes after the vessel passes.

Vertical profiles will report temperature, pH, dissolved oxygen, conductivity and salinity in addition to turbidity. Care will be taken to maintain the data waterproof or in electronic format. A shortcut key will be used to autopopulate the field parameters WQ data into a spreadsheet. As a backup, the same WQ data will also be documented either on a waterproof paper, or by taking legible photographs of the data output. Information for the field event will include: date, sample ID, time, location, depth, direction of water, turbidity and other WQ Parameters.

When it appears one or more vessels is passing the monitoring site while sampling is occurring associated with a recently passed vessel, a vertical profile of water quality including turbidity will be measured at 5 foot intervals from 1 foot below the surface to 5 feet above the bottom every 10 minutes until 20 minutes have passed since the last vessel passes. The sampling team may decide in the field to collect TSS and SDI samples with the passage of the second vessel. If the sampling team decides to collect TSS and SDI samples in those circumstances, it will follow the sampling process described above.

The following details will be documented for each vessel that passes:

i. Name or ID of the vessel

ii. Type of vessel
iii. Number of tugboats used for the vessel
iv. Photograph of vessel showing vessel identification
v. Time of the point of the bow passess the monitoring site
vi. Direction of travel
vii. Loading condition
viii. Draft / depth
ix. Time the end of the stern passes the monitoring site
x. Vessel wake (pictures will be taken)

Water samples for laboratory analysis of TSS and SDI will be collected at a depth of 20 ft using a discrete depth sampler. Prior to sampling, the sampler will be rinsed three times with ambient water at the sample location. Samples will be poured unfiltered into bottles provided by the Lab. Care will be taken not to overfill the sample bottles to prevent any contamination. Direct or indirect contact with the sample stream will be avoided. Sample bottles will not be opened until the sample was ready to be filled, so that the amount of time the sample containers are exposed to the air is minimized. In addition, care will be taken not to touch the inside of the bottles or lids. Sunscreen and insect repellent being potential contaminants, best management practices and techniques of water quality sampling will be used to prevent contact with foreign substances. All samples will be placed on ice in an ice chest immediately after collection. The holding time for TSS is 7 days and there are no holding time requirements for SDI.

4. Quality Assurance:

a. *Chain of Custody:* The chain of custody form will be obtained from the lab in advance of sampling. Samples will remain in possession of the field sampling crew until they are delivered back to the lab. Completeness of the form will be verified prior to relinquishing the samples to the lab. A signature from lab personnel will be obtained prior to leaving the facility after submitting the samples.

b. *Water Quality Meter and Sample Pump:* The water quality meter, including the turbidity probe, will be precalibrated a day before sampling and post-calibrated within a day after sampling. Calibration will be done according to manufacturer's specifications.

c. *Data Management:* Upon completion of sampling, all paper field records, and chain-of-custody forms will be reviewed to help ensure there are no data gaps or errors. All water quality data will be entered into an Excel spreadsheet and will be checked for data entry errors.

5. Safety:

Safety will be the first and foremost factor for the field sampling crew. Care will be taken while traveling to the field during greater risk situations like unexpected inclement weather and boating traffic (particularly during the summer). Ship traffic can cause rapid and extreme changes in water level, and appropriate caution will need to be observed when navigating in the channel. Sampling personnel will need to be aware of these rapid changes to avoid losing their balance and falling or falling overboard.

Prior to sampling, the weather forecast will be observed. If the conditions do not seem safe, the sampling event will be rescheduled to the next suitable date with more favorable weather conditions. The sample locations are generally protected from high winds; however, care will be taken while procuring samples due to unforeseen wind gusts, and waves generated by sustained winds. Sampling in the rain will be avoided.

Sampling will be performed only during daylight hours. The sampling boat will be equipped with personal floatation devices for each crew member, a throw cushion, fire extinguisher, horn/whistle, and all other equipment required under Texas boating laws.

6. Path Forward:

After the Turbidity-Sediment Sampling is complete, the results from the sampling will be assessed and submitted to TCEQ as a part of the New Source Approval package.

7. Contact Information:

For questions or additional information, Table 3 represents the contact information and role of the relevant representatives:

Table 3 Contact Information

Name	Contact Information	Role
Marisa Juarez	MarisaJ@cctexas.com 361-826-1201	City Lab Manager (CoCC)
CJ Sellers	CJ.Sellers@freese.com 337-378-7994	Environmental Scientist (FNI)

Inner Harbor SDI, TSS and Turbidity Sampling (20 Feet Depth) - November 12, 2021

Time	Sample ID (TSS Vessel # - Sample #)	TSS (mg/L)
7:46 AM	TSS 1-1	17
7:52 AM	TSS 1-2	11
7:57 AM	TSS 1-3	37
8:02 AM	TSS 1-4	41
8:07 AM	TSS 1-5	39
8:12 AM	TSS 1-6	31
8:49 AM	TSS 2-1	26
9:05 AM	TSS 2-2	46
9:11 AM	TSS 2-3	57
9:16 AM	TSS 2-4	29
9:21 AM	TSS 2-5	29
9:26 AM	TSS 2-6	51
9:22 AM	TSS 3-1	54
9:27 AM	TSS 3-2	33
9:32 AM	TSS 3-3	38
9:37 AM	TSS 3-4	53
9:42 AM	TSS 3-5	46
9:47 AM	TSS 3-6	48
10:49 AM	TSS 4-1	49
10:59 AM	TSS 4-2	52
11:04 AM	TSS 4-3	54
11:09 AM	TSS 4-4	47
11:14 AM	TSS 4-5	57
11:19 AM	TSS 4-6	39
11:26 AM	TSS 5-2	54
11:31 AM	TSS 5-3	37
11:36 AM	TSS 5-4	28
11:41 AM	TSS 5-5	54
11:46 AM	TSS 5-6	26
3:42 PM	TSS 6-1	40
3:50 PM	TSS 6-2	56
3:55 PM	TSS 6-3	48
4:00 PM	TSS 6-4	29
4:05 PM	TSS 6-5	52
4:10 PM	TSS 6-6	30

Time	Sample ID (Turbidity Vessel # - Sample #)	Turbidity (NTU)
7:49 AM	Turbidity 1-1	5.6
7:54 AM	Turbidity 1-2	6.8
8:03 AM	Turbidity 1-3	8.1
8:13 AM	Turbidity 1-4	6.5
8:56 AM	Turbidity 2-1	3.7
9:07 AM	Turbidity 2-2	7.9
9:17 AM	Turbidity 2-3	7.8
9:29 AM	Turbidity 2-4	8.2
9:22 AM	Turbidity 3-1	7.3
9:33 AM	Turbidity 3-2	9.6
9:38 AM	Turbidity 3-3	10
9:48 AM	Turbidity 3-4	8.5
10:49 AM	Turbidity 4-1	5
11:01 AM	Turbidity 4-2	9.4
11:10 AM	Turbidity 4-3	8.5
11:20 AM	Turbidity 4-4	7.9
11:20 AM	Turbidity 5-1	7.9
11:27 AM	Turbidity 5-2	8.2
11:39 AM	Turbidity 5-3	7.8
11:48 AM	Turbidity 5-4	8
3:41 PM	Turbidity 6-1	6.8
3:51 PM	Turbidity 6-2	8.4
4:01 PM	Turbidity 6-3	8
4:11 PM	Turbidity 6-4	11.2

Time	Sample ID (SDI Vessel # - Sample #)	SDI
8:00 AM	SDI 1-1	13
8:02 AM	SDI 1-2	14
8:49 AM	SDI 2-1	14
8:49 AM	SDI 2-2	15
9:35 AM	SDI 3-1	11
9:35 AM	SDI 3-2	13
11:00 AM	SDI 4-1	12
11:00 AM	SDI 4-2	13
11:30 AM	SDI 5-1	15
11:30 AM	SDI 5-2	13
4:00 PM	SDI 6-1	15
4:00 PM	SDI 6-2	14

APPENDIX D

TCEQ DECEMBER 01, 2022
RFI LETTER

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 1, 2022

Ms. Katie Leatherwood, P.G.
Environmental Scientist
Freese and Nichols, Inc.
4055 International Plaza, Suite 200
Fort Worth, Texas 76109

Re: City of Corpus Christi TPDES Permit Application No. WQ0005289000

Dear Ms. Leatherwood:

Please consider this letter as a formal request for information regarding the City of Corpus Christi Desalination permit application, WQ0005289000. This request supplements previous requests for this information sent by Mr. James Michalk via e-mail on October 19, 2022 and as discussed in our October 23, 2022 meeting with the applicant. The TCEQ Water Quality Standards Implementation Team and Water Quality Assessment Team conducted their initial technical reviews of the application submitted on January 22, 2020 and determined the following items need to be addressed to complete the standards, dissolved oxygen modeling, and diffuser technical reviews:

SALINITY

1. Cumulative effects of concentrated saline discharges in estuarine environments can increase the overall salinity of the bay. Increased salinity tends to lower dissolved oxygen levels and can negatively affect sensitive aquatic species in the area. Please address the effects of the discharge on the salinity gradient within the surrounding estuaries, including the Nueces Bay region. Please consider the cumulative effects of this proposed discharge along with other permitted desalination facilities in the vicinity which include issued TPDES permit number WQ0005019000 (Corpus Christi Polymers, LLC) and WQ0005253000 (Port of Corpus Christi Harbor Island desalination plant discharge), which was approved for issuance by our Commissioners on September 22, 2022.

Far-field Effects

2. The diffuser report previously submitted by the applicant lacks information regarding far-field effects and whether these effects were taken into consideration in the Corpus Christi Inner Harbor Channel

including potential re-entrainment of those higher salinity waters from upstream occurring during the outgoing tidal period. A QUAL-TX model is sometimes used in TCEQ diffuser reviews, if available, to supplement CORMIX analyses in tidal channels and canals such as the Corpus Christi Inner Harbor to determine whether a higher base percent effluent 'starting point' attributable to a specific discharger may be appropriate to include in (add to) the percent effluent values calculated by CORMIX. Please provide detailed information to address expected far-field effects from this discharge as discussed above and address in detail the expected effect of the proposed discharge on ambient salinities in the surrounding estuaries and bay system and include consideration of salinity contributions from TPDES permit numbers WQ0005253000 and WQ0005019000.

VELOCITY

3. The diffuser report indicates that the ambient velocity component used in the applicant's CORMIX modeling was derived from data obtained via a substantial data collection effort. However, the value used in the applicant's modeling is an overall long-term net average value derived using an approach that averaged opposing incoming (calling them negative) and outgoing (calling them positive) 'along-channel' tidal velocities, essentially resulting in a near-zero net tidal velocity (0.0057 meters/second). While this metric may be useful for some type of analysis, it is not a meaningful velocity value in the context of a CORMIX diffuser analysis. It is also not clear if CORMIX will produce reliable predictions at that low of an ambient velocity input. Please provide the corresponding average value of the observed *incoming* tidal velocities and (as a separate value) the average value of the observed *outgoing* tidal velocities. 'Cross channel' velocities may also need to be considered; however, that is left up to your discretion.

DISTANCE FROM SHORELINE

4. The diffuser setup screenshot included in the report indicates that both ends of the diffuser barrel (oriented parallel to the shoreline) are located at (or modeled as) 21 feet from the near shoreline (i.e., 'Distance to 1st endpoint' and 'Distance to 2nd endpoint'). However, aerial imagery and graphs included in the diffuser report indicate that the diffuser will be located greater than 200 feet from the shoreline. The approach documented in the report is different from how the Water Quality Assessment Team would typically set up a CORMIX model for analysis of a diffuser discharge. A truncated modeled shoreline distance may be appropriate in some circumstances to 'schematize' the modeled channel dimensions to comply with CORMIX methodology. However, using a presumed distance of 21 feet, when schematics and aerial imagery show the distance to shoreline as closer to 250 feet, seems inappropriate, especially without explanation or justification. Please provide further explanation regarding why using a 'distance from shore' of 21 feet in the

model setup is appropriate, and please also indicate what the actual distance from the 'true shoreline' will be.

5. It is unclear whether the channel bottom depths represented on the report maps and in the depth representations in the report's graph schematic just reflect a lack of depth data in the portion of the channel outside of the navigational channel or if these indicate a steep drop-off just shoreward of the proposed outfall location. As this information may play a role in the schematization of the channel for modeling purposes or in other components of the modeling setup, please clarify whether the channel bottom drops sharply at this point into the navigational channel portion of the Inner Harbor, with the channel bottom being dramatically shallower shoreward of this point, or if there is just a lack of depth data available for this area nearer to the shoreline.

FLINT HILLS DIFFUSER DISCHARGE AND OVERLAPPING MIXING ZONES

6. The diffuser report states that the plume from this discharge will always be negatively buoyant and that it will not interact with the positively buoyant plume from the nearby Flint Hills (WQ0000457000) diffuser discharge, which would otherwise potentially represent an overlapping mixing zone situation. The report includes a schematic said to represent the conceptual Flint Hills diffuser configuration, with that discharge shown as being located **2.5 meters below the water surface** and **5.25 meters above the channel bottom**, with the maximum height of the Corpus Christi discharge plume extending up to about 4.5 meters below the surface (therefore, below the Flint Hills plume). The schematic of the Flint Hills diffuser configuration that was included in the Flint Hills application materials (2016) shows the discharge being located at **5.25 meters *below the water surface*** and **2.5 meters *above the channel bottom*** (i.e. within the depth range of the Corpus Christi discharge plume). The latter scenario is the diffuser configuration that has been used by both Mark Rudolph and Katie Cunningham in previous CORMIX reviews of the Flint Hills permit. Please see both schematics in the attachments. Overlapping mixing zones appear to still be a potential issue, so the mixing zones of the proposed Corpus Christi discharge will be truncated as necessary to prevent any such overlap.

PERCENT EFFLUENT

7. The diffuser report indicates a Limiting Effluent Percentage approach concerning effluent percentage predictions from CORMIX. Our understanding is that the analysis as described is using the *lowest* percent effluent scenarios predicted by CORMIX, rather than the *highest* percent effluent scenarios which are used to define critical conditions in standard CORMIX analyses of diffuser discharges. The proposed approach has not been used in the TCEQ reviews of other TPDES desalination discharge permit applications to date and would set a precedent that deviates

considerably from TCEQ's established CORMIX modeling analysis procedures for diffuser discharges. TCEQ protocols require the higher percentage of effluent for development of appropriate effluent limits or for calculating applicable values for permit-related parameters other than salinity. Please explain and demonstrate how the proposed approach is conservative and appropriate in your view so that we can consider its applicability in our own review of the permit application.

Please note, the applicant has the right to take a non-standard approach different from TCEQ's analysis to assist in supporting its position that a permit will be protective and, more specifically for a discharge of this nature, in assessing potential salinity impacts of a proposed desalination facility discharge. In the event of a contested case hearing, supplemental analyses performed by an applicant may provide additional perspective on the assessment of potential environmental impacts.

8. A source waterbody characterization study was being conducted on the receiving water bodies, per an email submitted in March 2020. Please submit the source waterbody characterization study and any other pertinent information not previously submitted.

9. The newly approved (with stipulations) desalination permit for the Port of Corpus Christi (WQ0005253000) included biomonitoring requirements to ensure that water quality is maintained and to ensure the protection of sensitive aquatic species. Is the applicant proposing biomonitoring requirements for this proposed facility?

The TCEQ appreciates your continued efforts to resolve these matters and looks forward to receiving a response to this letter. Please provide this response to Ms. Brittany Lee, Mr. James Michalk, and Mr. Peter Schaefer of the Water Quality Division by e-mail at brittany.lee@tceq.texas.gov, james.michalk@tceq.texas.gov and peter.schaefer@tceq.texas.gov. Ms. Lee may also be contacted by telephone at (512) 239-3043.

Sincerely,

Gregg Easley, Manager
Water Quality Assessment Section, Water Quality Division
Texas Commission on Environmental Quality

GE/BL

Enclosures (2)
Flint Hills Diffuser Layout (conceptual)

Flint Hills Diffuser Layout in Flint Hills Resources Effluent Diffuser Modeling Report

ccs: Ernest To, Plummer Associates via e-mail at eto@plummer.com
Mike Morrison, Freese and Nichols, Inc. via email at mgm@freese.com

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May 8, 2023

Gregg Easley
Manager, Water Quality Assessment Section, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle,
Austin, TX 78753

Re: City of Corpus Christi TPDES Permit Application No. WQ0005289000
REVISION to Response to the Request for Information (RFI) dated April 6, 2023

Dear Mr. Easley:

On **April 10, 2023,** Freese and Nichols submitted a response to the TCEQ's request for information (RFI) to assist in their review of the City of Corpus Christi's (CoCC's) TPDES permit application **WQ 0005289000** for the Inner Harbor seawater desalination plant. A transposition of numbers has been identified in **Table 1-2 of the RFI.** Attached to this letter is a revised copy of Table 1-2. Please exchange this table with page 6 containing the erroneous Table 1-2 in the original submittal.

If there are any questions, please feel free to contact me at katie.leatherwood@freese.com or 817-735-7503.

Sincerely,

Katie Leatherwood
Environmental Scientist
Freese and Nichols, Inc.
801 Cherry Street, Suite 2800
Fort Worth, Texas 76102

Table 1-2 CORMIX Modeling Results for Inner Harbor Desalination Permit Application WQ0005289000

Inner Harbor blended discharge salinity: ZID *Area = 7,854 sf* MX *Area = 125,664 sf* HHMZ *Area = 502,656 sf*

Water Production/ Discharge (MGD)	Existing Ambient Average Salinity (ppt)	Effluent Salinity (ppt) **40% Recovery**	Percent Effluent ZID	Increase in salinity (ppt) ZID	Percent salinity increase ZID	Discharge blended average salinity (ppt) ZID	Percent Effluent MZ	Increase in salinity (ppt) MZ	Percent salinity increase MZ	Discharge blended average salinity (ppt) MZ	Percent Effluent HHMZ	Increase in salinity (ppt) HHMZ	Percent salinity increase HHMZ	Discharge blended average salinity (ppt) HHMZ
20/34.31	31.59	49.9	8.30%	1.52	4.82%	33.11	5.92%	1.09	3.43%	32.68	4.60%	0.84	2.67%	32.43
30/51.47	31.59	49.9	8.04%	1.47	4.66%	33.06	5.73%	1.05	3.32%	32.64	4.45%	0.82	2.58%	32.41
Water Production/ Discharge (MGD)	Existing Ambient Average Salinity (ppt)	Effluent Salinity (ppt) **50% Recovery**	Percent Effluent ZID	Increase in salinity (ppt) ZID	Percent salinity increase ZID	Discharge blended average salinity (ppt) ZID	Percent Effluent MZ	Increase in salinity (ppt) MZ	Percent salinity increase MZ	Discharge blended average salinity (ppt) MZ	Percent Effluent HHMZ	Increase in salinity (ppt) HHMZ	Percent salinity increase HHMZ	Discharge blended average salinity (ppt) HHMZ
20/23.45	31.59	58.4	8.80%	2.36	7.47%	33.95	6.28%	1.68	5.33%	33.27	4.88%	1.31	4.14%	32.90
30/35.17	31.59	58.4	8.28%	2.22	7.03%	33.81	5.90%	1.58	5.01%	33.17	4.58%	1.23	3.89%	32.82

ZID – Zone of Initial Dilution; MZ – Mixing Zone; HHMZ – Human Health Mixing Zone [Corrected 4-27-23]

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TPDES PERMIT FOR INDUSTRIAL WASTEWATER

NEW

Permit No. WQ0005289000

APPLICATION AND PRELIMINARY DECISION. City of Corpus Christi, P.O. Box 9277, Corpus Christi, Texas 78469, which proposes to operate the Inner Harbor Desalination Plant, a seawater desalination facility, has applied to the Texas Commission on Environmental Quality (TCEQ) for a new permit, Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000, to authorize the discharge of water treatment waste at a daily average flow not to exceed 34,300,000 gallons per day (gpd) for the intial phase and 51,500,000 gpd for the final phase via Outfall 001. The TCEQ received this application on January 22, 2020.

The facility is located at the intersection of Nueces Bay Boulevard and East Broadway Street, in the City of Corpus Christi, Nueces County, Texas 78401. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application. https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.418055%2C27.8075&level=12

The effluent is discharged directly to Corpus Christi Inner Harbor in Segment No. 2484 of the Bays and Estuaries. The designated uses for Segment No. 2484 are non-contact recreation and intermediate aquatic life use.

In accordance with Title 30 Texas Administrative Code Section 307.5 and TCEQ's *Procedures to Implement the Texas Surface Water Quality Standards* (June 2010), an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review has preliminarily determined that no significant degradation of water quality is expected in Corpus Christi Inner Harbor, which has been identified as having intermediate aquatic life use. Existing uses will be maintained and protected. The preliminary determination can be reexamined and may be modified if new information is received.

The TCEQ Executive Director reviewed this action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the regulations of the General Land Office and has determined that the action is consistent with the applicable CMP goals and policies.

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying online at https://www.cctexas.com/government/city-secretary/agendas/misc.

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit written or oral comment or to ask questions about the application. Generally, the 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 public comments, the Executive Director will consider the comments and prepare a response to all relevant and material, or significant public comments. **The response to comments, along with the Executive Director's decision on the application, will be mailed to everyone who submitted public comments or who requested to be on a mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision.** A contested case hearing is a legal proceeding similar to a civil trial in a 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.**

EXECUTIVE DIRECTOR ACTION. The Executive Director may issue final approval of the application unless a timely contested case hearing request or a timely request for reconsideration is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director will not issue final approval of the permit and will forward the application and requests to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

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 added to: (1) the permanent list for a specific applicant name and permit number; and (2) the mailing list for a specific county. If you wish to be placed on the permanent and the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 or electronically at https://www.tceq.texas.gov/goto/comment **within 30 days from the date of newspaper publication of this notice.**

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at https://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. Public comments and requests must be submitted either electronically at https://www.tceq.texas.gov/goto/comment, 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 https://www.tceq.texas.gov/agency/decisions/participation/permitting-participation. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from City of Corpus Christi at the address stated above or by calling Mr. Esteban Ramos at 361-826-3294.

Issued: January 12, 2024

(3) Draft Permit

THIS IS A DRAFT VERSION OF THIS NOTICE. DO NOT PUBLISH UNTIL YOU RECEIVE THE OFFICIAL VERSION AND INSTRUCTIONS FROM TCEQ's OFFICE OF THE CHIEF CLERK.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TPDES PERMIT FOR INDUSTRIAL WASTEWATER NEW

Permit No. WQ0005289000

APPLICATION AND PRELIMINARY DECISION. City of Corpus Christi, P.O. Box 9277, Corpus Christi, Texas 78469, which proposes to operate the Inner Harbor Desalination Plant, a seawater desalination facility, has applied to the Texas Commission on Environmental Quality (TCEQ) for a new permit, Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000, to authorize the discharge of water treatment waste at a daily average flow not to exceed 34,300,000 gallons per day (gpd) for the intial phase and 51,500,000 gpd for the final phase via Outfall 001. The TCEQ received this application on January 22, 2020.

The facility is located at the intersection of Nueces Bay Boulevard and East Broadway Street, in the City of Corpus Christi, Nueces County, Texas 78401. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application. https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.418055%2C27.8075&level=12

The effluent is discharged directly to Corpus Christi Inner Harbor in Segment No. 2484 of the Bays and Estuaries. The designated uses for Segment No. 2484 are non-contact recreation and intermediate aquatic life use.

In accordance with Title 30 Texas Administrative Code Section 307.5 and TCEQ's *Procedures to Implement the Texas Surface Water Quality Standards* (June 2010), an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review has preliminarily determined that no significant degradation of water quality is expected in Corpus Christi Inner Harbor, which has been identified as having intermediate aquatic life use. Existing uses will be maintained and protected. The preliminary determination can be reexamined and may be modified if new information is received.

The TCEQ Executive Director reviewed this action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the regulations of the General Land Office and has determined that the action is consistent with the applicable CMP goals and policies.

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying online at https://www.cctexas.com/government/city-secretary/agendas/misc.

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit written or oral comment or to ask questions about the application. Generally, the 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 public comments, the Executive Director will consider the comments and prepare a response to all relevant and material, or significant public comments. **The response to comments, along with the Executive Director's decision on the application, will be mailed to everyone who submitted public comments or who requested to be on a mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision.** A contested case hearing is a legal proceeding similar to a civil trial in a 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.**

EXECUTIVE DIRECTOR ACTION. The Executive Director may issue final approval of the application unless a timely contested case hearing request or a timely request for reconsideration

is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director will not issue final approval of the permit and will forward the application and requests to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

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 added to: (1) the permanent list for a specific applicant name and permit number; and (2) the mailing list for a specific county. If you wish to be placed on the permanent and the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 or electronically at https://www.tceq.texas.gov/goto/comment **within 30 days from the date of newspaper publication of this notice.**

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at https://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. Public comments and requests must be submitted either electronically at https://www.tceq.texas.gov/goto/comment, 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 https://www.tceq.texas.gov/agency/decisions/participation/permitting-participation. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from City of Corpus Christi at the address stated above or by calling Mr. Esteban Ramos at 361-826-3294.

Issued:

AGENDA CAPTION FOR PERMIT NO. WQ0005289000

City of Corpus Christi, which proposes to operate the Inner Harbor Desalination Plant, a seawater desalination facility, has applied for a new permit, Texas Pollutant Discharge Elimination System Permit No. WQ0005289000, to authorize the discharge of water treatment waste at a daily average flow not to exceed 34,300,000 gallons per day (gpd) for the intial phase and 51,500,000 gpd for the final phase via Outfall 001. The facility is located at the intersection of Nueces Bay Boulevard and East Broadway Street, in the City of Corpus Christi, Nueces County, Texas 78401.

The TCEQ Executive Director has reviewed this action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the regulations of the General Land Office and has determined that the action is consistent with the applicable CMP goals and policies.

Senate Bill 709 (84th Legislative Session, 2015) amended the Texas Water Code by adding new Section 5.5553, which requires the Texas Commission on Environmental Quality (TCEQ) to provide written notice to you at least thirty (30) days prior to the TCEQ's issuance of draft permits for applications that are located in your district.

City of Corpus Christi, 1201 Leopard Street, Corpus Christi, Texas 78401, which will own a seawater desalination plant, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000 (EPA I.D. No. TX0139874) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 51,500,000 gallons per day. The facility will be located at the southeast corner of the intersection of Nueces Bay Boulevard and West Broadway Street, in Nueces County, Texas 78401. The discharge route will be from the plant site via pipe directly to Corpus Christi Inner Harbor. TCEQ received this application on January 22, 2020. The permit application is available for viewing online at https://www.cctexas.com/government/city-secretary/agendas/misc. 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://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=db5bac44afbc468bbddd360f8168250f&marker=-97.418055%2C27.8075&level=12

TCEQ is preparing the initial draft permit. At the time the draft permit is issued, the applicant will be required to publish notice in a newspaper of general circulation, and the TCEQ will provide a copy of the notice of draft permit to persons who have requested to be on a mailing list.

Questions regarding this application may be directed to Ms. Alyssa Loveday by calling 512-239-4524.

Issuance Date: _____

STATEMENT OF BASIS/TECHNICAL SUMMARY AND
EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

DESCRIPTION OF APPLICATION

Applicant:	City of Corpus Christi; Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005289000 (EPA I.D. No. TX0139874)
Regulated activity:	Industrial wastewater permit
Type of application:	New permit
Request:	New permit
Authority:	Federal Clean Water Act (CWA) §402; Texas Water Code (TWC) §26.027; 30 Texas Administrative Code (TAC) Chapter 305, Subchapters C-F, and Chapters 307 and 319; commission policies; and Environmental Protection Agency (EPA) guidelines

EXECUTIVE DIRECTOR RECOMMENDATION

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The draft permit will expire at midnight, five years from the date of permit issuance according to the requirements of 30 TAC §305.127(1)(C)(i).

REASON FOR PROJECT PROPOSED

The applicant has applied to the Texas Commission on Environmental Quality (TCEQ) for a new permit.

PROJECT DESCRIPTION AND LOCATION

The applicant proposes to operate Inner Harbor Desalination Plant, a seawater desalination facility.

The wastewater system consists of taking raw seawater and producing potable water. The wastestreams will be generated by pretreatment, membrane filtration, and desalination processes. The wastestreams from these processes will be comingled for discharge through Outfall 001. The initial phase of producing water is at 20 million gallons per day (MGD) with the final phase increase to 30 MGD.

This permit does not authorize the discharge of domestic wastewater. All domestic wastewater must be disposed of in an approved manner, such as routing to an approved on-site septic tank and drainfield system or to an authorized facility for treatment and disposal.

The facility is located at the intersection of Nueces Bay Boulevard and East Broadway Street, in the City of Corpus Christi, Nueces County, Texas 78401.

Discharge Route and Designated Uses

The effluent is discharged directly to Corpus Christi Inner Harbor in Segment No. 2484 of the Bays and Estuaries. The designated uses for Segment No. 2484 are non-contact recreation and intermediate aquatic life use. The effluent limits in the draft permit will maintain and protect the existing instream uses. All determinations are preliminary and subject to additional review and revisions.

Antidegradation Review
In accordance with 30 TAC §307.5 and TCEQ's *Procedures to Implement the Texas Surface Water Quality Standards* (June 2010), an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review has preliminarily determined that no significant degradation of water quality is expected in Corpus Christi Inner Harbor, which has been identified as having intermediate aquatic life use. Existing uses will be maintained and protected. The preliminary determination can be reexamined and may be modified if new information is received.

Endangered Species Review
The discharge from this permit action is not expected to have an effect on any federal endangered or threatened aquatic or aquatic dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS) biological opinion on the State of Texas authorization of the TPDES program September 14, 1998, October 21, 1998 update. To make this determination for TPDES permits, TCEQ and EPA only consider aquatic or aquatic dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS biological opinion. Though the piping plover, *Charadrius melodus* Ord, can occur in Nueces County, the discharge is not to a watershed of high priority per Appendix A of the USFWS biological opinion. The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. The permit does not require EPA review with respect to the presence of endangered or threatened species.

Impaired Water Bodies
Segment No. 2484 is currently listed on the state's inventory of impaired and threatened waters, the 2022 CWA §303(d) list. The listing is specifically for copper in water from U.S. Highway 181 to the Viola Turning Basin (entire segment) (AU 2484_01). The desalination process does not add additional copper to the segment. Therefore, it will not cause or contribute to the existing copper impairment.

Completed Total Maximum Daily Loads (TMDLs)
There are no completed TMDLs for Segment No. 2484.

Dissolved Oxygen
The proposed discharge is not expected to contain significant levels of oxygen-demanding constituents. Dissolved oxygen concentrations in the receiving waters are expected to consistently be protected and maintained above the criterion established for Corpus Christi Inner Harbor (3.0 mg/L).

Diffuser Analysis
Outfall 001 will consist of a submerged multi-port diffuser, located approximately 58 feet from the shoreline.

A mixing analysis of the discharge from Outfall 001 was conducted using the CORMIX 12.0GTD (Version 12.0.1.0) modeling software. This analysis relies, in part, on the documents titled *Technical Memorandum: City of Corpus Christi Desalination Study - Concentrate Modeling at Inner Harbor Channel - TPDES Permit No.: WQ0005289000* (July 26, 2021); *RFI Response Report: City of Corpus Christi TPDES Permit Application No. WQ0005289000 Response to the Request for Information (RFI)* (April 10, 2023); and *RFI Response Report: City of Corpus Christi TPDES Permit Application No. WQ0005289000 REVISION to Response to the Request for Information (RFI) dated April 6, 2023* (May 8, 2023). Information contained in those documents was used in the development of the TCEQ CORMIX analysis. Based on this initial mixing analysis, the following critical effluent percentages were recommended:

Initial Phase - 20 MGD of produced water uses approximately 55.4 MGD of raw water and results in approximately 34.3 MGD of discharge at 40% reverse osmosis (RO) recovery. 20 MGD of produced water uses approximately 44.3 MGD of raw water and results in approximately 23.5 MGD of discharge at 50% RO recovery,

Chronic Aquatic Life Effluent Mixing Zone %:	20 MGD at 40% RO for 6.26 %
	20 MGD at 50% RO for 6.62 %
Acute Aquatic Life Effluent Zone of Initial Dilution %:	20 MGD at 40% RO for 8.76 %
	20 MGD at 50% RO for 9.26 %
Human Health Effluent %:	20 MGD at 40% RO for 4.87 %
	20 MGD at 50% RO for 5.15 %

Final Phase - 30 MGD of produced water uses approximately 83.1 MGD of raw water and results in approximately 51.5 MGD of discharge at 40% RO recovery. 30 MGD of produced water uses approximately 66.5 MGD of raw water and results in approximately 35.2 MGD of discharge at 50% RO recovery.

Chronic Aquatic Life Effluent Mixing Zone %:	30 MGD at 40% RO for 6.08 %
	30 MGD at 50% RO for 6.24 %
Acute Aquatic Life Effluent Zone of Initial Dilution %:	30 MGD at 40% RO for 8.50 %
	30 MGD at 50% RO for 8.74 %
Human Health Effluent %:	30 MGD at 40% RO for 4.72 %
	30 MGD at 50% RO for 4.85 %

The highest predicted percent effluent results should be used for the general assessment of permit effluent limits. However, since the percent effluent predictions are higher during the Initial phase (20 MGD production capacity) than they are for the Ultimate phase (30 MGD production capacity), the percent effluent values used for permitting purposes may be partitioned separately for these two permit phases (though it should be noted that future reviews, once discharge commences, will also include CORMIX model runs performed using median discharge flows). These percent effluent values are also predicted to be the maximum effluent percentages at the edges of the regulatory mixing zones for the assessment of potential concerns about salinity impacts related to this discharge. It is recommended that only the highest percent effluent predictions for each regulatory mixing zone be used for screening purposes and for the derivation of effluent limits, though again, those percent effluent values may be applied with more specificity to correspond to the two different permit phases (production capacities).

SUMMARY OF EFFLUENT DATA

Self-reporting data is not available because the facility has not been constructed.

DRAFT PERMIT CONDITIONS

The draft permit authorizes the discharge of water treatment wastes at a daily average flow not to exceed 34.3 MGD initial phase and 51.5 MGD final phase via Outfall 001.

Effluent limitations are established in the draft permit as follows:

Outfall	Pollutant	Daily Average mg/L	Daily Average lbs/day	Daily Maximum mg/L	Daily Maximum lbs/day
001 Initial	Flow	34.3 MGD		41 MGD	
	Total Suspended Solids (TSS)	Report	Report	Report	Report
	Total Dissolved Solids (TDS)	Report	Report	Report	Report
	Chloride	Report	Report	Report	Report
	Sulfate	Report	Report	Report	Report
	pH (Standard Units, SU)	6.5 SU, min		9.0 SU	

Outfall	Pollutant	Daily Average mg/L	Daily Average lbs/day	Daily Maximum mg/L	Daily Maximum lbs/day
001 Final	Flow	51.5 MGD		62 MGD	
	TSS	Report	Report	Report	Report
	TDS	Report	Report	Report	Report
001 Final	Chloride	Report	Report	Report	Report
	Sulfate	Report	Report	Report	Report
	pH (Standard Units, SU)	6.5 SU, min		9.0 SU	

OUTFALL LOCATIONS

Outfall	Latitude	Longitude
001	27.814363 N	97.418753 W

Technology-Based Effluent Limitations
Regulations in Title 40 of the Code of Federal Regulations (40 CFR) require that technology-based limitations be placed in wastewater discharge permits based on effluent limitations guidelines (ELGs), where applicable, or on best professional judgment (BPJ) in the absence of guidelines.

The discharge of water treatment wastes resulting from desalination processes is not subject to any ELGs. Monitoring and reporting requirements for TSS have been included in the draft permit at Outfall 001 based upon BPJ due to the potential for elevated levels of suspended solids to be present in the discharge.

Water Quality-Based Effluent Limitations
Calculations of water quality-based effluent limitations for the protection of aquatic life and human health are presented in Appendix A. Aquatic life criteria established in Table 1 and human health criteria established in Table 2 of 30 TAC Chapter 307 are incorporated into the calculations, as are recommendations in the Water Quality Assessment Team's memorandum dated October 18, 2023. TCEQ practice for determining significant potential is to compare the reported analytical data from the facility against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application exceeds 85 percent of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application exceeds 70 percent of the calculated daily average water quality-based effluent limitation.

No analytical data was submitted with the application because the facility has not been constructed. Other Requirement No. 8 has been added to the draft permit requiring sampling and analysis of the effluent upon commencement of discharge. Based on a review of the data, the permit may be reopened to add limitations or monitoring requirements, if needed.

Total Dissolved Solids (TDS), Chloride, and Sulfate Screening
Segment No. 2484, which receives the discharge from this facility, does not have criteria established for TDS, chloride, or sulfate in 30 TAC Chapter 307; therefore, no screening was performed for TDS, chloride, or sulfate in the effluent. However, the applicant performed extensive analyses and modeling to conclude that the discharge would not impact salinity gradients in the surrounding waters and that survival, growth, and reproduction of aquatic life would not be significantly impacted and provided their report as part of their application. In addition, monitoring and reporting requirements for TDS, chloride, and sulfate have been included in the draft permit at Outfall 001 based on the presence of water treatment wastes which will include elevated levels of these constituents in the proposed discharge. Other Requirement No. 8 has been added to the draft permit requiring sampling and analysis of the effluent upon commencement of discharge. Due to the nature of water treatment wastes, TDS, chloride, and sulfate monitoring is initially placed in the draft. Based on a review of the data, the permit may be reopened to add limitations or monitoring requirements, if needed.

pH Screening
The permit includes pH limits of 6.5 – 9.0 SU at Outfall 001, which discharges directly into Corpus Christi Inner Harbor, Segment No. 2484. The segment has these same pH standards and thus limits are protective of the segment criteria.

SUMMARY OF CHANGES FROM APPLICATION

No changes were made from the application.

BASIS FOR DRAFT PERMIT

The following items were considered in developing the draft permit:

1. Application received on January 22, 2020, and additional information received on March 17 and 30, 2020; April 3, 8, 9, 14, 24, 27, and 28, 2020; May 4, 14, 19, and 21, 2020; April 10, 2023; and May 8, 2023.
2. TCEQ Rules.
3. *Texas Surface Water Quality Standards* – 30 TAC §§307.1-307.10, effective March 1, 2018, as approved by EPA Region 6.
4. *Texas Surface Water Quality Standards* – 30 TAC §§307.1-307.10, effective March 6, 2014, as approved by EPA Region 6, for portions of the 2018 standards not approved by EPA Region 6.
5. *Texas Surface Water Quality Standards* – 30 TAC §§307.1-307.10, effective July 22, 2010, as approved by EPA Region 6, for portions of the 2014 standards not approved by EPA Region 6.
6. *Texas Surface Water Quality Standards* – 30 TAC §§307.1-307.10, effective August 17, 2000, and Appendix E, effective February 27, 2002, for portions of the 2010 standards not approved by EPA Region 6.
7. *Procedures to Implement the Texas Surface Water Quality Standards* (IPs), Texas Commission on Environmental Quality, June 2010, as approved by EPA Region 6.
8. *Procedures to Implement the Texas Surface Water Quality Standards*, Texas Commission on Environmental Quality, January 2003, for portions of the 2010 IPs not approved by EPA Region 6.
9. Memos from the Standards Implementation Team and Water Quality Assessment Team of the Water Quality Assessment Section of the TCEQ, including their diffuser memo.
10. *Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits*, TCEQ Document No. 98-001.000-OWR-WQ, May 1998.
11. EPA Effluent Guidelines: N/A.
12. Consistency with the Coastal Management Plan: The executive director has reviewed this action for consistency with the goals and policies of the Texas Coastal Management Program (CMP) in

accordance with the regulations of the General Land Office and has determined that the action is consistent with the applicable CMP goals and policies.

13. Letter dated May 28, 2014, from L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ, to Bill Honker, Director, Water Quality Protection Division, EPA (TCEQ proposed development strategy for pH evaluation procedures).
14. Letter dated June 2, 2014, from William K. Honker, P.E., Director, Water Quality Protection Division, EPA, to L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ (Approval of TCEQ proposed development strategy for pH evaluation procedures).
15. Letter dated April 10, 2023, from Katie Leatherwood, Environmental Scientist, Freese and Nichols, Inc., to TCEQ, City of Corpus Christi TPDES Permit Application No. WQ0005289000 Response to the Request for Information, with corrected table 1-2 on May 8, 2023.

PROCEDURES FOR FINAL DECISION

When an application is declared administratively complete, the chief clerk sends a letter to the applicant advising the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the Chief Clerk instructs the applicant to place a copy of the application in a public place for reviewing and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The Chief Clerk also mails this notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent to the Chief Clerk, along with the Executive Director's preliminary decision contained in the technical summary or fact sheet. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's preliminary decision and draft permit in the public place with the application.

Any interested person may request a public meeting on the application until the deadline for filing public comments. A public meeting is intended for the taking of public comment and is not a contested case hearing.

After the public comment deadline, the Executive Director prepares a response to all significant public comments on the application or the draft permit raised during the public comment period. The Chief Clerk then mails the Executive Director's response to comments and final decision to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the Executive Director's response and decision, they can request a contested case hearing or file a request to reconsider the Executive Director's decision within 30 days after the notice is mailed.

The Executive Director will issue the permit unless a written hearing request or request for reconsideration is filed within 30 days after the Executive Director's response to comments and final decision is mailed. If a hearing request or request for reconsideration is filed, the Executive Director will not issue the permit and will forward the application and request to the TCEQ commissioners for their consideration at a scheduled commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the Executive Director calls a public meeting or the commission grants a contested case hearing as described above, the commission will give notice of the date, time, and place of the meeting or hearing.

If a hearing request or request for reconsideration is made, the commission will consider all public comments in making its decision and shall either adopt the Executive Director's response to public comments or prepare its own response.

For additional information about this application, contact Thomas E. Starr at (512) 239-4570.

Thomas E. Starr
Thomas E. Starr, P.E.

November 28, 2023
Date

Appendix A
Calculated Water Quality-Based Effluent Limits

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	The City of Corpus Christi
TPDES Permit No:	WQ0005289000
Outfall No:	001 Initial
Prepared by:	Thomas Starr, P.E.
Date:	November 27, 2023

DISCHARGE INFORMATION

Receiving Waterbody:	Corpus Christi Inner Harbor
Segment No:	2484
TSS (mg/L):	9
Effluent Flow for Aquatic Life (MGD)	N/A
% Effluent for Chronic Aquatic Life (Mixing Zone):	6.62
% Effluent for Acute Aquatic Life (ZID):	9.26
Oyster Waters?	**no**
Effluent Flow for Human Health (MGD):	N/A
% Effluent for Human Health:	5.15

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Estuarine Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (trivalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	13489.63	0.881		1.00	Assumed
Lead	6.06	-0.85	162181.01	0.381		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	131825.67	0.431		1.00	Assumed
Zinc	5.36	-0.52	69183.10	0.591		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrolein	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin	1.3	N/A	14.0	N/A	4.49	N/A	6.60	13.9
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	1609	1178	515	719	756	1601
Cadmium	40.0	8.75	432	132	138	80.6	118	250
Carbaryl	613	N/A	6620	N/A	2118	N/A	3113	6588
Chlordane	0.09	0.004	0.972	0.0604	0.311	0.0369	0.0541	0.114
Chlorpyrifos	0.011	0.006	0.119	0.0906	0.0380	0.0553	0.0558	0.118
Chromium (trivalent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (hexavalent)	1090	49.6	11771	749	3767	457	671	1421
Copper	13.5	3.6	165	61.5	52.8	37.5	55.1	116
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide (free)	5.6	5.6	60.5	84.6	19.4	51.6	28.4	60.1
4,4'-DDT	0.13	0.001	1.40	0.0151	0.449	0.00921	0.0135	0.0286
Demeton	N/A	0.1	N/A	1.51	N/A	0.921	1.35	2.86
Diazinon	0.819	0.819	8.84	12.4	2.83	7.55	4.16	8.80
Dicofol [Kelthane]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	7.67	0.0302	2.45	0.0184	0.0270	0.0573
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (*alpha*)	0.034	0.009	0.367	0.136	0.117	0.0829	0.121	0.257
Endosulfan II (*beta*)	0.034	0.009	0.367	0.136	0.117	0.0829	0.121	0.257
Endosulfan sulfate	0.034	0.009	0.367	0.136	0.117	0.0829	0.121	0.257
Endrin	0.037	0.002	0.400	0.0302	0.128	0.0184	0.0270	0.0573
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.151	N/A	0.0921	0.135	0.286
Heptachlor	0.053	0.004	0.572	0.0604	0.183	0.0369	0.0541	0.114
Hexachlorocyclohexane (*gamma*) [Lindane]	0.16	N/A	1.73	N/A	0.553	N/A	0.812	1.71
Lead	133	5.3	3729	208	1193	127	186	394
Malathion	N/A	0.01	N/A	0.151	N/A	0.0921	0.135	0.286
Mercury	2.1	1.1	22.7	16.6	7.26	10.1	10.6	22.5
Methoxychlor	N/A	0.03	N/A	0.453	N/A	0.276	0.406	0.859
Mirex	N/A	0.001	N/A	0.0151	N/A	0.00921	0.0135	0.0286
Nickel	118	13.1	1274	198	408	121	177	375
Nonylphenol	7	1.7	75.6	25.7	24.2	15.7	23.0	48.7
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	163	145	52.2	88.5	76.7	162
Phenanthrene	7.7	4.6	83.2	69.5	26.6	42.4	39.1	82.7
Polychlorinated Biphenyls [PCBs]	10	0.03	108	0.453	34.6	0.276	0.406	0.859
Selenium	564	136	6091	2054	1949	1253	1842	3897
Silver	2	N/A	49.3	N/A	15.8	N/A	23.1	49.0
Toxaphene	0.21	0.0002	2.27	0.00302	0.726	0.00184	0.00270	0.00573
Tributyltin [TBT]	0.24	0.0074	2.59	0.112	0.829	0.0682	0.100	0.212
2,4,5 Trichlorophenol	259	12	2797	181	895	111	162	343
Zinc	92.7	84.2	1660	2108	531	1286	780	1651

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	115	2233	2077	3052	6458
Aldrin	1.147E-05	0.000223	0.000207	0.000304	0.000644
Anthracene	1317	25573	23783	34960	73964
Antimony	1071	20796	19340	28430	60148
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	581	11282	10492	15423	32629
Benzidine	0.107	2.08	1.93	2.84	6.00
Benzo(*a*)anthracene	0.025	0.485	0.451	0.663	1.40
Benzo(*a*)pyrene	0.0025	0.0485	0.0451	0.0663	0.140
Bis(chloromethyl)ether	0.2745	5.33	4.96	7.28	15.4
Bis(2-chloroethyl)ether	42.83	832	773	1136	2405
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthala	7.55	147	136	200	424
Bromodichloromethane [Dichlorobromomethane]	275	5340	4966	7300	15444
Bromoform [Tribromomethane]	1060	20583	19142	28138	59530
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	46	893	831	1221	2583
Chlordane	0.0025	0.0485	0.0451	0.0663	0.140
Chlorobenzene	2737	53146	49425	72655	153713
Chlorodibromomethane [Dibromochloromethane]	183	3553	3305	4857	10277
Chloroform [Trichloromethane]	7697	149456	138994	204321	432272
Chromium (hexavalent)	502	9748	9065	13325	28192
Chrysene	2.52	48.9	45.5	66.8	141
Cresols [Methylphenols]	9301	180602	167960	246900	522354
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.0388	0.0361	0.0530	0.112
4,4'-DDE	0.00013	0.00252	0.00235	0.00345	0.00730
4,4'-DDT	0.0004	0.00777	0.00722	0.0106	0.0224
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	473	9184	8542	12556	26564
1,2-Dibromoethane [Ethylene Dibromide]	4.24	82.3	76.6	112	238
m -Dichlorobenzene [1,3-Dichlorobenzene]	595	11553	10745	15794	33415
o -Dichlorobenzene [1,2-Dichlorobenzene]	3299	64058	59574	87574	185275
p -Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	2.24	43.5	40.5	59.4	125
1,2-Dichloroethane	364	7068	6573	9662	20442
1,1-Dichloroethylene [1,1-Dichloroethene]	55114	1070175	995263	1463035	3095266
Dichloromethane [Methylene Chloride]	13333	258893	240771	353932	748796
1,2-Dichloropropane	259	5029	4677	6875	14545
1,3-Dichloropropene [1,3-Dichloropropylene]	119	2311	2149	3158	6683
Dicofol [Kelthane]	0.30	5.83	5.42	7.96	16.8
Dieldrin	2.0E-05	0.000388	0.000361	0.000530	0.00112
2,4-Dimethylphenol	8436	163806	152339	223938	473775
Di-*n* -Butyl Phthalate	92.4	1794	1669	2452	5189
Dioxins/Furans [TCDD Equivalents]	7.97E-08	0.0000015	0.0000014	0.0000021	0.0000045
Endrin	0.02	0.388	0.361	0.530	1.12
Epichlorohydrin	2013	39087	36351	53436	113052
Ethylbenzene	1867	36252	33715	49560	104852
Ethylene Glycol	1.68E+07	326213592	303378641	445966601	943507572
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0001	0.00194	0.00181	0.00265	0.00561
Heptachlor Epoxide	0.00029	0.00563	0.00524	0.00769	0.0162
Hexachlorobenzene	0.00068	0.0132	0.0123	0.0180	0.0381
Hexachlorobutadiene	0.22	4.27	3.97	5.84	12.3

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Hexachlorocyclohexane (*alpha*)	0.0084	0.163	0.152	0.222	0.471
Hexachlorocyclohexane (*beta*)	0.26	5.05	4.70	6.90	14.6
Hexachlorocyclohexane (*gamma*) [Lindane]	0.341	6.62	6.16	9.05	19.1
Hexachlorocyclopentadiene	11.6	225	209	307	651
Hexachloroethane	2.33	45.2	42.1	61.8	130
Hexachlorophene	2.90	56.3	52.4	76.9	162
4,4'-Isopropylidenediphenol [Bisphenol A]	15982	310330	288607	424252	897567
Lead	3.83	193	180	263	558
Mercury	0.0250	0.485	0.451	0.663	1.40
Methoxychlor	3.0	58.3	54.2	79.6	168
Methyl Ethyl Ketone	9.92E+05	19262136	17913786	26333266	55711875
Methyl *tert* -butyl ether [MTBE]	10482	203534	189287	278251	588681
Nickel	1140	22136	20586	30262	64023
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	1873	36369	33823	49719	105189
N-Nitrosodiethylamine	2.1	40.8	37.9	55.7	117
N-Nitroso-di-*n* -Butylamine	4.2	81.6	75.8	111	235
Pentachlorobenzene	0.355	6.89	6.41	9.42	19.9
Pentachlorophenol	0.29	5.63	5.24	7.69	16.2
Polychlorinated Biphenyls [PCBs]	6.4E-04	0.0124	0.0116	0.0169	0.0359
Pyridine	947	18388	17101	25138	53184
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.24	4.66	4.33	6.37	13.4
1,1,2,2-Tetrachloroethane	26.35	512	476	699	1479
Tetrachloroethylene [Tetrachloroethylene]	280	5437	5056	7432	15725
Thallium	0.23	4.47	4.15	6.10	12.9
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.214	0.199	0.292	0.617
2,4,5-TP [Silvex]	369	7165	6663	9795	20723
1,1,1-Trichloroethane	784354	15230175	14164063	20821171	44050234
1,1,2-Trichloroethane	166	3223	2998	4406	9322
Trichloroethylene [Trichloroethene]	71.9	1396	1298	1908	4037
2,4,5-Trichlorophenol	1867	36252	33715	49560	104852
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	16.5	320	298	438	926

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Acrolein	N/A	N/A
Aldrin	4.62	5.61
Aluminum	N/A	N/A
Arsenic	529	643
Cadmium	82.9	100
Carbaryl	2179	2646
Chlordane	0.0379	0.0460
Chlorpyrifos	0.0391	0.0474
Chromium (trivalent)	N/A	N/A
Chromium (hexavalent)	470	571
Copper	38.6	46.8
Copper (oyster waters)	N/A	N/A
Cyanide (free)	19.9	24.1
4,4'-DDT	0.00948	0.0115
Demeton	0.948	1.15
Diazinon	2.91	3.53
Dicofol [Kelthane]	N/A	N/A
Dieldrin	0.0189	0.0230
Diuron	N/A	N/A
Endosulfan I (*alpha*)	0.0853	0.103
Endosulfan II (*beta*)	0.0853	0.103
Endosulfan sulfate	0.0853	0.103
Endrin	0.0189	0.0230
Guthion [Azinphos Methyl]	0.0948	0.115
Heptachlor	0.0379	0.0460
Hexachlorocyclohexane (*gamma*) [Lindane]	0.568	0.690
Lead	130	158
Malathion	0.0948	0.115
Mercury	7.46	9.06
Methoxychlor	0.284	0.345
Mirex	0.00948	0.0115
Nickel	124	150
Nonylphenol	16.1	19.5
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	53.6	65.2
Phenanthrene	27.3	33.2
Polychlorinated Biphenyls [PCBs]	0.284	0.345
Selenium	1289	1565
Silver	16.2	19.7
Toxaphene	0.00189	0.00230
Tributyltin [TBT]	0.0701	0.0852
2,4,5 Trichlorophenol	113	138
Zinc	546	663

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Acrylonitrile	2136	2594
Aldrin	0.000213	0.000258
Anthracene	24472	29716
Antimony	19901	24165
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	10796	13109
Benzidine	1.98	2.41
Benzo(*a*)anthracene	0.464	0.564
Benzo(*a*)pyrene	0.0464	0.0564
Bis(chloromethyl)ether	5.10	6.19
Bis(2-chloroethyl)ether	795	966
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthala	140	170
Bromodichloromethane [Dichlorobromomethane]	5110	6205
Bromoform [Tribromomethane]	19696	23917
Cadmium	N/A	N/A
Carbon Tetrachloride	854	1037
Chlordane	0.0464	0.0564
Chlorobenzene	50858	61757
Chlorodibromomethane [Dibromochloromethane]	3400	4129
Chloroform [Trichloromethane]	143025	173673
Chromium (hexavalent)	9328	11327
Chrysene	46.8	56.8
Cresols [Methylphenols]	172830	209865
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0371	0.0451
4,4'-DDE	0.00241	0.00293
4,4'-DDT	0.00743	0.00902
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	8789	10672
1,2-Dibromoethane [Ethylene Dibromide]	78.7	95.6
m -Dichlorobenzene [1,3-Dichlorobenzene]	11056	13425
o -Dichlorobenzene [1,2-Dichlorobenzene]	61301	74437
p -Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	41.6	50.5
1,2-Dichloroethane	6763	8213
1,1-Dichloroethylene [1,1-Dichloroethene]	1024125	1243580
Dichloromethane [Methylene Chloride]	247753	300842
1,2-Dichloropropane	4812	5844
1,3-Dichloropropene [1,3-Dichloropropylene]	2211	2685
Dicofol [Kelthane]	5.57	6.76
Dieldrin	0.000371	0.000451
2,4-Dimethylphenol	156757	190348
Di-*n* -Butyl Phthalate	1716	2084
Dioxins/Furans [TCDD Equivalents]	0.0000015	0.0000018
Endrin	0.371	0.451
Epichlorohydrin	37405	45420
Ethylbenzene	34692	42126
Ethylene Glycol	312176621	379071611
Fluoride	N/A	N/A
Heptachlor	0.00185	0.00225
Heptachlor Epoxide	0.00538	0.00654
Hexachlorobenzene	0.0126	0.0153
Hexachlorobutadiene	4.08	4.96

Human Health *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Hexachlorocyclohexane (*alpha*)	0.156	0.189
Hexachlorocyclohexane (*beta*)	4.83	5.86
Hexachlorocyclohexane (*gamma*) [Lindane]	6.33	7.69
Hexachlorocyclopentadiene	215	261
Hexachloroethane	43.2	52.5
Hexachlorophene	53.8	65.4
4,4'-Isopropylidenediphenol [Bisphenol A]	296976	360614
Lead	184	224
Mercury	0.464	0.564
Methoxychlor	55.7	67.6
Methyl Ethyl Ketone	18433286	22383276
Methyl *tert* -butyl ether [MTBE]	194775	236513
Nickel	21183	25722
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	34803	42261
N-Nitrosodiethylamine	39.0	47.3
N-Nitroso-di-*n* -Butylamine	78.0	94.7
Pentachlorobenzene	6.59	8.01
Pentachlorophenol	5.38	6.54
Polychlorinated Biphenyls [PCBs]	0.0118	0.0144
Pyridine	17597	21367
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	4.45	5.41
1,1,2,2-Tetrachloroethane	489	594
Tetrachloroethylene [Tetrachloroethylene]	5202	6317
Thallium	4.27	5.18
Toluene	N/A	N/A
Toxaphene	0.204	0.248
2,4,5-TP [Silvex]	6856	8326
1,1,1-Trichloroethane	14574820	17697996
1,1,2-Trichloroethane	3084	3745
Trichloroethylene [Trichloroethene]	1336	1622
2,4,5-Trichlorophenol	34692	42126
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	306	372

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	The City of Corpus Christi
TPDES Permit No:	WQ0005289000
Outfall No:	001 Final
Prepared by:	Thomas Starr, P.E.
Date:	November 27, 2023

DISCHARGE INFORMATION

Receiving Waterbody:	Corpus Christi Inner Harbor
Segment No:	2484
TSS (mg/L):	9
Effluent Flow for Aquatic Life (MGD)	N/A
% Effluent for Chronic Aquatic Life (Mixing Zone):	6.24
% Effluent for Acute Aquatic Life (ZID):	8.74
Oyster Waters?	**no**
Effluent Flow for Human Health (MGD):	N/A
% Effluent for Human Health:	4.85

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Estuarine Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (trivalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	14552.76	0.884		1.00	Assumed
Lead	6.06	-0.85	177375.60	0.385		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	142514.99	0.438		1.00	Assumed
Zinc	5.36	-0.52	73079.22	0.603		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*SW Acute Criterion (µg/L)*	*SW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrolein	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin	1.3	N/A	14.9	N/A	4.76	N/A	6.99	14.8
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	1705	1250	546	763	801	1696
Cadmium	40.0	8.75	458	140	146	85.5	125	266
Carbaryl	613	N/A	7014	N/A	2244	N/A	3299	6980
Chlordane	0.09	0.004	1.03	0.0641	0.330	0.0391	0.0574	0.121
Chlorpyrifos	0.011	0.006	0.126	0.0962	0.0403	0.0587	0.0592	0.125
Chromium (trivalent)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (hexavalent)	1090	49.6	12471	795	3991	485	712	1507
Copper	13.5	3.6	175	65.2	55.9	39.8	58.5	123
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide (free)	5.6	5.6	64.1	89.7	20.5	54.7	30.1	63.7
4,4'-DDT	0.13	0.001	1.49	0.0160	0.476	0.00978	0.0143	0.0304
Demeton	N/A	0.1	N/A	1.60	N/A	0.978	1.43	3.04
Diazinon	0.819	0.819	9.37	13.1	3.00	8.01	4.40	9.32
Dicofol [Kelthane]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	8.12	0.0321	2.60	0.0196	0.0287	0.0608
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (*alpha*)	0.034	0.009	0.389	0.144	0.124	0.0880	0.129	0.273
Endosulfan II (*beta*)	0.034	0.009	0.389	0.144	0.124	0.0880	0.129	0.273
Endosulfan sulfate	0.034	0.009	0.389	0.144	0.124	0.0880	0.129	0.273
Endrin	0.037	0.002	0.423	0.0321	0.135	0.0196	0.0287	0.0608
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.160	N/A	0.0978	0.143	0.304
Heptachlor	0.053	0.004	0.606	0.0641	0.194	0.0391	0.0574	0.121
Hexachlorocyclohexane (*gamma*) [Lindane]	0.16	N/A	1.83	N/A	0.586	N/A	0.861	1.82
Lead	133	5.3	3951	221	1264	135	197	418
Malathion	N/A	0.01	N/A	0.160	N/A	0.0978	0.143	0.304
Mercury	2.1	1.1	24.0	17.6	7.69	10.8	11.3	23.9
Methoxychlor	N/A	0.03	N/A	0.481	N/A	0.293	0.431	0.912
Mirex	N/A	0.001	N/A	0.0160	N/A	0.00978	0.0143	0.0304
Nickel	118	13.1	1350	210	432	128	188	398
Nonylphenol	7	1.7	80.1	27.2	25.6	16.6	24.4	51.6
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	173	154	55.3	93.8	81.2	171
Phenanthrene	7.7	4.6	88.1	73.7	28.2	45.0	41.4	87.6
Polychlorinated Biphenyls [PCBs]	10	0.03	114	0.481	36.6	0.293	0.431	0.912
Selenium	564	136	6453	2179	2065	1329	1954	4134
Silver	2	N/A	52.2	N/A	16.7	N/A	24.5	51.9
Toxaphene	0.21	0.0002	2.40	0.00321	0.769	0.00196	0.00287	0.00608
Tributyltin [TBT]	0.24	0.0074	2.75	0.119	0.879	0.0723	0.106	0.224
2,4,5 Trichlorophenol	259	12	2963	192	948	117	172	364
Zinc	92.7	84.2	1758	2237	563	1364	827	1749

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	115	2371	2205	3241	6858
Aldrin	1.147E-05	0.000236	0.000220	0.000323	0.000684
Anthracene	1317	27155	25254	37123	78539
Antimony	1071	22082	20537	30188	63869
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	581	11979	11141	16377	34647
Benzidine	0.107	2.21	2.05	3.01	6.38
Benzo(*a*)anthracene	0.025	0.515	0.479	0.704	1.49
Benzo(*a*)pyrene	0.0025	0.0515	0.0479	0.0704	0.149
Bis(chloromethyl)ether	0.2745	5.66	5.26	7.73	16.3
Bis(2-chloroethyl)ether	42.83	883	821	1207	2554
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthala	7.55	156	145	212	450
Bromodichloromethane [Dichlorobromomethane]	275	5670	5273	7751	16399
Bromoform [Tribromomethane]	1060	21856	20326	29878	63213
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	46	948	882	1296	2743
Chlordane	0.0025	0.0515	0.0479	0.0704	0.149
Chlorobenzene	2737	56433	52483	77149	163221
Chlorodibromomethane [Dibromochloromethane]	183	3773	3509	5158	10913
Chloroform [Trichloromethane]	7697	158701	147592	216960	459010
Chromium (hexavalent)	502	10351	9626	14150	29936
Chrysene	2.52	52.0	48.3	71.0	150
Cresols [Methylphenols]	9301	191773	178349	262173	554665
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.0412	0.0384	0.0563	0.119
4,4'-DDE	0.00013	0.00268	0.00249	0.00366	0.00775
4,4'-DDT	0.0004	0.00825	0.00767	0.0112	0.0238
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	473	9753	9070	13332	28207
1,2-Dibromoethane [Ethylene Dibromide]	4.24	87.4	81.3	119	252
m-Dichlorobenzene [1,3-Dichlorobenzene]	595	12268	11409	16771	35482
o-Dichlorobenzene [1,2-Dichlorobenzene]	3299	68021	63259	92990	196736
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	2.24	46.2	43.0	63.1	133
1,2-Dichloroethane	364	7505	6980	10260	21707
1,1-Dichloroethylene [1,1-Dichloroethene]	55114	1136371	1056825	1553532	3286726
Dichloromethane [Methylene Chloride]	13333	274907	255664	375825	795114
1,2-Dichloropropane	259	5340	4966	7300	15445
1,3-Dichloropropene [1,3-Dichloropropylene]	119	2454	2282	3354	7096
Dicofol [Kelthane]	0.30	6.19	5.75	8.45	17.8
Dieldrin	2.0E-05	0.000412	0.000384	0.000563	0.00119
2,4-Dimethylphenol	8436	173938	161762	237790	503081
Di-*n*-Butyl Phthalate	92.4	1905	1772	2604	5510
Dioxins/Furans [TCDD Equivalents]	7.97E-08	0.0000016	0.0000015	0.0000022	0.0000048
Endrin	0.02	0.412	0.384	0.563	1.19
Epichlorohydrin	2013	41505	38600	56741	120045
Ethylbenzene	1867	38495	35800	52626	111338
Ethylene Glycol	1.68E+07	346391753	322144330	473552164	1001868865
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0001	0.00206	0.00192	0.00281	0.00596
Heptachlor Epoxide	0.00029	0.00598	0.00556	0.00817	0.0172
Hexachlorobenzene	0.00068	0.0140	0.0130	0.0191	0.0405
Hexachlorobutadiene	0.22	4.54	4.22	6.20	13.1

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Hexachlorocyclohexane (*alpha*)	0.0084	0.173	0.161	0.236	0.500
Hexachlorocyclohexane (*beta*)	0.26	5.36	4.99	7.32	15.5
Hexachlorocyclohexane (*gamma*) [Lindane]	0.341	7.03	6.54	9.61	20.3
Hexachlorocyclopentadiene	11.6	239	222	326	691
Hexachloroethane	2.33	48.0	44.7	65.6	138
Hexachlorophene	2.90	59.8	55.6	81.7	172
4,4'-Isopropylidenediphenol [Bisphenol A]	15982	329526	306459	450494	953087
Lead	3.83	205	191	280	593
Mercury	0.0250	0.515	0.479	0.704	1.49
Methoxychlor	3.0	61.9	57.5	84.5	178
Methyl Ethyl Ketone	9.92E+05	20453608	19021856	27962127	59157971
Methyl *tert* -butyl ether [MTBE]	10482	216124	200995	295462	625094
Nickel	1140	23505	21860	32133	67983
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	1873	38619	35915	52795	111696
N-Nitrosodiethylamine	2.1	43.3	40.3	59.1	125
N-Nitroso-di-*n* -Butylamine	4.2	86.6	80.5	118	250
Pentachlorobenzene	0.355	7.32	6.81	10.0	21.1
Pentachlorophenol	0.29	5.98	5.56	8.17	17.2
Polychlorinated Biphenyls [PCBs]	6.4E-04	0.0132	0.0123	0.0180	0.0381
Pyridine	947	19526	18159	26693	56474
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.24	4.95	4.60	6.76	14.3
1,1,2,2-Tetrachloroethane	26.35	543	505	742	1571
Tetrachloroethylene [Tetrachloroethylene]	280	5773	5369	7892	16697
Thallium	0.23	4.74	4.41	6.48	13.7
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.227	0.211	0.310	0.655
2,4,5-TP [Silvex]	369	7608	7076	10401	22005
1,1,1-Trichloroethane	784354	16172247	15040190	22109079	46774991
1,1,2-Trichloroethane	166	3423	3183	4679	9899
Trichloroethylene [Trichloroethene]	71.9	1482	1379	2026	4287
2,4,5-Trichlorophenol	1867	38495	35800	52626	111338
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	16.5	340	316	465	983

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Acrolein	N/A	N/A
Aldrin	4.89	5.94
Aluminum	N/A	N/A
Arsenic	561	681
Cadmium	88.0	106
Carbaryl	2309	2804
Chlordane	0.0402	0.0488
Chlorpyrifos	0.0414	0.0503
Chromium (trivalent)	N/A	N/A
Chromium (hexavalent)	498	605
Copper	40.9	49.7
Copper (oyster waters)	N/A	N/A
Cyanide (free)	21.0	25.6
4,4'-DDT	0.0100	0.0122
Demeton	1.00	1.22
Diazinon	3.08	3.74
Dicofol [Kelthane]	N/A	N/A
Dieldrin	0.0201	0.0244
Diuron	N/A	N/A
Endosulfan I (*alpha*)	0.0905	0.109
Endosulfan II (*beta*)	0.0905	0.109
Endosulfan sulfate	0.0905	0.109
Endrin	0.0201	0.0244
Guthion [Azinphos Methyl]	0.100	0.122
Heptachlor	0.0402	0.0488
Hexachlorocyclohexane (*gamma*) [Lindane]	0.602	0.731
Lead	138	168
Malathion	0.100	0.122
Mercury	7.91	9.60
Methoxychlor	0.301	0.366
Mirex	0.0100	0.0122
Nickel	131	160
Nonylphenol	17.1	20.7
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	56.8	69.0
Phenanthrene	29.0	35.2
Polychlorinated Biphenyls [PCBs]	0.301	0.366
Selenium	1368	1661
Silver	17.1	20.8
Toxaphene	0.00201	0.00244
Tributyltin [TBT]	0.0744	0.0903
2,4,5 Trichlorophenol	120	146
Zinc	578	703

Human Health *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Acrylonitrile	2269	2755
Aldrin	0.000226	0.000274
Anthracene	25986	31554
Antimony	21132	25660
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	11463	13920
Benzidine	2.11	2.56
Benzo(*a*)anthracene	0.493	0.598
Benzo(*a*)pyrene	0.0493	0.0598
Bis(chloromethyl)ether	5.41	6.57
Bis(2-chloroethyl)ether	845	1026
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthala	148	180
Bromodichloromethane [Dichlorobromomethane]	5426	6588
Bromoform [Tribromomethane]	20915	25397
Cadmium	N/A	N/A
Carbon Tetrachloride	907	1102
Chlordane	0.0493	0.0598
Chlorobenzene	54004	65577
Chlorodibromomethane [Dibromochloromethane]	3610	4384
Chloroform [Trichloromethane]	151872	184416
Chromium (hexavalent)	9905	12027
Chrysene	49.7	60.3
Cresols [Methylphenols]	183521	222847
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0394	0.0479
4,4'-DDE	0.00256	0.00311
4,4'-DDT	0.00789	0.00958
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	9332	11332
1,2-Dibromoethane [Ethylene Dibromide]	83.6	101
m -Dichlorobenzene [1,3-Dichlorobenzene]	11740	14255
o -Dichlorobenzene [1,2-Dichlorobenzene]	65093	79042
p -Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	44.1	53.6
1,2-Dichloroethane	7182	8721
1,1-Dichloroethylene [1,1-Dichloroethene]	1087473	1320503
Dichloromethane [Methylene Chloride]	263077	319451
1,2-Dichloropropane	5110	6205
1,3-Dichloropropene [1,3-Dichloropropylene]	2348	2851
Dicofol [Kelthane]	5.91	7.18
Dieldrin	0.000394	0.000479
2,4-Dimethylphenol	166453	202122
Di-*n* -Butyl Phthalate	1823	2213
Dioxins/Furans [TCDD Equivalents]	0.0000016	0.0000019
Endrin	0.394	0.479
Epichlorohydrin	39719	48230
Ethylbenzene	36838	44732
Ethylene Glycol	331486515	402519340
Fluoride	N/A	N/A
Heptachlor	0.00197	0.00239
Heptachlor Epoxide	0.00572	0.00694
Hexachlorobenzene	0.0134	0.0162
Hexachlorobutadiene	4.34	5.27

Human Health *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Hexachlorocyclohexane (*alpha*)	0.165	0.201
Hexachlorocyclohexane (*beta*)	5.13	6.22
Hexachlorocyclohexane (*gamma*) [Lindane]	6.72	8.17
Hexachlorocyclopentadiene	228	277
Hexachloroethane	45.9	55.8
Hexachlorophene	57.2	69.4
4,4'-Isopropylidenediphenol [Bisphenol A]	315346	382920
Lead	196	238
Mercury	0.493	0.598
Methoxychlor	59.1	71.8
Methyl Ethyl Ketone	19573489	23767808
Methyl *tert* -butyl ether [MTBE]	206823	251143
Nickel	22493	27313
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	36956	44876
N-Nitrosodiethylamine	41.4	50.3
N-Nitroso-di-*n* -Butylamine	82.8	100
Pentachlorobenzene	7.00	8.50
Pentachlorophenol	5.72	6.94
Polychlorinated Biphenyls [PCBs]	0.0126	0.0153
Pyridine	18685	22689
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	4.73	5.75
1,1,2,2-Tetrachloroethane	519	631
Tetrachloroethylene [Tetrachloroethylene]	5524	6708
Thallium	4.53	5.51
Toluene	N/A	N/A
Toxaphene	0.217	0.263
2,4,5-TP [Silvex]	7280	8841
1,1,1-Trichloroethane	15476355	18792717
1,1,2-Trichloroethane	3275	3977
Trichloroethylene [Trichloroethene]	1418	1722
2,4,5-Trichlorophenol	36838	44732
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	325	395

Appendix B
Comparison of Technology-Based Effluent Limits and Water Quality-Based Effluent Limits

The following table is a summary of technology-based effluent limitations calculated/assessed in the draft permit (Technology-Based) and calculated/ assessed water quality-based effluent limitations (Water Quality-Based. Effluent limitations appearing in bold are the most stringent of the two and are included in the draft permit.

Outfall	*Pollutant*	*Technology-Based*				*Water Quality-Based*			
		Daily Avg		*Daily Max*		*Daily Avg*		*Daily Max*	
		lbs/day	*mg/L*	*lbs/day*	*mg/L*	*lbs/day*	*mg/L*	*lbs/day*	*mg/L*
001 Initial	Flow	**34.3 MGD**		**41 MGD**		-		-	
	Total Suspended Solids (TSS)	**Report**	**Report**	**Report**	**Report**	-	-	-	-
	Total Dissolved Solids (TDS)	-	-	-	-	**Report**	**Report**	**Report**	**Report**
	Chloride	-	-	-	-	**Report**	**Report**	**Report**	**Report**
	Sulfate	-	-	-	-	**Report**	**Report**	**Report**	**Report**
	pH	**6.5 SU, minimum**		**9.0 SU**		-		-	
001 Final	Flow	**51.5 MGD**		**62 MGD**		-		-	
	TSS	**Report**	**Report**	**Report**	**Report**	-	-	-	-
	TDS	-	-	-	-	**Report**	**Report**	**Report**	**Report**
	Chloride	-	-	-	-	**Report**	**Report**	**Report**	**Report**
	Sulfate	-	-	-	-	**Report**	**Report**	**Report**	**Report**
	pH	**6.5 SU, minimum**		**9.0 SU**		-		-	

TPDES PERMIT NO.
WQ0005289000
[For TCEQ office use only -
EPA I.D. No. TX0139874]

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

PERMIT TO DISCHARGE WASTES
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

City of Corpus Christi

whose mailing address is

P.O. Box 9277
Corpus Christi, Texas 78469

is authorized to treat and discharge wastes from Inner Harbor Desalination Plant, a seawater desalination facility (SIC 4941)

located at the intersection of Nueces Bay Boulevard and East Broadway Street, in the City of Corpus Christi, Nueces County, Texas 78401

directly to Corpus Christi Inner Harbor in Segment No. 2484 of the Bays and Estuaries

only according to effluent limitations, monitoring requirements, and other conditions set forth in this permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the permittee the right to use private or public property for conveyance of wastewater along the discharge route described in this permit. This includes, but is not limited to, property belonging to any individual, partnership, corporation, or other entity. Neither does this permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight, five years from the date of permit issuance.

ISSUED DATE:

For the Commission

1. During the period beginning upon the date of permit issuance and lasting through the date of expansion to the final phase, the permittee is authorized to discharge water treatment wastes [1] subject to the following effluent limitations:

   The daily average flow of effluent shall not exceed 34.3 million gallons per day (MGD). The daily maximum flow shall not exceed 41 MGD.

Effluent Characteristics	Discharge Limitations					Minimum Self-Monitoring Requirements	
	Daily Average		Daily Maximum		Single Grab	Report Daily Average and Daily Maximum	
	lbs/day	mg/L	lbs/day	mg/L	mg/L	Measurement Frequency	Sample Type
Flow	34.3 MGD		41 MGD		N/A	Continuous	Totalizer
Total Suspended Solids	Report	Report	Report	Report	N/A	1/week	Grab
Total Dissolved Solids	Report	Report	Report	Report	N/A	1/week	Grab
Chloride	Report	Report	Report	Report	N/A	1/week	Grab
Sulfate	Report	Report	Report	Report	N/A	1/week	Grab

2. The pH must not be less than 6.5 standard units nor greater than 9.0 standard units and must be monitored 1/day by grab sample.

3. There must be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples must be taken at the following location: At Outfall 001, following commingling of all wastewater and prior to the start-of-pipe to diffuser.

[1] See Other Requirement No. 3.

1. During the period beginning upon the date of expansion to the final phase and lasting through the date of permit expiration, the permittee is authorized to discharge water treatment wastes [1] subject to the following effluent limitations:

   The daily average flow of effluent shall not exceed 51.5 million gallons per day (MGD). The daily maximum flow shall not exceed 62 MGD.

Effluent Characteristics	Discharge Limitations					Minimum Self-Monitoring Requirements	
	Daily Average		Daily Maximum		Single Grab	Report Daily Average and Daily Maximum	
	lbs/day	mg/L	lbs/day	mg/L	mg/L	Measurement Frequency	Sample Type
Flow	51.5 MGD		62 MGD		N/A	Continuous	Totalizer
Total Suspended Solids	Report	Report	Report	Report	N/A	1/week	Grab
Total Dissolved Solids	Report	Report	Report	Report	N/A	1/week	Grab
Chloride	Report	Report	Report	Report	N/A	1/week	Grab
Sulfate	Report	Report	Report	Report	N/A	1/week	Grab

2. The pH must not be less than 6.5 standard units nor greater than 9.0 standard units and must be monitored 1/day by grab sample.

3. There must be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples must be taken at the following location: At Outfall 001, following commingling of all wastewater and prior to the start-of-pipe to diffuser.

[1] See Other Requirement No. 3.

DEFINITIONS AND STANDARD PERMIT CONDITIONS

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC §§305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in Texas Water Code §26.001 and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

1. Flow Measurements

   a. Annual average flow - the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder, and limited to major domestic wastewater discharge facilities with a one million gallons per day or greater permitted flow.

   b. Daily average flow - the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.

   c. Daily maximum flow - the highest total flow for any 24-hour period in a calendar month.

   d. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.

   e. 2-hour peak flow (domestic wastewater treatment plants) - the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.

   f. Maximum 2-hour peak flow (domestic wastewater treatment plants) - the highest 2-hour peak flow for any 24-hour period in a calendar month.

2. Concentration Measurements

   a. Daily average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.

      i. For domestic wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.

      ii. For all other wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.

   b. 7-day average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.

   c. Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.

   d. Daily discharge - the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the “daily discharge” is calculated as the total

mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day.

The "daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

e. Bacteria concentration (Fecal coliform, *E. coli*, or Enterococci) – the number of colonies of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the nth root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substitute value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

f. Daily average loading (lbs/day) - the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as (Flow, MGD × Concentration, mg/L × 8.34).

g. Daily maximum loading (lbs/day) - the highest daily discharge, in terms of mass (lbs/day), within a period of one calendar month.

3. Sample Type

a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(c).

b. Grab sample - an individual sample collected in less than 15 minutes.

4. Treatment Facility (facility) - wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.

5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids that have not been classified as hazardous waste separated from wastewater by unit processes.

6. Bypass - the intentional diversion of a waste stream from any portion of a treatment facility.

MONITORING AND REPORTING REQUIREMENTS

1. Self-Reporting

Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the Enforcement Division (MC 224), by the 20th day of the following month for each discharge that is described by this permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.

As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act; TWC Chapters 26, 27, and 28; and THSC Chapter 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record, or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

2. Test Procedures

   a. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§319.11 - 319.12. Measurements, tests, and calculations shall be accurately accomplished in a representative manner.

   b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.

3. Records of Results

   a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.

   b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR §264.73(b)(9) shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, application or certification. This period shall be extended at the request of the Executive Director.

   c. Records of monitoring activities shall include the following:

      i. date, time, and place of sample or measurement;
      ii. identity of individual who collected the sample or made the measurement;
      iii. date and time of analysis;
      iv. identity of the individual and laboratory who performed the analysis;
      v. the technique or method of analysis; and
      vi. the results of the analysis or measurement and quality assurance/quality control records.

      The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

4. Additional Monitoring by Permittee

   If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

5. Calibration of Instruments

   All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification shall be retained at the facility site or shall be readily available for review by a TCEQ representative for a period of three years.

6. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date to the regional office and the Enforcement Division (MC 224).

7. Noncompliance Notification

a. In accordance with 30 TAC §305.125(9) any noncompliance that may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Report of such information shall be provided orally or by facsimile transmission (FAX) to the regional office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the regional office and the Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. For Publicly Owned Treatment Works (POTWs), effective September 1, 2020, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.

b. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:

i. unauthorized discharges as defined in Permit Condition 2(g).
ii. any unanticipated bypass that exceeds any effluent limitation in the permit.
iii. violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of an Industrial TPDES permit.

c. In addition to the above, any effluent violation that deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the regional office and the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.

d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, noncompliances shall be reported on the approved self-report form.

8. In accordance with the procedures described in 30 TAC §§35.301 - 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.

9. Changes in Discharges of Toxic Substances

All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the regional office, orally or by facsimile transmission within 24 hours, and both the regional office and the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

i. one hundred micrograms per liter (100 µg/L);
ii. two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
iii. five (5) times the maximum concentration value reported for that pollutant in the permit application; or
iv. the level established by the TCEQ.

b. That any activity has occurred or will occur that would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

i. five hundred micrograms per liter (500 µg/L);
ii. one milligram per liter (1 mg/L) for antimony;
iii. ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
iv. the level established by the TCEQ.

10. Signatories to Reports

All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).

11. All POTWs must provide adequate notice to the Executive Director of the following:

a. any new introduction of pollutants into the POTW from an indirect discharger that would be subject to CWA §301 or §306 if it were directly discharging those pollutants;

b. any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and

c. for the purpose of this paragraph, adequate notice shall include information on:

i. the quality and quantity of effluent introduced into the POTW; and
ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PERMIT CONDITIONS

1. General

a. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in an application or in any report to the Executive Director, it shall promptly submit such facts or information.

b. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application, and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:

i. violation of any terms or conditions of this permit;
ii. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending, or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

2. Compliance

a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.

b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds for enforcement action, for permit amendment,

revocation, or suspension, or for denial of a permit renewal application or an application for a permit for another facility.

c. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

d. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation that has a reasonable likelihood of adversely affecting human health or the environment.

e. Authorization from the Commission is required before beginning any change in the permitted facility or activity that may result in noncompliance with any permit requirements.

f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§305.62 and 305.66 and TWC §7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Other Requirements section of this permit.

h. In accordance with 30 TAC §305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility that does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.

i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under Texas Water Code §§7.051 - 7.075 (relating to Administrative Penalties), 7.101 - 7.111 (relating to Civil Penalties), and 7.141 - 7.202 (relating to Criminal Offenses and Penalties) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA §402, or any requirement imposed in a pretreatment program approved under the CWA §§402(a)(3) or 402(b)(8).

3. Inspections and Entry

a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC Chapter 361.

b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit, or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee, Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in TWC §7.002. The statement above, that Commission entry shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection, is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

4. Permit Amendment or Renewal

   a. The permittee shall give notice to the Executive Director as soon as possible of any planned physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements. Notice shall also be required under this paragraph when:

      i. the alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC §305.534 (relating to New Sources and New Dischargers); or

      ii. the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or

      iii. the alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   b. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.

   c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.

   d. Prior to accepting or generating wastes that are not described in the permit application or that would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.

   e. In accordance with the TWC §26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.

   f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA §307(a) for a toxic pollutant that is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA §307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Permit Transfer

   a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.

   b. A permit may be transferred only according to the provisions of 30 TAC §305.64 (relating to Transfer of Permits) and 30 TAC §50.133 (relating to Executive Director Action on Application or WQMP update).

6. Relationship to Hazardous Waste Activities

   This permit does not authorize any activity of hazardous waste storage, processing, or disposal that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Relationship to Water Rights

   Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to Texas Water Code Chapter 11.

8. Property Rights

   A permit does not convey any property rights of any sort, or any exclusive privilege.

9. Permit Enforceability

   The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Relationship to Permit Application

    The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

11. Notice of Bankruptcy.

    a. Each permittee shall notify the Executive Director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:

       i. the permittee;
       ii. an entity (as that term is defined in 11 USC, §101(15)) controlling the permittee or listing the permit or permittee as property of the estate; or
       iii. an affiliate (as that term is defined in 11 USC, §101(2)) of the permittee.

    b. This notification must indicate:

       i. the name of the permittee;
       ii. the permit number(s);
       iii. the bankruptcy court in which the petition for bankruptcy was filed; and
       iv. the date of filing of the petition.

OPERATIONAL REQUIREMENTS

1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.

2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge use and disposal and 30 TAC §§319.21 - 319.29 concerning the discharge of certain hazardous metals.

3. Domestic wastewater treatment facilities shall comply with the following provisions:

   a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.

   b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment or other treatment unit regulated by this permit.

4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, or retention of inadequately treated wastewater.

5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.

6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under TWC §7.302(b)(6).

7. Documentation

   For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other information specified as not confidential in 30 TAC §1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

8. Facilities that generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.

   a. Whenever flow measurements for any domestic sewage treatment facility reach 75% of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion or upgrading of the domestic wastewater treatment or collection facilities. Whenever the flow reaches 90% of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment or collection facilities. In the case of a domestic wastewater treatment facility that reaches 75% of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste produced is not expected to exceed the design limitations of the treatment facility, the permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

      If in the judgment of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 219) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission, and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.

c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.

9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.

10. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.

11. Facilities that generate industrial solid waste as defined in 30 TAC §335.1 shall comply with these provisions:

a. Any solid waste, as defined in 30 TAC §335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.

b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.

c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC §335.8(b)(1), to the Corrective Action Section (MC 127) of the Remediation Division informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.

d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Remediation Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC §335.5.

e. The term "industrial solid waste management unit" means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well, container, drum, salt dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.

f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC Chapter 335 and must include the following, as it pertains to wastewater treatment and discharge:

i. volume of waste and date(s) generated from treatment process;
ii. volume of waste disposed of on-site or shipped off-site;
iii. date(s) of disposal;

iv. identity of hauler or transporter;
v. location of disposal site; and
vi. method of final disposal.

The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

12. For industrial facilities to which the requirements of 30 TAC Chapter 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC Code Chapter 361.

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OTHER REQUIREMENTS

1. Violations of daily maximum limitations for the following pollutants shall be reported orally or by facsimile to TCEQ Region 14 within 24 hours from the time the permittee becomes aware of the violation, followed by a written report within five working days to TCEQ Region 14 and Compliance Monitoring Team (MC 224): None.

2. The Executive Director reviewed this action for consistency with the goals and policies of the Texas Coastal Management Program (CMP) in accordance with the regulations of the General Land Office and determined that the action is consistent with the applicable CMP goals and policies.

3. The term *water treatment wastes* includes, but is not limited to, cold lime water treatment wastes, demineralizer backwash, filter backwash, ion exchange water treatment system wastes, membrane regeneration wastes, supernate, filtrate, and reverse osmosis reject water.

4. MIXING ZONES

   Initial Phase:

   The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum effluent percentage of 9.26 percent at the edge of the ZID. The ZID is defined as a 117.1-foot by 67.1-foot rectangle centered on the diffuser barrel with the longer edge running parallel to the diffuser barrel. This area is approximately equal to the area of a 50-foot radius circle.

   The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum effluent percentage of 6.62 percent at the edge of the chronic aquatic life mixing zone. The chronic aquatic life mixing zone is defined as a 380.4-foot by 330.4-foot rectangle centered on the diffuser with the longer edge running parallel to the diffuser barrel. This area is approximately equal to the area of a 200-foot radius circle.

   The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum effluent percentage of 5.15 percent at the edge of the human health mixing zone. The human health mixing zone is defined as a 734.4-foot by 684.4-foot rectangle centered on the diffuser with the longer edge running parallel to the diffuser barrel. This area is approximately equal to the area of a 400-foot radius circle.

   Final Phase:

   The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum effluent percentage of 8.74 percent at the edge of the ZID. The ZID is defined as a 117.1-foot by 67.1-foot rectangle centered on the diffuser barrel with the longer edge running parallel to the diffuser barrel. This area is approximately equal to the area of a 50-foot radius circle.

   The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum effluent percentage of 6.24 percent at the edge of the chronic aquatic life mixing zone. The chronic aquatic life mixing zone is defined as a 380.4-foot by 330.4-foot rectangle centered on the diffuser with the longer edge running parallel to the diffuser barrel. This area is approximately equal to the area of a 200-foot radius circle.

   The permittee shall maintain the diffuser at Outfall 001 to achieve a maximum effluent percentage of 4.85 percent at the edge of the human health mixing zone. The human health mixing zone is defined as a 734.4-foot by 684.4-foot rectangle centered on the diffuser with the longer edge running parallel to the diffuser barrel. This area is approximately equal to the area of a 400-foot radius circle.

5. This permit does not authorize the discharge of domestic wastewater. All domestic wastewater must be disposed of in an approved manner, such as routing to an approved on-site septic tank and drainfield system or to an authorized facility for treatment and disposal.

6. The sludge from the treatment process must be dewatered, and disposed of in accordance with all the applicable rules of the TCEQ. The permittee shall ensure that the disposal of sludge does not cause any contamination of the ground or surface waters in the state. The permittee shall keep records of all sludge removed from the wastewater treatment plant site. Such records shall include the following information:

   A. volume (dry weight basis) of sludge disposed of;

   B. date of disposal;

   C. identity and registration number of hauler;

   D. location and registration or permit number of disposal site; and

   E. method of final disposal.

   The above records must be maintained on a monthly basis and be available at the plant site for inspection by authorized representatives of the TCEQ for at least three (3) years.

7. Reporting requirements according to 30 TAC §§ 319.1-319.12 and any additional effluent reporting requirements contained in the permit are suspended from the effective date of the permit until plant startup or discharge, whichever occurs first, from the facility described by this permit. The permittee shall provide written notice to the TCEQ Region 14 Office, Applications Review and Processing Team (MC 148) of the Water Quality Division, and Compliance Monitoring Team (MC 224) at least forty-five days prior to plant startup or anticipated discharge, whichever occurs first, on Notification of Completion Form 20007. Additionally, the written notice is required at least forty-five days prior to the final phase startup on Form 20007.

8. Wastewater discharged via Outfall 001 must be sampled and analyzed as directed below for those parameters listed in Tables 1, 2, and 3 of Attachment A of this permit. Analytical testing for Outfall 001 must be completed within 60 days of initial discharge. Results of the analytical testing must be submitted within 90 days of initial discharge to the TCEQ Industrial Permits Team (MC-148). Based on a technical review of the submitted analytical results, an amendment may be initiated by TCEQ staff to include additional effluent limitations, monitoring requirements, or both.

   Table 1: Analysis is required for all pollutants in Table 1. Wastewater must be sampled and analyzed for those parameters listed in Table 1 for a minimum of four sampling events that are each at least one week apart.

   Table 2: Analysis is required for those pollutants in Table 2 that are used at the facility that could in any way contribute to contamination in the Outfall 001 discharge. Sampling and analysis must be conducted for a minimum of four sampling events that are each at least one week apart.

   Table 3: For all pollutants listed in Table 3, the permittee shall indicate whether each pollutant is believed to be present or absent in the discharge. Sampling and analysis must be conducted for each pollutant believed present for a minimum of one sampling event.

The permittee shall report the flow at Outfall 001 in MGD in the attachment. The permittee shall indicate on each table whether the samples are composite (C) or grab (G) by checking the appropriate box.

9. The permittee has completed a study of ambient water velocity and provided the results as an appendix to the modeling report. During the term of this permit, the permittee shall submit a report to the TCEQ Water Quality Assessment Section (MC-150) summarizing measured ambient water velocity at the location of Outfall 001. The report must include results of measurements of speed and direction of the tidal current collected at the depth of the proposed/installed diffuser barrel. The measurements shall capture velocities encompassing a complete tidal cycle and be collected during a period in which maximum tidal amplitude typically occurs.

10. Effluent salinity monitoring is a requirement of this permit.

    A. Beginning at commencement of discharge and lasting through the permit expiration date, the permittee shall perform the following at a frequency of once per quarter in order to better characterize the potential effects of the discharge on the salinity gradient within the Corpus Christi Inner Harbor:

        1. On a quarterly frequency, the permittee shall measure and record salinity concentrations of influent, effluent, and in the receiving waterbody at fixed sampling points. To the extent logistically possible, sampling at all locations shall occur concurrently.

        2. The sampling points shall not be influenced, as much as possible, by any other contributions (e.g., additional discharges). The location of fixed sampling points in the receiving waterbody should be 330 feet from the center of the diffuser and 660 feet from the center of the diffuser. The fixed sampling points shall be coordinated with and approved by TCEQ Water Quality Standards Implementation Team Staff prior to initiation of data collection efforts.
        3. Salinity measurements taken from all sampling points shall be either determined with properly calibrated, industry grade equipment or a properly collected grab sample analyzed for salinity at an accredited analytical laboratory.

    B. Background conditions.

        The permittee shall document significant rainfall amounts at the discharge location as recorded by the nearest, reliable weather station or rainfall gauge.

        Collected effluent salinity, instream salinity, influent salinity, and rainfall data shall be summarized and reported annually to the TCEQ Standards Implementation Team (MC-150) and the Industrial Permits Team (MC-148) of the TCEQ's Water Quality Division. The TCEQ will review these data to determine the appropriateness of the permit conditions and limitations.

Attachment A

Table 1 – Conventionals and Non-conventionals

Outfall No.: ☐C ☐G	Effluent Concentration (mg/L)					
Pollutant	**Samp.**	**Samp.**	**Samp.**	**Samp.**	**Average**	
Flow (MGD)						
BOD (5-day)						
CBOD (5-day)						
Chemical Oxygen Demand						
Total Organic Carbon						
Dissolved Oxygen						
Ammonia Nitrogen						
Total Suspended Solids						
Nitrate Nitrogen						
Total Organic Nitrogen						
Total Phosphorus						
Oil and Grease						
Total Residual Chlorine						
Total Dissolved Solids						
Sulfate						
Chloride						
Fluoride						
Total Alkalinity (mg/L as $CaCO_3$)						
Temperature (°F)						
pH (Standard Units; min/max)						

Table 2 – Metals

Pollutant	**Effluent Concentration (µg/L)[1]**					**MAL[2] (µg/L)**
	Samp.	**Samp.**	**Samp.**	**Samp.**	**Average**	
Aluminum, Total						2.5
Antimony, Total						5
Arsenic, Total						0.5
Barium, Total						3
Beryllium, Total						0.5
Cadmium, Total						1
Chromium, Total						3
Chromium, Hexavalent						3
Chromium, Trivalent						N/A
Copper, Total						2
Cyanide, Free						10
Lead, Total						0.5
Mercury, Total						0.005

[1] Indicate units if different than µg/L.
[2] Minimum Analytical Level

Pollutant	Effluent Concentration (µg/L)[1]					MAL[2] (µg/L)
	Samp.	Samp.	Samp.	Samp.	Average	
Nickel, Total						2
Selenium, Total						5
Silver, Total						0.5
Thallium, Total						0.5
Zinc, Total						5.0

Table 3 – Toxic Pollutants with Water Quality Criteria

Outfall No.: ☐C ☐G Pollutant	Samp. 1 (µg/L)[3]	Samp. 2 (µg/L)[3]	Samp. 3 (µg/L)[3]	Samp. 4 (µg/L)[3]	Avg. (µg/L)[3]	MAL (µg/L)
Acrolein						0.7
Acrylonitrile						50
Anthracene						10
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
Carbon Tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane						10
Chloroform						10
Chrysene						5
Cresols						10
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-Dichloropropylene						10
2,4-Dimethylphenol						10
Di-*n*-Butyl Phthalate						10
Epichlorohydrin						1,000
Ethylbenzene						10
Ethylene Glycol						—

[3] Indicate units if different than µg/L.

Outfall No.: ☐C ☐G **Pollutant**	**Samp. 1 (µg/L)[3]**	**Samp. 2 (µg/L)[3]**	**Samp. 3 (µg/L)[3]**	**Samp. 4 (µg/L)[3]**	**Avg. (µg/L)[3]**	**MAL (µg/L)**
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
4,4′-Isopropylidenediphenol [bisphenol A]						—
Methyl Ethyl Ketone						50
Methyl *tert*-butyl ether [MTBE]						—
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-*n*-Butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated Biphenyls (PCBs) [4]						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethylene						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethylene						10
2,4,5-Trichlorophenol						50
TTHM (Total Trihalomethanes)						10
Vinyl Chloride						10

[4] Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016. If all values are non-detects, enter the highest non-detect preceded by a "<" symbol.