Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

June 3, 2019
NOC-AE-19003665

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498 and STN 50-499
TPDES Permit Renewal Application 01908

Please find attached a copy of the Renewal Application for the South Texas Project Texas Pollutant Discharge Elimination System (TPDES) Permit No. 01908.

Appendix B of the South Texas Project Operating License requires the NRC be provided a copy of the application for renewal of the TPDES Permit at the same time the application is submitted to the permitting agency.

There are no commitments in this letter.

If you should have any questions on this matter, please contact N. Boehmisch at (361) 972-8172.

Michael P Murray
for L. Sterling
Lance P. Sterling
Manager, Regulatory Affairs

NB

Attachment: TPDES Permit Renewal Application for TPDES Permit No. 01908

STI: 34859088

cc:

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
1600 E. Lamar Boulevard
Arlington, TX 76011-4511

Glen 'Ed' Miller
Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North (O9E01)
11555 Rockville Pike
Rockville, MD 20852

NRC Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 289, Mail Code: MN116
Wadsworth, TX 77483

ERM

840 W. Sam Houston Parkway North
Suite 600
Houston, Texas
77024

Telephone: +1 281 600 1000
Fax: +1 281 520 4625

www.erm.com

May 21, 2019

Texas Commission on Environmental Quality
Applications Review and Processing Team (MC 148)
Building F, Room 2101
12100 Park 35 Circle
Austin, Texas 78711-3087

Reference: Project No. 0494757

Subject: Submittal of TPDES Permit Renewal Application
WQ0001908000, STP Nuclear Operating Company
12090 Farm-to-Market Road 521, Wadsworth, Texas 77483
CN 601658669; RN 102395654

To Whom It May Concern:

On behalf of South Texas Project Nuclear Operating Company (STPNOC), Environmental Resources Management Southwest, Inc. (ERM) is submitting the enclosed application for renewal of Texas Pollutant Discharge Elimination System (TPDES) permit No. WQ0001908000 re-authorizing wastewater discharge from South Texas Project Electric Generating Station.

One original and three additional copies of this application are enclosed and each includes the following:

- Industrial Administrative Report 1.0
- SPIF
- Industrial Technical Report 1.0
- Worksheets 1.0, 2.0, 4.0, 5.0, 11.0, 11.1, 11.2, and 11.3
- Core Data Form
- USGS Map
- Flow Diagram and Water Balance
- Site Drawing
- Supporting Attachments

If you have any questions regarding this renewal application, please contact Mr. Kurtis Schlicht, ERM Project Manager, at 832-730-4404, or Mr. Jason Ludwig, STPNOC Principal Environmental Consultant, at 361-972-4507.

Sincerely,

Environmental Resources Management Southwest, Inc.

Robert "Bob" Carpenter
Partner-in-Charge

Kurtis Schlicht
Project Manager

cc: Jason Ludwig, South Texas Project Nuclear Operating Company

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

TCEQ INDUSTRIAL WASTEWATER PERMIT APPLICATION

INDUSTRIAL ADMINISTRATIVE REPORT

Complete and submit this checklist with the application.

APPLICANT: STP Nuclear Operating Company

PERMIT NUMBER: WQ0001908000

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

	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—renewals, new, and amendments.

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

Permit No.: WQ0001908000

EPA ID No.: TX0064947

- ☐ New TPDES permit
- ☐ New TLAP permit
- ☐ Major Amendment with Renewal
- ☐ Major Amendment without Renewal
- ☒ Renewal of existing permit
- ☐ Stormwater only discharge
- ☐ Minor Amendment to permit
- ☐ Minor modification to permit

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

N/A

Please indicate by a check mark the amount submitted for the application fee:

EPA Classification	New	Major Amendment (With or Without Renewal)	Renewal Only	Minor Amendment/ Minor Modification
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.

Payment Information:

Mailed Check or Money Order Number: 123353

Check or Money Order Amount: $2,015

Named Printed on Check or Money Order: STP Nuclear Operating Company

EPAY Voucher Number:

Copy of Voucher Enclosed? ☐ Yes

Attachment: A

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

a. Facility Owner

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

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

STP Nuclear Operating Company

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

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

CN: 601658669

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

First/Last Name: Michael P. Murray

Title: Manager, Regulatory Affairs Credential:

b. Co-applicant Information

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

N/A

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

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

CN: N/A

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

First/Last Name: N/A

Title: Credential:

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

N/A

c. Core Data Form

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

Attachment: B

3. APPLICATION CONTACT INFORMATION (Instructions, Page 22)

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

a. First/Last Name: Jason Ludwig Credential:
Organization Name: STP Nuclear Operating Company Title: Staff Environmental Consultant
Mailing Address: P.O. Box 289
City: Wadsworth State: TX ZIP Code: 77483
Phone No.: 361-972-4507 Ext.: Fax No.:
E-mail Address: jaludwig@stpegs.com
Check one or both: ☒ Administrative Contact ☒ Technical Contact

b. First/Last Name: Kenneth Cunningham Credential:
Organization Name: STP Nuclear Operating Company Title: Environmental Supervisor
Mailing Address: P.O. Box 289
City: Wadsworth State: TX ZIP Code: 77483
Phone No.: 361-972-7880 Ext.: Fax No.:
E-mail Address: kmcunningham@stpegs.com
Check one or both: ☒ Administrative Contact ☒ Technical Contact

Attachment: N/A

4. PERMIT CONTACT INFORMATION (Instructions, Page 22)

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

a. First/Last Name: Jason Ludwig Credential:
Organization Name: STP Nuclear Operating Company Title: Staff Environmental Consultant
Mailing Address: P.O. Box 289
City: Wadsworth State: TX ZIP Code: 77483
Phone No.: 351-972-4507 Ext.: Fax No.:
E-mail Address: jaludwig@stpegs.com

b. First/Last Name: Kenneth Cunningham Credential:
Organization Name: STP Nuclear Operating Company Title: Environmental Supervisor
Mailing Address: P.O. Box 289
City: Wadsworth State: TX ZIP Code: 77483
Phone No.: 361-972-7880 Ext.: Fax No.:
E-mail Address: kmcunningham@stpegs.com

Attachment: N/A

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 (using form TCEQ-20029).*

First/Last Name: Jason Ludwig Credential:

Organization Name: STP Nuclear Operating Company Title: Staff Environmental Consultant

Mailing Address: P.O. Box 289

City: Wadsworth State: TX ZIP Code: 77483

Phone No.: 361-972-4507 Ext.: Fax No.:

E-mail Address: jaludwig@stpegs.com

6. DMR/MER CONTACT INFORMATION (Instructions, Pages 22-23)

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

First/Last Name: Kenneth Cunningham Credential:

Organization Name: STP Nuclear Operating Company Title: Environmental Supervisor

Mailing Address: P.O. Box 289

City: Wadsworth State: TX ZIP Code: 77483

Phone No.: 361-972-7880 Ext.: Fax No.:

E-mail Address: kmcunningham@stpegs.com

You can submit DMR data on the TCEQ website at https://www.tceq.texas.gov/field/netdmr/netdmr.html. Establish an electronic reporting account with the permit number.

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

a. Individual Publishing the Notices

First/Last Name: Jason Ludwig Credential:

Organization Name: STP Nuclear Operating Company Title: Staff Environmental Consultant

Mailing Address: P.O. Box 289

City: Wadsworth State: TX ZIP Code: 77483

Phone No.: 361-972-4507 Ext.: Fax No.:

E-mail Address: jaludwig@stpegs.com

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

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

☒ E-mail Address: jaludwig@stpegs.com

☐ Fax No.:

☐ Regular Mail:

Mailing Address:

City: State: ZIP Code:

Phone No.: Ext.: Fax:

c. Contact in the Notice

First/Last Name: Jason Ludwig Credential:

Organization Name: STP Nuclear Operating Company Title: Staff Environmental Consultant

Phone No.: 361-972-4507 Ext.: E-mail: jaludwig@stpegs.com

d. Public Place Information

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

Public building name: Matagorda County Courthouse

Location within the building: County Clerk's Office

Physical Address of Building: 1700 7th Street

City: Bay City County: Matagorda

Contact Name: Stephanie Wurtz

Phone No.: 979-244-7680 Ext.:

e. Bilingual Notice Requirements:

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

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

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

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

   ☐ Yes ☒ No

   If **no**, publication of an alternative language notice is not required; **skip to** 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? Click here to enter text

8. REGULATED ENTITY AND PERMITTED SITE INFORMATION (Instructions Pages 24-26)

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 at http://www15.tceq.texas.gov/crpub/index.cfm?fuseaction=regent.RNSearch 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 Regulated Entity Number and provide 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.

TCEQ issued Regulated Entity Number (RN): **RN** 102395654

a. State/TPDES Permit No.: WQ0001908000 Expiration Date: December 1, 2019

EPA Identification No. (TPDES Permits only): TX 0064947

b. Name of project or site (the name known by the community where located): South Texas Project Electric Generating Station

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: STP Nuclear Operating Company

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

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

First/Last Name: STP Nuclear Operating Company

Mailing Address: P.O. Box 289

City: Wadsworth State: TX ZIP Code: 77483

Phone No.: 361-972-4507 E-mail Address: jaludwig@stpegs.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: N/A

g. Owner of effluent disposal site:

First/Last Name: N/A

Mailing Address:

City: State: ZIP Code:

Phone No.: E-mail Address:

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

Attachment: N/A

h. Owner of sewage sludge disposal site:

First/Last Name: N/A

Mailing Address:

City: State: ZIP Code:

Phone No.: E-mail Address:

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

Attachment: N/A

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

9. DISCHARGE/ DISPOSAL INFORMATION (Instructions, Pages 26-28)

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

☐ Yes ☒ No

b. Provide an **original** full size USGS Topographic Map with all required information. Indicate by a check mark that the following information is provided.

See Attachment C

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

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

☐ Yes ☐ No

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

N/A

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

☒ Yes ☐ No

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

N/A

e. City nearest the outfall(s): Bay City

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

g. Outfall Latitude: See Attachment D Longitude:

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

☐ Yes ☒ No

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

☐ Authorization granted ☐ Authorization pending

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

Attachment: N/A

i. 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.

N/A

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

☐ Yes ☐ No

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

N/A

k. City nearest the disposal site: N/A

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

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

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

N/A

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

N/A

10. MISCELLANEOUS INFORMATION (Instructions, Pages 28-29)

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

☐ Yes ☒ No

List each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application:

N/A

b. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

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

Account number: N/A Amount past due: N/A

c. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

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

Enforcement order number: N/A Amount past due: N/A

11. SIGNATURE PAGE (Instructions, Page29)

Permit Number: WQ0001908000

Applicant: STP Nuclear Operating Company

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): Michael P. Murray

Signatory title: Manager, Regulatory Affairs

Signature: _____ Date: 5-16-19

(Use blue ink)

Subscribed and Sworn to before me by the said Michael P. Murray

on this 16th day of May, 2019.

My commission expires on the 26th day of April, 2020.

_____
Notary Public

RAFAEL GARCIA
Notary Public, State of Texas
Comm. Expires 04-26-2020
Notary ID 128973100

[SEAL]

Matagorda
County, Texas

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

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: STP Nuclear Operating Company

2. Permit No. WQ00 01908000 EPA ID No. TX 0064947

3. Address of the project (location description that includes street/highway, city/vicinity, and county):
   12090 Farm-to-Market Road 521, Wadsworth, Texas 77483

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

   First/Last Name: Jason Ludwig Credential:

   Organization Name: STP Nuclear Operating Company Title: Staff Environmental Consultant

   Mailing Address: P.O. Box 289

   City: Wadsworth State: TX ZIP Code: 77483

   Phone: 361-972-4507 Fax: E-mail Address: jaludwig@stpegs.com

5. List the county in which the facility is located: Matagorda

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.

via Outfall 001 directly to the Colorado River Tidal in Segment No. 1401 of the Colorado River Basin; via Outfall 002 to the Plant Area Drainage Ditch (PADD), thence to the Colorado River Tidal in Segment No. 1401 of the Colorado River Basin; via Outfall 003 to the West Branch of Colorado River, thence to Matagorda Bay/Powderhorn Lake in Segment No. 2451 of the Bays and Estuaries; via Outfall 004 to an unnamed ditch, thence to the Colorado River Tidal in Segment No. 1401 of the Colorado River Basin; via Outfall 005 to East Fork Little Robbins Slough, thence to Robbins Slough, thence to Robbins Lake, thence to Robbins Slough, thence to Crab Lake, thence to Crab Bayou, thence to the Gulf Intracoastal Waterway (GIWW), thence to Matagorda Bay/Powderhorn Lake in Segment No. 2451 of the Bays and Estuaries; and via Outfall 006 to Little Robbins Slough, thence to an unnamed pond, thence to Robbins Slough, thence to an unnamed lake, thence to Robbins Lake, thence to Robbins Slough, thence to Crab Lake, thence to Crab Bayou, thence to the GIWW, thence to Matagorda Bay /Powderhorn Lake in Segment No. 2451 of the Bays and Estuaries.

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 addvition to the map in the administrative report). See SPIF Attachment A

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

N/A

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

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:

N/A

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

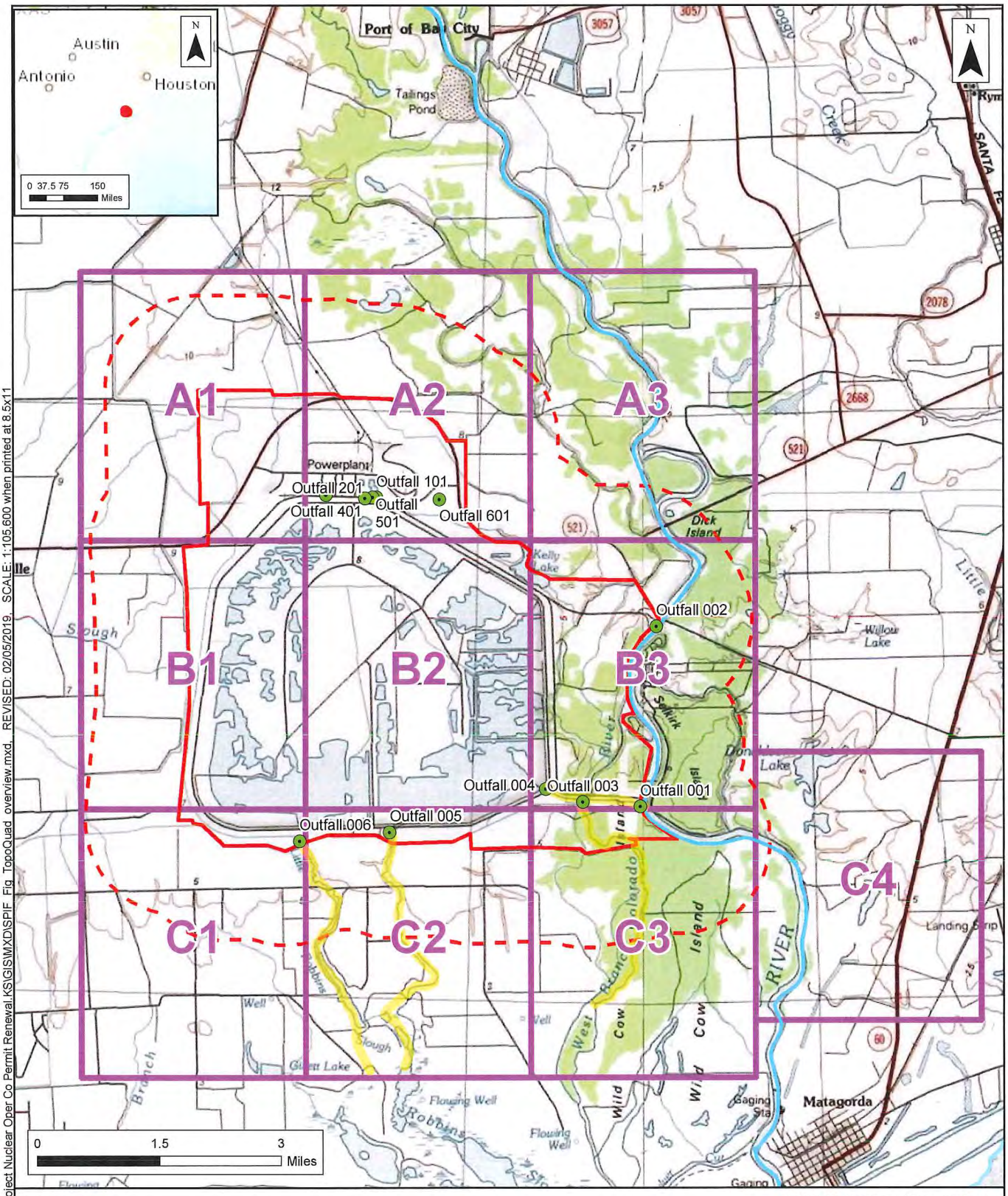
N/A

SPIF Figure

SPIF Attachment A

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000



Legend

- Property Boundary
- One-mile buffer
- Outfall
- Discharge route
- TCEQ Stream Segment

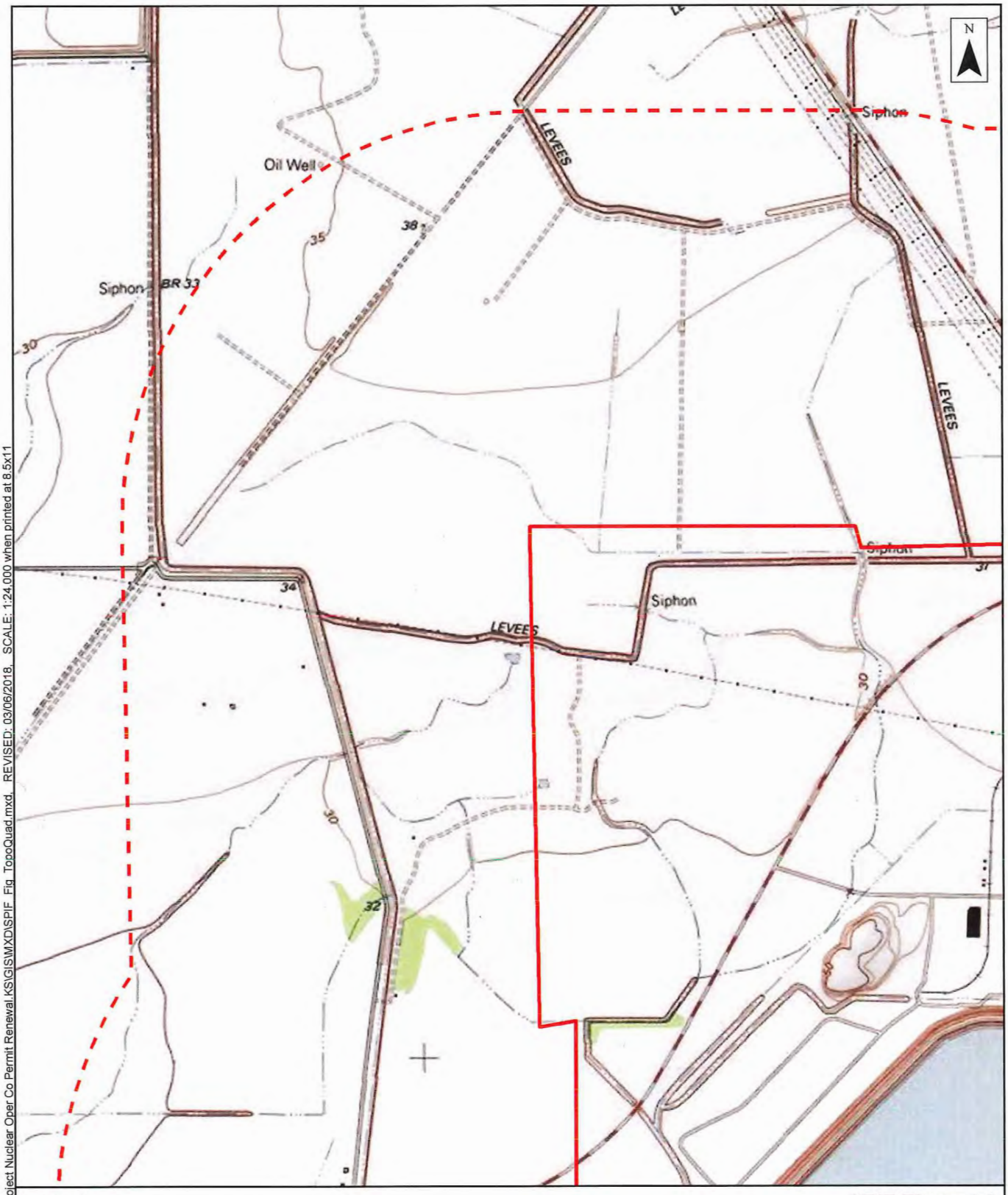
SPIF Figure Overview
Blessing SE, Wadsworth, Palacios NE, and Matagorda
1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad_overview.mxd, REVISED: 02/05/2019, SCALE: 1:105,600 when printed at 8.5x11

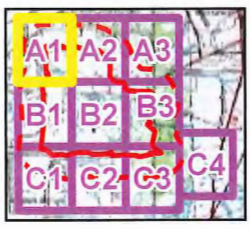
P:\Projects\0494757\DM\27552H(SPIF_Fig).pdf



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd. REVISED: 03/06/2018. SCALE: 1:24,000 when printed at 8.5x11

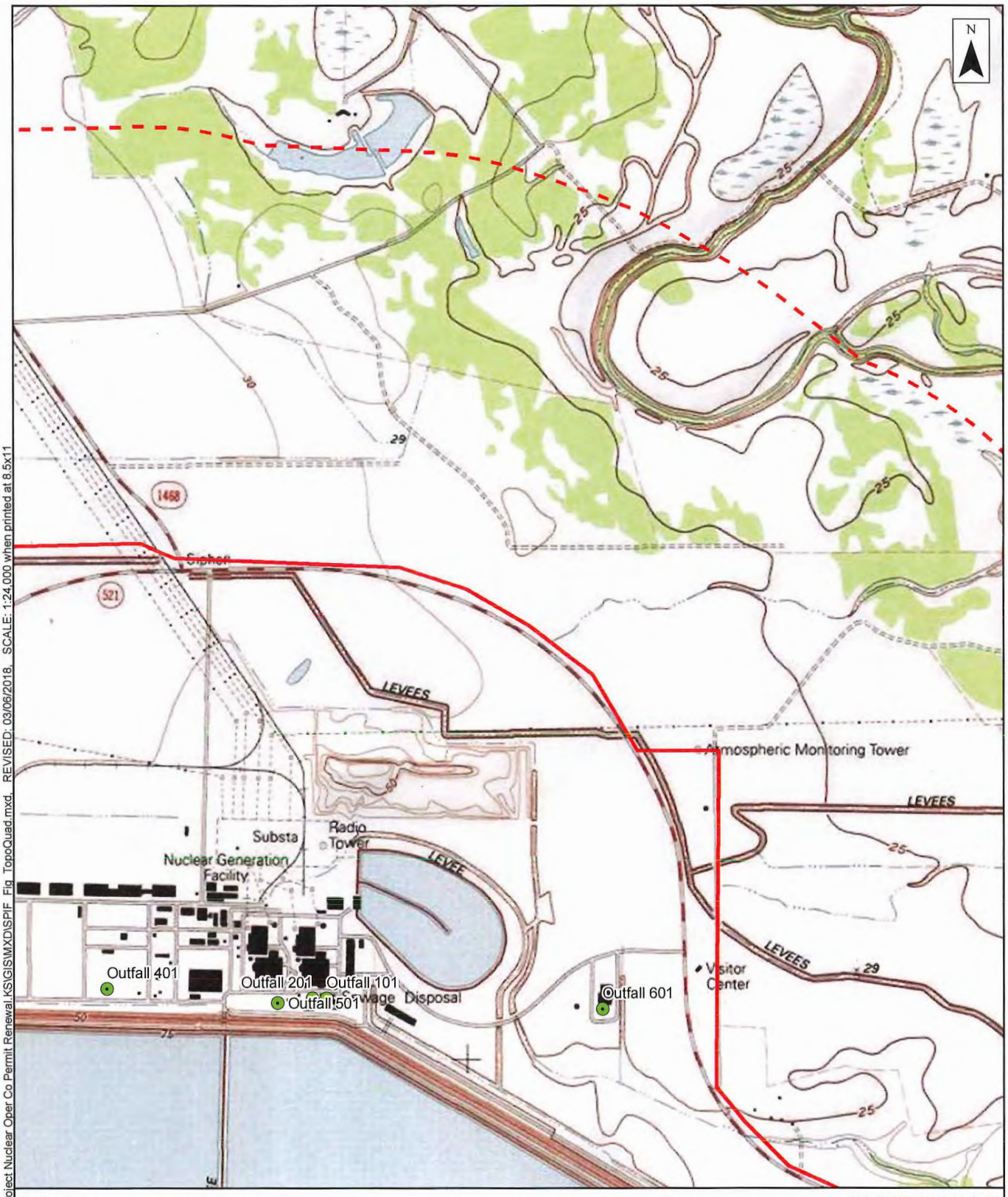
Legend

- Property Boundary
- One-mile buffer
- TCEQ Stream Segment



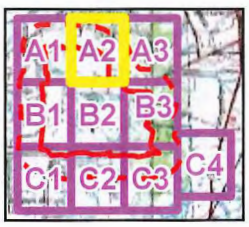
SPIF Figure A1
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



Legend

- Property Boundary
- One-mile buffer
- Outfall
- TCEQ Stream Segment

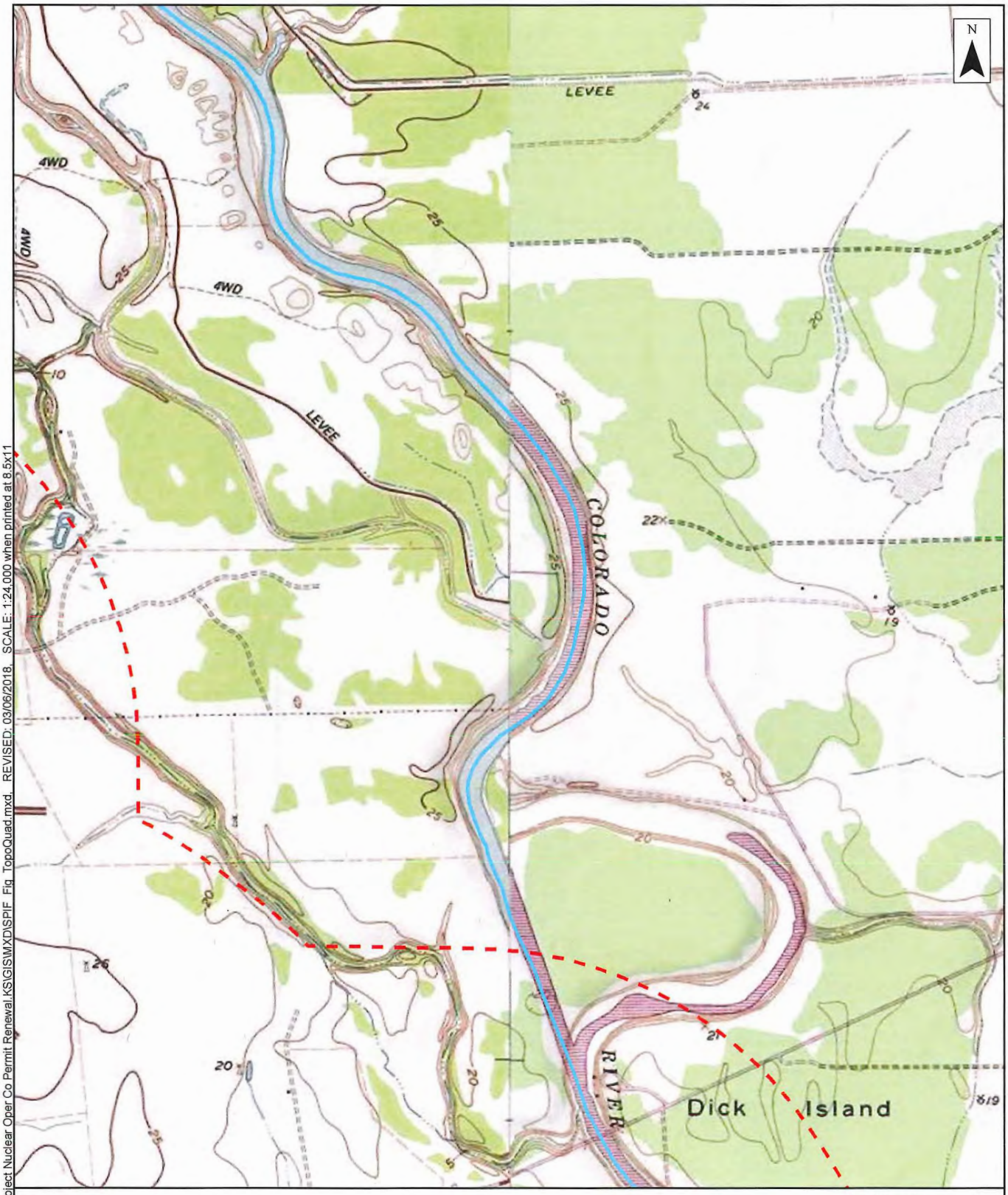


SPIF Figure A2
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd, REVISED: 03/06/2018, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

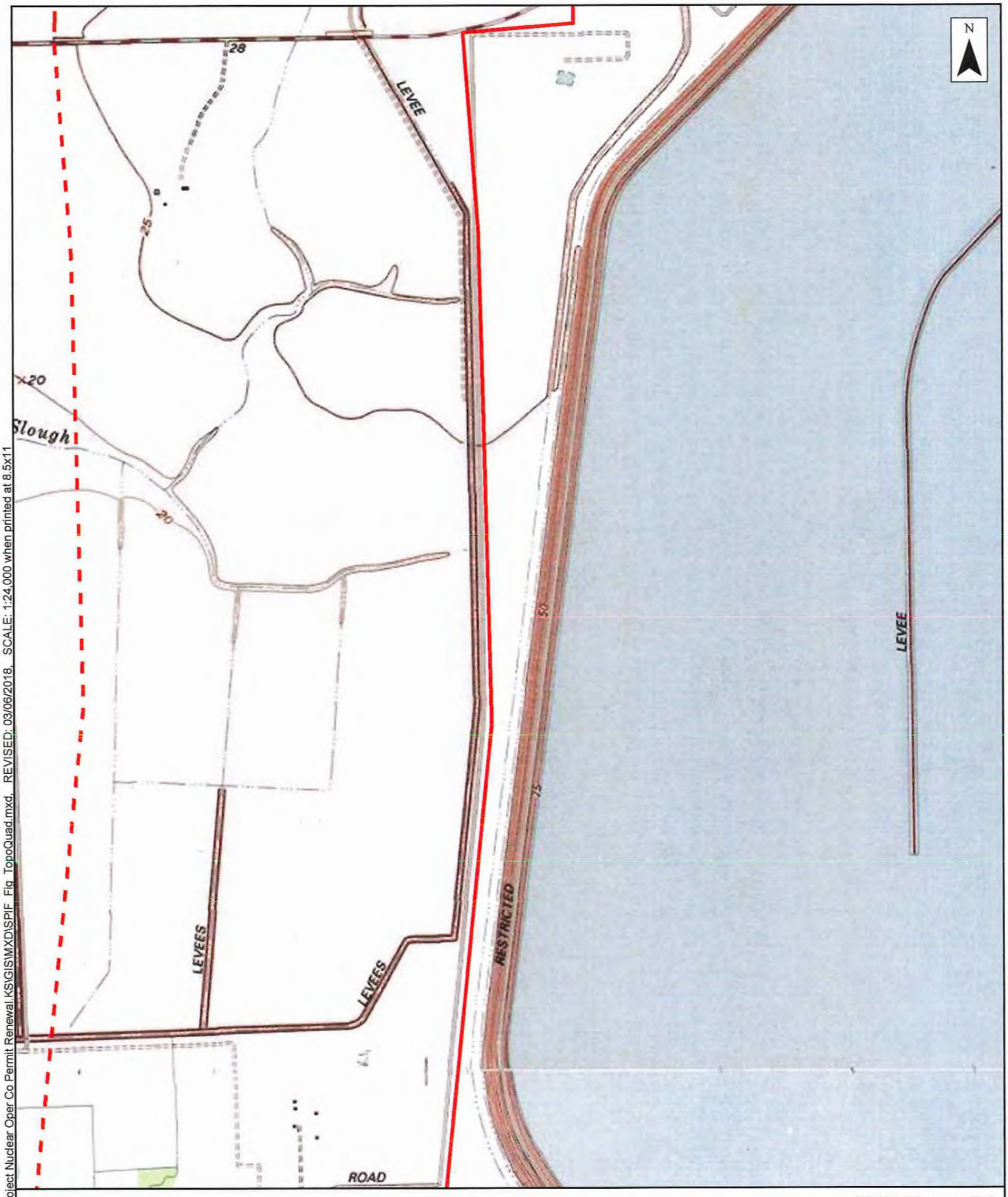


SPIF Figure A3
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd. REVISED: 03/06/2018. SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



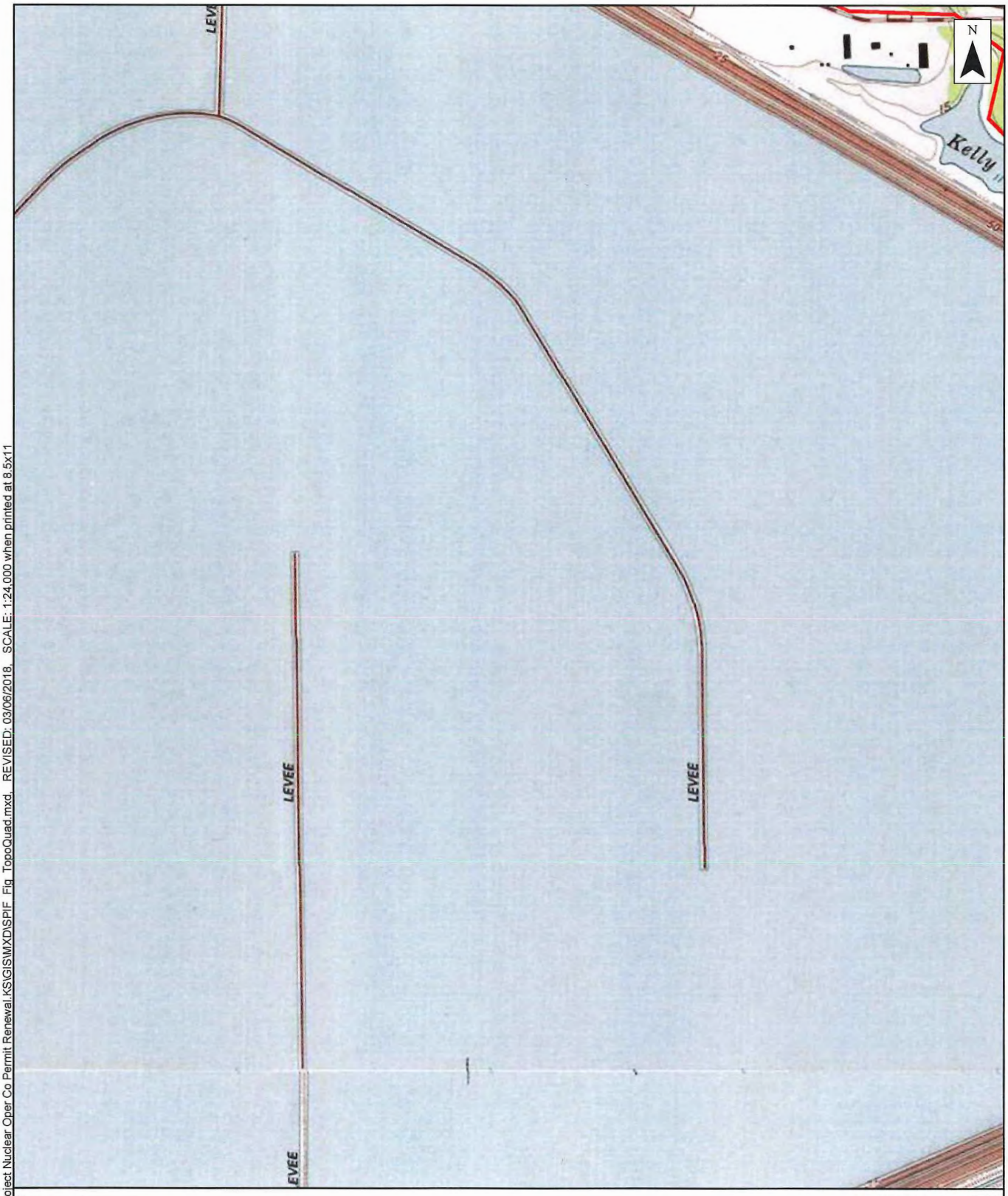
SPIF Figure B1
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd, REVISED: 03/06/2018, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

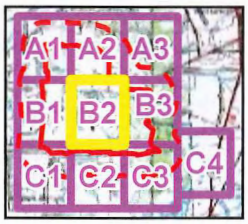
P:\Projects\0494757\DM\27552H(SPIF_Fig).pdf



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd, REVISED: 03/06/2018, SCALE: 1:24,000 when printed at 8.5x11

Legend

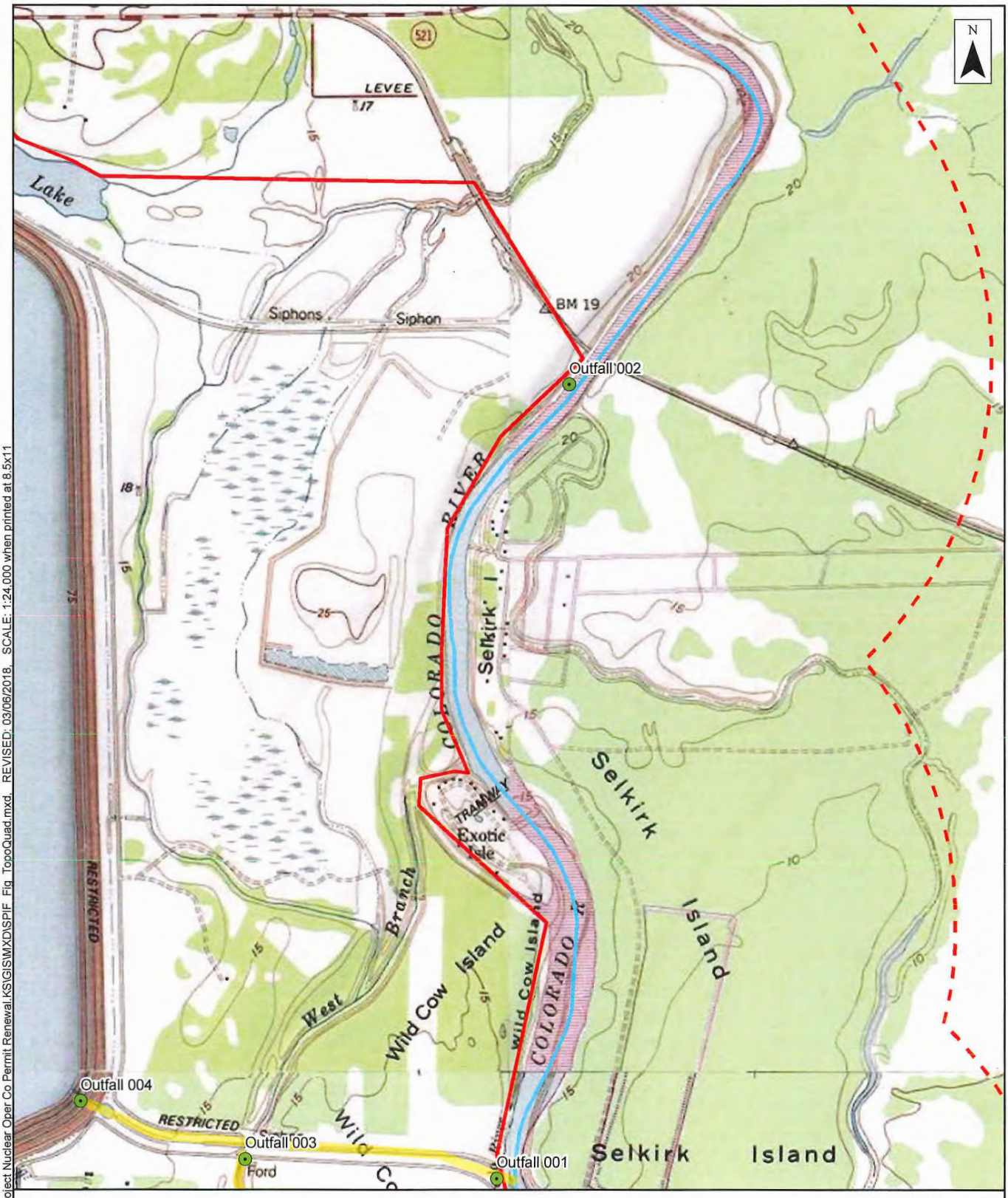
- Property Boundary
- One-mile buffer
- TCEQ Stream Segment



SPIF Figure B2
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

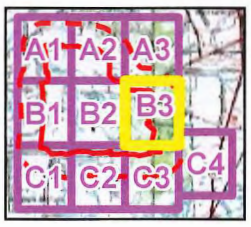
Environmental Resources Management
www.erm.com
ERM

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



Legend

- Property Boundary
- One-mile buffer
- Outfall
- Discharge route
- TCEQ Stream Segment

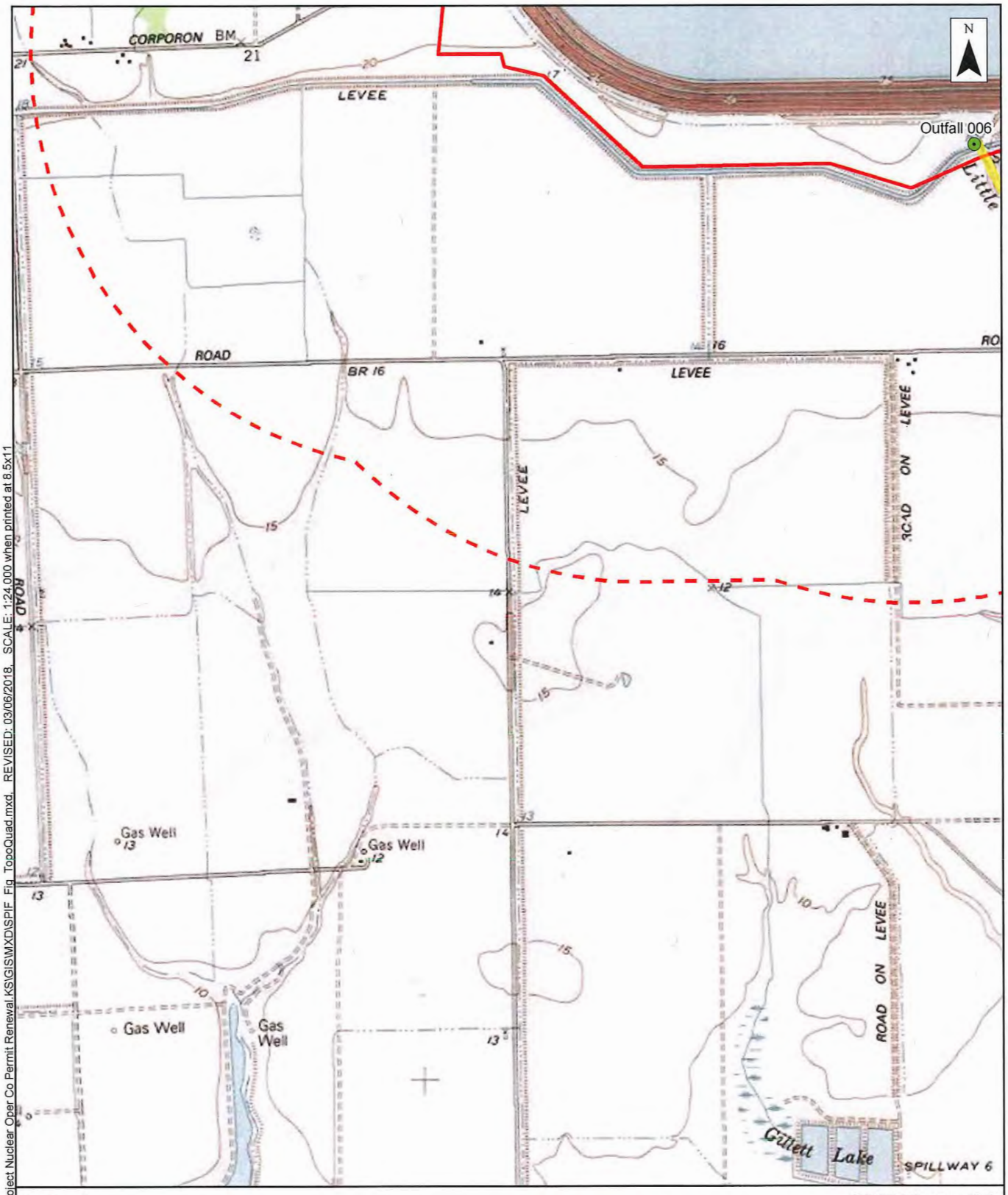


SPIF Figure B3
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

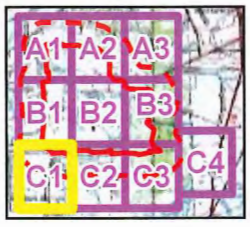
H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd. REVISED: 03/06/2018. SCALE: 1:24,000 when printed at 8.5x11



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd. REVISED: 03/06/2018. SCALE: 1:24,000 when printed at 8.5x11

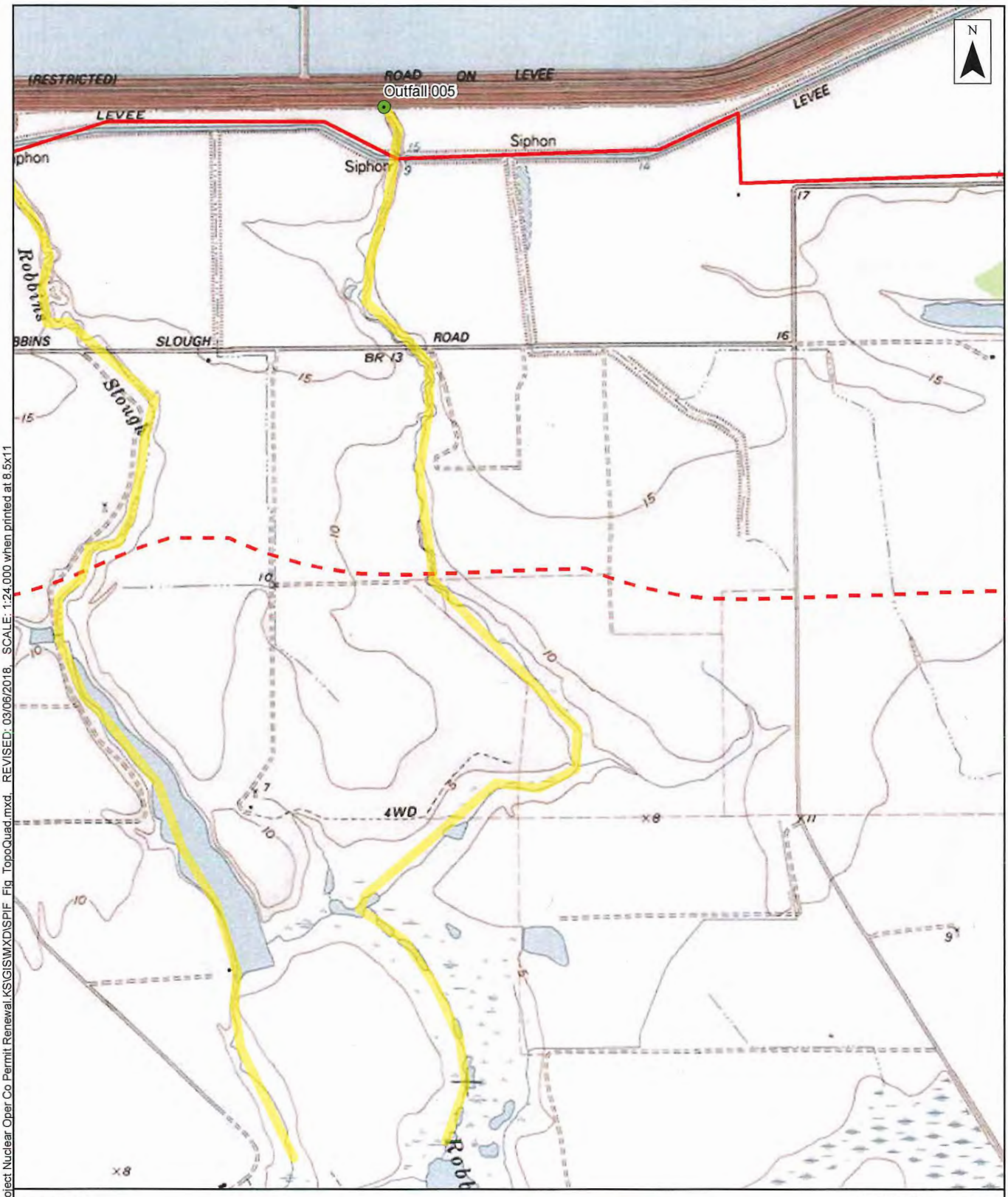
Legend

- Property Boundary
- One-mile buffer
- Outfall
- Discharge route
- TCEQ Stream Segment



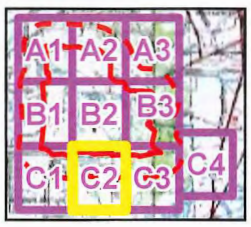
SPIF Figure C1
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



Legend

- Property Boundary
- One-mile buffer
- Outfall
- Discharge route
- TCEQ Stream Segment

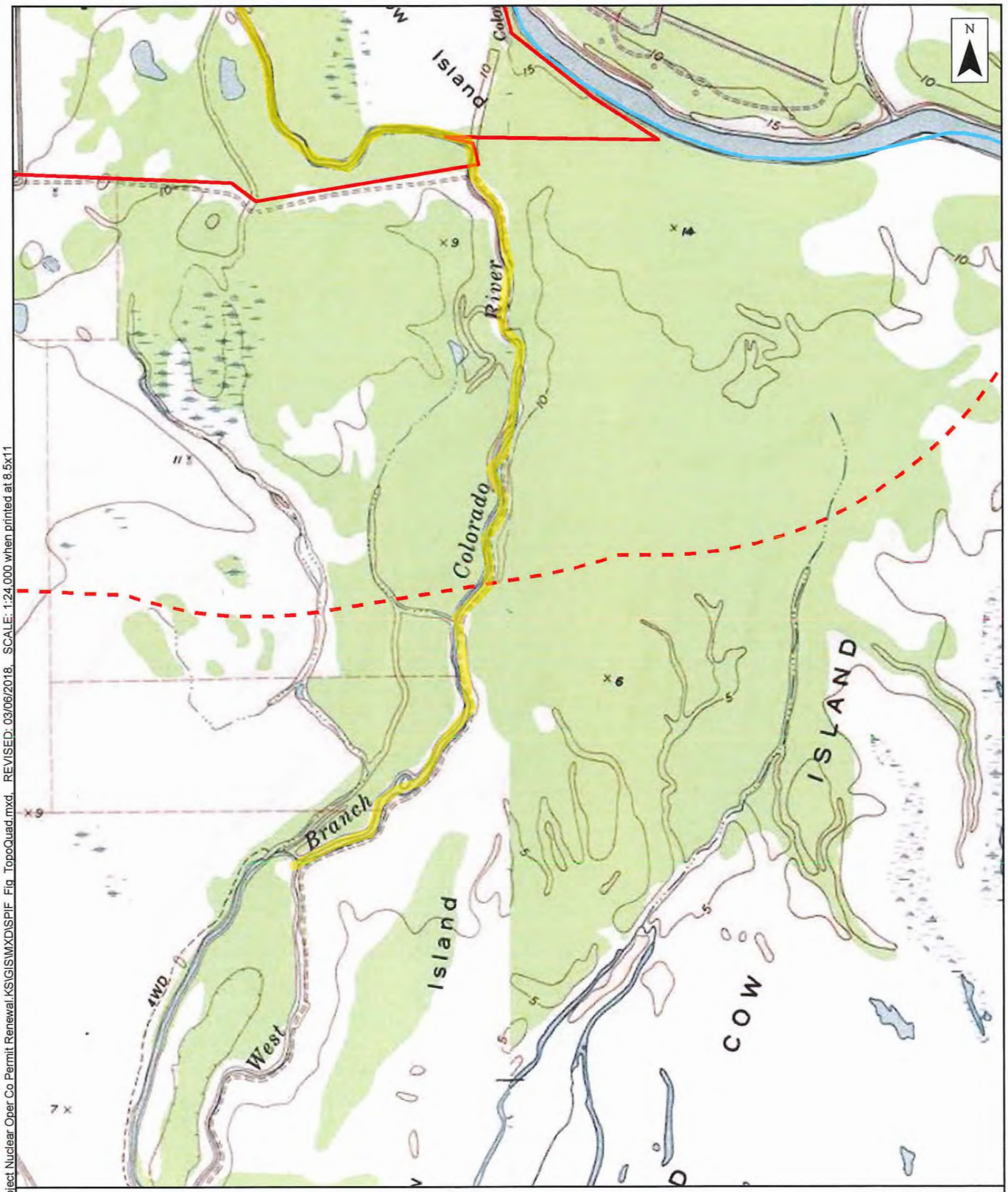


SPIF Figure C2
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

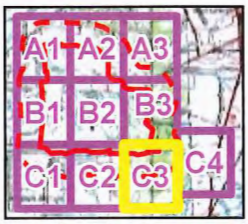
H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd, REVISED: 03/06/2018, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



Legend

- Property Boundary
- One-mile buffer
- Discharge route
- TCEQ Stream Segment

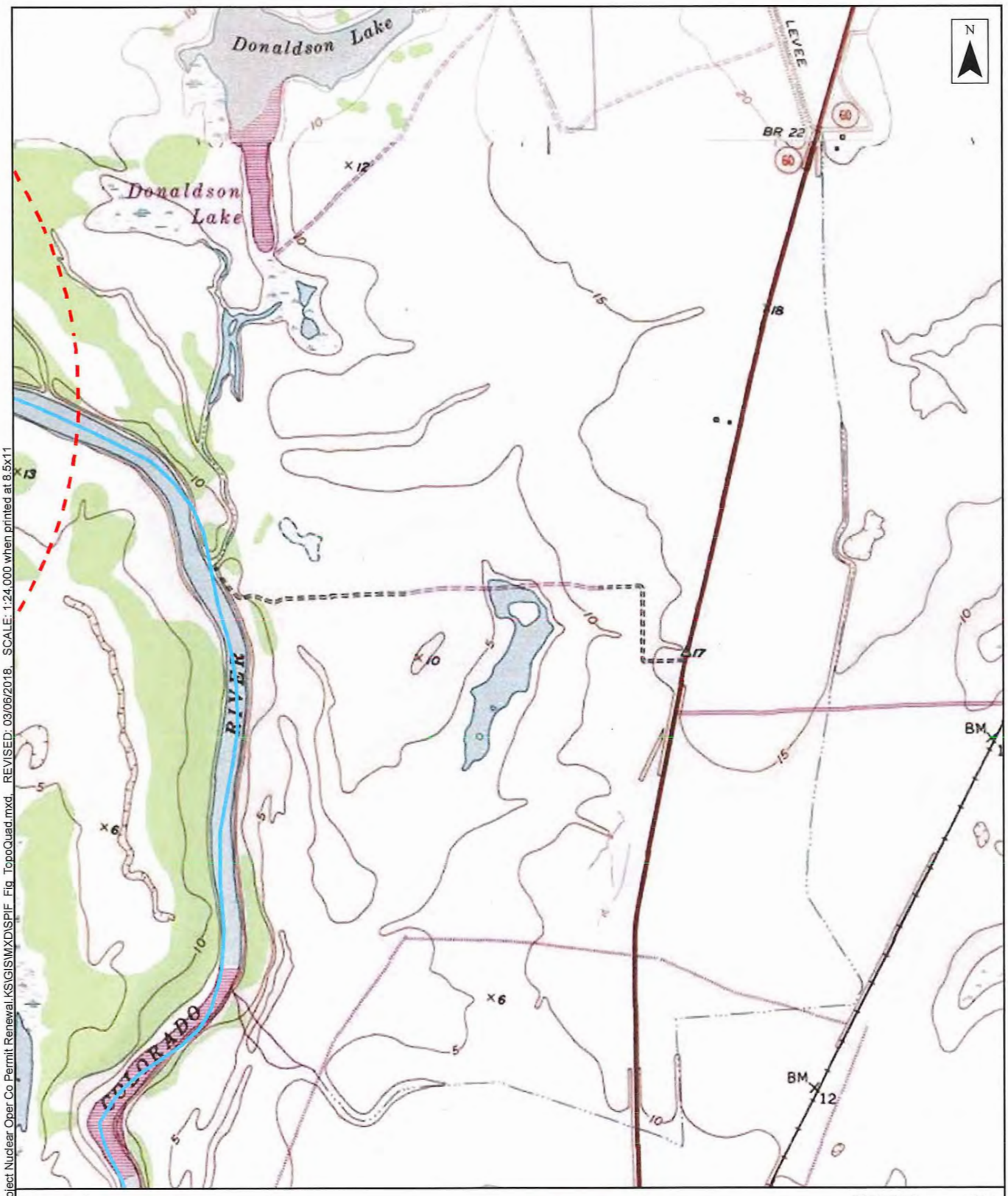


SPIF Figure C3
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF Fig TopoQuad.mxd, REVISED: 03/06/2018, SCALE: 1:24,000 when printed at 8.5x11

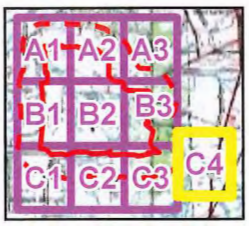
Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



Legend

One-mile buffer

TCEQ Stream Segment



SPIF Figure C4
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\SPIF_Fig_TopoQuad.mxd. REVISED: 03/06/2018. SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

TECHNICAL REPORT 1.0
INDUSTRIAL

This application form is for an industrial wastewater discharge authorization only. Your facility may need additional authorizations from the TCEQ Waste Permitting Division or the TCEQ Air Permitting Division.

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

1. FACILITY/SITE INFORMATION (Instructions, Pages 35-36)

a. Describe the type of activity and general nature of your business.

South Texas Project Electric Generating Station (STPEGS) is a nuclear fueled, steam-electric generating facility. Electricity is generated from steam driven turbines.

b. Describe the wastewater-generating processes.

See Attachment E

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

Materials List

Raw Materials	Intermediate Products	Final Products
Nuclear Fuel (7440-61-1)	Steam	Electricity

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

- Production areas, maintenance areas, materials-handling areas, and waste-disposal areas
- The location of each unit of the wastewater treatment plant including the location of wastewater collection sumps, impoundments, and outfalls (also include locations of 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 below.

N/A

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

☒ Yes ☐ No

List source(s) used to determine 100-year frequency flood plain:

FIRM 4854890375C, eff. 3/18/1985

If **no**, provide the elevation of the 100-year frequency flood plain and describe what protective measures are in use or planned to be used to prevent flooding of the treatment facility/disposal area.

N/A

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

☐ Yes ☐ No

If **no**, proceed to Item 2.

h. If **yes** to the above question, has the applicant applied for a U.S. Army Corps of Engineers 404 Dredge and Fill permit?

☐ Yes ☐ No

If **yes**, provide the permit number: N/A

If **no**, provide the approximate date you anticipate submitting your application to the Corps: N/A

2. TREATMENT SYSTEM (Instructions, Page 36)

a. List any physical, chemical, or biological treatment process that you use for the treatment of wastewater at your facility. Include a description of each treatment process, starting with initial treatment and finishing with the outfall/point of disposal.

See Attachment G

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

Attachment: H

3. IMPOUNDMENTS (Instructions, Pages 36-39)

Do you use or plan to use any wastewater lagoons, ponds, or impoundments?

☒ Yes ☐ No

If **yes**, complete **Item 3.a** for **existing** impoundments and **Items 3.a-3.h** for **new or proposed** impoundments. If **no**, proceed to Item 4.

Please note: Surface impoundments may also require additional authorizations from the TCEQ Waste Permit Division.

a. Provide the following information in the table provided:

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

Associated Outfall Number: If a discharge occurs from the impoundments, designate the outfall associated with the impoundment.

Liner Type: If the impoundments are lined to comply with specifications outlined for 1) a compacted clay liner (C), 2) an in-situ clay liner (I), or 3) a synthetic/plastic/rubber liner (S), indicate the liner type with the appropriate letter designation **(see instructions for further detail on liner specifications)**. If not, provide a reference to the attachment that provides a description of the alternate liner and any additional technical information necessary for an evaluation.

Dimensions: Provide the dimensions, freeboard, surface area, and storage capacity of the impoundments. For impoundments with irregular shapes, submit surface area (instead of length and width), the average depth, and the maximum depth below natural ground level.

Impoundment Information

Parameter	Pond #1	Pond #2	Pond #3	Pond #4
Use Designation: (T) (D) (C) or (E)	T	T	T	T
Associated Outfall Number	501	501	101	001
Liner Type (C) (I) or (S)	Reinforce concrete	Reinforce concrete	Reinforce concrete	Soil and concrete
Alt. Liner Attachment Reference	N/A	N/A	N/A	N/A
Length (ft)	100	25	136	N/A
Width (ft)	80	25	42	N/A
Depth from Water Surface (ft)	17.5	13.3	16	49
Avg Depth from Nat. Ground Level (ft)	0	0	0	0
Max Depth from Nat. Ground Level (ft)	0	0	0	0
Freeboard (ft)	>2	>2	>2	>2.5
Surface Area (acres)	0.18	0.01	0.13	7,000
Storage Capacity (gallons)	1,000,000	50,000	600,000	6.6e10
Compliance with *40 CFR Chapter 257, Subpart D* is required.	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No

Impoundment Information

Parameter	Pond #5	Pond #6	Pond #	Pond #
Use Designation: (T) (D) (C) or (E)	C	C		
Associated Outfall Number	None	None		
Liner Type (C) (I) or (S)	None	Soil and concrete		
Alt. Liner Attachment Reference	N/A	N/A		
Length (ft)	150	2,000		
Width (ft)	70	1,000		
Depth from Water Surface (ft)	4	8		
Avg Depth from Nat. Ground Level (ft)	0	0		
Max Depth from Nat. Ground Level (ft)	0	0		
Freeboard (ft)	>2	>2		
Surface Area (acres)	0.24	47		
Storage Capacity (gallons)	314,160	1.3e8		
Compliance with *40 CFR Chapter 257, Subpart D* is required.	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

The following information (b - h) is required only for **new or proposed** impoundments.

b. Indicate if any of the following data was provided with the application:

☐ Compacted clay liner data

☐ Synthetic/plastic/rubber liner data

☐ In-situ clay liner data

Attachment: N/A

c. Are there any leak detection systems or groundwater monitoring wells in place or planned?

☐ Yes ☐ No

If **yes**, attach information on the leak detection system for each pond and groundwater monitoring well data.

Attachment: N/A

d. Is the bottom of the pond above the seasonal high water table in the shallowest waste-bearing zone?

☐ Yes ☐ No

If **no**, attach additional information describing the depth of the seasonal high water table in the shallowest waste-bearing zone in relation to the depth of the bottom of the new or proposed impoundment and how this may or may not impact groundwater.

Attachment: N/A

e. Attach a USGS quadrangle map or a color copy of original quality and scale which accurately locates and identifies water supply wells and monitor wells within ½ mile radius of the impoundments

Attachment: N/A

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

Attachment: N/A

g. For TLAP permit applications: Are new or proposed impoundment(s) and the land application disposal area are located in the same general area?

☐ Yes ☐ No

If **yes**, provide information for this item in Worksheet 3.0 (Item 5).

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

Attachment: N/A

4. OUTFALL/DISPOSAL METHOD INFORMATION (Instructions, Pages 39-40)

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.

For TLAP permit 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" designation (e.g. "E1" for evaporation pond 1, "I2" for irrigation area No. 2, etc.).

Outfall Latitude and Longitude

Outfall Number	Latitude-degrees	Latitude-minutes	Latitude-seconds	Longitude-degrees	Longitude-minutes	Longitude-seconds
001	28	44	46	-96	00	02
002	28	46	29	-95	59	53
003	28	44	49	-96	00	40
004	28	44	57	-96	01	03
005	28	44	32	-96	02	42
006	28	44	31	-96	03	36
101	28	47	35	-96	02	51
201	28	47	35	-96	03	07
401	28	47	35	-96	03	17
501	28	47	39	-96	02	52
601	28	47	15	-96	02	10

Outfall Location Description

Outfall Number	Location Description
001	At a point in the blowdown line prior to entering the Colorado River
002	Prior to entering the plant drainage ditch
003	At the discharge of flowing relief wells prior to mixing with the West Branch of Colorado River
004	At a point in the MCR Spillway Channel after commingling of spillway gate leakage and relief well water, and prior to mixing with other waters
005	At the discharge of flowing relief wells, prior to mixing with the East Fork Little Robbins Slough
006	At the discharge of flowing relief wells, prior to mixing with Little Robbins Slough
101	Where low volume waste sources commingled with previously monitored effluents are discharged from the neutralization basins prior to mixing with other waste stream
201	Where low volume waste sources are discharged from the oily waste treatment system prior to mixing with any other waste stream
401	At discharge from the sewage treatment plant (West Sanitary Waste Treatment System) prior to mixing with any other waste stream
501	Where metal cleaning wastes are discharged prior to mixing with any other waste stream
601	At discharge from the sewage treatment plant (Training Sanitary Waste Treatment Facility) prior to mixing with any other waste stream

Description of Sampling Points (if different from Outfall location)

Outfall Number	Description of Sampling Point
	N/A

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)
001	144	200	144	200
002	N/A	N/A		
003	N/A	N/A		
004	N/A	N/A		
005	N/A	N/A		
006	N/A	N/A		
101	N/A	N/A		
201	N/A	N/A		
401	N/A	N/A		
501	N/A	N/A		
601	N/A	N/A		

Outfall Discharge – Method and Measurement

Outfall Number	Pumped Discharge? Y/N	Gravity Discharge? Y/N	Type of Flow Measurement Device Used
001	N	Y	Estimate
002	N	Y	Estimate
003	N	Y	Estimate
004	N	Y	Estimate
005	N	Y	Estimate
006	N	Y	Estimate
101	Y	N	Estimate
201	Y	N	Estimate (verified using totalizer)
401	Y	N	Estimate (verified using totalizer)
501	Y	N	Estimate
601	Y	N	Estimate (verified using totalizer)

Outfall Discharge – Flow Characteristics

Outfall Number	Intermittent Discharge? Y/N	Seasonal Discharge? Y/N	Continuous Discharge? Y/N	Discharge Duration (hours/ day)	Discharge Duration (days/ month)	Discharge Duration (months/ year)
001	Y	N	N	**	**	**
002	Y	N	N	N/A	N/A	N/A
003	Y	N	N	N/A	N/A	N/A
004	Y	N	N	N/A	N/A	N/A
005	Y	N	N	N/A	N/A	N/A
006	Y	N	N	N/A	N/A	N/A
101	Y	N	N	N/A	N/A	N/A
201	Y	N	N	N/A	N/A	N/A
401	Y	N	N	N/A	N/A	N/A
501	Y	N	N	N/A	N/A	N/A
601	Y	N	N	N/A	N/A	N/A

**There has been no discharge from the outfall since March 4, 1997

Wastestream Contributions

Outfall No.: 001

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Recirculated cooling water	N/A*	>99
Cooling reservoir blowdown		<1
Previously monitored effluent		<1
Stormwater		<1
Makeup water from the Colorado River		<1
Uncontaminated groundwater		<1
*There has been no discharge from this outfall since March 4, 1997		

Outfall No.: 002

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Reservoir relief well effluent (wells 1-125)	Intermittent	>99
Demineralized water from instrumentation	Intermittent	<1

Outfall No.: 003

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Reservoir relief well effluent (wells 138-195)	Intermittent	100

Additional Outfall wastestream contributions included as **Attachment:** I

5. BLOWDOWN AND ONCE-THROUGH COOLING WATER DISCHARGES (Instructions, Pages 40-41)

a. Does your facility use any cooling towers or boilers that discharge blowdown or other wastestreams to the outfall(s)?

☒ Yes ☐ No

b. Does your facility discharge once-through cooling water to the outfall(s)?

☐ Yes ☒ No

c. If **yes** to either Item a **or** b, attach the appropriate 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 in wastestream (if above item is for whole product)
- Concentration of active ingredient in wastestream (if above item is for active ingredient)

Please provide a summary attachment 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: J

d. Cooling Towers and Boilers

Cooling Towers and Boilers

Type of Unit	Number of Units	Dly Avg Blowdown (gallons/day)	Dly Max Blowdown (gallons/day)
Cooling Towers (Office Building Cooling Tower/ HVAC Cooling Unit)	1	7,200	17,280
Boilers	0	N/A	N/A

6. STORMWATER MANAGEMENT (Instructions, Page 41)

Are there any existing or proposed outfalls which discharge stormwater runoff commingled with other wastestreams? See Attachment K

☒ Yes ☐ No

If **no**, proceed to Item 7.

If **yes**, briefly describe the industrial processes and activities that occur outdoors or in some manner that may result in exposure of the materials to precipitation or runoff in areas where runoff is generated.

7. DOMESTIC SEWAGE, SEWAGE SLUDGE, AND SEPTAGE MANAGEMENT AND DISPOSAL (Instructions, Pages 41-42)

a. Please check the appropriate method(s) of domestic sewage and domestic sewage sludge treatment/disposal and complete Worksheet 5.0 or Item 7.b if directed to do so.

- ☐ Facility is connected to a wastewater treatment plant permitted to receive domestic sewage, or the domestic sewage is transported off-site to a permitted facility for treatment, disposal, or both. COMPLETE ITEM 7.b BELOW.
- ☐ Domestic sewage is disposed of by an on-site septic tank and drainfield system. COMPLETE ITEM 7.b BELOW.
- ☐ Both 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 OF THIS APPLICATION.
- ☐ Facility is a POTW. COMPLETE WORKSHEET 5.0 OF THIS APPLICATION.
- ☐ Domestic sewage is not generated on-site.
- ☐ Other (e.g., portable toilets): Please provide a detailed description:

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.
Blue Ridge Landfill	TXR000084592
Allied Waste	85812

8. IMPROVEMENTS OR COMPLIANCE/ENFORCEMENT REQUIREMENTS (Instructions, Page 42)

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

☐ Yes ☒ No

If **yes**, provide a brief summary of the requirements and a status update.

N/A

9. TOXICITY TESTING (Instructions, Pages 42-43)

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

☐ Yes ☒ No

If **yes**, identify the tests and describe their purposes below. Please attach a copy of all tests performed that have not been previously sent to the TCEQ or the EPA.

Attachment: There has been no discharge via Outfall 001 since 1997. The facility will perform the required testing when discharges occur.

10. OFF-SITE/THIRD PARTY WASTES (Instructions, Page 43)

Do you receive wastes from off-site sources for any or all of the following: treatment in your 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 a, b, and c below.

a. Attach the following information to the application:

- List of wastes received
- Characterization of wastes received
- Volumes of each waste received
- Information on compatibility with on-site wastes
- Identified sources of wastes received
- Name and addresses of generators
- Description of the relationship of waste source(s) with your facility's activities

Attachment: N/A

b. Is wastewater from a TCEQ, NPDES, or TPDES permitted facility commingled with your wastewater after your final treatment and prior to discharge via your 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: N/A

c. Is your facility a Publicly Owned Treatment Works (POTW) that accepts process wastewater from any Significant Industrial User (SIU) and has or is required to have an approved pretreatment program under the NPDES/TPDES program?

☐ Yes ☐ No

If **yes**, complete **Worksheet 6.0** of this application.

11. RADIOACTIVE MATERIALS (Instructions, Page 44)

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

☒ Yes ☐ No

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

Radioactive Materials Mined, Used, Stored, or Processed

Radioactive Material	Concentration (pCi/L)
Nuclear fuel (CAS no. 7440-61-1)	---*
*There has been no discharge via Outfall 001 since 1997.	

b. Do you 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 your effluent for all radioactive materials that may be present. Provide results in picocuries per liter (pCi/L). Do not include information provided in response to Item 11.a.

Radioactive Materials Present in the Discharge

Radioactive Material	Concentration (pCi/L)
N/A	

12. COOLING WATER INTAKE STRUCTURES (Instructions, Pages 44-46)

a. The facility uses or proposes to use water for cooling purposes?

☒ Yes ☐ No

If **yes**, complete this item (12. Cooling Water Intake Structures); otherwise, stop here.

b. Cooling Water Supplier

1. Complete the following table with information regarding the Cooling Water Intake Structure(s) owner(s), operator(s), and location

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

CWIS ID	RMPF	Reservoir		
Owner	STPNOC	STPNOC		
Operator	STPNOC	STPNOC		
Latitude	28°46'27.97"	28°47'32.09"		
Longitude	-95°59'51.84"	-96° 3'1.80"		

2. Cooling water is obtained from a Public Water Supplier (PWS)

☐ Yes ☒ No

If **yes**, provide the Public Water Supplier Registration No. for the entity providing cooling water in the space provided, and stop here.

- PWS Registration Number: N/A

3. Cooling water is obtained from an Independent Supplier

☐ Yes ☒ No

If **no**, proceed to section c; otherwise, if **yes** provide the following:

- Independent Supplier's TPDES permit number: N/A

  If the Independent Supplier holds a TPDES Industrial Wastewater Permit, provide the permit number in the space provided. Otherwise enter N/A and continue.

- Independent Supplier's CWIS AIF (in MGD): N/A

  Enter the Independent Supplier's CWIS actual intake flow (AIF) in million gallons per day in the space provided, and continue.

- The facility uses or proposes to use less than 25% of the Independent Supplier's CWIS AIF for cooling purposes?

  ☐ Yes ☐ No

  If **yes**, stop here. If **no**, proceed to section c.

c. 316(b) General Criteria

Compete all questions in this section unless otherwise directed.

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

   ☒ Yes ☐ No

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

   ☒ Yes ☐ No

3. The facility withdraws or 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* in the space provided. If additional space is needed for the explanation, include the information as an attachment to the application and provide the attachment number in the space instead.

   Explanation:

   N/A

If **yes** to all three questions in section c above, proceed to section d. If **no** to any of the questions in section c above the facility does not meet the minimum criteria to be subject to the full requirements of 316(b). 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 best professional judgement (BPJ).

d. Phase I vs Phase II Facilities

1. Existing facility (Phase II)

   ☒ Yes ☐ No

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

2. New Facility – (Phase I)

   ☐ Yes ☐ No

   If **yes**, continue.

3. Compliance track selection (For Phase I only; must choose one of the following)

   ☐ Track I - AIF greater than 2 MGD, but less than 10 MGD

   If selected, include information required under *40 CFR §§ 125.86(b)(2)-(4)* as an attachment and complete Worksheet 11.0, items 2 and 3, and Worksheet 11.2.

   ☐ Track I - AIF greater than 10 MGD

   If selected, include information required under *40 CFR § 125.86(b)* as an attachment and complete Worksheet 11.0, items 2 and 3, and Worksheet 11.2.

   ☐ Track II

   If selected, include information required under *40 CFR § 125.86(c)* as an attachment and complete Worksheet 11.0, items 2 and 3, and Worksheet 11.2.

Attachment: N/A

Note: Items 12, 13, and 14 are required only for **existing permitted** facilities.

13. MAJOR AMENDMENT REQUESTS (Instructions, Page 46)

Are you requesting a major amendment of an existing permit?

☐ Yes ☒ No

If **yes**, list each specific request and provide discussion on the scope of any requested permit changes. If necessary, provide supplemental information or additional data that will support the request.

N/A

14. MINOR MODIFICATION REQUESTS (Instructions, Page 47)

Are you requesting any minor modifications to the permit? Note: see the instructions for an exclusive list of changes considered as minor modifications.

☐ Yes ☒ No

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

N/A

15. MINOR AMENDMENT REQUESTS (Instructions, Page 47)

Are you requesting any minor amendments to the permit?

☐ Yes ☒ No

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

N/A

WORKSHEET 1.0
EPA CATEGORICAL EFFLUENT GUIDELINES

This worksheet is required for all applications for TPDES permits for discharges of wastewaters subject to EPA categorical effluent guidelines.

1. CATEGORICAL INDUSTRIES (Instructions, Pages 50-51)

Is your facility subject to any of the 40 CFR effluent guidelines outlined on page 52 of the instructions?

☒ Yes ☐ No

If **yes**, provide the appropriate information in the table below.

If **no**, this worksheet is not required.

40 CFR Effluent Guidelines

Industry	40 CFR Part
Steam Electric Generating Station	423

2. PRODUCTION/PROCESS DATA (Instructions, Page 51)

a. Production Data

Provide the appropriate data for effluent guidelines with production-based effluent limitations.

Production Data

Subcategory	Actual Quantity/Day	Design Quantity/Day	Units
N/A			

b. Organic Chemicals, Plastics, and Synthetic Fibers Manufacturing Data (*40 CFR Part 414*)

Provide each appropriate subpart and the percent of total production. Also provide the appropriate data for metal-bearing wastestreams as required in *40 CFR Part 414*, Appendices A and B.

Percentages of Total Production

Subcategory	Percent of Total Production	Appendix A and B - Metal	Appendix A and B – Process
N/A			

c. Refineries (*40 CFR Part 419*):

Provide the applicable subcategory and a brief justification.

N/A

3. PROCESS/NON-PROCESS WASTEWATER FLOWS (Instructions, Page 51)

Provide a breakdown of process wastewater flow(s) and non-process wastewater flow(s) as directed.

See flow diagrams in Attachment H

4. NEW SOURCE DETERMINATION (Instructions, Page 51)

Provide a list of wastewater-generating processes subject to effluent guidelines and the appropriate information.

Wastewater-generating Processes Subject to Effluent Guidelines

Process	EPA Guideline: Part	EPA Guideline: Subpart	Date Process/ Construction Commenced
Units 1 and 2	423	N/A	1975

WORKSHEET 2.0
POLLUTANT ANALYSES REQUIREMENTS

There has not been a discharge via Outfall 001 since 1997. Therefore, the required effluent samples could not be collected. STP will collect the required samples for the application upon the next available discharge via Outfall 001 and submit the results to the TCEQ for review.

Worksheet 2.0 is **required** for applications submitted for a TPDES permit.

Worksheet 2.0 is **not required** for applications for a permit to dispose of all wastewater by land disposal or for discharges solely of stormwater runoff.

1. LABORATORY ACCREDITATION (Instructions, Page 52)

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:

   1. periodically inspected by the TCEQ; or
   2. located in another state and is accredited or inspected by that state; or
   3. performing work for another company with a unit located in the same site; or
   4. performing pro bono work for a governmental agency or charitable organization.

b. The laboratory is accredited under federal law. See Attachment L

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.

The applicant should 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 designated representatives who may sign the certification.

I, Michael P Murray 5-16-19, certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25*, Environmental Testing Laboratory Accreditation and Certification.

2. GENERAL TESTING REQUIREMENTS (Instructions, Pages 52-54)

Please read the general testing requirements in the instructions for important information about sampling, test methods, MALs, and averaging sample results.

3. SPECIFIC TESTING REQUIREMENTS (Instructions, Pages 54-66)

Table 1 and Table 2 (Instructions, Page 54)

Completion of Tables 1 and 2 is required for all external outfalls for new, renewal, and amendment applications.

Table 1 for Outfall No.: 001 – no discharge since 1997

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)	Average (mg/L)
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)					

Table 2 for Outfall No.: 001 – no discharge since 1997

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Average (µg/L)	MAL (µg/L)
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, available						2/10
Lead, total						0.5
Mercury, total						0.005/0.0005
Nickel, total						2
Selenium, total						5
Silver, total						0.5
Thallium, total						0.5
Zinc, total						5.0

TABLE 3 (Instructions, Page 54).

Completion of Table 3 is required for all external outfalls which discharge process wastewater.

Partial completion of Table 3 is required for all external outfalls with non-process wastewater discharges.

For discharges of stormwater runoff commingled with other wastestreams, complete Table 3 as instructed

Table 3 for Outfall No.: 001 – no discharge since 1997

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
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 [Dichlorobromomethane]						10
Bromoform						10
Carbon tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane [Dibromochloromethane]						10
Chloroform						10
Chrysene						5
m-Cresol [3-Methylphenol]						10
o-Cresol [2-Methylphenol]						10
p-Cresol [4-Methylphenol]						10
1,2-Dibromoethane						10
m-Dichlorobenzene [1,3-Dichlorobenzene]						10
o-Dichlorobenzene [1,2-Dichlorobenzene]						10
p-Dichlorobenzene [1,4-Dichlorobenzene]						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethene [1,1-Dichloroethylene]						10
Dichloromethane [Methylene chloride]						20
1,2-Dichloropropane						10
1,3-Dichloropropene [1,3-Dichloropropylene]						10
2,4-Dimethylphenol						10

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
Di-n-Butyl phthalate						10
Ethylbenzene						10
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
Methyl ethyl ketone						50
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-n-butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated biphenyls (PCBs) (**)						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethene [Tetrachloroethylene]						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethene [Trichloroethylene]						10
2,4,5-Trichlorophenol						50
TTHM (Total trihalomethanes)						10
Vinyl chloride						10

(*) Indicate units if different from µg/L.

(**) Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, and PCB-1016. If all non-detects, enter the highest non-detect preceded by a "<".

TABLE 4 (Instructions, Page 55

Partial completion of Table 4 (only those pollutants which are required by the conditions specified below) **is required** for each external outfall.

Completion of Table 4 **is not required** for internal outfalls.

a. Tributyltin

Is your facility an industrial/commercial facility which directly disposes of wastewater from the types of operations listed below or a domestic facility which receives wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, indicate all of the following criteria which apply and provide the appropriate testing results in the table below.

☐ Manufacturers and formulators of tributyltin or related compounds

☐ Painting of ships, boats and marine structures

☐ Ship and boat building and repairing

☐ Ship and boat cleaning, salvage, wrecking and scaling

☐ Operation and maintenance of marine cargo handling facilities and marinas

☐ Facilities engaged in wood preserving

☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. Enterococci

Does or will your facility discharge **directly** into **saltwater** receiving waters **and**:

Enterococci bacteria are expected to be present in the discharge based on facility processes?

☒ Yes ☐ No

Domestic wastewater is or will be discharged?

☒ Yes ☐ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

c. E. coli

Does or will your facility discharge **directly** into **freshwater** receiving waters **and**:

E. coli bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

Table 4 for Outfall No.: 001 – no discharge since 1997

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	Average	MAL
Tributyltin (µg/L)						0.010
Enterococci (cfu or MPN/100 mL)						N/A
E. coli (cfu or MPN/100 mL)						N/A

TABLE 5 (Instructions, Page 56)

Completion of Table 5 **is required** for all external outfalls which discharge process wastewater or other wastewaters which may contain pesticides or herbicides from a facility which manufactures or formulates pesticides or herbicides. Completion of Table 5 **is not required** for internal outfalls.

Does your facility manufacture or formulate pesticides or herbicides?

☐ Yes ☒ No

If **yes**, provide the appropriate testing results in Table 5.

Table 5 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	Average (µg/L)*	MAL (µg/L)*
Aldrin						0.01
Carbaryl						5
Chlordane						0.2
Chlorpyrifos						0.05
4,4'-DDD						0.1
4,4'-DDE						0.1
4,4'-DDT						0.02
2,4-D						0.7
Danitol [Fenpropathrin]						—
Demeton						0.20
Diazinon						0.5/0.1
Dicofol [Kelthane]						1
Dieldrin						0.02
Diuron						0.090
Endosulfan I (*alpha*)						0.01
Endosulfan II (*beta*)						0.02
Endosulfan sulfate						0.1
Endrin						0.02
Guthion [Azinphos methyl]						0.1
Heptachlor						0.01
Heptachlor epoxide						0.01
Hexachlorocyclohexane (*alpha*)						0.05
Hexachlorocyclohexane (*beta*)						0.05
Hexachlorocyclohexane (*gamma*) [Lindane]						0.05
Hexachlorophene						10
Malathion						0.1
Methoxychlor						2.0
Mirex						0.02
Parathion (ethyl)						0.1
Toxaphene						0.3
2,4,5-TP [Silvex]						0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 56)

Completion of Table 6 is required for all external outfalls but is not required for internal outfalls.

Table 6 for Outfall No.: 001 – no discharge since 1997

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutants	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (µg/L)*
Bromide	☐	☐				400
Color (PCU)	☐	☐				—
Nitrate-Nitrite (as N)	☐	☐				—
Sulfide (as S)	☐	☐				—
Sulfite (as SO_3)	☐	☐				—
Surfactants	☐	☐				—
Boron, total	☐	☐				20
Cobalt, total	☐	☐				0.3
Iron, total	☐	☐				7
Magnesium, total	☐	☐				20
Manganese, total	☐	☐				0.5
Molybdenum, total	☐	☐				1
Tin, total	☐	☐				5
Titanium, total	☐	☐				30

* Indicate units if different from µg/L.

TABLE 7 (Instructions, Page 56)

Indicate any of the industrial categories applicable to your facility; otherwise, check the "N/A" box below. If GC/MS testing is required, indicate with an 'x' in the box provided that the testing results for the appropriate parameters are provided with the application.

☐ N/A

Table 7 for Applicable Industrial Categories

Industrial Category	40 CFR Part	Volatiles Table 8	Acids Table 9	Bases/Neutrals Table 10	Pesticides Table 11
☐ Adhesives and Sealants		☐ Yes	☐ Yes	☐ Yes	No
☐ Aluminum Forming	467	☐ Yes	☐ Yes	☐ Yes	No
☐ Auto and Other Laundries		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Battery Manufacturing	461	☐ Yes	No	☐ Yes	No
☐ Coal Mining	434	No	No	No	No
☐ Coil Coating	465	☐ Yes	☐ Yes	☐ Yes	No
☐ Copper Forming	468	☐ Yes	☐ Yes	☐ Yes	No
☐ Electric and Elcctronic Components	469	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Electroplating	413	☐ Yes	☐ Yes	☐ Yes	No
☐ Explosives Manufacturing	457	No	☐ Yes	☐ Yes	No
☐ Foundries		☐ Yes	☐ Yes	☐ Yes	No
☐ Gum and Wood Chemicals - Subparts A,B,C,E	454	☐ Yes	☐ Yes	No	No
☐ Gum and Wood Chemicals - Subparts D,F	454	☐ Yes	☐ Yes	☐ Yes	No
☐ Inorganic Chemicals Manufacturing	415	☐ Yes	☐ Yes	☐ Yes	No
☐ Iron and Steel Manufacturing	420	☐ Yes	☐ Yes	☐ Yes	No
☐ Leather Tanning and Finishing	425	☐ Yes	☐ Yes	☐ Yes	No
☐ Mechanical Products Manufacturing		☐ Yes	☐ Yes	☐ Yes	No
☐ Nonferrous Metals Manufacturing	421,471	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Ore Mining - Subpart B	440	No	☐ Yes	No	No
☐ Organic Chemicals Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Paint and Ink Formulation	446,447	☐ Yes	☐ Yes	☐ Yes	No
☐ Pesticides	455	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Petroleum Refining	419	☐ Yes	No	No	No
☐ Pharmaceutical Preparations	439	☐ Yes	☐ Yes	☐ Yes	No
☐ Photographic Equipment and Supplies	459	☐ Yes	☐ Yes	☐ Yes	No
☐ Plastic and Synthetic Materials Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Plastic Processing	463	☐ Yes	No	No	No
☐ Porcelain Enameling	466	No	No	No	No
☐ Printing and Publishing		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Pulp and Paperboard Mills - Subpart C	430	☐ *	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subparts F, K	430	☐ *	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts A, B, D, G, H	430	☐ Yes	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts I, J, L	430	☐ Yes	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subpart E	430	☐ Yes	☐ Yes	☐ Yes	☐ *
☐ Rubber Processing	428	☐ Yes	☐ Yes	☐ Yes	No
☐ Soap and Detergent Manufacturing	417	☐ Yes	☐ Yes	☐ Yes	No
☒ Steam Electric Power Plants	423	☒ Yes	☒ Yes	No	No
☐ Textile Mills (Not Subpart C)	410	☐ Yes	☐ Yes	☐ Yes	No
☐ Timber Products Processing	429	☐ Yes	☐ Yes	☐ Yes	☐ Yes

* Test if believed present.

TABLES 8, 9, 10, and 11 (Instructions, Pages 56-57)

Completion of Tables 8, 9, 10, and 11 **is required** as specified in Table 7 for all external outfalls that contain process wastewater.

Completion of Tables 8, 9, 10, and 11 **is not required** for internal outfalls.

Completion of Tables 8, 9, 10, and 11 **may be required** for types of industry not specified in Table 7 for specific parameters that are believed to be present in the wastewater.

Table 8 for Outfall No.: 001 – no discharge since 1997: Volatile Compounds

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene [1,1-Dichloroethene]				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
Ethylbenzene				10
Methyl bromide [Bromomethane]				50
Methyl chloride [Chloromethane]				50
Methylene chloride [Dichloromethane]				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene [Tetrachloroethene]				10
Toluene				10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]				10
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 9 for Outfall No.: 001 – no discharge since 1997: Acid Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
p-Chloro-m-cresol				10
Pentachlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

Table 10 for Outfall No.: N/A: Base/Neutral Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)anthracene				5
Benzo(a)pyrene				5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]				10
Benzo(ghi)perylene				20
Benzo(k)fluoranthene				5
Bis(2-chloroethoxy)methane				10
Bis(2-chloroethyl)ether				10
Bis(2-chloroisopropyl)ether				10
Bis(2-ethylhexyl)phthalate				10
4-Bromophenyl phenyl ether				10
Butylbenzyl phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)anthracene				5
1,2-Dichlorobenzene [o-Dichlorobenzene]				10
1,3-Dichlorobenzene [m-Dichlorobenzene]				10
1,4-Dichlorobenzene [p-Dichlorobenzene]				10

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
3,3'-Dichlorobenzidine				5
Diethyl phthalate				10
Dimethyl phthalate				10
Di-n-butyl phthalate				10
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-octyl phthalate				10
1,2-Diphenylhydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

Table 11 for Outfall No.: N/A: Pesticides
Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Aldrin				0.01
alpha-BHC [alpha-Hexachlorocyclohexane]				0.05
beta-BHC [beta-Hexachlorocyclohexane]				0.05
gamma-BHC [gamma-Hexachlorocyclohexane]				0.05
delta-BHC [delta-Hexachlorocyclohexane]				0.05
Chlordane				0.2
4,4'-DDT				0.02
4,4'-DDE				0.1
4,4'-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Endosulfan sulfate				0.1
Endrin				0.02
Endrin aldehyde				0.1
Heptachlor				0.01
Heptachlor epoxide				0.01
PCB 1242				0.2
PCB 1254				0.2
PCB 1221				0.2
PCB 1232				0.2
PCB 1248				0.2
PCB 1260				0.2
PCB 1016				0.2
Toxaphene				0.3

* Indicate units if different from µg/L

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete Table 12 as directed. Table 12 is not required for internal outfalls. (Instructions, Pages 57-58)

a. Are any of the following compounds manufactured or used in a process at the facility?

☐ Yes ☒ No

If **yes**, indicate which compound(s) are manufactured or used at the facility and provide a brief description of the conditions of its/their presence at the facility.

☐	2,4,5-trichlorophenoxy acetic acid	(2,4,5-T)	CASRN 93-76-5
☐	2-(2,4,5-trichlorophenoxy) propanoic acid	(Silvex, 2,4,5-TP)	CASRN 93-72-1
☐	2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate	(Erbon)	CASRN 136-25-4
☐	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate	(Ronnel)	CASRN 299-84-3
☐	2,4,5-trichlorophenol	(TCP)	CASRN 95-95-4
☐	hexachlorophene	(HCP)	CASRN 70-30-4

Description:

N/A

b. Do you know or have any reason to believe that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

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

N/A

c. If you responded **yes** to either Item a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10
1,2,3,7,8-PeCDD	0.5					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					50
2,3,7,8-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.05					50
2,3,4,7,8-PeCDF	0.5					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 as directed. Not required for internal outfalls. (Instructions, Pages 58-59)

a. Are there any pollutants listed in the instructions (page 60) believed present in the discharge?

☐ Yes ☒ No

b. Are there pollutants listed in Item 1.d. on page 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If you responded **yes** to **either** Item a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	CASRN	Average (µg/L)	Maximum (µg/L)	No. of Samples	Analytical Method

Table 1 for Outfall No.: 002

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)	Average (mg/L)
BOD (5-day)	1.0	1.0	1.0	1.0	1.0
CBOD (5-day)	1.0	1.0	1.0	1.0	1.0
Chemical oxygen demand	21.5	5.4	25.5	17.4	17.5
Total organic carbon	4.0	4.0	4.2	3.9	4.0
Dissolved oxygen	2.1	1.9	1.1	1.4	1.6
Ammonia nitrogen	0.017	0.017	0.042	0.13	0.05
Total suspended solids	0.63	1.4	0.50	0.25	0.7
Nitrate nitrogen	1.0	1.0	1.0	1.0	1.0
Total organic nitrogen	<0.30	0.49	0.51	0.30	0.43
Total phosphorus	0.017	0.0080	0.016	0.011	0.013
Oil and grease	0.63	0.63	0.63	0.63	0.6
Total residual chlorine	<0.02	<0.02	<0.02	<0.02	<0.02
Total dissolved solids	2590	2790	2970	2650	2750
Sulfate	95.5	107	97.5	113	103.3
Chloride	1290	1170	1340	1190	1248
Fluoride	0.93	0.98	0.91	0.88	0.93
Total alkalinity (mg/L as CaCO3)	265	295	295	225	270
Temperature (°F)	75.2	56.4	72.6	72.3	69.1
pH (standard units)	7.03	7.05	6.88	7.01	6.99

Table 2 for Outfall No.: 002

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Average (µg/L)	MAL (µg/L)
Aluminum, total	16.24	3.8	3.95	6.55	7.6	2.5
Antimony, total	<5.0	0.40	0.52	0.40	1.0	5
Arsenic, total	<4.0	0.77	1.0	1.2	1.7	0.5
Barium, total	304	177	312	347	285	3
Beryllium, total	<2.0	0.42	0.42	0.42	0.8	0.5
Cadmium, total	<2.0	0.24	0.24	0.24	0.7	1
Chromium, total	0.82	<0.5	<0.1	0.11	0.3	3
Chromium, hexavalent	<0.5	<1	<0.5	<0.5	0.3	3
Chromium, trivalent	<1	<1	<1	<1	<1	N/A
Copper, total	<2.0	0.49	0.49	0.67	0.7	2
Cyanide, available	2	2	2	2	2	2/10
Lead, total	<1.0	0.29	0.29	0.29	0.5	0.5
Mercury, total	0.0119	0.0155	0.0119	0.0136	0.0132	0.005/0.0005
Nickel, total	3.6	2.0	3.3	4.0	3.2	2
Selenium, total	<5.0	0.90	0.90	0.90	1.3	5
Silver, total	<1.0	0.25	0.25	0.25	0.4	0.5
Thallium, total	<2.0	0.22	0.22	0.22	0.7	0.5
Zinc, total	<5.0	1.4	2.8	4.0	2.7	5.0

TABLE 3 (Instructions, Page 54).

Completion of Table 3 is required for all external outfalls which discharge process wastewater.

Partial completion of Table 3 is required for all external outfalls with non-process wastewater discharges.

For discharges of stormwater runoff commingled with other wastestreams, complete Table 3 as instructed

Table 3 for Outfall No.: N/A

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
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 [Dichlorobromomethane]						10
Bromoform						10
Carbon tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane [Dibromochloromethane]						10
Chloroform						10
Chrysene						5
m-Cresol [3-Methylphenol]						10
o-Cresol [2-Methylphenol]						10
p-Cresol [4-Methylphenol]						10
1,2-Dibromoethane						10
m-Dichlorobenzene [1,3-Dichlorobenzene]						10
o-Dichlorobenzene [1,2-Dichlorobenzene]						10
p-Dichlorobenzene [1,4-Dichlorobenzene]						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethene [1,1-Dichloroethylene]						10
Dichloromethane [Methylene chloride]						20
1,2-Dichloropropane						10
1,3-Dichloropropene [1,3-Dichloropropylene]						10
2,4-Dimethylphenol						10

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
Di-n-Butyl phthalate						10
Ethylbenzene						10
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
Methyl ethyl ketone						50
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-n-butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated biphenyls (PCBs) (**)						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethene [Tetrachloroethylene]						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethene [Trichloroethylene]						10
2,4,5-Trichlorophenol						50
TTHM (Total trihalomethanes)						10
Vinyl chloride						10

(*) Indicate units if different from µg/L.

(**) Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, and PCB-1016. If all non-detects, enter the highest non-detect preceded by a "<".

TABLE 4 (Instructions, Page 55

Partial completion of Table 4 (only those pollutants which are required by the conditions specified below) **is required** for each external outfall.

Completion of Table 4 **is not required** for internal outfalls.

a. Tributyltin

Is your facility an industrial/commercial facility which directly disposes of wastewater from the types of operations listed below or a domestic facility which receives wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, indicate all of the following criteria which apply and provide the appropriate testing results in the table below.

☐ Manufacturers and formulators of tributyltin or related compounds

☐ Painting of ships, boats and marine structures

☐ Ship and boat building and repairing

☐ Ship and boat cleaning, salvage, wrecking and scaling

☐ Operation and maintenance of marine cargo handling facilities and marinas

☐ Facilities engaged in wood preserving

☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. Enterococci

Does or will your facility discharge **directly** into **saltwater** receiving waters **and**:

Enterococci bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

c. E. coli

Does or will your facility discharge **directly** into **freshwater** receiving waters **and**:

E. coli bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

Table 4 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	Average	MAL
Tributyltin (µg/L)						0.010
Enterococci (cfu or MPN/100 mL)						N/A
E. coli (cfu or MPN/100 mL)						N/A

TABLE 5 (Instructions, Page 56)

Completion of Table 5 **is required** for all external outfalls which discharge process wastewater or other wastewaters which may contain pesticides or herbicides from a facility which manufactures or formulates pesticides or herbicides. Completion of Table 5 **is not required** for internal outfalls.

Does your facility manufacture or formulate pesticides or herbicides?

☐ Yes ☒ No

If **yes**, provide the appropriate testing results in Table 5.

Table 5 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	Average (µg/L)*	MAL (µg/L)*
Aldrin						0.01
Carbaryl						5
Chlordane						0.2
Chlorpyrifos						0.05
4,4'-DDD						0.1
4,4'-DDE						0.1
4,4'-DDT						0.02
2,4-D						0.7
Danitol [Fenpropathrin]						—
Demeton						0.20
Diazinon						0.5/0.1
Dicofol [Kelthane]						1
Dieldrin						0.02
Diuron						0.090
Endosulfan I (*alpha*)						0.01
Endosulfan II (*beta*)						0.02
Endosulfan sulfate						0.1
Endrin						0.02
Guthion [Azinphos methyl]						0.1
Heptachlor						0.01
Heptachlor epoxide						0.01
Hexachlorocyclohexane (*alpha*)						0.05
Hexachlorocyclohexane (*beta*)						0.05
Hexachlorocyclohexane (*gamma*) [Lindane]						0.05
Hexachlorophene						10
Malathion						0.1
Methoxychlor						2.0
Mirex						0.02
Parathion (ethyl)						0.1
Toxaphene						0.3
2,4,5-TP [Silvex]						0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 56)

Completion of Table 6 is required for all external outfalls but is not required for internal outfalls.

Table 6 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutants	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (µg/L)*
Bromide	☐	☐				400
Color (PCU)	☐	☐				—
Nitrate-Nitrite (as N)	☐	☐				—
Sulfide (as S)	☐	☐				—
Sulfite (as SO3)	☐	☐				—
Surfactants	☐	☐				—
Boron, total	☐	☐				20
Cobalt, total	☐	☐				0.3
Iron, total	☐	☐				7
Magnesium, total	☐	☐				20
Manganese, total	☐	☐				0.5
Molybdenum, total	☐	☐				1
Tin, total	☐	☐				5
Titanium, total	☐	☐				30

* Indicate units if different from µg/L.

TABLE 7 (Instructions, Page 56)

Indicate any of the industrial categories applicable to your facility; otherwise, check the "N/A" box below. If GC/MS testing is required, indicate with an 'x' in the box provided that the testing results for the appropriate parameters are provided with the application.

☐ N/A

Table 7 for Applicable Industrial Categories

Industrial Category	40 CFR Part	Volatiles Table 8	Acids Table 9	Bases/Neutrals Table 10	Pesticides Table 11
☐ Adhesives and Sealants		☐ Yes	☐ Yes	☐ Yes	No
☐ Aluminum Forming	467	☐ Yes	☐ Yes	☐ Yes	No
☐ Auto and Other Laundries		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Battery Manufacturing	461	☐ Yes	No	☐ Yes	No
☐ Coal Mining	434	No	No	No	No
☐ Coil Coating	465	☐ Yes	☐ Yes	☐ Yes	No
☐ Copper Forming	468	☐ Yes	☐ Yes	☐ Yes	No
☐ Electric and Electronic Components	469	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Electroplating	413	☐ Yes	☐ Yes	☐ Yes	No
☐ Explosives Manufacturing	457	No	☐ Yes	☐ Yes	No
☐ Foundries		☐ Yes	☐ Yes	☐ Yes	No
☐ Gum and Wood Chemicals - Subparts A,B,C,E	454	☐ Yes	☐ Yes	No	No
☐ Gum and Wood Chemicals - Subparts D,F	454	☐ Yes	☐ Yes	☐ Yes	No
☐ Inorganic Chemicals Manufacturing	415	☐ Yes	☐ Yes	☐ Yes	No
☐ Iron and Steel Manufacturing	420	☐ Yes	☐ Yes	☐ Yes	No
☐ Leather Tanning and Finishing	425	☐ Yes	☐ Yes	☐ Yes	No
☐ Mechanical Products Manufacturing		☐ Yes	☐ Yes	☐ Yes	No
☐ Nonferrous Metals Manufacturing	421,471	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Ore Mining - Subpart B	440	No	☐ Yes	No	No
☐ Organic Chemicals Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Paint and Ink Formulation	446,447	☐ Yes	☐ Yes	☐ Yes	No
☐ Pesticides	455	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Petroleum Refining	419	☐ Yes	No	No	No
☐ Pharmaceutical Preparations	439	☐ Yes	☐ Yes	☐ Yes	No
☐ Photographic Equipment and Supplies	459	☐ Yes	☐ Yes	☐ Yes	No
☐ Plastic and Synthetic Materials Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Plastic Processing	463	☐ Yes	No	No	No
☐ Porcelain Enameling	466	No	No	No	No
☐ Printing and Publishing		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Pulp and Paperboard Mills - Subpart C	430	☐ *	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subparts F, K	430	☐ *	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts A, B, D, G, H	430	☐ Yes	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts I, J, L	430	☐ Yes	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subpart E	430	☐ Yes	☐ Yes	☐ Yes	☐ *
☐ Rubber Processing	428	☐ Yes	☐ Yes	☐ Yes	No
☐ Soap and Detergent Manufacturing	417	☐ Yes	☐ Yes	☐ Yes	No
☒ Steam Electric Power Plants	423	☒ Yes	☒ Yes	No	No
☐ Textile Mills (Not Subpart C)	410	☐ Yes	☐ Yes	☐ Yes	No
☐ Timber Products Processing	429	☐ Yes	☐ Yes	☐ Yes	☐ Yes

* Test if believed present.

TABLES 8, 9, 10, and 11 (Instructions, Pages 56-57)

Completion of Tables 8, 9, 10, and 11 **is required** as specified in Table 7 for all external outfalls that contain process wastewater.

Completion of Tables 8, 9, 10, and 11 **is not required** for internal outfalls.

Completion of Tables 8, 9, 10, and 11 **may be required** for types of industry not specified in Table 7 for specific parameters that are believed to be present in the wastewater.

Table 8 for Outfall No.: N/A: Volatile Compounds

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene [1,1-Dichloroethene]				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
Ethylbenzene				10
Methyl bromide [Bromomethane]				50
Methyl chloride [Chloromethane]				50
Methylene chloride [Dichloromethane]				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene [Tetrachloroethene]				10
Toluene				10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]				10
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 9 for Outfall No.: N/A: Acid Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
p-Chloro-m-cresol				10
Pentachlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

Table 10 for Outfall No.: N/A: Base/Neutral Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)anthracene				5
Benzo(a)pyrene				5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]				10
Benzo(ghi)perylene				20
Benzo(k)fluoranthene				5
Bis(2-chloroethoxy)methane				10
Bis(2-chloroethyl)ether				10
Bis(2-chloroisopropyl)ether				10
Bis(2-ethylhexyl)phthalate				10
4-Bromophenyl phenyl ether				10
Butylbenzyl phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)anthracene				5
1,2-Dichlorobenzene [o-Dichlorobenzene]				10
1,3-Dichlorobenzene [m-Dichlorobenzene]				10
1,4-Dichlorobenzene [p-Dichlorobenzene]				10

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
3,3'-Dichlorobenzidine				5
Diethyl phthalate				10
Dimethyl phthalate				10
Di-n-butyl phthalate				10
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-octyl phthalate				10
1,2-Diphenylhydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

Table 11 for Outfall No.: N/A: Pesticides
Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Aldrin				0.01
alpha-BHC [alpha-Hexachlorocyclohexane]				0.05
beta-BHC [beta-Hexachlorocyclohexane]				0.05
gamma-BHC [gamma-Hexachlorocyclohexane]				0.05
delta-BHC [delta-Hexachlorocyclohexane]				0.05
Chlordane				0.2
4,4'-DDT				0.02
4,4'-DDE				0.1
4,4'-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Endosulfan sulfate				0.1
Endrin				0.02
Endrin aldehyde				0.1
Heptachlor				0.01
Heptachlor epoxide				0.01
PCB 1242				0.2
PCB 1254				0.2
PCB 1221				0.2
PCB 1232				0.2
PCB 1248				0.2
PCB 1260				0.2
PCB 1016				0.2
Toxaphene				0.3

* Indicate units if different from µg/L

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete Table 12 as directed. Table 12 is not required for internal outfalls. (Instructions, Pages 57-58)

a. Are any of the following compounds manufactured or used in a process at the facility?

☐ Yes ☒ No

If **yes**, indicate which compound(s) are manufactured or used at the facility and provide a brief description of the conditions of its/their presence at the facility.

☐	2,4,5-trichlorophenoxy acetic acid	(2,4,5-T)	CASRN 93-76-5
☐	2-(2,4,5-trichlorophenoxy) propanoic acid	(Silvex, 2,4,5-TP)	CASRN 93-72-1
☐	2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate	(Erbon)	CASRN 136-25-4
☐	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate	(Ronnel)	CASRN 299-84-3
☐	2,4,5-trichlorophenol	(TCP)	CASRN 95-95-4
☐	hexachlorophene	(HCP)	CASRN 70-30-4

Description:

N/A

b. Do you know or have any reason to believe that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

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

N/A

c. If you responded **yes** to either Item a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10
1,2,3,7,8-PeCDD	0.5					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					50
2,3,7,8-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.05					50
2,3,4,7,8-PeCDF	0.5					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 as directed. Not required for internal outfalls. (Instructions, Pages 58-59)

a. Are there any pollutants listed in the instructions (page 60) believed present in the discharge?

☐ Yes ☒ No

b. Are there pollutants listed in Item 1.d. on page 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If you responded **yes** to **either** Item a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	CASRN	Average (µg/L)	Maximum (µg/L)	No. of Samples	Analytical Method

Table 1 for Outfall No.: 003

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)	Average (mg/L)
BOD (5-day)	1.0	1.0	1.0	1.0	1.0
CBOD (5-day)	1.0	1.0	1.0	1.0	1.0
Chemical oxygen demand	23.5	19.5	27.5	19.5	22.5
Total organic carbon	3.0	3.9	3.9	4.2	3.8
Dissolved oxygen	1.7	1.3	1.5	1.9	1.6
Ammonia nitrogen	0.024	0.093	0.25	0.24	0.15
Total suspended solids	0.50	0.50	1.3	0.13	0.6
Nitrate nitrogen	1.1	1.0	0.98	1.0	1.0
Total organic nitrogen	<0.30	0.37	0.52	0.37	0.4
Total phosphorus	0.0080	0.0080	0.0080	0.023	0.012
Oil and grease	0.63	0.63	0.63	0.63	0.6
Total residual chlorine	<0.02	<0.02	<0.02	<0.02	<0.02
Total dissolved solids	2580	2300	2780	2370	2508
Sulfate	22.0	31.2	52.8	53.6	39.9
Chloride	1120	1030	1280	1080	1128
Fluoride	0.79	0.79	0.70	0.70	0.75
Total alkalinity (mg/L as CaCO3)	320	370	340	255	321
Temperature (°F)	71	60.2	70.8	68.2	67.6
pH (standard units)	7.21	7.28	7.22	7.30	7.25

Table 2 for Outfall No.: 003

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Average (µg/L)	MAL (µg/L)
Aluminum, total	17.67	15.2	4.78	6.12	10.9	2.5
Antimony, total	<5.0	0.40	0.53	0.40	1.0	5
Arsenic, total	<4.0	1.7	0.51	1.1	1.8	0.5
Barium, total	482	578	672	583	579	3
Beryllium, total	<2.0	0.42	0.42	0.42	0.8	0.5
Cadmium, total	<2.0	0.24	0.24	0.24	0.7	1
Chromium, total	1.07	<0.5	0.11	0.11	0.4	3
Chromium, hexavalent	4	<1	0.6	<0.5	1.4	3
Chromium, trivalent	1.1	<1	<1	<1	1.0	N/A
Copper, total	<2.0	0.49	0.49	0.49	0.6	2
Cyanide, available	2	2	2	2	2	2/10
Lead, total	<1.0	0.29	0.29	0.29	0.5	0.5
Mercury, total	0.00098	0.004	0.0012	0.0014	0.0019	0.005/0.0005
Nickel, total	2.6	6.1	3.6	8.3	5.2	2
Selenium, total	<5.0	0.90	0.90	0.90	1.3	5
Silver, total	<1.0	0.25	0.25	0.25	0.4	0.5
Thallium, total	<2.0	0.22	0.22	0.22	0.7	0.5
Zinc, total	<5.0	1.3	4.4	1.9	2.5	5.0

TABLE 3 (Instructions, Page 54).

Completion of Table 3 is required for all external outfalls which discharge process wastewater.

Partial completion of Table 3 is required for all external outfalls with non-process wastewater discharges.

For discharges of stormwater runoff commingled with other wastestreams, complete Table 3 as instructed

Table 3 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
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 [Dichlorobromomethane]						10
Bromoform						10
Carbon tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane [Dibromochloromethane]						10
Chloroform						10
Chrysene						5
m-Cresol [3-Methylphenol]						10
o-Cresol [2-Methylphenol]						10
p-Cresol [4-Methylphenol]						10
1,2-Dibromoethane						10
m-Dichlorobenzene [1,3-Dichlorobenzene]						10
o-Dichlorobenzene [1,2-Dichlorobenzene]						10
p-Dichlorobenzene [1,4-Dichlorobenzene]						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethene [1,1-Dichloroethylene]						10
Dichloromethane [Methylene chloride]						20
1,2-Dichloropropane						10
1,3-Dichloropropene [1,3-Dichloropropylene]						10
2,4-Dimethylphenol						10

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
Di-n-Butyl phthalate						10
Ethylbenzene						10
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
Methyl ethyl ketone						50
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-n-butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated biphenyls (PCBs) (**)						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethene [Tetrachloroethylene]						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethene [Trichloroethylene]						10
2,4,5-Trichlorophenol						50
TTHM (Total trihalomethanes)						10
Vinyl chloride						10

(*) Indicate units if different from µg/L.

(**) Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, and PCB-1016. If all non-detects, enter the highest non-detect preceded by a "<".

TABLE 4 (Instructions, Page 55

Partial completion of Table 4 (only those pollutants which are required by the conditions specified below) **is required** for each external outfall.

Completion of Table 4 **is not required** for internal outfalls.

a. Tributyltin

Is your facility an industrial/commercial facility which directly disposes of wastewater from the types of operations listed below or a domestic facility which receives wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, indicate all of the following criteria which apply and provide the appropriate testing results in the table below.

☐ Manufacturers and formulators of tributyltin or related compounds

☐ Painting of ships, boats and marine structures

☐ Ship and boat building and repairing

☐ Ship and boat cleaning, salvage, wrecking and scaling

☐ Operation and maintenance of marine cargo handling facilities and marinas

☐ Facilities engaged in wood preserving

☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. Enterococci

Does or will your facility discharge **directly** into **saltwater** receiving waters **and**:

Enterococci bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

c. E. coli

Does or will your facility discharge **directly** into **freshwater** receiving waters **and**:

E. coli bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

Table 4 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	Average	MAL
Tributyltin (µg/L)						0.010
Enterococci (cfu or MPN/100 mL)						N/A
E. coli (cfu or MPN/100 mL)						N/A

TABLE 5 (Instructions, Page 56)

Completion of Table 5 **is required** for all external outfalls which discharge process wastewater or other wastewaters which may contain pesticides or herbicides from a facility which manufactures or formulates pesticides or herbicides. Completion of Table 5 **is not required** for internal outfalls.

Does your facility manufacture or formulate pesticides or herbicides?

☐ Yes ☒ No

If **yes**, provide the appropriate testing results in Table 5.

Table 5 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	Average (µg/L)*	MAL (µg/L)*
Aldrin						0.01
Carbaryl						5
Chlordane						0.2
Chlorpyrifos						0.05
4,4'-DDD						0.1
4,4'-DDE						0.1
4,4'-DDT						0.02
2,4-D						0.7
Danitol [Fenpropathrin]						—
Demeton						0.20
Diazinon						0.5/0.1
Dicofol [Kelthane]						1
Dieldrin						0.02
Diuron						0.090
Endosulfan I (*alpha*)						0.01
Endosulfan II (*beta*)						0.02
Endosulfan sulfate						0.1
Endrin						0.02
Guthion [Azinphos methyl]						0.1
Heptachlor						0.01
Heptachlor epoxide						0.01
Hexachlorocyclohexane (*alpha*)						0.05
Hexachlorocyclohexane (*beta*)						0.05
Hexachlorocyclohexane (*gamma*) [Lindane]						0.05
Hexachlorophene						10
Malathion						0.1
Methoxychlor						2.0
Mirex						0.02
Parathion (ethyl)						0.1
Toxaphene						0.3
2,4,5-TP [Silvex]						0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 56)

Completion of Table 6 is required for all external outfalls but is not required for internal outfalls.

Table 6 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutants	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (µg/L)*
Bromide	☐	☐				400
Color (PCU)	☐	☐				—
Nitrate-Nitrite (as N)	☐	☐				—
Sulfide (as S)	☐	☐				—
Sulfite (as SO3)	☐	☐				—
Surfactants	☐	☐				—
Boron, total	☐	☐				20
Cobalt, total	☐	☐				0.3
Iron, total	☐	☐				7
Magnesium, total	☐	☐				20
Manganese, total	☐	☐				0.5
Molybdenum, total	☐	☐				1
Tin, total	☐	☐				5
Titanium, total	☐	☐				30

* Indicate units if different from µg/L.

TABLE 7 (Instructions, Page 56)

Indicate any of the industrial categories applicable to your facility; otherwise, check the "N/A" box below. If GC/MS testing is required, indicate with an 'x' in the box provided that the testing results for the appropriate parameters are provided with the application.

☐ N/A

Table 7 for Applicable Industrial Categories

Industrial Category	40 CFR Part	Volatiles Table 8	Acids Table 9	Bases/Neutrals Table 10	Pesticides Table 11
☐ Adhesives and Sealants		☐ Yes	☐ Yes	☐ Yes	No
☐ Aluminum Forming	467	☐ Yes	☐ Yes	☐ Yes	No
☐ Auto and Other Laundries		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Battery Manufacturing	461	☐ Yes	No	☐ Yes	No
☐ Coal Mining	434	No	No	No	No
☐ Coil Coating	465	☐ Yes	☐ Yes	☐ Yes	No
☐ Copper Forming	468	☐ Yes	☐ Yes	☐ Yes	No
☐ Electric and Electronic Components	469	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Electroplating	413	☐ Yes	☐ Yes	☐ Yes	No
☐ Explosives Manufacturing	457	No	☐ Yes	☐ Yes	No
☐ Foundries		☐ Yes	☐ Yes	☐ Yes	No
☐ Gum and Wood Chemicals - Subparts A,B,C,E	454	☐ Yes	☐ Yes	No	No
☐ Gum and Wood Chemicals - Subparts D,F	454	☐ Yes	☐ Yes	☐ Yes	No
☐ Inorganic Chemicals Manufacturing	415	☐ Yes	☐ Yes	☐ Yes	No
☐ Iron and Steel Manufacturing	420	☐ Yes	☐ Yes	☐ Yes	No
☐ Leather Tanning and Finishing	425	☐ Yes	☐ Yes	☐ Yes	No
☐ Mechanical Products Manufacturing		☐ Yes	☐ Yes	☐ Yes	No
☐ Nonferrous Metals Manufacturing	421,471	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Ore Mining - Subpart B	440	No	☐ Yes	No	No
☐ Organic Chemicals Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Paint and Ink Formulation	446,447	☐ Yes	☐ Yes	☐ Yes	No
☐ Pesticides	455	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Petroleum Refining	419	☐ Yes	No	No	No
☐ Pharmaceutical Preparations	439	☐ Yes	☐ Yes	☐ Yes	No
☐ Photographic Equipment and Supplies	459	☐ Yes	☐ Yes	☐ Yes	No
☐ Plastic and Synthetic Materials Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Plastic Processing	463	☐ Yes	No	No	No
☐ Porcelain Enameling	466	No	No	No	No
☐ Printing and Publishing		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Pulp and Paperboard Mills - Subpart C	430	☐ *	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subparts F, K	430	☐ *	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts A, B, D, G, H	430	☐ Yes	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts I, J, L	430	☐ Yes	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subpart E	430	☐ Yes	☐ Yes	☐ Yes	☐ *
☐ Rubber Processing	428	☐ Yes	☐ Yes	☐ Yes	No
☐ Soap and Detergent Manufacturing	417	☐ Yes	☐ Yes	☐ Yes	No
☒ Steam Electric Power Plants	423	☒ Yes	☒ Yes	No	No
☐ Textile Mills (Not Subpart C)	410	☐ Yes	☐ Yes	☐ Yes	No
☐ Timber Products Processing	429	☐ Yes	☐ Yes	☐ Yes	☐ Yes

* Test if believed present.

TABLES 8, 9, 10, and 11 (Instructions, Pages 56-57)

Completion of Tables 8, 9, 10, and 11 **is required** as specified in Table 7 for all external outfalls that contain process wastewater.

Completion of Tables 8, 9, 10, and 11 **is not required** for internal outfalls.

Completion of Tables 8, 9, 10, and 11 **may be required** for types of industry not specified in Table 7 for specific parameters that are believed to be present in the wastewater.

Table 8 for Outfall No.: N/A: Volatile Compounds

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene [1,1-Dichloroethene]				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
Ethylbenzene				10
Methyl bromide [Bromomethane]				50
Methyl chloride [Chloromethane]				50
Methylene chloride [Dichloromethane]				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene [Tetrachloroethene]				10
Toluene				10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]				10
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 9 for Outfall No.: N/A: Acid Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
p-Chloro-m-cresol				10
Pentachlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

Table 10 for Outfall No.: N/A: Base/Neutral Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)anthracene				5
Benzo(a)pyrene				5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]				10
Benzo(ghi)perylene				20
Benzo(k)fluoranthene				5
Bis(2-chloroethoxy)methane				10
Bis(2-chloroethyl)ether				10
Bis(2-chloroisopropyl)ether				10
Bis(2-ethylhexyl)phthalate				10
4-Bromophenyl phenyl ether				10
Butylbenzyl phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)anthracene				5
1,2-Dichlorobenzene [o-Dichlorobenzene]				10
1,3-Dichlorobenzene [m-Dichlorobenzene]				10
1,4-Dichlorobenzene [p-Dichlorobenzene]				10

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
3,3'-Dichlorobenzidine				5
Diethyl phthalate				10
Dimethyl phthalate				10
Di-n-butyl phthalate				10
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-octyl phthalate				10
1,2-Diphenylhydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

Table 11 for Outfall No.: N/A: Pesticides
Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Aldrin				0.01
alpha-BHC [alpha-Hexachlorocyclohexane]				0.05
beta-BHC [beta-Hexachlorocyclohexane]				0.05
gamma-BHC [gamma-Hexachlorocyclohexane]				0.05
delta-BHC [delta-Hexachlorocyclohexane]				0.05
Chlordane				0.2
4,4'-DDT				0.02
4,4'-DDE				0.1
4,4'-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Endosulfan sulfate				0.1
Endrin				0.02
Endrin aldehyde				0.1
Heptachlor				0.01
Heptachlor epoxide				0.01
PCB 1242				0.2
PCB 1254				0.2
PCB 1221				0.2
PCB 1232				0.2
PCB 1248				0.2
PCB 1260				0.2
PCB 1016				0.2
Toxaphene				0.3

* Indicate units if different from µg/L

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete Table 12 as directed. Table 12 is not required for internal outfalls. (Instructions, Pages 57-58)

a. Are any of the following compounds manufactured or used in a process at the facility?

☐ Yes ☒ No

If **yes**, indicate which compound(s) are manufactured or used at the facility and provide a brief description of the conditions of its/their presence at the facility.

☐	2,4,5-trichlorophenoxy acetic acid	(2,4,5-T)	CASRN 93-76-5
☐	2-(2,4,5-trichlorophenoxy) propanoic acid	(Silvex, 2,4,5-TP)	CASRN 93-72-1
☐	2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate	(Erbon)	CASRN 136-25-4
☐	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate	(Ronnel)	CASRN 299-84-3
☐	2,4,5-trichlorophenol	(TCP)	CASRN 95-95-4
☐	hexachlorophene	(HCP)	CASRN 70-30-4

Description:

N/A

b. Do you know or have any reason to believe that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

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

N/A

c. If you responded **yes** to either Item a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10
1,2,3,7,8-PeCDD	0.5					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					50
2,3,7,8-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.05					50
2,3,4,7,8-PeCDF	0.5					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 as directed. Not required for internal outfalls. (Instructions, Pages 58-59)

a. Are there any pollutants listed in the instructions (page 60) believed present in the discharge?

☐ Yes ☒ No

b. Are there pollutants listed in Item 1.d. on page 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If you responded **yes** to **either** Item a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	CASRN	Average (µg/L)	Maximum (µg/L)	No. of Samples	Analytical Method

Table 1 for Outfall No.: 004

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)	Average (mg/L)
BOD (5-day)	1.0	1.0	1.0	1.0	1.0
CBOD (5-day)	1.0	1.0	1.0	1.0	1.0
Chemical oxygen demand	11.4	7.4	25.5	11.4	13.9
Total organic carbon	3.1	3.3	3.2	3.4	3.3
Dissolved oxygen	2.2	1.7	2.2	1.2	1.8
Ammonia nitrogen	0.10	0.017	0.087	0.15	0.09
Total suspended solids	0.50	0.13	0.50	0.12	0.3
Nitrate nitrogen	1.1	1.0	1.0	1.1	1.1
Total organic nitrogen	<0.30	0.28	0.54	0.39	0.38
Total phosphorus	0.024	0.0080	0.041	0.031	0.030
Oil and grease	0.63	0.63	0.63	0.63	0.6
Total residual chlorine	<0.02	<0.02	<0.02	<0.02	<0.02
Total dissolved solids	2070	2380	2410	2190	2263
Sulfate	53.8	58.2	53.4	53.6	54.8
Chloridc	1080	907	933	905	956
Fluoride	<0.70	0.76	0.70	0.71	0.72
Total alkalinity (mg/L as CaCO3)	315	320	330	250	304
Temperature (°F)	75.4	68.2	72.2	74.4	72.6
pH (standard units)	6.98	7.11	6.96	6.96	7.0

Table 2 for Outfall No.: 004

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Average (µg/L)	MAL (µg/L)
Aluminum, total	16.67	11.2	3.35	2.78	8.5	2.5
Antimony, total	<5.0	0.40	0.54	0.40	1.0	5
Arsenic, total	<4.0	0.84	0.46	0.82	1.5	0.5
Barium, total	341	395	361	402	375	3
Beryllium, total	<2.0	0.42	0.42	0.42	0.8	0.5
Cadmium, total	<2.0	0.24	0.26	0.28	0.7	1
Chromium, total	0.92	<0.5	0.13	<0.1	0.3	3
Chromium, hexavalent	<0.5	<1	<0.5	<0.5	0.3	3
Chromium, trivalent	<1	<1	<1	<1	<1	N/A
Copper, total	<2.0	0.49	0.49	0.49	0.6	2
Cyanide, available	2	2	2	2	2	2/10
Lead, total	<1.0	0.29	0.29	0.29	0.5	0.5
Mercury, total	0.0322	0.0383	0.0345	0.0368	0.0355	0.005/0.0005
Nickel, total	3.9	4.2	3.6	4.3	4	2
Selenium, total	<5.0	0.90	0.90	0.90	1.3	5
Silver, total	<1.0	0.25	0.25	0.25	0.4	0.5
Thallium, total	<2.0	0.22	0.22	0.22	0.7	0.5
Zinc, total	<5.0	2.7	1.6	2.1	2.1	5.0

TABLE 3 (Instructions, Page 54).

Completion of Table 3 is required for all external outfalls which discharge process wastewater.

Partial completion of Table 3 is required for all external outfalls with non-process wastewater discharges.

For discharges of stormwater runoff commingled with other wastestreams, complete Table 3 as instructed

Table 3 for Outfall No.: N/A

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
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 [Dichlorobromomethane]						10
Bromoform						10
Carbon tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane [Dibromochloromethane]						10
Chloroform						10
Chrysene						5
m-Cresol [3-Methylphenol]						10
o-Cresol [2-Methylphenol]						10
p-Cresol [4-Methylphenol]						10
1,2-Dibromoethane						10
m-Dichlorobenzene [1,3-Dichlorobenzene]						10
o-Dichlorobenzene [1,2-Dichlorobenzene]						10
p-Dichlorobenzene [1,4-Dichlorobenzene]						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethene [1,1-Dichloroethylene]						10
Dichloromethane [Methylene chloride]						20
1,2-Dichloropropane						10
1,3-Dichloropropene [1,3-Dichloropropylene]						10
2,4-Dimethylphenol						10

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
Di-n-Butyl phthalate						10
Ethylbenzene						10
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
Methyl ethyl ketone						50
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-n-butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated biphenyls (PCBs) (**)						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethene [Tetrachloroethylene]						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethene [Trichloroethylene]						10
2,4,5-Trichlorophenol						50
TTHM (Total trihalomethanes)						10
Vinyl chloride						10

(*) Indicate units if different from µg/L.

(**) Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, and PCB-1016. If all non-detects, enter the highest non-detect preceded by a "<".

TABLE 4 (Instructions, Page 55

Partial completion of Table 4 (only those pollutants which are required by the conditions specified below) **is required** for each external outfall.

Completion of Table 4 **is not required** for internal outfalls.

a. Tributyltin

Is your facility an industrial/commercial facility which directly disposes of wastewater from the types of operations listed below or a domestic facility which receives wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, indicate all of the following criteria which apply and provide the appropriate testing results in the table below.

☐ Manufacturers and formulators of tributyltin or related compounds

☐ Painting of ships, boats and marine structures

☐ Ship and boat building and repairing

☐ Ship and boat cleaning, salvage, wrecking and scaling

☐ Operation and maintenance of marine cargo handling facilities and marinas

☐ Facilities engaged in wood preserving

☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. Enterococci

Does or will your facility discharge **directly** into **saltwater** receiving waters **and**:

Enterococci bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

c. E. coli

Does or will your facility discharge **directly** into **freshwater** receiving waters **and**:

E. coli bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

Table 4 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	Average	MAL
Tributyltin (µg/L)						0.010
Enterococci (cfu or MPN/100 mL)						N/A
E. coli (cfu or MPN/100 mL)						N/A

TABLE 5 (Instructions, Page 56)

Completion of Table 5 **is required** for all external outfalls which discharge process wastewater or other wastewaters which may contain pesticides or herbicides from a facility which manufactures or formulates pesticides or herbicides. Completion of Table 5 **is not required** for internal outfalls.

Does your facility manufacture or formulate pesticides or herbicides?

☐ Yes ☒ No

If **yes**, provide the appropriate testing results in Table 5.

Table 5 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	Average (µg/L)*	MAL (µg/L)*
Aldrin						0.01
Carbaryl						5
Chlordane						0.2
Chlorpyrifos						0.05
4,4'-DDD						0.1
4,4'-DDE						0.1
4,4'-DDT						0.02
2,4-D						0.7
Danitol [Fenpropathrin]						—
Demeton						0.20
Diazinon						0.5/0.1
Dicofol [Kelthane]						1
Dieldrin						0.02
Diuron						0.090
Endosulfan I (*alpha*)						0.01
Endosulfan II (*beta*)						0.02
Endosulfan sulfate						0.1
Endrin						0.02
Guthion [Azinphos methyl]						0.1
Heptachlor						0.01
Heptachlor epoxide						0.01
Hexachlorocyclohexane (*alpha*)						0.05
Hexachlorocyclohexane (*beta*)						0.05
Hexachlorocyclohexane (*gamma*) [Lindane]						0.05
Hexachlorophene						10
Malathion						0.1
Methoxychlor						2.0
Mirex						0.02
Parathion (ethyl)						0.1
Toxaphene						0.3
2,4,5-TP [Silvex]						0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 56)

Completion of Table 6 is required for all external outfalls but is not required for internal outfalls.

Table 6 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutants	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (µg/L)*
Bromide	☐	☐				400
Color (PCU)	☐	☐				—
Nitrate-Nitrite (as N)	☐	☐				—
Sulfide (as S)	☐	☐				—
Sulfite (as SO3)	☐	☐				—
Surfactants	☐	☐				—
Boron, total	☐	☐				20
Cobalt, total	☐	☐				0.3
Iron, total	☐	☐				7
Magnesium, total	☐	☐				20
Manganese, total	☐	☐				0.5
Molybdenum, total	☐	☐				1
Tin, total	☐	☐				5
Titanium, total	☐	☐				30

* Indicate units if different from µg/L.

TABLE 7 (Instructions, Page 56)

Indicate any of the industrial categories applicable to your facility; otherwise, check the "N/A" box below. If GC/MS testing is required, indicate with an 'x' in the box provided that the testing results for the appropriate parameters are provided with the application.

☐ N/A

Table 7 for Applicable Industrial Categories

Industrial Category	40 CFR Part	Volatiles Table 8	Acids Table 9	Bases/Neutrals Table 10	Pesticides Table 11
☐ Adhesives and Sealants		☐ Yes	☐ Yes	☐ Yes	No
☐ Aluminum Forming	467	☐ Yes	☐ Yes	☐ Yes	No
☐ Auto and Other Laundries		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Battery Manufacturing	461	☐ Yes	No	☐ Yes	No
☐ Coal Mining	434	No	No	No	No
☐ Coil Coating	465	☐ Yes	☐ Yes	☐ Yes	No
☐ Copper Forming	468	☐ Yes	☐ Yes	☐ Yes	No
☐ Electric and Electronic Components	469	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Electroplating	413	☐ Yes	☐ Yes	☐ Yes	No
☐ Explosives Manufacturing	457	No	☐ Yes	☐ Yes	No
☐ Foundries		☐ Yes	☐ Yes	☐ Yes	No
☐ Gum and Wood Chemicals - Subparts A,B,C,E	454	☐ Yes	☐ Yes	No	No
☐ Gum and Wood Chemicals - Subparts D,F	454	☐ Yes	☐ Yes	☐ Yes	No
☐ Inorganic Chemicals Manufacturing	415	☐ Yes	☐ Yes	☐ Yes	No
☐ Iron and Steel Manufacturing	420	☐ Yes	☐ Yes	☐ Yes	No
☐ Leather Tanning and Finishing	425	☐ Yes	☐ Yes	☐ Yes	No
☐ Mechanical Products Manufacturing		☐ Yes	☐ Yes	☐ Yes	No
☐ Nonferrous Metals Manufacturing	421,471	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Ore Mining - Subpart B	440	No	☐ Yes	No	No
☐ Organic Chemicals Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Paint and Ink Formulation	446,447	☐ Yes	☐ Yes	☐ Yes	No
☐ Pesticides	455	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Petroleum Refining	419	☐ Yes	No	No	No
☐ Pharmaceutical Preparations	439	☐ Yes	☐ Yes	☐ Yes	No
☐ Photographic Equipment and Supplies	459	☐ Yes	☐ Yes	☐ Yes	No
☐ Plastic and Synthetic Materials Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Plastic Processing	463	☐ Yes	No	No	No
☐ Porcelain Enameling	466	No	No	No	No
☐ Printing and Publishing		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Pulp and Paperboard Mills - Subpart C	430	☐ *	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subparts F, K	430	☐ *	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts A, B, D, G, H	430	☐ Yes	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts I, J, L	430	☐ Yes	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subpart E	430	☐ Yes	☐ Yes	☐ Yes	☐ *
☐ Rubber Processing	428	☐ Yes	☐ Yes	☐ Yes	No
☐ Soap and Detergent Manufacturing	417	☐ Yes	☐ Yes	☐ Yes	No
☒ Steam Electric Power Plants	423	☒ Yes	☒ Yes	No	No
☐ Textile Mills (Not Subpart C)	410	☐ Yes	☐ Yes	☐ Yes	No
☐ Timber Products Processing	429	☐ Yes	☐ Yes	☐ Yes	☐ Yes

* Test if believed present.

TABLES 8, 9, 10, and 11 (Instructions, Pages 56-57)

Completion of Tables 8, 9, 10, and 11 **is required** as specified in Table 7 for all external outfalls that contain process wastewater.

Completion of Tables 8, 9, 10, and 11 **is not required** for internal outfalls.

Completion of Tables 8, 9, 10, and 11 **may be required** for types of industry not specified in Table 7 for specific parameters that are believed to be present in the wastewater.

Table 8 for Outfall No.: N/A: Volatile Compounds

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene [1,1-Dichloroethene]				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
Ethylbenzene				10
Methyl bromide [Bromomethane]				50
Methyl chloride [Chloromethane]				50
Methylene chloride [Dichloromethane]				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene [Tetrachloroethene]				10
Toluene				10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]				10
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 9 for Outfall No.: N/A: Acid Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
p-Chloro-m-cresol				10
Pentachlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

Table 10 for Outfall No.: N/A: Base/Neutral Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)anthracene				5
Benzo(a)pyrene				5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]				10
Benzo(ghi)perylene				20
Benzo(k)fluoranthene				5
Bis(2-chloroethoxy)methane				10
Bis(2-chloroethyl)ether				10
Bis(2-chloroisopropyl)ether				10
Bis(2-ethylhexyl)phthalate				10
4-Bromophenyl phenyl ether				10
Butylbenzyl phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)anthracene				5
1,2-Dichlorobenzene [o-Dichlorobenzene]				10
1,3-Dichlorobenzene [m-Dichlorobenzene]				10
1,4-Dichlorobenzene [p-Dichlorobenzene]				10

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
3,3'-Dichlorobenzidine				5
Diethyl phthalate				10
Dimethyl phthalate				10
Di-n-butyl phthalate				10
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-octyl phthalate				10
1,2-Diphenylhydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

Table 11 for Outfall No.: N/A: Pesticides
Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Aldrin				0.01
alpha-BHC [alpha-Hexachlorocyclohexane]				0.05
beta-BHC [beta-Hexachlorocyclohexane]				0.05
gamma-BHC [gamma-Hexachlorocyclohexane]				0.05
delta-BHC [delta-Hexachlorocyclohexane]				0.05
Chlordane				0.2
4,4'-DDT				0.02
4,4'-DDE				0.1
4,4'-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Endosulfan sulfate				0.1
Endrin				0.02
Endrin aldehyde				0.1
Heptachlor				0.01
Heptachlor epoxide				0.01
PCB 1242				0.2
PCB 1254				0.2
PCB 1221				0.2
PCB 1232				0.2
PCB 1248				0.2
PCB 1260				0.2
PCB 1016				0.2
Toxaphene				0.3

* Indicate units if different from µg/L

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete Table 12 as directed. Table 12 is not required for internal outfalls. (Instructions, Pages 57-58)

a. Are any of the following compounds manufactured or used in a process at the facility?

☐ Yes ☒ No

If **yes**, indicate which compound(s) are manufactured or used at the facility and provide a brief description of the conditions of its/their presence at the facility.

☐	2,4,5-trichlorophenoxy acetic acid	(2,4,5-T)	CASRN 93-76-5
☐	2-(2,4,5-trichlorophenoxy) propanoic acid	(Silvex, 2,4,5-TP)	CASRN 93-72-1
☐	2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate	(Erbon)	CASRN 136-25-4
☐	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate	(Ronnel)	CASRN 299-84-3
☐	2,4,5-trichlorophenol	(TCP)	CASRN 95-95-4
☐	hexachlorophene	(HCP)	CASRN 70-30-4

Description:

N/A

b. Do you know or have any reason to believe that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

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

N/A

c. If you responded **yes** to either Item a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10
1,2,3,7,8-PeCDD	0.5					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					50
2,3,7,8-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.05					50
2,3,4,7,8-PeCDF	0.5					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 as directed. Not required for internal outfalls. (Instructions, Pages 58-59)

a. Are there any pollutants listed in the instructions (page 60) believed present in the discharge?

☐ Yes ☒ No

b. Are there pollutants listed in Item 1.d. on page 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If you responded **yes** to **either** Item a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	CASRN	Average (µg/L)	Maximum (µg/L)	No. of Samples	Analytical Method

Table 1 for Outfall No.: 005

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)	Average (mg/L)
BOD (5-day)	1.0	1.0	1.0	1.0	1.0
CBOD (5-day)	1.0	1.0	1.0	1.0	1.0
Chemical oxygen demand	29.5	19.5	39.6	15.4	26
Total organic carbon	3.8	4.2	4.4	4.1	4.1
Dissolved oxygen	1.8	2.6	2.7	2.5	2.4
Ammonia nitrogen	0.045	0.017	0.018	0.16	0.06
Total suspended solids	0.50	0.38	0.75	0.63	0.6
Nitrate nitrogen	1.0	1.1	1.0	1.1	1.05
Total organic nitrogen	<0.30	1.2	0.46	0.27	0.56
Total phosphorus	0.0080	0.0080	0.012	0.013	0.010
Oil and grease	0.63	0.60	0.63	0.63	0.6
Total residual chlorine	<0.02	<0.02	<0.02	<0.02	<0.02
Total dissolved solids	2660	2750	2750	2600	2690
Sulfate	51.9	56.1	54.8	48.5	52.8
Chloride	1200	1250	1320	1220	1248
Fluoride	1.4	1.5	1.6	1.4	1.5
Total alkalinity (mg/L as CaCO3)	310	310	405	260	321
Temperature (°F)	76.4	70.2	71.0	71.4	72.3
pH (standard units)	7.07	7.24	7.02	7.11	7.11

Table 2 for Outfall No.: 005

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Average (µg/L)	MAL (µg/L)
Aluminum, total	7.2	8.3	4.47	2.87	5.7	2.5
Antimony, total	<5.0	0.40	0.58	0.40	1.0	5
Arsenic, total	<4.0	1.0	0.58	0.86	1.6	0.5
Barium, total	365	387	369	405	382	3
Beryllium, total	<2.0	0.42	0.42	0.42	0.8	0.5
Cadmium, total	<2.0	0.24	0.24	0.24	0.7	1
Chromium, total	<0.1	<0. 5	0.16	<0.1	0.13	3
Chromium, hexavalent	<0. 5	<1	0.6	<0.5	0.4	3
Chromium, trivalent	1.2	<1	<1	<1	1.1	N/A
Copper, total	<2.0	0.49	0.49	0.49	0.6	2
Cyanide, available	2	2	2	2	2	2/10
Lead, total	<1.0	0.29	0.29	0.29	0.5	0.5
Mercury, total	0.00033	0.00042	0.0065	0.0084	0.0039	0.005/0.0005
Nickel, total	2.2	2.0	1.8	2.3	2.1	2
Selenium, total	<5.0	0.90	0.90	0.90	1.3	5
Silver, total	<1.0	0.25	0.25	0.25	0.4	0.5
Thallium, total	<2.0	0.22	0.22	0.22	0.7	0.5
Zinc, total	<5.0	1.4	1.5	3.1	2.1	5.0

TABLE 3 (Instructions, Page 54).

Completion of Table 3 is required for all external outfalls which discharge process wastewater.

Partial completion of Table 3 is required for all external outfalls with non-process wastewater discharges.

For discharges of stormwater runoff commingled with other wastestreams, complete Table 3 as instructed

Table 3 for Outfall No.: N/A

Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
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 [Dichlorobromomethane]						10
Bromoform						10
Carbon tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane [Dibromochloromethane]						10
Chloroform						10
Chrysene						5
m-Cresol [3-Methylphenol]						10
o-Cresol [2-Methylphenol]						10
p-Cresol [4-Methylphenol]						10
1,2-Dibromoethane						10
m-Dichlorobenzene [1,3-Dichlorobenzene]						10
o-Dichlorobenzene [1,2-Dichlorobenzene]						10
p-Dichlorobenzene [1,4-Dichlorobenzene]						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethene [1,1-Dichloroethylene]						10
Dichloromethane [Methylene chloride]						20
1,2-Dichloropropane						10
1,3-Dichloropropene [1,3-Dichloropropylene]						10
2,4-Dimethylphenol						10

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
Di-n-Butyl phthalate						10
Ethylbenzene						10
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
Methyl ethyl ketone						50
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-n-butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated biphenyls (PCBs) (**)						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethene [Tetrachloroethylene]						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethene [Trichloroethylene]						10
2,4,5-Trichlorophenol						50
TTHM (Total trihalomethanes)						10
Vinyl chloride						10

(*) Indicate units if different from µg/L.

(**) Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, and PCB-1016. If all non-detects, enter the highest non-detect preceded by a "<".

TABLE 4 (Instructions, Page 55

Partial completion of Table 4 (only those pollutants which are required by the conditions specified below) **is required** for each external outfall.

Completion of Table 4 **is not required** for internal outfalls.

a. Tributyltin

Is your facility an industrial/commercial facility which directly disposes of wastewater from the types of operations listed below or a domestic facility which receives wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, indicate all of the following criteria which apply and provide the appropriate testing results in the table below.

☐ Manufacturers and formulators of tributyltin or related compounds

☐ Painting of ships, boats and marine structures

☐ Ship and boat building and repairing

☐ Ship and boat cleaning, salvage, wrecking and scaling

☐ Operation and maintenance of marine cargo handling facilities and marinas

☐ Facilities engaged in wood preserving

☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. Enterococci

Does or will your facility discharge **directly** into **saltwater** receiving waters **and**:

Enterococci bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

c. E. coli

Does or will your facility discharge **directly** into **freshwater** receiving waters **and**:

E. coli bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

Table 4 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	Average	MAL
Tributyltin (µg/L)						0.010
Enterococci (cfu or MPN/100 mL)						N/A
E. coli (cfu or MPN/100 mL)						N/A

TABLE 5 (Instructions, Page 56)

Completion of Table 5 **is required** for all external outfalls which discharge process wastewater or other wastewaters which may contain pesticides or herbicides from a facility which manufactures or formulates pesticides or herbicides. Completion of Table 5 **is not required** for internal outfalls.

Does your facility manufacture or formulate pesticides or herbicides?

☐ Yes ☒ No

If **yes**, provide the appropriate testing results in Table 5.

Table 5 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	Average (µg/L)*	MAL (µg/L)*
Aldrin						0.01
Carbaryl						5
Chlordane						0.2
Chlorpyrifos						0.05
4,4'-DDD						0.1
4,4'-DDE						0.1
4,4'-DDT						0.02
2,4-D						0.7
Danitol [Fenpropathrin]						—
Demeton						0.20
Diazinon						0.5/0.1
Dicofol [Kelthane]						1
Dieldrin						0.02
Diuron						0.090
Endosulfan I (*alpha*)						0.01
Endosulfan II (*beta*)						0.02
Endosulfan sulfate						0.1
Endrin						0.02
Guthion [Azinphos methyl]						0.1
Heptachlor						0.01
Heptachlor epoxide						0.01
Hexachlorocyclohexane (*alpha*)						0.05
Hexachlorocyclohexane (*beta*)						0.05
Hexachlorocyclohexane (*gamma*) [Lindane]						0.05
Hexachlorophene						10
Malathion						0.1
Methoxychlor						2.0
Mirex						0.02
Parathion (ethyl)						0.1
Toxaphene						0.3
2,4,5-TP [Silvex]						0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 56)

Completion of Table 6 is required for all external outfalls but is not required for internal outfalls.

Table 6 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutants	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (µg/L)*
Bromide	☐	☐				400
Color (PCU)	☐	☐				—
Nitrate-Nitrite (as N)	☐	☐				—
Sulfide (as S)	☐	☐				—
Sulfite (as SO_3)	☐	☐				—
Surfactants	☐	☐				—
Boron, total	☐	☐				20
Cobalt, total	☐	☐				0.3
Iron, total	☐	☐				7
Magnesium, total	☐	☐				20
Manganese, total	☐	☐				0.5
Molybdenum, total	☐	☐				1
Tin, total	☐	☐				5
Titanium, total	☐	☐				30

* Indicate units if different from µg/L.

TABLE 7 (Instructions, Page 56)

Indicate any of the industrial categories applicable to your facility; otherwise, check the "N/A" box below. If GC/MS testing is required, indicate with an 'x' in the box provided that the testing results for the appropriate parameters are provided with the application.

☐ N/A

Table 7 for Applicable Industrial Categories

Industrial Category	40 CFR Part	Volatiles Table 8	Acids Table 9	Bases/Neutrals Table 10	Pesticides Table 11
☐ Adhesives and Sealants		☐ Yes	☐ Yes	☐ Yes	No
☐ Aluminum Forming	467	☐ Yes	☐ Yes	☐ Yes	No
☐ Auto and Other Laundries		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Battery Manufacturing	461	☐ Yes	No	☐ Yes	No
☐ Coal Mining	434	No	No	No	No
☐ Coil Coating	465	☐ Yes	☐ Yes	☐ Yes	No
☐ Copper Forming	468	☐ Yes	☐ Yes	☐ Yes	No
☐ Electric and Elcctronic Components	469	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Electroplating	413	☐ Yes	☐ Yes	☐ Yes	No
☐ Explosives Manufacturing	457	No	☐ Yes	☐ Yes	No
☐ Foundries		☐ Yes	☐ Yes	☐ Yes	No
☐ Gum and Wood Chemicals - Subparts A,B,C,E	454	☐ Yes	☐ Yes	No	No
☐ Gum and Wood Chemicals - Subparts D,F	454	☐ Yes	☐ Yes	☐ Yes	No
☐ Inorganic Chemicals Manufacturing	415	☐ Yes	☐ Yes	☐ Yes	No
☐ Iron and Steel Manufacturing	420	☐ Yes	☐ Yes	☐ Yes	No
☐ Leather Tanning and Finishing	425	☐ Yes	☐ Yes	☐ Yes	No
☐ Mechanical Products Manufacturing		☐ Yes	☐ Yes	☐ Yes	No
☐ Nonferrous Metals Manufacturing	421,471	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Ore Mining - Subpart B	440	No	☐ Yes	No	No
☐ Organic Chemicals Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Paint and Ink Formulation	446,447	☐ Yes	☐ Yes	☐ Yes	No
☐ Pesticides	455	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Petroleum Refining	419	☐ Yes	No	No	No
☐ Pharmaceutical Preparations	439	☐ Yes	☐ Yes	☐ Yes	No
☐ Photographic Equipment and Supplies	459	☐ Yes	☐ Yes	☐ Yes	No
☐ Plastic and Synthetic Materials Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Plastic Processing	463	☐ Yes	No	No	No
☐ Porcelain Enameling	466	No	No	No	No
☐ Printing and Publishing		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Pulp and Paperboard Mills - Subpart C	430	☐ *	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subparts F, K	430	☐ *	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts A, B, D, G, H	430	☐ Yes	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts I, J, L	430	☐ Yes	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subpart E	430	☐ Yes	☐ Yes	☐ Yes	☐ *
☐ Rubber Processing	428	☐ Yes	☐ Yes	☐ Yes	No
☐ Soap and Detergent Manufacturing	417	☐ Yes	☐ Yes	☐ Yes	No
☒ Steam Electric Power Plants	423	☒ Yes	☒ Yes	No	No
☐ Textile Mills (Not Subpart C)	410	☐ Yes	☐ Yes	☐ Yes	No
☐ Timber Products Processing	429	☐ Yes	☐ Yes	☐ Yes	☐ Yes

* Test if believed present.

TABLES 8, 9, 10, and 11 (Instructions, Pages 56-57)

Completion of Tables 8, 9, 10, and 11 **is required** as specified in Table 7 for all external outfalls that contain process wastewater.

Completion of Tables 8, 9, 10, and 11 **is not required** for internal outfalls.

Completion of Tables 8, 9, 10, and 11 **may be required** for types of industry not specified in Table 7 for specific parameters that are believed to be present in the wastewater.

Table 8 for Outfall No.: N/A: Volatile Compounds

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene [1,1-Dichloroethene]				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
Ethylbenzene				10
Methyl bromide [Bromomethane]				50
Methyl chloride [Chloromethane]				50
Methylene chloride [Dichloromethane]				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene [Tetrachloroethene]				10
Toluene				10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]				10
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 9 for Outfall No.: N/A: Acid Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
p-Chloro-m-cresol				10
Pentachlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

Table 10 for Outfall No.: N/A: Base/Neutral Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)anthracene				5
Benzo(a)pyrene				5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]				10
Benzo(ghi)perylene				20
Benzo(k)fluoranthene				5
Bis(2-chloroethoxy)methane				10
Bis(2-chloroethyl)ether				10
Bis(2-chloroisopropyl)ether				10
Bis(2-ethylhexyl)phthalate				10
4-Bromophenyl phenyl ether				10
Butylbenzyl phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)anthracene				5
1,2-Dichlorobenzene [o-Dichlorobenzene]				10
1,3-Dichlorobenzene [m-Dichlorobenzene]				10
1,4-Dichlorobenzene [p-Dichlorobenzene]				10

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
3,3'-Dichlorobenzidine				5
Diethyl phthalate				10
Dimethyl phthalate				10
Di-n-butyl phthalate				10
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-octyl phthalate				10
1,2-Diphenylhydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

Table 11 for Outfall No.: N/A: Pesticides
Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Aldrin				0.01
alpha-BHC [alpha-Hexachlorocyclohexane]				0.05
beta-BHC [beta-Hexachlorocyclohexane]				0.05
gamma-BHC [gamma-Hexachlorocyclohexane]				0.05
delta-BHC [delta-Hexachlorocyclohexane]				0.05
Chlordane				0.2
4,4'-DDT				0.02
4,4'-DDE				0.1
4,4'-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Endosulfan sulfate				0.1
Endrin				0.02
Endrin aldehyde				0.1
Heptachlor				0.01
Heptachlor epoxide				0.01
PCB 1242				0.2
PCB 1254				0.2
PCB 1221				0.2
PCB 1232				0.2
PCB 1248				0.2
PCB 1260				0.2
PCB 1016				0.2
Toxaphene				0.3

* Indicate units if different from µg/L

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete Table 12 as directed. Table 12 is not required for internal outfalls. (Instructions, Pages 57-58)

a. Are any of the following compounds manufactured or used in a process at the facility?

☐ Yes ☒ No

If **yes**, indicate which compound(s) are manufactured or used at the facility and provide a brief description of the conditions of its/their presence at the facility.

☐	2,4,5-trichlorophenoxy acetic acid	(2,4,5-T)	CASRN 93-76-5
☐	2-(2,4,5-trichlorophenoxy) propanoic acid	(Silvex, 2,4,5-TP)	CASRN 93-72-1
☐	2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate	(Erbon)	CASRN 136-25-4
☐	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate	(Ronnel)	CASRN 299-84-3
☐	2,4,5-trichlorophenol	(TCP)	CASRN 95-95-4
☐	hexachlorophene	(HCP)	CASRN 70-30-4

Description:

N/A

b. Do you know or have any reason to believe that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

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

N/A

c. If you responded **yes** to either Item a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10
1,2,3,7,8-PeCDD	0.5					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					50
2,3,7,8-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.05					50
2,3,4,7,8-PeCDF	0.5					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 as directed. Not required for internal outfalls. (Instructions, Pages 58-59)

a. Are there any pollutants listed in the instructions (page 60) believed present in the discharge?

☐ Yes ☒ No

b. Are there pollutants listed in Item 1.d. on page 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If you responded **yes** to **either** Item a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	CASRN	Average (µg/L)	Maximum (µg/L)	No. of Samples	Analytical Method

-Table 1 for Outfall No.: 006

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)	Average (mg/L)
BOD (5-day)	1.0	1.0	1.0	1.0	1.0
CBOD (5-day)	1.0	1.0	1.0	1.0	1.0
Chemical oxygen demand	37.6	9.4	29.5	15.4	23
Total organic carbon	2.7	2.9	2.8	3.0	2.9
Dissolved oxygen	2.5	2.2	1.4	2.1	2.1
Ammonia nitrogen	0.017	0.017	0.017	0.096	0.04
Total suspended solids	0.50	0.13	0.63	0.63	0.5
Nitrate nitrogen	1.0	0.99	1.1	1.1	1
Total organic nitrogen	<0.30	0.32	0.37	0.17	0.29
Total phosphorus	0.013	0.0080	0.0080	0.022	0.013
Oil and grease	0.63	0.63	0.63	0.63	0.6
Total residual chlorine	<0.02	<0.02	<0.02	<0.02	<0.02
Total dissolved solids	2660	2780	2900	2650	2748
Sulfate	33.6	34.2	34.1	25.6	31.9
Chloride	1290	1200	1200	1280	1243
Fluoride	1.1	1.2	1.2	1.2	1.2
Total alkalinity (mg/L as CaCO3)	280	295	255	250	270
Temperature (°F)	77.2	72.4	68.6	72.4	72.7
pH (standard units)	7.11	7.08	7.00	6.96	7.04

Table 2 for Outfall No.: 006

Samples are (check one): ☐ **Composites** ☒ **Grabs**

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Average (µg/L)	MAL (µg/L)
Aluminum, total	18.11	4	6.74	2.7	7.9	2.5
Antimony, total	<5.0	0.40	0.75	0.40	1.0	5
Arsenic, total	<4.0	0.86	0.38	0.64	1.5	0.5
Barium, total	306	342	326	462	359	3
Beryllium, total	<2.0	0.42	0.42	0.42	0.8	0.5
Cadmium, total	<2.0	0.24	0.24	0.24	0.7	1
Chromium, total	0.85	<0.5	0.12	<0.1	0.3	3
Chromium, hexavalent	<0.5	<1	0.8	<0.5	0.5	3
Chromium, trivalent	<1	<1	<1	<1	<1	N/A
Copper, total	<2.0	0.49	0.49	0.49	0.6	2
Cyanide, available	3.2	2	2	2	2.3	2/10
Lead, total	<1.0	0.29	0.29	0.29	0.5	0.5
Mercury, total	0.00033	0.00033	0.00034	0.00077	0.0004	0.005/0.0005
Nickel, total	<2.0	0.87	0.80	0.78	0.9	2
Selenium, total	<5.0	0.90	0.90	0.90	1.3	5
Silver, total	<1.0	0.25	0.25	0.25	0.4	0.5
Thallium, total	<2.0	0.22	0.22	0.22	0.7	0.5
Zinc, total	<5.0	1.3	2.6	2.6	2.3	5.0

TABLE 3 (Instructions, Page 54).

Completion of Table 3 is required for all external outfalls which discharge process wastewater.

Partial completion of Table 3 is required for all external outfalls with non-process wastewater discharges.

For discharges of stormwater runoff commingled with other wastestreams, complete Table 3 as instructed

Table 3 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
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 [Dichlorobromomethane]						10
Bromoform						10
Carbon tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane [Dibromochloromethane]						10
Chloroform						10
Chrysene						5
m-Cresol [3-Methylphenol]						10
o-Cresol [2-Methylphenol]						10
p-Cresol [4-Methylphenol]						10
1,2-Dibromoethane						10
m-Dichlorobenzene [1,3-Dichlorobenzene]						10
o-Dichlorobenzene [1,2-Dichlorobenzene]						10
p-Dichlorobenzene [1,4-Dichlorobenzene]						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethene [1,1-Dichloroethylene]						10
Dichloromethane [Methylene chloride]						20
1,2-Dichloropropane						10
1,3-Dichloropropene [1,3-Dichloropropylene]						10
2,4-Dimethylphenol						10

Pollutant	Samp. 1 (µg/L)*	Samp. 2 (µg/L)*	Samp. 3 (µg/L)*	Samp. 4 (µg/L)*	Avg. (µg/L)*	MAL (µg/L)*
Di-n-Butyl phthalate						10
Ethylbenzene						10
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
Methyl ethyl ketone						50
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-n-butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated biphenyls (PCBs) (**)						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethene [Tetrachloroethylene]						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethene [Trichloroethylene]						10
2,4,5-Trichlorophenol						50
TTHM (Total trihalomethancs)						10
Vinyl chloride						10

(*) Indicate units if different from µg/L.

(**) Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, and PCB-1016. If all non-detects, enter the highest non-detect preceded by a "<".

TABLE 4 (Instructions, Page 55

Partial completion of Table 4 (only those pollutants which are required by the conditions specified below) **is required** for each external outfall.

Completion of Table 4 **is not required** for internal outfalls.

a. Tributyltin

Is your facility an industrial/commercial facility which directly disposes of wastewater from the types of operations listed below or a domestic facility which receives wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, indicate all of the following criteria which apply and provide the appropriate testing results in the table below.

☐ Manufacturers and formulators of tributyltin or related compounds

☐ Painting of ships, boats and marine structures

☐ Ship and boat building and repairing

☐ Ship and boat cleaning, salvage, wrecking and scaling

☐ Operation and maintenance of marine cargo handling facilities and marinas

☐ Facilities engaged in wood preserving

☐ Any other industrial/commercial facility for which tributyltin is known to be present, or for which there is any reason to believe that tributyltin may be present in the effluent.

b. Enterococci

Does or will your facility discharge **directly** into **saltwater** receiving waters **and**:

Enterococci bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

c. E. coli

Does or will your facility discharge **directly** into **freshwater** receiving waters **and**:

E. coli bacteria are expected to be present in the discharge based on facility processes?

☐ Yes ☒ No

Domestic wastewater is or will be discharged?

☐ Yes ☒ No

If **yes** to either question, provide the appropriate testing results in Table 4 below.

Table 4 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	Average	MAL
Tributyltin (µg/L)						0.010
Enterococci (cfu or MPN/100 mL)						N/A
E. coli (cfu or MPN/100 mL)						N/A

TABLE 5 (Instructions, Page 56)

Completion of Table 5 **is required** for all external outfalls which discharge process wastewater or other wastewaters which may contain pesticides or herbicides from a facility which manufactures or formulates pesticides or herbicides. Completion of Table 5 **is not required** for internal outfalls.

Does your facility manufacture or formulate pesticides or herbicides?

☐ Yes ☒ No

If **yes**, provide the appropriate testing results in Table 5.

Table 5 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	Average (µg/L)*	MAL (µg/L)*
Aldrin						0.01
Carbaryl						5
Chlordane						0.2
Chlorpyrifos						0.05
4,4'-DDD						0.1
4,4'-DDE						0.1
4,4'-DDT						0.02
2,4-D						0.7
Danitol [Fenpropathrin]						—
Demeton						0.20
Diazinon						0.5/0.1
Dicofol [Kelthane]						1
Dieldrin						0.02
Diuron						0.090
Endosulfan I (*alpha*)						0.01
Endosulfan II (*beta*)						0.02
Endosulfan sulfate						0.1
Endrin						0.02
Guthion [Azinphos methyl]						0.1
Heptachlor						0.01
Heptachlor epoxide						0.01
Hexachlorocyclohexane (*alpha*)						0.05
Hexachlorocyclohexane (*beta*)						0.05
Hexachlorocyclohexane (*gamma*) [Lindane]						0.05
Hexachlorophene						10
Malathion						0.1
Methoxychlor						2.0
Mirex						0.02
Parathion (ethyl)						0.1
Toxaphene						0.3
2,4,5-TP [Silvex]						0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 56)

Completion of Table 6 is required for all external outfalls but is not required for internal outfalls.

Table 6 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutants	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (µg/L)*
Bromide	☐	☐				400
Color (PCU)	☐	☐				—
Nitrate-Nitrite (as N)	☐	☐				—
Sulfide (as S)	☐	☐				—
Sulfite (as SO_3)	☐	☐				—
Surfactants	☐	☐				—
Boron, total	☐	☐				20
Cobalt, total	☐	☐				0.3
Iron, total	☐	☐				7
Magnesium, total	☐	☐				20
Manganese, total	☐	☐				0.5
Molybdenum, total	☐	☐				1
Tin, total	☐	☐				5
Titanium, total	☐	☐				30

* Indicate units if different from µg/L.

TABLE 7 (Instructions, Page 56)

Indicate any of the industrial categories applicable to your facility; otherwise, check the "N/A" box below. If GC/MS testing is required, indicate with an 'x' in the box provided that the testing results for the appropriate parameters are provided with the application.

☐ N/A

Table 7 for Applicable Industrial Categories

Industrial Category	40 CFR Part	Volatiles Table 8	Acids Table 9	Bases/Neutrals Table 10	Pesticides Table 11
☐ Adhesives and Sealants		☐ Yes	☐ Yes	☐ Yes	No
☐ Aluminum Forming	467	☐ Yes	☐ Yes	☐ Yes	No
☐ Auto and Other Laundries		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Battery Manufacturing	461	☐ Yes	No	☐ Yes	No
☐ Coal Mining	434	No	No	No	No
☐ Coil Coating	465	☐ Yes	☐ Yes	☐ Yes	No
☐ Copper Forming	468	☐ Yes	☐ Yes	☐ Yes	No
☐ Electric and Electronic Components	469	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Electroplating	413	☐ Yes	☐ Yes	☐ Yes	No
☐ Explosives Manufacturing	457	No	☐ Yes	☐ Yes	No
☐ Foundries		☐ Yes	☐ Yes	☐ Yes	No
☐ Gum and Wood Chemicals - Subparts A,B,C,E	454	☐ Yes	☐ Yes	No	No
☐ Gum and Wood Chemicals - Subparts D,F	454	☐ Yes	☐ Yes	☐ Yes	No
☐ Inorganic Chemicals Manufacturing	415	☐ Yes	☐ Yes	☐ Yes	No
☐ Iron and Steel Manufacturing	420	☐ Yes	☐ Yes	☐ Yes	No
☐ Leather Tanning and Finishing	425	☐ Yes	☐ Yes	☐ Yes	No
☐ Mechanical Products Manufacturing		☐ Yes	☐ Yes	☐ Yes	No
☐ Nonferrous Metals Manufacturing	421,471	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Ore Mining - Subpart B	440	No	☐ Yes	No	No
☐ Organic Chemicals Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Paint and Ink Formulation	446,447	☐ Yes	☐ Yes	☐ Yes	No
☐ Pesticides	455	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Petroleum Refining	419	☐ Yes	No	No	No
☐ Pharmaceutical Preparations	439	☐ Yes	☐ Yes	☐ Yes	No
☐ Photographic Equipment and Supplies	459	☐ Yes	☐ Yes	☐ Yes	No
☐ Plastic and Synthetic Materials Manufacturing	414	☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Plastic Processing	463	☐ Yes	No	No	No
☐ Porcelain Enameling	466	No	No	No	No
☐ Printing and Publishing		☐ Yes	☐ Yes	☐ Yes	☐ Yes
☐ Pulp and Paperboard Mills - Subpart C	430	☐ *	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subparts F, K	430	☐ *	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts A, B, D, G, H	430	☐ Yes	☐ Yes	☐ *	☐ *
☐ Pulp and Paperboard Mills - Subparts I, J, L	430	☐ Yes	☐ Yes	☐ *	☐ Yes
☐ Pulp and Paperboard Mills - Subpart E	430	☐ Yes	☐ Yes	☐ Yes	☐ *
☐ Rubber Processing	428	☐ Yes	☐ Yes	☐ Yes	No
☐ Soap and Detergent Manufacturing	417	☐ Yes	☐ Yes	☐ Yes	No
☒ Steam Electric Power Plants	423	☒ Yes	☒ Yes	No	No
☐ Textile Mills (Not Subpart C)	410	☐ Yes	☐ Yes	☐ Yes	No
☐ Timber Products Processing	429	☐ Yes	☐ Yes	☐ Yes	☐ Yes

* Test if believed present.

TABLES 8, 9, 10, and 11 (Instructions, Pages 56-57)

Completion of Tables 8, 9, 10, and 11 **is required** as specified in Table 7 for all external outfalls that contain process wastewater.

Completion of Tables 8, 9, 10, and 11 **is not required** for internal outfalls.

Completion of Tables 8, 9, 10, and 11 **may be required** for types of industry not specified in Table 7 for specific parameters that are believed to be present in the wastewater.

Table 8 for Outfall No.: N/A: Volatile Compounds

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acrolein				50
Acrylonitrile				50
Benzene				10
Bromoform				10
Carbon tetrachloride				2
Chlorobenzene				10
Chlorodibromomethane				10
Chloroethane				50
2-Chloroethylvinyl ether				10
Chloroform				10
Dichlorobromomethane [Bromodichloromethane]				10
1,1-Dichloroethane				10
1,2-Dichloroethane				10
1,1-Dichloroethylene [1,1-Dichloroethene]				10
1,2-Dichloropropane				10
1,3-Dichloropropylene [1,3-Dichloropropene]				10
Ethylbenzene				10
Methyl bromide [Bromomethane]				50
Methyl chloride [Chloromethane]				50
Methylene chloride [Dichloromethane]				20
1,1,2,2-Tetrachloroethane				10
Tetrachloroethylene [Tetrachloroethene]				10
Toluene				10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]				10
1,1,1-Trichloroethane				10
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 9 for Outfall No.: N/A: Acid Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
2-Chlorophenol				10
2,4-Dichlorophenol				10
2,4-Dimethylphenol				10
4,6-Dinitro-o-cresol				50
2,4-Dinitrophenol				50
2-Nitrophenol				20
4-Nitrophenol				50
p-Chloro-m-cresol				10
Pentachlorophenol				5
Phenol				10
2,4,6-Trichlorophenol				10

Table 10 for Outfall No.: N/A: Base/Neutral Compounds
Samples are (check one): ☐ Composites ☐ Grabs

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Acenaphthene				10
Acenaphthylene				10
Anthracene				10
Benzidine				50
Benzo(a)anthracene				5
Benzo(a)pyrene				5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]				10
Benzo(ghi)perylene				20
Benzo(k)fluoranthene				5
Bis(2-chloroethoxy)methane				10
Bis(2-chloroethyl)ether				10
Bis(2-chloroisopropyl)ether				10
Bis(2-ethylhexyl)phthalate				10
4-Bromophenyl phenyl ether				10
Butylbenzyl phthalate				10
2-Chloronaphthalene				10
4-Chlorophenyl phenyl ether				10
Chrysene				5
Dibenzo(a,h)anthracene				5
1,2-Dichlorobenzene [o-Dichlorobenzene]				10
1,3-Dichlorobenzene [m-Dichlorobenzene]				10
1,4-Dichlorobenzene [p-Dichlorobenzene]				10

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
3,3'-Dichlorobenzidine				5
Diethyl phthalate				10
Dimethyl phthalate				10
Di-n-butyl phthalate				10
2,4-Dinitrotoluene				10
2,6-Dinitrotoluene				10
Di-n-octyl phthalate				10
1,2-Diphenylhydrazine (as Azobenzene)				20
Fluoranthene				10
Fluorene				10
Hexachlorobenzene				5
Hexachlorobutadiene				10
Hexachlorocyclopentadiene				10
Hexachloroethane				20
Indeno(1,2,3-cd)pyrene				5
Isophorone				10
Naphthalene				10
Nitrobenzene				10
N-Nitrosodimethylamine				50
N-Nitrosodi-n-propylamine				20
N-Nitrosodiphenylamine				20
Phenanthrene				10
Pyrene				10
1,2,4-Trichlorobenzene				10

Table 11 for Outfall No.: N/A: Pesticides
Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Aldrin				0.01
alpha-BHC [alpha-Hexachlorocyclohexane]				0.05
beta-BHC [beta-Hexachlorocyclohexane]				0.05
gamma-BHC [gamma-Hexachlorocyclohexane]				0.05
delta-BHC [delta-Hexachlorocyclohexane]				0.05
Chlordane				0.2
4,4'-DDT				0.02
4,4'-DDE				0.1
4,4'-DDD				0.1
Dieldrin				0.02
Endosulfan I (alpha)				0.01
Endosulfan II (beta)				0.02

Pollutant	Average (µg/L)*	Maximum (µg/L)*	No. of Samples	MAL (µg/L)
Endosulfan sulfate				0.1
Endrin				0.02
Endrin aldehyde				0.1
Heptachlor				0.01
Heptachlor epoxide				0.01
PCB 1242				0.2
PCB 1254				0.2
PCB 1221				0.2
PCB 1232				0.2
PCB 1248				0.2
PCB 1260				0.2
PCB 1016				0.2
Toxaphene				0.3

* Indicate units if different from µg/L

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete Table 12 as directed. Table 12 is not required for internal outfalls. (Instructions, Pages 57-58)

a. Are any of the following compounds manufactured or used in a process at the facility?

☐ Yes ☒ No

If **yes**, indicate which compound(s) are manufactured or used at the facility and provide a brief description of the conditions of its/their presence at the facility.

☐	2,4,5-trichlorophenoxy acetic acid	(2,4,5-T)	CASRN 93-76-5
☐	2-(2,4,5-trichlorophenoxy) propanoic acid	(Silvex, 2,4,5-TP)	CASRN 93-72-1
☐	2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate	(Erbon)	CASRN 136-25-4
☐	0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate	(Ronnel)	CASRN 299-84-3
☐	2,4,5-trichlorophenol	(TCP)	CASRN 95-95-4
☐	hexachlorophene	(HCP)	CASRN 70-30-4

Description:

N/A

b. Do you know or have any reason to believe that 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or any congeners of TCDD may be present in your effluent?

☐ Yes ☒ No

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

N/A

c. If you responded **yes** to either Item a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-TCDD	1					10
1,2,3,7,8-PeCDD	0.5					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					50
2,3,7,8-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.05					50
2,3,4,7,8-PeCDF	0.5					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 as directed. Not required for internal outfalls. (Instructions, Pages 58-59)

a. Are there any pollutants listed in the instructions (page 60) believed present in the discharge?

☐ Yes ☒ No

b. Are there pollutants listed in Item 1.d. on page 1 of this technical report which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If you responded **yes** to **either** Item a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A

Samples are (check one): ☐ **Composites** ☐ **Grabs**

Pollutant	CASRN	Average (µg/L)	Maximum (µg/L)	No. of Samples	Analytical Method

WORKSHEET 4.0
RECEIVING WATERS

This worksheet **is required** for all renewal, amendment, and new TPDES permit applications.

1. DOMESTIC DRINKING WATER SUPPLY (Instructions, Page 78)

Is there 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 **yes**, identify owner of the drinking water supply, the distance and direction to the intake, and locate and identify the intake on the USGS map.

☐ Indicate with an 'x' in the box that the requested information is provided.

2. DISCHARGE INTO TIDALLY INFLUENCED WATERS (Instructions, Page 78)

a. Width of the receiving water at the outfall? ~300 feet

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

☐ Yes ☒ No

If **yes**, indicate approximate distance and direction from outfall(s):

N/A

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

☐ Yes ☒ No

If **yes**, provide the distance and direction to the grasses:

N/A

3. CLASSIFIED SEGMENT (Instructions, Page 78)

Is the discharge 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, and it is not necessary to complete Worksheet 4.1.

If **no**, complete Items 4 and 5.

4. DESCRIPTION OF IMMEDIATE RECEIVING WATERS (Instructions, Page 79)

Name of the immediate receiving waters: N/A

a. Check the appropriate description of the 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:

If you checked "man-made channel or ditch" or "stream or creek" above, provide responses to items b - e below:

b. 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)
- ☐ others, specify:

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

N/A

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

☐ Yes ☐ No

If yes, discuss how:

N/A

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

N/A

Date and time of observation: N/A

Was water body influenced by stormwater runoff during observations?

☐ Yes ☐ No

5. GENERAL CHARACTERISTICS OF WATER BODY (Instructions, Page 79)

a. Is the receiving water upstream of the existing discharge or proposed discharge site influenced by (check as appropriate):

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

b. Uses of water body observed or evidence of such uses (check as appropriate):

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

c. Check the description (only one) that best describes the aesthetics of the receiving water and the surrounding area:

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

☐ Natural Area: trees 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 5.0
SEWAGE SLUDGE MANAGEMENT AND DISPOSAL

The following information **is required** for all TPDES permit applications that meet the conditions as outlined in Technical Report 1.0, Item 7.

1. SEWAGE SLUDGE SOLIDS MANAGEMENT PLAN (Instructions, Page 82)

a. Is this a new permit application or an amendment permit application?

☐ Yes ☒ No

b. Does the facility discharge in the Lake Houston watershed?

☐ Yes ☒ No

If yes to either Item a or b, attach a solids management plan.

Attachment:: N/A

2. SEWAGE SLUDGE MANAGEMENT AND DISPOSAL (Instructions, Page 83)

a. Please check the current sludge disposal method(s). More than one method can be checked.

☒ Permitted landfill

☐ Marketing and distribution by the permittee

☐ Registered land application site

☐ Composted by the permittee

☐ Surface disposal site (sludge monofill)

☐ Transported to another WWTP (written statement or contractual agreement required)

☐ Beneficial land application as authorized in the existing permit

b. Disposal site name: Blue Ridge Landfill

TCEQ Permit/Registration Number: TXR000084592

County where disposal site is located: Fort Bend County

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

Hauler Registration Number: 85812

Sludge is transported as a:

☐ liquid

☐ semi-liquid

☐ semi-solid

☒ solid

Purpose of land application (check one): ☐ reclamation ☐ soil conditioning

Provide a written statement or copy of contractual agreements confirming that the wastewater treatment plant identified above will accept and be responsible for the sludge from the plant for the life of the permit (at least 5 years).

Attachment: N/A

d. If the existing permit contains authorization for sludge land application, composting, marketing and distribution of sludge, or sludge lagoons and authorization to renew the activity is being sought in the application, the appropriate sections of the Sewage Sludge Technical Report (form TCEQ-10056) must be provided.

3. PERMIT AUTHORIZATION FOR SEWAGE SLUDGE DISPOSAL (Instructions, Page 83)

Are you requesting new authorization to beneficially land apply sewage sludge at this site or a site under your direct control?

☐ Yes ☒ No

Are you requesting new authorization to market and distribute sewage sludge at this facility or a facility under your direct control?

☐ Yes ☒ No

Are you requesting new authorization to compost sewage sludge?

☐ Yes ☒ No

Are you requesting new authorization to surface dispose sewage sludge at this site or site under your direct control?

☐ Yes ☒ No

Are you requesting new authorization to incinerate sewage sludge at this site or site under your direct control?

☐ Yes ☒ No

If **yes** to **any** of the above items, provide the information required in the *Sewage Sludge Technical Report* (form TCEQ-10056).

Attachment: N/A

New authorization for beneficial land application, incineration, and sludge lagoons in the TPDES permit or TLAP **requires a major amendment to the permit**. New authorization for composting may require a major amendment to the permit. See the instructions for an explanation whether a major amendment is required or if authorization for composting can be added through the renewal process.

WORKSHEET 11.0
COOLING WATER INTAKE INFORMATION

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12.

1. COOLING WATER SYSTEM DATA (Instructions, Pages 102-103)

a. Complete the following table with information regarding the cooling water system.

Cooling Water System Data

Total DIF	387.8 MGD
Total AIF	35 MGD
Intake Flow Uses (%)	
Contact cooling	
Non-contact cooling	100%
Process uses	
Other	

b. Provide the following information as an attachment.

Attachment: M

1. A narrative description of the design and annual operation of the facility's cooling water system and its relationship to the CWIS(s).
2. A scaled map depicting the location of each CWIS, impoundment, intake pipe, and canals, pipes, or waterways used to convey cooling water to, or within, the cooling water system. Provide the latitude and longitude for each CWIS and any intake pipe(s) on the map. Indicate the position of the intake pipe within the water column.
3. A description of water reuse activities, if applicable.
4. Design and engineering calculations prepared by a qualified professional and data to support the information provided in above item a.
5. Previous year (a minimum of 12 months) of AIF data.
6. A narrative description of existing or proposed impingement and entrainment technologies or operation measures and a summary of their performance, including, but not limited to, reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage.

2. COOLING WATER INTAKE STRUCTURE(S) DATA (Instructions, Page 103)

a. Complete the following table with information regarding each cooling water intake structure (this includes primary and make-up CWIS(s)).

Cooling Water Intake Structure(s) Data

CWIS ID	RMPF	Reservoir		
DIF	387.8 MGD	1367 MGD		
AIF	35 MGD	1365 MGD		
Intake Flow Uses (%)				
Contact cooling				
Non-contact cooling	100	100		
Process uses				
Other				
Latitude	28°46'27.97"N	28°47'32.09"N		
Longitude	95°59'51.84"W	96° 3'1.80"W		

b. Provide the following information as an attachment

Attachment: N

1. A narrative description of the configuration of each CWIS, annual and daily operation, including any seasonal changes, and where it is located in the water body and in the water column.
2. Engineering calculations for each CWIS.

3. SOURCE WATER PHYSICAL DATA (Instructions, Page 104)

a. Complete the following table with information regarding the CWIS(s) source waterbody (this includes primary and make-up CWIS(s)).

Source Waterbody Data

CWIS ID	RMPF	Reservoir		
Source water body	Colorado River	Colorado River		
Mean annual flow	1,711 MGD	1,711 MGD		
Source	https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08162500	https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08162500		

b. Provide the following information as an attachment.

Attachment: O

1. A narrative description of the source water for each CWIS, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports your determination of the water body type where each cooling water intake structure is located.
2. A narrative description of the source waterbody's hydrological and geomorphological features.
3. Scaled drawings showing the physical configuration of all source water bodies used by the facility, including the source waterbody's hydrological and geomorphological features. Note: The source waterbody's hydrological and geomorphological features may be included on the map submitted for item 1.b.ii of this worksheet.
4. A description of the methods used to conduct any physical studies to determine your intake's area of influence within the waterbody and the results of such studies.

4. OPERATIONAL STATUS (Instructions, Pages 104-105)

a. Is this application is for a power production or steam generation facility?

☒ Yes ☐ No

If **yes**, provide the following information as an attachment; otherwise, proceed to item b.

Attachment: P

1. Describe the operating status of each individual unit, including age of each unit, capacity utilization rate (or equivalent), for the previous five years (a minimum of 60 months), and any seasonal changes in operation.
2. Describe any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors.
3. Identify any operating unit with a capacity utilization rate of less than 8 percent averaged over a contiguous period of two years (a minimum of 24 months).
4. Describe any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type.

b. Process Units

1. Is this application for a facility which has process units that use cooling water other than for power production or steam generation?

☐ Yes ☒ No

If **yes**, continue; otherwise, proceed to item c.

2. Does the facility use or intend to use reductions in flow or changes in operations to meet the requirements of *40 CFR § 125.94(c)*?

☐ Yes ☐ No

If **yes**, provide descriptions of the following information as an attachment, otherwise proceed to item c.

Attachment: N/A

- Individual production processes and product lines
- The operating status, including age of each line and seasonal operation
- Any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors
- Any major upgrades completed within the last 15 years and plans or schedules for decommissioning or replacement of process units or production processes and product lines.

c. Is this an application for a nuclear power production facility?

☒ Yes ☐ No

If **yes**, include a description of completed, approved, or scheduled upgrades and Nuclear Regulatory Commission relicensing status of each unit at the facility as an attachment; otherwise, proceed to item d.

Attachment: P

d. Is this an application for a manufacturing facility?

☐ Yes ☒ No

If **yes**, include descriptions of current and future production schedules and any plans or schedules for any new units planned within the next five years (a minimum of 60 months) as an attachment; otherwise proceed to Worksheet 11.1.

Attachment: N/A

WORKSHEET 11.1
IMPINGEMENT MORTALITY

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12. Complete one copy of this worksheet for each individual CWIS the facility uses or proposes to use.

CWIS ID: RMPF

1. IMPINGEMENT COMPLIANCE TECHNOLOGY OPTION SELECTION (Instructions, Page 106)

Indicate the method of compliance with the Impingement Mortality Standard selected by the facility with an 'x' in the appropriate box.

- ☒ Closed-cycle recirculating system(CCRS) [*40 CFR § 125.94(c)(1)*]
- ☐ 0.5 ft/s Through-Screen Design Velocity [*40 CFR § 125.94(c)(2)*] – Proceed to Worksheet 11.2
- ☐ 0.5 ft/s Through Screen Actual Velocity [*40 CFR § 125.94(c)(3)*]
- ☐ Existing offshore velocity cap [*40 CFR § 125.94(c)(4)*] – Proceed to Worksheet 11.2
- ☐ Modified traveling screens [*40 CFR § 125.94(c)(5)*]
- ☐ System of technologies [*40 CFR § 125.94(c)(6)*]
- ☐ Impingement mortality performance standard [*40 CFR § 125.94(c)(7)*]
- ☐ De minimis rate of impingement [*40 CFR § 125.94(c)(11)*]
- ☐ Low capacity utilization power-generation facilities [*40 CFR § 125.94(c)(12)*]

If you selected 0.5 ft/s Through-Screen Design Velocity [*40 CFR § 125.94(c)(2)*] or existing offshore velocity cap [*40 CFR § 125.94(c)(4)*], proceed to Worksheet 11.2. Otherwise, continue.

2. IMPINGEMENT COMPLIANCE TECHNOLOGY INFORMATION (Instructions, Pages 106-108)

Complete the following sections based on the selection made for item 1 above.

a. CCRS [*40 CFR § 125.94(c)(1)*]

☒ Indicate with an 'x' in the box if the CWS meets the definition of CCRS located at *40 CFR § 125.91(c)* and provide a response to the following questions.

1. Does the facility use or propose to use a CWIS to replenish water losses to the CWS?

   ☒ Yes ☐ No

   If **no**, proceed to **item ii**. If **yes**, provide the following information as an attachment and continue.

   Attachment: Q

   i. CWIS ID

   ii. 12 months of intake flow data for any CWIS used for make-up intake flows to replenish cooling water losses, excluding intakes for losses due to blowdown, drift, or evaporation.

   iii. A narrative description of any physical or operational measures taken to minimize make-up withdraws.

   Note: You do not need to complete a separate Worksheet 11.1 for a make-up CWIS.

2. Does the facility use or propose to use cooling towers?

☐ Yes ☒ No

If **no**, proceed to Worksheet 11.2. If **yes**, provide the following information and proceed to Worksheet 11.2.

i. Average number of COCs prior to blowdown: 2

Average COCs prior to blowdown

Cooling Tower ID				
COCs				

Provide COC monitoring data for each cooling tower from the previous year (a minimum of 12 months) as an attachment.

Attachment: N/A

ii. Maximum number of COCs each cooling tower can accomplish based on design of the system.

Calculated COCs prior to blowdown

Cooling Tower ID				
COCs				

iii. Describe conditions that may limit the number of COCs prior to blowdown, if any, including but not limited to permit conditions.

N/A

b. 0.5 ft/s Through Screen Actual Velocity [*40 CFR § 125.94(c)(3)*]

Provide daily intake flow measurement monitoring data from the previous year (a minimum of 12 months) as an attachment and proceed to Worksheet 11.2.

Attachment: N/A

c. Modified traveling screens [*40 CFR § 125.94(c)(5)*]

Provide the following information as an attachment and proceed to Worksheet 11.2.

Attachment: N/A

1. A description of the modified traveling screens and associated equipment.
2. A site-specific impingement technology performance optimization study that includes a narrative description of the biological data collection methods
3. Biological sampling data from the previous two years (a minimum of 24 months).

d. System of technologies [*40 CFR § 125.94(c)(6)*] or impingement mortality performance standard [*40 CFR § 125.94(c)(7)*]

Provide the following information as an attachment and proceed to Worksheet 11.2.

Attachment: N/A

i. A description of the system of technologies used or proposed for use by the facility to achieve compliance with the impingement mortality standard.

ii. A site-specific impingement technology performance optimization study that includes a narrative description of the biological data collection methods.

iii. Biological sampling data from the previous two years (a minimum of 24 months).

e. De minimis rate of impingement [*40 CFR § 125.94(c)(11)*]

Provide the following information and proceed to Worksheet 11.2.

1. Include monitoring data from the previous year (a minimum of 12 months) of intake flow measured at a frequency of 1/day on days of operation as an attachment.

   Attachment: N/A

2. If the rate of impingement caused by the CWIS is extremely low (at an organism or age-one equivalent count), include supplemental information to Worksheet 11.0, item 1.b.vi. to support as an attachment.

   Attachment: N/A

f. Low capacity utilization power-generation facilities [*40 CFR § 125.94(c)(12)*]

Provide monthly utilization data from the previous 2 years (a minimum of 24 months) for each operating unit as an attachment and proceed to Worksheet 11.2.

Attachment: N/A

WORKSHEET 11.2
SOURCE WATER BIOLOGICAL DATA

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12. Complete one copy of this worksheet for each source waterbody of a CWIS for which a facility has selected an Impingement Mortality Technology Option described at *40 CFR §§ 125.94(c)(1)-(7)*.

Name of source waterbody: Colorado River

1. SPECIES MANAGEMENT (Instructions, Page 109)

a. The facility has obtained an incidental take permit for its cooling water intake structure(s) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

☐ Yes ☒ No

If **yes**, any information submitted in order to obtain that permit may be used to supplement the permit application information requirements of paragraph *40 CFR § 125.95(f)*. If included, provide the attachment number.

Attachment: N/A

b. Is the facility requesting a waiver from application requirements at *40 CFR § 122.21(r)(4)* in accordance with *40 CFR § 125.95* for any CWIS(s) that withdraw from a man-made reservoir that is stocked and managed by a state or federal natural resources agency or the equivalent?

☐ Yes ☒ No

If yes, include a copy of the most recent managed fisheries report to TPWD, or equivalent, as an attachment.

Attachment: N/A

c. There are no federally listed threatened or endangered species or critical habitat designations within the source water body.

☐ True ☒ False

2. SOURCE WATER BIOLOGICAL DATA (Instructions, Pages 109-110)

New Facilities (Phase I, Track I and II)

- Provide responses to all items in this section and stop.

Existing Facilities (Phase II)

- If the answer to **1.b.** above was **no**, provide responses to all items in this section and proceed to Worksheet 11.3.
- If the answer to **1.b.** was **yes** and **1.c.** was **true,** do not complete any items in this section and proceed to Worksheet 11.3.
- If the answer to **1.b**. was **yes** and **1.c.** was **false**, provide a response for any item in this section that is not contained within the most recent TPWD, or equivalent, report as an attachment to the application and enter the attachment number in the space provided. Proceed to Worksheet 11.3.

Attachment: R

a. A list of the data requested at *40 CFR § 122.21(r)(4)(ii)* through *(vi)* that are not available and efforts made to identify sources of the data.

b. Provide a list of species (or relevant taxa) in the vicinity of the CWIS and identify the following information regarding each species listed.
   1. all life stages and their relative abundance,
   2. identification of all species and life stages that would be most susceptible to impingement and entrainment,
   3. forage base,
   4. significance to commercial fisheries,
   5. significance to recreational fisheries,
   6. primary period of reproduction,
   7. larval recruitment, and
   8. period of peak abundance for relevant taxa.

c. Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure.

d. Identify all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at your cooling water intake structures.

e. Documentation of any public participation or consultation with federal or state agencies undertaken and provide an attachment number.

The following is required for existing facilities only. Include the following information with the above listed attachment.

f. Identify any protective measures and stabilization activities that have been implemented, and provide a description of how these measures and activities affected the baseline water condition in the vicinity of the intake.

g. A list of fragile species, as defined at *40 CFR § 125.92(m)*, at the facility. The applicant need only identify those species not already identified as fragile at *40 CFR § 125.92(m)*.

   Note: New units at an existing facility are not required to resubmit this information if the cooling water withdrawals for the operation of the new unit are from an existing intake.

WORKSHEET 11.3
COMPLIANCE WITH ENTRAINMENT MORTALITY STANDARD

This worksheet **is required** for all new, renewal, and amendment TPDES permit applications that meet the conditions outlined in Technical Report 1.0, Item 12. Complete one copy of this worksheet for each individual CWIS the facility uses or proposes to use.

CWIS ID: RMPF

1. APPLICABILITY (Instructions, Page 111)

Is the AIF of the CWIS identified above greater than, or equal to, 125 MGD?

☐ Yes ☒ No

- If **no** or the facility has selected **CCRS** [*40 CFR § 125.94(c)(1)*] for the impingement mortality compliance method, complete item 2 and stop here.
- If **yes** and the facility is **seeking a waiver** from application requirements in accordance with *40 CFR § 125.95* for any CWIS(s) that withdraw from a man-made reservoir that is stocked and managed by a state or federal natural resources agency or the equivalent, complete item 2 and stop.
- If **yes** and the facility is **not seeking a waiver** from application requirements in accordance with *40 CFR § 125.95*, complete item 2 and provide any required and completed studies listed in item 3. For any required studies in item 3 that are not complete, provide a detailed explanation for the delay and an anticipated schedule for completion and submittal.

2. EXISTING ENTRAINMENT PERFORMANCE STUDIES (Instructions, Page 111)

Previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies with the application.

Attachment: S

3. FACILITY ENTRAINMENT PERFORMANCE STUDIES (Instructions, Pages 111-112)

a. Provide an entrainment characterization study, as described at *40 CFR § 122.21(r)(9)*, as an attachment.

Attachment: N/A

b. Provide a comprehensive feasibility study, as described as *40 CFR § 122.21(r)(10)*, as an attachment.

Attachment: N/A

c. Provide a benefits valuation study, as described as *40 CFR § 122.21(r)(11)*, as an attachment.

Attachment: N/A

d. Provide a non-water quality environmental and other impacts study, as described as *40 CFR § 122.21(r)(12)*, as an attachment.

Attachment: N/A

e. Provide a peer review analysis, as described as *40 CFR § 122.21(r)(13)*, as an attachment.

Attachment: N/A

Copy of Payment Information

Attachment A

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

CERTIFIED MAIL (7017-3040-0001-0776-2342)

April 29, 2019
NOC-TX-19033318
STI No. 34840290
PFN: W02

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

Re: Payment for the renewal of TPDES Permit Number WQ0001908000
South Texas Project Nuclear Operating Company (STP)

Enclosed is a check in the amount of $2,015 for the payment of application fees for the renewal of Texas Pollutant Discharge Elimination System (TPDES) permit number WQ0001908000 for the South Texas Project Nuclear Operating Company.

If you have any questions or require additional information, please contact Jason Ludwig at (361) 972-4507.

Sincerely,

Jason Ludwig
Staff Environmental Consultant

JAL/jal

Enclosure

bcc: Correspondence, N2002

WATER QUALITY PERMIT

PAYMENT SUBMITTAL FORM

Use this form to submit the Application Fee, if the 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 e

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 Q
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, Texas 78753

Fee Code: WQP **Waste Permit No:** WQ0001908000

1. Check or Money Order Number: 123353
2. Check or Money Order Amount: $2,015
3. Date of Check or Money Order: 4/24/2019
4. Name on Check or Money Order: STP Nuclear Operating Company
5. APPLICATION INFORMATION

   Name of Project or Site: South Texas Project Electric Generating Station

   Physical Address of Project or Site: 12090 Farm-to-Market Road 521, Wadsworth, TX 77483

Core Data Form

Attachment B

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

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 601658669		RN 102395654

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	05/31/2019

☐ 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:*
STP Nuclear Operating Company	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
145955301	17605175979	76-0517597	

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 289							
	City	Wadsworth	State	TX	ZIP	77483	ZIP + 4	

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

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(361) 972-8164		( ) -

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.)*

South Texas Project Electric Generating Station

23. Street Address of the Regulated Entity: *(No PO Boxes)*	12090 Farm-to-Market Road 521							
	City	Wadsworth	State	TX	ZIP	77483	ZIP + 4	
24. County	Matagorda							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	N/A							
26. Nearest City					State		Nearest ZIP Code	
Bay City					TX		77483	
27. Latitude (N) In Decimal:				28. Longitude (W) In Decimal:				
Degrees	Minutes	Seconds		Degrees	Minutes	Seconds		
28	47	50		-96	03	10		

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)
4911		221113	

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

Steam Electric Generating Facility

34. Mailing Address:	P.O. Box 289							
	City	Wadsworth	State	TX	ZIP	77483	ZIP + 4	
35. E-Mail Address:	mpmurray@stpegs.com							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(361) 972-8164		( ) -

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:
	WQ0001908000			

SECTION IV: Preparer Information

40. Name:	Amanda Ragatz	41. Title:	Senior Scientist

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(314) 551-7099		( ) -	amanda.ragatz@erm.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.

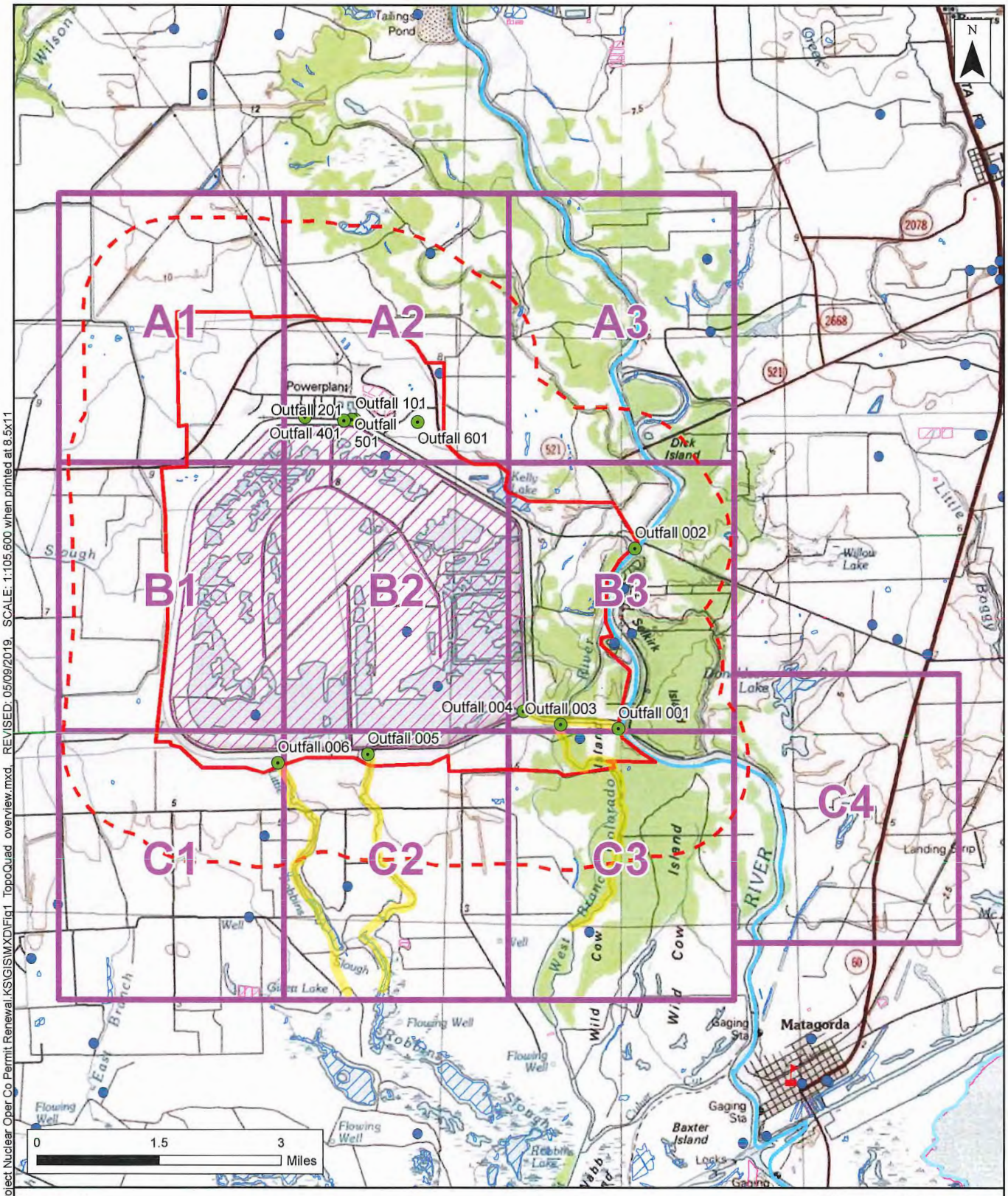
Company:	STP Nuclear Operating Company	Job Title:	Manager, Regulatory Affairs
Name*(In Print)* :	Michael P. Murray	Phone:	(361) 972-8164
Signature:		Date:	5-16-19

USGS Figure

Attachment C

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000



Legend

- Property Boundary
- One-mile buffer
- Outfall
- Discharge route
- Recirculating Cooling Reservoir
- LakePond
- Reservoir
- TCEQ Stream Segment
- TWDB Water Wells
- School

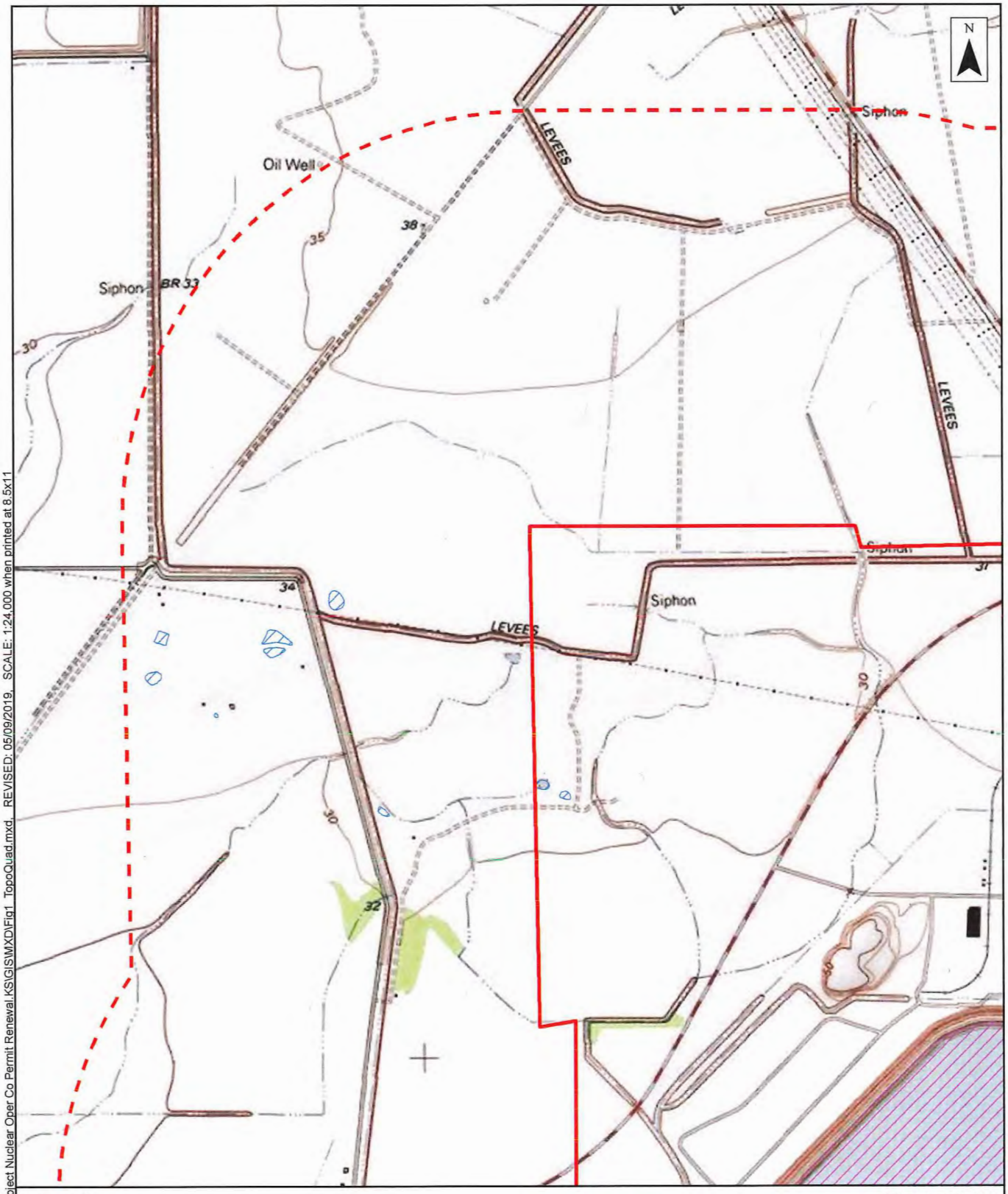
Figure 1 Overview
Blessing SE, Wadsworth, Palacios NE, and Matagorda
1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KSG\GIS\MXD\Fig1_TopoQuad_overview.mxd_ REVISED: 05/09/2019_ SCALE: 1:105,600 when printed at 8.5x11

P:\Projects\0494757\DM\27552H(AttC).pdf



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1 TopoQuad.mxd REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Legend

- Property Boundary
- One-mile buffer
- Recirculating Cooling Reservoir
- LakePond
- TCEQ Stream Segment
- TWDB Water Wells

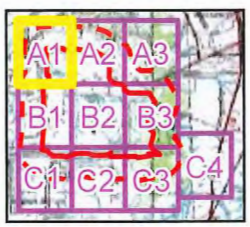
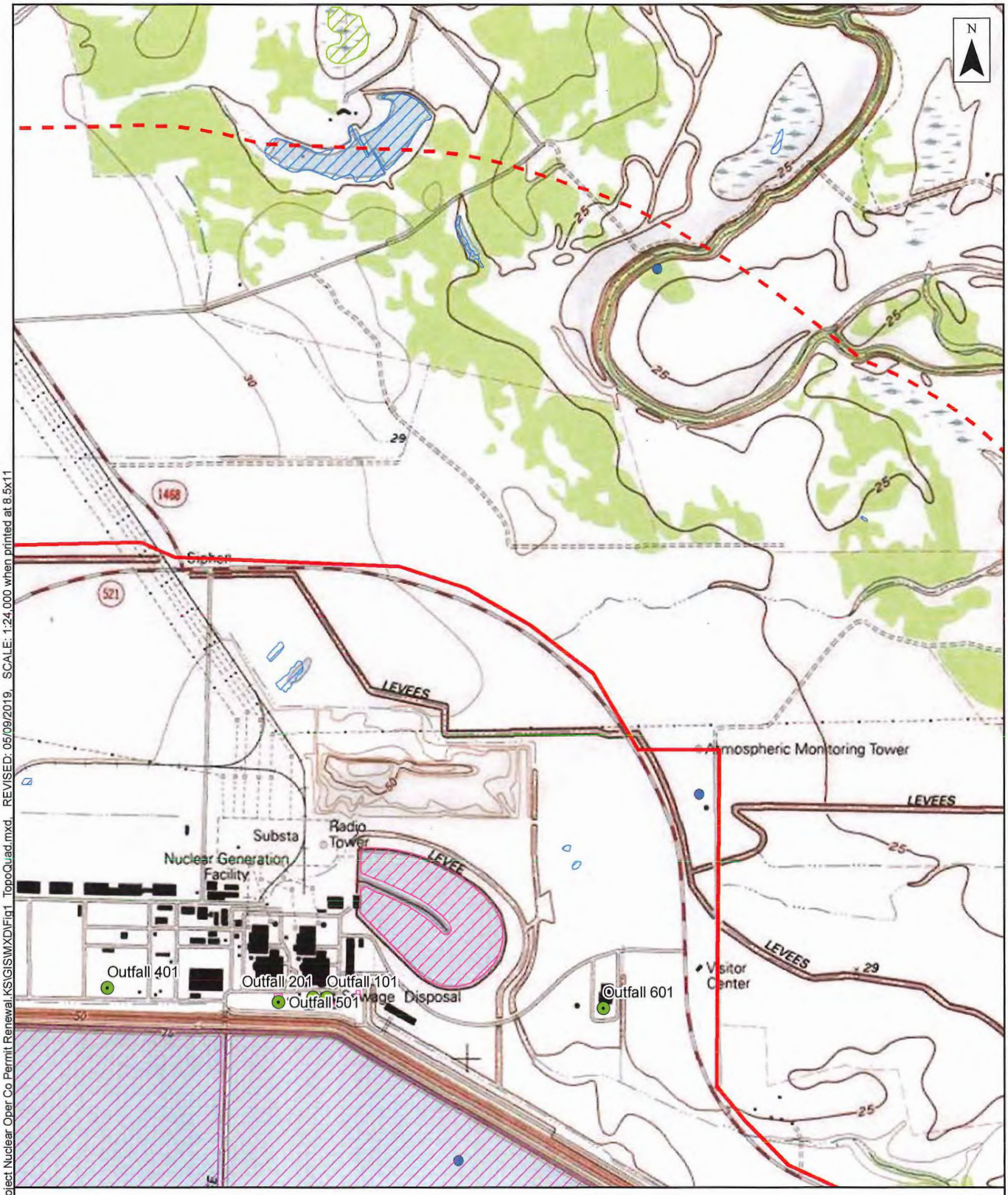


Figure 1-A1
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1_TopoQuad.mxd. REVISED: 05/09/2019. SCALE: 1:24,000 when printed at 8.5x11

Legend

- Property Boundary
- One-mile buffer
- Outfall
- Recirculating Cooling Reservoir
- LakePond
- Reservoir
- SwampMarsh
- TCEQ Stream Segment
- TWDB Water Wells

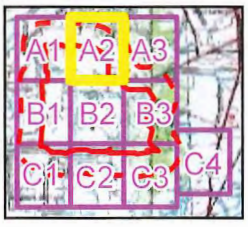
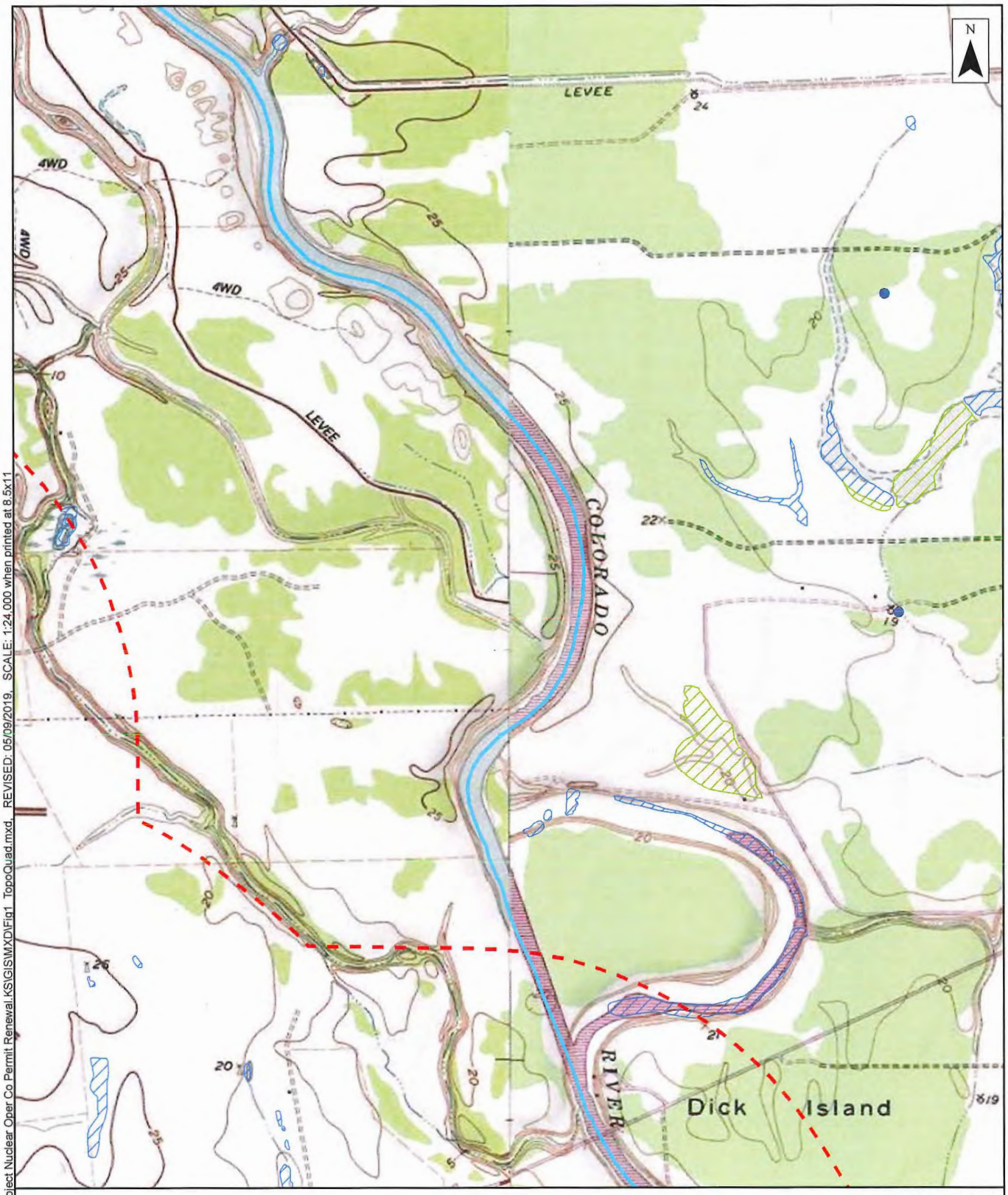


Figure 1-A2
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

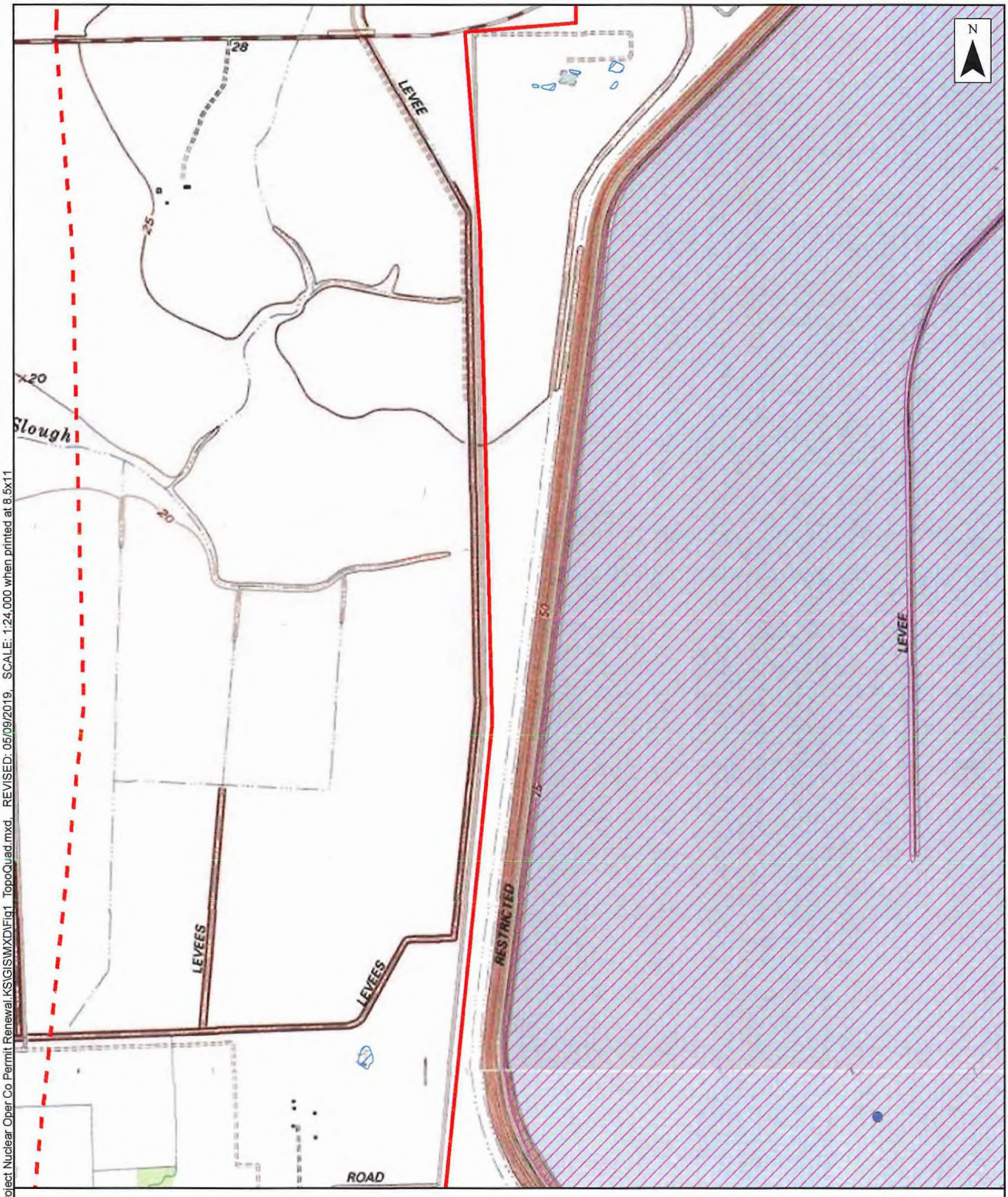
Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1_TopoQuad.mxd REVISED: 05/09/2019 SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

Figure 1-A3
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

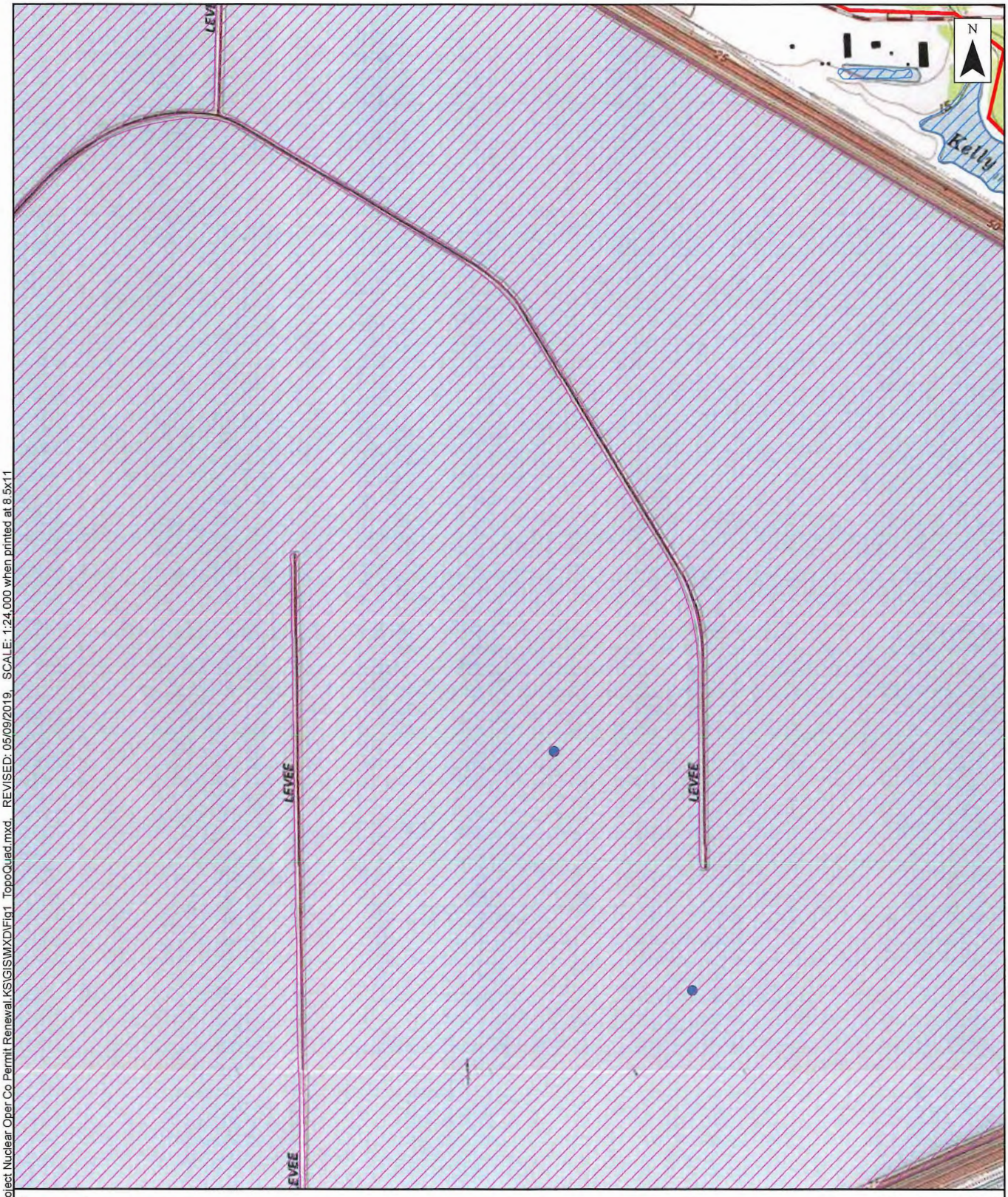


H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1_TopoQuad.mxd, REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

Figure 1-B1
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM



Legend

- Property Boundary
- One-mile buffer
- Recirculating Cooling Reservoir
- LakePond
- TCEQ Stream Segment
- TWDB Water Wells

Figure 1-B2
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1_TopoQuad.mxd, REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

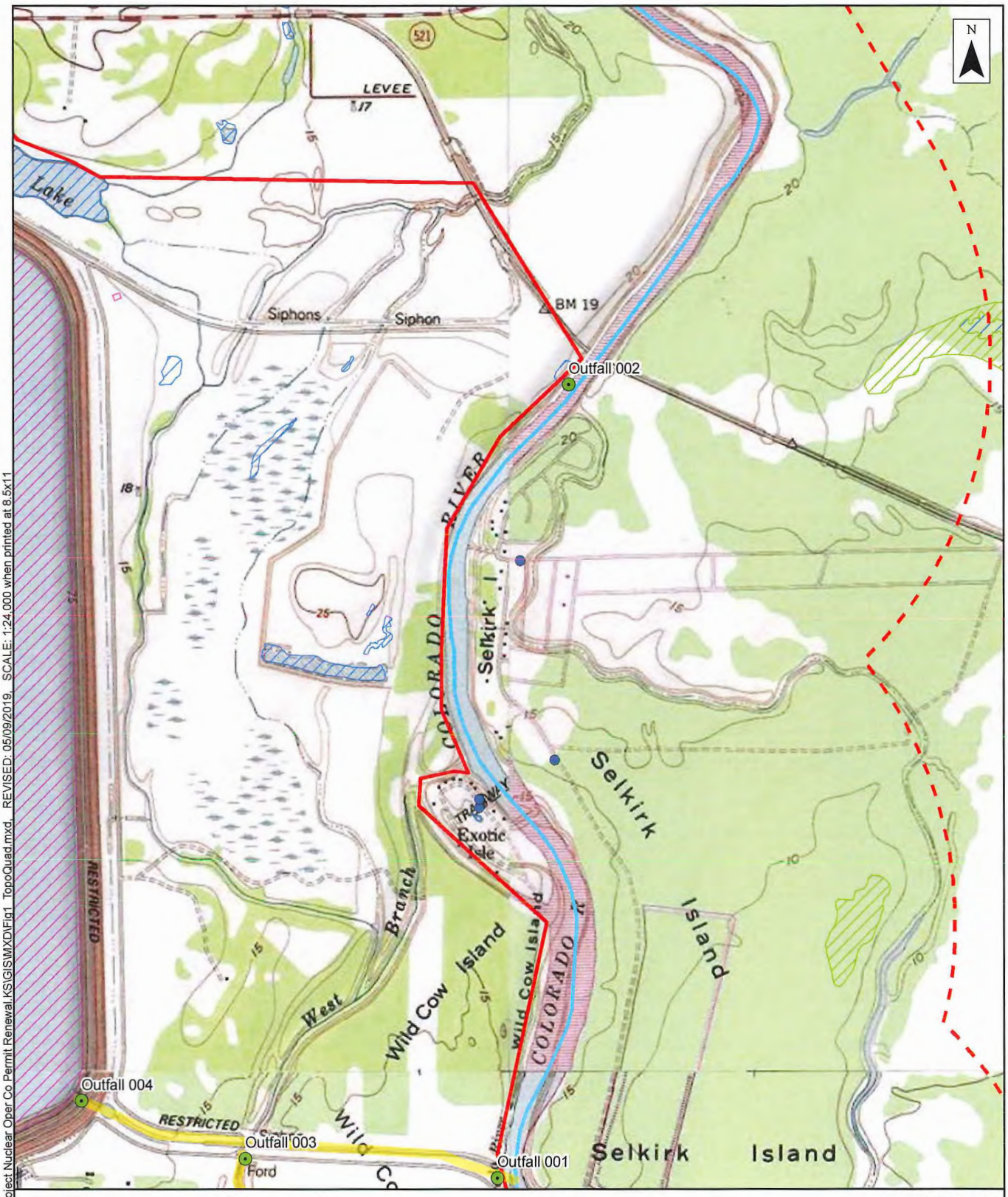
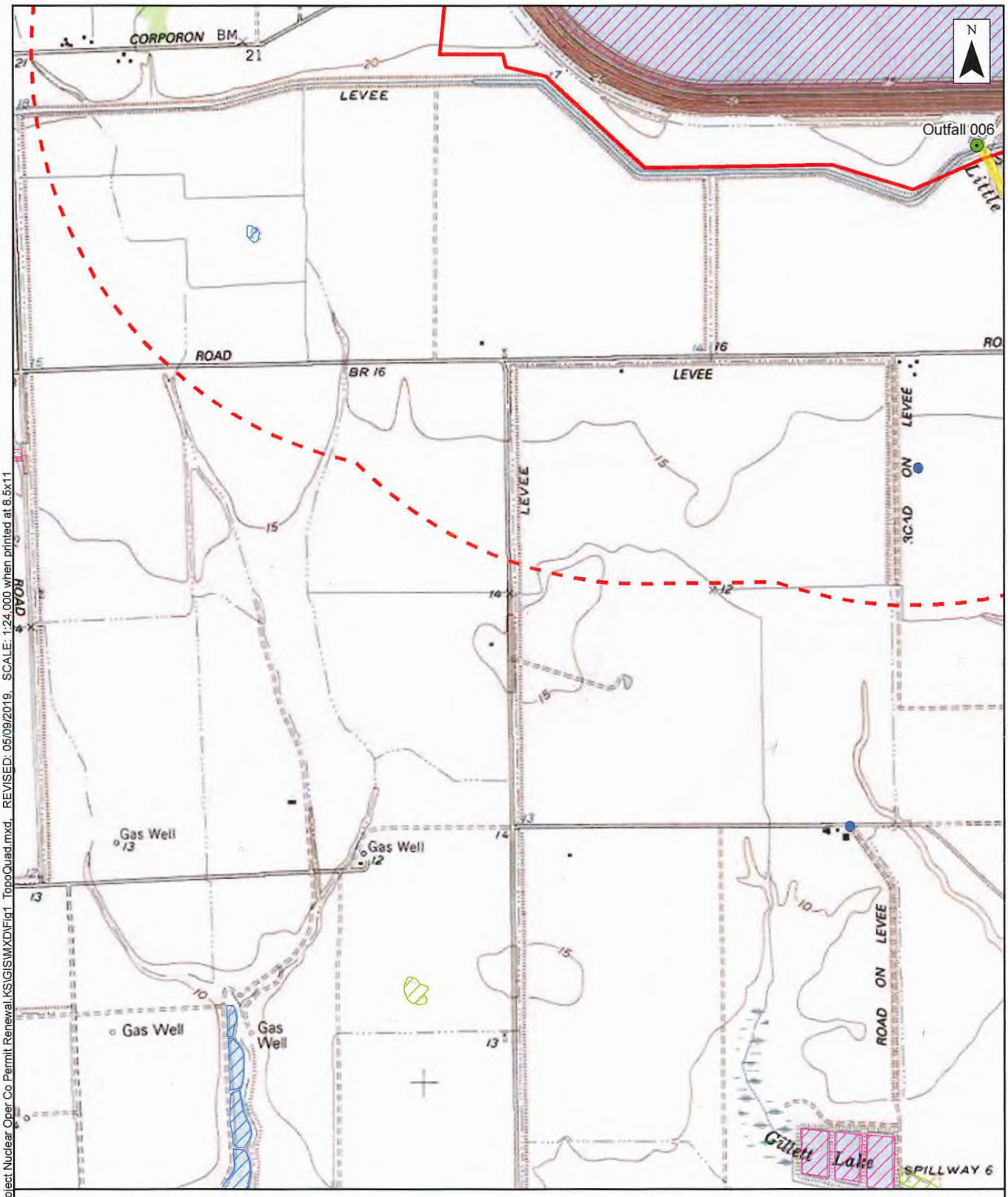


Figure 1-B3
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1 TopoQuad.mxd, REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



Legend

- Property Boundary
- One-mile buffer
- Outfall
- Discharge route
- Recirculating Cooling Reservoir
- LakePond
- Reservoir
- SwampMarsh
- TCEQ Stream Segment
- TWDB Water Wells

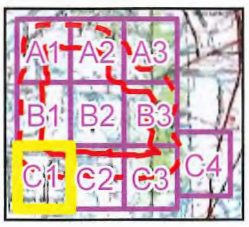


Figure 1-C1
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1 TopoQuad.mxd, REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

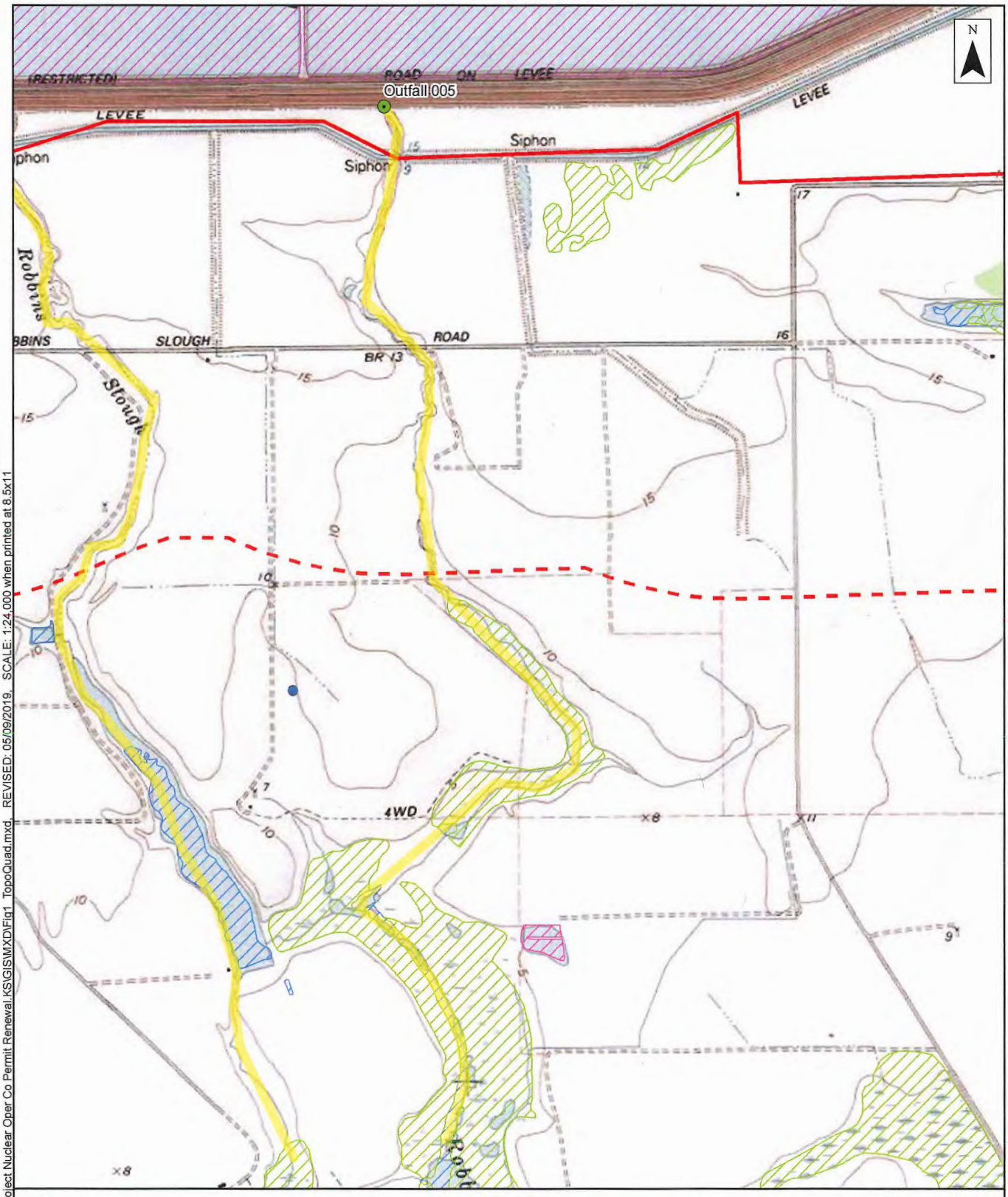
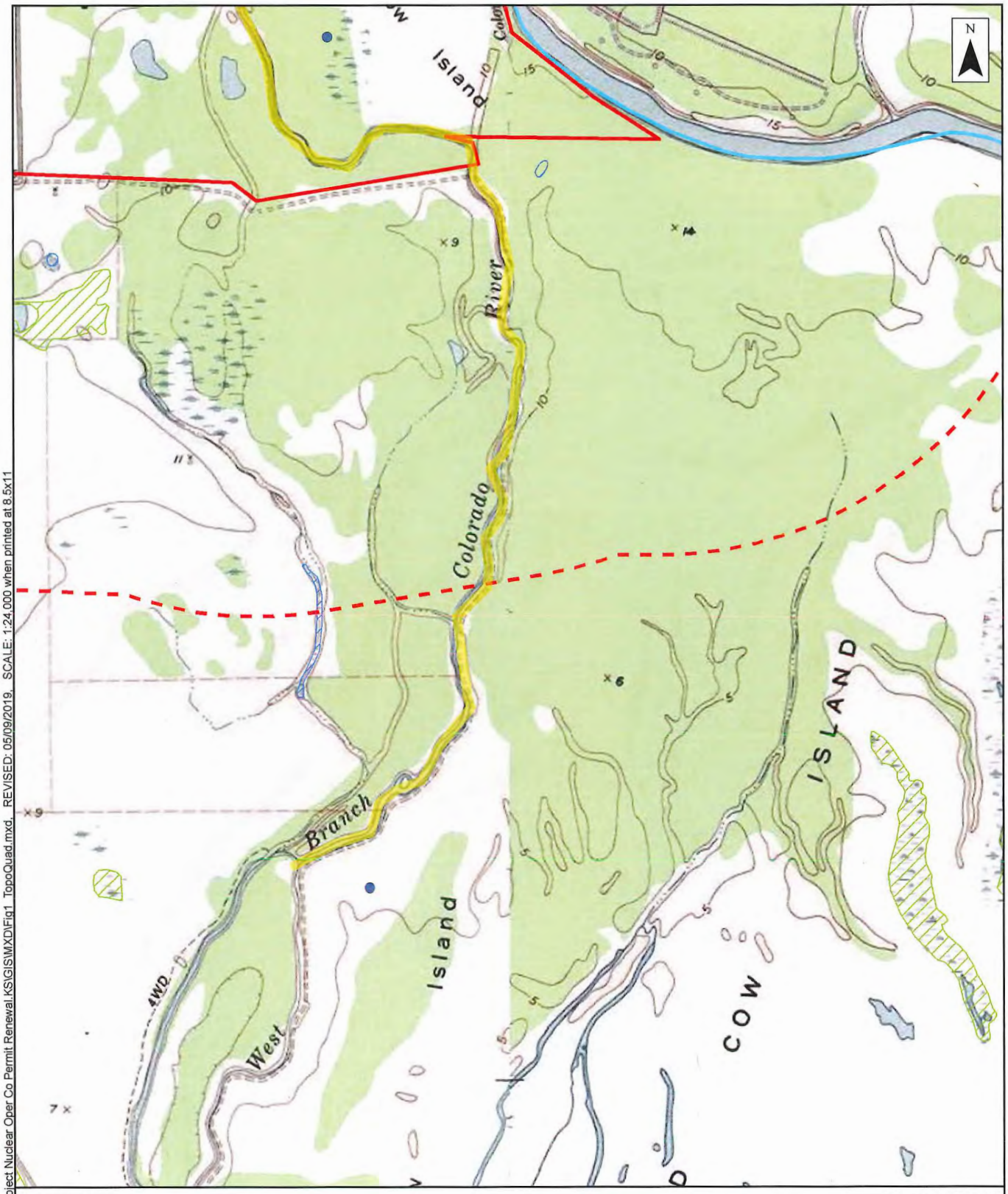


Figure 1-C2
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1 TopoQuad.mxd, REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

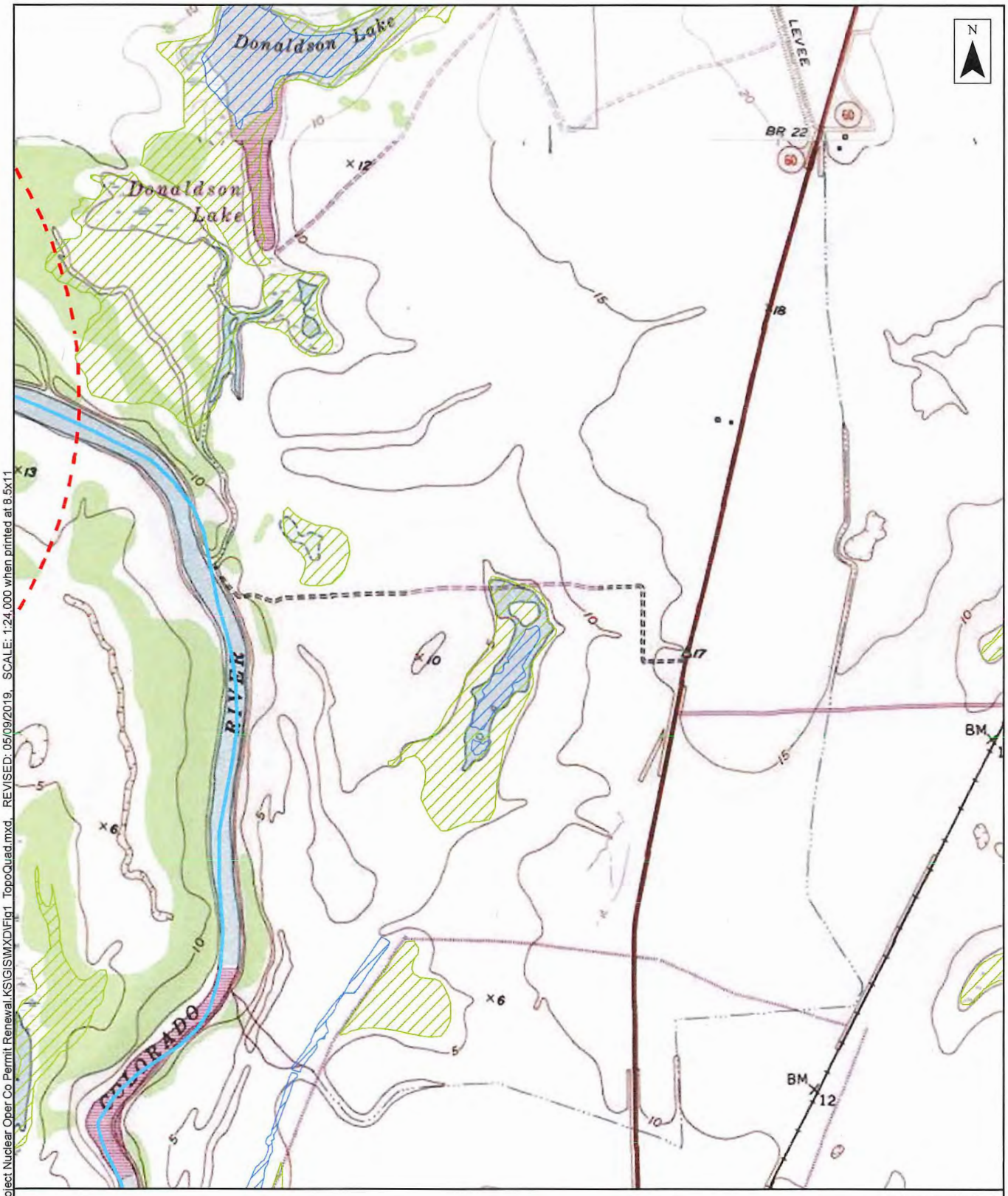
Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere



H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1 TopoQuad.mxd, REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

Figure 1-C3
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas



Legend

- One-mile buffer
- LakePond
- SwampMarsh
- TCEQ Stream Segment
- TWDB Water Wells

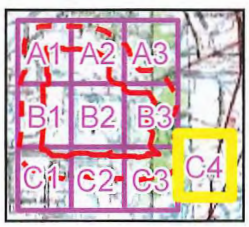


Figure 1-C4
Blessing SE, Wadsworth, Palacios NE, and Matagorda 1:24,000 USGS Quadrangles
TPDES Permit Renewal
STP Nuclear Operating Company
Matagorda County, Texas

Environmental Resources Management
www.erm.com
ERM

H:\Projects\0494757 South Texas Project Nuclear Oper Co Permit Renewal.KS\GIS\MXD\Fig1_TopoQuad.mxd_ REVISED: 05/09/2019, SCALE: 1:24,000 when printed at 8.5x11

Source: Esri - World Topoographic Map; WGS 1984 Web Mercator Auxiliary Sphere

Outfall Coordinates

Attachment D

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

9. Discharge/Disposal Information

Outfall	Latitude	Longitude
001	28° 44' 48"N	96° 00' 02"W
002	28° 46' 29"N	95° 59' 53"W
003	28° 44' 49"N	96° 00' 40"W
004	28° 44' 57"N	96° 01' 03"W
005	28° 44' 32"N	96° 02' 42"W
006	28° 44' 31"N	96° 03' 36"W

Wastewater Generating Processes

Attachment E

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

1. Describe the wastewater-generating processes.

Outfall 001 – Main Cooling Reservoir

Outfall 001 is the discharge point for the 7,000-acre main cooling reservoir. This reservoir is part of the main recirculating cooling water loop used to remove heat from the steam-electric generating units. There has not been a discharge from Outfall 001 since March 1997 other than minor permitted leakage through the closed spillway gates and relief wells. If a discharge were to occur, blowdown from the main cooling reservoir would make up the largest percentage of wastewater. A discharge from Outfall 001 would flow to the Colorado River (Colorado River Tidal in Segment 1401 of the Colorado River Basin).

All internal outfalls (Outfalls 101, 201, 401, and 601) discharge to the main cooling reservoir. Outfall 501 would also discharge to the reservoir via Outfall 101, but has not discharged since 1992.

Outfalls 101 and 201 – Low Volume Wastewater

Low volume wastewater results from water treatment operations, boiler blowdown, HVAC blowdown, floor drains, SPCC sources and their associated oily water treatment system discharges, and other miscellaneous sources. Boiler blowdown is from one auxiliary steam boiler, released to reduce impurities in the water that can cause corrosion and boiler tube failure. Service water is demineralized and regeneration of the demineralizer resin beds produces an acidic and caustic wastewater that is treated at the neutralization basins along with boiler blowdown. The floor drain system captures condensate and water from production and maintenance areas that may contain oil or grease, which is then transported to the oily waste treatment system where the oil is separated from the water. The first flush of stormwater from some production and storage areas is also treated in the oily waste system. Other non-process stormwater flow is directed through designated storm water outfalls.

Outfalls 401 and 601 – Treated Domestic Wastewater

Domestic wastewater is treated onsite in two package treatment systems consisting of aeration, clarification, and disinfection. Car wash water, air conditioning condensate, HVAC cooling tower blowdown, and stormwater are commingled with the domestic wastewater prior to treatment.

Outfall 501 – Metal Cleaning Waste

Metal cleaning waste has not been discharged since 1992. Metal cleaning using chemical or nonchemical liquids produces a waste that would be discharged through Outfall 501 to the neutralization basins (Outfall 101). Stormwater may also be discharge through Outfall 501.

Outfalls 002 through 006 – Main Cooling Reservoir (MCR) Relief Well Effluent

MCR relief well effluent is collected from the perimeter of the MCR and discharged via Outfalls 002 through 006 without treatment. Outfall 002 is also authorized to discharge demineralized water from instrumentation.

Facility Map

Attachment F

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

LEGEND

- South Texas Nuclear Plant
- Units 1 & 2
- Outfall Location
- Internal Monitoring Points

0 400 800 FEET

1 " = 700 '
1:8,400

SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT G
FACILITY SITE MAP

DRAWN BY: S.S.WILSON	SCALE:	PROJ. NO.	2014 TPDES
CHECKED BY: T KOENINGS	AS NOTED	FILE NO.	STN_Facility Map.mxd
APPROVED BY:	DATE PRINTED:		
DATE: May, 2014	5/27/2014		

RPS

Gala Centre Building II, Suite 300
1250 Capital of Texas Highway South
Austin, Texas 78746
512-347-7585

J:\Pg\South Texas Nuclear\2014 TPDES\STN_Facility Map.mxd
Printed By: SteMap on 5/27/2014 09:20 AM

P:\Projects\0494757\DM\27552H(AttF).pdf

Wastewater Treatment Process

Attachment G

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

2.a. List any physical, chemical, and/or biological treatment process that you use for the treatment of wastewater at your facility. Include a description of each treatment process starting with initial treatment and finishing with the discharge point.

Treatment System	Outfall	Unit Dimensions	Treatment Processes
Main Cooling Reservoir	001	7,000 acre pond (irregular)	Heat Dissipation Reuse/Recycle
Low Volume Waste Metal Cleaning Wastes** Neutralization Basin	101	2-Neutralization Basins (300,000 gallons each) 68' x 42' x 16'	Neutralization* Mixing* Sedimentation
Low Volume Waste Oily Waste Treatment System	201	Gross Oil Separator (API) 13,000 gallons 24" x 8' x 7'	Equalization Flotation Skimming* Sedimentation
		Tricellerator (DAF) 3,800 gallons 9' dia x 8'	Dissolved air flotation Coagulation*
		Effluent Tank 850 gallons 5' dia x 6'	Multi-media Filtration
West Sanitary Waste Treatment System	401	2-Aeration Basins 63" x 12" x 11'6"	Screening Activated Sludge
		2 Clarifiers 16' dia x 11'6"	Sedimentation
		Primary Chlorine Contact Chamber 6" x 12' x 11'6"	Disinfection***
		Secondary Chlorine Contact Chamber 4' dia x 4'3"	Disinfection***
Metal Cleaning Waste**	501	Organic Basin Approx. 1,000,000 gallons 100'x 80' x 17'6"	Equalization Mixing* Aeration*
		Inorganic Basin Approx. 50,000 gallons 25' x 25' x 13'3"	Coagulation* Chemical Precipitation* Sedimentation
		Treatment Tanks (possible future use)	Not determined at this time.
Training Sanitary Waste Treatment System	601	2-Aeration Basins 54'6" x 12' x 13'3"	Screening Activated Sludge
		1-Clarifier 20' dia x 13'3"	Sedimentation
		Chlorine Contact Chamber 5.9' x 3. 4' x 11.2'	Disinfection***

Note: Chlorine may be used intermittently to control algae growth in treatment units.

* Treatment process may be used based on influent characteristics.

** Outfall 501 is routed to Outfall 101. There have been no discharges from Outfall 501 since December 1992.

*** Disinfection may include sodium hypochlorite or calcium hypochlorite.

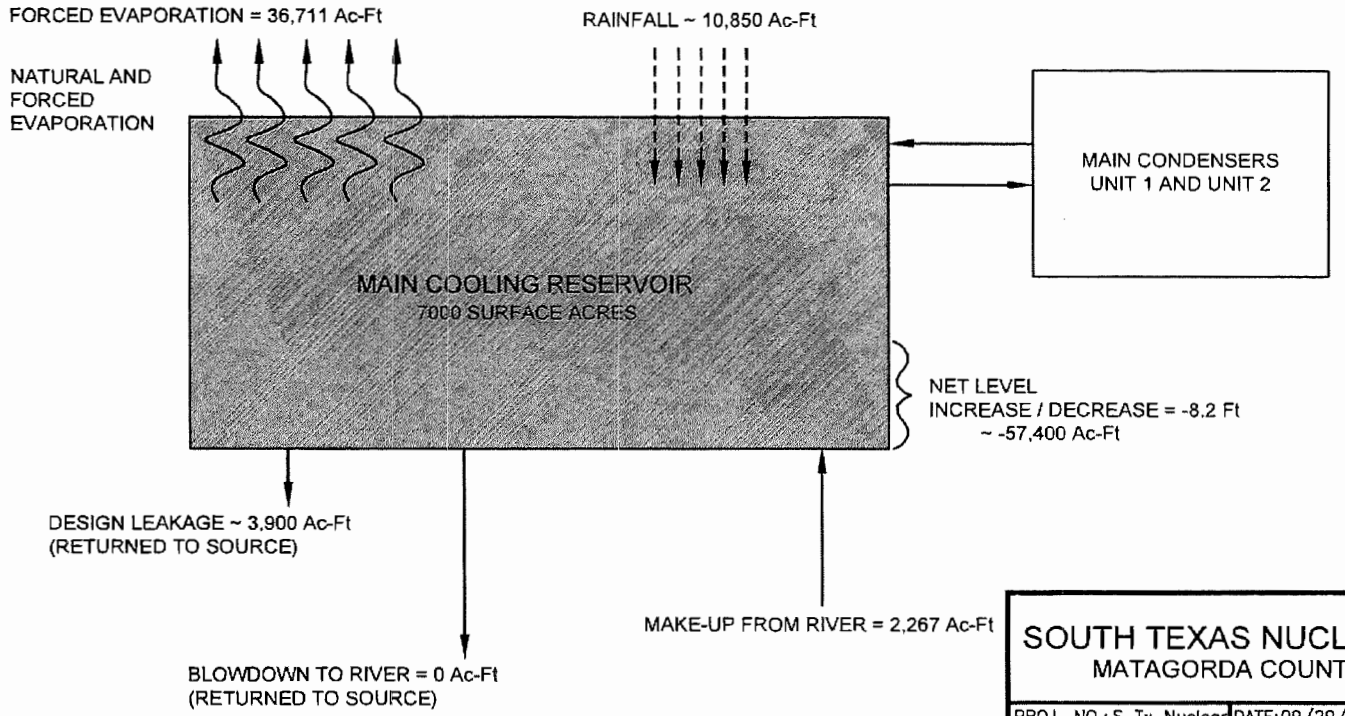
Flow Schematic and Water Balance

Attachment H

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

SIMPLIFIED WATER BALANCE FOR THE SOUTH TEXAS PROJECT
MAIN COOLING RESERVOIR

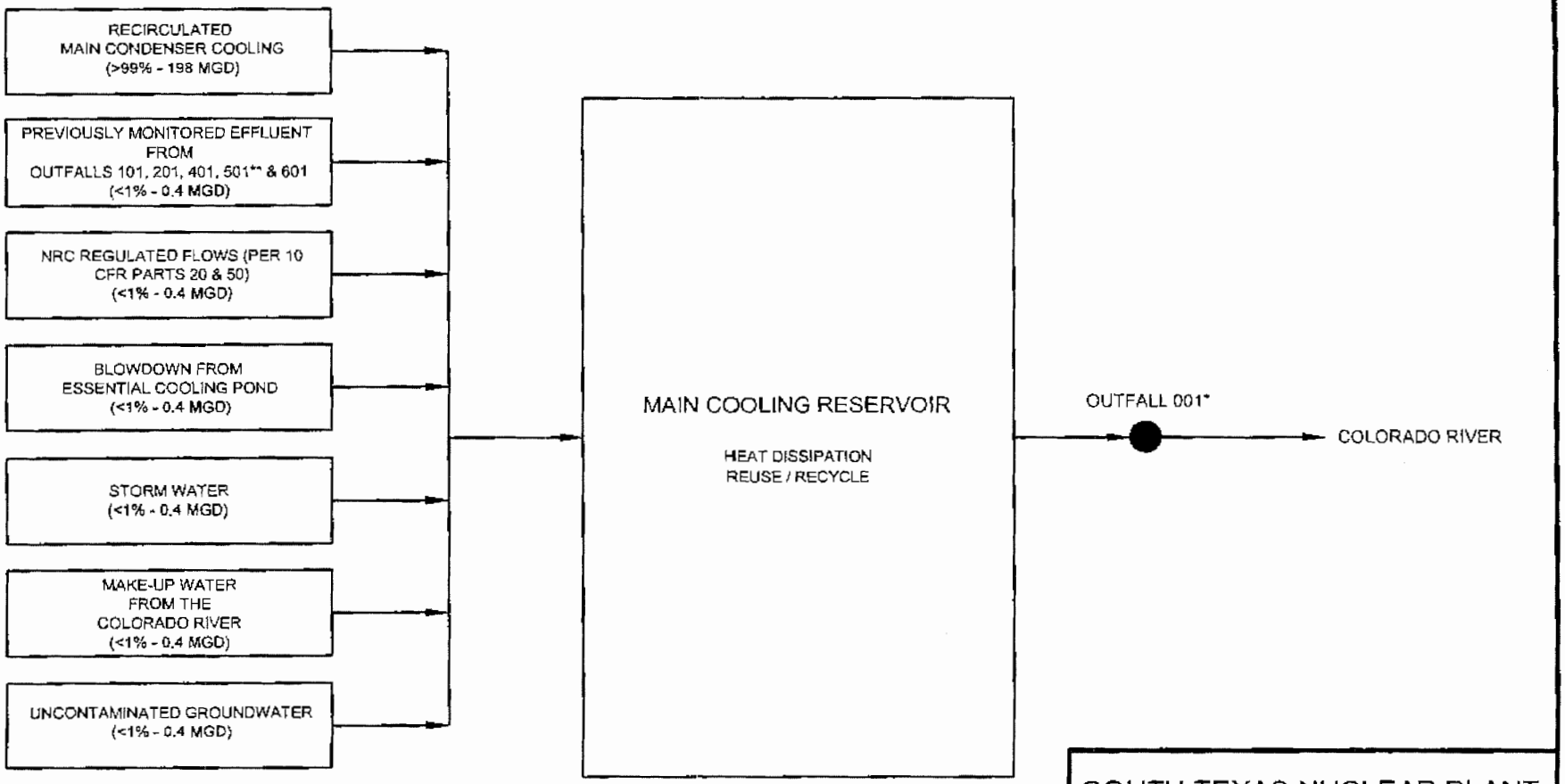


SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

PROJ. NO.: S Tx Nuclear	DATE:09/29/14	FILESTxNuclearA02

ATTACHMENT H
WATER BALANCE

RPS
Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298



NOTES:

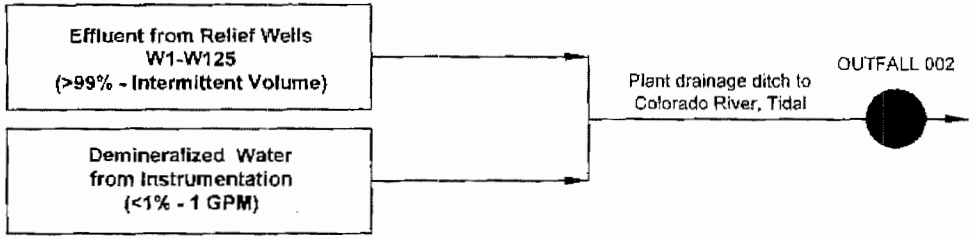
* OUTFALL HAS NOT DISCHARGED SINCE MARCH 4, 1997
** OUTFALL HAS NOT DISCHARGED SINCE DECEMBER 1992

SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

PROJ. NO.: S Tx Nuclear	DATE: 09/29/14	FILE: STxNuclearA01

ATTACHMENT H
FLOW SCHEMATIC
OUTFALL 001

RPS
Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298

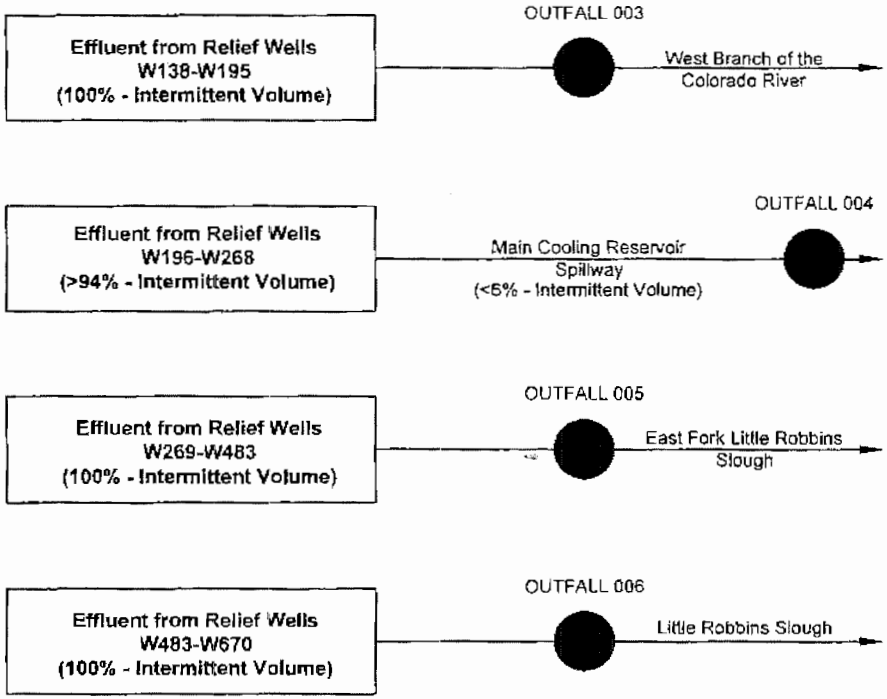


SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 002

DRAWN BY: SSWILSON	SCALE:	PROJ:	2014TPDES
CHECKED BY: T KOENINGS	See bar scale	FILE NO:	STP_Flow Diagrams.dwg
APPROVED BY: _	DATE PRINTED:		
DATE: May 12, 2014			

RPS
Circle Centre, Building III, Suite 200
1250 Capital of Texas Highway South
Austin, Texas 78746
512-347-7588

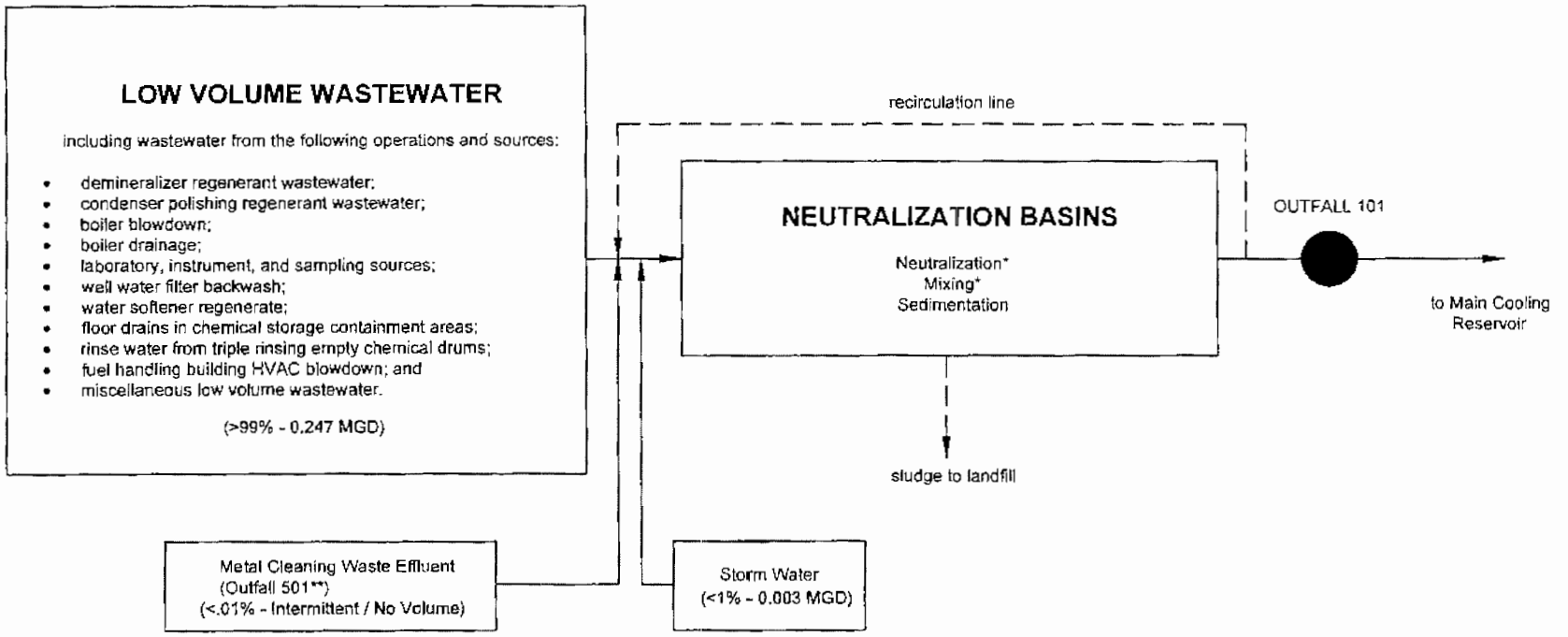


SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 003, 004, 005, 006

DRAWN BY: SSWILSON	SCALE:	PROJ: 20147PDES
CHECKED BY: T KOENINGS	See bar scale	FILE NO.: STN_Flow Diagrams.dwg
APPROVED BY:	DATE PRINTED:	
DATE: May 12, 2014		

RPS
Cielo Centre, Building III, Suite 205
1250 Capital of Texas Highway South
Austin, Texas 78746
512-347-7588



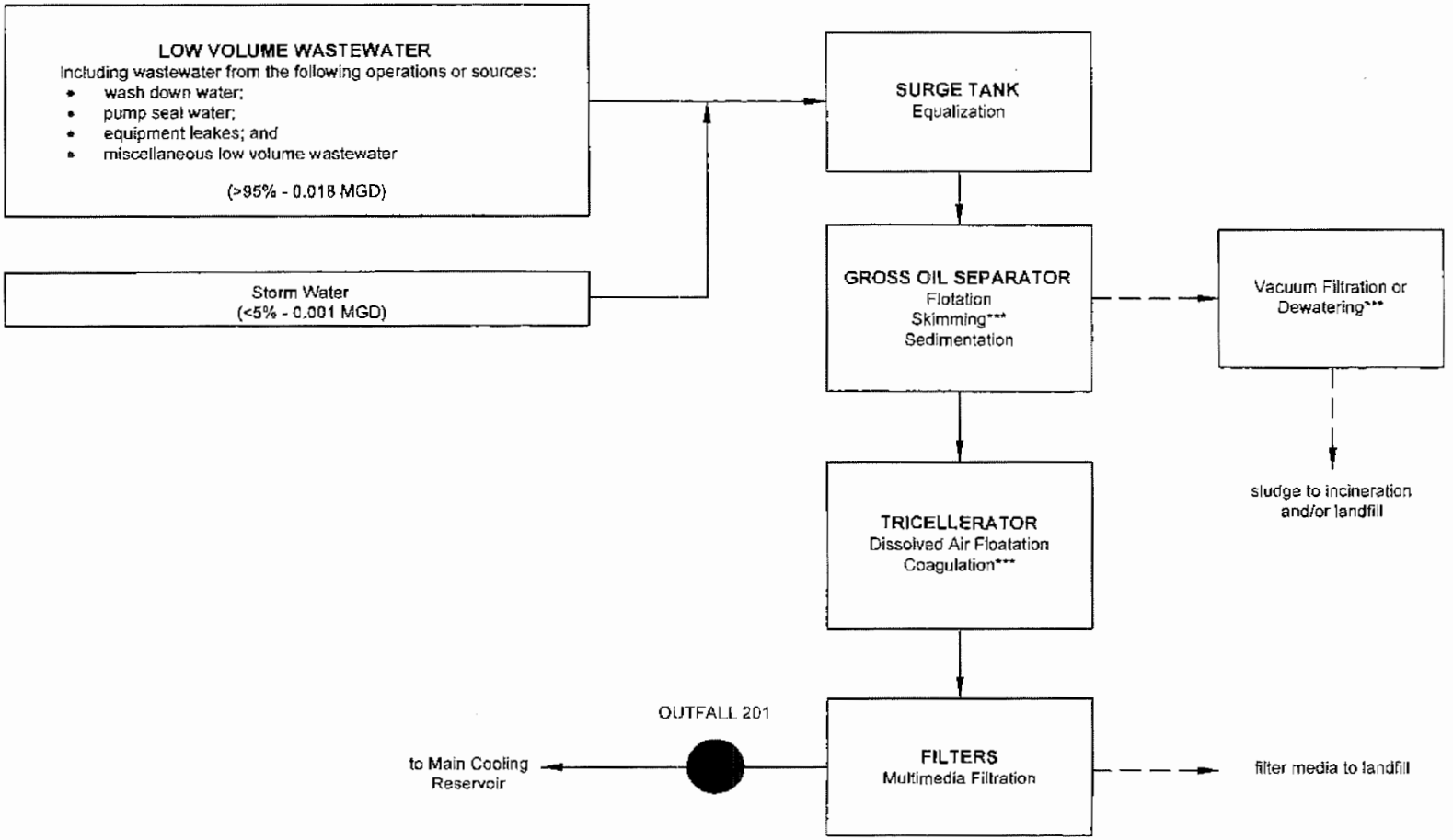
Notes:
* Treatment may be used based on influent quality
** Outfall 501 has not discharged since December 1992.

SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 101

DRAWN BY: SSWILSON	SCALE	PROJ	2014TPDES
CHECKED BY: T KOENINGS	See bar scale	FILE NO	STM_Flow Diagrams.dwg
APPROVED BY:	DATE PRINTED		
DATE: May 12, 2014			

RPS
Civic Centre, Building II, Suite 200
1250 Capital of Texas Highway, South
Austin, Texas 78746
512-347-7588



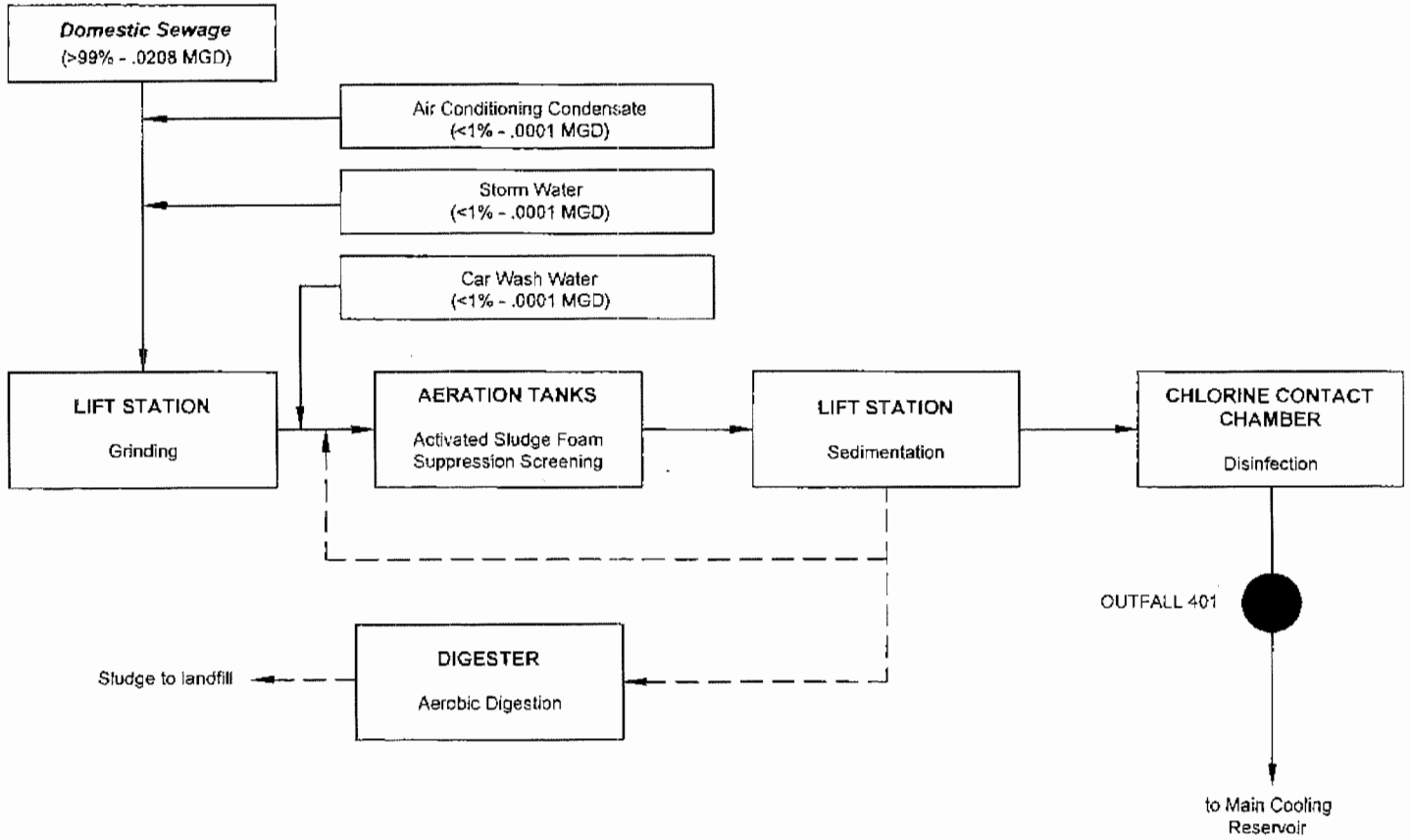
Notes:
*** Treatment process may be used based on influent characteristics.

SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 201

DRAWN BY SSWILSON	SCALE	PROJ.	2014TPDES
CHECKED BY: KOENINGS	See bar scale	FILE NO	STH_Flow Diagrams.dwg
APPROVED BY	DATE PRINTED.		
DATE: May 12, 2014			

RPS
Civic Centre, Building III, Suite 200
1250 Capital of Texas Highway, South
Austin, Texas 78746
512-347-7588

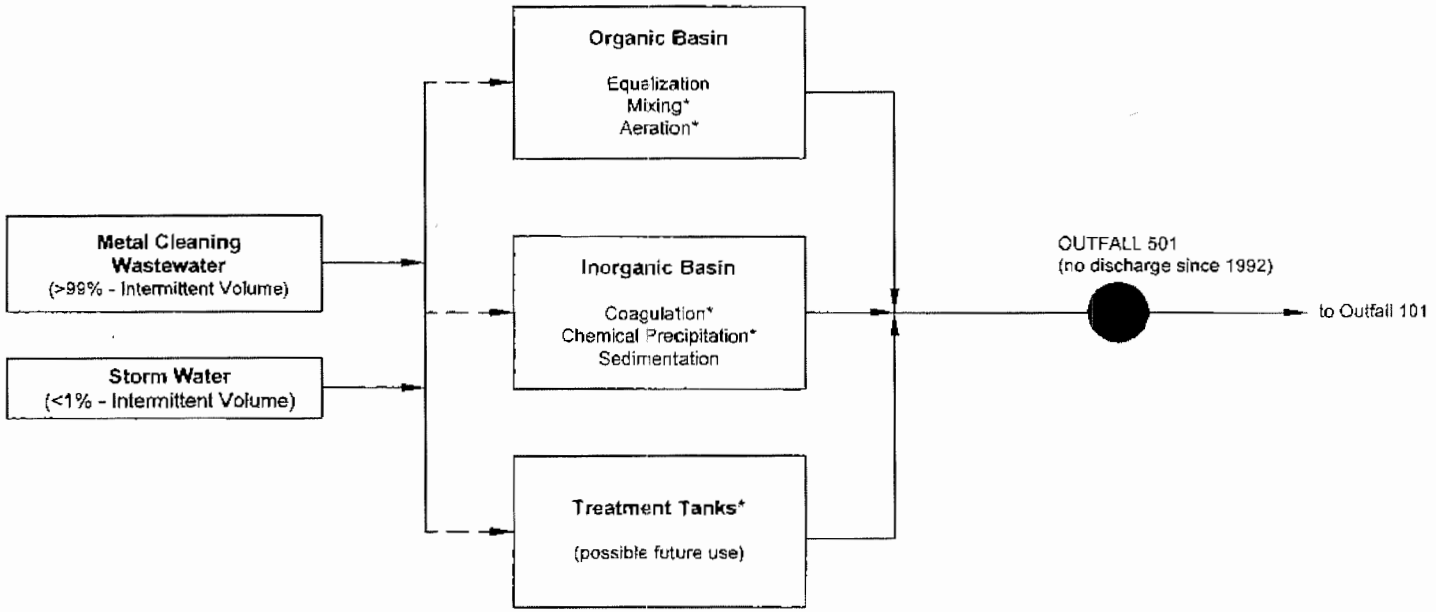


SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 401

DRAWN BY: SSWILSON	SCALE	PROJ	2014TPDES
CHECKED BY: T KOENINGS	See bar scale	FILE NO.	5"H_Flow Diagrams.dwg
APPROVED BY: _	DATE PRINTED		
DATE: May 13 2014			

RPS
Civic Centre Building III Suite 200
1250 Capital of Texas Highway, South
Austin, Texas 78746
512-347-7588



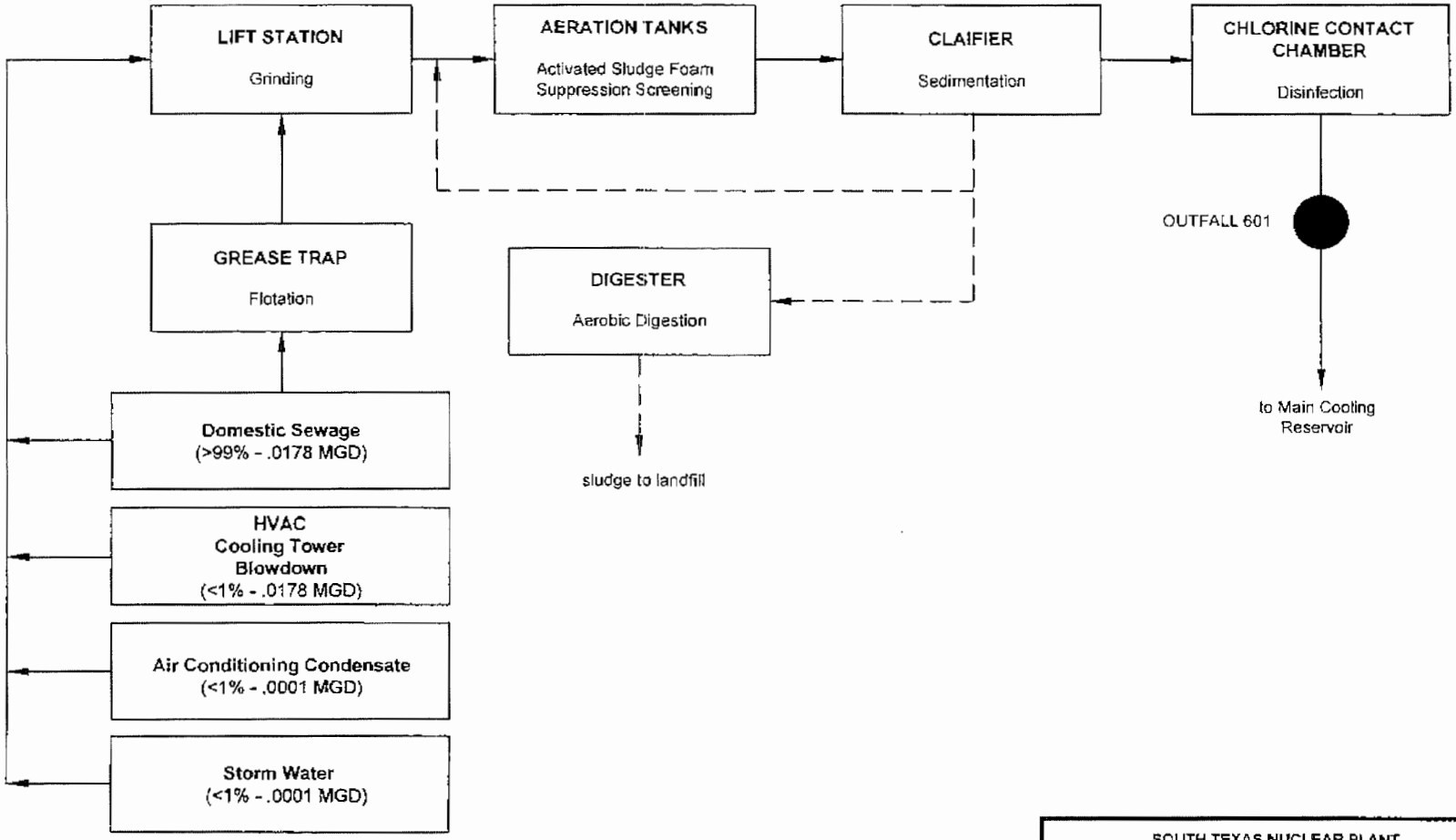
Notes:
* Treatment process may be used based on influent characteristics.

SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 501

DRAWN BY: SSWILSON	SCALE:	PROJ	2014TPDES
CHECKED BY: T KOENINGS	See bar scale	FILE NO.	STN_Flow Diagrams.dwg
APPROVED BY: _	DATE PRINTED:		
DATE May 12, 2014			

RPS
Circle Centre, Building II, Suite 200
1250 Capital of Texas Highway, South
Austin, Texas 78746
512-347-7588



SOUTH TEXAS NUCLEAR PLANT
MATAGORDA COUNTY, TEXAS

ATTACHMENT H
FLOW SCHEMATIC - OUTFALL 601

DRAWN BY: SSWILSON	SCALE: See bar scale	PROJ: 2014TPDES
CHECKED BY: T KOENINGS		FILE NO: STN_Flow Diagrams.dwg
APPROVED BY:	DATE PRINTED:	
DATE: May 12, 2014		

RPS

Otto Centre, Building III, Suite 200
1250 Capital of Texas Highway, South
Austin, Texas 78746
512-347-7588

Additional Outfall Wastestream Contributions

Attachment I

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

4. Additional Outfall wastestream contributions.

Wastestream Contributions

Outfall No.: 004

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Reservoir relief well effluent (wells 196-268)	Intermittent	>94
Spillway leakage		<6

Outfall No.: 005

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Reservoir relief well effluent (wells 269-483)	Intermittent	100

Outfall No.: 006

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Reservoir relief well effluent (wells 483-670)	Intermittent	100

Outfall No.: 101

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Low volume waste sources comingled with	0.333*	>99
previously monitored effluents from the metal		
cleaning waste system discharge		
Stormwater		<1
*Total outfall flow averaged from May 2014 to January 2019		

Outfall No.: 201

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Low volume waste sources from the oily waste	0.023*	>95
treatment system		
Stormwater		<5
*Total outfall flow averaged from May 2014 to January 2019		

Outfall No.: 401

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Treated sanitary sewage commingled with car	0.037*	>99
wash water and air conditioning condensate		
Stormwater		<1
*Total outfall flow averaged from May 2014 to January 2019		

Outfall No.: 501

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Metal cleaning waste	N/A*	N/A
Stormwater	N/A*	N/A
*There has been no discharge from Outfall 501 since December 1992		

Outfall No.: 601

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Treated sanitary sewage commingled with air	0.028*	>99
conditioning condensate and HVAC cooling		
tower blowdown		
Stormwater		<1
*Total outfall flow averaged from May 2014 to January 2019		

Chemical Summary and SDS for Cooling Water Discharges

Attachment J

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

If **yes** to either Item a **or** b, attach the appropriate SDS with the following information for each chemical additive.

Treatment Chemicals (Outfall 001)

Product Name	Manufacturer	Use	Components Listed in SDS	CAS	Persistence	Product Half-Life	Frequency of Use	Toxicity Data In SDS	Product Concentration
Liquichlor	Univar	Biocide	Sodium Hypochlorite	7681-52-9	Non-persistent	Soluble in water	3 times per day for 20 minutes to unit's cooling water	Yes	0.15-0.6 ppm total residual chlorine
			Sodium Hydroxide	1310-73-2					
1359 Plus	Nalco	Corrosion inhibitor	Sodium nitrite	7632-00-0	No data available	Soluble in water	As needed to maintain concentration	No	0.25 oz per gallon of closed cooling system water
			Sodium metaborate	7775-19-1					
19H	Nalco	Oxygen scavenger	Hydrazine	302-01-2	Non-persistent	Soluble in water	Continuous	Yes	0.1 ppm to feedwater
LCS-60	Nalco	Corrosion inhibitor	Sodium Nitrite	7632-00-0	Non-persistent	Soluble in water	As needed to maintain concentration	No	500-1500 ppm sodium nitrite concentration
			Sodium Tetraborate	1330-43-4					
9353	Nalco	Scale inhibitor/dispersant	Polyacrylic Acid	N/A	Non-persistent	Soluble in water	Continuous	No	0.25 ppm federate as product
ACTI-BROM 1318	Nalco	Biocide	Sodium bromide	7647-15-6	Non-persistent	Soluble in water	3 times per day for 20 minutes to unit's cooling water	Yes	0.15-0.6 ppm total residual chlorine
B-2200	Varichem	Algaecide	Ethyl Alcohol	64-17-S	No data available	Soluble in water	Batch treated as needed	No	5 ppm

Attachment J
Technical Report, page 10

Product Name	Manufacturer	Use	Components Listed in SDS	CAS	Persistence	Product Half-Life	Frequency of Use	Toxicity Data In SDS	Product Concentration
Bromo Tabs	Varichem	Biocide	2,4-Imidazolidinedione, 1-Bromo-3-chloro-5,5-dimethyl-	16079-88-2	No data available	No data available	Continuous	No	0.5-2 ppm
SC-2310	Varichem	Scale and corrosion inhibitor	None listed	N/A	No data available	Soluble in water	Continuous	No	80-120 ppm
H-130M	Nalco	Biocide	Didecyl-Dimethyl-Ammonium chloride	7173-51-5	No data available	Soluble in water	2/Yr.	Yes	4 ppm as product (2.5 ppm as active) to aux. cooling system for 8 hours twice per year.
			Ethanol	64-17-5					
77352NA	Nalco	Isothiazolin	Magnesium Salt	N/A	Non-persistent	Soluble in water	Batch treated as needed	Yes	300 ppm
			2-Methyl-4-Isothiazolin-3-one	2682-20-4					
			5-Chloro-2-Methyl-4-Isothiazolin-3-one	26172-55-4					
Optisperse PWR6600	GE Betz	Dispersant	Monoethanolamine	141-43-5	No data available	Soluble in water	Continuous	Yes	40 ppb to feedwater
			Polyacrylic Acid	N/A					
3D Trasar 3DT198	Nalco	Corrosion Inhibitor	Sodium Tlytriazole	64665-57-2	Non-persistent	No data available	Continuous	Yes	25 to 100 ppm in cooling systems
Monoethanolamine (ETA) 7080HP	Nalco	Corrosion inhibitor/pH control	Monoethanolamine	141-43-5	No data available	Soluble in water	Continuous	Yes	4 ppm in the secondary system

Univar
3075 Highland Pkwy STE 200
Downers Grove, IL 60515
425-889-3400

SAFETY DATA SHEET

1. Identification

Product identifier: SODIUM HYPOCHLORITE 10-16%

Other means of identification

Synonyms:	Liquichlor, Bleach
CAS NUMBERS:	7681-52-9
SDS number:	000100001054

Recommended use and restriction on use

Recommended use: Reserved for industrial and professional use.

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information

Univar

3075 Highland Pkwy STE 200

Downers Grove, IL 60515

425-889-3400

Emergency telephone number:For emergency assistance Involving chemicals

call CHEMTREC day or night at: 1-800-424-9300. CHEMTREC INTERNATIONAL Tel# 703-527-3887

2. Hazard(s) identification

Hazard Classification

Physical Hazards	
Corrosive to metals	Category 1
Health Hazards	
Acute toxicity (Oral)	Category 5
Skin Corrosion/Irritation	Category 1
Serious Eye Damage/Eye Irritation	Category 1
Environmental Hazards Acute hazards to the aquatic environment	Category 1
Chronic hazards to the aquatic environment	Category 1

Label Elements

Hazard Symbol

Signal Word	Danger
Hazard Statement	May be corrosive to metals. Causes severe skin burns and eye damage. Causes serious eye damage. May be harmful if swallowed. Very toxic to aquatic life with long lasting effects. Very toxic to aquatic life.
Precautionary Statements	
Prevention	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Do not breathe dust or mists. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before reuse.

Storage	Store locked up.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards which do not result in GHS classification	None.

3. Composition/information on ingredients

Substances

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
Sodium hypochlorite		7681-52-9	10 - 16%
Sodium hydroxide		1310-73-2	0.3 - 5%
Water		7732-18-5	80 - 89.7%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	Get medical advice/attention.
Ingestion:	Do NOT induce vomiting. Never give liquid to an unconscious person. Get medical attention immediately.
Inhalation:	Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. Move to fresh air. If breathing is difficult, give oxygen.
Skin Contact:	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Eye contact:	If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

Most important symptoms/effects, acute and delayed

Symptoms: No data available.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use: Foam. Carbon dioxide or dry powder.

Unsuitable extinguishing media: No data available.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away.

Methods and material for containment and cleaning up: Absorb spillage with non-combustible, absorbent material.

Notification Procedures: Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk.

Environmental Precautions: Do not contaminate water sources or sewer. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling: Do not taste or swallow. Wash hands thoroughly after handling. Do not get in eyes. Do not get in eyes, on skin, on clothing.

Conditions for safe storage, including any incompatibilities: Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Sodium hydroxide	Ceiling	2 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008)
Sodium hydroxide - Particulate.	ST ESL	20 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013)
	AN ESL	2 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013)
Sodium hydroxide	Ceiling	2 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (02 2012)
	Ceiling	2 mg/m3	US. ACGIH Threshold Limit Values (03 2016)
	Ceil_Time	2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
	Ceiling	2 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

Appropriate Engineering Controls Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment

General information: Provide easy access to water supply and eye wash facilities. Use personal protective equipment as required. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.

Eye/face protection: Wear a full-face respirator, if needed. Wear safety glasses with side shields (or goggles) and a face shield.

Skin Protection

Hand Protection: Chemical resistant gloves

Other: Chemical resistant clothing

Respiratory Protection:	In case of inadequate ventilation use suitable respirator.
Hygiene measures:	Do not eat, drink or smoke when using the product. Wash hands after handling. Do not get in eyes. Observe good industrial hygiene practices. Wash contaminated clothing before reuse. Do not get this material in contact with skin. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Physical state:	liquid
Form:	liquid
Color:	Pale yellow-green, Clear
Odor:	Odor of chlorine
Odor threshold:	No data available.
pH:	10 - 12
Melting point/freezing point:	-20 °C
Initial boiling point and boiling range:	> 40 °C
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Relative density:	1.224
Solubility(ies)	
Solubility in water:	Soluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.

Viscosity: No data available.

10. Stability and reactivity

Reactivity: No data available.
Chemical Stability: Material is stable under normal conditions.
Possibility of hazardous reactions: Stable
Conditions to avoid: Avoid heat or contamination.
Incompatible Materials: Oxidizers, acids Ammonia. Amines.
Hazardous Decomposition Products: By heating and fire, toxic vapors/gases may be formed.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion: No data available.
Inhalation: No data available.
Skin Contact: No data available.
Eye contact: No data available.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: LD 50 (Rat): 3 - 5 g/kg

Dermal
Product: LD 50 (Rabbit): > 2 g/kg

Inhalation
Product: May be harmful if inhaled.

Repeated dose toxicity
Product: No data available.

Skin Corrosion/Irritation
Product: Causes severe skin burns.

Serious Eye Damage/Eye Irritation
Product: Causes serious eye damage.

Respiratory or Skin Sensitization
Product: Not a skin sensitizer.

Carcinogenicity
Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ Cell Mutagenicity
In vitro
Product: No data available.
In vivo
Product: No data available.
Reproductive toxicity
Product: No data available.
Specific Target Organ Toxicity - Single Exposure
Product: No data available.
Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.
Aspiration Hazard
Product: No data available.
Other effects: No data available.

12. Ecological information

Ecotoxicity:
Acute hazards to the aquatic environment:
Fish
Product: LC 50 (Shiner perch (Cymatogaster aggregata), 96 h): 0.033 - 0.097 mg/l LC 50 (Bluegill (Lepomis macrochirus), 48 h): 0.6 mg/l
Aquatic Invertebrates
Product: LC 50 (Aquatic crustacea): 1 mg/l LC 50 (Daphnia magna, 96 h): 2.1 mg/l
Chronic hazards to the aquatic environment:
Fish
Product: No data available.
Aquatic Invertebrates
Product: No data available.
Toxicity to Aquatic Plants
Product: EC 50 (Green algae (Dunaliella bioculata), 24 h): 0.6 mg/l
Persistence and Degradability
Biodegradation

Product:	The product solely consists of inorganic compounds which are not biodegradable.

BOD/COD Ratio

Product:	No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	The product is not bioaccumulating.

Partition Coefficient n-octanol / water (log Kow)

Product:	No data available.
Mobility in soil:	No data available.

Known or predicted distribution to environmental compartments

Sodium hypochlorite	No data available.
Sodium hydroxide	No data available.
Water	No data available.

Known or predicted distribution to environmental compartments

Water	No data available.

13. Disposal considerations

Disposal instructions:	Discharge, treatment, or disposal may be subject to national, state, or local laws.
Contaminated Packaging:	Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN Number:	UN 1791
UN Proper Shipping Name:	Hypochlorite solutions
Transport Hazard Class(es)	
Class:	8
Label(s):	8
Packing Group:	III
Marine Pollutant:	Marine Pollutant

Special precautions for user: –

IMDG

UN Number:	UN 1791
UN Proper Shipping Name:	HYPOCHLORITE SOLUTION
Transport Hazard Class(es)	
Class:	8
Label(s):	8
EmS No.:	F-A, S-B
Packing Group:	III
Marine Pollutant:	Marine Pollutant
Special precautions for user:	–

15. Regulatory information

US Federal RegulationsUS. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Sodium hypochlorite	Reportable quantity: 100 lbs.
Sodium hydroxide	Reportable quantity: 1000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

[x] Acute (Immediate) [ ] Chronic (Delayed) [ ] Fire [ ] Reactive [ ] Pressure Generating

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	RQ
Sodium hypochlorite	100 lbs.
Sodium hydroxide	1000 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Sodium hypochlorite	500 lbs
Sodium hydroxide	500 lbs

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

Sodium hypochlorite	Reportable quantity: 100 lbs.
Sodium hydroxide	Reportable quantity: 1000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

Sodium hypochlorite	Listed
Sodium hydroxide	Listed

US. Massachusetts RTK - Substance List

Sodium hypochlorite	Listed
Sodium hydroxide	Listed

US. Pennsylvania RTK - Hazardous Substances

Sodium hypochlorite	Listed
Sodium hydroxide	Listed

US. Rhode Island RTK

Sodium hypochlorite	Listed
Sodium hydroxide	Listed

Inventory Status: Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EU EINECS List:	On or in compliance with the inventory
EU ELINCS List:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
EU No Longer Polymers List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.
US TSCA Inventory:	On or in compliance with the inventory

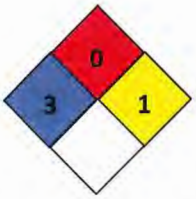
16.Other information, including date of preparation or last revision

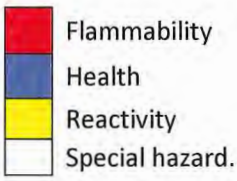
HMIS Hazard ID

B - Safety Glasses & Gloves

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

NFPA Hazard ID





Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date:	05/31/2018
Revision Date:	No data available.
Version #:	1.6
Further Information:	No data available.

NALCO
An Ecolab Company

SAFETY DATA SHEET

NALCO 1359 PLUS CORROSION INHIBITOR

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NALCO 1359 PLUS CORROSION INHIBITOR
Other means of identification	:	Not applicable.
Recommended use	:	CORROSION INHIBITOR
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	12/11/2015

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Oxidizing liquids	:	Category 3
Acute toxicity (Oral)	:	Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
Specific target organ toxicity - single exposure (Oral)	:	Category 1 (Blood)

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : May intensify fire; oxidiser.
Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.
Causes damage to organs (Blood) if swallowed.

Precautionary Statements : **Prevention:**
Keep away from heat. Keep/Store away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Do not breathe dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed: Call a POISON CENTER or doctor/ physician.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Sodium Nitrite	7632-00-0	10 - 30
Sodium Metaborate	7775-19-1	5 - 10
Sodium Hydroxide	1310-73-2	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Get medical attention if irritation develops and persists.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

If inhaled : Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Oxidizer. Contact with other material may cause fire.
If product is allowed to dry, the sodium nitrite is an oxidizing agent and can initiate the combustion of other materials.

Hazardous combustion products : Decomposition products may include the following materials: nitrogen oxides (NOx)

Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Avoid contact with skin and eyes. Do not ingest. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep in a cool, well-ventilated place. Keep away from reducing agents. Keep away from combustible material. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Sodium Metaborate	7775-19-1	TWA (Inhalable fraction)	2 mg/m3	ACGIH
		STEL (Inhalable fraction)	6 mg/m3	ACGIH

Engineering measures	:	Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	:	Safety glasses with side-shields
Hand protection	:	Wear the following personal protective equipment: Standard glove type. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Light yellow
Odour	:	no data available
Flash point	:	does not flash
pH	:	>= 11.4, 100 %
Odour Threshold	:	no data available
Melting point/freezing point	:	FREEZING POINT: -45.5 °C, <
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	similar to water
Relative vapour density	:	no data available
Relative density	:	1.305 (22.2 °C)
Density	:	10.84 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	< 7 mPa.s (22.8 °C)

Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Freezing temperatures. Do not allow evapouration to dryness. Dried product residue can act as an oxidizer.
Incompatible materials	:	Contact with reducing agents (e.g. hydrazine, sulfites, sulfide, aluminum or magnesium dust) may generate heat, fires, explosions and toxic vapors. Do not mix with amines. Sodium nitrite can react with certain amines to produce N-nitrosamines, many of which are cancer-causing agents to laboratory animals. Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Amines Strong acids Reducing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: nitrogen oxides (NOx)

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye irritation.
Skin	:	Causes skin irritation.
Ingestion	:	Harmful if swallowed.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	May cause damage to organs.

Experience with human exposure

Eye contact	:	Redness, Pain, Irritation
Skin contact	:	Redness, Irritation

Ingestion	:	No information available.
Inhalation	:	No symptoms known or expected.

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate 780.28 mg/kg
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Toxic to aquatic life.

Components

Toxicity to fish	:	Sodium Nitrite LC50 Fish: 1 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates	:	Sodium Hydroxide EC50 : 40 mg/l Exposure time: 48 h

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

no data available

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste:	:	D002
Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S

Technical name(s)	:	SODIUM NITRITE
UN/ID No.	:	UN 2922
Transport hazard class(es)	:	8, 6.1
Packing group	:	III
Reportable Quantity (per package)	:	430 lbs
RQ Component	:	SODIUM NITRITE

Air transport (IATA)

Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S
Technical name(s)	:	SODIUM NITRITE
UN/ID No.	:	UN 2922
Transport hazard class(es)	:	8, 6.1
Packing group	:	III
Reportable Quantity (per package)	:	430 lbs
RQ Component	:	SODIUM NITRITE

Sea transport (IMDG/IMO)

Proper shipping name	:	CORROSIVE LIQUID, TOXIC, N.O.S
Technical name(s)	:	SODIUM NITRITE
UN/ID No.	:	UN 2922
Transport hazard class(es)	:	8, 6.1
Packing group	:	III

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Sodium Nitrite	7632-00-0	100	442

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Sodium Nitrite	7632-00-0	10 - 30 %

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpart D):
The following components are listed: Sodium Nitrite

California Prop 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

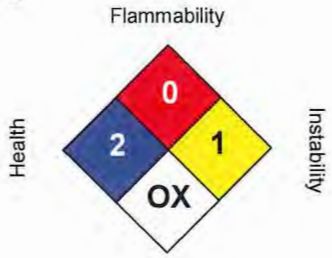
JAPAN
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA
All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	0
PHYSICAL HAZARD	1

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	12/11/2015
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an SDS visit www.nalco.com and request access.

NALCO
An Ecolab Company

SAFETY DATA SHEET

NALCO 19H OXYGEN SCAVENGER

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NALCO 19H OXYGEN SCAVENGER
Other means of identification	:	relabel R-741 from Arch Chemical Co. (Olin)
Recommended use	:	OXYGEN SCAVENGER
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	10/09/2014

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 4
Acute toxicity (Oral)	:	Category 3
Acute toxicity (Inhalation)	:	Category 3
Acute toxicity (Dermal)	:	Category 3
Skin corrosion	:	Category 1B
Serious eye damage/eye irritation	:	Category 1
Skin sensitization	:	Category 1
Germ cell mutagenicity	:	Category 2
Carcinogenicity	:	Category 2

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Combustible liquid
Toxic if swallowed, in contact with skin or if inhaled
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of causing genetic defects.
Suspected of causing cancer.

Precautionary Statements : **Prevention:**
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid

breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection. Use personal protective equipment as required.

Response:

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER or doctor/ physician. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Hydrazine	302-01-2	30 - 60

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders.Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance.
Hazardous combustion products	:	Carbon oxides nitrogen oxides (NOx) ammonia Contact with reactive metals (e.g. aluminum) may result in the generation of flammable hydrogen gas.
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Polypropylene, Polyethylene, Stainless Steel 304, Stainless Steel 316L, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Copper, Brass, Aluminum

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Hydrazine	302-01-2	TWA	0.01 ppm	ACGIH
		Ceiling	0.03 ppm 0.04 mg/m3	NIOSH REL
		TWA	1 ppm 1.3 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : colourless

Odour : Ammoniacal

Flash point : > 110 °C
Method: Pensky-Martens closed cup

		75 °C Method: ASTM D 93, Pensky-Martens closed cup
pH	:	10.1 - 10.7, 1 %
Odour Threshold	:	no data available
Melting point/freezing point	:	FREEZING POINT: -65 °C
Initial boiling point and boiling range	:	109 °C (760 mm Hg)
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	> 99.9 V%
Lower explosion limit	:	4.7 V%
Vapour pressure	:	22 mm Hg (25 °C)
Relative vapour density	:	no data available
Relative density	:	1.03 (15.6 °C)
Density	:	8.56 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	Carbon oxides nitrogen oxides (NOx) ammonia Contact with reactive metals (e.g. aluminum) may result in the generation of flammable hydrogen gas.
Viscosity, dynamic	:	2 mPa.s (15.6 °C)
Viscosity, kinematic	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks. Extremes of temperature
Incompatible materials	:	Acids Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Organic materials

		Gives off hydrogen by reaction with metals. Avoid contact with metal oxides such as those of iron, copper, lead, manganese and molybdenum. Such contact may lead to decomposition.
Hazardous decomposition products	:	Oxides of nitrogen ammonia Flammable gases/vapors Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction. Toxic in contact with skin.
Ingestion	:	Causes digestive tract burns. Toxic if swallowed.
Inhalation	:	May cause nose, throat, and lung irritation. Toxic if inhaled.
Chronic Exposure	:	Suspected of causing genetic defects. Suspected of causing cancer.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	LD50 rat 185 mg/kg Test substance Product
Acute inhalation toxicity	:	LC50 rat: 2.1 mg/l Exposure time: 4 hrs Test substance: Product
Acute dermal toxicity	:	LD50 rabbit: 420 mg/kg Test substance: Product
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available

Respiratory or skin sensitization	:	no data available
Carcinogenicity		
IARC		**Group 2B: Possibly carcinogenic to humans** Hydrazine 302-01-2
OSHA		No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP		**Reasonably anticipated to be a human carcinogen** Hydrazine 302-01-2
Reproductive effects	:	no data available
Germ cell mutagenicity	:	An ingredient in this product has shown positive results in a screening test for mutagenicity.
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Very toxic to aquatic life with long lasting effects.

Product

Toxicity to fish	:	LC50 Lepomis macrochirus (Bluegill sunfish): 4.2 mg/l Exposure time: 96 hrs Test substance: Product
		LC50 Oncorhynchus mykiss (rainbow trout): 4.3 mg/l Exposure time: 96 hrs Test substance: Product
		LC50 Leuciscus idus (Golden orfe): 0.75 mg/l Exposure time: 96 hrs Test substance: Product

Product

Toxicity to daphnia and other aquatic invertebrates	:	LC50 Daphnia magna (Water flea): 0.46 mg/l Exposure time: 48 hrs Test substance: Product
		LC50 Daphnia magna (Water flea): 0.81 mg/l

Exposure time: 48 hrs
Test substance: Product

Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste:	:	D002, U133
Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	HYDRAZINE, AQUEOUS SOLUTION
Technical name(s)	:	
UN/ID No.	:	UN 3293
Transport hazard class(es)	:	6.1
Packing group	:	III
Reportable Quantity (per package)	:	3 lbs
RQ Component	:	HYDRAZINE

Air transport (IATA)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	HYDRAZINE, AQUEOUS SOLUTION
Technical name(s)	:	
UN/ID No.	:	UN 3293
Transport hazard class(es)	:	6.1
Packing group	:	III
Reportable Quantity (per package)	:	3 lbs
RQ Component	:	HYDRAZINE

Sea transport (IMDG/IMO)

Proper shipping name	:	HYDRAZINE, AQUEOUS SOLUTION
Technical name(s)	:	
UN/ID No.	:	UN 3293
Transport hazard class(es)	:	6.1
Packing group	:	III
*Marine pollutant	:	HYDRAZINE

*Note: This product is regulated as a Marine Pollutant when shipped by Rail, Highway (in bulk quantities), or Air (if no other hazard class applies), and when shipped by water in all quantities.

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrazine	302-01-2	1	3

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrazine	302-01-2	1	3

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard
Fire Hazard

SARA 302 : The following components are subject to reporting levels established by SARA Title III, Section 302:

Hydrazine	302-01-2	35 %

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65
WARNING! This product contains a chemical known to the State of California to cause cancer.

Hydrazine	302-01-2

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

EUROPE
The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA
All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

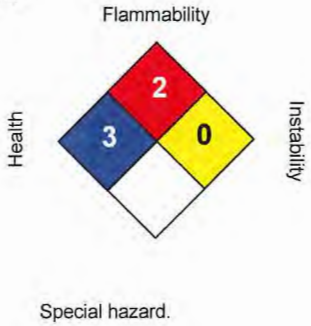
PHILIPPINES
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

SAFETY DATA SHEET

NALCO 19H OXYGEN SCAVENGER

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	2
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	10/09/2014
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an MSDS visit www.nalco.com and request access.

NALCO
An Ecolab Company

SAFETY DATA SHEET

LCS-60

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	LCS-60
Other means of identification	:	Not applicable.
Recommended use	:	WATER TREATMENT
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	04/22/2014

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral)	:	Category 4
Reproductive toxicity (Oral)	:	Category 1B
Specific target organ toxicity - single exposure (Oral)	:	Category 1 (Blood)

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Harmful if swallowed.
May damage fertility or the unborn child if swallowed.
Causes damage to organs (Blood) if swallowed.

Precautionary Statements : **Prevention:**
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use personal protective equipment as required.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. IF exposed: Call a POISON CENTER or doctor/ physician. Rinse mouth.
Storage:
Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Sodium Nitrite	7632-00-0	5 - 10
Sodium Tetraborate	1330-43-4	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders.Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting. : Not flammable or combustible.

Hazardous combustion products : Carbon oxides

Special protective equipment for firefighters : Use personal protective equipment

Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and : Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes.

emergency procedures		When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
Packaging material	:	Suitable material: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use. Keep in properly labelled containers. Unsuitable material: not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	:	Safety glasses
Hand protection	:	Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Clear

		Light yellow
Odour	:	None
Flash point	:	Not applicable.
pH	:	8 - 9, 100 %
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	similar to water
Relative vapour density	:	no data available
Relative density	:	1.076 (25 °C)
Density	:	no data available
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	Carbon oxides
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
VOC	:	0 %

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Contact with reducing agents (e.g. hydrazine, sulfites, sulfide, aluminum or magnesium dust) may generate heat, fires, explosions and toxic vapors. Do not mix with amines. Sodium nitrite can react with certain amines to produce N-nitrosamines, many of which are cancer-causing agents to laboratory animals. Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors.
Hazardous decomposition products	:	Oxides of nitrogen Oxides of sodium

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Health injuries are not known or expected under normal use.
Skin	:	Health injuries are not known or expected under normal use.
Ingestion	:	Harmful if swallowed. Produces methemoglobin.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	May damage fertility or the unborn child if swallowed. May cause damage to organs. May damage the unborn child. May damage fertility.

Experience with human exposure

Eye contact	:	No symptoms known or expected
Skin contact	:	No symptoms known or expected
Ingestion	:	No information available.
Inhalation	:	No symptoms known or expected

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate 1,895 mg/kg
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available

Carcinogenicity

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	Experimental animal studies with sodium nitrite have shown reproductive effects in the offspring of treated parents. These effects are not transmissible.
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	This product has no known ecotoxicological effects.

Product

Toxicity to fish	:	LC50 Rainbow Trout: 20 mg/l Exposure time: 96 hrs
Toxicity to daphnia and other aquatic invertebrates.	:	LC50 Daphnia magna: 340 mg/l Exposure time: 48 hrs EC50 Daphnia magna: 210 mg/l Exposure time: 48 hrs
Toxicity to algae	:	no data available

Persistence and degradability

Greater than 95% of this product consists of inorganic substances for which a biodegradation value is not applicable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods	:	Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	SODIUM NITRITE
UN/ID No.	:	UN 3082
Transport hazard class(es)	:	9
Packing group	:	III
Reportable Quantity (per package)	:	1,050 lbs
RQ Component	:	SODIUM NITRITE

Air transport (IATA)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	:	SODIUM NITRITE
UN/ID No.	:	UN 3082
Transport hazard class(es)	:	9
Packing group	:	III
Reportable Quantity (per	:	1,050 lbs

package)
RQ Component : SODIUM NITRITE

Sea Transport (IMDG/IMO)

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s) : SODIUM NITRITE
UN/ID No. : UN 3082
Transport hazard class(es) : 9
Packing group : III

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Sodium Nitrite	7632-00-0	100	1053

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 302 : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:
Sodium Nitrite 7632-00-0 9.5 %

California Prop 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

EUROPE
The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

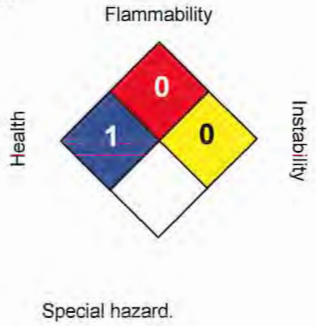
JAPAN
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA
All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	04/22/2014
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

For additional copies of an MSDS visit www.nalco.com and request access.

NALCO
An Ecolab Company

SAFETY DATA SHEET

NALCO® 9353

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NALCO® 9353
Other means of identification	:	Not applicable.
Recommended use	:	SCALE INHIBITOR/DISPERSANT
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	07/14/2014

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

GHS Label element

Precautionary Statements : **Prevention:**
Wash hands thoroughly after handling.
Response:
Specific measures: consult MSDS Section 4.
Storage:
Store in accordance with local regulations. Protect product from freezing.

Other hazards : None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

In case of eye contact	:	Rinse with plenty of water. Get medical attention if symptoms occur.
In case of skin contact	:	Wash off with soap and plenty of water. Get medical attention if symptoms occur.
If swallowed	:	Rinse mouth. Get medical attention if symptoms occur.
If inhaled	:	Get medical attention if symptoms occur.
Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency

responders.Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products : Carbon oxides

Special protective equipment for firefighters : Use personal protective equipment.

Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.

Environmental precautions : No special environmental precautions required.

Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8. Wash hands after handling.

Conditions for safe storage : Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers. Protect product from freezing.

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : not determined

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection	:	Safety glasses
Hand protection	:	Wear protective gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Hygiene measures	:	Wash hands before breaks and immediately after handling the product.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Colorless Opaque
Odour	:	None
Flash point	:	> 100 °C Method: ASTM D 93, Pensky-Martens closed cup
pH	:	3.0, 100.0 %
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	1.23 - 1.29 (25 °C)
Density	:	10.5 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available

Thermal decomposition	:	Carbon oxides
Viscosity, dynamic	:	275 mPa.s (22 °C)
Viscosity, kinematic	:	no data available
VOC	:	0 %

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Freezing temperatures. Extremes of temperature
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors.
Hazardous decomposition products	:	Oxides of carbon Oxides of nitrogen Oxides of sulfur

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Health injuries are not known or expected under normal use.
Skin	:	Health injuries are not known or expected under normal use.
Ingestion	:	Health injuries are not known or expected under normal use.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	No symptoms known or expected.
Skin contact	:	No symptoms known or expected.
Ingestion	:	No symptoms known or expected.
Inhalation	:	No symptoms known or expected.

Toxicity

Product

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	This product has no known ecotoxicological effects.

Product

Toxicity to fish	:	LC50 Fathead Minnow: 700 mg/l Exposure time: 96 hrs Test substance: Product
Toxicity to daphnia and other aquatic invertebrates	:	LC50 Ceriodaphnia dubia: 375 mg/l Exposure time: 48 hrs Test substance: Product
Toxicity to algae	:	no data available

Persistence and degradability

The organic portion of this preparation is expected to be poorly biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the

defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	10 - 30%
Soil	:	70 - 90%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

SECTION 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods	:	Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea Transport (IMDG/IMO)

Proper shipping name	:	PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 302 : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

EUROPE
The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

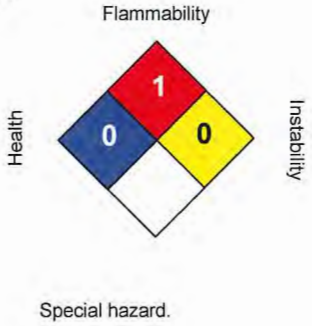
JAPAN
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA
All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

SECTION 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	0
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	07/14/2014
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

For additional copies of an MSDS visit www.nalco.com and request access.

NALCO Water
An Ecolab Company

SAFETY DATA SHEET

ACTI-BROM™ 1318

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	ACTI-BROM™ 1318
Other means of identification	:	Not applicable.
Recommended use	:	BIOCIDE
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	02/27/2017

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation	:	Category 2B

GHS Label element

Signal Word	:	Warning
Hazard Statements	:	Causes eye irritation.
Precautionary Statements	:	**Prevention:** Wash skin thoroughly after handling. **Response:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Other hazards	:	None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Sodium Bromide	7647-15-6	43

Section: 4. FIRST AID MEASURES

In case of eye contact	:	Rinse with plenty of water. Get medical attention if symptoms occur.
In case of skin contact	:	Wash off with soap and plenty of water. Get medical attention if symptoms occur.
If swallowed	:	Rinse mouth. Get medical attention if symptoms occur.

If inhaled	:	Get medical attention if symptoms occur.
Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	May evolve hydrogen bromide and bromine under fire conditions.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides
Special protective equipment for firefighters	:	In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Keep people away from and upwind of spill/leak. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.
Environmental precautions	:	This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters, unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.
Methods and materials for	:	Stop leak if safe to do so. Contain spillage, and then collect with non-

containment and cleaning up	combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.
Conditions for safe storage	:	Store the containers tightly closed. Store in suitable labeled containers.
Suitable material	:	Shipping and long term storage compatibility with construction materials can vary; we therefore recommend that compatibility is tested prior to use.Keep in properly labelled containers.

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection	:	Safety glasses
Hand protection	:	Wear protective gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Wear suitable protective clothing.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	colourless
Odour	:	odourless
Flash point	:	does not flash
pH	:	7.9, 100 %, Method: ASTM E 70

Odour Threshold	:	no data available
Melting point/freezing point	:	FREEZING POINT: -14 °C, ASTM D-1177
Initial boiling point and boiling range	:	103.5 °C, Method: ASTM D 86
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	5.6 mm Hg, (20 °C), ASTM D 323,
Relative vapour density	:	no data available
Relative density	:	1.45, (25 °C), ASTM D-1298
Density	:	12.1 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	5 mPa.s (20 °C)
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	0 %, EPA Method 24

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Freezing temperatures.
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Hazardous decomposition products	:	Decomposition products may include the following materials: None known

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes eye irritation.
Skin	:	Health injuries are not known or expected under normal use.
Ingestion	:	Health injuries are not known or expected under normal use.
Inhalation	:	Health injuries are not known or expected under normal use.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Irritation
Skin contact	:	No symptoms known or expected.
Ingestion	:	No symptoms known or expected.
Inhalation	:	No symptoms known or expected.

Toxicity

Product

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	Species: Rabbit Result: 0.0 Method: Draize Test Test substance: Similar Product
Serious eye damage/eye irritation	:	Species: rabbit Result: 16.0 Method: Draize Test Test substance: Similar Product
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Components

Acute oral toxicity : Sodium Bromide
LD50 rat: 4,200 mg/kg

Components

Acute dermal toxicity : Sodium Bromide
LD50 rabbit: > 2,000 mg/kg

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects : This product has no known ecotoxicological effects.

Product

Toxicity to fish : LC50 Lepomis macrochirus (Bluegill sunfish): > 1,000 mg/l
Exposure time: 96 hrs
Test substance: Similar Product

LC50 Oncorhynchus mykiss (rainbow trout): > 1,000 mg/l
Exposure time: 96 hrs
Test substance: Similar Product

LC50 Pimephales promelas (fathead minnow): > 5,000 mg/l
Exposure time: 96 hrs
Test substance: Product

NOEC Pimephales promelas (fathead minnow): 5,000 mg/l
Exposure time: 96 hrs
Test substance: Product

Toxicity to daphnia and other aquatic invertebrates : LC50 Ceriodaphnia dubia: > 5,000 mg/l
Exposure time: 48 hrs
Test substance: Product

NOEC Ceriodaphnia dubia: 5,000 mg/l
Exposure time: 48 hrs
Test substance: Product

Persistence and degradability

Greater than 95% of this product consists of inorganic substances for which a biodegradation value is not applicable.

Biochemical Oxygen Demand (BOD):This material is an oxidizing biocide and is not expected to persist in the environment.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods	:	As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	DO NOT REUSE EMPTY CONTAINER. Triple rinse the container (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerate. Burn only if allowed by state and local authorities. If burned, stay out of smoke. Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Section: 15. REGULATORY INFORMATION

TSCA list	:	No substances are subject to a Significant New Use Rule. No substances are subject to TSCA 12(b) export notification requirements.
EPA Reg. No.	:	83451-18-1706

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	:	Acute Health Hazard
SARA 302	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory

This product is exempted under TSCA and regulated under FIFRA. The inerts are on the Inventory List.

Australia. Industrial Chemical (Notification and Assessment) Act

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

Canadian Domestic Substances List (DSL)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

Japan. ENCS - Existing and New Chemical Substances Inventory

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)

All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand

not determined

Philippines Inventory of Chemicals and Chemical Substances (PICCS)

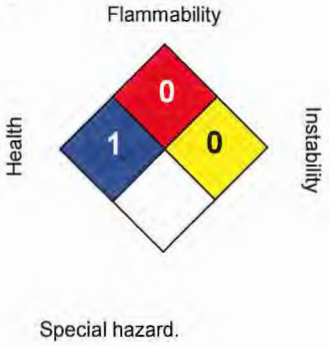
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

Taiwan Chemical Substance Inventory
On the inventory, or in compliance with the inventory

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	02/27/2017
Version Number	:	1.1
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an SDS visit www.nalco.com and request access.

Varichem International Inc.
7833 HWY 35 N
BAY CITY, TEXAS 77414

MATERIAL SAFETY DATA SHEET
EMERGENCY NO. 1-800-424-9300
INFORMATION NO. 979-245-7278

SECTION I

IDENTITY	DATE PREPARED
B-2200 Industrial Cooling Tower Algaecide	5-29-2013

SECTION II -- HAZARDOUS INGREDIENTS /IDENTITY INFORMATION

MATERIAL OR COMPONENTS/	OSHA PEL	ACGIH TLV	OTHER LIMITS	%
Ethyl Alcohol, Denatured (Cas#64-17-S)(Flammable	1000	1000	none	2.2

*DOT: UN1760, Corrosive liquids, n.o.s. (contains DIDECYL-Dimethyl-Ammonium-Chloride), 8, PG II

*This product does not contain any Sara Section 313 listed chemicals

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT 212F SPECIFIC GRAVITY (H20=1) .985
VAPOR PRESSURE (MM Hg.) ND MELTING POINT NA
VAPOR DENSITY (AIR = 1) heavier than air EVAPORATION RATE: Slower Ethyl Ether
SOLUBILITY IN WATER: Soluble
APPEARANCE AND ODOR: Clear light yellow liquid

SECTION IV-- FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (METHOD USED) >200F (set a flash) FLAMMABLE LIMITS LEL NA
UEL NA
EXTINGUISHING MEDIA: CO2, DRY CHEMICAL, FOAM OR WATER
SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus for maximum respiratory protection.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Strong acids and bases react with aluminum to form hydrogen which is explosive if ignited.

SECTION V -- REACTIVITY DATA
STABILITY: UNSTABLE CONDITIONS TO AVOID:
STABLE X
INCOMPATIBILITY (MATERIALS TO AVOID): Strong Oxidizing agents
HAZARDOUS DECOMPOSITION OR BY PRODUCTS: Nitrous oxides and ammoniacal vapors

HAZARDOUS MAY OCCUR CONDITIONS TO AVOID:
POLYMERIZATION WILL NOT OCCUR: X None

SECTION VI -- HEALTH HAZARD DATA

ROUTE(S) OF ENTRY: INHALATION? X SKIN? X
INGESTION? X HEALTH HAZARDS (ACUTE & CHRONIC):
Severe eye irritant

CARCINOGENICITY: No NTP? No
IARC MONOGRAPHS? No OSHA Regulated? No

SIGNS AND SYMPTOMS OF EXPOSURE: Contact with eyes causes irritation. Prolonged or repeated contact with skin may cause irritation, Dust or Mist may irritate respiratory passages.

MEDICAL CONDITIONS
GENERALLY AGGRAVATED BY EXPOSURE: ND
EMERGENCY and FIRST AID PROCEDURES: Eyes: flush immediately with water for 15 minutes. Skin: wash off and remove contaminated clothing. Ingestion: Consult A physician immediately.

SECTION VII -- PRECAUTIONS FOR SAFE HANDLING AND USE
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Contain all spills and leaks to prevent discharge to the environment. ventilate area. Soak up small spill with absorbent, shovel into waste containers. Recover large spills for reprocessing or disposal.
WASTE DISPOSAL METHOD: Recover or dispose waste material, in accordance with all applicable, federal, state and local regulations and laws. May be disposed of in a permitted landfill.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid over treating or freezing
OTHER PRECAUTIONS: ND
SECTION VIII -- CONTROL MEASURES
RESPIRATORY PROTECTION (SPECIFY TYPE): If vapor are present use a OSHA or NOSH approved respirator, fresh air or self-contained breathing apparatus.
VENTILATION LOCAL EXHAUST Yes SPECIAL PROTECTIVE GLOVES: Impervious gloves EYE PROTECTION: Goggles or face shield OTHER PROTECTIVE CLOTHING OR EQUIPMENT: ND
WORK/HYGIENIC PRACTICES: Wash hands after using or transferring this product.

SAFETY DATA SHEET
Bromo Tabs

Printed: 07/30/2015
Revision: 03/03/2015

1. Product and Company Identification

Product Code: 00145

Product Name: Bromo Tabs

Company Name: VariChem International Inc
7833 State Highway 35 North
PHONE# 979-245-7278
Bay City, TX 77414

Phone Number: (979)245-7278

Web site address: www.varichemusa.com

Email address: varichem@yahoo.com

Emergency Contact: CHEMTREC (800)424-9300

2. Hazards Identification

Acute Toxicity: Skin, Category 5
Acute Toxicity: Inhalation, Category 5
Acute Toxicity: Oral, Category 3
Skin Corrosion/Irritation, Category 1C
Oxidizing Solids, Category 2

GHS Signal Word: **Danger**

GHS Hazard Phrases:
H272 - May intensify fire; oxidizer.
H301 - Toxic if swallowed.
H313 - May be harmful in contact with skin.
H314 - Causes severe skin burns and eye damage.
H333 - May be harmful if inhaled.

GHS Precaution Phrases:
P262 - Do not get in eyes, on skin, or on clothing.
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P220 - Keep away from combustible materials.
P221 - Take any precaution to avoid mixing with combustibles/...
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

GHS Response Phrases:
P301+310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303+361+353 - IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+351+338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a POISON CENTER or doctor/physician.
P330 - Rinse mouth.
P363 - Wash contaminated clothing before reuse.

GHS Storage and Disposal Phrases:
P405 - Store locked up.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

Potential Health Effects (Acute and Chronic):

Inhalation: Irritating to respiratory system. Can cause severe respiratory irritation. Harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Skin Contact: Do not get on skin. May cause severe skin burns and/or eye damage.

Eye Contact: May cause irreversible eye damage. Do not get in eyes.

Ingestion: Harmful if swallowed. May be fatal if swallowed and enters airways. May cause nausea and vomiting. Swallowing this product is HARMFUL.

3. Composition/Information on Ingredients

CAS #	Hazardous Components (Chemical Name)	Concentration
16079-88-2	2,4-Imidazolidinedione, 1-Bromo-3-chloro-5,5-dimethyl-	100.0 %

4. First Aid Measures

Emergency and First Aid Procedures: If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. In case of eye contact, immediately flush eyes with plenty of water for 15-20 minutes while holding eyelids open. In case of skin contact, flush skin with plenty of soap and water. In case of ingestion, DO NOT INDUCE VOMITING. Rinse mouth out with water. Get immediate medical attention. Seek medical advise for any of these occurances.

In Case of Inhalation: Show this safety data sheet to the doctor in attendance. If breathed in, move person into fresh air. If not breathing, give artificial respiration. Get medical attention immediately.

In Case of Skin Contact: Immediately wash skin with plenty of soap and water while removing contaiminated clothing and shoes. GET MEDICAL ATTENTION. Contaminated clothing should be discarded in a manner which limits further exposure.

In Case of Eye Contact: Hold eyelids open and flush for 15-20 minutes with plenty of water. seek medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.

In Case of Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. If swallowed, do NOT induce vomiting. Give victim a glass of water or milk. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

Signs and Symptoms Of Exposure: May cause irreversible eye damage.
Can cause chemical burns to the respiratory tract.
May cause severe skin burns.
Ingestion is not expected to be a primary route of exposure.

5. Fire Fighting Measures

Flash Pt:	No data.
Explosive Limits:	LEL: No data. UEL: No data.
Autoignition Pt:	No data.
Suitable Extinguishing Media:	Use water spray to cool unopened containers. CAUTION: Material may react with extinguishing agent. Cool all affected containers with flooding quantities of water. Do NOT use carbon dioxide or dry chemical. Suitable: Water spray. Use water only!
Unsuitable Extinguishing Media:	Ammonium Phosphate (ABC) fire extinguishers should not be used. Dry chemical or CO2.
Fire Fighting Instructions:	Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products.
Flammable Properties and Hazards:	Fires fueled by other materials may release hydrogen bromide, bromine, hydrogen chloride or chlorine. This product may smolder for prolonged periods emitting a dense black smoke. Any spilled material should be considered contaminated. Neutralize to a non-oxidizing material for safe disposal.
Hazardous Combustion Products:	A dust explosion severity determination was performed using the Hartmann Dust Explosibility Bomb designed at the U.S. Bureau of Mines. The product was determined not to be ignitable.

6. Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled:	Using appropriate protective clothing and safety equipment, contain the spilled material. Do not add water to spilled material. Using clean dedicated equipment, sweep and scoop all spilled material, contaminated soil, and other contaminated material and place into clean dry containers for disposal. Do not use floor sweeping compounds to clean up spills. Do not close containers containing wet or damp material. They should be left open to disperse any hazardous gases that may form. Do not transport wet or damp material. Keep product out of sewers, watersheds, and water systems. Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. Dispose of according to local, state, and federal regulations.

7. Handling and Storage

Precautions To Be Taken in Handling:	Strong Oxidizing Agent. Do not mix with other chemicals. Mix only with water. Never add water to product. Always add product to large quantities of water. Use clean dry utensils. Do not add this product to any dispensing device containing remnants of any other product. Contamination with moisture, organic matter, or other chemicals will start a chemical reaction and generate heat, hazardous gas, possible fire, and explosion. In case of contamination, do not reseal container. If possible, isolate container in open air or well ventilated area, away from heat or open flame.
Precautions To Be Taken in Storing:	Keep this product dry i the original container. Keep container tightly closed when not in use. Store in a cool, dry, well ventilated area, away from heat or open flame. Moisture may decompose this product and cause a violent reaction leading to fire and explosion.

8. Exposure Controls/Personal Protection

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
16079-88-2	2,4-Imidazolidinedione, 1-Bromo-3-chloro-5,5-dimethyl-	No data.	No data.	No data.

Respiratory Equipment (Specify Type): No data available.

Eye Protection: No data available.

Protective Gloves: No data available.

Other Protective Clothing: No data available.

Engineering Controls (Ventilation etc.): No data available.

9. Physical and Chemical Properties

Physical States: [ ] Gas [ ] Liquid [X] Solid

Appearance and Odor: Tablets. White. chlorine-like.

Melting Point: No data.

Boiling Point: No data.

Flash Pt: No data.

Evaporation Rate: No data.

Flammability (solid, gas): No data available.

Explosive Limits: LEL: No data. UEL: No data.

Vapor Pressure (vs. Air or mm Hg): No data.

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Percent Volatile: No data.

Autoignition Pt: No data.

10. Stability and Reactivity

Stability: Unstable [ ] Stable [X]

Conditions To Avoid - Instability: High temperatures. Poor ventilation. Contamination. Moisture/high humidity.

Incompatibility - Materials To Avoid: Avoid contact with water on concentrated material in the container. Avoid contact with easily oxidizable material; ammonia, urea, or similar nitrogen containing compounds; inorganic reducing compounds; floor sweeping compounds; cyanuric acid containing compounds; calcium hypochlorite; alkalis. Avoid contact with all other chemicals.

Hazardous Decomposition or Byproducts: Hydrogen bromide, bromine, hydrogen chloride, chlorine.

Possibility of Hazardous Reactions: Will occur [ ] Will not occur [X]

Conditions To Avoid - Hazardous Reactions: No data available.

11. Toxicological Information

Toxicological Information: No data available.

Symptoms related to Toxicological Characteristics: May cause irreversible eye damage.
May cause severe skin burns.
May be irritating to nose and throat.

Chronic Toxicological Effects: Toxicological studies indicate this product to be corrosive to eyes.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

12. Ecological Information

General Ecological Information: Toxic to aquatic life.

13. Disposal Considerations

Waste Disposal Method: No data available.

14. Transport Information

LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: UN1479, Oxidizing Solid, n.o.s., (Bromo, chloro-5, 5-dimethylhydantoin), 5.1, PG II. (CHEMTREC 800-424-9300 -- CCN23740)

DOT Hazard Class: 5.1 OXIDIZER

UN/NA Number: UN1479 **Packing Group:** II

15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
16079-88-2	2,4-Imidazolidinedione, 1-Bromo-3-chloro-5,5-dimethyl-	No	No	No

16. Other Information

Revision Date: 03/03/2015

Hazard Rating System:

HMIS:

NFPA:

Additional Information About This Product: No data available.

Company Policy or Disclaimer: The information accumulated herein is believed to be accurate based on the information provided, although no guarantee or warranty, either expressed or implied is made as to the accuracy or completeness of this information, whether originating from this company or not. Recipients are advised to confirm, in advance of need, that the information is correct, applicable, and suitable to their circumstances. The conditions or methods of

handling, storage, use, and disposal of the product and container are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, or use of this information or product. If the product is used as a component in another product, this information may not be appllicable.

Material Safety Data Sheet
May be used to comply with
OSHA'S Hazard Communication Standard
29 sCFR 1910, 1200. Standard Must be
consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
SC-2310 Scale & Corrosion Inhibitor	

Section I

Manufacture's Name: VariChem International, Inc.	Emergency Telephone Number: 1-800-424-9300
Address (Number, Street, City, State, and Zip Code)	Telephone Number for information: 1-979-245-7278
P.O. Box 528 / Hwy 35 West	Date Prepared: January 2, 2013
Van Vleck, TX 77482	Signature of Preparer (optional)

Section II -- Hazardous Ingredients / Identity Information

Hazardous Components (Specific Chemical Identity: Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (Optional)
None				
This product contains no hazardous components under current OSHA definitions.				
DOT: Not Regulated				

** This product does not contain any SARA Section 313 listed Chemicals **

Section III -- Physical / Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H2O =1)	1.032
Vapor Pressure (mm Hg.)	16.6	Melting Point	N/A
Vapor Density (Air=1)	0.6	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility In Water: Complete

Appearance and Odor: Dark brown liquid with no distinct odor.

Section IV -- Fire and Explosion Hazard Data

Flash Point (Method Used)	Above 200°F (PMCC)	Flammable Limits	%	LEL N/DA	UEL N/DA

Extinguishing Media: Water spray

Special Fire Fighting Procedures: Do not enter any enclosed fire space without proper protective equipment.

Unusual Fire and Explosion Hazards: None

(Reproduce Locally) OSHA 174, Sept. 1985

Section V -- Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	None

Incompatibility (Materials to Avoid) Strong acids, strong oxidizing agents.

Hazardous Decomposition or Byproducts Incomplete combustion may result in oxides of Phosphorus, Sulfur, & Nitrogen.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	None

Section VI -- Health Hazard Data

Route(s) of Entry: Inhalation? Yes Skin? Yes Ingestion? Yes

Health Hazards (Acute and Chronic) This material may cause minor irritation upon contact with the eyes.

Carcinogenicity: NTP? No IARC Monographs No OSHA Regulated? No

Signs and Symptoms of Exposure This material may cause minor irritation upon contact with the eyes. This material is not expected to present a skin contact hazard.

Medical Conditions Aggravated by Exposure None

Emergency and First Aid Procedures Eyes: Flush with water for 15 min. Seek medical attention if irritation persist. Skin: Wash with soap & water. Ingestion: Seek medical attention.

Section VII -- Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Eliminate all open flames in the vicinity of the spill or released vapor. Contain by diking with a Non-Combustible absorbent and dispose of in a DOT approved container.

Waste Disposal Method Flush with water. Absorb large spills with an absorbent, and dispose of in a DOT approved container.

Precautions to Be Taken in Handling and Storing Keep out of reach of Children. Avoid splashing in your eyes.

Other Precautions

None

Section VIII -- Control Measures

Respiratory Protection (Specify Type) Not normally required.

Ventilation	Local Exhaust	Sufficient	Special	None
	Mechanical (General)	None	Other	None

Protective Gloves	Rubber Gloves	Eye Protection	Goggles, Safety Glasses

Other Protective Clothing Equipment Not normally required.

Work/Hygienic Practices Eyewash should be available and ready for use.

STI: 31746888

DATA / MSDS
U2906
0PGP03ZI0012

MATERIAL SAFETY DATA SHEET (MSDS)

03/04/04
Record Date, if available

560(660)-26115
Stock Code, Indicate N/A if not available

H-130M Biocide / Nalco Company
Product Name / Manufacturer Name

560 (660) – 26115

NALCO

MATERIAL SAFETY DATA SHEET

PRODUCT

H-130M

EMERGENCY TELEPHONE NUMBER(S)
(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **H-130M**

APPLICATION : BIOCIDE

COMPANY IDENTIFICATION : Nalco Company
1601 W. Diehl Road
Naperville, Illinois
60563-1198

EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING
HEALTH : 3 / 3 FLAMMABILITY : 2 / 2 INSTABILITY : 0 / 0 OTHER :
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Didecyl-Dimethyl-Ammonium chloride	7173-51-5	50.0
Ethanol	64-17-5	5 - 10

3. HAZARDS IDENTIFICATION

****EMERGENCY OVERVIEW****

DANGER
CORROSIVE. Causes severe eye and skin damage. Harmful or fatal if swallowed. Do not get in eyes, on skin, or on clothing. Wears goggles or face shield and rubber gloves when handling. Avoid contamination of food. Remove contaminated clothing and wash before reuse.
Do not get in eyes, on skin, on clothing. Do not take internally. Keep away from heat. Keep away from sources of ignition - No smoking. Use with adequate ventilation. Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.
Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.
Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve HCl under fire conditions. May evolve ammonia (NH4) under fire conditions.

PRIMARY ROUTES OF EXPOSURE :
Eye, Skin

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :
May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered.

SKIN CONTACT :
May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered.

INGESTION :
May cause burns to mouth and gastro-intestinal tract.

INHALATION :
Repeated or prolonged exposure may irritate the respiratory tract. Can cause central nervous system depression.

SYMPTOMS OF EXPOSURE :
Acute :
A review of available data does not identify any symptoms from exposure not previously mentioned.
Chronic :
A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :
A review of available data does not identify any worsening of existing conditions.

4. FIRST AID MEASURES

For Eyes and Skin: Flush with plenty of water for at least 15 minutes. (Eyelids must be held open). Call a physician immediately. Remove contaminated clothing and wash before reuse.

If swallowed: Immediately give 3-4 glasses of milk; if unavailable, give water. Do not induce vomiting. Call a physician.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

NOTE TO PHYSICIAN :
Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : 109 °F / 43 °C (SETAFLASH)

EXTINGUISHING MEDIA :
Foam, Carbon dioxide, Dry powder, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.
Water mist may be used to cool closed containers.

FIRE AND EXPLOSION HAZARD :
Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve HCl under fire conditions. May evolve ammonia (NH4) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :
In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :
Notify appropriate government, occupational health and safety and environmental authorities. Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Eliminate ignition sources. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

METHODS FOR CLEANING UP :
SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. LARGE SPILLS: Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :
This product is toxic to fish and other water organisms. Do not discharge directly into lakes, ponds, streams, waterways or public water supplies.

7. HANDLING AND STORAGE

HANDLING :
Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Avoid release of vapors or mists into workplace air. Keep the containers closed when not in use. Do not use in locations where vapor is likely to travel to welding flames or arcs or to other hot surfaces. Vapors are much heavier than air, this can result in uneven distribution. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

STORAGE CONDITIONS :
Store away from heat and sources of ignition. Connections must be grounded to avoid electrical charges. Store the containers tightly closed. Store separately from oxidizers. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :
Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

ACGIH/TLV :

Substance(s)
Ethanol TWA: 1,000 ppm , 1,880 mg/m3

OSHA/PEL :
Substance(s)
Ethanol TWA: 1,000 ppm , 1,900 mg/m3

ENGINEERING MEASURES :
Use general ventilation with local exhaust ventilation.

RESPIRATORY PROTECTION :
If significant mists, vapors or aerosols are generated an approved respirator is recommended. An organic vapor cartridge with dust/mist prefilter may be used. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :
Neoprene gloves, Viton# gloves

SKIN PROTECTION :
Wear impervious apron and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :
Wear chemical splash goggles.

HYGIENE RECOMMENDATIONS :
Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Use good work and personal hygiene practices to avoid exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Light yellow
ODOR	Alcoholic
SPECIFIC GRAVITY	0.93 @ 77 °F / 25 °C
DENSITY	7.7 lb/gal
SOLUBILITY IN WATER	Complete
pH (1 %)	7.0 - 8.0
VISCOSITY	< 100 cps @ 77 °F / 25 °C
FREEZING POINT	12 °F /
VOC CONTENT	10 %

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :
Stable under normal conditions.

HAZARDOUS POLYMERIZATION :
Hazardous polymerization will not occur.

CONDITIONS TO AVOID :
Heat and sources of ignition including static discharges.

MATERIALS TO AVOID :
Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Contact with reducing agents (e.g. hydrazine, sulfites, sulfide, aluminum or magnesium dust) may generate heat, fires, explosions and toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :
Under fire conditions: Oxides of carbon, Oxides of nitrogen, HCl

11. TOXICOLOGICAL INFORMATION

The following results are for the product.

ACUTE DERMAL TOXICITY :

Species	LD50	Test Descriptor
Rabbit	> 4 g/kg	Product

Rating : Non-Hazardous

SENSITIZATION :
This product is not expected to be a sensitizer.

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	2.2 mg/l	
Bluegill Sunfish	96 hrs	0.92 mg/l	

Rating : Very toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	0.19 mg/l		
Mysid Shrimp (Mysidopsis bahia)	96 hrs	0.14 mg/l		

Rating : Very toxic

If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D001

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name :	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Technical Name(s) :	DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL
UN/ID No :	UN 2920
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II
Flash Point :	43 °C / 109 °F

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Technical Name(s) :	DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL
UN/ID No :	UN 2920
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II
IATA Cargo Packing Instructions :	

IATA Cargo Aircraft Limit : (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Technical Name(s) :	DIDECYLDIMETHYLAMMONIUM CHLORIDE, ETHANOL
UN/ID No :	UN 2920
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II

15. REGULATORY INFORMATION

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :
Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Didecyl-Dimethyl-Ammonium chloride : Corrosive
Ethanol : Flammable

CERCLA/SUPERFUND, 40 CFR 117, 302 :
This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

RQ Substance	RQ
Ethanol	1,000 lbs

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :
This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :
Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
-	Delayed (Chronic) Health Hazard
X	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :
This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA) :
EPA Reg. No. 6836-203-1706
In all cases follow instructions on the product label.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :
None of the substances are specifically listed in the regulation.

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :
This product contains the following substances listed in the regulation:

Substance(s)	Citations
• Ethanol	Sec. 111

CALIFORNIA PROPOSITION 65 :
This product does not contain substances which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS :
None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :
This product is a registered biocide and is exempt from State Right to Know Labelling Laws.

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :
Pesticide controlled products are not regulated under WHMIS.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :
The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department
Date issued : 03/04/2004
Version Number : 1.5

NALCO Water
An Ecolab Company

SAFETY DATA SHEET

NALCO® 77352NA

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NALCO® 77352NA
Other means of identification	:	Not applicable.
Recommended use	:	BIOCIDE
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	07/30/2018

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Inhalation)	:	Category 4
Skin corrosion	:	Category 1A
Serious eye damage	:	Category 1
Skin sensitization	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Harmful if inhaled.

Precautionary Statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or doctor/ physician. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse.
Storage:
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Magnesium Nitrate	10377-60-3	1 - 5
5-Chloro-2-Methyl-4-Isothiazolin-3-one	26172-55-4	1 - 5
Magnesium Chloride	7786-30-3	1 - 5
2-Methyl-4-Isothiazolin-3-one	2682-20-4	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	:	Safety goggles Face-shield

Hand protection	:	Wear the following personal protective equipment: Standard glove type. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	yellow
Odour	:	Pungent
Flash point	:	does not flash
pH	:	3 - 5,(100 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	100 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	0.1 mm Hg, (20 °C),
Relative vapour density	:	no data available
Relative density	:	1.02, (20 °C),
Density	:	1.02 g/cm3 , 8.5 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	3 mPa.s (25 °C)

Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	0 %, 0 g/l, EPA Method 24

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Extremes of temperature Freezing temperatures.
Incompatible materials	:	Amines Organic materials and reducing agents Mercaptans Oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction.
Ingestion	:	Causes digestive tract burns.
Inhalation	:	Harmful if inhaled. May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	LD50 rat: 4,000 mg/kg Test substance: Product (estimated)
Acute inhalation toxicity	:	Acute toxicity estimate: 19.41 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	LD50 rabbit: > 5,000 mg/kg Test substance: Product (estimated)
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects : Harmful to aquatic life.

Product

Toxicity to fish : LC50 Lepomis macrochirus (Bluegill sunfish): 30 mg/l
Exposure time: 96 hrs
Test substance: Product (estimated)

LC50 Oncorhynchus mykiss (rainbow trout): 12 mg/l
Exposure time: 96 hrs
Test substance: Product (estimated)

LC50 Cyprinodon variegatus (sheepshead minnow): 18.5 mg/l
Exposure time: 96 hrs
Test substance: Product (estimated)

LC50 Inland Silverside: 15.5 mg/l
Exposure time: 96 hrs
Test substance: Product (estimated)

LC50 Pimephales promelas (fathead minnow): 7.4 mg/l
Exposure time: 144 hrs
Test substance: Product (estimated)

		LC50 Pimephales promelas (fathead minnow): 9.1 mg/l Exposure time: 48 hrs Test substance: Product NOEC Pimephales promelas (fathead minnow): 6.3 mg/l Exposure time: 48 hrs Test substance: Product
Toxicity to daphnia and other aquatic invertebrates	:	LC50 Daphnia magna (Water flea): 10 mg/l Exposure time: 48 hrs Test substance: Product (estimated) LC50 Mysid Shrimp (Mysidopsis bahia): 17 mg/l Exposure time: 96 hrs Test substance: Product (estimated) LC50 Ceriodaphnia dubia: 16.2 mg/l Exposure time: 48 hrs Test substance: Product NOEC Ceriodaphnia dubia: 6.3 mg/l Exposure time: 48 hrs Test substance: Product EC50 Ceriodaphnia dubia: 10.7 mg/l Exposure time: 48 hrs Test substance: Product NOEC Ceriodaphnia dubia: 3.1 mg/l Exposure time: 48 hrs Test substance: Product
Toxicity to algae	:	EC50 Marine Algae (Skeletonema costatum): 0.003 mg/l Test substance: Active Substance EC50 Green Algae (Pseudokirchneriella subcapitata, previously Selenastrum capricornutum): 0.018 mg/l Test substance: Active Substance

Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%

Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name	:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s)	:	5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE, ISOTHIAZOLINONE MICROBIOCIDE
UN/ID No.	:	UN 3265
Transport hazard class(es)	:	8
Packing group	:	II

Air transport (IATA)

Proper shipping name	:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s)	:	5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE, ISOTHIAZOLINONE MICROBIOCIDE
UN/ID No.	:	UN 3265
Transport hazard class(es)	:	8
Packing group	:	II

Sea transport (IMDG/IMO)

Proper shipping name	:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s)	:	5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE, ISOTHIAZOLINONE MICROBIOCIDE
UN/ID No.	:	UN 3265

Transport hazard class(es) : 8
Packing group : II

*Marine pollutant : ISOTHIAZOLINONE MICROBIOCIDE

* Note: This product is regulated as a Marine Pollutant when shipped by Rail or Highway (in bulk quantities), and when shipped by water in all quantities.

Section: 15. REGULATORY INFORMATION

EPA Reg. No. : 707-133-1706

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This product does not contain a RQ substance, or this product contains a substance with a RQ, however the calculated RQ exceeds the reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory

This product is exempted under TSCA and regulated under FIFRA. The inerts are on the Inventory List.

Australia. Industrial Chemical (Notification and Assessment) Act

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

Canadian Domestic Substances List (DSL)

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

Japan. ENCS - Existing and New Chemical Substances Inventory

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)

All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

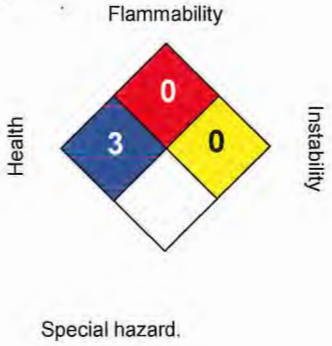
China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Taiwan Chemical Substance Inventory
All substances in this product comply with the Taiwan Existing Chemical Substances Inventory (ECSI).

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	07/30/2018
Version Number	:	1.3
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an SDS visit www.nalco.com and request access.

GE Power & Water
Water & Process Technologies

SAFETY DATA SHEET

OPTISPERSE* PWR6600

1. Identification

Product identifier	**OPTISPERSE PWR6600**
Other means of identification	None.
Recommended use	Internal boiler water treatment
Recommended restrictions	None known.

Company/undertaking identification

GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards	Not classified.
Health hazards	Not classified.
OSHA defined hazards	Not classified.

Label elements

Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

This material is not considered to be hazardous according to regulatory guidelines (see Section 15 of the SDS).

Composition comments	This product does not contain hazardous ingredients in reportable concentrations. Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and water.

Eye contact	Immediately flush eye(s) with plenty of water. Get medical attention if irritation develops and persists.
Ingestion	Get medical attention if symptams occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware af the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Protect from freezing. If frozen, thaw completely and mix thoroughly prior to use. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	Splash proof chemical goggles.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. The chaice of an appropriate glove does not only depend on its material but also on other quality features and is different from ane producer to the other. Glove selection must take into account any solvents and other hazards present.
Other	Wear suitable protective clothing.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Color	Colorless to light yellow
Physical state	Liquid
Odor	Slight
Odor threshold	Not available.
pH (concentrated product)	8.5
pH in aqueous solution	8.5 (5% SOL.)
Melting point/freezing point	30 °F (-1 °C)
Initial boiling point and boiling range	220 °F (104 °C)
Flash point	> 212 °F (> 100 °C) P-M(CC)
Evaporation rate	< 1 (Ether = 1)
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)
Relative density	1.06
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	133 cps
Viscosity temperature	70 °F (21 °C)
Other information	
Percent volatile	15 (Calculated)
Pour point	35 °F (2 °C)
Specific gravity	1.06
VOC (Weight %)	0.26 % Switzerland estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Protect from freezing.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Ammonia, oxides of carbon and nitrogen evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to respiratory organs.
Skin contact	Prolonged or repeated contact may cause irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
OPTISPERSE PWR6600 (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
Inhalation		
LC50	Rat	> 20 mg/l, 4 Hours, (Calculated according to GHS additivity formula)
Oral		
LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met. May be harmful if swallowed and enters airways.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
OPTISPERSE PWR6600 (CAS Mixture)			
	0% Mortality	Fathead Minnow	2000 mg/L, Static Bioassay with 48-Haur Renewal, 96 hour
	LC50	Mysid Shrimp	2640 mg/L, Static Renewal Bioassay, 96 hour

Product		Species	Test Results
	NOEL	Mysid Shrimp	1000 mg/L, Static Renewal Bioassay, 96 hour
		Sheepshead Minnow	8000 mg/L, Static Renewal Bioassay, 96 hour
Aquatic			
Crustocea	LC50	Daphnia magna	1250 mg/L, Static Renewal Bioassay, 48 hour
	NOEL	Daphnia magna	687 mg/L, Static Renewal Bioassay, 48 hour

* Estimates for product may be based on additional component data not shown.

Bioaccumulative potential No data avoilable.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

Environmental fate The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability

No data available

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

Some containers may be DOT exempt, please check BOL for exact container classification.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components of this product are included on or are in compliance with the U.S. TSCA regulations.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not reguloted.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

US state regulations

US - Massachusetts RTK - Substance List

Not regulated.

US - Pennsylvania RTK - Hazardous Substances

Not regulated.

US - Rhode Island RTK

Not regulated.

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Diethanolamine (CAS 111-42-2) Listed: June 22, 2012

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

16. Other information, including date of preparation or last revision

Issue date	Feb-04-2015
Revision date	Feb-04-2015
Version #	1.0

List of abbreviations	CAS: Chemical Abstract Service Registration Number TWA: Time Weighted Average STEL: Short Term Exposure Limit TLV: Threshold Limit Value LD50: Lethal Dose, 50% LC50: Lethal Concentration, 50% NOEL: No Observed Effect Level COD: Chemical Oxygen Demand BOD: Biochemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code TSRN indicates a Trade Secret Registry Number is used in place of the CAS number. ACGIH: American Conference of Governmental Industrial Hygienists NFPA: National Fire Protection Association
References:	No data available
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision Information	Product and Company Identification: Product and Company Identification Composition / Information on Ingredients: Ingredients Physical & Chemical Properties: Multiple Properties Toxicological Information: Toxicological Data Transport Information: Material Transportation Information Regulatory Information: Risk Phrases - Labeling HazReg Data: Europe - EU GHS: Classification
Prepared by	This SDS has been prepared by GE Water & Process Technologies Regulatory Department (1-215-355-3300).

* Trademark of General Electric Company. May be registered in one or more countries.

NALCO Water
An Ecolab Company

SAFETY DATA SHEET

3D TRASAR™ 3DT198

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	3D TRASAR™ 3DT198
Other means of identification	:	Not applicable
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	02/13/2018

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral)	:	Category 4
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Harmful if swallowed.
Causes severe skin burns and eye damage.

Precautionary Statements :

Prevention:
Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse.

Storage:
Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Sodium Tolyltriazole	64665-57-2	30 - 60

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products : Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus

Special protective equipment for firefighters : Use personal protective equipment.

Specific extinguishing : Fire residues and contaminated fire extinguishing water must be disposed of in

methods	accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Do not store near acids. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Stainless Steel 304, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	:	Safety goggles Face-shield
Hand protection	:	Wear the following personal protective equipment: Standard glove type. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety

		goggles and protective clothing
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Light
Odour	:	Characteristic
Flash point	:	does not flash
pH	:	11.5 - 12,(10 %)
Odour Threshold	:	no data available
Melting point/freezing point	:	FREEZING POINT: -7.8 - -5 °C
Initial boiling point and boiling range	:	106 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	18.8 mm Hg, (20 °C),
Relative vapour density	:	no data available
Relative density	:	1.19 - 1.21,
Density	:	1.17 g/cm3 , 9.8 lb/gal
Water solubility	:	no data available
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	log Pow: -1.20
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	55 mPa.s (16 °C)
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Strong acids
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns.
Ingestion	:	Harmful if swallowed. Causes digestive tract burns.
Inhalation	:	May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	LD50 rat: 640 mg/kg Test substance: Product
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	LD50 rabbit: > 2,000 mg/kg Test substance: Product
Skin corrosion/irritation	:	no data available
Serious eye damage/eye	:	no data available

irritation

Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects : Harmful to aquatic life.

Product

Toxicity to fish : LC50 Bluegill Sunfish: 191.2 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Rainbow Trout: 23.7 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Inland Silverside: 93.2 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Zebra Danio: 122 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Bluegill Sunfish: 173 mg/l
Exposure time: 96 hrs
Test substance: Product

NOEC Bluegill Sunfish: 56 mg/l
Exposure time: 96 hrs
Test substance: Product

NOEC Rainbow Trout: 10 mg/l
Exposure time: 96 hrs
Test substance: Product

NOEC Inland Silverside: 62.5 mg/l
Exposure time: 96 hrs
Test substance: Product

Toxicity to daphnia and other aquatic invertebrates	:	LC50 Daphnia magna: 245.7 mg/l Exposure time: 48 hrs Test substance: Product LC50 Mysid Shrimp (Mysidopsis bahia): 89.8 mg/l Exposure time: 96 hrs Test substance: Product LC50 Acartia tonsa: 605 mg/l Exposure time: 48 hrs Test substance: Product NOEC Mysid Shrimp (Mysidopsis bahia): 62.5 mg/l Exposure time: 96 hrs Test substance: Product NOEC Acartia tonsa: 250 mg/l Exposure time: 48 hrs Test substance: Product
Toxicity to algae	:	LC50 Marine Algae (Skeletonema costatum): 114 mg/l Exposure time: 72 hrs Test substance: Product NOEC Marine Algae (Skeletonema costatum): 10 mg/l Exposure time: 72 hrs Test substance: Product
Toxicity to bacteria	:	LC50 Pseudomonas putida: 500 mg/l Test substance: Product
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	IC50: 2.1 mg/l Exposure time: 21 Days Species: Daphnia magna Test substance: Product

Persistence and degradability

The organic portion of this preparation is expected to be poorly biodegradable.

Total Organic Carbon (TOC) : 280,000 mg/l

Chemical Oxygen Demand (COD): 850,000 mg/l

Biochemical Oxygen Demand (BOD):

Incubation Period	Value	Test Descriptor
5 d	< 300 mg/l	Product

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	:	<5%
Water	:	10 - 30%
Soil	:	70 - 90%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name	:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S
Technical name(s)	:	Substituted Triazole
UN/ID No.	:	UN 3267
Transport hazard class(es)	:	8
Packing group	:	II

Air transport (IATA)

Proper shipping name	:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S
Technical name(s)	:	Substituted Triazole
UN/ID No.	:	UN 3267
Transport hazard class(es)	:	8
Packing group	:	II

Sea transport (IMDG/IMO)

Proper shipping name	:	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S
Technical name(s)	:	Substituted Triazole

UN/ID No.	:	UN 3267
Transport hazard class(es)	:	8
Packing group	:	II

Section: 15. REGULATORY INFORMATION

TSCA list : Not relevant

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

Australia. Industrial Chemical (Notification and Assessment) Act

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

Canadian Domestic Substances List (DSL)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

Japan. ENCS - Existing and New Chemical Substances Inventory

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)

All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

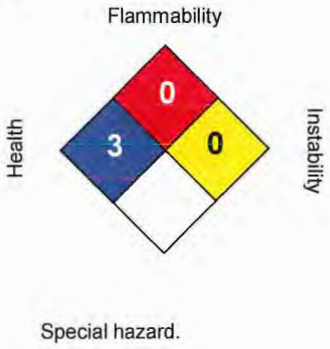
China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Taiwan Chemical Substance Inventory
All substances in this product comply with the Taiwan Existing Chemical Substances Inventory (ECSI).

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	02/13/2018
Version Number	:	1.1
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an SDS visit www.nalco.com and request access.

NALCO Water
An Ecolab Company

SAFETY DATA SHEET

PRE-TECT™ 7080HP

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	PRE-TECT™ 7080HP
Other means of identification	:	Not applicable.
Recommended use	:	WATER TREATMENT
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	11/17/2016

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral)	:	Category 4
Acute toxicity (Inhalation)	:	Category 4
Acute toxicity (Dermal)	:	Category 4
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system)

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Harmful if swallowed, in contact with skin or if inhaled
Causes severe skin burns and eye damage.
May cause respiratory irritation.

Precautionary Statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a

POISON CENTER/doctor.IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.

Storage:
Store in a well-ventilated place. Keep container tightly closed.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Monoethanolamine	141-43-5	60 - 100

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Do not store near acids. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Monoethanolamine	141-43-5	TWA	3 ppm	ACGIH
		STEL	6 ppm	ACGIH
		TWA	3 ppm 8 mg/m3	NIOSH REL
		STEL	6 ppm 15 mg/m3	NIOSH REL
		TWA	3 ppm	OSHA Z1

			6 mg/m3	

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	colourless
Odour	:	ammoniacal
Flash point	:	> 93.3 °C, Method: ASTM D 56, Tag closed cup
pH	:	12.5 - 13.5, 100 %, (25 °C)
Odour Threshold	:	no data available
Melting point/freezing point	:	FREEZING POINT: < -20 °C
Initial boiling point and boiling range	:	170 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	23.5 V%
Lower explosion limit	:	3 V%
Vapour pressure	:	0.3 - 0.4 mm Hg, (20 °C),
Relative vapour density	:	no data available
Relative density	:	1.0067 - 1.0467, (25 °C),
Density	:	no data available
Water solubility	:	completely soluble

Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	410 °C
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Strong acids
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Harmful in contact with skin. Causes severe skin burns.
Ingestion	:	Harmful if swallowed. Causes digestive tract burns.
Inhalation	:	May cause respiratory tract irritation. Harmful if inhaled. May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion

Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	LD50 rat: 1,089 mg/kg Test substance: Active Substance
Acute inhalation toxicity	:	Acute toxicity estimate: 1.88 mg/l Exposure time: 4 h
Acute dermal toxicity	:	LD50 rabbit: 1,025 mg/kg Test substance: Active Substance
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Harmful to aquatic life with long lasting effects.

Product

Toxicity to fish	:	LC50 Pimephales promelas (fathead minnow): 125 mg/l Exposure time: 96 hrs LC50 Lepomis macrochirus (Bluegill sunfish): 75 mg/l Exposure time: 96 hrs LC50 Oncorhynchus mykiss (rainbow trout): 150 mg/l Exposure time: 96 hrs
Toxicity to daphnia and other aquatic invertebrates	:	LC50 Daphnia magna (Water flea): 140 mg/l Exposure time: 24 hrs

Persistence and degradability

no data available

Mobility

The environmental fate was estimated using level III fugacity mathematical models developed by the US EPA. The model assumes a steady state condition where the total input and output have equilibrated. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

Air	:	<5%
Water	:	30 - 50%
Soil	:	50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

no data available

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste:	:	D002
Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name	:	ETHANOLAMINE SOLUTION
Technical name(s)	:	
UN/ID No.	:	UN 2491
Transport hazard class(es)	:	8
Packing group	:	III

Air transport (IATA)

Proper shipping name	:	ETHANOLAMINE SOLUTION
Technical name(s)	:	
UN/ID No.	:	UN 2491
Transport hazard class(es)	:	8
Packing group	:	III

Sea transport (IMDG/IMO)

Proper shipping name	:	ETHANOLAMINE SOLUTION
Technical name(s)	:	
UN/ID No.	:	UN 2491
Transport hazard class(es)	:	8
Packing group	:	III

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

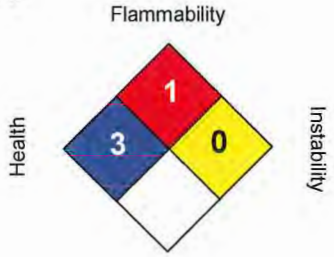
JAPAN
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	11/17/2016
Version Number	:	1.1
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an SDS visit www.nalco.com and request access.

Stormwater Management

Attachment K

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

6. If **yes**, briefly describe the industrial processes and activities that occur outdoors or in some manner that may result in exposure of the materials to precipitation or runoff in areas where runoff is generated.

Storm water drainage from production and non-production areas is discharged through permitted outfalls or under the TPDES Stormwater General Permit. For production areas, at least the first flush of stormwater runoff from SPCC sources and production equipment areas is collected and treated by the Oily Waste Treatment Systems (Outfall 201). Secondary containment is provided for chemical and other storage tank areas.

Laboratory Information

Attachment L

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

Alkalinity, BOD, Carbonaceous BOD, Chemical Oxygen Demand, Chloride, Cyanide, Fluoride, Oil and Grease, Ammonia Nitrogen, Nitrate Nitrogen, Total Organic Nitrogen, Total Phosphorus, TSS, Sulfate, and Total Organic Carbon analyses were performed by:
SGS Accutest North America Inc.
10165 Harwin Drive
Houston, TX 77036
Phone: 713-271-4700

Antimony, Arsenic, Barium, Beryllium, Cadmium, Copper, Lead, Nickel, Selenium, Silver, Thallium, Zinc analyses were performed by:
SGS Accutest North America Inc.
500 Ambassador Caffery Parkway
Scott, LA 70583
Phone: 337-237-4775

Low Level Mercury analyses were performed by:
SGS Accutest North America Inc.
2235 US Highway 130
Dayton, NJ 08810
Phone: 732-329-0200

Chromium Hexavalent, Chromium Trivalent, Chromium, and Aluminum analyses were performed by:
A&B Labs
10100 East Freeway, Suite 100
Houston, TX 77029
Phone: 713-453-6060

Dissolved oxygen, pH, temperature, and total residual chlorine were analyzed on-site.

Cooling Water System Data

Attachment M

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

b. Provide the following information as an attachment.

1. *A narrative description of the design and annual operation of the facility's cooling water system and its relationship to the CWIS(s).*

South Texas Project Electric Generating Station (STPEGS) is a nuclear-powered steam electric plant with two generating units (Units 1 and 2) operating as a member of the Electric Reliability Council of Texas (ERCOT) supplying power to the grid. For cooling purposes, STPEGS employs a closed-cycle recirculating cooling system utilizing a 7,000-acre main cooling reservoir (MCR) as an impoundment for the closed-cycle recirculating system. Under current operating conditions, new water to the MCR is provided by rainfall and periodic make-up water diverted from the Colorado River.

The cooling water intake structure located on the Colorado River is referred to as the Reservoir Makeup Pumping Facility (RMPF). The RMPF Cooling Water Intake Structure operates as a make-up water intake providing make-up water from the Colorado River, a water of the U.S., to the MCR, which is not a water of the U.S. The RMPF Cooling Water Intake Structure is operated intermittently based on reservoir level and river flow. Conditions of river water diversions are limited to 55% of the river flow and only when river flow exceeds 300 cubic feet per second (cfs). While the design intake flow (DIF) (387.792 million gallons per day [MGD]) could result in the removal of 22.6% of the mean annual river flow (2,648 cfs-1,711 MGD), the actual river flow withdrawal over the past 3 years (2016-2018) occurring from intermittent diversion to the MCR was limited to 2.05%. From the reported 5-year period (2014-2018), STPEGS' annual average capacity factor was 91.4% for Unit 1, 98.9% for Unit 2 with a combined 95.2% station utilization. Make-up water usage from the Colorado River equates to a mean of 35 MGD.

2. *A scaled map depicting the location of each CWIS, impoundment, intake pipe, and canals, pipes, or waterways used to convey cooling water to, or within, the cooling water system. Provide the latitude and longitude for each CWIS and any intake pipe(s) on the map. Indicate the position of the intake pipe within the water column.*

Figure 1 shows the location of the RMPF Cooling Water Intake Structure on the Colorado River, the make-up water pipeline from the RMPF Cooling Water Intake Structure to the Main Cooling Reservoir, the Reservoir Circulating Water Intake Structure in the Main Cooling Reservoir, and the Essential Cooling Pond. Additional details are provided in the engineering drawings in Appendix 1.

FIGURE 1: Location of the cooling water system components for STPEGS

RMPF Cooling Water Intake Structure: 28°46'27.97"N, 95°59'51.84"W

Reservoir Circulating Water Intake Structure: 28°47'32.09"N, 96° 3'1.80"W

3. *A description of water reuse activities, if applicable.*

Water discharges from internal outfalls 101, 201, 401, and 601 are discharged into the Main Cooling Reservoir for reuse in accordance with the wastewater permit.

4. *Design and engineering calculations prepared by a qualified professional and data to support the information provided in above item a.*

The RMPF Cooling Water Intake Structure supports a DIF of 387.792 MGD based on four, single speed, line-drive turbine pumps operating with a pump rate of 26,930 gallons per minute (gpm) per each of two small-volume pumps and a pump rate of 107,720 gpm per each of two large-volume pumps over a 24-hour period. The following provides the calculation for estimating the DIF: 26,930 + 107,720 X 2 pumps X 60 min X 24 hours/ 1,000,000 = DIF.

Based upon the facility's reported diversion from the Colorado River for 3 years, 2016-2018, the annual volume from all four pumps was 14,719.3 + 18,217.8 + 5,024.9 million gallons per year respectively. The daily actual intake flow (AIF) computed on 365 days/year for each year

equates to 40.32 + 49.91 + 13.77 MGD with a three-year average of 34.67 MGD. This equates to 8.9% (34.67 ÷ 387.792) of the DIF volume or a 91.1% reduction in actual usage from the DIF.

5. *Previous year (a minimum of 12 months) of AIF data.*

Actual Intake Flow (MGD) for 2018												
Day	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0	348.7	38.8
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.6	348.7	38.8
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.5	348.7	38.8
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.3	348.7	38.8
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.9	348.7	38.8
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	348.7	15.4
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.2	348.7	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.3	212.4	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	196.5	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	348.7	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	309.1	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	116.3	0.0	38.8	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	371.9	88.3	38.8	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	387.5	316.5	38.8	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	387.5	172.3	38.8	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	387.5	274.4	38.8	0.0
18	0.0	0.0	0.0	0.0	0.0	11.6	0.0	0.0	262.4	348.7	38.8	0.0
19	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	75.4	348.7	38.8	0.0
20	0.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	32.2	348.7	38.8	0.0
21	0.0	0.0	0.0	0.0	0.0	38.8	0.0	0.0	2.4	348.7	38.8	0.0
22	0.0	0.0	0.0	0.0	0.0	129.5	0.0	0.0	0.0	348.7	38.8	0.0
23	0.0	0.0	0.0	0.0	0.0	193.7	0.0	0.0	0.0	348.7	38.8	21.8
24	0.0	0.0	0.0	0.0	0.0	193.7	0.0	0.0	0.0	348.7	38.8	0.0
25	0.0	0.0	0.0	0.0	0.1	193.7	0.0	0.0	0.0	348.7	38.8	0.0
26	0.0	0.0	0.0	0.0	6.7	77.3	0.0	0.0	0.0	348.7	38.8	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	284.3	348.7	38.8	0.0
28	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	234.3	348.7	38.8	0.0
29	0.0	-	0.0	0.0	38.8	0.0	0.0	0.0	232.5	348.7	38.8	0.0
30	0.0	-	0.0	0.0	14.5	0.0	0.0	0.0	232.5	348.7	38.8	0.0
31	0.0	-	0.0	-	0.0	-	0.0	0.0	-	348.7	-	4.9

6. *A narrative description of existing or proposed impingement and entrainment technologies or operation measures and a summary of their performance, including, but not limited to, reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage.*

STPEGS utilizes a closed-cycle recirculating system for achieving impingement reduction as stated under 40 CFR § 125.94(c)(1). This closed-cycle recirculating system is comprised of a 7,000-acre cooling impoundment. The point of compliance for 316(b) will be the RMPF Cooling Water Intake Structure located on the Colorado River.

STPEGS has an AIF of 34.7 MGD, which is less than 125 MGD required for meeting the site-specific entrainment (E) requirements. While there is no prescribed single nationally-applicable E-standard, the Rule requires the Director to establish best technology available (BTA) on a site-specific basis. South Texas Project Nuclear Operating Company (STPNOC) believes the BTA technologies identified in this document not only support the impingement mortality (IM) BTA evaluation, but also support the evaluation of BTA for E. Furthermore, it is STPNOC's position that STPEGS's closed-cycle cooling BTA for IM serves as BTA for entrainment under §125.94(d), should the TCEQ decide to evaluate STPEGS's CWIS under the rules for entrainment standards.

In addition to the pre-approved technology of a closed-cycle recirculating system for IM BTA, STPEGS utilizes a combination of other technologies that effectively reduce the likelihood of fish impingement and entrainment including:

1) Large capacity cooling water impoundment (MCR) designed for industrial cooling water and waste water. The size of the MCR provides for reduced water diversions i.e. make-up water from waters of the US;
2) Traveling screens fitted with 3/8 mesh and fish return designed to return fish at the RMPF Cooling Water Intake Structure downstream of the intake; and
3) Credit for intake location in channel border habitat outside of the bio-productive areas within the source water.

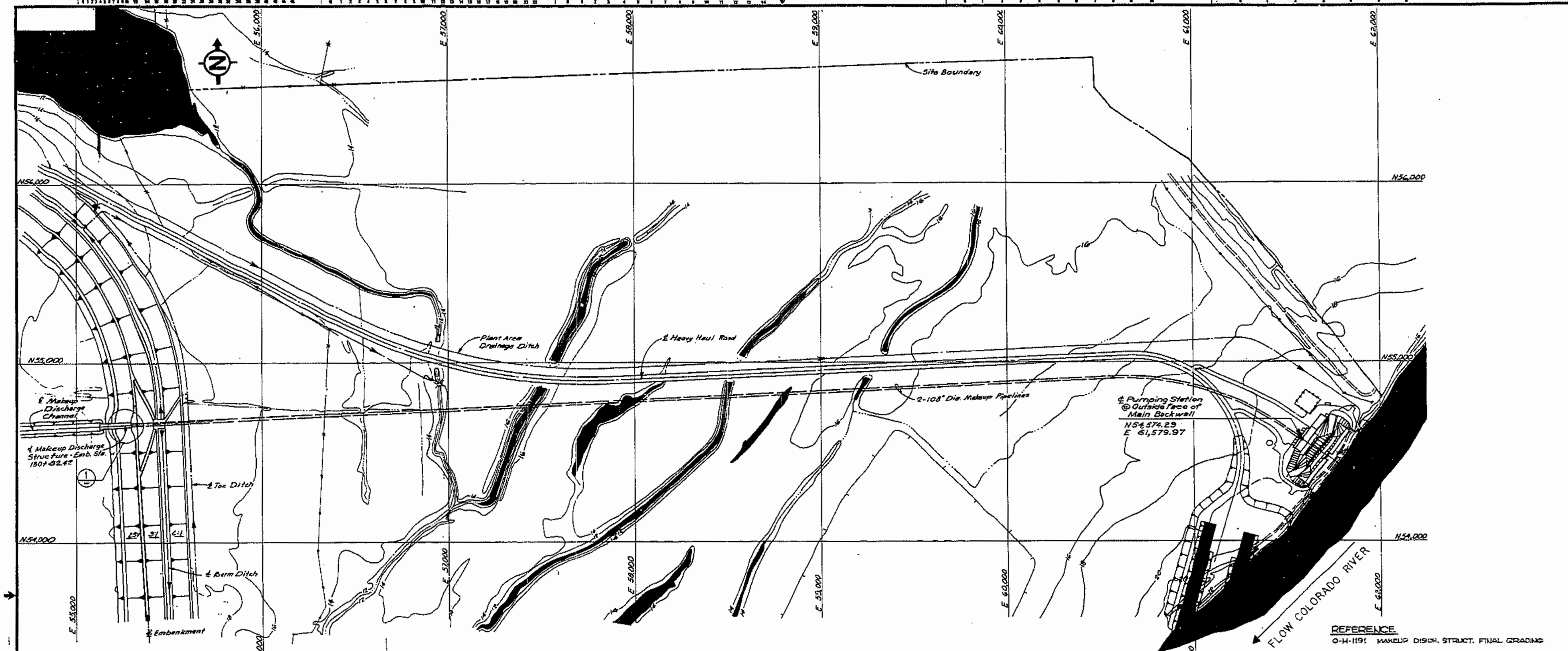
Engineering Drawings

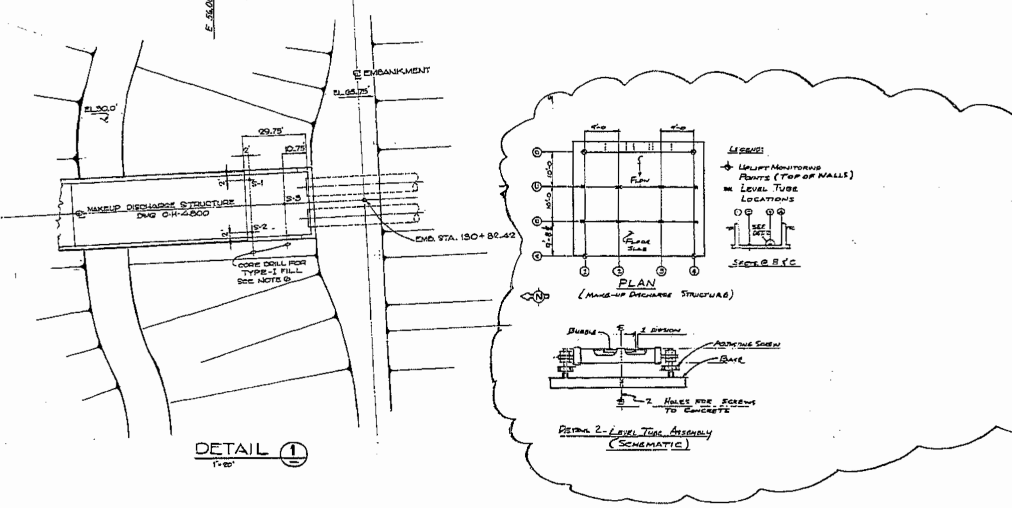
Appendix 1

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

0-H-4110





7. ELEVATIONS OF UPLIFT MONITORING POINTS SHALL BE DETERMINED BEFORE THE START AND AFTER COMPLETION OF GROUTING OPERATIONS. ELEVATIONS SHALL ALSO BE DETERMINED DURING GROUTING OPERATIONS AS DIRECTED BY THE ENGINEER.
8. IN THE EVENT A CHANGE IN ELEVATION OF 1/8 INCH OR MORE OCCURS, GROUTING SHALL BE SUSPENDED AND HOUSTON OFFICE ENGINEERING SHALL BE NOTIFIED ON THE SAME DAY.
9. LEVEL TUBE ASSEMBLIES AS SHOWN IN DETAIL 2 SHALL BE FIRMLY ATTACHED TO EXISTING CONCRETE AND THE BUBBLES CENTERED PRIOR TO START OF GROUTING OPERATIONS.
10. LEVEL TUBES SHALL HAVE A SENSITIVITY OF NOT MORE THAN 30 SECONDS PER DIVISION.
11. GROUT PRESSURES SHALL BE CONTROLLED SUCH THAT BUBBLE MOVEMENTS AWAY FROM THE CENTER OF THE TUBE SHALL NOT EXCEED THE FOLLOWING FOR A TUBE WITH A SENSITIVITY OF 30 SECONDS PER DIVISION:
   A) ON FLOOR SLAB -------- 2 DIVISIONS
   B) ON RETAINING WALL ----- 7 DIVISIONS

REFERENCE

0-H-1191 MAKEUP DISCH. STRUCT. FINAL GRADING

NOTES:

1. TOPOGRAPHIC MAP BASE PREPARED FROM AERIAL CONTOUR MAPPING BY INTERNATIONAL AERIAL MAPPING CO., SAN ANTONIO, TEXAS; FLOWN IN MAY, 1973. CONTOURS SHOWN ARE APPROXIMATE ONLY. GRID SYSTEM SHOWN IS THE STP SITE GEODETIC COORDINATE SYSTEM.
2. THE STP PLANT AND SITE COORDINATE SYSTEM IS A RECTANGULAR GEODETIC COORDINATE SYSTEM. ALL DIMENSIONS, COORDINATE VALUES, ANGLES, AND BEARINGS SHOWN ON THIS DRAWING ARE BASED ON THE ABOVE DESCRIBED COORDINATE SYSTEM. THE STP PLANT AND SITE RECTANGULAR GEODETIC COORDINATE SYSTEM IS REFERENCED TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, AT THE CENTER OF UNIT NO. 1, WHOSE TEXAS STATE PLANE COORDINATES ARE: N-561,565.00 AND E-2,946,360.00; AND WHOSE PLANT AND SITE RECTANGULAR GEODETIC COORDINATES ARE: N-61,565.00 AND E-46,360.00.
3. SITE BOUNDARY SHOWN ON THIS DRAWING IS APPROXIMATE ONLY.
4. INDICATIONS OF STRUCTURES INCLUDING BUILDINGS, SHEDS AND FENCE LINES ARE BASED ON THEIR EXISTENCE AT TIME OF AERIAL MAPPING.
5. RESERVOIR EMBANKMENT, DITCHES, HEAVY HAUL ROAD, AND BARGE SLIP ARE TO BE CONSTRUCTED UNDER SEPARATE SCOPE.
6. SAMPLES OF TYPE-I FILL UNDER THE MAKEUP DISCHARGE STRUCTURE SHALL BE OBTAINED AS FOLLOWS
   a. CORE DRILL THROUGH EXISTING CONCRETE AT THE LOCATIONS SHOWN ON DETAIL 1 MARKED S-1, S-2 & S-3. CORE DRILLS MAY BE RELOCATED UP TO 2 FEET IN ANY DIRECTION IN ORDER TO AVOID CUTTING REINFORCING BAR.
   b. CORE DRILLS SHALL BE 3 INCH DIA. OR LARGER.
   c. SAMPLES OF INPLACE TYPE-I FILL SHALL BE OBTAINED UNDER THE DIRECTION OF THE EMBANKMENT ENGINEER.
   d. SAMPLES OF TYPE-I FILL SHALL BE TESTED AS DIRECTED BY THE EMBANKMENT ENGINEER.
   e. CORE HOLES & HOLES IN TYPE-I FILL SHALL BE FILLED W/NON-SHRINK GROUT IN ACCORDANCE W/SPEC 2A010CS1009

SUPERSEDES B&R. DWG. 9-Y-50 0-H-4110 REV. 3

NO.	REVISION	DFT	CKR	GL	EGS	PEM	DATE
6	INCORP. DCN-1	[illegible]	[illegible]	[illegible]	[illegible]	N/A	07-17-85
5	INCORP. FCR'S BC-01258 & BC-01325	[illegible]	PKM	[illegible]	[illegible]	[illegible]	12-14-84
4	ISSUED FOR CONSTRUCTION	NRA	[illegible]	[illegible]	[illegible]	[illegible]	1/7/84

CHIEF ENGR: N/A

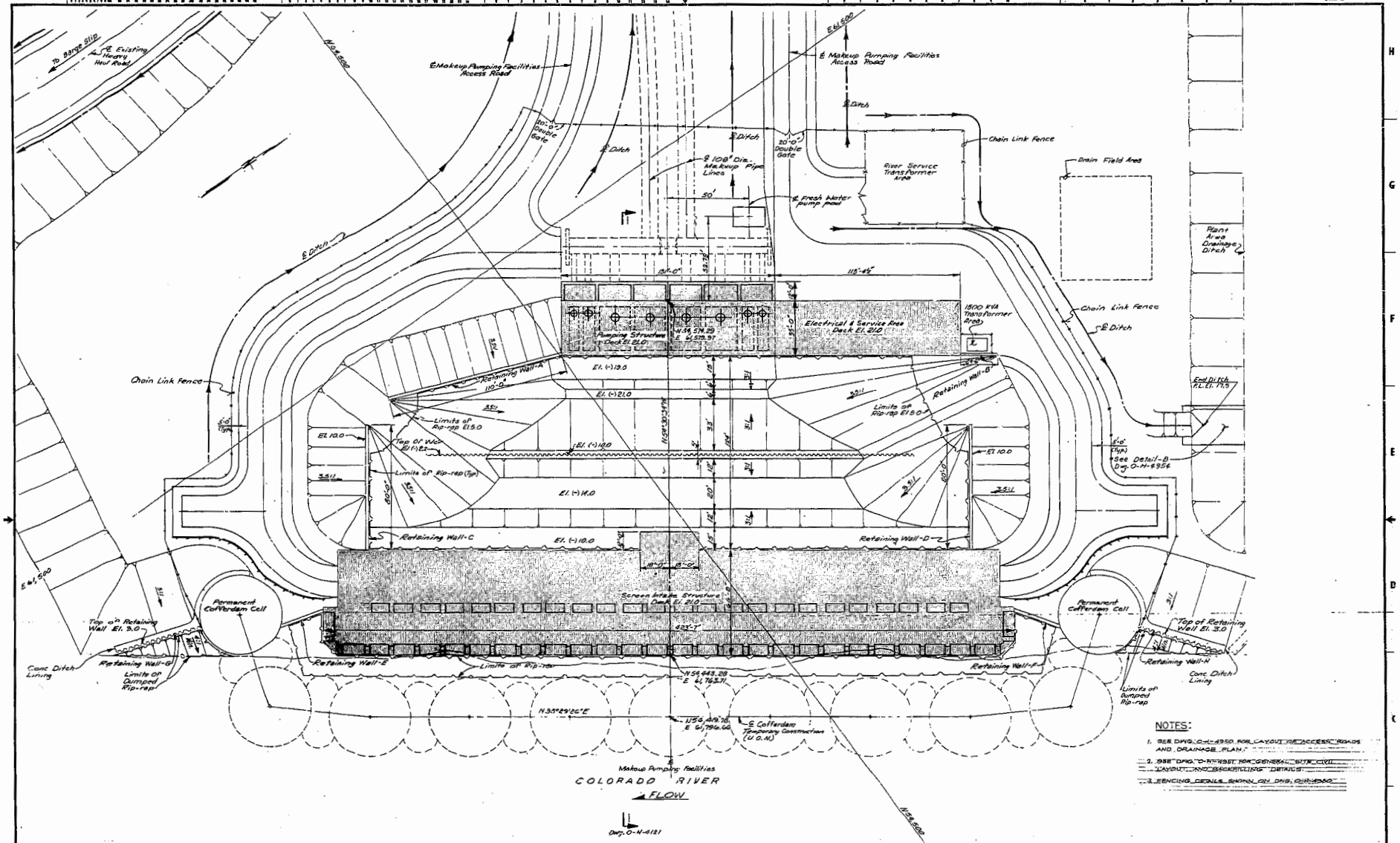
BECHTEL POWER CORPORATION
HOUSTON, TEXAS
HOUSTON LIGHTING & POWER CO.
SOUTH TEXAS PROJECT

RESERVOIR MAKEUP PUMPING FACILITIES
GENERAL · LAYOUT

SCALE	JOB NO.	DRAWING NO.	REV.
1" = 200'	14926	9-Y-50 0-H-4110	6

30X

1985



NOTES:

1. SEE DWG. O-H-4950 FOR LAYOUT OF ACCESS ROADS AND DRAINAGE PLAN.
2. SEE DWG. O-H-4951 FOR GENERAL SITE CIVIL LAYOUT AND BACKFILLING DETAILS.
3. FENCING DETAILS SHOWN ON DWG. O-H-4950

SUPERSEDES B.& R. DWG. 9-Y-50 O-H-4120 REV. 6

NO.	REVISION	DFT	CKR	GL	EGS	PEM	DATE
7	ISSUED FOR CONSTRUCTION	MRA	[illegible]	NV	WKV	IS	11/1/82

CHIEF ENGR

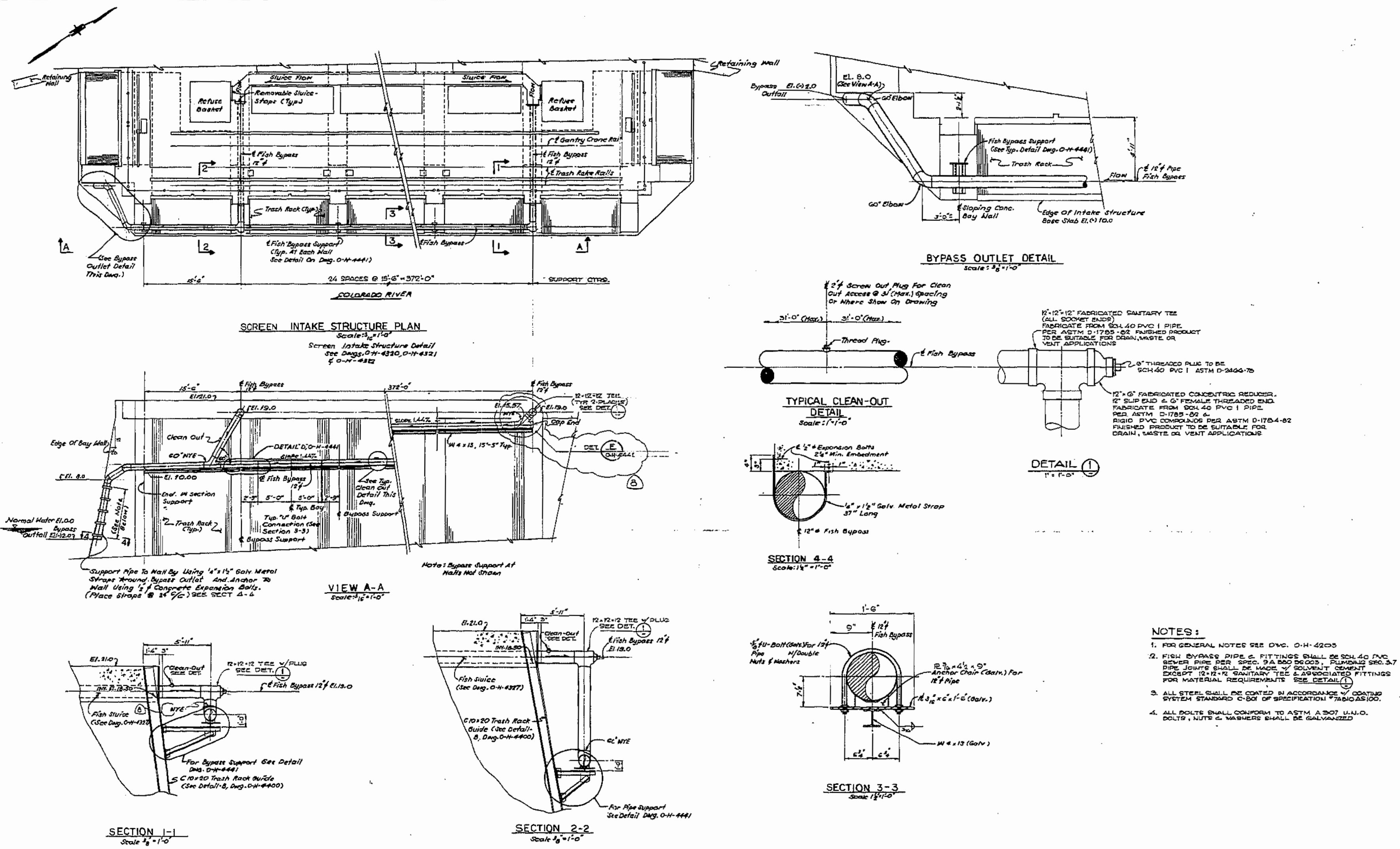
BECHTEL POWER CORPORATION
HOUSTON, TEXAS

HOUSTON LIGHTING & POWER CO.
SOUTH TEXAS PROJECT

RESERVOIR MAKEUP PUMPING FACILITIES
SCREEN INTAKE & PUMPING STRUCTURES
LAYOUT

SCALE	JOB NO.	DRAWING NO.	REV.
1"=20'	14926	9-Y-50 O-H-4120	7

0-H-4440



NOTES:

1. FOR GENERAL NOTES SEE DWG. 0-H-4205
2. FISH BYPASS PIPE & FITTINGS SHALL BE SCH. 40 PVC SEWER PIPE PER SPEC. 9A 880 DS003, PLUMBING SEC. 3.7 PIPE JOINTS SHALL BE MADE W/ SOLVENT CEMENT EXCEPT 12×12×12 SANITARY TEE & ASSOCIATED FITTINGS FOR MATERIAL REQUIREMENTS SEE DETAIL 1
3. ALL STEEL SHALL BE COATED IN ACCORDANCE W/ COATING SYSTEM STANDARD C-801 OF SPECIFICATION #7A810AS100.
4. ALL BOLTS SHALL CONFORM TO ASTM A307 U.N.O. BOLTS, NUTS & WASHERS SHALL BE GALVANIZED

REFERENCE

0-H-39008 FISH BYPASS LINE PLATFORMS

ISSUED IN REFERENCE TO DCP 0-C-0001-00

SUPERSEDES B.& R. DWG. 9-Y-50 0-H-4440 REV. 3

	NO.	REVISION	DFT	CKR	GL		PEM	DATE
N/A	8	REV'D NORTH END OF FISH BYPASS						04-02-85
N/A	7	INCORP. DCN. 4 (DCN. 4 SUPERSEDES DCN. 3)						9/16/84
N/A	6	INCORP. DCN. 2 — INCORP. DCN. FLOW REV. 5	AR					9-16-83
N/A	5	REV'D: FISH BYPASS ELEV. & SLOPE — INCORP. DCN. 1						3-14-83
	4	REV'D AS NOTED & ISSUED FOR CONSTRUCTION						11-19-82

CHIEF ENGR: N/A

BECHTEL ENERGY CORPORATION
HOUSTON, TEXAS

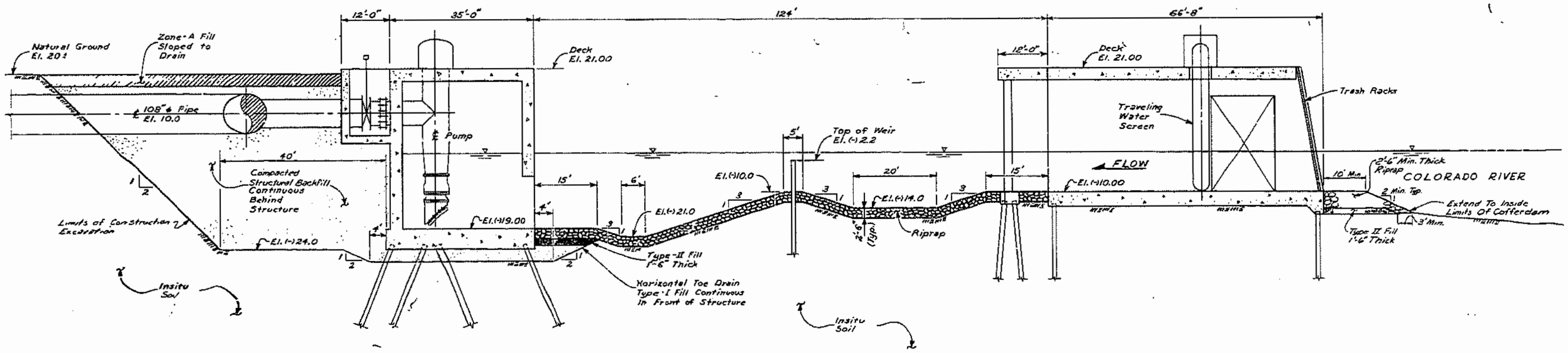
HOUSTON LIGHTING & POWER CO.
SOUTH TEXAS PROJECT

RESERVOIR MAKEUP PUMPING FACILITIES
SCREEN INTAKE STRUCTURE FISH BYPASS
SHEET 1 OF 2

SCALE	JOB NO.	DRAWING NO.		REV.
AS NOTED	14926	9-Y-50	0-H-4440	8

30X

O-H-4121



SECTION 1-1

Dwg. O-H-4120
Scale: 1"=10'

NOTES:

1 – See Notes on Drawing O-H-4110.
2 – See Drawing O-H-4950 for Layout of Roads, Fencing & Drainage Ditches.
3 – See Drawing O-H-4120 for Plan Layout of Makeup Pumping Facilities.
4 – Areas under foundation slabs which have been over-excavated shall be brought up to lines and grades as shown on the drawings with compacted Type I fill material or Structural Backfill. Structural Backfill shall conform to the material requirements of South Texas Project Specification 3Y069YS029
5 – Type I fill material and Structural Backfill material shall be spread in uniform horizontal layers, each not more than 12 inches thick after compaction and shall be compacted to a relative density which, when averaged by the moving average method, will be at least 80% of the maximum relative density as determined by ASTM Designation D 2049-69. The moving average will be determined as follows: In a series of 10 consecutive tests, the relative density shall average at least 80%. No test result shall be lower than 75%. No more than 2 test results shall be lower than 80%. See Drawing O-H-4203, General Notes #28 and #29.
6 – The density of the Type I fill material and the Structural Backfill material shall be tested at each structure at least once per shift during which Type I fill or Structural Backfill material is placed. Also, hand tamped Type I fill material or Structural Backfill material shall be tested at least once every 200 cubic yards and machine compacted material shall be tested at least once every 1,000 cubic yards.

(8)

SUPERSEDES B.& R. DWG. 9-Y-50 O-H-4121 REV. 6

NO.	REVISION	DFT	CKR	GL	EGS	PEM	DATE
8	SICORP. D.C.R. D.C.N. 1 / 9Y50014121-0						09-30-85
7	ISSUED FOR CONSTRUCTION						

CHIEF ENGR: N/A

BECHTEL POWER CORPORATION
HOUSTON, TEXAS

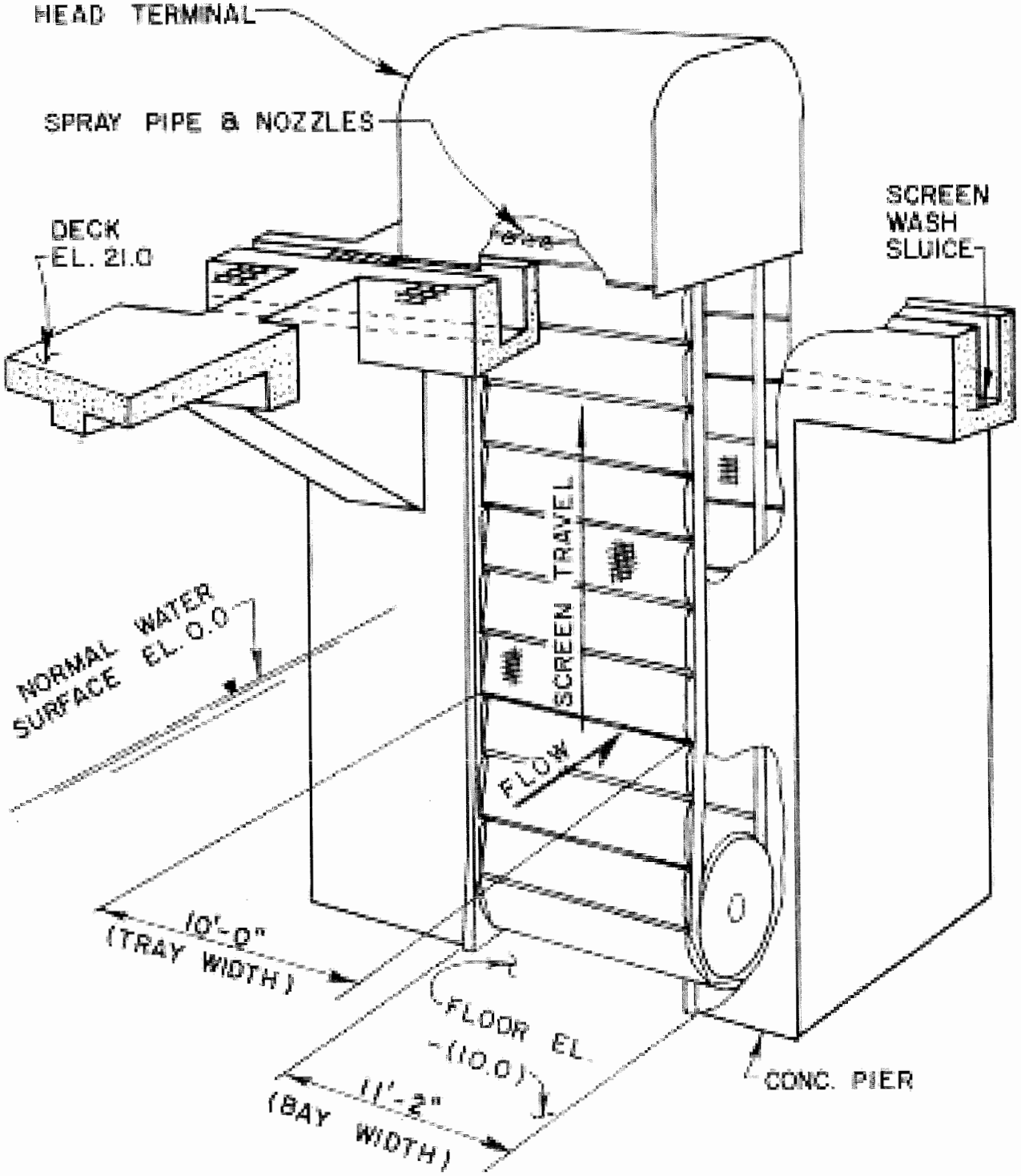
HOUSTON LIGHTING & POWER CO.
SOUTH TEXAS PROJECT

RESERVOIR MAKEUP PUMPING FACILITIES
SCREEN INTAKE & PUMPING STRUCTURES
SECTION

SCALE	JOB NO.	DRAWING NO.	REV.
AS SHOWN	14926	9-Y-50 O-H-4121	8

30X

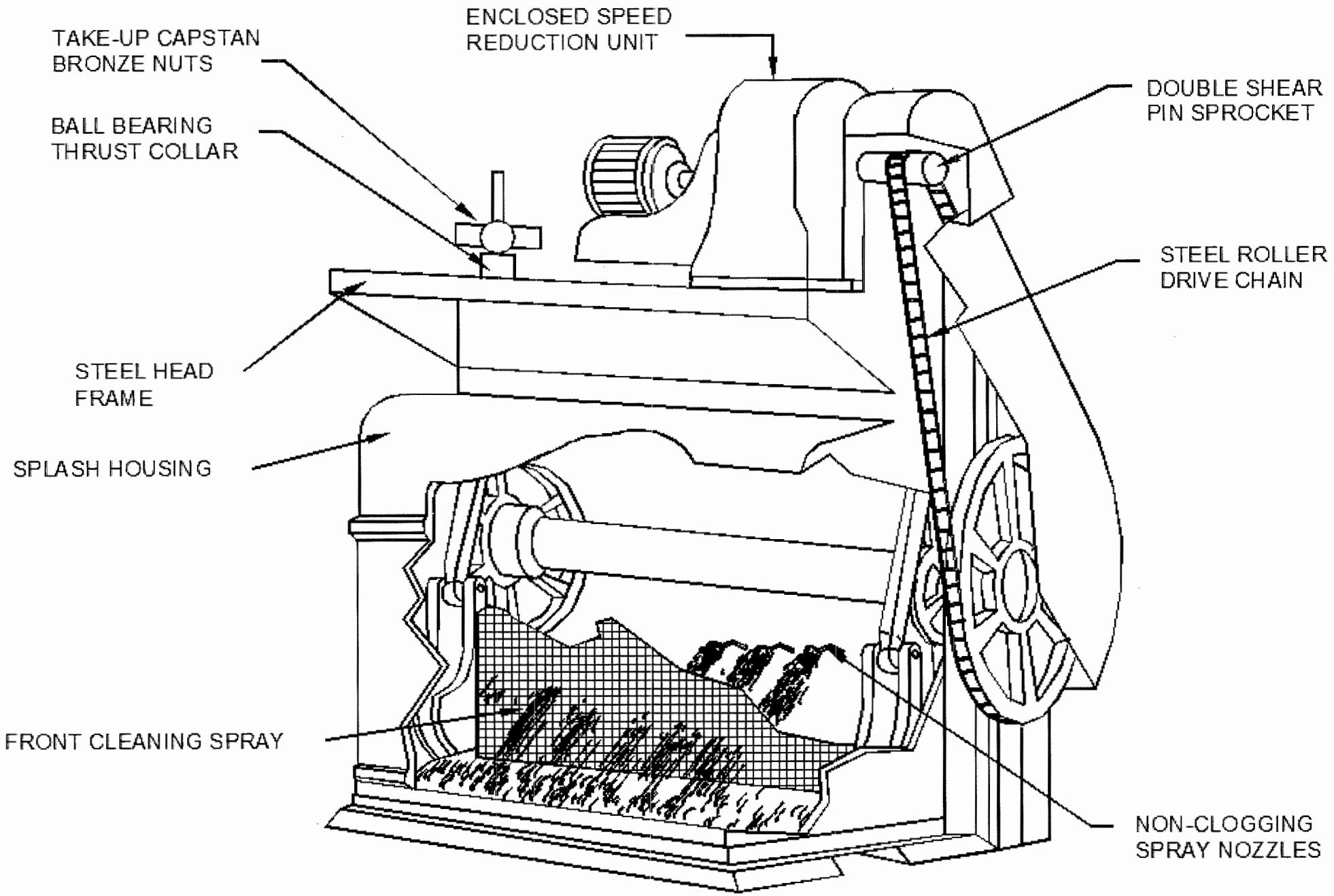
1985

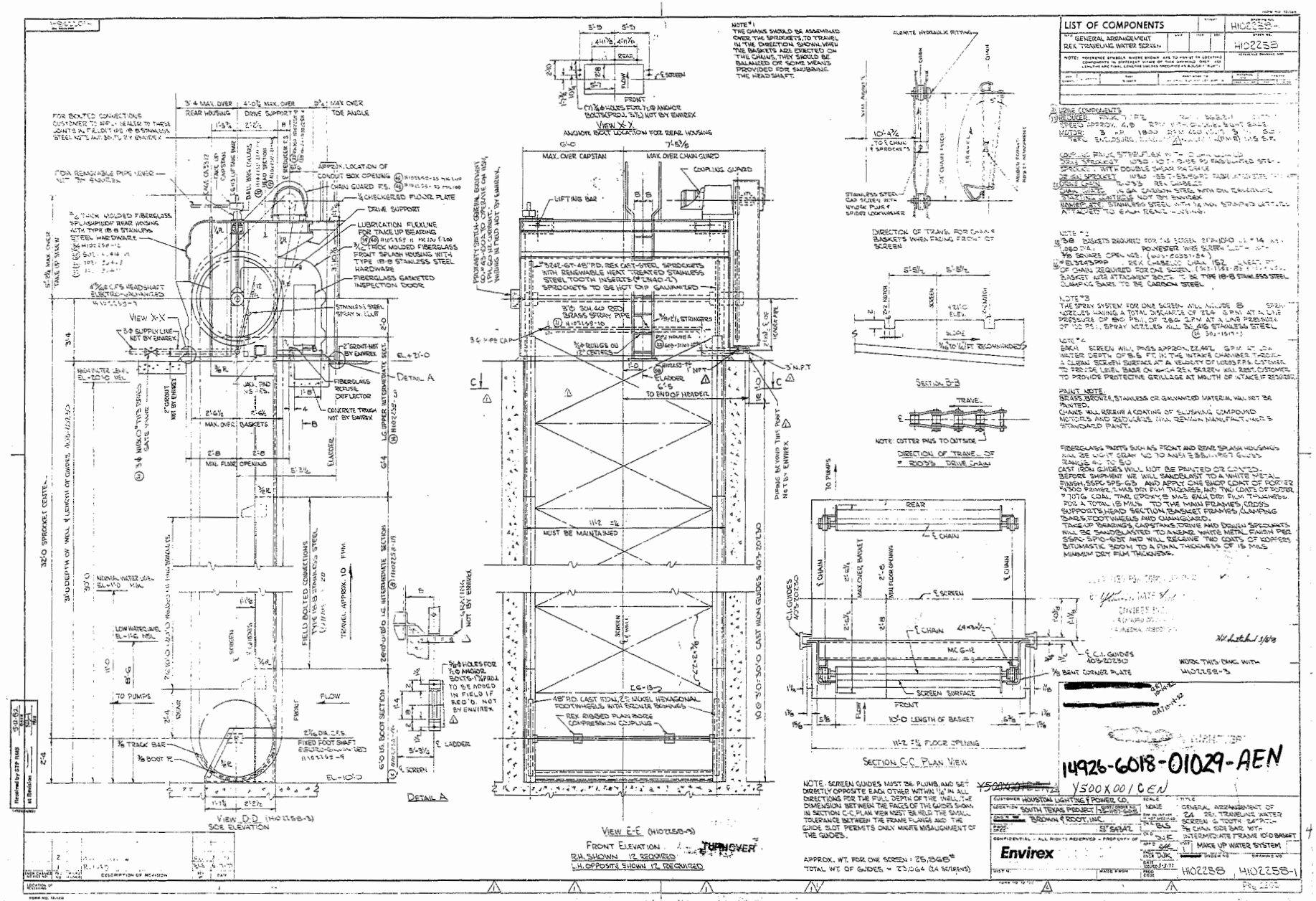


SOUTH TEXAS PROJECT
UNITS 1 & 2

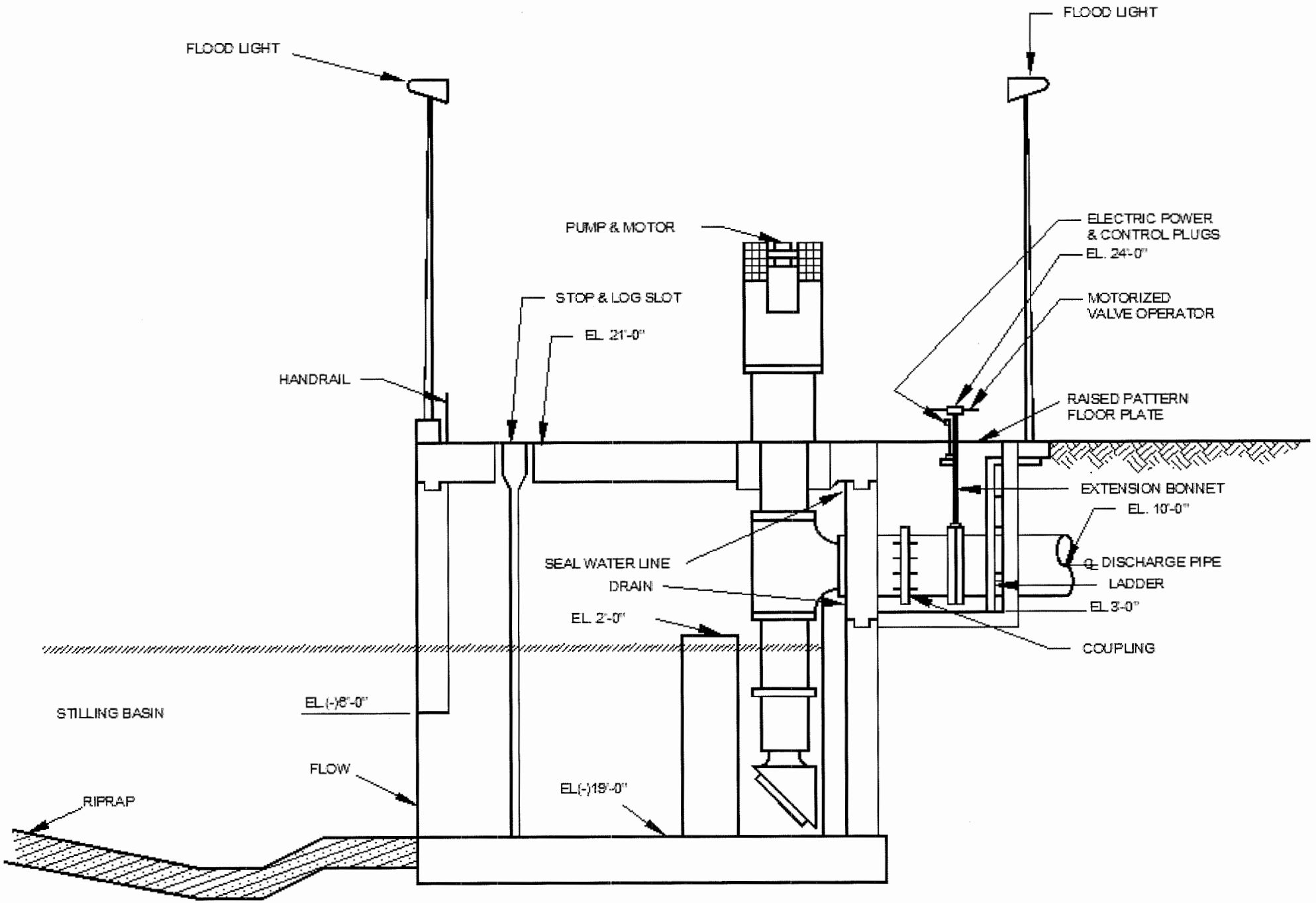
TYPICAL TRAVELING WATER SCREEN
AT
MAKEUP INTAKE STRUCTURE

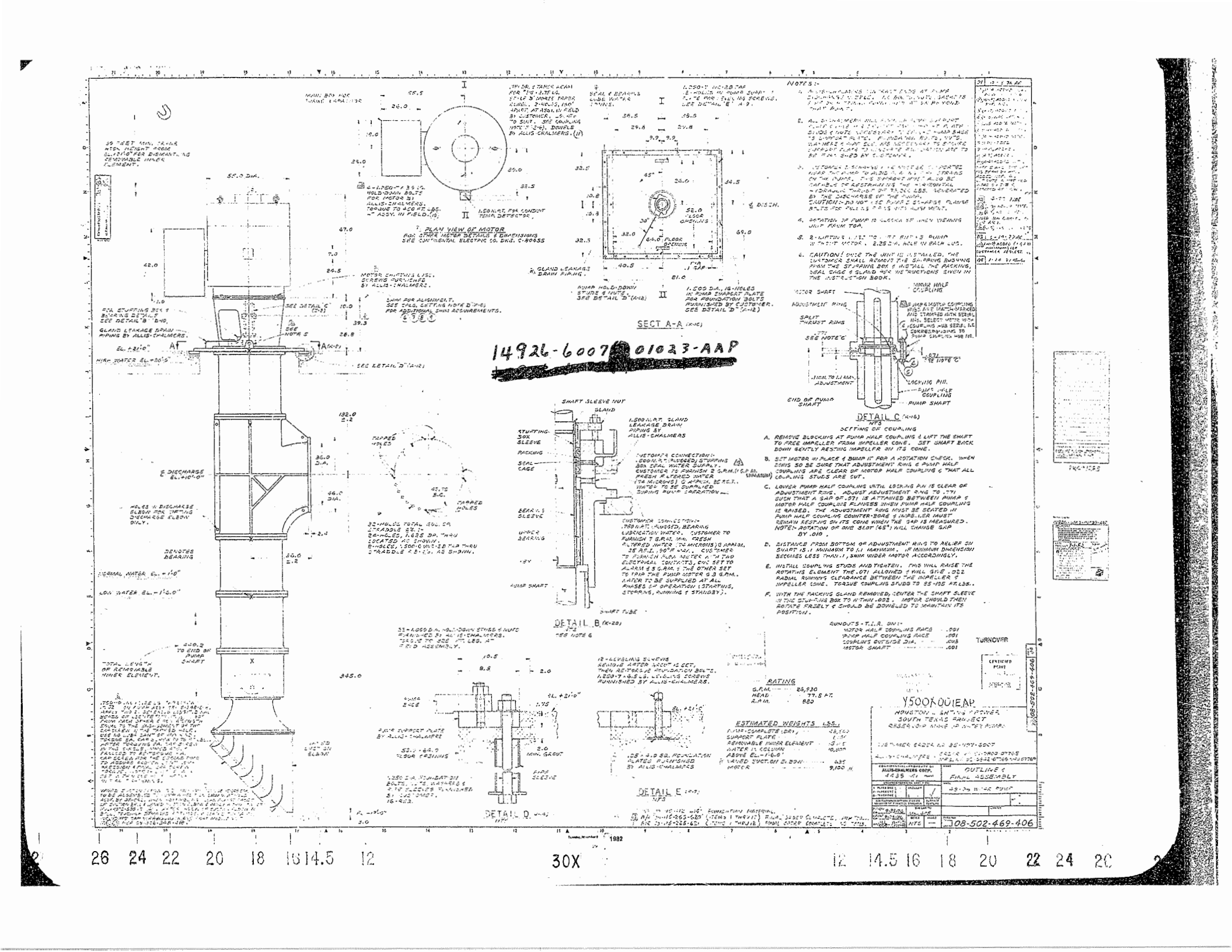
FIGURE 3.4-3

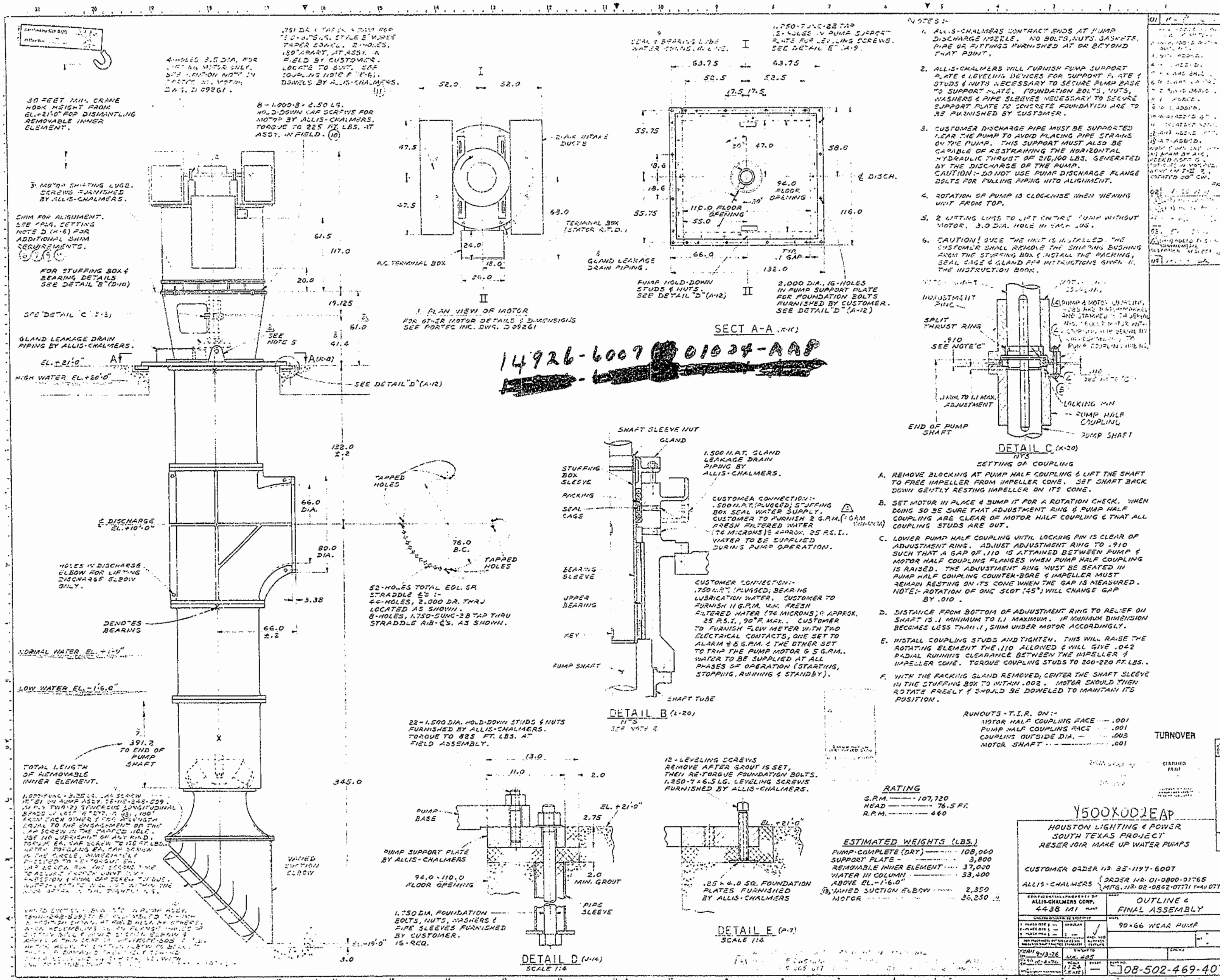

TAKE-UP CAPSTAN
BRONZE NUTS
BALL BEARING
THRUST COLLAR
ENCLOSED SPEED
REDUCTION UNIT
DOUBLE SHEAR
PIN SPROCKET
STEEL ROLLER
DRIVE CHAIN
STEEL HEAD
FRAME
SPLASH HOUSING
FRONT CLEANING SPRAY
NON-CLOGGING
SPRAY NOZZLES



20 18 16 14.5 12 24X 12 14.5 16 18 20 2


FLOOD LIGHT
FLOOD LIGHT
PUMP & MOTOR
ELECTRIC POWER
& CONTROL PLUGS
EL. 24'-0"
STOP & LOG SLOT
EL. 21'-0"
MOTORIZED
VALVE OPERATOR
HANDRAIL
RAISED PATTERN
FLOOR PLATE
EXTENSION BONNET
EL. 10'-0"
SEAL WATER LINE
℄ DISCHARGE PIPE
DRAIN
LADDER
EL. 3'-0"
EL. 2'-0"
COUPLING
STILLING BASIN
EL.(-)8'-0"
FLOW
EL.(-)19'-0"
RIPRAP


14926-6007 01023-AAP
SECT A-A
PLAN VIEW OF MOTOR
DETAIL B
DETAIL C
DETAIL D
DETAIL E
NOTES:-
SETTING OF COUPLING
RATING
G.P.M. 26,930
HEAD 77.5 FT.
R.P.M. 880
ESTIMATED WEIGHTS LBS.
PUMP-COMPLETE (DRY) 42,500
SUPPORT PLATE 1,150
REMOVABLE INNER ELEMENT 10,000
WATER IN COLUMN ABOVE EL.-1'-6" 10,000
FLARED SUCTION ELBOW 635
MOTOR 9,100
TURNOVER
Y500X00IEAP
HOUSTON LIGHTING & POWER
SOUTH TEXAS PROJECT
OUTLINE & FINAL ASSEMBLY
08-502-469-406


NOTES:
1. ALLIS-CHALMERS CONTRACT ENDS AT PUMP DISCHARGE NOZZLE. NO BOLTS, NUTS, GASKETS, PIPE OR FITTINGS FURNISHED AT OR BEYOND THAT POINT.
2. ALLIS-CHALMERS WILL FURNISH PUMP SUPPORT PLATE & LEVELING DEVICES FOR SUPPORT PLATE; STUDS & NUTS NECESSARY TO SECURE PUMP BASE TO SUPPORT PLATE. FOUNDATION BOLTS, NUTS, WASHERS & PIPE SLEEVES NECESSARY TO SECURE SUPPORT PLATE TO CONCRETE FOUNDATION ARE TO BE FURNISHED BY CUSTOMER.
3. CUSTOMER DISCHARGE PIPE MUST BE SUPPORTED NEAR THE PUMP TO AVOID PLACING PIPE STRAINS ON THE PUMP. THIS SUPPORT MUST ALSO BE CAPABLE OF RESTRAINING THE HORIZONTAL HYDRAULIC THRUST OF 216,100 LBS. GENERATED BY THE DISCHARGE OF THE PUMP. CAUTION:- DO NOT USE PUMP DISCHARGE FLANGE BOLTS FOR PULLING PIPING INTO ALIGNMENT.
4. ROTATION OF PUMP IS CLOCKWISE WHEN VIEWING UNIT FROM TOP.
5. 2 LIFTING LUGS TO LIFT ENTIRE PUMP WITHOUT MOTOR. 3.0 DIA. HOLE IN EACH LUG.
6. CAUTION! ONCE THE UNIT IS INSTALLED, THE CUSTOMER SHALL REMOVE THE SHIPPING BUSHING FROM THE STUFFING BOX & INSTALL THE PACKING, SEAL CAGE & GLAND PER INSTRUCTIONS GIVEN IN THE INSTRUCTION BOOK.
30 FEET MIN. CRANE HOOK HEIGHT FROM EL.+21'0" FOR DISMANTLING REMOVABLE INNER ELEMENT.
4-HOLES 3.5 DIA. FOR LIFTING MOTOR ONLY.
8-1.000-8 x 2.50 LG. HOLD-DOWN CAP SCREWS FOR MOTOR BY ALLIS-CHALMERS. TORQUE TO 225 FT. LBS. AT ASSY. IN FIELD.
3-MOTOR SHIFTING LUGS. SCREWS FURNISHED BY ALLIS-CHALMERS.
FOR STUFFING BOX & BEARING DETAILS SEE DETAIL "B" (D-10)
GLAND LEAKAGE DRAIN PIPING BY ALLIS-CHALMERS.
EL.+21'-0"
HIGH WATER EL.+20'-0"
SEE DETAIL "D" (A-12)
1. PLAN VIEW OF MOTOR
SECT A-A
PUMP HOLD-DOWN STUDS & NUTS. SEE DETAIL "D" (A-12)
2.000 DIA., 16-HOLES IN PUMP SUPPORT PLATE FOR FOUNDATION BOLTS FURNISHED BY CUSTOMER. SEE DETAIL "D" (A-12)
14926-6007 [redacted] 01034-AAP
[redacted]
DETAIL C (K-20)
SETTING OF COUPLING
A. REMOVE BLOCKING AT PUMP HALF COUPLING & LIFT THE SHAFT TO FREE IMPELLER FROM IMPELLER CONE. SET SHAFT BACK DOWN GENTLY RESTING IMPELLER ON ITS CONE.
B. SET MOTOR IN PLACE & BUMP IT FOR A ROTATION CHECK. WHEN DOING SO BE SURE THAT ADJUSTMENT RING & PUMP HALF COUPLING ARE CLEAR OF MOTOR HALF COUPLING & THAT ALL COUPLING STUDS ARE OUT.
C. LOWER PUMP HALF COUPLING UNTIL LOCKING PIN IS CLEAR OF ADJUSTMENT RING. ADJUST ADJUSTMENT RING TO .910 SUCH THAT A GAP OF .110 IS ATTAINED BETWEEN PUMP & MOTOR HALF COUPLING FLANGES WHEN PUMP HALF COUPLING IS RAISED. THE ADJUSTMENT RING MUST BE SEATED IN PUMP HALF COUPLING COUNTER-BORE & IMPELLER MUST REMAIN RESTING ON ITS CONE WHEN THE GAP IS MEASURED. NOTE:- ROTATION OF ONE SLOT (45°) WILL CHANGE GAP BY .010.
D. DISTANCE FROM BOTTOM OF ADJUSTMENT RING TO RELIEF ON SHAFT IS .1 MINIMUM TO 1.1 MAXIMUM. IF MINIMUM DIMENSION BECOMES LESS THAN .1, SHIM UNDER MOTOR ACCORDINGLY.
E. INSTALL COUPLING STUDS AND TIGHTEN. THIS WILL RAISE THE ROTATING ELEMENT THE .110 ALLOWED & WILL GIVE .042 RADIAL RUNNING CLEARANCE BETWEEN THE IMPELLER & IMPELLER CONE. TORQUE COUPLING STUDS TO 200-220 FT. LBS.
F. WITH THE PACKING GLAND REMOVED, CENTER THE SHAFT SLEEVE IN THE STUFFING BOX TO WITHIN .002. MOTOR SHOULD THEN ROTATE FREELY & SHOULD BE DOWELED TO MAINTAIN ITS POSITION.
RUNOUTS - T.I.R. ON:-
MOTOR HALF COUPLING FACE .001
PUMP HALF COUPLING FACE .001
COUPLING OUTSIDE DIA. .005
MOTOR SHAFT .001
TURNOVER
DETAIL B (L-20)
CUSTOMER CONNECTION:- .500 N.P.T. (PLUGGED) STUFFING BOX SEAL WATER SUPPLY. CUSTOMER TO FURNISH 2 G.P.M. FRESH FILTERED WATER (74 MICRONS) @ APPROX. 25 P.S.I., TO BE SUPPLIED DURING PUMP OPERATION.
CUSTOMER CONNECTION:- .750 N.P.T. (PLUGGED) BEARING LUBRICATION WATER. CUSTOMER TO FURNISH 11 G.P.M. MIN. FRESH FILTERED WATER (74 MICRONS) @ APPROX. 25 P.S.I., 90°F MAX. CUSTOMER TO FURNISH FLOW METER WITH TWO ELECTRICAL CONTACTS, ONE SET TO ALARM @ 8 G.P.M. & THE OTHER SET TO TRIP THE PUMP MOTOR @ 5 G.P.M. WATER TO BE SUPPLIED AT ALL PHASES OF OPERATION (STARTING, STOPPING, RUNNING & STANDBY).
NORMAL WATER EL.+1'-0"
LOW WATER EL.-1'-6.0"
TOTAL LENGTH OF REMOVABLE INNER ELEMENT.
22-1.500 DIA. HOLD-DOWN STUDS & NUTS FURNISHED BY ALLIS-CHALMERS. TORQUE TO 825 FT. LBS. AT FIELD ASSEMBLY.
12-LEVELING SCREWS. REMOVE AFTER GROUT IS SET, THEN RE-TORQUE FOUNDATION BOLTS. 1.250-7 x 6.5 LG. LEVELING SCREWS FURNISHED BY ALLIS-CHALMERS.
.25 x 6.0 SQ. FOUNDATION PLATES FURNISHED BY ALLIS-CHALMERS
1.750 DIA. FOUNDATION BOLTS, NUTS, WASHERS & PIPE SLEEVES FURNISHED BY CUSTOMER. 16-REQ.
DETAIL D (J-14) SCALE 1:4
DETAIL E (F-7) SCALE 1:4
RATING
G.P.M. 107,720
HEAD 76.5 FT.
R.P.M. 440
ESTIMATED WEIGHTS (LBS.)
PUMP-COMPLETE (DRY) 108,060
SUPPORT PLATE 3,800
REMOVABLE INNER ELEMENT 37,020
WATER IN COLUMN ABOVE EL.-1'6.0" 53,400
VANED SUCTION ELBOW 2,350
MOTOR 36,250
Y500X002EAP
HOUSTON LIGHTING & POWER
SOUTH TEXAS PROJECT
RESERVOIR MAKE UP WATER PUMPS
CUSTOMER ORDER NO. 35-1197-6007
ALLIS-CHALMERS ORDER NO. 01-0800-01765 MFG. NO. 02-0842-07771 THRU 07774
ALLIS-CHALMERS CORP.
OUTLINE & FINAL ASSEMBLY
90x66 WEAR PUMP
08-502-469-407
1982
30X

Cooling Water Intake Structure Data

Attachment N

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

b. Provide the following information as an attachment.

1. *A narrative description of the configuration of each CWIS, annual and daily operation, including any seasonal changes, and where it is located in the water body and in the water column.*

The South Texas Project Electric Generating Station (STPEGS) Reservoir Makeup Pumping Facility (RMPF) Cooling Water Intake Structure is located on the right descending (west) bank of the Colorado River near river mile 14.6 (28°46'27.97"N, 95°59'51.84"W). The RMPF Cooling Water Intake Structure withdraws water through a 406-foot long intake along the shoreline of the Colorado River. Water from the river flows through trash racks with 4-inch bar spacing, then through traveling screens, and over a weir into an embayment before entering the pumps and subsequently into a pipeline delivering makeup water to the 7,000-acre main cooling reservoir (MCR), an impoundment of this closed cycle recirculating system.

At the RMPF Cooling Water Intake Structure, 12 vertical traveling screens exist, each with ⅜-inch mesh and a 13.5-foot width. The bottom of the screens are positioned 10 feet below mean sea level (MSL) in the Colorado River based on a water surface elevation of 0 feet MSL. When operating, screen rotation and wash are initiated by differential pressure or optionally can be operated manually dependent upon debris loading. Fish swimming through the trash racks can move laterally along the face of the intake structure and exit through the trash racks. Fish and debris impinged on the intake screens would be washed (via screen wash) into a sluice and fish bypass and returned back to the Colorado River downstream of the intake.

New water to the MCR is provided by direct rainfall, as it is a perched reservoir receiving no runoff, and make-up water diverted periodically from the Colorado River. The pumps are operated intermittently based on reservoir level, river flow and the operability of the reservoir pumping facility. Conditions of river water diversions are limited to 55% of the river flow and only when river flow exceeds 300 cubic feet per second (cfs). While the design intake flow (DIF) (387.792 million gallons per day [MGD]) could result in the removal of 22.6% of the mean annual river flow (2,648 cfs-1,711 MGD), the actual river flow withdrawal over the past 3 years occurring from intermittent diversion to the MCR is limited to 2.05%. Please see Attachments M and P for operational use and status.

2. *Engineering calculations for each CWIS.*

The RMPF Cooling Water Intake Structure consists of four makeup pumps. Pumps 1 & 2 are small volume capacity (26,930 gallons per minute [gpm] each) and Pumps 3 & 4 are large volume capacity (107,720 gpm each). The four pumps have a combined design intake flow (DIF) of 387.792 MGD. The following provides the calculation for estimating the DIF: 26,930 + 107,720 X 2 pumps X 60 min X 24 hours/ 1,000,000 = DIF. The two smaller pumps each exist with a 36-inch discharge and the two larger pumps each have a 66-inch discharge. All four pumps discharge into a common header subsequently providing makeup water to the MCR through a 1-mile long, 108-inch pipeline.

Flow distribution and water balance diagrams are provided as Attachment H. Engineering drawings of the RMPF Cooling Water Intake Structure are provided as Appendix 1 in Attachment M.

Source Water Physical Data

Attachment O

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

b. Provide the following information as an attachment.

1. *A narrative description of the source water for each CWIS, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports your determination of the water body type where each cooling water intake structure is located.*

South Texas Project Electrical Generating Station (STPEGS) withdraws water from the Colorado River for cooling water purposes via the Reservoir Makeup Pumping Facility (RMPF) Cooling Water Intake Structure. The RMPF Cooling Water Intake Structure is located on the west bank of the lower Colorado River approximately 13 miles southwest of Bay City, Texas and 10 miles north of Matagorda Bay (Figure 1). Water from the Colorado River, a water of the U.S., provides makeup water for cooling water losses to the main cooling reservoir (MCR), not a water of the U.S.

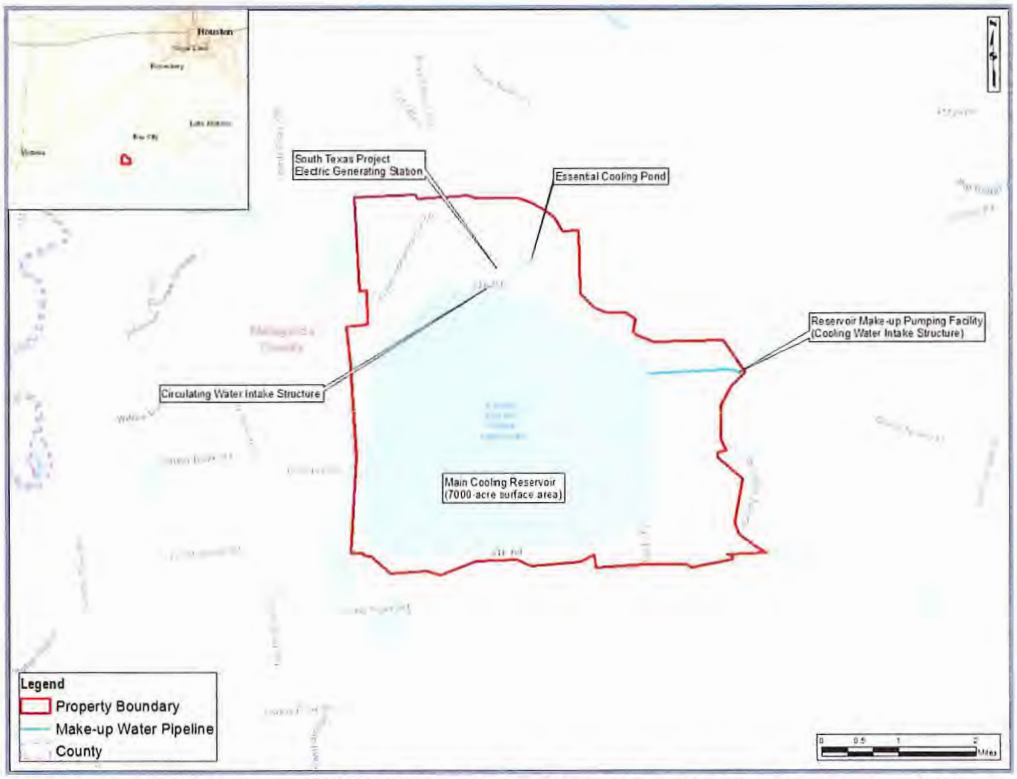


FIGURE 1: General Location of the STPEGS RMPF Cooling Water Intake Structure within the Colorado River

The Colorado River is approximately 300 feet across at the RMPF Cooling Water Intake Structure location and water depth ranges from approximately 12 to 19 feet (Figure 2). The RMPF Cooling Water Intake Structure is located parallel to the shoreline of the Colorado River. Water enters the RMPF Cooling Water Intake Structure through a coarse trash rack and traveling mesh screens into a siltation basin before entering the pumping station. The water is pumped from the siltation basin to the MCR through one buried 108-inch diameter pipeline.

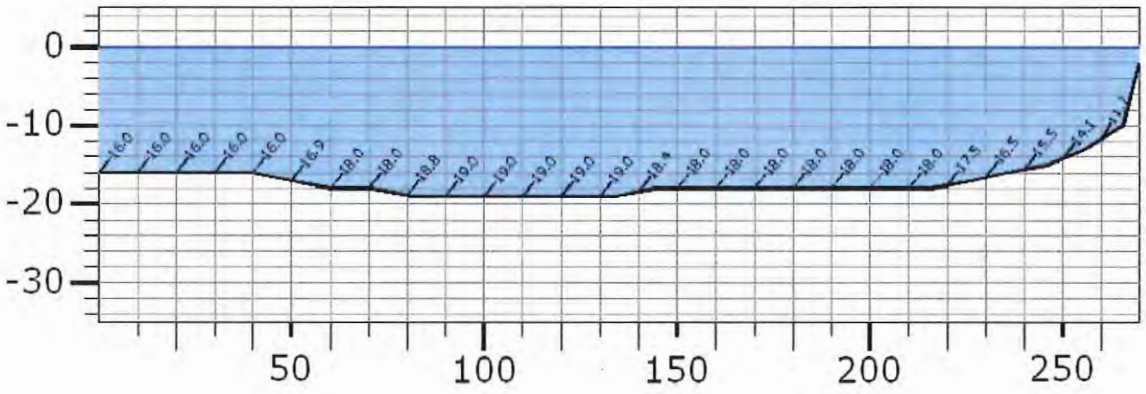


FIGURE 2: Cross Sectional Bathymetry in the location of the STPEGS RMPF Cooling Water Intake Structure
Source: MWH 2007[1]

The United States Geological Survey (USGS) operates monitoring stations in the Colorado River. The nearest station (08162501) is located in the vicinity of the RMPF Cooling Water Intake Structure location. Data from this station were available from February 2012 through October 2018. Water temperature data collected from 2012 to 2018 show the temperature ranges from 12° C to 32.1° C, with highest temperatures between the months of May and September and lowest temperatures in December (Figure 3). Data collected by ENSR (2008)[2] during trawl sampling ranged from 12.3° C to 31.0° C. A similar trend was observed with highest temperatures between June and September and lowest temperatures in January (Figure 4).

Specific conductance data from USGS 08162500 in the Colorado River were used to assess conditions at the RMPF Cooling Water Intake Structure location. Data collected from 2012 through 2018 were converted to salinity (practical salinity units [psu]). Salinity ranged from 0.1 to 7.1 psu (Figure 5). Data collected by ENSR (2008) during trawl sampling ranged from 0.2 to 8.2 psu at the surface and 0.2 to 23.0 psu at the bottom (Figure 6).

[1] MWH. 2007. South Texas Project Electric Generating Station, Wadsworth, Texas, Cooling Water Blowdown Facility. Supplement to Colorado River Streambank Revetment Assessment. Prepared for STPNOC. January 2007.
[2] ENSR. 2008. Aquatic Ecology – Colorado River Monitoring Report: Unit 3 and 4 Licensing

FIGURE 3: Average Annual Water Temperature by Month from 2012-2018 at USGS 08162501 Colorado River near Wadsworth, TX in the Colorado River
Source: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08162501

FIGURE 4: Average Annual Water Temperature by Month from 2007-2008 on the lower Colorado River
Source: ENSR 2008

FIGURE 5: Average Annual Salinity by Month from 2012-2018 at USGS 08162501 Colorado River near Wadsworth, TX in the Colorado River
Source: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08162501

FIGURE 6: Average Annual Salinity by Month from 2007-2008 on the lower Colorado River
Source: ENSR 2008

2. *A narrative description of the source waterbody's hydrological and geomorphological features.*

The Colorado River originates south of Lubbock and flows generally southeast for 862 miles before emptying into the Gulf of Mexico at Matagorda Bay. Major tributaries include Concho River, Pecan Bayou, Llano River, San Saba River, and Pedernales River. The Colorado River Basin is approximately 42,318 square miles and includes almost 15% of Texas. The watershed includes several major metropolitan areas, including Midland-Odessa, San Angelo, and Austin, as well as hundreds of smaller towns and communities. The section of the river where STPEGS is located is a slow-moving, scenic river that is wide and deep.[3,4]

The Colorado River contains several man-made reservoirs including Lake Buchanan, Inks Lake, Lake Lyndon B. Johnson, Lake Marble Falls, Lake Travis, Lake Austin, and Lady Bird Lake, collectively referred to as the Highland Lakes. Three reservoirs located upstream of the Highland Lakes, Lake J.B. Thomas, E.V. Spence Reservoir, and O.H. Ivie Reservoir are owned and operated by the Colorado River Municipal Water District. The Upper Colorado River Authority and the Lower Colorado River Authority manage flood control and use of the Colorado River.[5]

The RMPF Cooling Water Intake Structure is located in the Floodplains and Low Terraces of the Western Gulf Coastal Plain ecoregion. This region consists of bottomland forests of pecan, water oak, southern live oak and elm, with some bald cypress on larger streams. Land cover is a mix of forest, cropland, and pasture.

The RMPF Cooling Water Intake Structure is located within Segment 1401 – Colorado River Tidal of the Colorado River Basin, which extends from the confluence with the Gulf of Mexio in Matagorda County to a point 1.3 miles downstream of the Missouri-Pacific Railroad in Matagorda County. The reservoir has been designated for the following uses by the TCEQ: primary contact recreation, high aquatic life use, and general use. The numeric water quality criteria specified for the river segment include a minimum 24-hour mean dissolved oxygen at any point of 4.0 mg/L, a pH range of 6.5 to 9.0 units, an indicator bacteria count of 35 colonies per 100 milliliters (mL), and a maximum temperature of 95 °F (35 °C).[6]

The RMPF Cooling Water Intake Structure is located on the west bank of the Colorado River approximately 14.6 miles upstream from Matagorda Bay. Water enters the intake structure via a 406-foot long intake structure located parallel to the shoreline in channel

---

[3] About the River. 2018. Colorado River Alliance. https://coloradoriver.org/about-the-river/

[4] An Analysis of Texas Waterways, A Report on the Physical Characteristics of Rivers, Streams, and Bayous in Texas. No date. Texas Parks & Wildlife Department. https://tpwd.texas.gov/publications/pwdpubs/pwd_rp_t3200_1047/15_c_tx_colorado.phtml

[5] Colorado River (Texas). No date. U.S. Rivers Information. http://www.usrivers.info/River/Colorado-River-Texas/81/

[6] Texas Commission on Environmental Quality. 2014. "2014 Texas Integrated Report: Assessment Results for Basin 14 – Colorado River." Available at https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_basin14.pdf.

border habitat and enters into the sedimentation basin before entering the makeup water pipeline to the MCR.

Using data (1948-2008) from USGS 08162500 on the Colorado River near Bay City, Texas, the Colorado River has a mean annual flow of approximately 2,648 cubic feet per second (cfs) which equates to approximately 1,711 million gallons per day (MGD) of flow (Figure 7). Based on these data, it is estimated that the facility withdraws a maximum 22.6% of the mean river flow when pumping at maximum capacity. The actual withdrawal over the past 3 years was calculated to be 2.05%.

FIGURE 7: Mean Monthly Flow (cfs) by Month from 1948-2008 at USGS 08162500 Colorado River near Bay City, TX
Source:
https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=08162500

3. *Scaled drawings showing the physical configuration of all source water bodies used by the facility, including the source waterbody's hydrological and geomorphological features. Note: The source waterbody's hydrological and geomorphological features may be included on the map submitted for item 1.b.ii of this worksheet.*

Figure 8 shows the location of the RMPF Cooling Water Intake Structure in the Colorado River. Figure 9 shows the profile view of the RMPF Cooling Water Intake Structure. Refer to Appendix 1 in Attachment M for engineering drawings.

FIGURE 8: Location of RMPF Cooling Water Intake Structure in the Colorado River

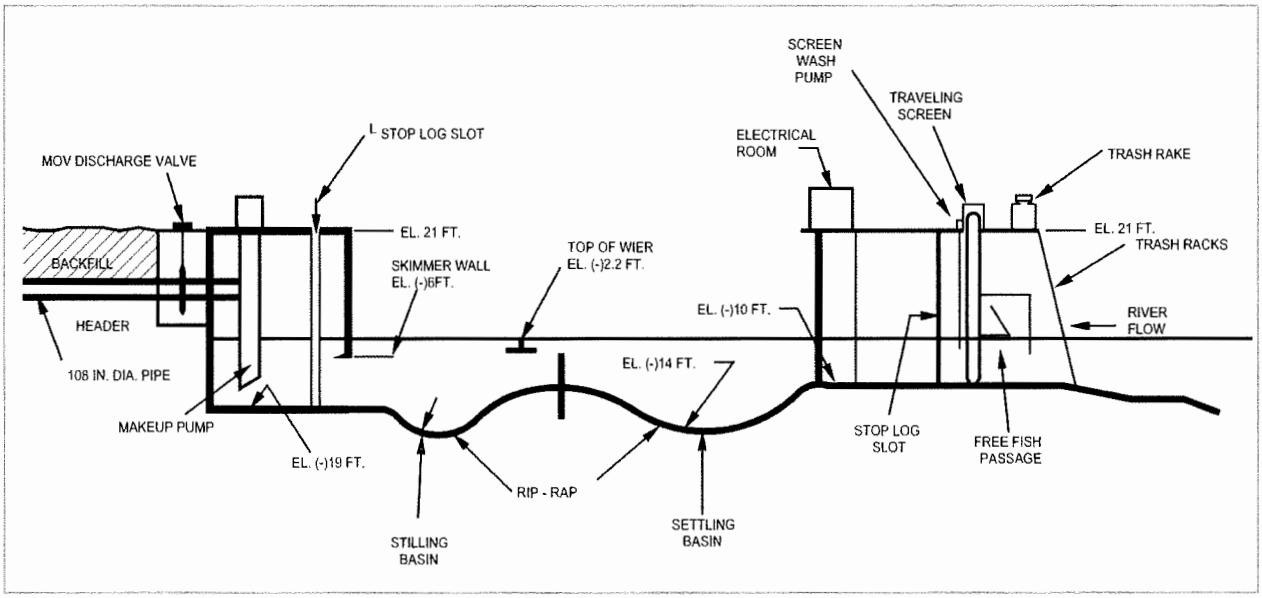


FIGURE 9: Profile view of RMPF Cooling Water Intake Structure in the Colorado River

4. *A description of the methods used to conduct any physical studies to determine your intake's area of influence within the waterbody and the results of such studies.*

The zone of influence (ZOI) associated with the RMPF Cooling Water Intake Structure at the STPEGS was calculated based upon client-provided design drawings and information related to structure and system data (Attachments M and N) and source water physical data (Attachment O). Periodically, four river-water intake pumps withdraw make-up water from the Colorado River at the RMPF Cooling Water Intake Structure through eighteen 13.5 feet wide by 10-feet deep intake bays located along the shoreline. The RMPF Cooling Water Intake Structure includes two small-volume capacity pumps each with a pump rate of 26,930 gallons per minute or 60 cubic feet per second (ft3/s) and two large-volume capacity pumps each with a pump rate of 107,720 gpm or 240 ft3/s. Combined, all four pumps discharge at a rate of 269,300 gpm or 600 ft3/s. The maximum velocity through each screen bay is 0.96 feet per second (ft/s). The ZOI consist of a semi-circle area calculated for each screen bay with a radius of 11.05 feet with an overlap to each other representing their combined influence. Table 1 and Figure 9 include the ZOI data and expected effect.

TABLE 1: ZOI Data and Calculations

Site: Colorado River, TX			
	Value	**Units**	**Reference**
Colorado River			
Colorado River Mean Annual Flow Rate	2648	ft^3/s	Client
Length	862	mi	Client
Depth at intake	10	ft	Client
Width at intake	276	ft	Client
Velocity at intake	0.96	ft/s	Client
RMPF Pump Volumes			
Number of Pumps	4	number	Client
Small volume pump (2 total)	26,930	GPM	Client
Large volume pump (2 total)	107,720	GPM	Client
Small volume pump (2 total)	38.78	MGD	Client
Large volume pump (2 total)	155.12	MGD	Client
Total Design intake flow	269,300	GPM	Client
Total Design intake flow	387.8	MGD	Client
Small Intake Pump Diameter	8	ft	Client
Large Intake Pump Diameter	8	ft	Client
RMPF Dimensions			
Reservoir Makeup Pumping Facility (RMPF) Depth	10	ft	Client
Number of screens at RMPF	18	number	Client
Screen width	13.5	ft	Client
Total with of RMPF	406	ft	Client
Distance from shore	0	ft	Client
ZOI Calculation			
Case	Target Area (sq ft)	Circumference available for flow (fraction)	ZOI radius (ft)
Semi Circle ZOI (each bay)	347.2480112	50%	11.05324749

FIGURE 9: Expected Zone of Influence at the RMPF Cooling Water Intake Structure

Operational Status

Attachment P

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

a. Is this application is for a power production or steam generation facility?

☒ Yes ☐ No

If **yes**, provide the following information as an attachment; otherwise, proceed to item b.

1. *Describe the operating status of each individual unit, including age of each unit, capacity utilization rate (or equivalent), for the previous five years (a minimum of 60 months), and any seasonal changes in operation.*

South Texas Project Electric Generating Station (STPEGS) has two nuclear powered steam electric generating units in operation. Commercial operation of Unit 1 began in August 1988 and Unit 2 began in June 1989. Table 1 provides the annual capacity utilization for the previous five years. During this period, STPEGS had an average capacity utilization of 95.2 percent.

TABLE 1: STP Capacity Utilization by Year

Year	Unit 1 Capacity Factor (%)	Unit 2 Capacity Factor (%)	Station Capacity Factor (%)
2014	82.8	106.2	94.5
2015	85.2	92.7	89.0
2016	102.8	95.2	99.0
2017	92.3	105.0	98.7
2018	94.1	95.2	94.7

2. *Describe any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors.*

STPEGS has not experienced any planned outages (other than refueling) and has not had any lengthy unplanned or forced outages during the operating period from January 2014 through December 2018 that would affect current data for flow, impingement, or entrainment.

3. *Identify any operating unit with a capacity utilization rate of less than 8 percent averaged over a contiguous period of two years (a minimum of 24 months).*

N/A

4. *Describe any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type.*

STPEGS has not had any major upgrades within the last 15 years, nor are there plans or schedules for decommissioning, replacement of units, or any new units at STPEGS within the next five years.

b. Is this an application for a nuclear power production facility?

☒ Yes ☐ No

If yes, include a description of completed, approved, or scheduled upgrades and Nuclear Regulatory Commission relicensing status of each unit at the facility as an attachment; otherwise, proceed to item d.

The renewal of the Facility Operating License for STPEGS was issued on September 28, 2017, extending the facility operating licenses for Units 1 and 2 for an additional 20 years. This extension allows Units 1 and 2 to operate until 2047 and 2048, respectively.

Impingement Compliance Technology Information

Attachment Q

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

Attachment Q
Worksheet 11.1, page 77

a. Provide the following information as an attachment.

i. CWIS ID

Reservoir Make-up Pumping Facility - RMPF

ii. 12 months of intake flow data for any CWIS used for make-up intake flows to replenish cooling water losses, excluding intakes for losses due to blowdown, drift, or evaporation.

Actual Intake Flow (MGD) for 2018												
Day	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0	348.7	38.8
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.6	348.7	38.8
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.5	348.7	38.8
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	201.3	348.7	38.8
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.9	348.7	38.8
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	348.7	15.4
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.2	348.7	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.3	212.4	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	196.5	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	348.7	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	309.1	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	116.3	0.0	38.8	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	371.9	88.3	38.8	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	387.5	316.5	38.8	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	387.5	172.3	38.8	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	387.5	274.4	38.8	0.0
18	0.0	0.0	0.0	0.0	0.0	11.6	0.0	0.0	262.4	348.7	38.8	0.0
19	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	75.4	348.7	38.8	0.0
20	0.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	32.2	348.7	38.8	0.0
21	0.0	0.0	0.0	0.0	0.0	38.8	0.0	0.0	2.4	348.7	38.8	0.0
22	0.0	0.0	0.0	0.0	0.0	129.5	0.0	0.0	0.0	348.7	38.8	0.0
23	0.0	0.0	0.0	0.0	0.0	193.7	0.0	0.0	0.0	348.7	38.8	21.8
24	0.0	0.0	0.0	0.0	0.0	193.7	0.0	0.0	0.0	348.7	38.8	0.0
25	0.0	0.0	0.0	0.0	0.1	193.7	0.0	0.0	0.0	348.7	38.8	0.0
26	0.0	0.0	0.0	0.0	6.7	77.3	0.0	0.0	0.0	348.7	38.8	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	284.3	348.7	38.8	0.0
28	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	234.3	348.7	38.8	0.0
29	0.0	-	0.0	0.0	38.8	0.0	0.0	0.0	232.5	348.7	38.8	0.0
30	0.0	-	0.0	0.0	14.5	0.0	0.0	0.0	232.5	348.7	38.8	0.0
31	0.0	-	0.0	-	0.0	-	0.0	0.0	-	348.7	-	4.9

iii. A narrative description of any physical or operational measures taken to minimize make-up withdraws.

The Reservoir Makeup Pumping Facility (RMPF) Cooling Water Intake Structure pumps are operated intermittently based on reservoir level, river flow and the operability of the reservoir pumps. Conditions of river water diversions are limited to 55% of the river flow and only when river flow exceeds 300 cubic feet per second (cfs). While the design intake flow (DIF) (387.79 MGD) could result in the removal of 22.6% of the mean annual river flow (2,648 cfs-1,711 MGD), the actual river flow withdrawal over the past 3 years (2016-2018) occurring from intermittent diversion to the MCR was limited to 2.05%. From the reported 5-year period (2014-2018), STPEGS' annual average capacity factor was 91.4% for Unit 1, 98.9% for Unit 2 with a combined 95.2% station utilization. Make-up water usage from the Colorado River equates to a mean of 35 MGD.

Water discharges from internal outfalls 101, 201, 401, and 601 are discharged into the Main Cooling Reservoir for reuse in accordance with the wastewater permit.

Source Water Biological Data

Attachment R

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

b. Provide the following information as an attachment.

a. A list of the data requested at 40 CFR § 122.21(r)(4)(ii) *through* (vi) *that are not available and efforts made to identify sources of the data.*

An extensive dataset has been compiled by South Texas Project Nuclear Operating Company (STPNOC) in an effort to support STPNOC's 316(b) compliance, including historical biological demonstrations and studies specific to the South Texas Project Electric Generating Station (STPEGS), including impingement and entrainment studies associated with the Reservoir Make-up Pumping Facility (RMPF) Cooling Water Intake Structure and studies characterizing the biota of the lower Colorado River near the RMPF Cooling Water Intake Structure. Data taken from source waters over the course of 30 years indicate no adverse environmental impacts on the lower Colorado River fishery. STPNOC believes the combination of the historical studies and more recent data support the requirements under 122.21 (r)(4)(ii) through (vi) and will demonstrate STPEGS currently operates BTA that meets the standards for IM and E under 40 CFR § 125.94(c) and (d). A summary of the sampling studies utilized is provided below.

U.S. Nuclear Regulatory Commission (NRC) 1975. Final Environmental Statement: Construction Phase – STP Units 1 and 2
Data were collected from 1973-1974. Seventeen species were identified during the study with bay anchovy (35.6%) and Gulf menhaden (20.0%) the dominant species collected.

McAden et al. 1984 and 1985. Colorado River Entrainment and Impingement Monitoring Program, Reports 1 and 2
Data were collected from July 1983–June 1984 and July-December 1984 during reservoir fill pumping at the RMPF Cooling Water Intake Structure, according to section 6.1.3.2 and Appendix E of the FEIS for the STPEGS. This study was completed in order to verify operational impacts associated with impingement and entrainment. Overall, nektonic species richness in samples taken from the lower Colorado River ranged from 24 to 26 during this sampling period, depending upon sampling date and sampling method used (seine vs trawl). Zooplankton and ichthyoplankton richness was recorded as 59 species in 1983-1984, and 36 species in 1984; plankton net samples in both sampling periods are intended to represent the community of entrainable organisms in the lower Colorado River near the RMPF Cooling Water Intake Structure. Nine species were noted as impinged in the July 1983-June 1984 data, while four species were impinged in the July-December 1984 data.

NRC 1986. Final Environmental Statement – STP Units 1 and 2
This document compared data and conclusions from the Construction Phase Final Environmental Statement (FES-CP; NRC 1975) with the more recent studies conducted by McAden et al. in 1983 and 1984. NRC concluded entrainment impacts to the faunal community of the lower Colorado River will not be significant due to low numbers, the fact that lower Colorado River does not appear to be unique among estuarine-marine nurseries, ubiquity of entrained species of commercial importance, and pumping will occur during high river flow (freshwater influence) thereby reducing the impact to estuarine-marine species. Likewise, NRC concluded impingement would result in only minor effects on the lower Colorado River biota, based on low total density, screen position, lack of unique nursery environment, and ubiquity of impinged species of commercial importance.

ENSR 2008. Aquatic Ecology – Colorado River Monitoring Report: Unit 3 and 4 Licensing
ENSR conducted a year-long field study to determine the fish and macroinvertebrate community composition in the lower Colorado river associated with STPEGS facilities, compare with historical data to determine impacts of STPEGS Units 1 and 2, and document salinity patterns in the lower Colorado River. This study included 186 samples over a year-long assessment using trawls, seines, gill nets, and hoop nets in the lower Colorado River. A total of 69 species (11 invertebrates and 58 fish species) were identified from this sampling effort. There was considerable seasonal variation in species composition within each sampling gear used, with white shrimp and a common dominant species in the fall for both trawl and seine methods. Spring and summer composition varied among methods, with trawls being dominated by bay anchovy, brown shrimp, atlantic croaker and sand trout in spring, and spring seines yielded mostly Gulf menhaden, striped mullet, and grass shrimp. Summer trawls were dominated by blue catfish, white shrimp, and Gulf menhaden, while summer seine samples were dominated by inland silverside, gizzard shad, and striped mullet. Comparison with communities represented in the 1973-74, 1975-76, and 1983-84 data indicated that overall, the faunal community observed in 2008 was more diverse than that represented by historic data in the lower Colorado River.

NRC 2011. EIS for Combined Licenses – STP Units 3 and 4
NRC examined each of the historic studies listed above, and determined that the results and conclusions of the earlier impingement and entrainment studies were still applicable due to design features of the RMPF Cooling Water Intake Structure that would minimize losses of organisms. These design features would not change due to the addition of Units 3 and 4. NRC concluded that due to use of the MCR as closed-cycle cooling, infrequent pumping of water at low velocity, and the presence of trash racks, traveling screens, and fish return system, the impacts from impingement and entrainment for the proposed units would be minor. Units 3 and 4 were terminated prior to completing construction.

NRC 2013. EIS for License Renewal – STP Units 1 and 2
NRC examined each of the historic studies listed above, and concluded that the impacts due to entrainment and impingement by the STPEGS cooling water system on aquatic resources to be small. This is due to design features of the RMPF Cooling Water Intake Structure that minimize losses of organisms, as well as the conclusions of previous studies indicating minimal impact and the continued presence of those aquatic species most likely to be impinged in the lower Colorado River.

b. *Provide a list of species (or relevant taxa) in the vicinity of the CWIS and identify the following information regarding each species listed.*

An examination of bag seine and trawl data from the lower Colorado River in 1974, 1983-84, and 2007-08, as well as gill net and hoop net data from 2007-08 indicates that a total of 90 species were collected among all three studies. In the 2008 study, 72 species were collected with 33 of these species representing 99% of the total catch. In 1983-84, 48 species were collected with 20 species representing 99% of the total catch. In 1974, 27 species were collected with 17 species representing 99% of the total catch. While there was variation among studies, there were nine species in the top 99% of all three studies. In addition, another eight species were

found in two of the three studies. In total, there were 44 species in the top 99% of at least one of the three lower Colorado River studies as detailed in Table 1 and Figures 1-3 below.

TABLE 1: Fish Species Known to Occur in the Lower Colorado River

	ENSR 2008		NUREG 1983-84		NUREG 1974	
Family and Species	**Number collected**	**% Total**	**Number collected**	**% Total**	**Number collected**	**% Total**
Palaemonidae						
Ghost shrimp			19	0.26		
Grass shrimp	1763	9.88	65	0.89		
River shrimp			837	11.47	270	14.18
Penaeidae						
Brown shrimp	456	2.56			126	6.62
Seabob	127	0.71				
White shrimp	3482	19.51	1430	19.59	102	5.36
Portunidae						
Blue crab	277	1.55	508	6.96	13	0.68
Lesser blue crab					4	0.21
Loliginidae						
Atlantic brief squid	30	0.17				
Lepisosteidae						
Alligator gar	17	0.10				
Clupeidae						
Gizzard shad	62	0.35				
Gulf menhaden	4043	22.65	56	0.77	381	20.01
Threadfin shad					23	1.21
Engraulidae						
Bay anchovy	288	1.61	3860	52.88	678	35.61
Catostomidae						
Smallmouth buffalo	37	0.21				
Cyprinidae						
Speckled chub					6	0.32
Ariidae						
Gafftopsail catfish	192	1.08			5	0.26
Hardhead catfish	254	1.42	40	0.55	16	0.84
Ictaluridae						
Blue catfish	754	4.22	15	0.21	34	1.79
Channel catfish	30	0.17			7	0.37
Atherinopsidae						
Inland silverside	17	0.10	13	0.18		
Fundulidae						
Gulf killifish	20	0.11				
Cyprinodontidae						
Sheepshead minnow	93	0.52				
Poeciliidae						
Sailfin molly	161	0.90				
Sparidae						
Pinfish			11	0.15		
Sheepshead	69	0.39				
Sciaenidae						
Atlantic croaker	1075	6.02	37	0.51	43	2.26
Black drum	1363	7.64				
Red drum	79	0.44				

Attachment R
Worksheet 11.2, page 80

	ENSR 2008		NUREG 1983-84		NUREG 1974	
Family and Species	**Number collected**	**% Total**	**Number collected**	**% Total**	**Number collected**	**% Total**
Sand trout	321	1.80	41	0.56	78	4.10
Silver perch	350	1.96				
Speckled trout	57	0.32				
Spot	245	1.37	28	0.38	96	5.04
Star drum	86	0.48				
Polynemidae						
Atlantic threadfin					5	0.26
Mugilidae						
Striped mullet	1673	9.37	78	1.07		
White mullet	182	1.02				
Carangidae						
Crevalle jack			14	0.19		
Gerreidae						
Spotfin mojarra			11	0.15		
Eleotridae						
Fat sleeper			20	0.27		
Gobiidae						
Darter goby			62	0.85		
Sharptail goby	39	0.22				
Paralichthyidae						
Bay whiff	19	0.11	83	1.14		
Southern flounder	19	0.11				
Other	**167**	**0.94**	**71**	**0.97**	**17**	**0.89**
Total Species (in top 99%)	**33**		**20**		**17**	
Total Abundance Value		**100**		**100**		**100**

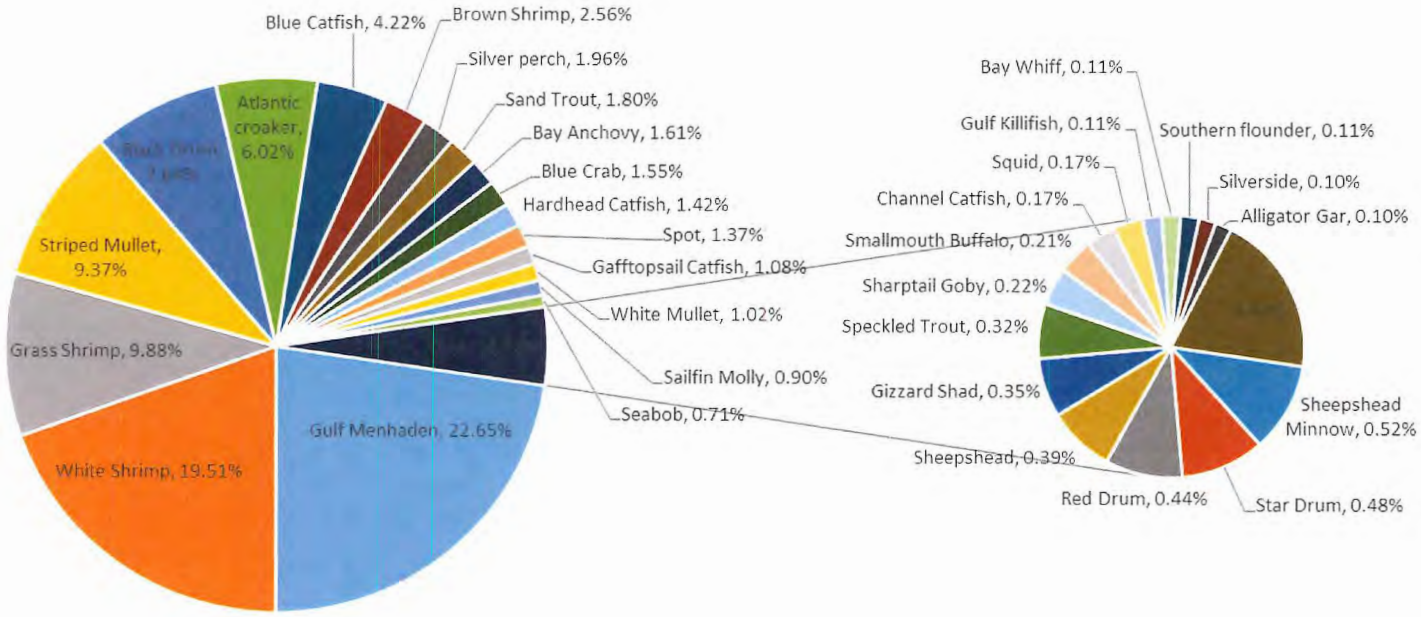


FIGURE 1: Species Representing 99% of Total Relative Abundance among all Survey Methods of the Lower Colorado River in 2007-08

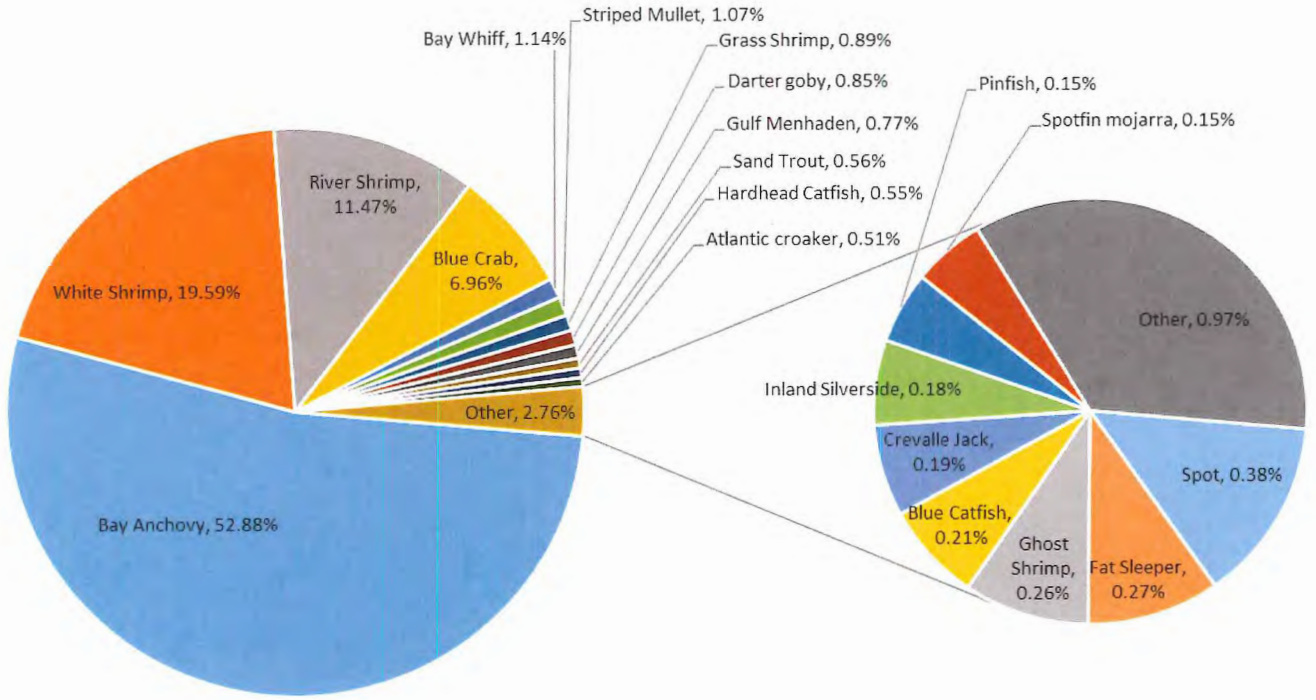


FIGURE 2: Species Representing 99% of Total Relative Abundance in Seine and Trawl Samples of the Lower Colorado River from 1983-84

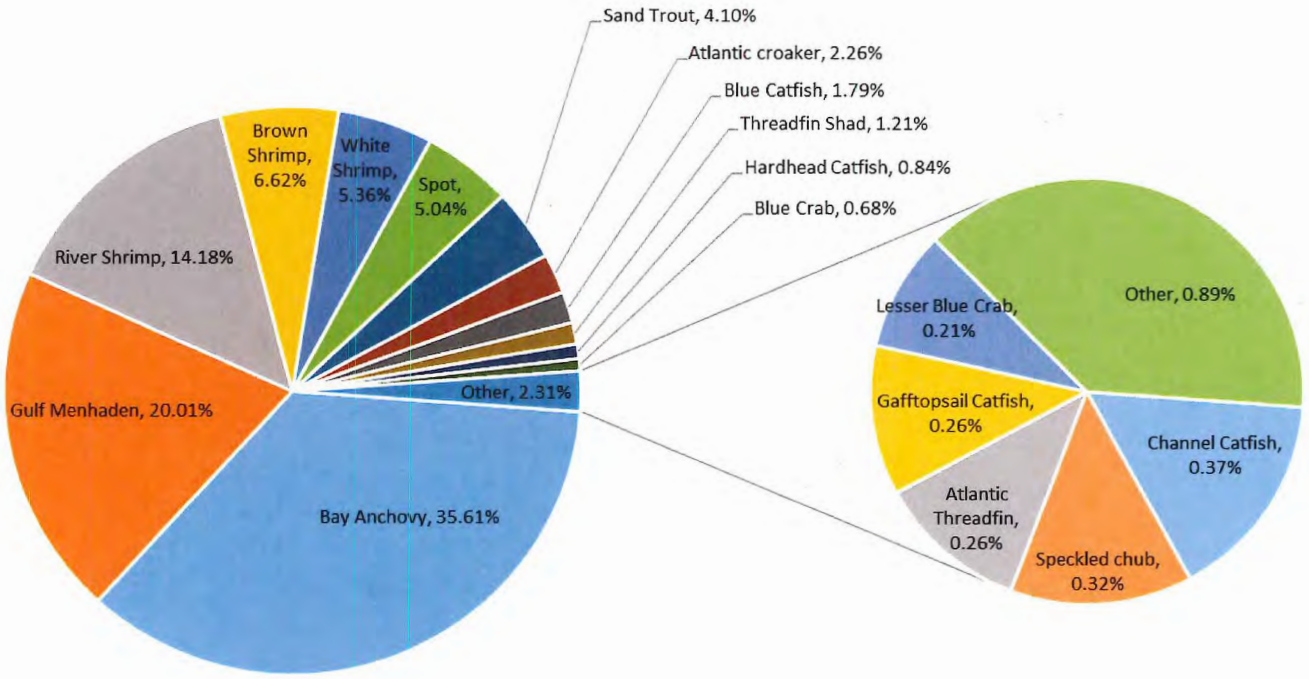


FIGURE 3: Species Representing 99% of Total Relative Abundance among Species Captured in the Lower Colorado River in 1974

1. *all life stages and their relative abundance,*

Historical Impingement Data

Data from the entrainment and impingement studies in 1983 and 1984 described 10 species impinged at the RMPF Cooling Water Intake Structure during phase II sampling of the intake screens. Four of these species were numerically dominant in the impingement samples and contributed >1% of the total organisms impinged, including blue crab, river shrimp, white shrimp, and ghost shrimp. All of these species are considered estuarine species. A single freshwater species, the green sunfish (*Lepomis cyanellus*) was also impinged but was not included in the study summary due to the fact that it is a freshwater fish and therefore not a part of the estuarine community assessed in this study (Figure 4).

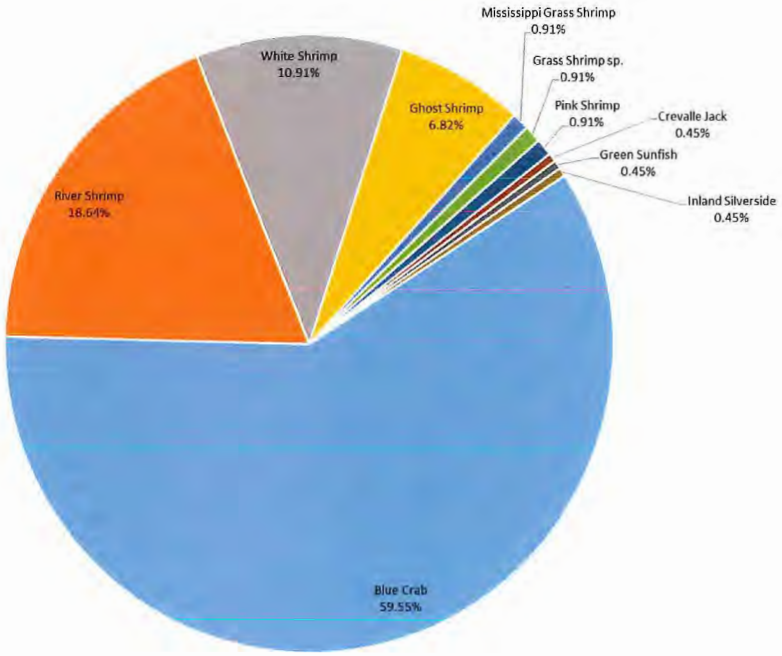


FIGURE 4: Percent Composition of all Species Impinged at the RMPF Cooling Water Intake Structure during Sampling in 1983 and 1984

The ENSR 2006 IMECS report examined impingement data from other Texas estuarine facilities and found eight species comprised the majority of impingement among the facilities including Gulf menhaden, Atlantic croaker, white shrimp, brown shrimp, blue crab, bay anchovy, sand seatrout, and striped mullet (Table 2). The total number of species impinged was lower at the RMPF Cooling Water Intake Structure than in other studies. However, the blue crab, white shrimp, and Palaemonid shrimp (grass shrimp, Mississippi grass shrimp, ghost shrimp, and pink shrimp), which are all commonly impinged at other Texas estuarine facilities, cumulatively comprised >75% of the individuals impinged at the RMPF Cooling Water Intake Structure in 1983 and 1984. When coupled with the relatively small sample size from STPEGS in 1983 and 1984, this overlap in dominant species indicates a similarity in impinged species between this and similar intake structures located in estuarine systems in Texas.

TABLE 2: Species Dominating Impingement among Six Estuarine Power Facilities

Plant	Impinged Species[1]																	
	Eight Dominant Species									Other Commonly Impinged Species[2]								
	Gulf Menhaden	Atlantic Croaker	White Shrimp	Brown Shrimp	Blue Crab	Bay Anchovy	Sand Trout	Striped Mullet[3]	% of Impingement of Eight Dominants	Bay Whiff	Spot	Atlantic Cutlassfish	Grass Shrimp	Gulf Butterfish	Least Puffer	Star drum	Sheepshead minnow	Threadfin shad
Sabine	4.3	5.9	75.1	2.0	7.0	0.7	1.6	0.40	97.0	0.20	<1	<1	<1	<1	<1	<1	<1	0.60
Cedar Bayou	52.8	8.2	5.8	5.3	3.2	1.4	1.3	5.82	83.9	<1	<1	5.80	3.70	<1	<1	<1	<1	<1
Sam Berton	49.1	13.2	10.1	6.3	2.8	3.0	2.7	0.56	87.8	<1	4.20	<1	<1	<1	<1	<1	<1	<1
PH Robinson	16.0	15.0	24.0	14.0	8.0	5.0	2.0	0.29	84.3	0.20	1.90	2.00	0.80	1.20	1.10	0.03	0.17	0.43
Webster	28.0	19.0	18.0	19.0	10.0	1.0	1.0	0.61	96.6	0.00	0.53	0.02	0.43	0.09	0.13	0.03	0.05	0.11
Deepwater	5.4	30.3	14.2	1.4	22.9	6.9	6.8	0.01	87.9	0.08	0.20	0.01	0.28	0.43	0.18	1.70	1.20	0.29
Average	25.9	15.3	24.5	8.0	9.0	3.0	2.6	1.28	89.6	0.11	1.17	1.34	0.90	0.34	0.29	0.34	0.29	0.27
Minimum	4.3	5.9	5.8	1.4	2.8	0.7	1.0	0.01	83.9	0.00	0.10	0.01	0.10	0.09	0.10	0.03	0.05	0.10
Maximum	52.8	30.3	75.1	19.0	22.9	6.9	6.8	5.8	97.0	0.20	4.20	5.80	3.70	1.20	1.10	1.70	1.20	0.60

Notes:
1. All numbers are percent of total number impinged.
2. In the absence of a specific value in the original study, a value of 0.1% was used in calculating statistics for those species listed as <1%.
3 Striped mullet was selected over Atlantic Cutlassfish as a dominant species due to its relatively frequent occurance in TPWD bag seine data.

Historical Entrainment Data

Samples were taken using 0.5m plankton nets in the lower Colorado River in 1983 and 1984 in order to represent the faunal community present in the vicinity of the RMPF Cooling Water Intake Structure susceptible to entrainment. A total of 59 taxa (49 invertebrates and 10 vertebrates) were collected in June – September 1983 samples, dominated by cladocerans (water fleas), copepods, and Malacostraca such as mysid shrimp, amphipods, commercial shrimp, grass and river shrimp, and crabs. Of the 10 fish taxa collected, only the bay anchovy occasionally occurred in large numbers. In 1984, the most abundant invertebrate plankton were jellyfish medusa, copepods, barnacle nauplii, and zoeal larvae of Malacostraca, specifically grass shrimp, mud shrimp, and xanthid mud crabs (Figure 5).

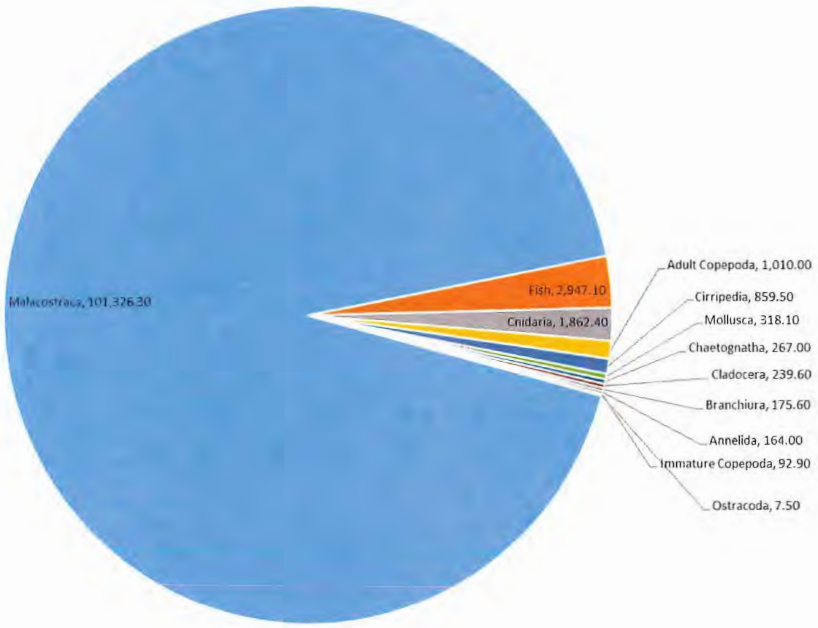


FIGURE 5: Zooplankton in the Lower Colorado River from 1983-1984, # Individuals / 100m³

Review of the entrainment data from other Texas estuarine facilities indicated that entrainment rates have historically been highly variable among plants and that entrainment at all plants was dominated by copepods (Table 3).

TABLE 3: Entrainment Rates and Composition at Six Estuarine Power Plants

	Plankton Density and (Percent of Total)								
Plant (Study)	**Mean Density**	**Crustacea**	**Fish larvae and eggs**	**Copepoda**	**Barnacle nauplii**	**Cladoceran**	**Rotifera**	**Polychaete Larvae**	**Bryozoan Larvae**
	(#/m³)	(#/m³)	(#/m³)	(#/m³)	(#/m³)	(#/m³)	(#/m³)	(#/m³)	(#/m³)
Cedar Bayou (ENSR, 2007)	4308	1973 (47.3%)	27 (.66%)	2009 (48.2%)	51.24 (1.2%)	94.92 (2.3%)		1.4 (.03%)	
Cedar Bayou (Bedinger et al., 1980[1])	2085	Few	Few	Dominant	Dominant	Dominant	Dominant		
P.H. Robinson (Chase, 1977)	6514	0.3 (0.005%)	3.8 (0.06%)	5751(88.3%)	669 (10.3%)			91 (1.4%)	
P.H. Robinson (McCullough, 1971[2])	0.0004		0.0004 (100%)						
P.H. Robinson (McAden, 1977)	16568	115 (0.7%)	21.8 (0.1%)	10075(60.1%)	5973 (36.1%)			97 (0.6%)	207 (1.2%)
Webster (Greene, 1980)	8193	68 (0.8%)	1.9 (0.02%)	7152 (87.3%)	616 (7.5%)				
Sabine (Espey, Huston & Associates, 1979[3])	33749	3963 (11.7%)	<312 (0.9%)	25876 (76.7%)		3376 (10.0%)	314 (0.9%)		
Sabine (ENSR 2007[4])	70.01	23.11 (33.0%)	0.80 (1.1%)	44.74 (63.9%)					
Michoud (ENSR 2007)	38.74	11.76 (30.36%)	0.18 (0.47%)	20.19 (52.11%)	4.22 (10.90%)			0.13 (0.34%)	0.06 (0.17%)
Voestalpine (ERM 2017[5])	8.19	6.93 (84.62%)	1.26 (15.38%)						

Notes:

1. Raw data for the Cedar Bayou (1980) study are not available. Dominant groups were discussed in publication text.
2. McCullough (1971) only identified larval fish species.
3. The 1979 Sabine study lumped all non-dominant taxonomic group together so exact fish numbers are not available.
4. The 2007 Sabine study did not detail non-fish species that represented <1% of sample.
5. The 2017 Voestalpine study only identified crustaceans, fish, and fish eggs. Copepods were dominant and categorized under crustaceans.

Lower Colorado River Studies Overall Relative Abundance

Analysis of historic sampling data conducted in 1974, 1983-1984, and 2007-2008 provided species composition and/or relative abundance of 90 different taxa/species occurring in the lower Colorado River with potential to be associated with the RMPF Cooling Water Intake Structure. Of these 90 taxa, only 20 species represent greater than 1% of the total abundance for any of the historic studies in the lower Colorado River (Table 1). Dominant species included Gulf menhaden, white shrimp, river shrimp, grass shrimp, and bay anchovy (Figures 6 – 8). Several of these species are similar to those identified in the historical impingement sampling at the RMPF Cooling Water Intake Structure.

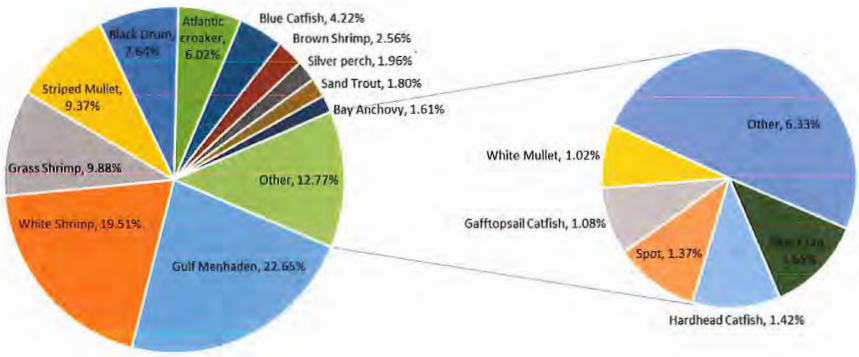


FIGURE 6: Relative Abundance of Species Comprising Greater than 1% of Total among all Sampling Methods in the Lower Colorado River in 2007-2008

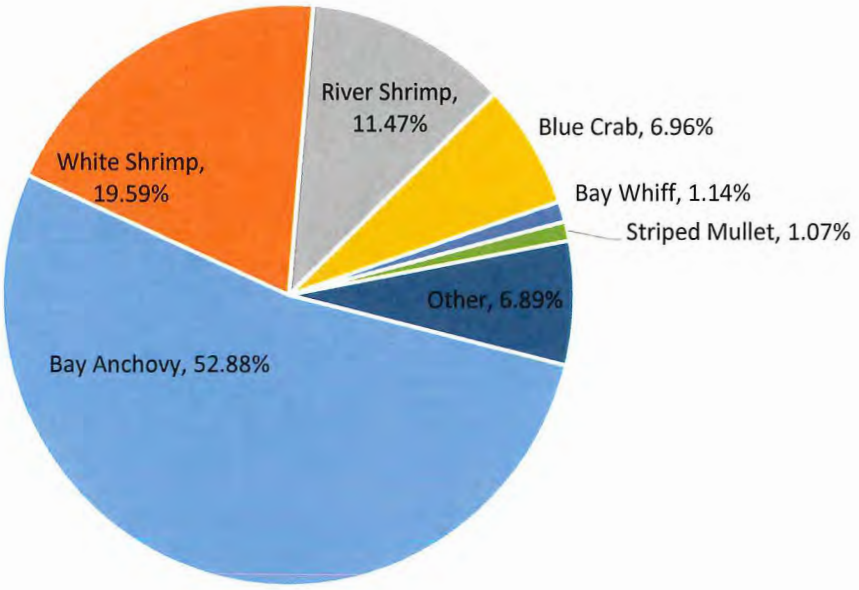


FIGURE 7: Relative Abundance of Species Comprising Greater than 1% of Total Among Seine and Trawl Samples in the Lower Colorado River in 1983-1984

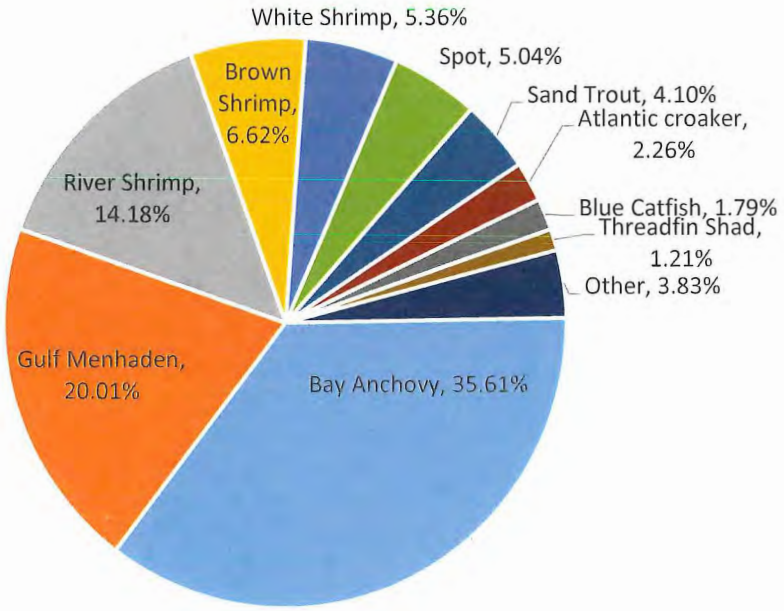


FIGURE 8: Relative Abundance of Species Comprising Greater than 1% of Total among all Sampling Methods in the Lower Colorado River in 1974

2. *identification of all species and life stages that would be most susceptible to impingement and entrainment,*

Susceptibility to impingement and entrainment is dependent upon a variety of interrelated factors including size, life stage, swimming speed, intake flow velocity, rheotaxis, seasonal variation, habitat preference, etc. Studies have shown that smaller, juvenile individuals are more susceptible to impingement than their larger, adult counterparts.[1,2] Young fish often exhibit higher natural mortality or weakened swimming ability due to stresses including extreme water temperature, low dissolved oxygen, strong flow velocity, physical damage, and infectious disease.[2]

The relative abundance data provided by STPNOC, ENSR, and NUREG were compared with the previous impingement and entrainment studies and species life history information to evaluate and determine those species or families most susceptible to impingement and entrainment impacts at the RMPF Cooling Water Intake Structure. To develop a list of species susceptible to impingement, species that occurred in high abundances within the historic studies of the lower Colorado River that are also known to exhibit slow swimming speeds were added to the list of species impinged from the historical studies. To develop a list of species susceptible to entrainment, life history information for the fish species identified in the historic data were assessed to determine spawning habitat preference, spawning periods, and spawning frequency. Applicable species were added to the list of species entrained from the historical studies. Table 4 provides a summary of the 16 species identified as being susceptible to impingement, and Table 5 provides a summary of the species identified as being susceptible to entrainment at the RMPF Cooling Water Intake Structure.

TABLE 4: Species Susceptible to Impingement at the RMPF Cooling Water Intake Structure

White shrimp	Blue crab
Atlantic croaker	Gulf menhaden
Brown shrimp	Inland silverside
Bay anchovy	Threadfin shad
Grass shrimp	Bay whiff
Hardhead catfish	Spot
Gizzard shad	River shrimp
Striped mullet	Black drum

TABLE 5: Species Susceptible to Entrainment at the RMPF Cooling Water Intake Structure

Family	*Potential Species*
Portunidae	Blue crab
Palaemonidae	Grass shrimp, river shrimp
Penaeidae	Brown shrimp, white shrimp
Clupeidae	Gulf menhaden, gizzard shad, threadfin shad
Engraulidae	Bay anchovy
Sciaenidae	Atlantic croaker, black drum, red drum, sand trout

[1] Bodensteiner, L. R. and W. M. Lewis. 1992. "Role of temperature, dissolved oxygen, and backwater in the winter survival of freshwater drum (Aplodinotus grunniens) in the Mississippi River." Canadian Journal of Fisheries and Aquatic Sciences 49(1):173-184.
[2] Saalfeld, D.T. 2006. "Variables Influencing Fish Impingement at Five Alabama Power Steam Plants". MS thesis. Auburn University, Auburn, AL. May 11, 2006.

3. *forage base,*

Estuarine systems are highly diverse systems. Biological data for the lower Colorado River indicated the species present are interchangeable between estuarine and freshwater species with the estuarine species being dominant most of the time. Forage species include: Gulf menhaden, mullet, shrimp, blue crab, silversides, anchovy, and other shad species.

4. *significance to commercial fisheries,*

Several of the fish and shellfish species occurring in the lower Colorado River are considered commercially or recreationally important (CRI) species. These species include fish that are targeted by commercial fisheries, recreational anglers, or serve as the forage base for the targeted species. A list of CRI species in the lower Colorado River is provided in Table 6 below.

TABLE 6: Commercially and Recreationally Important (CRI) Species in the Lower Colorado River

Species	Commercial	Recreational	Forage
Atlantic croaker	X	X	
Bay anchovy			X
Black drum	X	X	
Blue crab	X	X	
Brown shrimp	X		
Channel catfish		X	
Crevalle jack		X	
Gafftopsail		X	
Gizzard shad			X
Grass shrimp			X
Gulf menhaden			X
Inland silverside			X
Ladyfish		X	
Pinfish		X	
Pink shrimp	X		
Red drum		X	
Sand seatrout		X	
Sheepshead		X	
Southern flounder		X	
Speckled trout		X	

Species	Commercial	Recreational	Forage
Spot		X	
Striped mullet	X		X
Threadfin shad			X
White mullet	X		X
White shrimp	X		

5. *significance to recreational fisheries,*

   See Section b.1.4. and Table 6 above.

6. *primary period of reproduction,*

Spawning and recruitment (movement into the bays as juveniles) of estuarine species is widely variable and dependent upon regional location, habitat conditions, and environmental conditions. It is expected that most, if not all, of the species identified as being susceptible to impingement do not spawn in the lower Colorado River. Spawning will occur in the nearshore Gulf near the river mouths and passes.

Spawning may be influenced by environmental variables including water temperature, freshwater inflow, turbidity, and photoperiod. Spatiotemporally, spawning is highly dependent on the species in terms of their environmental preferences, reproductive strategy and the environmental conditions during spawning. However, based on data presented from the RMPF Cooling Water Intake Structure entrainment studies and species-specific spawning information it can be assumed that peak spawning will occur in spring followed by late spawning into the early summers months of June and July. The species-specific spawning periods and recruitment periods of the species identified as susceptible to impingement and entrainment are detailed below in Table 7.

TABLE 7: Typical Spawning and Recruitment Periods of Species Susceptible to Impingement or Entrainment at the RMPF Cooling Water Intake Structure

Species	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
Atlantic croaker	■	■	■	■	■				■	■	■	■
Bay anchovy			■	■	■	■	■	■	■	■		
Bay whiff	■	■	■	■	■							■
Black drum	■	■	■	■	■							■
Blue crab				■	■			■	■	■		
Brown shrimp	■	■	■	■	■				■	■	■	■
Gizzard shad			■	■	■	■	■	■				
Grass shrimp		■	■	■	■	■	■	■	■	■		
Gulf menhaden	■	■	■	■	■					■	■	■
Hardhead catfish					■	■	■	■	■			
Inland silverside	■		■	■	■	■			■	■	■	■
Red drum								■	■	■		
River Shrimp				■	■	■						
Sand trout		■	■	■	■	■	■	■	■	■		
Spot	■	■	■	■							■	■
Striped mullet										■	■	■
Threadfin shad			■	■	■	■	■					
White shrimp			■	■	■	■	■	■	■	■		

Sources: Patillo et al, 1997[3], TPWD 2018[4]. (Gray shaded cells indicate peak spawning and recruitment months)

7. larval recruitment, and

Once spawning occurs eggs and larvae will float in the water column and then will be transported by currents into the shallow bay waters or rivers that act as nurseries. The time frame for ontogenetic process (eggs to larvae to juvenile) will vary by species. Current literature indicates that once eggs are released it can take between 10 to 60 days for most species to become larvae and then more than 30 days to move from larvae to post-larvae or actual juvenile stage. This temporal lag between eggs to larvae and then larvae to juvenile indicates that the spawning to recruitment process for most of these species represented in lower Colorado River would more than likely be late larvae or early juveniles before reaching the STPEGS RMPF Cooling Water Intake Structure.

Following the abundance of adults during spawning season, a temporal lag of roughly one to two months will occur in which there will be a peak in the abundance of larval stages associated with recruitment into the river. Entrainment data from NUREG recorded in 1983-1984 indicated that larval densities were lower in the first sampling period (early July) than in the other sampling periods (late July, early August, and mid-September).

---

3 Pattillo, M.E., T.E. Czapla, D.M. Nelson, and M.E. Monaco. 1997. Distribution and abundance of fishes and invertebrates in Gulf of Mexico estuaries, Volume II: Species life history summaries. ELMR Rep. No. 11. NOAA/NOS Strategic Environmental Assessments Division, Silver Spring, MD. 377 p.

4 Texas Parks and Wildlife. 2018. Sabine Lake Fisheries Data – Bag Seine Sampling Results from 2006-2017.

8. *period of peak abundance for relevant taxa.*

Examination of catch rates on a monthly or seasonal basis provides insights into potential species-specific trends due to factors such as spawning periods, habitat preferences, migration patterns, etc. While studies from 1974 and 1983-1984 had a small number of sampling periods, data from 2007-2008 contains monthly data for an entire yearly cycle. Monthly catch rate data were available for overall catch within the 2007-2008 dataset and is presented in Figures 9-12 below.

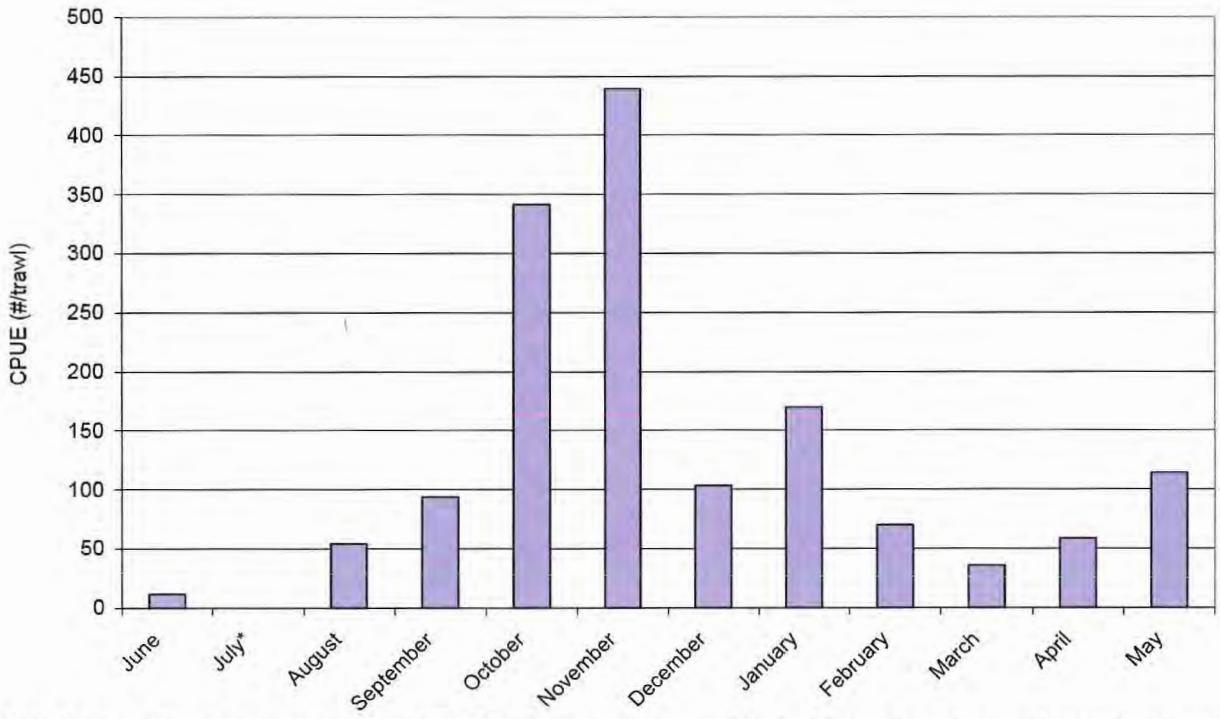


FIGURE 9: Catch per unit effort (CPUE) for organisms collected from trawl samples in the lower Colorado River, 2007 - 2008

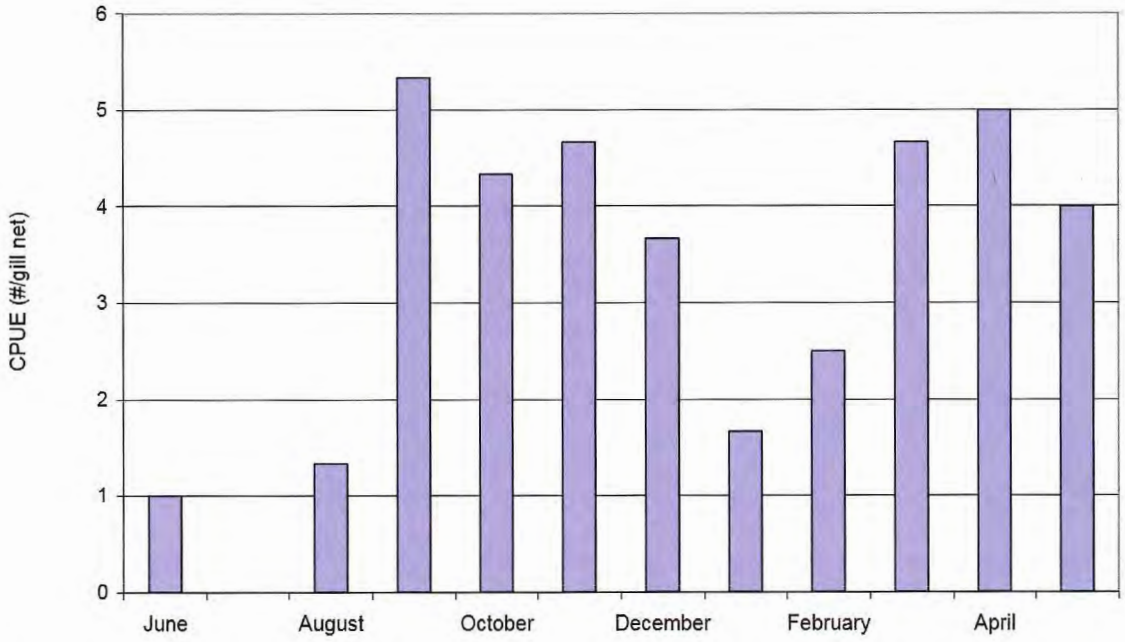


FIGURE 10: Catch per unit effort (CPUE) for organisms collected from gill net samples in the lower Colorado River, 2007 – 2008

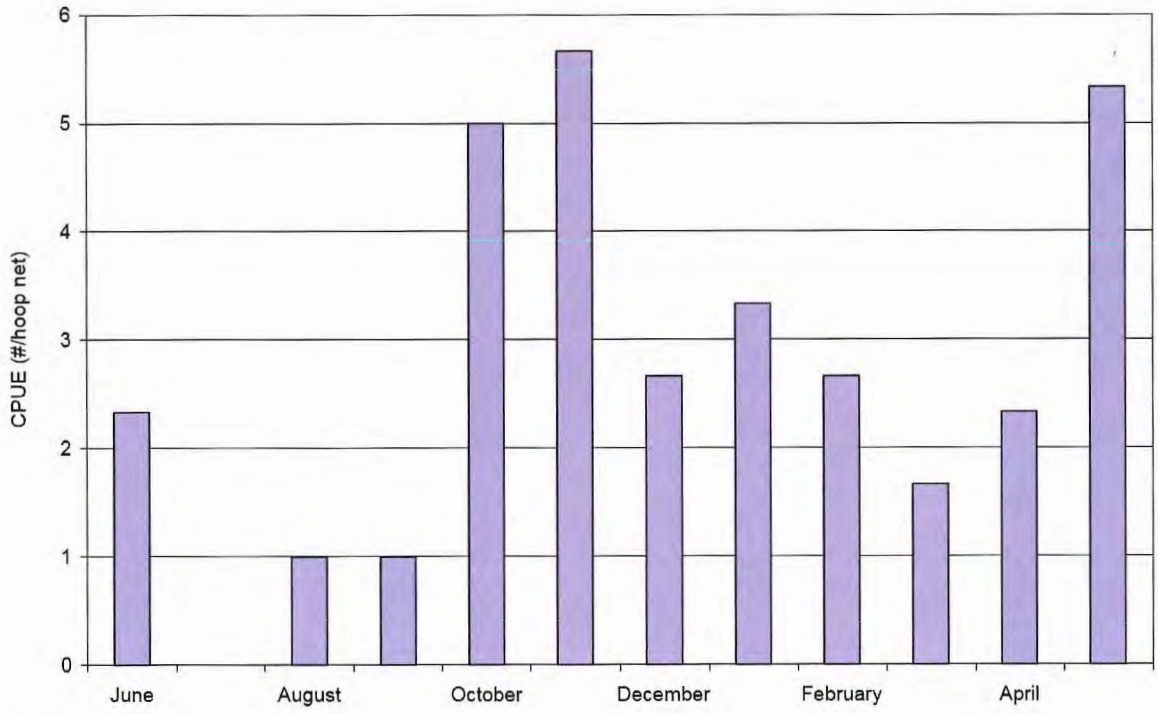


FIGURE 11: Catch per unit effort (CPUE) for organisms collected from hoop net samples in the lower Colorado River, 2007 – 2008

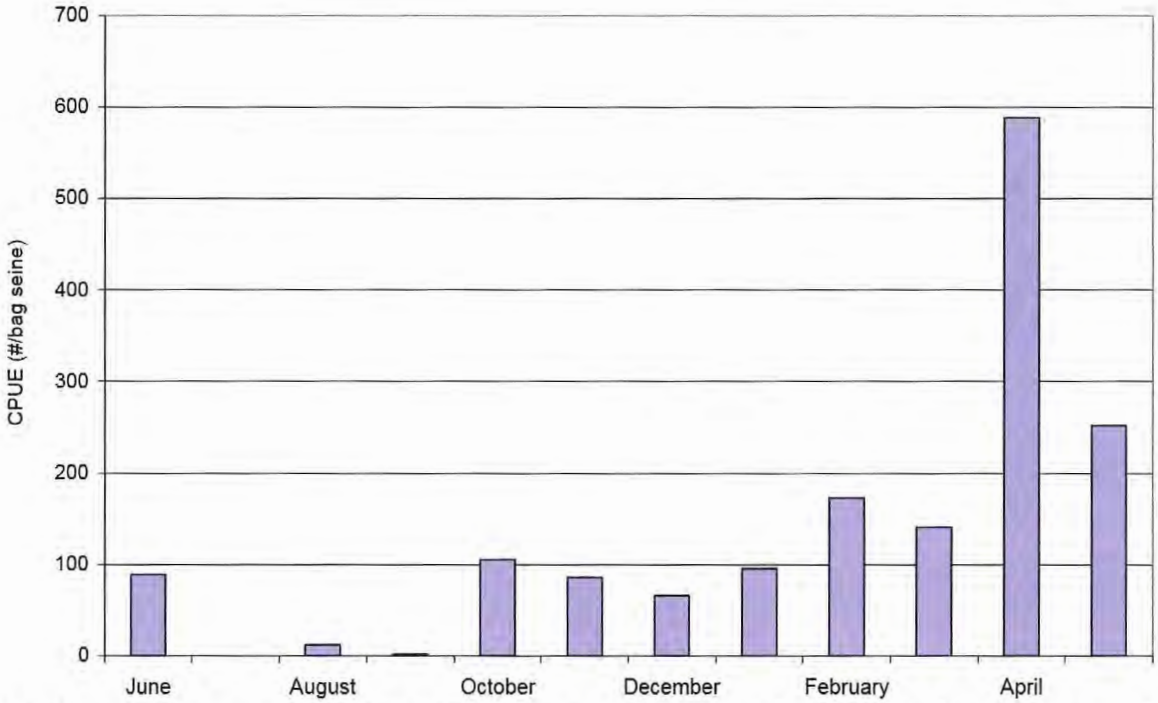
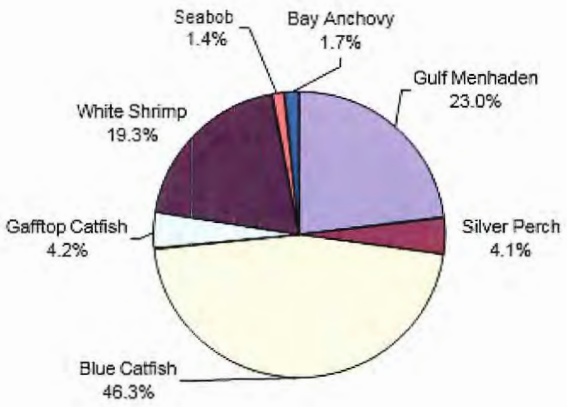


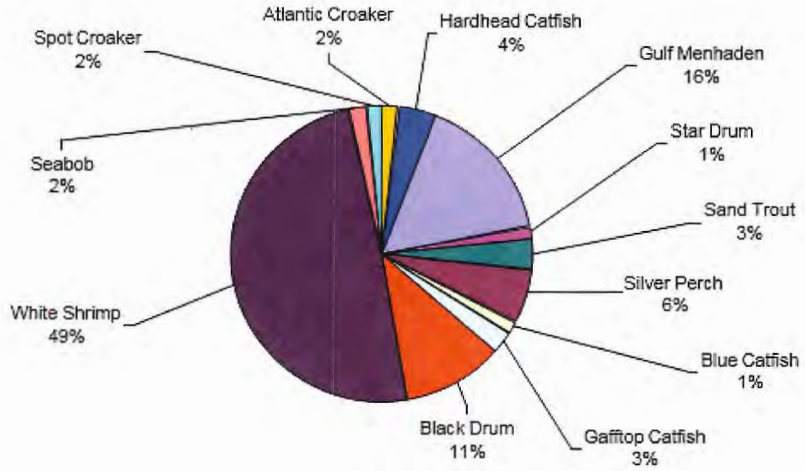
FIGURE 12: Catch per unit effort (CPUE) for organisms collected from bag seine samples in the lower Colorado River, 2007 - 2008

c. *Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure.*

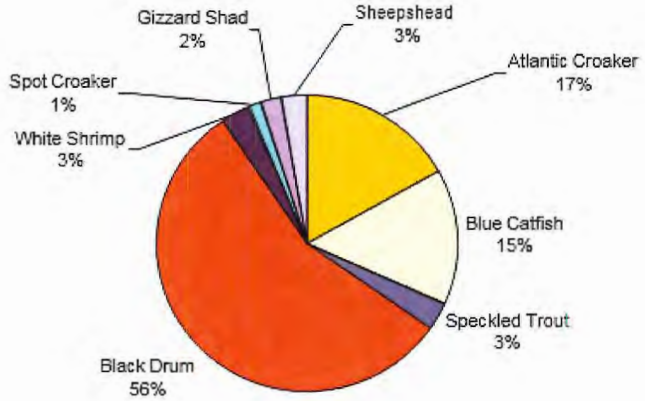
Examination of catch rates on a monthly or seasonal basis provides insights into potential species-specific trends due to factors such as spawning periods, habitat preferences, migration patterns, etc. Monthly catch rate data were available for several species within the 2007-2008 dataset and is presented in Figures 13-16 below.



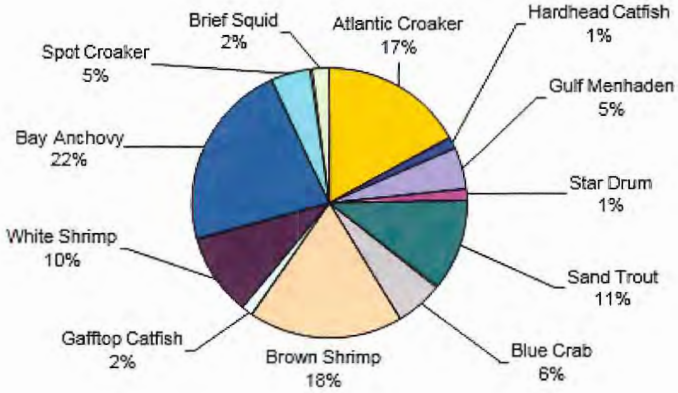
Summer



Fall



Winter



Spring

FIGURE 13: Seasonal composition of aquatic organisms representing >1% of trawl samples in the lower Colorado River, 2007-2008

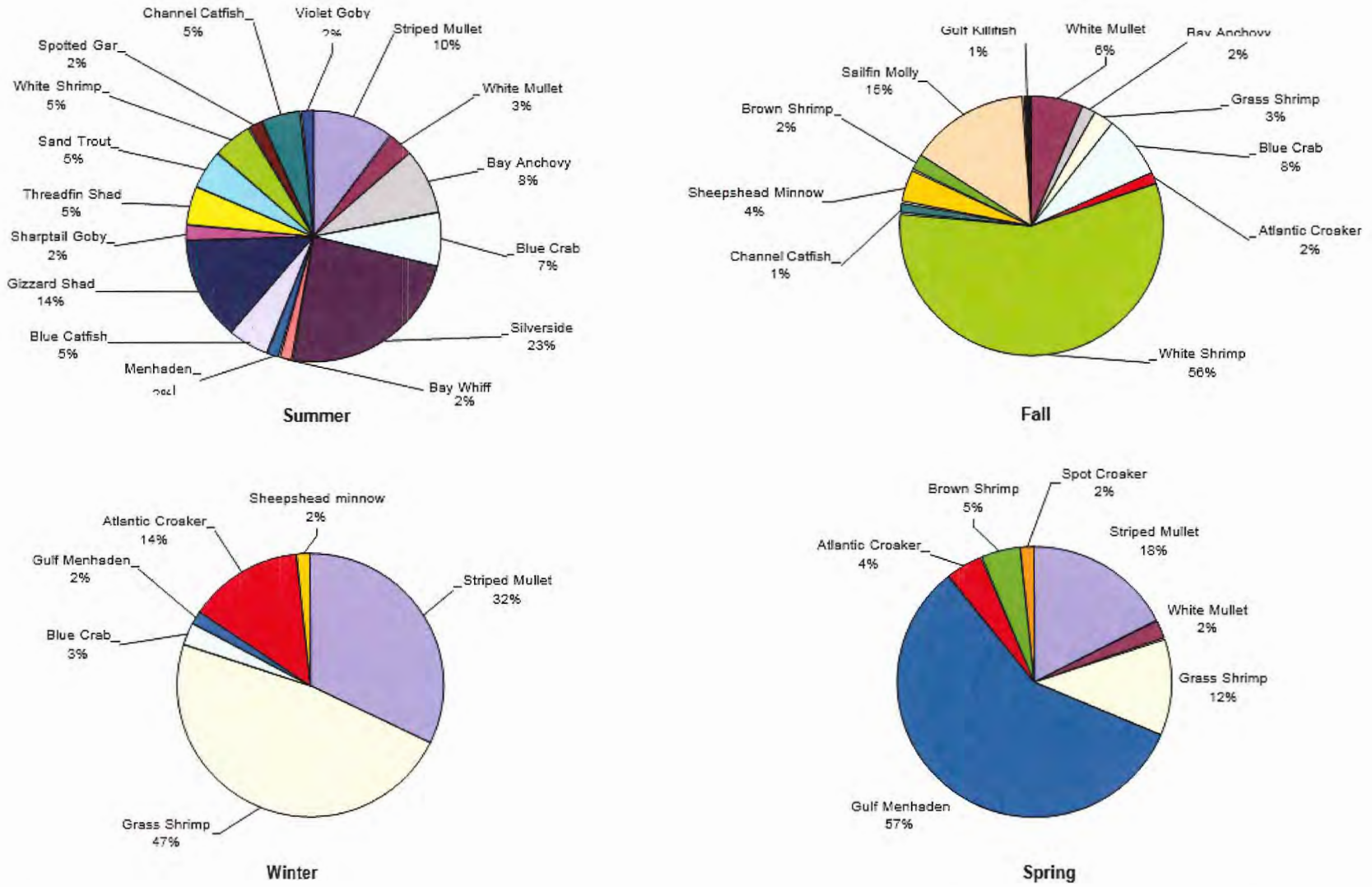


FIGURE 14: Seasonal composition of aquatic organisms representing >1% of bag seine samples in the lower Colorado River, 2007-2008

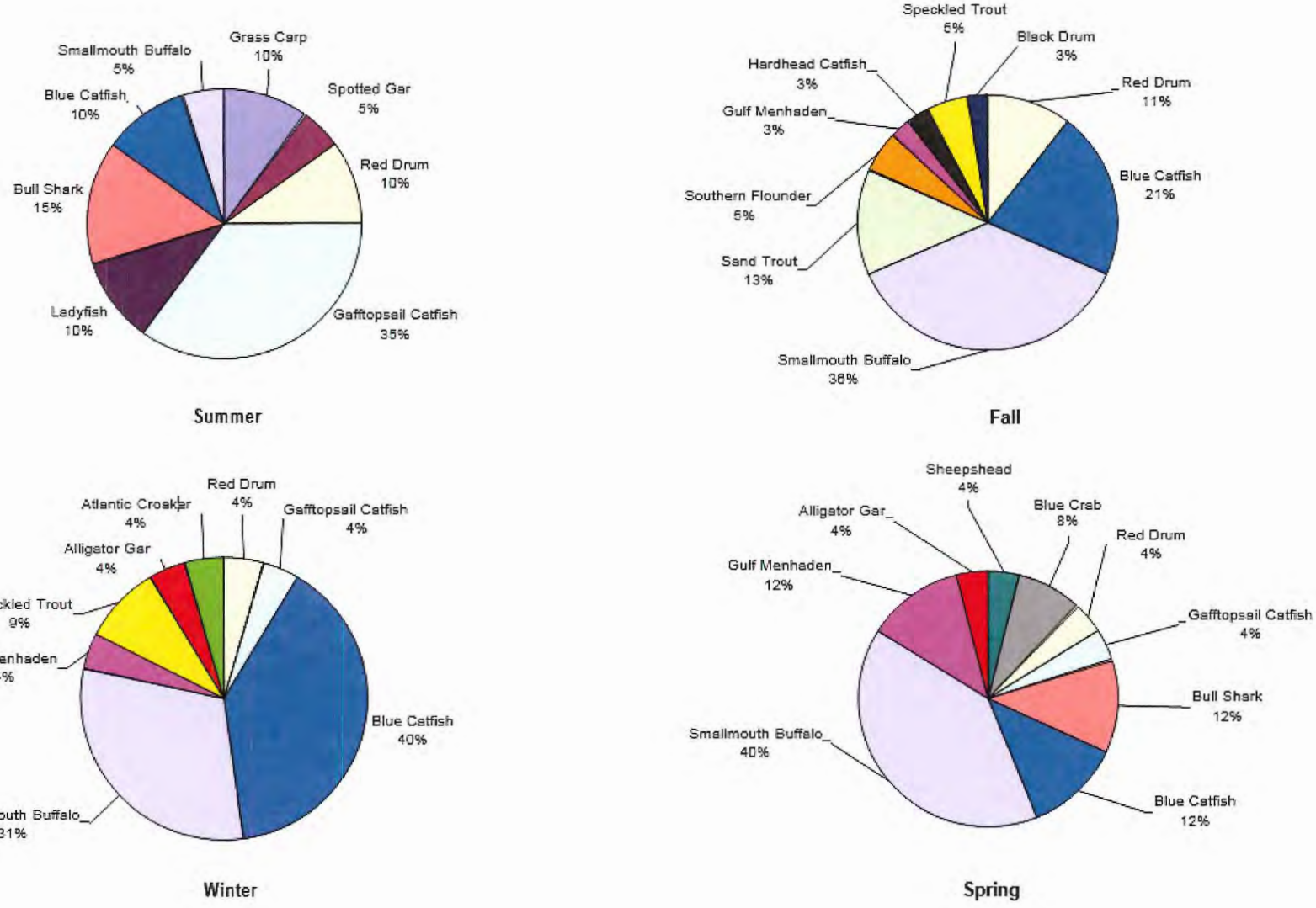


FIGURE 15: Seasonal composition of aquatic organisms representing >1% of gill net samples in the lower Colorado River, 2007-2008

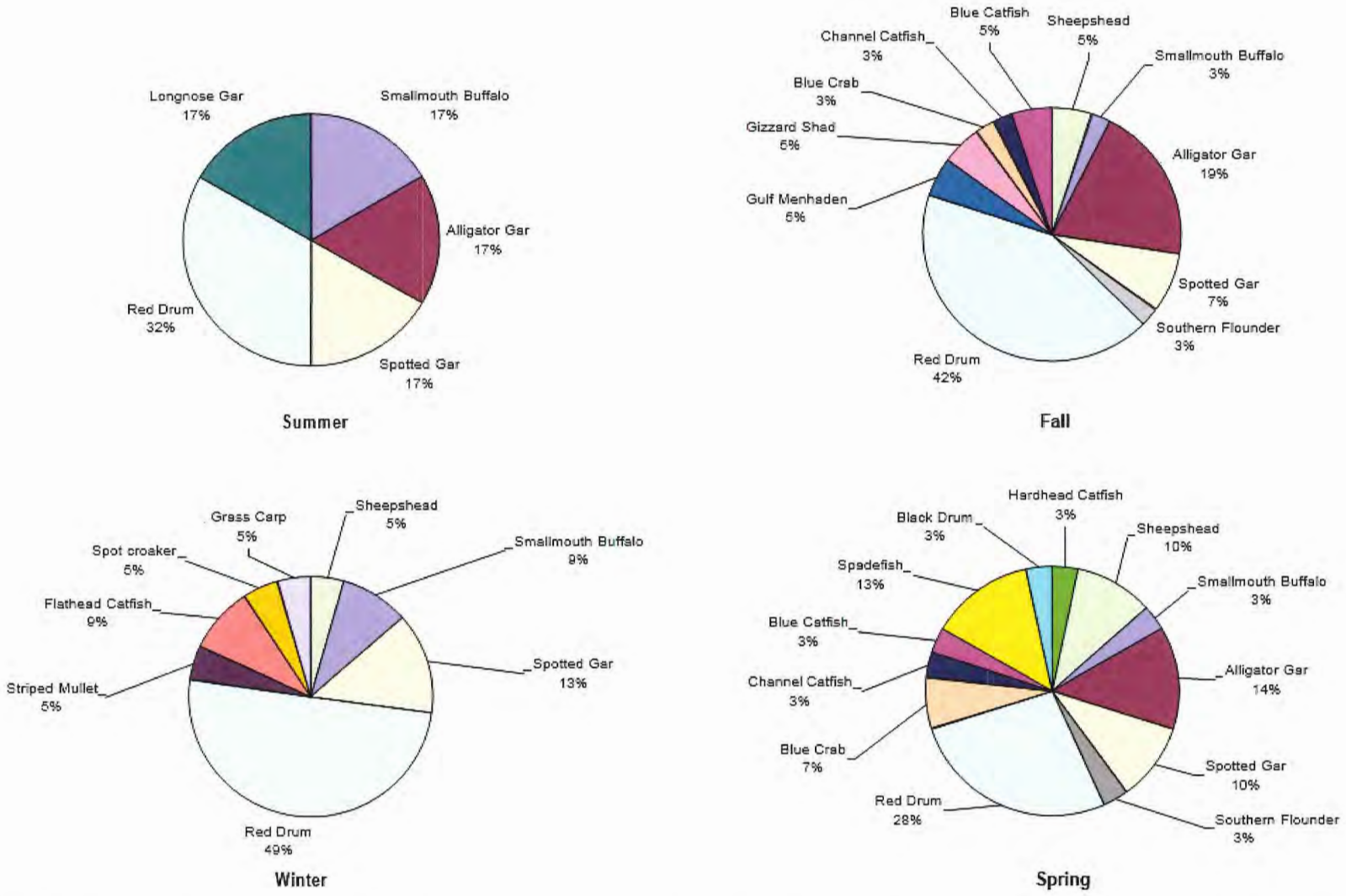


FIGURE 16: Seasonal composition of aquatic organisms representing >1% of hoop net samples in the lower Colorado River, 2007-2008.

d. *Identify all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at your cooling water intake structures.*

Review of United States Fish and Wildlife Service (USFWS) Threatened and Endangered Species List on March 10, 2019 for Matagorda County identified ten protected species: one mammal, four bird, and five reptile species as shown in Table 8. None of these species are considered susceptible to impingement and entrainment at the STPEGS RMPF Cooling Water Intake Structure. No critical habitat was identified in the vicinity of the RMPF Cooling Water Intake Structure.

TABLE 8: USFWS Threatened and Endangered Species in Matagorda County

Type	Common name	Scientific name	Status
Mammal	West Indian Manatee	*Trichechus manatus*	Threatened
Bird	Whooping Crane	*Grus americana*	Endangered
	Piping plover	*Charadrius melodus*	Threatened
	Red knot	*Calidris canutus rufa*	Threatened
	Northern Aplomado Falcon	*Falco temporalis septentrionalis*	Endangered
Reptile	Green Sea Turtle	*Chelonia midas*	Threatened
	Hawksbill Sea Turtle	*Eretmochelys imbricata*	Endangered
	Kemp's Ridley Sea Turtle	*Lepidochelys kempi*	Endangered
	Leatherback Sea Turtle	*Dermochelys coriacea*	Endangered
	Loggerhead Sea Turtle	*Caretta caretta*	Threatened

e. *Documentation of any public participation or consultation with federal or state agencies undertaken and provide an attachment number.*

STPNOC met with TCEQ in July 2017 to discuss compliance for STPEGS.

The following is required for existing facilities only. Include the following information with the above listed attachment.

f. *Identify any protective measures and stabilization activities that have been implemented, and provide a description of how these measures and activities affected the baseline water condition in the vicinity of the intake.*

The RMPF Cooling Water Intake Structure is designed with steel sheet piling around the structure to provide protective measures and shoreline stabilization. Additionally, STPNOC frequently dredges in and adjacent to the RMPF Cooling Water Intake Structure to maintain the appropriate water depths for the intake screens. Neither of these activities have an impact on the baseline water conditions evaluated in the vicinity of the intake.

g. *A list of fragile species, as defined at* 40 CFR § 125.92(m), *at the facility. The applicant need only identify those species not already identified as fragile at* 40 CFR § 125.92(m).

Fragile species are also susceptible to impingement, and are defined as those with an impingement survival rate of less than 30 percent. Impingement mortality data from the historical studies and current relative abundance data indicated fragile species found in the vicinity of the RMPF Cooling Water Intake Structure include Gulf menhaden, gizzard shad, threadfin shad, and bay anchovy.

Existing Entrainment Performance Studies

Attachment S

May 2019
Project No. 0494757

Environmental Resources Management
CityCentre Four
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024-3920
281-600-1000

Attachment S
Worksheet 11.3, page 81

Previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies with the application.

§122.21(r)(7) Entrainment Performance Studies

Entrainment monitoring studies have been performed at the South Texas Project Electric Generating Station (STPEGS) that included the source water makeup from the Colorado River and the Main Cooling Reservoir (MCR).

(i) Submit a description of any biological survival studies conducted at the facility and a summary of any conclusions or results, including the following: site-specific studies addressing technology efficacy, through facility entrainment survival (distinguished for eggs and larvae), entrainment analyses, or studies conducted at other locations including a justification as to why the data are relevant and representative of conditions at the facility.

a. The Construction Phase (CP) of the Final Environmental Statement (FES) for the STPEGS included a requirement from the Nuclear Regulatory Commission (NRC) to conduct a two-phase monitoring program related to the ecological conditions in the lower Colorado River.[1] Phase 1 occurred before the filling of the MCR. Phase 1 of the entrainment monitoring program was conducted from April 1975 to April 1976 and consisted of 26 sampling dates at 15 site locations with samples taken weekly from March through May, August through December, every other week during January through February and June through July.[2] Phase 2 of the entrainment monitoring program was conducted adjacent to the Reservoir Makeup Pumping Facility (RMPF) at one site location from July 1983 through December 1984 during the filling of the MCR.[3] McAden conducted studies to estimate entrainment impacts by collecting surface plankton samples in front of the RMPF. McAden used a hand-towed 0.5-meter (20-inch mouth diameter) ichthyoplankton net with 0.5-millimeter (0.02-inch) square mesh and swept the hand-tow parallel to the front wall of the pump structure. The most commonly collected species included the zoeae and juveniles of Harris mud crabs (*Rhithropanopeus harrisii*), river shrimp (*Macrobrachium ohione*), and white shrimp (*Litopenaeus setiferus*). McAden collected the eggs and larvae of two fish species, bay anchovy (*Anchoa mitchilli*) and mosquito fish (*Gambusia affinis*). McAden also conducted plankton tows in the Colorado River near the RMPF. The most commonly collected species of fish eggs and larvae included bay anchovy, Gulf menhaden (*Brevoortia patronus*), and Atlantic croaker (*Micropogonias undulatus*). Based on the McAden et. al entrainment study (1984;1985), the NRC estimated that entrainment losses would be approximately 10 percent of the organisms passing the RMPF.[3] This value represents the loss of organisms in the influence of the tidal flow in the river and does not represent the entire populations of those species in the lower Colorado River.

b. STP Nuclear Operating Facility (STPNOC) has not conducted impingement and/or entrainment studies on the Colorado River, a water of the U.S., since its 1983 to 1984

---

[1] U.S. Nuclear Regulatory Commission (NRC) 1975. Final Environmental Statement: Construction Phase – STP Units 1 and 2
[2] NUS 1976b as cited in NRC. 1986. Final Environmental Statement related to the operation of South Texas Project, Units 1 and 2. Docket Nos. 50-498 and 50-499.
[3] McAden et al. 1984 and 1985. Colorado River Entrainment and Impingement Monitoring Program, Reports 1 and 2

study. However, STPNOC conducted impingement and entrainment studies at the Reservoir Circulating Water Intake Structure on the MCR, not a water of the U.S., from May 2007 through April 2008.[4] The objective of the study was "to characterize the aquatic species within the MCR, and to evaluate impingement and entrainment impacts to establish, to the extent possible, relationships between the presence of aquatic organisms and the current (STP, Units 1 and 2) intake design and operating parameters". ENSR collected entrainment samples over a 24-hour period, twice per month from May through September and once per month from October through April. ENSR collected entrainment samples by placing 0.363-millimeter (0.014-inch) plankton nets behind the trash bars at the CWIS. ENSR pumped water from a depth of approximately 12 feet (3.7 meters) through a buffering chamber at flows up to 10,800 gallons per hour or 180 gallons per minute (gpm). ENSR operated the pumps four times per day, for approximately 2 hours per event, for a volume of 100 cubic meters (3,500 cubic feet) of water per 24-hour period. ENSR (2008a) collected 207,696 organisms representing nine different fish families and 12 different classes of invertebrates. The most commonly impinged taxa included Harris mud crab (68%) and unidentified decapod zoea (free swimming larvae) (15%). Ichthyoplankton, or fish eggs and larvae, comprised less than 1% of all entrained organisms. ENSR reported the highest entrainment rates from April through June and the lowest from December through March. Entrainment of threadfin shad and mud crabs was highest in late spring and summer with the entrainment of silversides highest in summer.[4]

[4] ENSR 2008. Aquatic Ecology – Colorado River Monitoring Report: Unit 3 and 4 Licensing