Administrative Package Cover Page

This file contains the following documents:

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

Portada de Paquete Administrativo

Este archivo contiene los siguientes documentos:

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

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

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

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

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

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

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

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

Solaris Water Midstream, LLC proposes to operate Red Bluff Produced Water Treatment Facility, a facility that treats water produced during oil and gas exploration and production (produced water). The facility will be located 1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, in Reeves County, Texas 79770. This application is for a new permit to authorize the treatment and discharge of produced water at a volume not to exceed an annual average flow of 10,000,000 gallons per day.

Discharges from the facility are expected to contain total dissolved solids, chloride, and sulfate. Produced water will be treated by pretreatment, desalination, and post-treatment.

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

AGUAS RESIDUALES INDUSTRIALES /AGUAS PLUVIALES

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

Solaris Water Midstream, LLC propone operar la planta de tratamiento de agua producida de Red Bluff, una instalación que trata el agua producida durante la exploración y producción de petróleo y gas (agua producida). La instalación estará ubicada a 1,8 millas al este-sureste de la intersección de la US Hwy 285 y Catfish Road, en el Condado de Reeves, Texas 79770. Esta solicitud es para un nuevo permiso para autorizar el tratamiento y descarga de agua producida en un volumen que no exceda un flujo promedio anual de 10.000.000 de galones por día.

Se espera que las descargas de la instalación contengan sólidos disueltos totales, cloruro y sulfato. Agua producida estará tratado por pretratamiento, desalinización y post-tratamiento.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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

PROPOSED PERMIT NO. WQ0005471000

APPLICATION. Solaris Water Midstream, LLC, 9651 Katy Freeway, Suite 400, Houston, Texas 77024, which owns a facility that will treat produced water from multiple oil and gas exploration and production facilities, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005471000 (EPA I.D. No. TX0146978) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 10,000,000 gallons per day. The facility will be located approximately 1.8 miles east-southeast of the intersection of Catfish Road and U.S. Highway 285, near the city of Pecos, in Reeves County, Texas 79770. The discharge route will be from the plant site directly to Red Bluff Reservoir. TCEQ received this application on November 22, 2024. The permit application will be available for viewing and copying at Reeves County Library, 315 South Oak Street, Pecos, in Reeves County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-104.002222,31.992222&level=18

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. El aviso de idioma alternativo en español está disponible en https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications.

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

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

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

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

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

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

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

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

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

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

Further information may also be obtained from Solaris Water Midstream, LLC at the address stated above or by calling Mr. Drew Dixon, Senior Vice President, Land & Regulatory, at 832-304-7003.

Issuance Date: December 11, 2024

Comisión de Calidad Ambiental del Estado de Texas

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

PERMISO PROPUESTO NO. WQ0005471000

SOLICITUD. Solaris Water Midstream, LLC, 9651 Katy Freeway, Suite 400, Houston, Texas 77024, que posee una instalación que tratará el agua producida de múltiples instalaciones de exploración y producción de petróleo y gas, ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para el propuesto Permiso No. WQ0005471000 (EPA I.D. No. TX0146978) del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas residuales tratadas en un volumen que no sobrepasa un flujo promedio diario de 10.000.000 galones por día. La planta estará ubicada aproximadamente a 1,8 millas al este-sureste de la intersección de Catfish Road y la U.S. Highway 285, cerca de la ciudad de Pecos, en el condado de Reeves, Texas 79770. La ruta de descarga será desde el sitio de la planta directamente al embalse Red Bluff. La TCEQ recibió esta solicitud el 22 de noviembre de 2024. La solicitud para el permiso estará disponible para leerla y copiarla en la biblioteca del condado de Reeves, 315 South Oak Street, Pecos, en el condado de Reeves, Texas, antes de la fecha de publicación de este aviso en el periódico. La solicitud, incluidas todas las actualizaciones y los avisos asociados están disponibles electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-104.002222,31.992222&level=18

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

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

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar

la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

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

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

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

LISTA DE CORREO. Si somete comentarios públicos, un pedido para una audiencia administrativa de lo contencioso o una reconsideración de la decisión del Director Ejecutivo, la Oficina del Secretario Principal enviará por correo los avisos públicos en relación con la solicitud. Ademas, puede pedir que la TCEQ ponga su nombre en una or mas de las listas

correos siguientes (1) la lista de correo permanente para recibir los avisos de el solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las solicitudes en un condado especifico. Si desea que se agrega su nombre en una de las listas designe cual lista(s) y envia por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

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

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

También se puede obtener información adicional del Solaris Water Midstream, LLC a la dirección indicada arriba o llamando al Sr. Drew Dixon, Vicepresidente Senior de Tierras y Regulación, al 832-304-7003.

Fecha de emisión el 11 de diciembre de 2024

PLUMMER

3689-001-01

November 22, 2024

Texas Commission on Environmental Quality
Applications Review and Processing Team
Building F, Room 2101
12100 Park 35 Circle
Austin, Texas 78753

Re: Solaris Water Midstream, LLC
Red Bluff Produced Water Treatment Facility
Application for New Industrial Texas Pollutant Discharge Elimination System (TPDES) Permit

To Whom It May Concern:

On behalf of Solaris Water Midstream, LLC, Plummer Associates, Inc. (Plummer) submits one original and two copies of a new industrial TPDES permit application for the above-referenced facility. The application fee of $1,250.00 has been submitted via ePay.

Please feel free to contact me at mpierce-walsh@plummer.com or (512) 359-7764 if you have any questions regarding this submittal.

Sincerely,

PLUMMER
TBPE Firm Registration No. F-13

Meg Pierce-Walsh
Environmental Services Practice Leader, Principal

Enclosures: New Industrial TPDES Permit Application (1 original, 2 copies)

cc: Mr. Chad Unrau, Solaris Water Midstream
Ms. Lisa Henthorne, P.E., Solaris Water Midstream
Mr. Tres Koenings, Plummer, Senior Project Manager

SOLARIS WATER MIDSTREAM, LLC

RED BLUFF PRODUCED WATER TREATMENT FACILITY

NEW INDUSTRIAL TPDES PERMIT APPLICATION

SUBMITTED TO:
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOVEMBER 2024

PROJECT #: 3689-001-01

PLUMMER

SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDUSTRIAL WASTEWATER APPLICATION CHECKLIST FOR OIL AND GAS EXTRACTION PERMITS ISSUED UNDER TEXAS WATER CODE CHAPTER 26

Complete and submit this checklist with the application.

APPLICANT NAME: Solaris Water Midstream, LLC

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	☐	☒
Public Involvement Plan Form	☒	☐	Worksheet 11.1	☐	☒
Plain Language Summary	☒	☐	Worksheet 11.2	☐	☒
Technical Report 1.0	☒	☐	Worksheet 11.3	☐	☒
Worksheet 1.0	☒	☐	Worksheet 12.0	☒	☐
Worksheet 2.0	☒	☐	Original USGS Map	☒	☐
Worksheet 3.0	☐	☒	Affected Landowners Map	☒	☐
Worksheet 3.1	☐	☒	Landowner Disk or Labels	☒	☐
Worksheet 3.2	☐	☒	Flow Diagram	☒	☐
Worksheet 3.3	☐	☒	Site Drawing	☒	☐
Worksheet 4.0	☒	☐	Original Photographs	☒	☐
Worksheet 4.1	☐	☒	Design Calculations	☐	☒
Worksheet 5.0	☐	☒	Solids Management Plan	☐	☒
Worksheet 6.0	☐	☒	Water Balance	☐	☒
Worksheet 7.0	☐	☒			

For TCEQ Use Only
Segment Number _____County _____
Expiration Date _____Region _____
Permit Number _____

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDUSTRIAL WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.0 FOR OIL AND GAS EXTRACTION PERMITS ISSUED UNDER TEXAS WATER CODE CHAPTER 26

This report is required for all applications for TPDES permits and TLAPs, except applications for oil and gas extraction operations subject to 40 CFR Part 435.

Please download and follow the instructions for Completing the Oil and Gas Extraction Administrative Report (TCEQ Form-20893-inst[1]). Contact the Industrial Permits Team (Oil and Gas Permits) at 512-239-4671 with any questions about completing this report.

1. TYPE OF APPLICATION AND FEES (Instructions, Page 8)

a. For facilities currently authorized by EPA and/or RRC, provide the following information:

RRC Permit No., if applicable: UIC Control No.: 000106896 Expiration Date: N/A

EPA ID No., if applicable: TX0N/A Expiration Date: N/A

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

- ☒ New TPDES permit
- ☐ Major amendment with renewal
- ☐ Renewal with changes
- ☐ Minor amendment without renewal
- ☐ Major amendment without renewal
- ☐ Renewal without changes
- ☐ Minor modification without renewal

c. If applying for an **amendment** or **modification** of a permit, describe the request in detail (include attachments as necessary): N/A

d. Check the box next to the amount submitted for the application fee

Application Fee:

EPA Classification	New	Major Amendment (With or Without Renewal)	Renewal (With or Without Changes)	Minor Amendment/ Minor Modification (Without Renewal)
Minor facility	☒ $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.

[1] https://www.tceq.texas.gov/publications/search_forms.html

e. Payment Information:

Mailed Check or money order number: N/A

Check or money order amount: N/A

Named printed on check or money order: N/A

ePAY Voucher number: 732215 & 732216

Copy of voucher attached? ☒ Yes **Attachment**: M

2. APPLICANT INFORMATION (Instructions, Page 8)

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

- Provide the legal name of the entity (applicant) applying for this permit: Solaris Water Midstream, LLC

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

- If the applicant is currently a customer with the TCEQ, provide the Customer Number, which can be located using the TCEQ's Central Registry Customer Search[2]: **CN**N/A

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

  Prefix: Ms. Full Name (Last/First Name: Brock, Amanda

  Title: Chief Executive Officer Credential: N/A

b. Co-applicant (Operator of the facility, if different from the owner of the facility) Information

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

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

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

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

  Prefix: N/A Full Name (Last/First Name: N/A

  Title: N/A Credential: N/A

- Provide a brief description of the need for a co-applicant: 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 the Administrative Report.

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

Attachment: A

3. APPLICATION CONTACT INFORMATION (Instructions, Page 9)

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

a. Prefix: Ms. Full Name (Last/First Name: Henthorne, Lisa
Title: Chief Scientist Credential: N/A
Organization Name: Solaris Water Midstream, LLC
Mailing Address: 9651 Katy Freeway, Suite 400 City/State/ZIP Code: Houston, TX 77024
Phone No.: 832-304-7003 E-mail: lisa.henthorne@ariswater.com
Check one or both: ☒ Administrative Contact ☒ Technical Contact

b. Prefix: Ms. Full Name (Last/First Name: Pierce-Walsh, Meg
Title: Environmental Services Practice Leader Credential: N/A
Organization Name: Plummer Associates, Inc.
Mailing Address: 8911 N Capital of Texas Hwy, Building 1 – Suite 1250 City/State/ZIP Code: Austin, TX 78759
Phone No.: 512-359-7764 E-mail: mpierce-walsh@plummer.com
Check one or both: ☒ Administrative Contact ☒ Technical Contact
Attachment: N/A

4. PERMIT CONTACT INFORMATION (Instructions, Page 9)

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

a. Prefix: Ms. Full Name (Last/First Name: Henthorne, Lisa
Title: Chief Scientist Credential: N/A
Organization Name: Solaris Water Midstream, LLC
Mailing Address: 9651 Katy Freeway, Suite 400 City/State/ZIP Code: Houston, TX 77024
Phone No.: 832-304-7003 E-mail: lisa.henthorne@ariswater.com

b. Prefix: Mr. Full Name (Last/First Name: Dixon, Drew
Title: Senior Vice President, Land & Regulatory Credential: J.D.
Organization Name: Solaris Water Midstream, LLC
Mailing Address: 9651 Katy Freeway, Suite 400 City/State/ZIP Code: Houston, TX 77024
Phone No.: 832-304-7003 E-mail: drew.dixon@ariswater.com

Attachment: N/A

5. BILLING CONTACT INFORMATION (Instructions, Page 9)

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits **in effect on September 1 of each year**. *The TCEQ will send a bill to the address provided in this*

section. The permittee is responsible for terminating the permit when it is no longer needed (form TCEQ-20029).

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

Prefix: N/A Full Name (Last/First Name: Accounts Payable

Title: N/A Credential: N/A

Organization Name: Solaris Water Midstream, LLC

Mailing Address: 9651 Katy Freeway, Suite 400 City/State/ZIP Code: Houston, TX 77024

Phone No.: 832-304-7003 E-mail: ap.midstream@ariswater.com

6. DMR CONTACT INFORMATION (Instructions, Page 10)

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

Prefix: Ms. Full Name (Last/First Name: Malton, Faith

Title: Regulatory Engineer Credential: N/A

Organization Name: Solaris Water Midstream, LLC

Mailing Address: 9651 Katy Freeway, Suite 400 City/State/ZIP Code: Houston, TX 77024

Phone No.: 832-304-7003 E-mail: faith.malton@ariswater.com

DMR data must be submitted through the NetDMR[3] system. An electronic reporting account can be established once the facility has obtained the permit number.

7. NOTICE INFORMATION (Instructions, Page 11)

a. Individual Publishing the Notices

Prefix: Ms. Full Name (Last/First Name: Griesel, Jenni

Title: Project Engineer Credential: P.E.

Organization Name: Plummer Associates, Inc.

Mailing Address: 8911N Capital of Texas Hwy, Bldg 1 - Ste 1250 City/State/ZIP Code: Austin, TX 78759

Phone No.: 512-687-2193 E-mail: jgriesel@plummer.com

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

☒ E-mail: jgriesel@plummer.com

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

☐ Fax: N/A

☐ Regular Mail (USPS) – Mailing Address (include City/State/Zip): N/A

c. Contact in the Notice

Prefix: Ms. Full Name (Last/First Name: Henthorne, Lisa

Title: Chief Scientist Credential: N/A

Organization Name: Solaris Water Midstream, LLC

Phone No.: 832-304-7003 E-mail: lisa.henthorne@ariswater.com

d. Public Place Information

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

Public building name: Reeves County Library Location within the building: N/A

Physical Address of Building: 315 S. Oak Street

City: Pecos County: Reeves

e. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, minor amendment or minor modification, and renewal 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? Spanish

f. Plain Language Summary Template

Complete the Plain Language Summary (TCEQ Form-20972) and include as an attachment.

Attachment: B

g. Public Involvement Plan Form

Complete the Public Involvement Plan Form (TCEQ Form-20960) for each application for a new permit or major amendment to a permit and include as an attachment.

Attachment: C

8. REGULATED ENTITY AND PERMITTED SITE INFORMATION (Instructions Page 11)

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[4] to determine the RN or to see if the larger site may already be registered as a regulated site:

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

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

b. Name of project/site/facility (the name known by the community where located): Red Bluff Produced Water Treatment Facility

c. Provide an address for the facility or a description of the facility location using the proximity of the facility to the nearest intersection: 1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, Reeves County, Texas.

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. Ownership of facility: ☐ Public ☒ Private ☐ Both ☐ Federal

9. TDPES DISCHARGE INFORMATION (Instructions, Page 12)

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

☐ Yes ☒ No

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

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

- ☒ One-mile radius and three-miles downstream information
- ☒ Facility boundaries
- ☒ State tract or lease block boundaries
- ☒ Labeled point(s) of discharge and highlighted discharge route(s)
- ☐ All wastewater ponds N/A
- ☐ New and future construction N/A
- ☐ Labeled and highlighted parks, playgrounds, and schoolyards N/A
- ☒ Attachment: D

c. Provide the state tract or lease block number and state tract or lease block name, and well numbers associated with the discharged water: Lease Block 57 T1; Lease No. 44257, Schmitt State, Well No. 1SW

d. Provide an accurate description of the point(s) of discharge and the discharge route(s): Directly to Red Bluff Reservoir

e. City nearest the outfall(s): Pecos, TX

f. County or counties in which the outfalls(s) is/are located: Reeves County, TX

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

☐ Yes ☒ No

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

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

Attachment: N/A

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

10. MISCELLANEOUS INFORMATION (Instructions, Page 14)

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

☒ Yes ☐ No

If **yes**, list each person: Tres Koenings, Kristin Arnold, Steve Walden

b. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following:

- Acct. No.: N/A
- Amt. due: N/A

c. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following:

- Enforcement Order No.: N/A
- Amt. due: N/A

11. SIGNATURE PAGE (Instructions, Page 15)

Applicant Name: Solaris Water Midstream, LLC

Certification:

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

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

Signatory name (typed or printed): Amanda Brock

Signatory title: Chief Executive Officer

Signature: Amanda Brock Date: 11/20/2024

(Use blue ink)

Subscribed and Sworn to before me by the said Amanda Brock

on this 20th day of November, 2024.

My commission expires on the 22nd day of April, 2026.

Amanda Ann LeBlanc
Notary Public

Harris
County, Texas

NOTARY PUBLIC
Amanda Ann LeBlanc
Exp. 4/22/2026
ID No. 7556370
STATE OF TEXAS
[SEAL]

If a co-applicant is necessary, each entity must submit an original, separate signature page.

INDUSTRIAL WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.1 FOR OIL AND GAS EXPLORATION AND PRODUCTION PERMITS ISSUED UNDER TEXAS WATER CODE CH. 26

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

1. AFFECTED LANDOWNER INFORMATION (Instructions, Page 16)

a. Landowner Map Components

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

- ☒ The facility's boundaries.
- ☒ The property boundaries of all properties adjacent to the facility's boundaries.
- ☐ The property boundaries of all properties within the facility's boundaries.
- ☐ The property boundaries of all properties overlapping the facility's boundaries.
- ☐ The property boundaries of all properties adjacent to any property overlapping the facility's boundaries.
- ☐ The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream of the discharge point(s).
- ☐ The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the discharge point(s).
- ☒ The property boundaries of the landowners along the watercourse for a one-half mile radius from the discharge point(s) if the discharge is into a lake, bay, estuary, or affected by tides.

Attachment: E.1

b. Landowner List Media

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

☐ Readable/Writeable CD or USB ☒ Four sets of labels

c. Cross-Referenced Landowner List

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

Attachment: E.2

d. Landowner Data Source

Provide the source of the landowners' names and mailing addresses: Reeves County CAD

e. School Fund Land

As required by *TWC § 5.115*, is any permanent school fund land affected by this application?

☐ Yes ☒ No

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

2. ORIGINAL PHOTOGRAPHS (Instructions, Page 18)

Provide original ground-level photographs. Indicate the following information is provided.

☒ At least one original photograph of the new or expanded facility location.

☒ At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.

☒ A plot plan or map showing the location and direction of each photograph.

Attachment: F

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

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

Attachment: SPIF

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING DOMESTIC OR INDUSTRIAL TPDES WASTEWATER PERMIT APPLICATIONS

TCEQ USE ONLY:

Application type: ____Renewal ____Major Amendment ____Minor Amendment ____New

County: _____ Segment Number: _____

Admin Complete Date: _____

Agency Receiving SPIF:

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

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

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

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

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

The following applies to all applications:

1. Permittee: Solaris Water Midstream, LLC

   Permit No. WQ00 N/A EPA ID No. TX N/A

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

   1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, Reeves County, Texas.

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

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

First and Last Name: Drew Dixon

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

Title: Senior Vice President, Land & Regulatory

Mailing Address: 9651 Katy Freeway, Suite 400

City, State, Zip Code: Houston, Texas 77024

Phone No.: 832-304-7003 Ext.: N/A Fax No.: N/A

E-mail Address: drew.dixon@ariswater.com

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

N/A

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

Via Outfall 001 directly to Red Bluff Reservoir in Segment No. 2312 of the Rio Grande Basin.

5. Please provide a separate 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required in addition to the map in the administrative report). See SPIF 1 and SPIF 2

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

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

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

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

Facility acreage is expected to be about 5 acres. Impacted depth will be <10 feet from surface elevation.

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

Land is undeveloped and vegetated with sparse shrubs and other semi-arid vegetation.

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

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

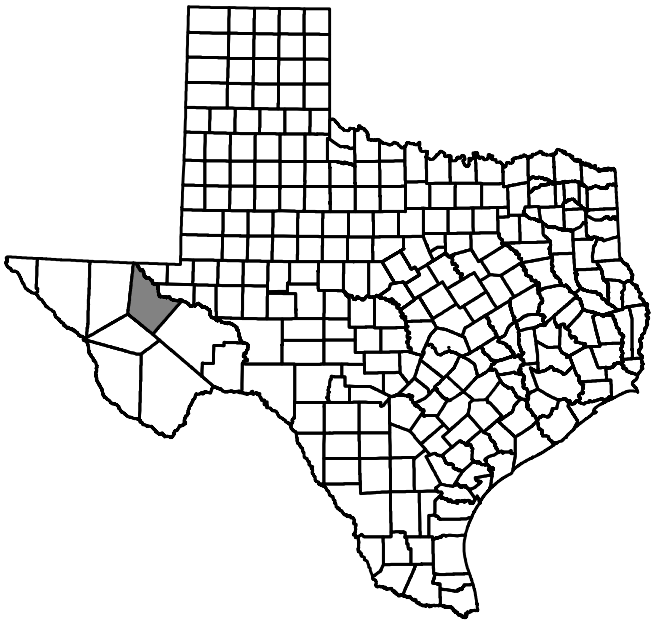
N/A – No structures on proposed facility property.

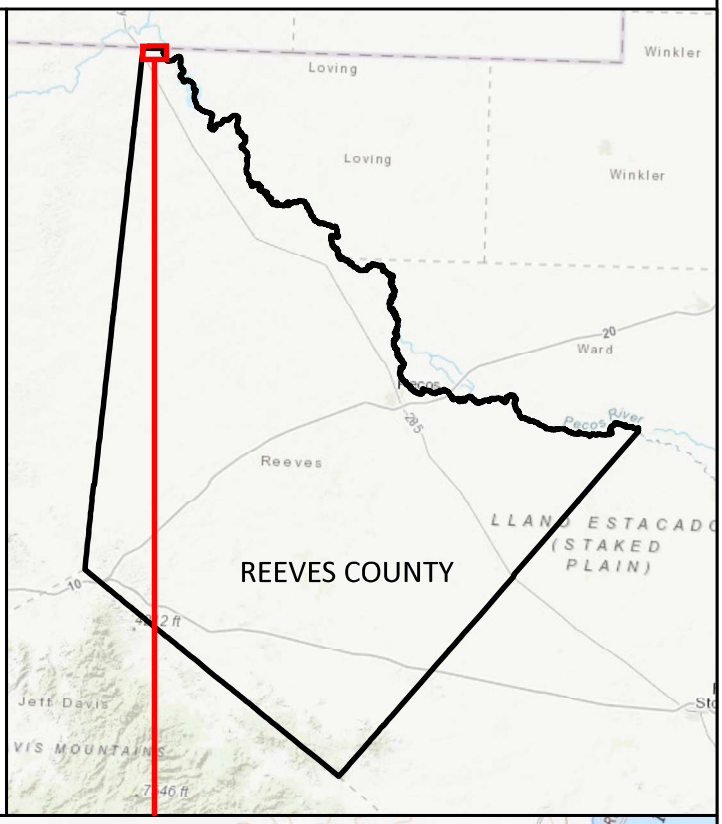
4. Provide a brief history of the property, and name of the architect/builder, if known.

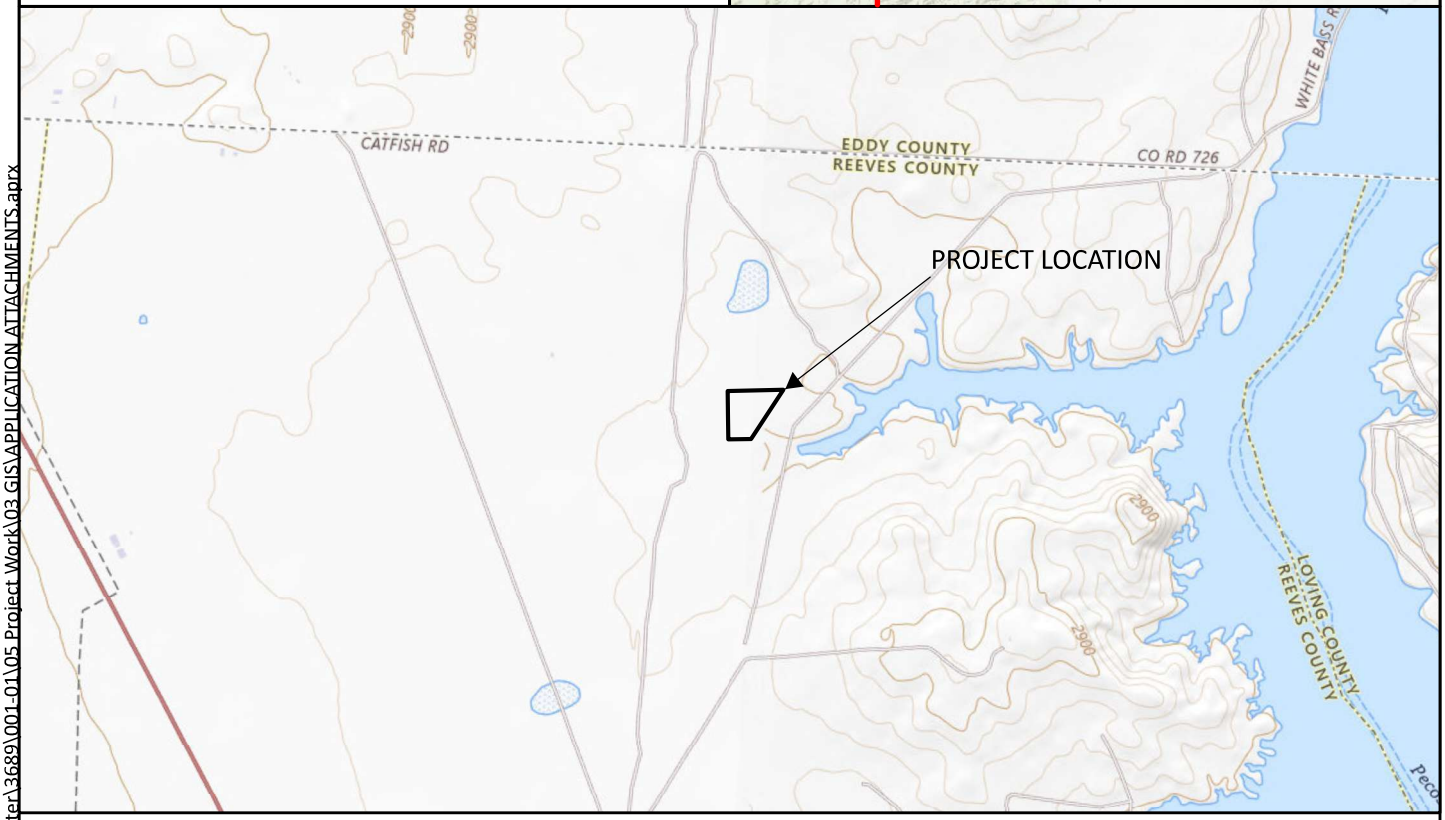
Proposed facility property has no development.

PLUMMER

N

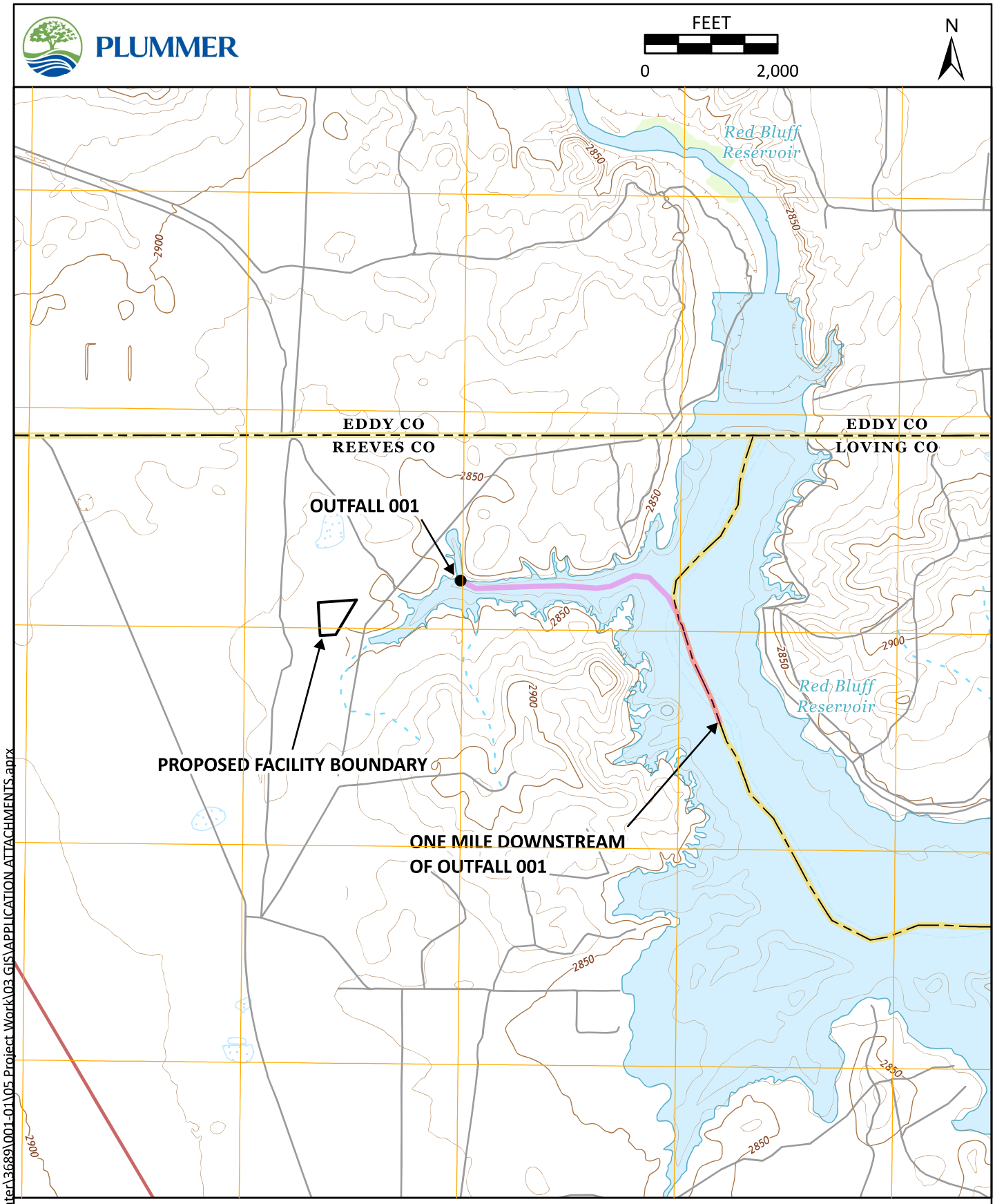






SPIF 1
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
GENERAL LOCATION MAP

TEXAS REGISTERED ENGINEERING FIRM F-13
Z:\Shared\Projects\Water\3689\001-01\05 Project Work\03 GIS\APPLICATION ATTACHMENTS.aprx



SPIF 2
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
USGS MAP

TEXAS REGISTERED ENGINEERING FIRM F-13
Z:\Shared\Projects\Water\3689\001-01\05 Project Work\03 GIS\APPLICATION ATTACHMENTS.aprx

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDUSTRIAL WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

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

For **additional information** or clarification on the requested information, please refer to the Instructions for Completing the Industrial Wastewater Permit Application[1] available on the TCEQ website. Please contact the Industrial Permits Team at 512-239-4671 with any questions about this form.

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

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

Item 1. Facility/Site Information (Instructions, Page 39)

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

The applicable SIC code is 1389 Oil and Gas Field Services, Not Elsewhere Classified.

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

The facility will collect raw and/or pretreated produced water from Oil & Gas Exploration and Production (PW) from multiple facilities and will treat the PW to generate purified water to be discharged to surface water.

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

Materials List

Raw Materials	Intermediate Products	Final Products
Raw and/or pretreated PW		Purified Water (Surface discharge)
		Brine Stream (Salt-water disposal well)

Attachment: N/A

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

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

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

Attachment: G

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

☐ Yes ☒ No

If **yes**, provide background discussion: N/A

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

☒ Yes ☐ No

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

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

Attachment: N/A

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

☐ Yes ☒ No ☐ N/A (renewal only)

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

☐ Yes ☐ No

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

If **no**, provide an approximate date of application submittal to the USACE: N/A

Item 2. Treatment System (Instructions, Page 40)

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

PW will be pretreated (removal of suspended solids, oil & grease, iron, and manganese), desalinated (dissolved solids removal), and post-treated (removal of ammonia, boron, and remaining organics) to generate purified water for surface water discharge. The brine streams from pretreatment and desalination will be disposed of in a saltwater disposal well (SWD). The post-treatment wastewater will either be recycled to the PW feed or disposed of in an SWD.

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

Attachment: H

Item 3. Impoundments (Instructions, Page 40)

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

☐ Yes ☒ No

If **no**, proceed to Item 4. If **yes**, complete **Item 3.a** for **existing** impoundments and **Items 3.a - 3.e** for **new or proposed** impoundments. **NOTE:** See instructions, Pages 40-42, for additional information on the attachments required by Items 3.a – 3.e.

a. Complete the table with the following information for each existing, new, or proposed impoundment. Attach additional copies of the Impoundment Information table, if needed.

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

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

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

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

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

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

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

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

Impoundment Information

Parameter	**Pond #**	**Pond #**	**Pond #**	**Pond #**
Use Designation: (T) (D) (C) or (E)	N/A	N/A	N/A	N/A
Associated Outfall Number	N/A	N/A	N/A	N/A
Liner Type (C) (I) (S) or (A)	N/A	N/A	N/A	N/A
Alt. Liner Attachment Reference	N/A	N/A	N/A	N/A
Leak Detection System, Y/N	N/A	N/A	N/A	N/A
Groundwater Monitoring Wells, Y/N	N/A	N/A	N/A	N/A
Groundwater Monitoring Data Attachment	N/A	N/A	N/A	N/A

Parameter	Pond #	Pond #	Pond #	Pond #
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	N/A	N/A	N/A	N/A
Length (ft)	N/A	N/A	N/A	N/A
Width (ft)	N/A	N/A	N/A	N/A
Max Depth From Water Surface (ft), Not Including Freeboard	N/A	N/A	N/A	N/A
Freeboard (ft)	N/A	N/A	N/A	N/A
Surface Area (acres)	N/A	N/A	N/A	N/A
Storage Capacity (gallons)	N/A	N/A	N/A	N/A
40 CFR Part 257, Subpart D, Y/N	N/A	N/A	N/A	N/A
Date of Construction	N/A	N/A	N/A	N/A

Attachment: N/A

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

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

1. Liner data

☐ Yes ☐ No ☐ Not yet designed N/A

2. Leak detection system or groundwater monitoring data

☐ Yes ☐ No ☐ Not yet designed N/A

3. Groundwater impacts

☐ Yes ☐ No ☐ Not yet designed N/A

NOTE: Item b.3 is required if the bottom of the pond is not above the seasonal high-water table in the shallowest water-bearing zone.

Attachment: N/A

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

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

Attachment: N/A

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

Attachment: N/A

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

Attachment: N/A

Item 4. Outfall/Disposal Method Information (Instructions, Page 42)

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

If there are more outfalls/points of disposal at the facility than the spaces provided, copies of pages 6 and/0r numbered accordingly (i.e., page 6a, 6b, etc.) may be used to provide information on the additional outfalls.

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

Outfall Longitude and Latitude

Outfall No.	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
001	31.994100	-103.994425

Outfall Location Description

Outfall No.	Location Description
001	Directly to Red Bluff Reservoir, in the northernmost western branch

Description of Sampling Point(s) (if different from Outfall location)

Outfall No.	Description of sampling point
001	After the final post-treatment unit

Outfall Flow Information – Permitted and Proposed

Outfall No.	Permitted Daily Avg Flow (MGD)	Permitted Daily Max Flow (MGD)	Proposed Daily Avg Flow (MGD)	Proposed Daily Max Flow (MGD)	Anticipated Discharge Date (mm/dd/yy)
001	N/A	N/A	0.5 (Interim I) 5.0 (Interim II) 10 (Final)	0.5 (Interim I) 5.0 (Interim II) 10 (Final)	01/01/2026

Outfall Discharge – Method and Measurement

Outfall No.	Pumped Discharge? Y/N	Gravity Discharge? Y/N	Type of Flow Measurement Device Used
001	Y	N	Flow Meter

Outfall Discharge – Flow Characteristics

Outfall No.	Intermittent Discharge? Y/N	Continuous Discharge? Y/N	Seasonal Discharge? Y/N	Discharge Duration (hrs/day)	Discharge Duration (days/mo)	Discharge Duration (mo/yr)
001	N	Y	N	24	30	12

Outfall Wastestream Contributions

Outfall No. 001

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow
Purified Water	0.5 (Interim I)	100
	5.0 (Interim II)	100
	10 (Final)	100

Outfall No. N/A

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow

Outfall No. N/A

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow

Attachment: N/A

Item 5. Blowdown and Once-Through Cooling Water Discharges (Instructions, Page 43)

a. Indicate if the facility currently or proposes to:

☐ Yes ☒ No Use cooling towers that discharge blowdown or other wastestreams

☐ Yes ☒ No Use boilers that discharge blowdown or other wastestreams

☐ Yes ☒ No Discharge once-through cooling water

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

b. If **yes** to any of the above, attach an SDS with the following information for each chemical additive.

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

- Concentration of whole product or active ingredient, as appropriate, in wastestream.

In addition to each SDS, attach a summary of the above information for each specific wastestream and the associated chemical additives. Specify which outfalls are affected.

Attachment: N/A

c. Cooling Towers and Boilers

If the facility currently or proposes to use cooling towers or boilers that discharge blowdown or other wastestreams to the outfall(s), complete the following table.

Cooling Towers and Boilers

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

Item 6. Stormwater Management (Instructions, Page 44)

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

☐ Yes ☒ No

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

Item 7. Domestic Sewage, Sewage Sludge, and Septage Management and Disposal (Instructions, Page 44)

Domestic Sewage - Waste and wastewater from humans or household operations that is discharged to a wastewater collection system or otherwise enters a treatment works.

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

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

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

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

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

☐ Facility is a POTW. Complete Worksheet 5.0.

☐ Domestic sewage is not generated on-site.

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

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.
To be determined	To be determined

Item 8. Improvements or Compliance/Enforcement Requirements (Instructions, Page 45)

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

☐ Yes ☒ No

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

☐ Yes ☒ No

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

Item 9. Toxicity Testing (Instructions, Page 45)

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

☐ Yes ☒ No

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

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

Item 10. Off-Site/Third Party Wastes (Instructions, Page 45)

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

☒ Yes ☐ No

If **yes**, provide responses to Items 10.b through 10.d below.

If **no**, proceed to Item 11.

b. Attach the following information to the application:

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

Attachment: I

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

☐ Yes ☒ No

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

Attachment: N/A

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

☐ Yes ☒ No

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

Item 11. Radioactive Materials (Instructions, Page 46)

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

☐ Yes ☒ No

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

Radioactive Materials Mined, Used, Stored, or Processed

Radioactive Material Name	Concentration (pCi/L)
N/A	N/A

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

☒ Yes ☐ No

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

Radioactive Materials Present in the Discharge

Radioactive Material Name	Concentration (pCi/L)
Gross Alpha	1.63 (Average of samples 4/16, 4/25, 4/30)
Gross Beta	2.72 (Average of samples 4/16, 4/25, 4/30)
Strontium-90	0.36 (Average of samples 4/16, 4/25, 4/30)

Item 12. Cooling Water (Instructions, Page 46)

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

☐ Yes ☒ No

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

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

☐ Yes ☐ No N/A

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

c. Cooling Water Supplier

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

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

CWIS ID				
Owner				
Operator				

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

☐ Yes ☐ No

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

3. Cooling water is/will be obtained from a reclaimed water source?

☐ Yes ☐ No

If **no**, continue. If **yes**, provide the Reuse Authorization No. and stop here: N/A

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

☐ Yes ☐ No

If **no**, proceed to Item 12.d. If **yes**, provide the actual intake flow of the Independent Supplier's CWIS that is/will be used to provide water for cooling purposes and proceed: N/A

d. 316(b) General Criteria

1. The CWIS(s) used to provide water for cooling purposes to the facility has or will have a cumulative design intake flow of 2 MGD or greater.

☐ Yes ☐ No

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

☐ Yes ☐ No

3. The CWIS(s) withdraw(s)/propose(s) 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*: N/A

If **yes** to all three questions in Item 12.d, the facility **meets** the minimum criteria to be subject to the full requirements of Section 316(b) of the CWA. Proceed to **Item 12.f**.

If **no** to any of the questions in Item 12.d, the facility **does not meet** the minimum criteria to be subject to the full requirements of Section 316(b) of the CWA; however, a determination is required based upon BPJ. Proceed to **Item 12.e**.

e. The facility does not meet the minimum requirements to be subject to the fill requirements of Section 316(b) **and uses**/proposes **to use cooling towers**.

☐ Yes ☐ No

If **yes**, stop here. If **no**, complete Worksheet 11.0, Items 1.a, 1.b.1-3 and 6, 2.b.1, and 3.a to allow for a determination based upon BPJ.

f. Oil and Gas Exploration and Production

1. The facility is subject to requirements at 40 CFR Part 435, Subparts A or D.

☐ Yes ☐ No

If **yes**, continue. If **no**, skip to Item 12.g.

2. The facility is an existing facility as defined at 40 CFR § 125.92(k) or a new unit at an existing facility as defined at 40 CFR § 125.92(u).

☐ Yes ☐ No

If **yes**, complete Worksheet 11.0, Items 1.a, 1.b.1-3 and 6, 2.b.1, and 3.a to allow for a determination based upon BPJ. If **no**, skip to Item 12.g.3.

g. Compliance Phase and Track Selection

1. Phase I – New facility subject to 40 CFR Part 125, Subpart I

☐ Yes ☐ No

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

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

- Attach information required by *40 CFR §§ 125.86(b)(2)-(4)*.

☐ Track I – AIF greater than 10 MGD

- Attach information required by *40 CFR § 125.86(b)*.

☐ Track II

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

Attachment: N/A

2. Phase II – Existing facility subject to 40 CFR Part 125, Subpart J

☐ Yes ☐ No

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

3. Phase III – New facility subject to 40 CFR Part 125, Subpart N

☐ Yes ☐ No

If **yes**, check the box next to the compliance track selection and provide the requested information.

☐ Track I – Fixed facility

- Attach information required by 40 CFR § 125.136(b) and complete Worksheet 11.0, Items 2 and 3, and Worksheet 11.2.

☐ Track I – Not a fixed facility

- Attach information required by 40 CFR § 125.136(b) and complete Worksheet 11.0, Item 2 (except CWIS latitude/longitude under Item 2.a).

☐ Track II – Fixed facility

- Attach information required by 40 CFR § 125.136(c) and complete Worksheet 11.0, Items 2 and 3.

Attachment: N/A

Item 13. Permit Change Requests (Instructions, Page 48)

This item is only applicable to existing permitted facilities.

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

☐ Yes ☐ No N/A

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

N/A

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

☐ Yes ☐ No N/A

If **yes**, list and describe each change individually.

N/A

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

☐ Yes ☐ No N/A

If **yes**, list and describe each change individually.

N/A

Item 14. Laboratory Accreditation (Instructions, Page 49)

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

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

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

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

CERTIFICATION:

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

Printed Name: Amanda Brock

Title: Chief Executive Officer

Signature: Amanda Brock

Date: 11/20/2024

INDUSTRIAL WASTEWATER PERMIT APPLICATION 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 limitation guidelines (ELGs).

Item 1. Categorical Industries (Instructions, Page 53)

Is this facility subject to any 40 CFR categorical ELGs outlined on page 53 of the instructions?

☒ Yes ☐ No

If **no**, this worksheet is not required. If **yes**, provide the appropriate information below.

40 CFR Effluent Guideline

Industry	40 CFR Part
Oil and Gas Extraction	435
Centralized Waste Treatment	437

Item 2. Production/Process Data (Instructions, Page 54)

NOTE: For all TPDES permit applications requesting individual permit coverage for discharges of oil and gas exploration and production wastewater (discharges into or adjacent to water in the state, falling under the Oil and Gas Extraction Effluent Guidelines – 40 CFR Part 435), see Worksheet 12.0, Item 2 instead.

a. Production Data

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

Production Data

Subcategory	Actual Quantity/Day	Design Quantity/Day	Units
Oils Treatment and Recovery	Not yet constructed	10,000,000 gpd (Final)	N/A

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

Provide each applicable subpart and the percent of total production. Provide data for metal-bearing and cyanide-bearing wastestreams, as required by *40 CFR Part 414, Appendices A and B*.

Percentage of Total Production

Subcategory	Percent of Total Production	Appendix A and B - Metals	Appendix A - Cyanide
N/A			

c. Refineries (40 CFR Part 419)

Provide the applicable subcategory and a brief justification.

N/A

Item 3. Process/Non-Process Wastewater Flows (Instructions, Page 54)

Provide a breakdown of wastewater flow(s) generated by the facility, including both process and non-process wastewater flow(s). Specify which wastewater flows are to be authorized for discharge under this permit and the disposal practices for wastewater flows, excluding domestic, which are not to be authorized for discharge under this permit.

The facility will generate process wastewater only. The facility will receive raw and/or pretreated produced water from oil and gas exploration and production (Part 437) and treat said produced water (Part 435). The discharge authorized under this permit will be purified water following pretreatment, desalination, and post-treatment. Pretreatment reject and the desalination's brine stream will not be authorized for discharge under this permit and will be disposed of in a saltwater disposal well (SWD). Post-treatment wastewater will be recycled into the produced water feed or disposed of in an SWD.

Item 4. New Source Determination (Instructions, Page 54)

Provide a list of all wastewater-generating processes subject to EPA categorical ELGs, identify the appropriate guideline Part and Subpart, and provide the date the process/construction commenced.

Wastewater Generating Processes Subject to Effluent Guidelines

Process	EPA Guideline Part	EPA Guideline Subpart	Date Process/ Construction Commenced
Treatment of Produced Water from Oil & Gas Extraction	435	C	Will commence following permit issuance
Receipt of Offsite Produced Water for Treatment	437	B	Will commence following permit issuance

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 2.0: POLLUTANT ANALYSIS

Worksheet 2.0 **is required** for all 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 associated with industrial activities.

Item 1. General Testing Requirements (Instructions, Page 55)

a. Provide the date range of all sampling events conducted to obtain the analytical data submitted with this application (e.g., 05/01/2018-05/30/2018): 04/13/2024 – 08/08/2024

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

c. Read the general testing requirements in the instructions for important information about sampling, test methods, and MALs. If a contact laboratory was used, attach a list which includes the name, contact information, and pollutants analyzed for each laboratory/firm. **Attachment:** J

Item 2. Specific Testing Requirements (Instructions, Page 56)

Attach correspondence from TCEQ approving submittal of less than the required number of samples, if applicable. **Attachment:** N/A Note: "-" means pollutant not analyzed.

TABLE 1 and TABLE 2 (Instructions, Page 58)

Completion of Tables 1 and 2 is required for all external outfalls for all TPDES permit applications.

Table 1 for Outfall No.: 001 **Samples are (check one):** ☐ **Composite** ☒ **Grab**

Pollutant	**4/13/24 (mg/L)**	**4/16/24 (mg/L)**	**4/25/24 (mg/L)**	**4/30/24 (mg/L)**	**5/7/24 (mg/L)**	**8/8/24 (mg/L)**
BOD (5-day)	<60	3.66	<3	23.3	-	-
CBOD (5-day)	-	-	-	-	-	-
Chemical oxygen demand	290	11	11	58	-	-
Total organic carbon	26.3	6.08	<5	2.48	-	-
Dissolved oxygen	17.8	8.86	9.28	9.03	9.34	-
Ammonia nitrogen	<0.51	1.4	<0.05	<0.05	-	-
Total suspended solids	46.2	<7.27	4.4	<4	<16	-
Nitrate nitrogen	0.119	0.0537	<0.0391	-	0.0782	<39.1
Total organic nitrogen	-	-	-	-	-	-
Total phosphorus	0.314	0.324	<0.0184	<0.0184	-	<0.0184
Oil and grease	-	-	-	-	-	<1.85
Total residual chlorine	-	-	-	-	-	-

Pollutant	4/13/24 (mg/L)	4/16/24 (mg/L)	4/25/24 (mg/L)	4/30/24 (mg/L)	5/7/24 (mg/L)	8/8/24 (mg/L)
Total dissolved solids	343	330	224	520	398	205
Sulfate	5.95	11.7	22.3	-	17.3	1.45
Chloride	34.8	30.8	13.6	-	15	28
Fluoride	8.69	1.88	<0.1	-	6.59	5.18
Total alkalinity (mg/L as CaCO3)	197	188	135	322	-	109
Temperature (˚F)	-	61.3	62.8	66.0	-	70.8
pH (standard units)	7.88	8.18	7.42	7.7	-	7.88

Table 2 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☐ Grab**

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)
Aluminum, total	845	-	502	49.3	373	<5.5	2.5
Antimony, total	<5	-	<5	<5	<5	<5	5
Arsenic, total	14.8	-	4.57	3.75	7.05	<0.69	0.5
Barium, total	26.5	-	9.2	<3	3.57	<3	3
Beryllium, total	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.5
Cadmium, total	<1	-	<1	<1	<1	<1	1
Chromium, total	16.5	-	7.64	5.98	8.11	<3	3
Chromium, hexavalent	-	-	<2	-	-	<3	3
Chromium, trivalent	<16.5	-	<7.64	<5.98	<8.11	<3	N/A
Copper, total	<3.88	N/A	<3.88	<3.88	<3.88	<3.9	2
Cyanide, available	-	<16.1	<1.98	<1.98	-	<2	2/10
Lead, total	0.52	-	<0.5	<0.5	<0.5	<0.5	0.5
Mercury, total	-	<0.071	<0.071	<0.071	<0.071	<0.0706	0.005/0.0005
Nickel, total	14.5	-	6.04	<2	<2	<2	2
Selenium, total	5.13	-	<5	<5	<5	<5	5
Silver, total	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.5
Thallium, total	<0.05	-	<0.5	<0.5	<0.5	<5	0.5
Zinc, total	17.1	-	<5	<5	<5	<5	5.0

TABLE 3 (Instructions, Page 58)

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** which discharge non-process wastewater and stormwater associated with industrial activities commingled with other wastestreams (see instructions for additional guidance).

Table 3 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☐ Grab**

Pollutant	**4/13/24 (µg/L)**	**4/16/24 (µg/L)**	**4/25/24 (µg/L)**	**4/30/24 (µg/L)**	**5/7/24 (µg/L)**	**8/8/24 (µg/L)**	**MAL (µg/L)***
Acrylonitrile	<50	<50	<50	<50	-	<50	50
Anthracene	<10	<10	<10	<10	<10	<10	10
Benzene	<10	<10	<10	<10	-	<10	10
Benzidine	<50	<50	<50	<50	<50	<50	50
Benzo(a)anthracene	<5	<5	<5	<5	<5	<5	5
Benzo(a)pyrene	<5	<5	<5	<5	<5	<5	5
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	10
Bis(2-ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10	10
Bromodichloromethane [Dichlorobromomethane]	<10	<10	<10	<10	-	<10	10
Bromoform	<10	<10	<10	<10	-	<10	10
Carbon tetrachloride	<2	<2	<2	<2	-	<2	2
Chlorobenzene	<10	<10	<10	<10	-	<10	10
Chlorodibromomethane [Dibromochloromethane]	<10	<10	<10	<10	-	<10	10
Chloroform	<10	<10	<10	<10	-	<10	10
Chrysene	<5	<5	<5	<5	<5	<5	5
m-Cresol [3-Methylphenol]	<10	<10	<10	<10	<10	<10	10
o-Cresol [2-Methylphenol]	<10	<10	<10	<10	<10	<10	10
p-Cresol [4-Methylphenol]	<10	<10	<10	<10	<10	<10	10
1,2-Dibromoethane	<10	<10	<10	<10	-	<10	10
m-Dichlorobenzene [1,3-Dichlorobenzene]	<10	<10	<10	<10	<10	<10	10
o-Dichlorobenzene [1,2-Dichlorobenzene]	<10	<10	<10	<10	<10	<10	10
p-Dichlorobenzene [1,4-Dichlorobenzene]	<10	<10	<10	<10	<10	<10	10
3,3'-Dichlorobenzidine	<5	<5	<5	<5	<5	<5	5
1,2-Dichloroethane	<10	<10	<10	<10	-	<10	10

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)*
1,1-Dichloroethene [1,1-Dichloroethylene]	<10	<10	<10	<10	-	<10	10
Dichloromethane [Methylene chloride]	<20	<20	<20	<20	-	<20	20
1,2-Dichloropropane	<10	<10	<10	<10	-	<10	10
1,3-Dichloropropene [1,3-Dichloropropylene]	<10	<10	<10	<10	-	<10	10
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	10
Di-n-Butyl phthalate	<10	<10	<10	<10	<10	<10	10
Ethylbenzene	<10	<10	<10	<10	-	<10	10
Fluoride	8,690	1,880	<500	-	6,590	5,180	500
Hexachlorobenzene	<5	<5	<5	<5	<5	<5	5
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10	10
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	10
Hexachloroethane	<20	<20	<20	<20	<20	<20	20
Methyl ethyl ketone	<50	<50	<50	<50	-	<50	50
Nitrobenzene	<10	<10	<10	<10	<10	<10	10
N-Nitrosodiethylamine	<20	<20	<20	<20	<20	<20	20
N-Nitroso-di-n-butylamine	<20	<20	<20	<20	<20	<20	20
Nonylphenol	-	-	-	-	-	-	333
Pentachlorobenzene	<20	<20	<20	<20	<20	<20	20
Pentachlorophenol	<5	<5	<5	<5	<5	<5	5
Phenanthrene	<10	<10	<10	<10	<10	<10	10
Polychlorinated biphenyls (PCBs) (**)	-	<0.2	<0.2	<0.2	<0.2	<0.34	0.2
Pyridine	<20	<20	<20	<20	<20	<20	20
1,2,4,5-Tetrachlorobenzene	<20	<20	<20	<20	<20	<20	20
1,1,2,2-Tetrachloroethane	<10	<10	<10	<10	-	<10	10
Tetrachloroethene [Tetrachloroethylene]	<10	<10	<10	<10	<10	<10	10
Toluene	<10	<10	<10	<10	-	<10	10
1,1,1-Trichloroethane	<10	<10	<10	<10	-	<10	10
1,1,2-Trichloroethane	<10	<10	<10	<10	-	<10	10
Trichloroethene [Trichloroethylene]	<10	<10	<10	<10	-	<10	10

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)*
2,4,5-Trichlorophenol	<50	<50	<50	<50	<50	<50	50
TTHM (Total trihalomethanes)	<10	<10	<10	<10	-	<10	10
Vinyl chloride	<10	<10	<10	<10	-	<10	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, Pages 58-59)

Partial completion of Table 4 **is required** for each **external outfall** based on the conditions below.

a. **Tributyltin**

Is this facility an industrial/commercial facility which currently or proposes to directly dispose of wastewater from the types of operations listed below or a domestic facility which currently or proposes to receive wastewater from the types of industrial/commercial operations listed below?

☐ Yes ☒ No

If **yes**, check the box next to each of the following criteria which apply and provide the appropriate testing results in Table 4 below (check all that apply).

☐ 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 (discharge to saltwater)**

This facility discharges/proposes to 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/will be discharged.

☐ Yes ☒ No

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

c. E. coli (discharge to freshwater)

This facility discharges/proposes to 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/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): ☐ Composite ☐ Grab**

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

TABLE 5 (Instructions, Page 59)

Completion of Table 5 **is required** for all **external outfalls** which discharge process wastewater from a facility which manufactures or formulates pesticides or herbicides or other wastewaters which may contain pesticides or herbicides.

If this facility does not/will not manufacture or formulate pesticides or herbicides and does not/will not discharge other wastewaters that may contain pesticides or herbicides, check N/A.

☒ N/A

Table 5 for Outfall No.: N/A **Samples are (check one): ☐ Composite ☐ Grab**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)*
Aldrin	N/A	N/A	N/A	N/A	0.01
Carbaryl	N/A	N/A	N/A	N/A	5
Chlordane	N/A	N/A	N/A	N/A	0.2
Chlorpyrifos	N/A	N/A	N/A	N/A	0.05
4,4'-DDD	N/A	N/A	N/A	N/A	0.1
4,4'-DDE	N/A	N/A	N/A	N/A	0.1
4,4'-DDT	N/A	N/A	N/A	N/A	0.02
2,4-D	N/A	N/A	N/A	N/A	0.7
Danitol [Fenpropathrin]	N/A	N/A	N/A	N/A	—
Demeton	N/A	N/A	N/A	N/A	0.20
Diazinon	N/A	N/A	N/A	N/A	0.5/0.1
Dicofol [Kelthane]	N/A	N/A	N/A	N/A	1
Dieldrin	N/A	N/A	N/A	N/A	0.02
Diuron	N/A	N/A	N/A	N/A	0.090

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)*
Endosulfan I (*alpha*)	N/A	N/A	N/A	N/A	0.01
Endosulfan II (*beta*)	N/A	N/A	N/A	N/A	0.02
Endosulfan sulfate	N/A	N/A	N/A	N/A	0.1
Endrin	N/A	N/A	N/A	N/A	0.02
Guthion [Azinphos methyl]	N/A	N/A	N/A	N/A	0.1
Heptachlor	N/A	N/A	N/A	N/A	0.01
Heptachlor epoxide	N/A	N/A	N/A	N/A	0.01
Hexachlorocyclohexane (*alpha*)	N/A	N/A	N/A	N/A	0.05
Hexachlorocyclohexane (*beta*)	N/A	N/A	N/A	N/A	0.05
Hexachlorocyclohexane (*gamma*) [Lindane]	N/A	N/A	N/A	N/A	0.05
Hexachlorophene	N/A	N/A	N/A	N/A	10
Malathion	N/A	N/A	N/A	N/A	0.1
Methoxychlor	N/A	N/A	N/A	N/A	2.0
Mirex	N/A	N/A	N/A	N/A	0.02
Parathion (ethyl)	N/A	N/A	N/A	N/A	0.1
Toxaphene	N/A	N/A	N/A	N/A	0.3
2,4,5-TP [Silvex]	N/A	N/A	N/A	N/A	0.3

* Indicate units if different from µg/L.

TABLE 6 (Instructions, Page 59)

Completion of Table 6 **is required** for all **external outfalls**.

Table 6 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☒ Grab**

Pollutants	Believed Present	Believed Absent	4/13 (µg/L)	4/16 (µg/L)	4/25 (µg/L)	4/30 (µg/L)	5/7 (µg/L)	8/8 (µg/L)	MAL (µg/L)*
Bromide	☒	☐	<71.1	<71.1	626	-	<71.1	<71.1	400
Color (PCU)	☐	☒	-	-	-	-	-	-	—
Nitrate-Nitrite (as N)	☒	☐	970	1,150	1,220	-	1,570	-	—
Sulfide (as S)	☐	☒	<2	<2	<2	<2	<2	<2	—
Sulfite (as SO3)	☐	☒	<5	<5	<1.5	<1.5	<1.5	-	—
Surfactants	☐	☒	-	-	-	-	-	-	—
Boron, total	☒	☐	444	424	<20	962	-	<20	20
Cobalt, total	☒	☐	0.661	0.655	<0.355	0.355	-	<0.36	0.3
Iron, total	☒	☐	264	241	<28.3	<28.3	-	<28.3	7
Magnesium, total	☒	☐	402	2,090	<44.5	148	-	<44.5	20
Manganese, total	☒	☐	12.8	27.3	<4.36	6.45	-	<4.4	0.5
Molybdenum, total	☒	☐	1.59	<1	<1	2.0	-	<1	1
Tin, total	☒	☐	12.1	<5	<5	<5	-	<5	5
Titanium, total	☐	☒	<30	<30	<30	<30	-	<30	30

TABLE 7 (Instructions, Page 60)

Check the box next to any of the industrial categories applicable to this facility. If no categories are applicable, check N/A. If GC/MS testing is required, check the box provided to confirm 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
☒ Oil and Gas Extraction - Subparts A, D, E, F, G, H	435	☒ Yes	☒ Yes	☒ Yes	No
☐ 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, Page 60)

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 **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 **Samples are (check one): ☒ Composite ☐ Grab**

Pollutant	**4/13/24 (µg/L)**	**4/16/24 (µg/L)**	**4/25/24 (µg/L)**	**4/30/24 (µg/L)**	**5/7/24 (µg/L)**	**8/8/24 (µg/L)**	**MAL (µg/L)**
Acrolein	<50	<50	<50	<50	-	<50	50
Acrylonitrile	<50	<50	<50	<50	-	<50	50
Benzene	<10	<10	<10	<10	-	<10	10
Bromoform	<10	<10	<10	<10	-	<10	10
Carbon tetrachloride	<2	<2	<2	<2	-	<2	2
Chlorobenzene	<10	<10	<10	<10	-	<10	10
Chlorodibromomethane	<10	<10	<10	<10	-	<10	10
Chloroethane	<50	<50	<50	<50	-	<50	50
2-Chloroethylvinyl ether	<10	<10	<10	<10	-	<10	10
Chloroform	<10	<10	<10	<10	-	<10	10
Dichlorobromomethane [Bromodichloromethane]	<10	<10	<10	<10	-	<10	10
1,1-Dichloroethane	<10	<10	<10	<10	-	<10	10
1,2-Dichloroethane	<10	<10	<10	<10	-	<10	10
1,1-Dichloroethylene [1,1-Dichloroethene]	<10	<10	<10	<10	-	<10	10
1,2-Dichloropropane	<10	<10	<10	<10	-	<10	10
1,3-Dichloropropylene [1,3-Dichloropropene]	<10	<10	<10	<10	-	<10	10
Ethylbenzene	<10	<10	<10	<10	-	<10	10
Methyl bromide [Bromomethane]	<50	<50	<50	<50	-	<50	50
Methyl chloride [Chloromethane]	<50	<50	<50	<50	-	<50	50
Methylene chloride [Dichloromethane]	<20	<20	<20	<20	-	<20	20
1,1,2,2-Tetrachloroethane	<10	<10	<10	<10	-	<10	10
Tetrachloroethylene [Tetrachloroethene]	<10	<10	<10	<10	-	<10	10
Toluene	<10	<10	<10	<10	-	<10	10

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]	<10	<10	<10	<10	-	<10	10
1,1,1-Trichloroethane	<10	<10	<10	<10	-	<10	10
1,1,2-Trichloroethane	<10	<10	<10	<10	-	<10	10
Trichloroethylene [Trichloroethene]	<10	<10	<10	<10	-	<10	10
Vinyl chloride	<10	<10	<10	<10	-	<10	10

* Indicate units if different from µg/L.

Table 9 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☐ Grab**

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)
2-Chlorophenol	<10	<10	<10	<10	<10	<10	10
2,4-Dichlorophenol	<10	<10	<10	<10	<10	<10	10
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	10
4,6-Dinitro-o-cresol	<50	<50	<50	<50	<50	<50	50
2,4-Dinitrophenol	<50	<50	<50	<50	<50	<50	50
2-Nitrophenol	<20	<20	<20	<20	<20	<20	20
4-Nitrophenol	<50	<50	<50	<50	<50	<50	50
p-Chloro-m-cresol	<10	<10	<10	<10	<10	<10	10
Pentachlorophenol	<5	<5	<5	<5	<5	<5	5
Phenol	<10	<10	<10	<10	<10	<10	10
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	10

* Indicate units if different from µg/L.

Table 10 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☐ Grab**

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)
Acenaphthene	<10	<10	<10	<10	<10	<10	10
Acenaphthylene	<10	<10	<10	<10	<10	<10	10
Anthracene	<10	<10	<10	<10	<10	<10	10
Benzidine	<50	<50	<50	<50	<50	<50	50
Benzo(a)anthracene	<5	<5	<5	<5	<5	<5	5
Benzo(a)pyrene	<5	<5	<5	<5	<5	<5	5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]	<10	<10	<10	<10	<10	<10	10
Benzo(ghi)perylene	<20	<20	<20	<20	<20	<20	20

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)
Benzo(k)fluoranthene	<5	<5	<5	<5	<5	<5	5
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	10
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	10
Bis(2-chloroisopropyl)ether	<10	<10	<10	<10	<10	<10	10
Bis(2-ethylhexyl)phthalate	<10	<10	<10	<10	<10	<10	10
4-Bromophenyl phenyl ether	<10	<10	<10	<10	<10	<10	10
Butylbenzyl phthalate	<10	<10	<10	<10	<10	<10	10
2-Chloronaphthalene	<10	<10	<10	<10	<10	<10	10
4-Chlorophenyl phenyl ether	<10	<10	<10	<10	<10	<10	10
Chrysene	<5	<5	<5	<5	<5	<5	5
Dibenzo(a,h)anthracene	<5	<5	<5	<5	<5	<5	5
1,2-Dichlorobenzene [o-Dichlorobenzene]	<10	<10	<10	<10	<10	<10	10
1,3-Dichlorobenzene [m-Dichlorobenzene]	<10	<10	<10	<10	<10	<10	10
1,4-Dichlorobenzene [p-Dichlorobenzene]	<10	<10	<10	<10	<10	<10	10
3,3'-Dichlorobenzidine	<5	<5	<5	<5	<5	<5	5
Diethyl phthalate	<10	<10	<10	<10	<10	<10	10
Dimethyl phthalate	<10	<10	<10	<10	<10	<10	10
Di-n-butyl phthalate	<10	<10	<10	<10	<10	<10	10
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	10
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	10
Di-n-octyl phthalate	<10	<10	<10	<10	<10	<10	10
1,2-Diphenylhydrazine (as Azobenzene)	<20	<20	<20	<20	<20	<20	20
Fluoranthene	<10	<10	<10	<10	<10	<10	10
Fluorene	<10	<10	<10	<10	<10	<10	10
Hexachlorobenzene	<5	<5	<5	<5	<5	<5	5
Hexachlorobutadiene	<10	<10	<10	<10	<10	<10	10
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10	10
Hexachloroethane	<20	<20	<20	<20	<20	<20	20
Indeno(1,2,3-cd)pyrene	<5	<5	<5	<5	<5	<5	5

Pollutant	4/13/24 (µg/L)	4/16/24 (µg/L)	4/25/24 (µg/L)	4/30/24 (µg/L)	5/7/24 (µg/L)	8/8/24 (µg/L)	MAL (µg/L)
Isophorone	<10	<10	<10	<10	<10	<10	10
Naphthalene	<10	<10	<10	<10	<10	<10	10
Nitrobenzene	<10	<10	<10	<10	<10	<10	10
N-Nitrosodimethylamine	<50	<50	<50	<50	<50	<50	50
N-Nitrosodi-n-propylamine	<20	<20	<20	<20	<20	<20	20
N-Nitrosodiphenylamine	<20	<20	<20	<20	<20	<20	20
Phenanthrene	<10	<10	<10	<10	<10	<10	10
Pyrene	<10	<10	<10	<10	<10	<10	10
1,2,4-Trichlorobenzene	<10	<10	<10	<10	<10	<10	10

* Indicate units if different from µg/L.

Table 11 for Outfall No.: N/A **Samples are (check one): ☐ Composite ☐ Grab**

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)
Aldrin	N/A	N/A	N/A	N/A	0.01
alpha-BHC [alpha-Hexachlorocyclohexane]	N/A	N/A	N/A	N/A	0.05
beta-BHC [beta-Hexachlorocyclohexane]	N/A	N/A	N/A	N/A	0.05
gamma-BHC [gamma-Hexachlorocyclohexane]	N/A	N/A	N/A	N/A	0.05
delta-BHC [delta-Hexachlorocyclohexane]	N/A	N/A	N/A	N/A	0.05
Chlordane	N/A	N/A	N/A	N/A	0.2
4,4'-DDT	N/A	N/A	N/A	N/A	0.02
4,4'-DDE	N/A	N/A	N/A	N/A	0.1
4,4'-DDD	N/A	N/A	N/A	N/A	0.1
Dieldrin	N/A	N/A	N/A	N/A	0.02
Endosulfan I (alpha)	N/A	N/A	N/A	N/A	0.01
Endosulfan II (beta)	N/A	N/A	N/A	N/A	0.02
Endosulfan sulfate	N/A	N/A	N/A	N/A	0.1
Endrin	N/A	N/A	N/A	N/A	0.02
Endrin aldehyde	N/A	N/A	N/A	N/A	0.1
Heptachlor	N/A	N/A	N/A	N/A	0.01
Heptachlor epoxide	N/A	N/A	N/A	N/A	0.01
PCB 1242	N/A	N/A	N/A	N/A	0.2

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)
PCB 1254	N/A	N/A	N/A	N/A	0.2
PCB 1221	N/A	N/A	N/A	N/A	0.2
PCB 1232	N/A	N/A	N/A	N/A	0.2
PCB 1248	N/A	N/A	N/A	N/A	0.2
PCB 1260	N/A	N/A	N/A	N/A	0.2
PCB 1016	N/A	N/A	N/A	N/A	0.2
Toxaphene	N/A	N/A	N/A	N/A	0.3

* Indicate units if different from µg/L.

TABLE 12 (DIOXINS/FURAN COMPOUNDS)

Complete of Table 12 **is required** for **external outfalls**, as directed below. (Instructions, Pages 59-60)

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 (check all that apply).

- ☐ 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
- ☒ None of the above

Description: N/A

Does the applicant or anyone at the facility 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 the effluent proposed for discharge?

☐ Yes ☒ No

Description: N/A

If **yes** to either Items a **or** b, complete Table 12 as instructed.

Table 12 for Outfall No.: N/A **Samples are (check one):** ☐ **Composite** ☐ **Grab**

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	N/A	N/A	N/A	N/A	10
1,2,3,7,8-PeCDD	1.0	N/A	N/A	N/A	N/A	50

Compound	Toxicity Equivalent Factors	Wastewater Concentration (ppq)	Wastewater Toxicity Equivalents (ppq)	Sludge Concentration (ppt)	Sludge Toxicity Equivalents (ppt)	MAL (ppq)
2,3,7,8-HxCDDs	0.1	N/A	N/A	N/A	N/A	50
1,2,3,4,6,7,8-HpCDD	0.01	N/A	N/A	N/A	N/A	50
2,3,7,8-TCDF	0.1	N/A	N/A	N/A	N/A	10
1,2,3,7,8-PeCDF	0.03	N/A	N/A	N/A	N/A	50
2,3,4,7,8-PeCDF	0.3	N/A	N/A	N/A	N/A	50
2,3,7,8-HxCDFs	0.1	N/A	N/A	N/A	N/A	50
2,3,4,7,8-HpCDFs	0.01	N/A	N/A	N/A	N/A	50
OCDD	0.0003	N/A	N/A	N/A	N/A	100
OCDF	0.0003	N/A	N/A	N/A	N/A	100
PCB 77	0.0001	N/A	N/A	N/A	N/A	500
PCB 81	0.0003	N/A	N/A	N/A	N/A	500
PCB 126	0.1	N/A	N/A	N/A	N/A	500
PCB 169	0.03	N/A	N/A	N/A	N/A	500
Total		N/A	N/A	N/A	N/A	

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 **is required** for all **external outfalls** as directed below. (Instructions, Pages 60-61)

Are there any pollutants listed in the instructions (pages 55-62) believed present in the discharge?

☐ Yes ☒ No

Are there pollutants listed in Item 1.c. of Technical Report 1.0 which are believed present in the discharge and have not been analytically quantified elsewhere in this application?

☐ Yes ☒ No

If **yes** to either Items a **or** b, complete Table 13 as instructed.

Table 13 for Outfall No.: N/A **Samples are (check one):** ☐ **Composite** ☐ **Grab**

Pollutant	CASRN	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	Analytical Method
N/A	N/A	N/A	N/A	N/A	N/A	N/A

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 4.0: RECEIVING WATERS

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

Item 1. Domestic Drinking Water Supply (Instructions, Page 80)

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

☐ Yes ☒ No

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

1. The legal name of the owner of the drinking water supply intake: N/A

2. The distance and direction from the outfall to the drinking water supply intake: N/A

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

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

Item 2. Discharge Into Tidally Influenced Waters (Instructions, Page 80)

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

a. Width of the receiving water at the outfall: N/A feet

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

☐ Yes ☐ No

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

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

☐ Yes ☐ No

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

Item 3. Classified Segment (Instructions, Page 80)

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

☒ Yes ☐ No

If **yes**, stop here and do not complete Items 4 and 5 of this worksheet or Worksheet 4.1.

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

Item 4. Description of Immediate Receiving Waters (Instructions, Page 80)

a. Name of the immediate receiving waters: N/A

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

☐ Lake or Pond

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

☐ Man-Made Channel or Ditch

☐ Stream or Creek

☐ Freshwater Swamp or Marsh

☐ Tidal Stream, Bayou, or Marsh

☐ Open Bay

☐ Other, specify:

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

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

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

☐ Intermittent (dry for at least one week during most years)

☐ Intermittent with Perennial Pools (enduring pools containing habitat to maintain aquatic life uses)

☐ Perennial (normally flowing)

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

☐ USGS flow records

☐ personal observation

☐ historical observation by adjacent landowner(s)

☐ other, specify:

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

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

☐ Yes ☐ No

If **yes**, describe how: N/A

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

Date and time of observation: N/A

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

☐ Yes ☐ No

If **yes**, describe how: N/A

Item 5. General Characteristics of Water Body (Instructions, Page 81)

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

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

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

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

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

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

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

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

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

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 12.0: OIL AND GAS EXPLORATION, DEVELOPMENT, AND PRODUCTION WASTEWATER DISCHARGES

This worksheet **is required** for all TPDES permit applications that are subject to Effluent Limitation Guidelines in 40 CFR Part 435.

Item 1. Operational Information (Instructions, Page 112)

a. Is the wastewater from an oil and gas exploration, development, or production facility located west of the 98th meridian?

☒ Yes ☐ No

If yes, continue to the next question. If no, skip to Item 2 relating to Production/Process Data.

b. Provide justification for how the wastewater is/will be used for agriculture or wildlife propagation.

The proposed discharge was assessed to determine its suitability for beneficial reuse in wildlife watering at Red Bluff Reservoir (RBR). Background data from RBR show that the reservoir is moderately brackish with high levels of total dissolved solids (TDS). The Pollutant Concentration Guidance Tool for Agricultural and Wildlife Water Use (see Attachment K), as outlined in 40 CFR 435, Subpart E, was employed to evaluate the proposed reuse for wildlife watering of fish species in RBR. According to the guidance tool, the most conservative screening value for TDS is a maximum of 5,000 mg/L. The proposed treatment design produces TDS levels less than 1,000 mg/L, which ensures that the discharge does not exceed the maximum TDS limit of 5,000 mg/L for RBR.

Item 2. Production/Process Data (Instructions, Page 112)

a. Provide the applicable 40 CFR Part 435 Subpart(s).

Subpart C Onshore Subcategory

b. Describe if the permit being sought is for discharges from exploration, development, production, or for a combination of more than one of those activities.

This permit application is for discharge of purified water generated by treatment of produced water sourced from a combination of exploration, development, and production activities.

c. Provide information on all waste-streams generated and specify which waste-streams you are requesting to be authorized for discharge.

Wastestreams Generated

Waste Stream	Requesting authorization to discharge? (Yes/No)	Volume (MGD) Interim I; Interim II; Final	% of Total Flow
Purified Water	Yes	0.5; 5.0; 10	46.5 - 47.6%
Pretreatment Reject	No	0.025; 0.25; 0.5	2.3 - 2.4%
Brine Stream	No	0.525; 5.25; 10.5	48.8 - 50.0%
Post-Treatment Wastewater	No	0.025; 0.25; 0.5 (May be recycled to feed)	0 - 2.4%

d. Describe how the facility will manage wastestreams for which discharge authorization is not being sought.

Post-treatment wastewater will be recycled into the produced water feed or disposed of in a saltwater disposal well (SWD). Pretreatment reject and the desalination brine waste stream will be disposed of in an SWD.

Attachment: N/A

e. Provide information on miscellaneous discharges.

N/A

Attachment: N/A

f. List of chemicals that are in use, or will be used, downhole. Provide the category, concentration used/to be used, and purpose of using the chemical. Attach a safety data sheet for each chemical listed.

Chemicals List

Category	Chemical Name	Concentration (include units)	Purpose
N/A	N/A	N/A	N/A

Attachment: N/A

g. **List of chemicals that are in use, or will be used, to treat the wastewater to be discharged under this authorization. Provide the concentration used/to be used and purpose of using the chemical. Attach a safety data sheet for each chemical listed.**

Water Treatment Chemicals List

Category	Chemical Name	Concentration (include units)	Purpose
	See Attachment L		

Attachment: L

Item 3. Pollutant Analysis (Instructions, Page 113)

Tables 1, 2, 6, and 7 located in Worksheet 2.0 are required. In addition, Table 19 below is required and must be completed for each outfall and submitted with this application. The remaining tables in Worksheet 2.0, are required as applicable.

a. Provide the date range of all sampling events conducted to obtain the analytical data submitted with this application (e.g., 05/01/2018-05/30/2018): 04/13/2024 – 08/08/2024

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

c. Read the general testing requirements in the instructions for important information about sampling, test methods, and MALs. If a contact laboratory was used, attach a list which includes the name, contact information, and pollutants analyzed for each laboratory/firm. **Attachment:** J

d. Attach correspondence from TCEQ approving submittal of less than the required number of samples, if applicable. **Attachment:** N/A

Table 19 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☐ Grab**

Pollutant	**4/13/24 (mg/L)***	**4/16/24 (mg/L)***	**4/25/24 (mg/L)***	**4/30/24 (mg/L)***
Calcium	2.93	18.1	<0.102	0.74
Potassium	2.41	15.3	<0.106	3.28
Sodium	116	485	0.158	124

*Indicate units if different from mg/L.

SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION

TABLE OF ATTACHMENTS

ATTACHMENT A

Core Data Form
Admin Rpt 1.0, Item 2.c

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing 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		**RN**

SECTION II: Customer Information

4. General Customer Information

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

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

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

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

If new Customer, enter previous Customer below:

Solaris Water Midstream, LLC

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0802518277	32061259712	475681507	080781138

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

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ 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 ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:	9651 Katy Freeway							
	Suite 400							
	City	Houston	**State**	TX	**ZIP**	77024	**ZIP + 4**	1590

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	drew.dixon@ariswater.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(832) 304-7003		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☒ 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 Core 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.)*

Red Bluff Produced Water Treatment Facility

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

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, Reeves County, Texas.				
26. Nearest City			**State**	**Nearest ZIP Code**	
Pecos			TX	79770	

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	31.992286		**28. Longitude (W) In Decimal:**	104.002289	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
31	59	32	104	0	8

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)
1389		213112	

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

Treatment of hydraulic fracturing water

34. Mailing Address:	**9651 Katy Freeway**							
	Suite 400							
	City	**Houston**	**State**	**TX**	**ZIP**	**77024**	**ZIP + 4**	**1590**
35. E-Mail Address:	**drew.dixon@ariswater.com**							

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(832) 304-7003		( ) -

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	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Jenni Griesel, P.E.	**41. Title:**	Project Engineer

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512) 687-2193		( ) -	jgriesel@plummer.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:	Solaris Water Midstream, LLC	**Job Title:**	Chief Executive Officer	
Name *(In Print):*	Amanda Brock		**Phone:**	(281) 501- **3070**
Signature:	Amanda Brock		**Date:**	11/20/2024

ATTACHMENT B

Plain Language Summary
Admin Rpt 1.0, Item 7.f

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

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

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

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

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

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

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

Solaris Water Midstream, LLC proposes to operate Red Bluff Produced Water Treatment Facility, a facility that treats water produced during oil and gas exploration and production (produced water). The facility will be located 1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, in Reeves County, Texas 79770. This application is for a new permit to authorize the treatment and discharge of produced water at a volume not to exceed an annual average flow of 10,000,000 gallons per day.

Discharges from the facility are expected to contain total dissolved solids, chloride, and sulfate. Produced water will be treated by pretreatment, desalination, and post-treatment.

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

AGUAS RESIDUALES INDUSTRIALES /AGUAS PLUVIALES

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

Solaris Water Midstream, LLC propone operar la planta de tratamiento de agua producida de Red Bluff, una instalación que trata el agua producida durante la exploración y producción de petróleo y gas (agua producida). La instalación estará ubicada a 1,8 millas al este-sureste de la intersección de la US Hwy 285 y Catfish Road, en el Condado de Reeves, Texas 79770. Esta solicitud es para un nuevo permiso para autorizar el tratamiento y descarga de agua producida en un volumen que no exceda un flujo promedio anual de 10.000.000 de galones por día.

Se espera que las descargas de la instalación contengan sólidos disueltos totales, cloruro y sulfato. Agua producida estará tratado por pretratamiento, desalinización y post-tratamiento.

ATTACHMENT C

Public Involvement Plan Form
Admin Rpt 1.0, Item 7.g

Texas Commission on Environmental Quality

Public Involvement Plan Form for Permit and Registration Applications

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

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

Section 1. Preliminary Screening

☒ New Permit or Registration Application

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

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

Section 2. Secondary Screening

☒ Requires public notice,

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

☒ Located within any of the following geographical locations:

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

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

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

Section 3. Application Information

Type of Application (check all that apply):

Air ☐ Initial ☐ Federal ☐ Amendment ☐ Standard Permit ☐ Title V

Waste ☐ Municipal Solid Waste ☐ Industrial and Hazardous Waste ☐ Scrap Tire
☐ Radioactive Material Licensing ☐ Underground Injection Control

Water Quality

☒ Texas Pollutant Discharge Elimination System (TPDES)

- ☐ Texas Land Application Permit (TLAP)
- ☐ State Only Concentrated Animal Feeding Operation (CAFO)
- ☐ Water Treatment Plant Residuals Disposal Permit

☐ Class B Biosolids Land Application Permit

☐ Domestic Septage Land Application Registration

Water Rights New Permit

☐ New Appropriation of Water

☐ New or existing reservoir

Amendment to an Existing Water Right

☐ Add a New Appropriation of Water

☐ Add a New or Existing Reservoir

☐ Major Amendment that could affect other water rights or the environment

Section 4. Plain Language Summary

Provide a brief description of planned activities.

Solaris Water Midstream, LLC proposes to operate Red Bluff Produced Water Treatment Facility, a facility that treats water produced during oil and gas exploration and production (produced water). The facility will be located 1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, in Reeves County, Texas 79770. This application is for a new permit to authorize the treatment and discharge of produced water at a volume not to exceed an annual average flow of 10,000,000 gallons per day.
Discharges from the facility are expected to contain total dissolved solids, chloride, and sulfate. Produced water will be treated by pretreatment, desalination, and post-treatment.

Section 5. Community and Demographic Information

Community information can be found using EPA's EJ Screen, U.S. Census Bureau information, or generally available demographic tools.

Information gathered in this section can assist with the determination of whether alternative language notice is necessary. Please provide the following information.

Pecos (nearest city with census data)

(City)

Reeves County

(County)

950600 (County), 950300/950200 (Pecos)

(Census Tract)

Please indicate which of these three is the level used for gathering the following information.

☒ City ☐ County ☐ Census Tract

(a) Percent of people over 25 years of age who at least graduated from high school

70.5%

(b) Per capita income for population near the specified location

$25,148

(c) Percent of minority population and percent of population by race within the specified location

Hispanic or Latino: 71.4%; White alone, not Hispanic or Latino: 22.1%; Black or African American: 4.7%; American Indian or Alaskan Native: 1.6%; Pacific Islander: 0.2%; Two or More Races: 1.4%

(d) Percent of Linguistically Isolated Households by language within the specified location

55.6%

(e) Languages commonly spoken in area by percentage

Spanish: 75.44%; English: 23.72%

(f) Community and/or Stakeholder Groups

Red Bluff Water Control District

(g) Historic public interest or involvement

Fishing and recreation

Section 6. Planned Public Outreach Activities

(a) Is this application subject to the public participation requirements of Title 30 Texas Administrative Code (30 TAC) Chapter 39?

☒ Yes ☐ No

(b) If yes, do you intend at this time to provide public outreach other than what is required by rule?

☐ Yes ☒ No

If Yes, please describe.

N/A

If you answered "yes" that this application is subject to 30 TAC Chapter 39, answering the remaining questions in Section 6 is not required.

(c) Will you provide notice of this application in alternative languages?

☐ Yes ☐ No

Please refer to Section 5. If more than 5% of the population potentially affected by your application is Limited English Proficient, then you are required to provide notice in the alternative language.

If yes, how will you provide notice in alternative languages?

☐ Publish in alternative language newspaper

☐ Posted on Commissioner's Integrated Database Website

☐ Mailed by TCEQ's Office of the Chief Clerk

☐ Other (specify)

(d) Is there an opportunity for some type of public meeting, including after notice?

☐ Yes ☐ No

(e) If a public meeting is held, will a translator be provided if requested?

☐ Yes ☐ No

(f) Hard copies of the application will be available at the following (check all that apply):

☐ TCEQ Regional Office ☐ TCEQ Central Office

☐ Public Place (specify)

Section 7. Voluntary Submittal

For applicants voluntarily providing this Public Involvement Plan, who are not subject to formal public participation requirements.

Will you provide notice of this application, including notice in alternative languages?

☐ Yes ☐ No

What types of notice will be provided?

☐ Publish in alternative language newspaper

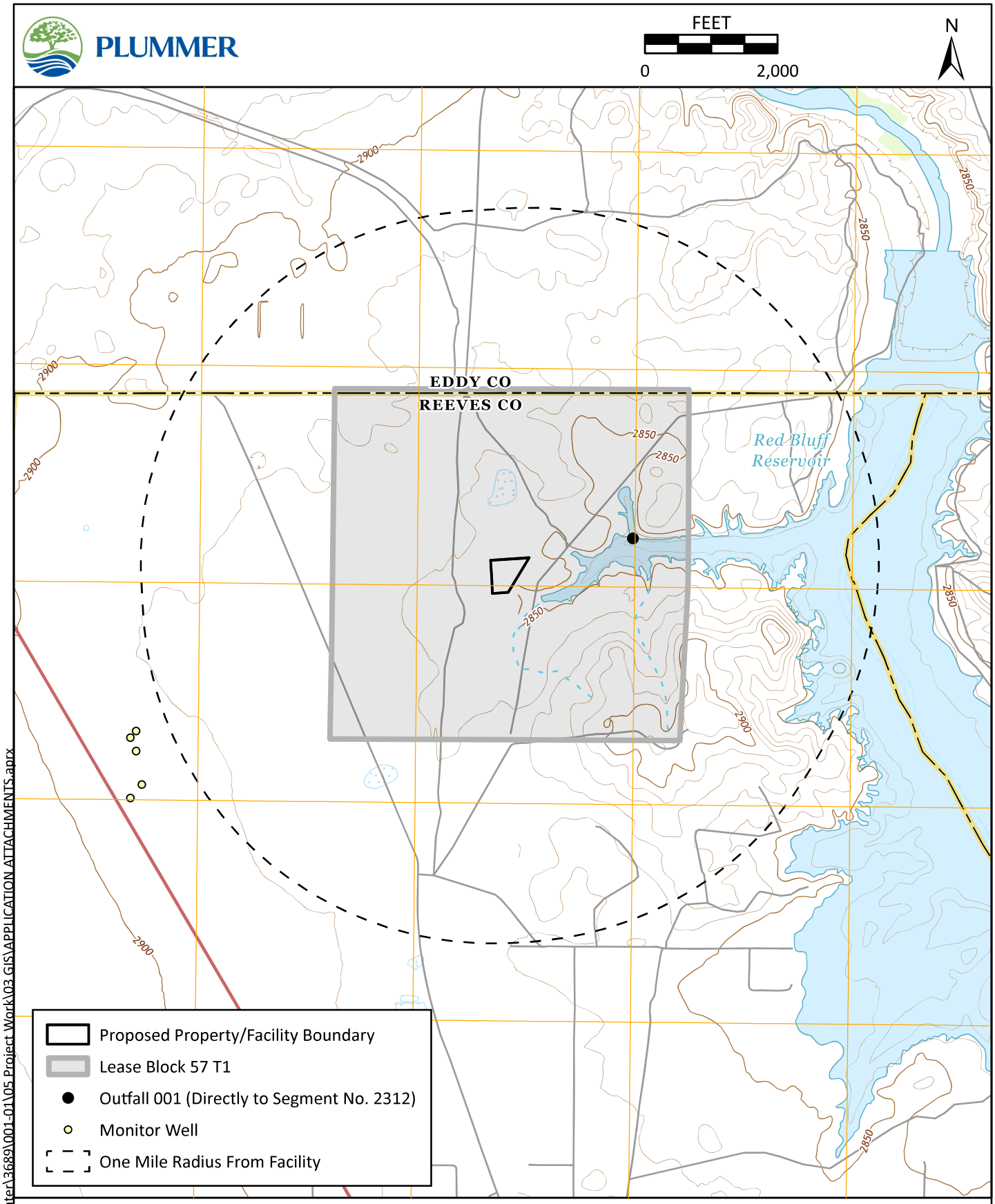
☐ Posted on Commissioner's Integrated Database Website

☐ Mailed by TCEQ's Office of the Chief Clerk

☐ Other (specify)

ATTACHMENT D

USGS Topographic Map
Admin Rpt 1.0, Item 9.b

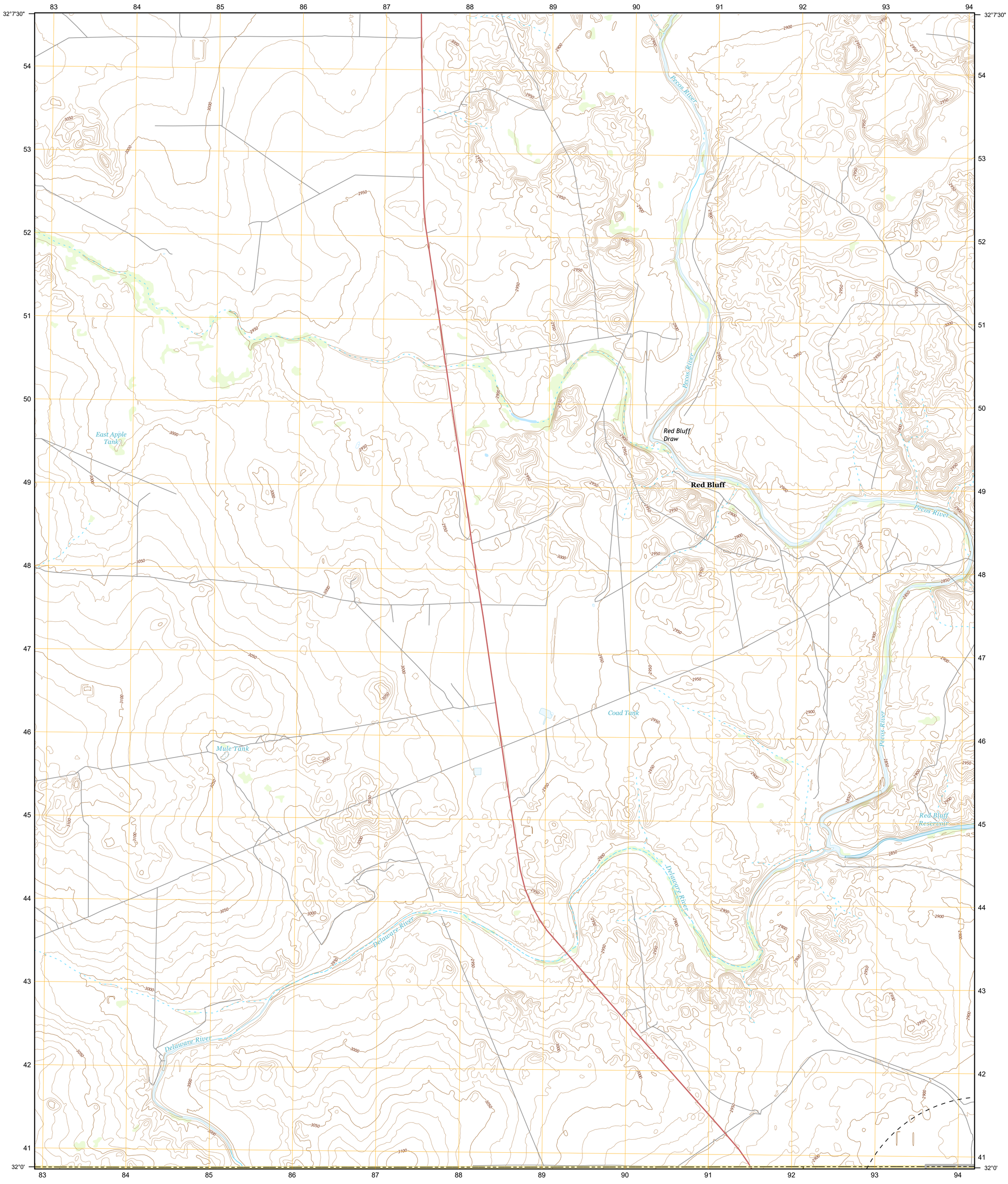


ATTACHMENT D
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
USGS MAP

TEXAS REGISTERED ENGINEERING FIRM F-13
Z:\Shared\Projects\Water\36891001-01\05 Project Work\03 GIS\APPLICATION ATTACHMENTS.aprx

Lease Block 57 T1
Monitor Well
One Mile Radius From Facility

RED BLUFF QUADRANGLE
NEW MEXICO
7.5-MINUTE



Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983

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

Initial styling of this Map Document was provided by the US Geological Survey. The edited content in this document are neither done by nor endorsed by the USGS.

Imagery.....NAIP, September 2016 - November 2016
Roads.....U.S. Census Bureau, 2015 - 2018
Names.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2002 - 2018
Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Wetlands.....FWS National Wetlands Inventory Not Available

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

SCALE 1:24,000

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

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

Bond Draw	Malaga	Pierce Canyon
Cottonwood Hills	Red Bluff	Ross Ranch
Owl Hills	Screw Bean Draw NE	Red Bluff

ADJOINING QUADRANGLES

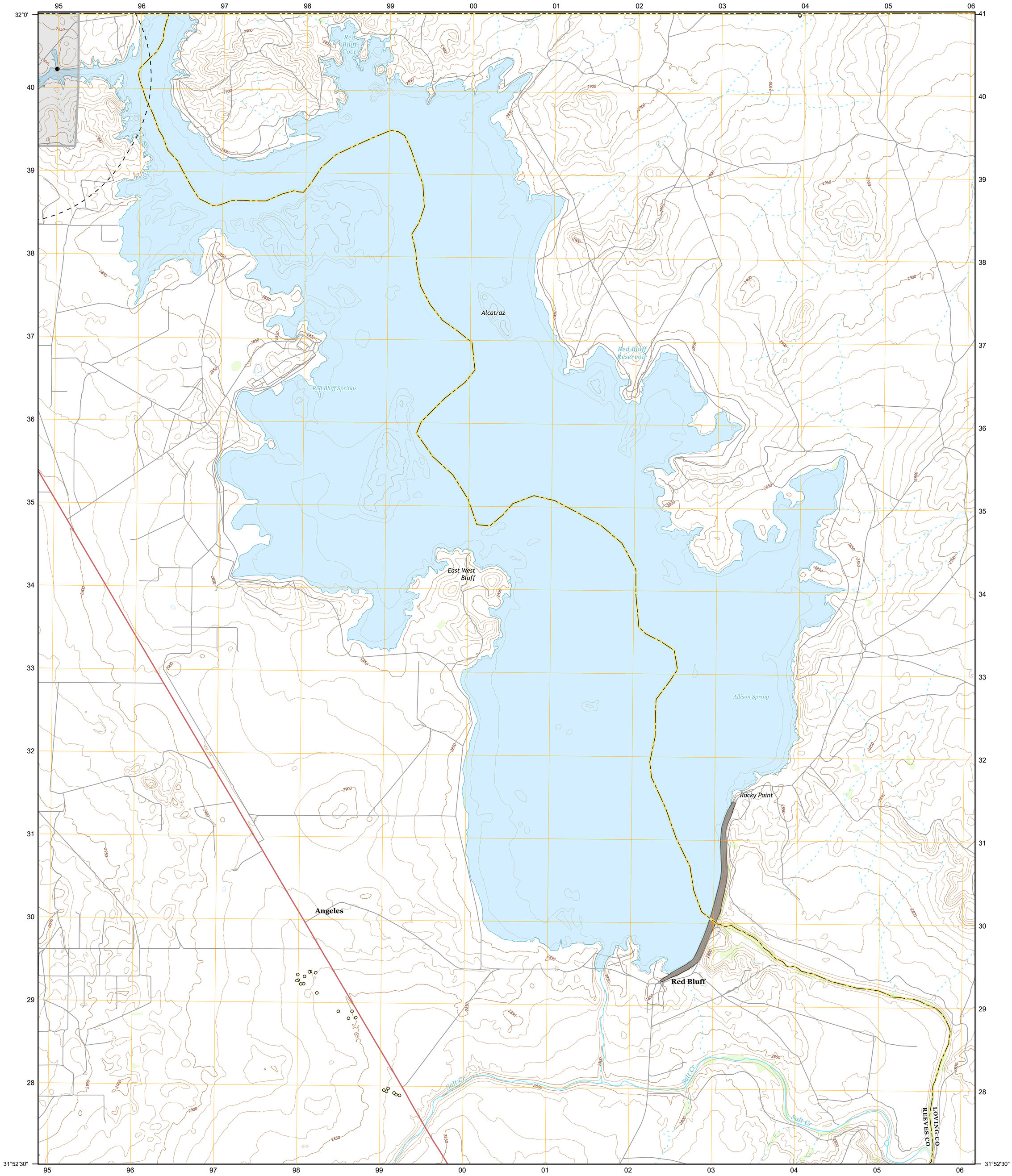
ROAD CLASSIFICATION

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

Red Bluff, NM
2024

Lease Block 57 T1
Proposed Property/Facility Boundary
Monitor Well
Outfall 001 (Directly to Segment No. 2312)
One Mile Radius From Facility

RED BLUFF QUADRANGLE
TEXAS
7.5-MINUTE



Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983

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Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Wetlands.....FWS National Wetlands Inventory Not Available

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

SCALE 1:24,000

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1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 500 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

Red Bluff	Ross Ranch	Phantom Banks
Screw Bean Draw NE	Red Bluff	Orla NE
Screw Bean Draw East	Orla	Orla SE

ADJOINING QUADRANGLES

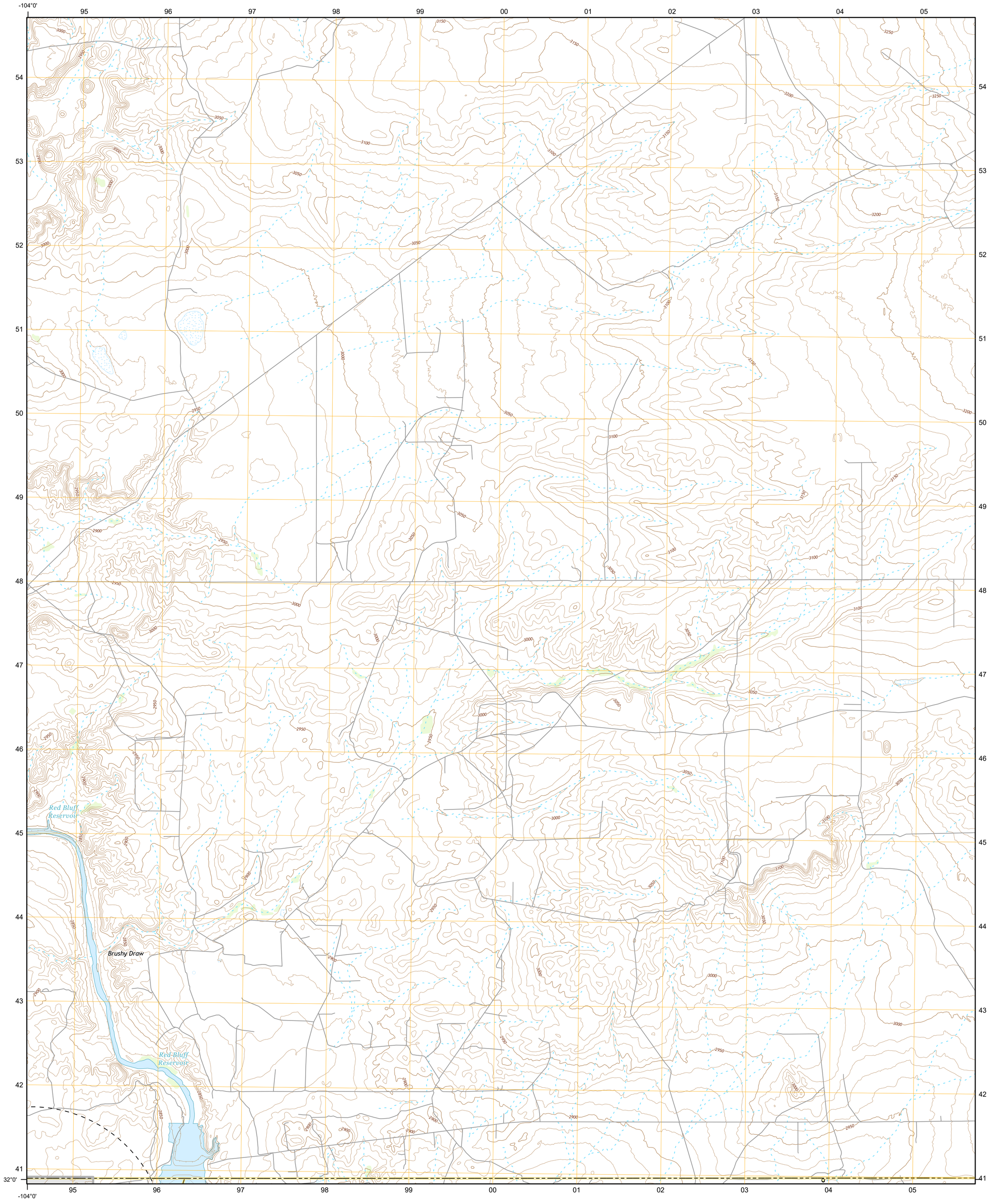
ROAD CLASSIFICATION

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

Red Bluff, TX
2024

Lease Block 57 T1
Monitor Well
One Mile Radius From Facility

ROSS RANCH QUADRANGLE
NEW MEXICO
7.5-MINUTE



Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983

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Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Wetlands.....FWS National Wetlands Inventory Not Available

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

SCALE 1:24,000

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

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

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

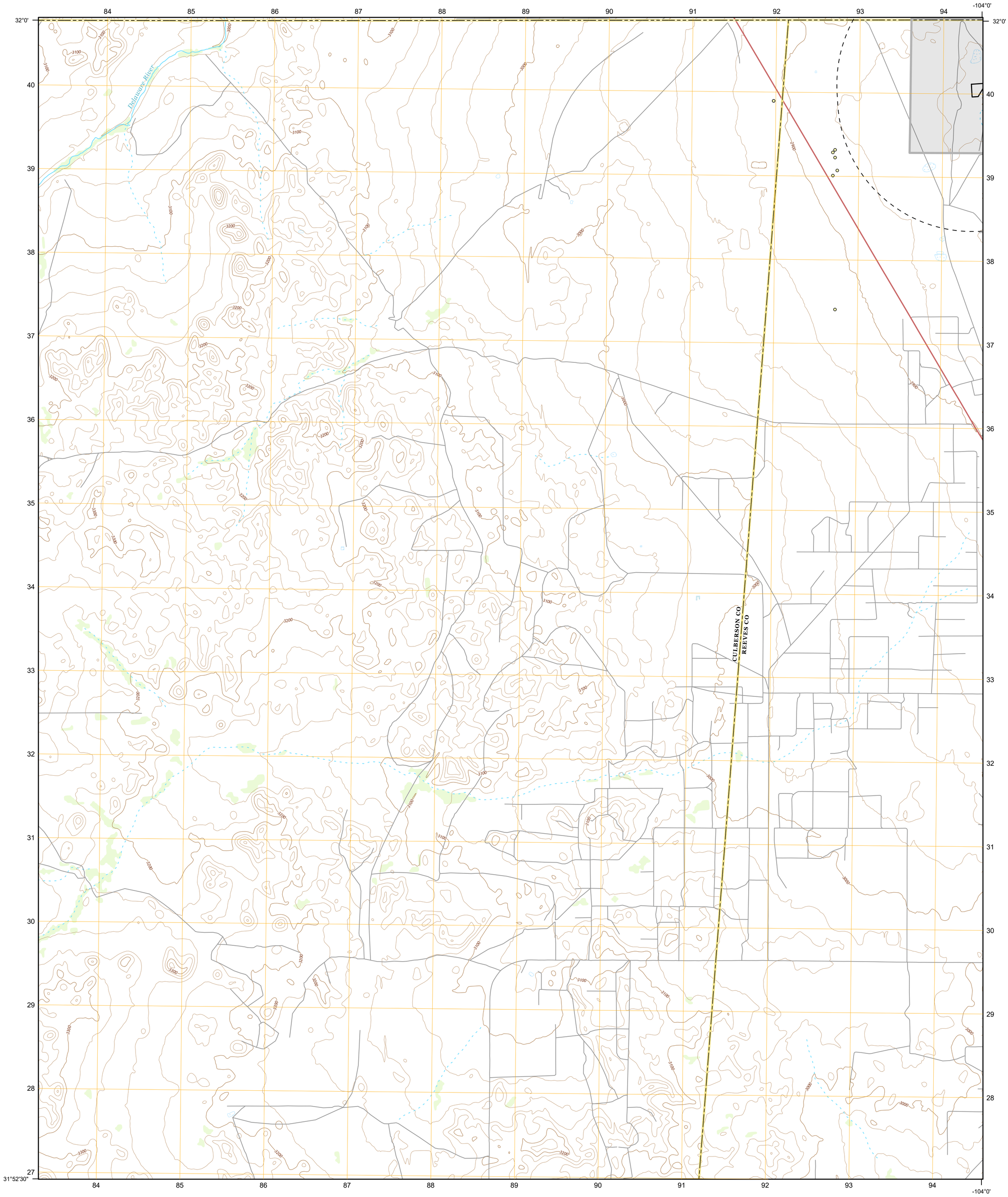
Malaga	Pierce Canyon	Big Sinks
Red Bluff	Ross Ranch	Phantom Banks
Screw Bean Draw NE	Red Bluff	Orla NE

ADJOINING QUADRANGLES

Ross Ranch, NM
2024

Lease Block 57 T1
Proposed Property/Facility Boundary
Monitor Well
One Mile Radius From Facility

SCREW BEAN DRAW NE QUADRANGLE
TEXAS
7.5-MINUTE



Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983

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Roads.....U.S. Census Bureau, 2015 - 2018
Names.....GNIS, 1979 - 2022
Hydrography.....National Hydrography Dataset, 2002 - 2018
Contours.....National Elevation Dataset, 2021
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Wetlands.....FWS National Wetlands Inventory Not Available

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

SCALE 1:24,000

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

CONTOUR INTERVAL 10 FEET

NEW MEXICO
TEXAS
QUADRANGLE LOCATION

Cottonwood Hills	Red Bluff	Ross Ranch
Owl Hills	Screw Bean Draw NE	Red Bluff
Screw Bean Draw West	Screw Bean Draw East	Orla

ADJOINING QUADRANGLES

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

Screw Bean Draw NE, TX
2024

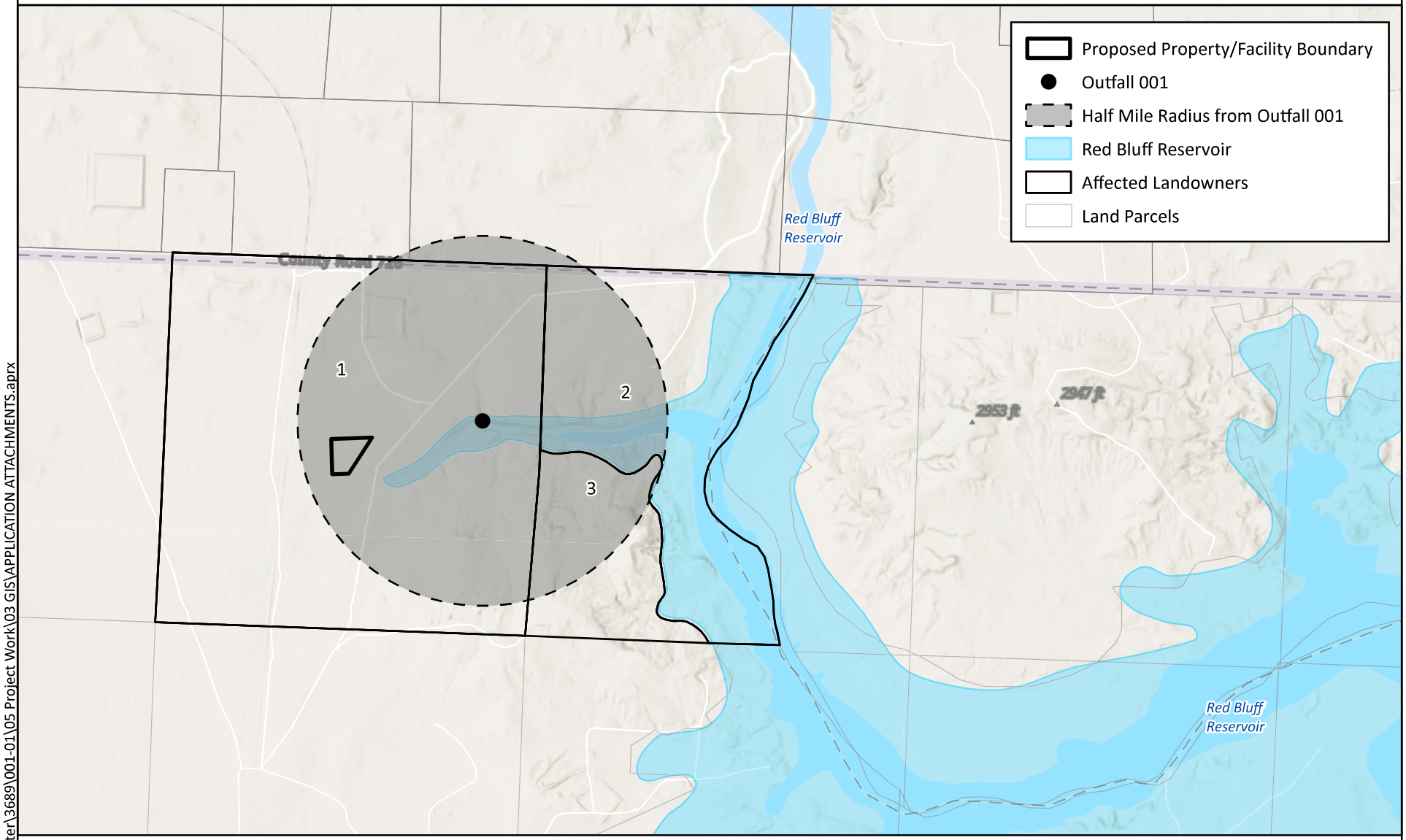
ATTACHMENT E

Affected Landowner Map and Information
Admin Rpt 1.1, Item 1.a & 1.c

PLUMMER

FEET
0 2,000

N



Note: See Attachment E.2 for a cross-referenced list of affected landowners

ATTACHMENT E.1
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
AFFECTED LANDOWNERS MAP

TEXAS REGISTERED ENGINEERING FIRM F-13
Z:\Shared\Projects\Water\3689\001-01\05 Project Work\03 GIS\APPLICATION ATTACHMENTS.aprx

ATTACHMENT E.2
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
LIST OF AFFECTED LANDOWNERS

MAP ID	LANDOWNER NAME	MAILING ADDRESS
1	BENECKE ANNA MARYVIOLA M JENSEN	5820 LINCOLN VILLAGE DR APT 717 RACINE, WI 53406
2	KESSLER A D AND JACLYN S TR	PO BOX L RANCHO SANTA FE, CA 92067
3	TEXAS PACIFIC RESOURCES LLC	1700 PACIFIC AVE STE 2900 DALLAS, TX 75201

ATTACHMENT F

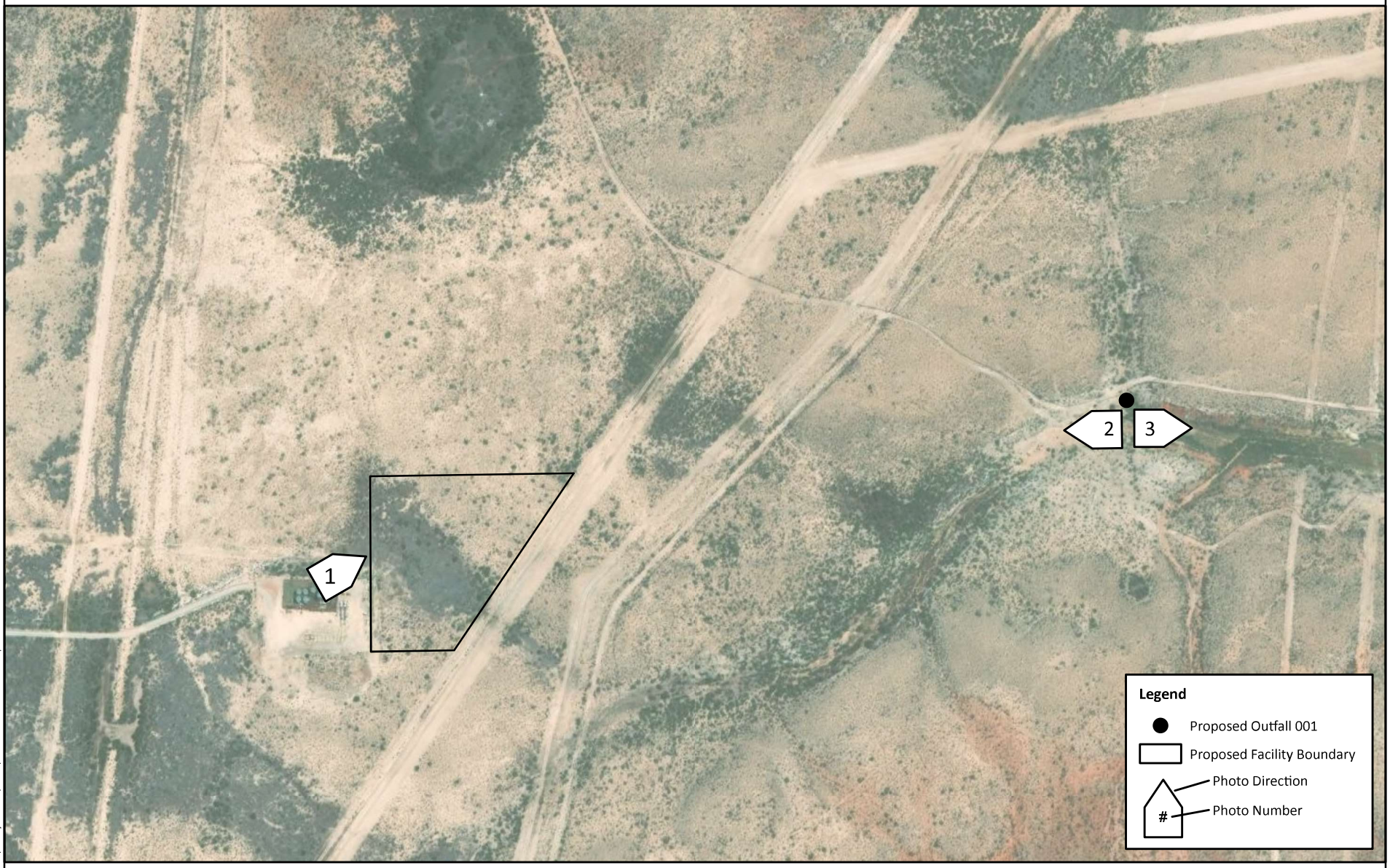
Original Photographs and Map
Admin Rpt 1.1, Item 2

PLUMMER

FEET

0 400

N



Note: See Attachment F.2 for cross-referenced original photographs.

ATTACHMENT F.1
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
ORIGINAL PHOTOGRAPHS MAP

ATTACHMENT F.2
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
ORIGINAL PHOTOGRAPHS

Photo 1: Proposed Facility Location, Facing Northeast.

Photo 2: Outfall 001, Facing West Shoreline.

Photo 3: Outfall 001, Facing East Shoreline.

ATTACHMENT G

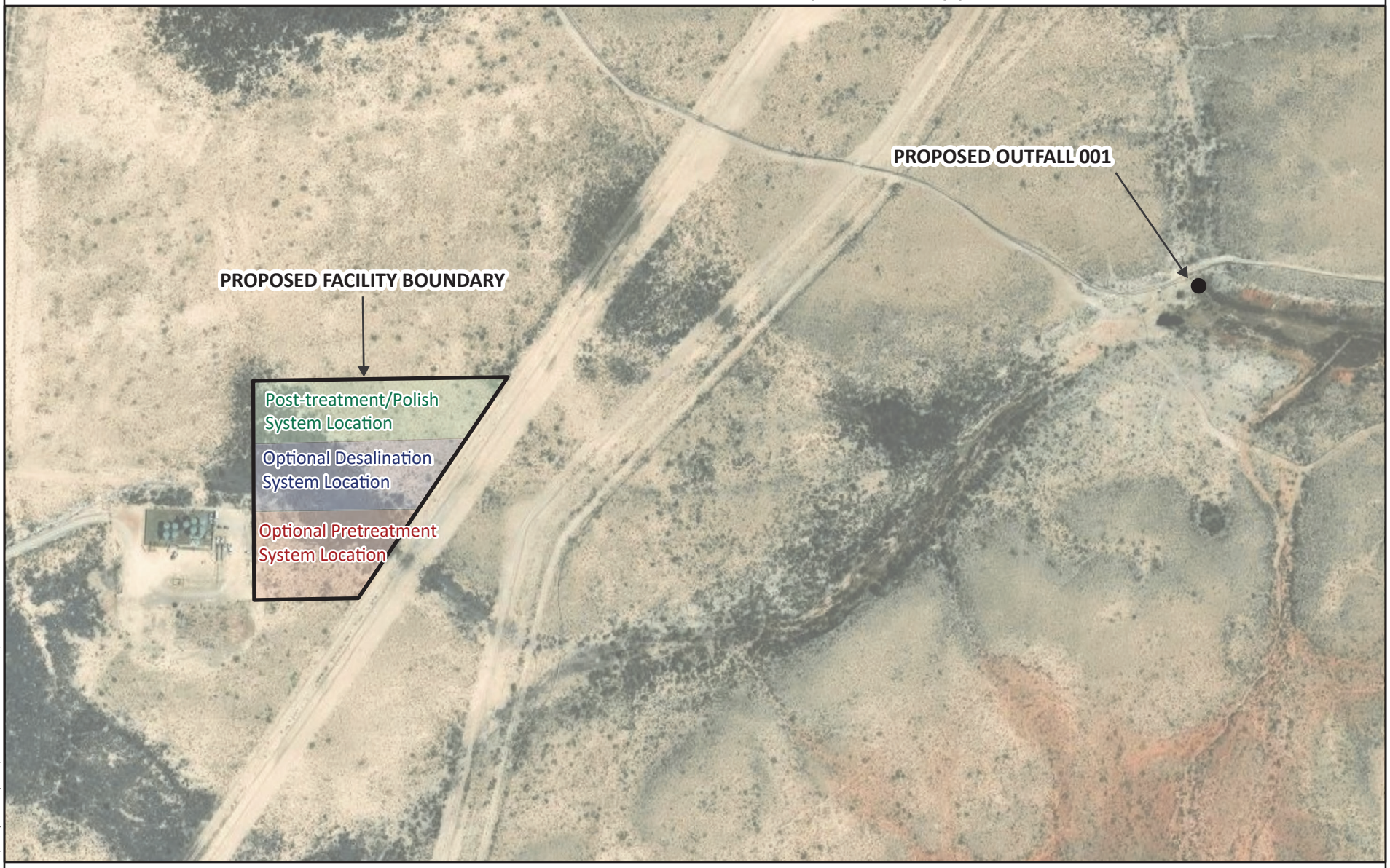
Facility Map
Tech Rpt 1.0, Item 1.d

PLUMMER

FEET

0 320

N

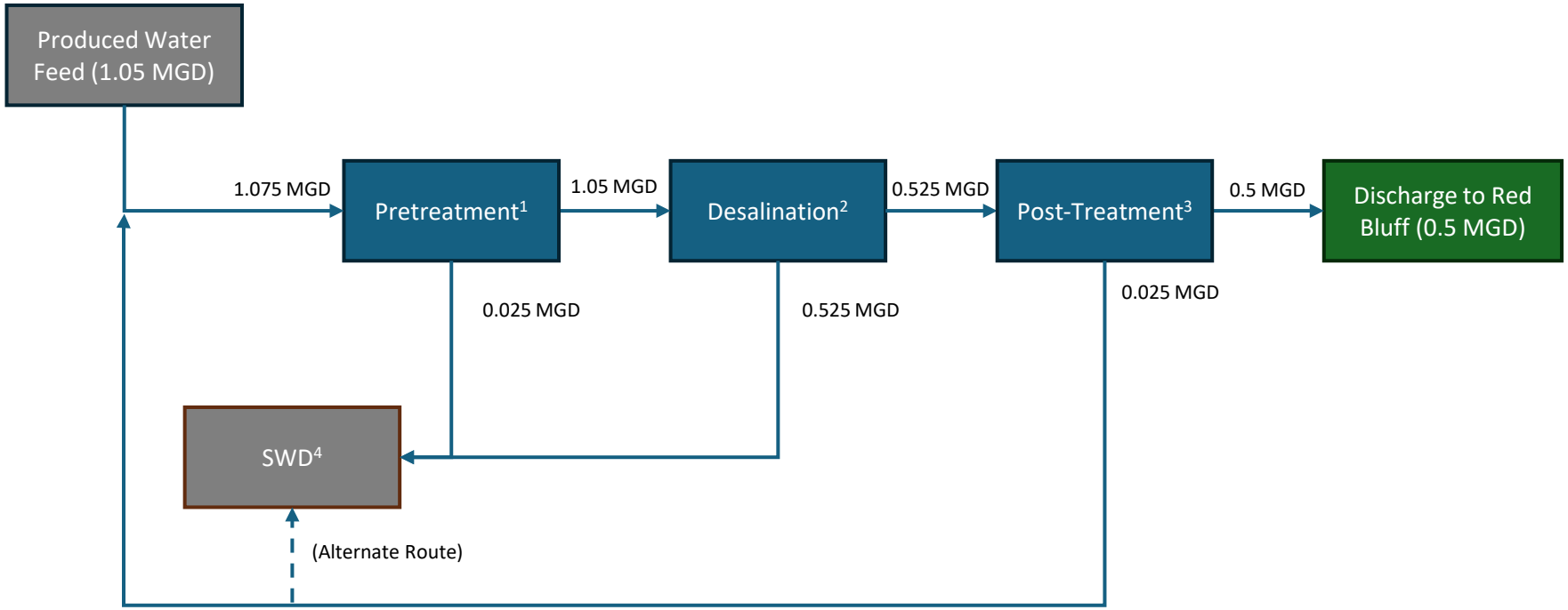


ATTACHMENT G
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
FACILITY MAP

ATTACHMENT H

Flow Schematic with Water Balance
Tech Rpt 1.0, Item 2.b

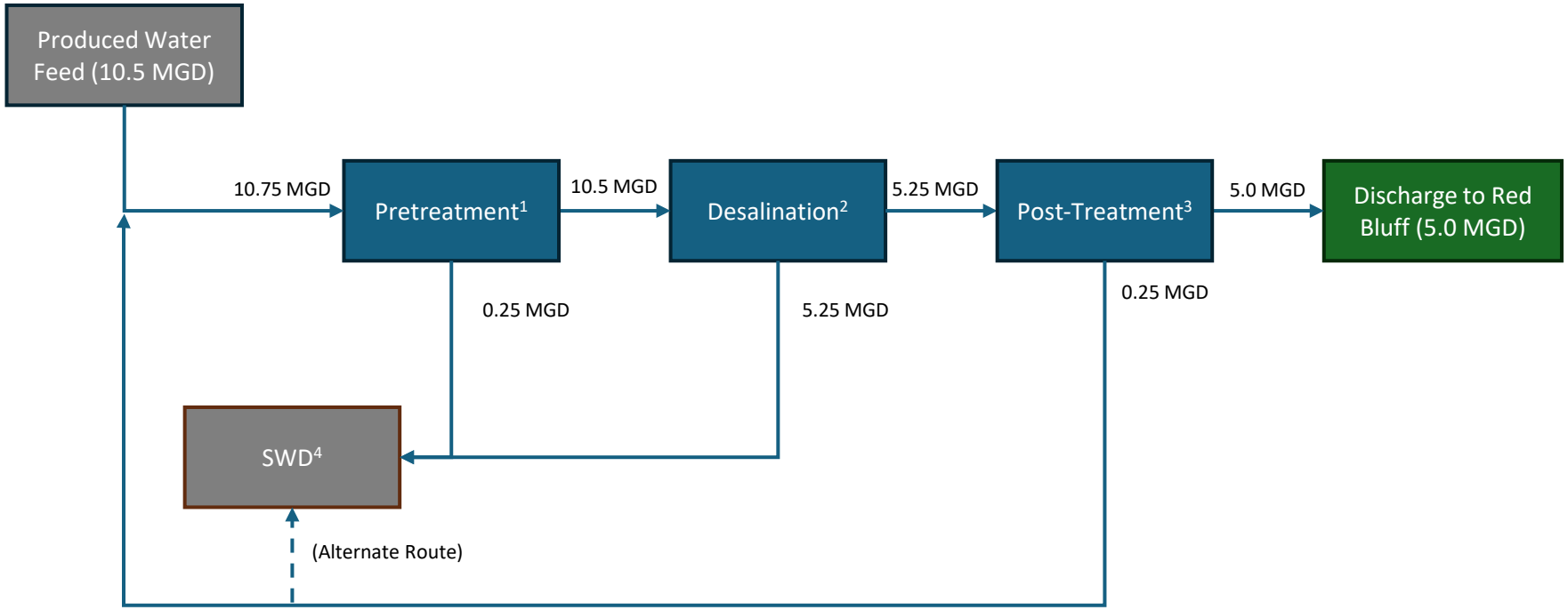
PLUMMER



1) Pretreatment: removes suspended solids, oil & grease, iron, manganese. Note: May occur at separate collection facility.
2) Desalination: removes dissolved solids. Note: May occur at separate collection facility.
3) Post-treatment: removes ammonia, boron, remaining organics, provides remineralization
4) SWD: salt-water disposal well for brine waste

ATTACHMENT H.1
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
PROCESS FLOW DIAGRAM – INTERIM I PHASE

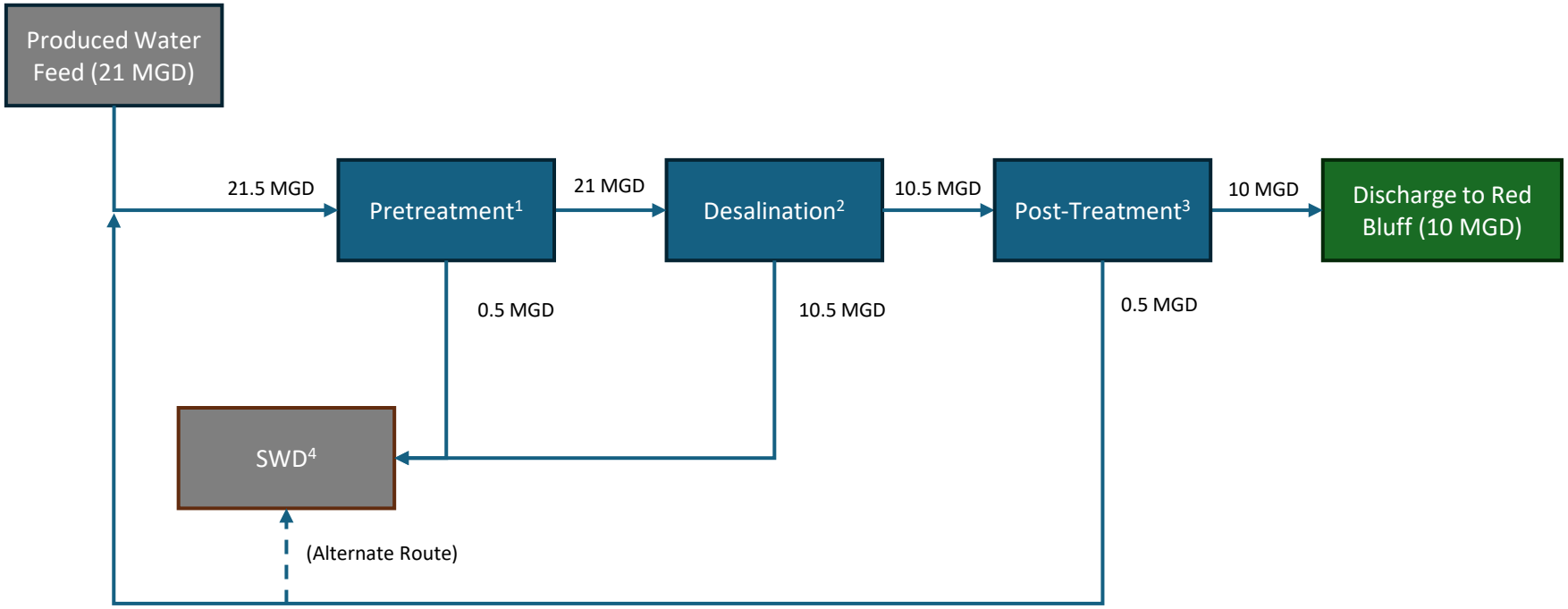
PLUMMER



1) Pretreatment: removes suspended solids, oil & grease, iron, manganese. Note: May occur at separate collection facility.
2) Desalination: removes dissolved solids. Note: May occur at separate collection facility.
3) Post-treatment: removes ammonia, boron, remaining organics, provides remineralization
4) SWD: salt-water disposal well for brine waste

ATTACHMENT H.2
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
PROCESS FLOW DIAGRAM – INTERIM II PHASE

PLUMMER



1) Pretreatment: removes suspended solids, oil & grease, iron, manganese. Note: May occur at separate collection facility.
2) Desalination: removes dissolved solids. Note: May occur at separate collection facility.
3) Post-treatment: removes ammonia, boron, remaining organics, provides remineralization
4) SWD: salt-water disposal well for brine waste

ATTACHMENT H.3
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
PROCESS FLOW DIAGRAM – FINAL PHASE

ATTACHMENT I

Wastes Received for Treatment
Tech Rpt 1.0, Item 10.b

ATTACHMENT I
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
WASTES RECEIVED FOR TREATMENT

The following information is provided to address Technical Report 1.0, Item 10. Off-Site/Third Party Wastes:

- List of wastes received (including volumes, characterization, and capability with on-site wastes).
    - All off site wastes received will be water produced during oil and gas exploration and production (produced water).
    - Individual sources of produced water will be compatible with each other and with the treatment processes on site.
- Identify the sources of wastes received (including the legal name and addresses of the generators).
    - Sources of produced water will be from organizations partnered with Aris Water Solutions, Inc.
- Description of the relationship of waste source(s) with the facility's activities
    - The facility will be designed specifically to treat produced water.

ATTACHMENT J

Contract Laboratory and Pollutants Analyzed
Wks 2.0, Item 2.c; Wks 12.0, Item 3.c

ATTACHMENT J
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
CONTRACT LABORATORY AND POLLUTANTS ANALYZED

Eurofins South Central, LLC
4145 Greenbriar Drive
Stafford, TX, 77477
+1 281-240-4200

_____
__

Calcium
Potassium
Sodium
BOD (5-day)
Chemical oxygen demand
Total organic carbon
Dissolved oxygen
Ammonia nitrogen
Total suspended solids
Nitrate nitrogen
Total phosphorus
Oil and grease
Total residual chlorine
Total dissolved solids
Sulfate
Chloride
Fluoride
Total alkalinity (mg/L as CaCO3)
Temperature (°F)
pH (standard units)
Aluminum, total
Antimony, total
Arsenic, total
Barium, total
Beryllium, total
Cadmium, total
Chromium, total
Chromium, hexavalent
Chromium, trivalent
Copper, total
Cyanide, available
Lead, total
Mercury, total
Nickel, total
Selenium, total
Silver, total
Thallium, total
Zinc, total
Acrylonitrile
Anthracene
Benzene
Benzidine
Benzo(a)anthracene
Benzo(a)pyrene
Bis(2-chloroethyl)ether
Bis(2-ethylhexyl)phthalate
Bromodichloromethane [Dichlorobromomethane]
Bromoform
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane [Dibromochloromethane]
Chloroform
Chrysene
m-Cresol [3-Methylphenol]
o-Cresol [2-Methylphenol]
p-Cresol [4-Methylphenol]
1,2-Dibromoethane
m-Dichlorobenzene [1,3-Dichlorobenzene]
o-Dichlorobenzene [1,2-Dichlorobenzene]
p-Dichlorobenzene [1,4-Dichlorobenzene]
3,3'-Dichlorobenzidine
1,2-Dichloroethane
1,1-Dichloroethene [1,1-Dichloroethylene]
Dichloromethane [Methylene chloride]
1,2-Dichloropropane
1,3-Dichloropropene [1,3-Dichloropropylene]
2,4-Dimethylphenol
Di-n-Butyl phthalate
Ethylbenzene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Methyl ethyl ketone
Nitrobenzene
N-Nitrosodiethylamine
N-Nitroso-di-n-butylamine
Pentachlorobenzene
Pentachlorophenol
Phenanthrene
Polychlorinated biphenyls (PCBs)
Pyridine
1,2,4,5-Tetrachlorobenzene
1,1,2,2-Tetrachloroethane
Tetrachloroethene [Tetrachloroethylene]
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene [Trichloroethylene]
2,4,5-Trichlorophenol
TTHM (Total trihalomethanes)
Vinyl chloride
Bromide
Nitrate-Nitrite (as N)
Boron, total
Cobalt, total
Iron, total
Magnesium, total
Manganese, total
Molybdenum, total
Tin, total
Titanium, total
Acrolein
Chloroethane
2-Chloroethylvinyl ether

ATTACHMENT J
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
CONTRACT LABORATORY AND POLLUTANTS ANALYZED

Dichlorobromomethane [Bromodichloromethane]
1,1-Dichloroethane
1,1-Dichloroethylene [1,1-Dichloroethene]
1,3-Dichloropropylene [1,3-Dichloropropene]
Methyl bromide [Bromomethane]
Methyl chloride [Chloromethane]
Methylene chloride [Dichloromethane]
1,1,2,2-Tetrachloroethane
Tetrachloroethylene [Tetrachloroethene]
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]
Trichloroethylene [Trichloroethene]
2-Chlorophenol
2,4-Dichlorophenol
4,6-Dinitro-o-cresol
2,4-Dinitrophenol
2-Nitrophenol
4-Nitrophenol
p-Chloro-m-cresol
Phenol
2,4,6-Trichlorophenol
Acenaphthene
Acenaphthylene
3,4-Benzofluoranthene [Benzo(b)fluoranthene]
Benzo(ghi)perylene
Benzo(k)fluoranthene
Bis(2-chloroethoxy)methane
Bis(2-chloroisopropyl)ether
4-Bromophenyl phenyl ether
Butylbenzyl phthalate
2-Chloronaphthalene
4-Chlorophenyl phenyl ether
Dibenzo(a,h)anthracene
Diethyl phthalate
Dimethyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
1,2-Diphenylhydrazine (as Azobenzene)
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Isophorone
Naphthalene
N-Nitrosodimethylamine
N-Nitrosodi-n-propylamine
N-Nitrosodiphenylamine
Pyrene
1,2,4-Trichlorobenzene
Gross Alpha
Gross Beta
Strontium-90

ATTACHMENT K

Pollutant Concentration Guidance Tool for Agricultural and Wildlife Water Use
Wks 12.0, Item 1.b

Pollutant Concentration Guidance Tool Inputs as Related to 40 CFR 435, Subpart E

Instructions can be found by scrolling this page down

Please note that users must select "Enable Editing" and "Enable Content" when opening the file. Also, if the Tool shows any error message, it is recommended to "End" the macro. If prompted, users are recommended to "Update" external data, and "Continue" when asked about editing links. If the Input tab is malfunctioning, "Clear Data" can be used to refresh and reset the page.

Beneficial Use

Please select from the following:

- Irrigation
- Livestock Watering
- Wildlife

Beneficial Use Category

Please select from the following:

- Feline
- Fish
- Fly
- Molluscs
- Plankton
- Rabbit

Beneficial Use Subcategory

Please select from the following:

Pollutant

Please select from the following:

- Strontium
- Sulfate
- Toluene
- Total Dissolved Solids
- Total Organic Carbon
- Total Suspended Solids

Only search for data from government documents and peer-reviewed sources

(if unselected, the search will provide all available data)

View Data **Clear Data**

Instructions

At any point, a user may select "View Data" to see the available data for the criteria selected. "Clear Data" may be used to reset the search form and refresh the worksheet. To select criteria, click the text in the list boxes. To deselect criteria, click the highlighted text in the list boxes. Users must click View Data to update the Output tab.

A user may search on multiple combinations of criteria (i.e., Beneficial Use, Beneficial Use Category, Beneficial Use Subcategory, Pollutant); all of the available options are listed on the Input Options tab. After one or more Beneficial Use is selected, options will populate in the Beneficial Use Category box. Similarly, Beneficial Use Subcategory options will become available after one or more Beneficial Use Category is selected. These options update based on selections in the preceding boxes. Users are limited to 3 Beneficial Use Categories, 10 Beneficial Use Subcategories, and 15 Pollutants per search. Please note that there is no required minimum selection for the search to run.

If a user wishes to only see data from sources that are peer-reviewed or government documents, check the box in Cell B14. If unselected, the search will provide all available data from all sources reviewed.

If a user wishes to analyze or manipulate the data further, we recommend the user copy and paste the Output table into a new workbook. Data can also be reviewed on the Standardized Data and Raw Data tabs. Please note that all filters on those tabs must be cleared before performing a search on the Input tab.

To view more detailed information about the data, Users may navigate to the "Raw Data" tab. This tab shows the data as reported in the literature side by side with the standardized data. To understand the standardization process, we recommend the user review the information on the Methodology and Assumptions tab. Further information can be found on the "...Crosswalk" tabs, which are hidden by default.

					Standardized Data										
Beneficial Use	Beneficial Use Category	Beneficial Use Subcategory	Beneficial Use Sub-subcategory	Pollutant Name	Standardized Pollutant Name	Min	Max	Units	Number of Data Points	Data Type	Associated Impacts	Short Citation	Notes	Peer Reviewed or Government Document (Y/N)
Wildlife	Fish	Fish (adult)	Japanese Medaka	Methylphenol	Phenol		25000	mg/kg BW	1	Study Result: Not Adverse	No Adverse Impacts	Fujita, K., 2021		Y
Wildlife	Fish	Fish (adult)	Japanese Medaka	Methylphenol	Phenol		125000	mg/kg BW	1	Study Result: Not Adverse	No Adverse Impacts	Fujita, K., 2021		Y
Wildlife	Fish	Fish (adult)	Japanese Medaka	Methylphenol	Phenol		625000	mg/kg BW	1	Study Result: Not Adverse	No Adverse Impacts	Fujita, K., 2021		Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Copper	Copper		0.045	mg/L	1	Study Result: Adverse	Reproduction/Lactation	Driessnack, Jamwal, & Niyogi, 2017b	ec	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Nickel	Nickel		0.27	mg/L	1	Study Result: Adverse	Reproduction/Lactation	Driessnack, Jamwal, & Niyogi, 2017b	ec	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Cadmium	Cadmium		0.007	mg/L	0	Study Result: Not Adverse	Reproduction/Lactation	Driessnack, Jamwal & Niyogi, 2017a	ec	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Zinc	Zinc		0.17	mg/L	1	Study Result: Adverse	Reproduction/Lactation	Driessnack, Jamwal & Niyogi, 2017a	ec	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Chlorine	Chlorine		4000	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Cozzarelli et al, 2017	ej	N
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Bicarbonate	Carbonate		1250	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Cozzarelli et al, 2017		N
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Ammonium	Ammonium	0.75	3.4	mg/L	2	Study Result: Adverse	Mortality/Severe Adverse	Cozzarelli et al, 2017	ek	N
Wildlife	Fish	Fish (larval)	Zebrafish (Danio rerio)	Bis(2-ethylhexyl) phthalate	Phthalate		54.02	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Boran, H. and Terzi, S., 2019		Y
Wildlife	Fish	Fish (embryos)	Fathead minnow (Pimephales promelas) embryo	Aluminum	Aluminum		1.105	mg/L	1	Study Result: Adverse	Hatchability	Cardwell et al, 2017	bs	Y
Wildlife	Fish	Fish (embryos)	Fathead minnow (Pimephales promelas) embryo	Aluminum	Aluminum		1.105	mg/L	1	Study Result: Adverse	Body size	Cardwell et al, 2017	bs	Y
Wildlife	Fish	Fish (embryos)	Fathead minnow (Pimephales promelas) embryo	Aluminum	Aluminum		1.105	mg/L	1	Study Result: Adverse	Survival	Cardwell et al, 2017	bs	Y
Wildlife	Fish	Fish (larval)	Zebrafish (Danio rerio)	Aluminum	Aluminum		0.548	mg/L	1	Study Result: Adverse	Survival	Cardwell et al, 2017	bs	Y
Wildlife	Fish	Fish (larval)	Zebrafish (Danio rerio)	Aluminum	Aluminum	0.139	0.548	mg/L	2	Study Result: Adverse	Body size	Cardwell et al, 2017	bs	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Phenanthrene	PAHs		0.202	mg/L	1	Study Result: Adverse	Stress response, reduced reproduction success	Loughery, Kidd, Mercer & Martyniuk, 2018	em	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Bromine	Bromine		100	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	es	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Bromine	Bromine		17800	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	et	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas)	Bromine	Bromine		16500	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	et	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Benzene	Benzene		32	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	bz	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Benzene	Benzene		35.1	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ca	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Benzene	Benzene		84	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cb	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas) adult	Benzene	Benzene		15.1	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cc	Y
Wildlife	Fish	Fish (larval)	Rainbow trout larval	Benzene	Benzene		8.25	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cd	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Benzene	Benzene		5.3	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ce	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Benzene	Benzene		56	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cf	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Ethylbenzene	Ethylbenzene		42.3	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ch	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Ethylbenzene	Ethylbenzene		48.5	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ci	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Toluene	Toluene		12.6	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cl	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Toluene	Toluene		46.3	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cm	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Toluene	Toluene		56	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cn	Y
Wildlife	Fish	Fish (larval)	Rainbow trout larval	Toluene	Toluene		0.02	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	co	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Toluene	Toluene		24	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cp	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Xylene	Xylene		27.7	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cm	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Xylene	Xylene		28.8	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cn	Y
Wildlife	Fish	Fish (larval)	Rainbow trout larval	Xylene	Xylene		3.77	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cq	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Xylene	Xylene		8.2	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cp	Y
Wildlife	Fish	Fish (juvenile)	Fathead minnow (Pimephales promelas) juvenile	Naphthalene	Naphthalene		1.99	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cr	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas) adult	Naphthalene	Naphthalene		7.9	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ce	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Naphthalene	Naphthalene		0.11	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cw	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Naphthalene	Naphthalene		1.6	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ce	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Naphthalene	Naphthalene		4.5	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cx	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Phenanthrene	PAHs		0.04	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cw	Y
Wildlife	Fish	Fish (juvenile)	Rainbow trout juvenile	Phenanthrene	PAHs		3.2	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	cx	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas) adult	Calcium	Calcium		4630	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ew	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas) adult	Magnesium	Magnesium		2120	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ew	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas) adult	Potassium	Potassium		6390	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ew	Y
Wildlife	Fish	Fish (adult)	Fathead minnow (Pimephales promelas) adult	Sodium	Sodium		6390	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Folkerts, Goss, & Blewett, 2020	ew	Y
Wildlife	Fish	Fish (larval)	Zebrafish (Danio rerio)	Phenanthrene	PAHs		0.3	mg/L	1	Study Result: Adverse	Other Health	Wallace et al., 2020	cz	Y
Wildlife	Fish	Fish (larval)	Zebrafish (Danio rerio)	Lead	Lead		9.936	mg/L	1	Study Result: Adverse	Mortality/Severe Adverse	Hong et al, 2018		Y
Wildlife	Fish	Fish (larval)	Zebrafish (Danio rerio)	Naphthalene	Naphthalene		2.56	mg/L	1	Study Result: Adverse	Other Health	Hong et al, 2018		Y
Wildlife	Wildlife-General	Wildlife-General	Mammals (Wildlife)	Methylmercury	Mercury		5	mg/kg diet	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Nonruminants (Wildlife)	Inorganic mercury	Mercury		1	mg/kg BW	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Ruminants (Wildlife)	Boron	Boron	6.8	7	mg/L	2	Study Result: Adverse	Other Health	Kennedy Jenks Consultants, 2013		N
Wildlife	Wildlife-General	Wildlife-General	Ruminants (Wildlife)	Organic Mercury	Mercury		2	mg/kg diet	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Ruminants (Wildlife)	Selenium	Selenium		5	mg/kg diet	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Ruminants (Wildlife)	Sodium Selenite	Selenium	1.9	8.3	mg/kg BW	2	Study Result: Adverse	Mortality/Severe Adverse	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Boron	Boron		135	mg/kg diet	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Boron	Boron		10	mg/kg BW/day	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Boron	Boron	100	300	mg/L	2	Guideline/Recommendation/Tolerable Level	Reproduction/Lactation, Mortality/Severe Adverse	Ramirez and Armstrong, 1992		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Magnesium	Magnesium		82	mg/L	1	Guideline/Recommendation/Tolerable Level	Mortality/Severe Adverse	Schwarz, Echols, Wolcott, and Nelson, 2004		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Selenium	Selenium		0.002	mg/L	1	Guideline/Recommendation/Tolerable Level	Mortality/Severe Adverse	Schwarz, Echols, Wolcott, and Nelson, 2004		Y

					Standardized Data										
Beneficial Use	Beneficial Use Category	Beneficial Use Subcategory	Beneficial Use Sub-subcategory	Pollutant Name	Standardized Pollutant Name	Min	Max	Units	Number of Data Points	Data Type	Associated Impacts	Short Citation	Notes	Peer Reviewed or Government Document (Y/N)
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Selenium	Selenium	0.002	0.005	mg/L	2	Guideline/Recommendation/Tolerable Level	Mortality/Severe Adverse	Ramirez and Armstrong, 1991		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Selenium	Selenium		0.005	mg/L	1	Guideline/Recommendation/Tolerable Level	Mortality/Severe Adverse	Ramirez and Armstrong, 1992		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Selenium	Selenium		2	mg/kg diet	1	Guideline/Recommendation/Tolerable Level	Other Health	National Research Council, 2005		Y
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Sulfate	Sulfate		3000	mg/L	1	Guideline/Recommendation/Tolerable Level	Other Health	Geomega, 2007		N
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Sulfate	Sulfate		3010	mg/L	1	Guideline/Recommendation/Tolerable Level	Other Health	Geomega, 2007		N
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Total Dissolved Solids	Total Dissolved Solids		5000	mg/L	1	Guideline/Recommendation/Tolerable Level	Other Health	Geomega, 2007		N
Wildlife	Wildlife-General	Wildlife-General	Wildlife-General	Total Dissolved Solids	Total Dissolved Solids		5600	mg/L	1	Guideline/Recommendation/Tolerable Level	Other Health	Geomega, 2007		N

ATTACHMENT L

Water Treatment Chemicals and Safety Data Sheets
Wks 12.0, Item 2.g

ATTACHMENT L
SOLARIS WATER MIDSTREAM, LLC
RED BLUFF PRODUCED WATER TREATMENT FACILITY
NEW INDUSTRIAL TPDES PERMIT APPLICATION
LIST OF WATER TREATMENT CHEMICALS AND SAFETY DATA SHEETS

The following provides a list of chemicals that will be used to treat the wastewater to be discharged under this authorization. A safety data sheet is attached for each chemical listed

- Hydrogen Peroxide (H2O2): Hydrogen peroxide, 35%wt is dosed in concentrations up to 215 mg/L in the DAF feed to increase oxidation-reduction potential (ORP) for the purpose of oxidizing iron to an insoluble form that can be separated and removed through the DAF. Concentration up to 20 mg/L are added to desalinated fresh water upstream of a UV device to aid in the removal of total organic carbon (TOC).
- Flocculant: An anionic polyacrylamide polymer is dosed to DAF feed in concentrations less than 5 mg/L.
- Coagulant: An aluminum-based coagulant such as Polyaluminum chloride (PACl) is used in concentrations up to 20 mg/L to aid in the removal of colloidal particles through the Ultrafiltration (UF) system.
- Hydrochloric Acid (HCl): HCl is used in pre-treatment at less than 20 mg/L to increase pH upstream of a Degasifier which facilitates the conversion of inorganic carbon to carbon dioxide. HCl is also used to decrease pH entering the Membrane Desalination process which aids in the prevention of scale formation.
- Antiscalant (Brenntag): An antiscalant provided by Brenntag (or similar) is added to pre-treated water feeding a Thermal Desalination process at <100 mg/L to prevent scale formation during operation.
- Antiscalant (Avista): An antiscalant provided by Avista (or similar) is added to pre-treated water feeding a Membrane Desalination process at <10 mg/L to prevent scale formation during operation.
- Sodium Bisulfite (SBS): SBS is added to the feed of the Membrane Desalination process at <10 mg/L to reduce the ORP of the feed brine to <250 mV. This serves to protect RO membranes from oxidation damage.
- Sodium Hydroxide (caustic; NaOH): Caustic is dosed upstream of the Ammonia Stripper at concentrations up to 250 mg/L to increase pH and improve removal of ammonia through the Ammonia Stripper via conversion of dissolved ammonium ions to gaseous ammonia. Up to 600 mg/L of caustic is also added in the Membrane Desalination process to improve removal of boron via conversion of boric acid to borate ions which are more readily rejected by RO membranes.
- Sulfuric Acid (H2SO4): Sulfuric acid is used in concentrations less than 200 mg/L to decrease pH upstream of the UV device to improve effectiveness of TOC removal.
- Calcium Chloride (CaCl2): Calcium chloride is dosed after Posttreatment to re-mineralize the Finished Water, with a target hardness of 40 mg/L as CaCO3. The dose of calcium chloride dose is <45 mg/L.

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier	**HYDROGEN PEROXIDE 35% NSF**
Other means of identification	None.
Recommended use	ALL PROPER AND LEGAL PURPOSES
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Brenntag Pacific Inc.	
Address	10747 Patterson Place Santa Fe Springs, CA 90670	
Telephone	562-903-9626	
E-mail	Not available.	
Emergency phone number	800-424-9300	CHEMTREC

2. Hazard(s) identification

Physical hazards	Oxidizing liquids	Category 2
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure	Category 2
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May intensify fire; oxidizer. Harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause respiratory irritation. May cause damage to organs through prolonged or repeated exposure.

Precautionary statement

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 mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear eye protection/face protection. Wear protective gloves/eye protection/face protection.
Response	If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. 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. Immediately call a poison center/doctor. Rinse mouth. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
HYDROGEN PEROXIDE (H2O2)		7722-84-1	35
Other components below reportable levels			65

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact
IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion
Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Skin irritation. May cause redness and pain. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
Take off all contaminated clothing immediately. Contact with combustible material may cause fire. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

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
Greatly increases the burning rate of combustible materials. Containers may explode when heated. 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
In case of fire and/or explosion do not breathe fumes. In case of fire: Stop leak if safe to do so. 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
May intensify fire; oxidizer. Contact with combustible material may cause fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep away from clothing and other combustible materials. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Ventilate the contaminated area.

Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. 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. Wear appropriate protective equipment and clothing during clean-up.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Provide adequate ventilation. Do not breathe mist or vapor. Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Do not store near combustible materials. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)	PEL	1.4 mg/m3
		1 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)	TWA	1 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)	TWA	1.4 mg/m3
		1 ppm

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. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations	Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Keep away from food and drink. 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	
Physical state	Liquid.
Form	Liquid.
Color	Colorless
Odor	Pungent
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	31.23 °F (-0.43 °C) estimated / -27 °F (-32.78 °C)
Initial boiling point and boiling range	244.76 °F (118.2 °C) estimated
Flash point	999.0 °F (537.2 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
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	0.92 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	12.04 lbs/gal estimated
Explosive properties	Not explosive.
Flammability class	Combustible IIIB estimated
Oxidizing properties	May intensify fire; oxidizer.
Percent volatile	65 % estimated
Specific gravity	1.44 estimated

10. Stability and reactivity

Reactivity	Greatly increases the burning rate of combustible materials.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat. Contact with incompatible materials.
Incompatible materials	Combustible material. Reducing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause damage to organs through prolonged or repeated exposure by inhalation. May cause irritation to the respiratory system.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity	Harmful if swallowed. May cause respiratory irritation.
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
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.

IARC Monographs. Overall Evaluation of Carcinogenicity

HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1) 3 Not classifiable as to carcinogenicity to humans.

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	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.

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.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
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.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
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	Dispose of in accordance with local regulations. 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	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number UN2014
UN proper shipping name HYDROGEN PEROXIDE, AQUEOUS SOLUTIONS
Transport hazard class(es)
Class 5.1
Subsidiary risk 8
Packing group II
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
ERG number 140
DOT information on packaging may be different from that listed.

DOT

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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

HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1) 1000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
HYDROGEN PEROXIDE (H2O2)	7722-84-1	1000	1000 lbs		

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

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.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)

US. New Jersey Worker and Community Right-to-Know Act

HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)

US. Pennsylvania Worker and Community Right-to-Know Law

HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)

US. Rhode Island RTK

HYDROGEN PEROXIDE (H2O2) (CAS 7722-84-1)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
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).

16. Other information, including date of preparation or last revision

Issue date	05-09-2015
Revision date	05-19-2015
Version #	03
HMIS® ratings	Health: 3* Flammability: 0 Physical hazard: 2
NFPA ratings	Health: 3 Flammability: 0 Instability: 0 Special hazards: OX
Disclaimer	BNA cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

Revision Information

Hazard(s) identification: Hazard statement
Hazard(s) identification: Prevention
Hazard(s) identification: Supplemental information
First-aid measures: Skin contact
Handling and storage: Precautions for safe handling
Physical and chemical properties: Color
Physical and chemical properties: Oxidizing properties
Physical and chemical properties: Odor
Physical and chemical properties: Explosive properties
Toxicological information: Acute toxicity
Toxicological information: Skin contact
Regulatory information: US federal regulations

GPAC 2040
PRODUCT SPECIFICATIONS

PARAMETER	SPECIFICATION
SPECIFIC GRAVITY (@ 20° C)	1.340 - 1.400
$\%Al_2O_3$	16.7 - 17.5
%Cl	19.5 - 21.9
Turbidity, NTU	<50
BASICITY	40 - 44

Revised: 10/23/2014
Supersedes: 10/16/2014

GULBRANDSEN TECHNOLOGIES, INC.
2 Main Street • P.O. Box 5523 • Clinton, New Jersey 08809
908-735-5458 • Fax 908-735-6971

SAFETY DATA SHEET

Preparation Date: 1/27/2017 **Revision Date:** 1/27/2017 **Revision Number:** G1

1. IDENTIFICATION

Product identifier

Product code: P2930
Product Name: Polyacrylamide (avg. M.W. 5,000,000)

Other means of identification
Synonyms: 2-Propenamide Homopolymer; PAA
CAS #: 9003-05-8
RTECS # AS3700000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: No information available.
Uses advised against No information available

Supplier:
Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000.
Order Online At: https://www.spectrumchemical.com
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Not classified

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Polyacrylamide	9003-05-8	100

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms May cause eye/skin irritation. May cause digestive (gastrointestinal) tract irritation. Dyspnea (Shortness of breath and difficulty breathing). May affect the liver. It may affect the kidneys. Ataxia. Convulsions.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Dioxide, Carbon Monoxide. Nitrogen Oxides.

Specific hazards: May be combustible at high temperatures.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent)

and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. All equipment used when handling the product must be grounded. Keep away from incompatible materials.

Safe Handling Advice
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not ingest. Do not breathe dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:
Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WHEEL
Polyacrylamide	9003-05-8	None	None	None	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Polyacrylamide	9003-05-8	None	None	None	None

Australia and Mexico

Components	CAS-No.	**Australia**	**Mexico**
Polyacrylamide	9003-05-8	None	None

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Safety glasses with side-shields or Goggles

Skin and body protection: Long sleeved clothing. Chemical resistant apron. Gloves.

Respiratory protection: Effective dust mask.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Solid

Appearance:
Crystals. Granules.

Color:
White. Off-white.

Odor:
Odorless.

Taste
No information available.

Formula:
[-CH2CH(CONH2]n

Molecular/Formula weight:
Av. M.W. = 5,000,000

Flammability:
No information available

Flashpoint (°C/°F):
No information available.

Flash Point Tested according to:
Not available

Autoignition Temperature (°C/°F):
No information available

Lower Explosion Limit (%):
No information available

Upper Explosion Limit (%):
No information available

Melting point/range(°C/°F):
No information available

Decomposition temperature(°C/°F):
No information available

Boiling point/range(°C/°F):
No information available

Bulk density:
No information available

Density (g/cm3):
No information available

Specific gravity:
1.3

pH:
No information available

Vapor pressure @ 20°C (kPa):
No information available

Evaporation rate:
No information available

Vapor density:
No information available

VOC content (g/L):
No information available

Odor threshold (ppm):
No information available

Partition coefficient (n-octanol/water):
No information available

Viscosity:
No information available

Miscibility:
No information available

Solubility:
Soluble in Water

10. STABILITY AND REACTIVITY

Reactivity
May react with strong oxidizers

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Incompatible materials.

Incompatible Materials: Strong oxidizing agents

Hazardous decomposition products: Carbon monoxide. Carbon dioxide. Nitrogen oxides (NOx).

Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion.

Acute Toxicity

Component Information

Polyacrylamide	
CAS-No.	9003-05-8

LD50/oral/rat = > 1 g/kg Oral LD50 Rat
LD50/oral/mouse = 12950 mg/kg
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No infomation available
Other LD50 or LC50information = 11250 mg/kg Oral LD50 Rabbit

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = > 1000 mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = 12950 mg/kg

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: May cause skin irritation.

Eye Contact: May cause eye irritation.

Inhalation May cause irritation of respiratory tract.

Ingestion May cause digestive (gastointestinal) tract irritation. May affect respiration (dyspnea - difficulty breathing and shortness of breath). May affect behavior/central nervous system (ataxia). May affect behavior/central nervous system (convulsions).

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated ingestion may affect the blood (pigmented or nucleated red blood cells). Prolonged or repeated ingestion may affect the liver, and kidneys.

Sensitization: No information available.

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Polyacrylamide	9003-05-8	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available.

STOT - repeated exposure No information available.
Target Organs: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Polyacrylamide	9003-05-8	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Class No information available
Packing group: No information available
Emergency Response Guide Number No information available
Marine Pollutant No data available
DOT RQ (lbs): No information available
Special Provisions No Information available
Symbol(s): No information available
Description: No information available

TDG (Canada)

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant No Information available
Description: No information available

ADR

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available

IMO / IMDG
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant No information available

RID
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

ICAO
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

IATA
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
ERG Code: No information available
Special Provisions No information available

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Polyacrylamide	9003-05-8	Present XU	Present KE-29375	Present	Present (6)-849	Present	Present	Not present

U.S. Regulations

Polyacrylamide
FDA - Direct Food Additives 21 CFR 172.255 21 CFR 173.315
FDA - 21 CFR - Total Food Additives 172.255 173.315 175.105 176.170 176.180

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Polyacrylamide	9003-05-8	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Polyacrylamide	9003-05-8	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Polyacrylamide	9003-05-8	Not Applicable	Not Applicable

Canada

WHMIS hazard class:
Non-controlled

Components
Polyacrylamide

WHIMHAZ
Uncontrolled product according to WHMIS classification criteria

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Polyacrylamide	9003-05-8	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Polyacrylamide	9003-05-8	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Polyacrylamide	9003-05-8	Not listed

EU Classification
R-phrase(s)
not determined (not applicable)

S -phrase(s)
none

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Polyacrylamide	9003-05-8		No information	

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Not dangerous

16. OTHER INFORMATION

Preparation Date: 1/27/2017
Revision Date: 1/27/2017
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet

Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Hydrochloric (Muriatic) Acid**
HBCC SDS number : CM15000
Synonym : Muriatic Acid, Hydrogen Chloride Solution, Chlorohydric Acid, HCl

Product use and Restrictions : Refer to label or call

Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
1675 North Main Street
Orange, California 92867
714-998-8800 - Office
800-821-7234 - Office

Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone Number (Chemtrec) : 800-424-9300
Website : http://hillbrothers.com

2. Hazard Identification

Classification : Acute Toxicity, Inhalation; Category 3
Skin Corrosion/Irritation; Category 1A
Serious Eye Damage/Eye Irritation; Category 1
Corrosive to metals; Category 1

Signal Word : Danger

Pictogram(s) :

Hazard Statements : H331: Toxic if inhaled.
H314: Causes severe skin burns and eye damage.
H290: May be corrosive to metals

Precautionary Statements

Response : P304+P340+P310: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P301+P310+P330+P331: IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.

P303+P361+P353+P363+P310: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor.
P305+P351+P338+P310: 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 of doctor.

Prevention : P280: Wear protective gloves/protective clothing/eye protection/face protection.
P271: Use only outdoors or in a well-ventilated area.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P264: Wash hands thoroughly after handling.

Storage : P390 Absorb spillage to prevent material-damage.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P406: Store in a corrosive resistant container with a resistant inner liner.

Disposal : P501: Dispose of contents and container in accordance with all local/regional/national/international regulation.

3. Composition/Information on Ingredients

CAS Number	Ingredient Name	Weight %
7647-01-0	Hydrochloric Acid	5-35%
7732-18-5	Water	95-65%

Synonyms/ Common Names : Muriatic Acid, Hydrogen Chloride Solution, Chlorohydric Acid, HCl

4. First Aid Measures

Ingestion : If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should rinse mouth with large amounts of water. Victim should drink large amounts of water to dilute the ingested material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Never induce vomiting or give water to someone who is unconscious having convulsions, or who cannot swallow. GET IMMEDIATE MEDICAL ATTENTION.

Inhalation : If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or inhaled the substance: induce artificial respiration with the aid of a pocket mask equipped with a

one-way valve or other proper respiratory medical device. Give Cardiopulmonary Resuscitation (CPR) if there is no pulse AND no breathing. Obtain medical attention IMMEDIATELY. Symptoms may appear up to 48 hours after exposure.

Skin : Immediately flush contaminated skin with water for at least 15 minutes and wash with soap and water. If large areas of the body are contaminated or if clothing is penetrated, immediately use safety shower preferably removing clothing while under the shower. Flush exposed areas with large amounts of water for at least 30 minutes. Keep affected area cool. GET PROMPT MEDICAL ATTENTION. Wash clothing before reuse. Destroy contaminated shoes.

Eyes : Immediately flush eyes with a directed stream of water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of all eye and lid tissue. Do not use chemical antidotes. Speed is essential. GET IMMEDIATE MEDICAL ATTENTION.

Medical Conditions : Hydrogen chloride (Hydrochloric Acid) is a respiratory irritant. Persons with impaired pulmonary function may be at increased risk from exposure. Periodic surveillance is indicated.

Effects of Overexposure : The most significant routes of occupational overexposure are inhalation and contact with skin and eyes.

Summary of Acute Health Hazards

Ingestion : If ingested, solutions can cause corrosive burns to the mouth, throat, esophagus and stomach. Symptoms may include difficulty in swallowing, intense thirst, nausea, vomiting, diarrhea and in severe cases, collapse and death. Small amounts of acid which enter the lungs during ingestion or aspiration while vomiting can cause serious lung injury and death.

Inhalation : Vapor or mist from concentrated solutions can cause severe nasal irritation, sore throat, choking, coughing and difficulty breathing (50-100 ppm). Prolonged exposures can cause burns and ulcers to the nose and throat. Severe exposures (e.g. 1000-2000 ppm), for even a few minutes, can cause a life-threatening accumulation of fluid in the lungs (pulmonary edema). Symptoms of pulmonary edema such as shortness of breath can be delayed for several hours after the exposure.

Skin : Contact with the skin may cause severe irritation, skin burns and permanent skin damage. Prolonged exposure may result in ulcerating burns which could leave scars. Prolonged and repeated exposure to dilute solutions often causes irritation, redness, pain and drying and cracking of the skin.

Eyes : Contact with the eyes may cause severe irritation, eye burns and permanent eye damage, which may result in permanent blindness. Low concentrations of vapors or mist (10-35 ppm) can be immediately irritating, causing redness.

Note to Physicians : This product may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use

endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Following exposure the patient should be kept under medical review for at least 48 hours as delayed pneumonitis may occur. DO NOT attempt to neutralize the acid with weak bases since the reaction will produce heat that may extend the corrosive injury.

Summary of Chronic Health : Prolonged and repeated exposure to dilute solutions often causes irritation, redness, pain and drying and cracking of the skin. Repeated exposure to low concentrations of mist can cause brownish discoloration and damage to tooth enamel. Dental erosion becomes more severe with increased exposure. Repeated exposure to low concentrations can cause nose and gum bleeding. Chronic bronchitis and stomach pain (gastritis) have also been reported.

5. Fire Fighting Measures

Extinguishing : Use water spray, fog, alcohol-resistant foam, dry chemicals, CO2, or other agents as appropriate for surrounding fire. Neutralize with soda ash or slaked lime. Do NOT use straight streams of water. Most foams will react with the material and release corrosive/toxic gases. Do not use carbon dioxide if cyanides are involved in a fire. Water fog is effective for controlling vapors. Controlled water addition is an effective method to reduce vapor pressure and control vapor emissions. If possible, prevent run-off water from entering storm drains, bodies of water, or other Environmentally sensitive areas.

Special Exposure Hazards : This product is corrosive, and presents a significant inhalation and contact hazard to fire-fighters. This product will not decompose at temperatures below 1500ºC (2730ºF). Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas. Reacts with active metals (potassium, sodium, calcium, powdered aluminum, zinc, magnesium) to produce flammable hydrogen gas which can form explosive mixtures. May also form hydrogen chloride, and acid vapors. Explosive concentrations of hydrogen may accumulate inside metal equipment.

Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and full protective equipment.

Fire Fighting Procedures : N/A

NFPA Rating : Health - 3
Flammability - 0
Instability - 1

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : Class 3 Water-Reactive Material

6. Accidental Release Measures

Personal Precautions : In case of a spill, clear the affected area, protect people and respond with trained personnel.

Emergency Procedures : Spill and Leak Response: uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used.

Methods of Containment And Clean-Up : Deny access to the area. Determine isolation distance. Stop leak at source, dike area, pick up with pump as much material as possible, prevent material from entering waterway, prevent contact with other chemicals. Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with lime or soda ash or other acid-neutralizing agent. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residues in a suitable container. Dispose of in accordance with Federal, State and local hazardous waste disposal regulations (see Section XIII)

7. Handling and Storage

Safe Handling : All employees who handle this material should be trained to handle it safely. Avoid breathing mists or sprays generated by this product. Use in a well -ventilated location.

Storage : For Non-Bulk Containers - Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Only store in acid -resistant containers. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a diked area, as appropriate. Store containers away from incompatible chemicals. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage containers are properly labeled and not damaged. Empty containers may contain residual liquid. Therefore, empty containers should be handled with care.
Bulk Containers – All tanks and pipelines which contain this material must be labeled. All equipment must be designed for use with this product. Perform routine maintenance on tanks or pipelines which contain this

product. Report all leaks immediately to the proper personnel.

Tank Car Shipments – Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective must be used (see Section VIII). All loading and unloading equipment must be inspected prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading and unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and properly prepared, prior to starting the transfer operations. All equipment must be designed for use with this product. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

Work/Hygienic Practices : All employees who handle this product should wash their hands before eating, drinking, smoking, or using toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Always use this product in areas where adequate ventilation is provided. Provide good general room ventilation to minimize exposure. Use local exhaust and corrosion-resistant ventilation at points of vapor emission. System should be discharged into absorption media.

Maintenance : Protective Practices During Maintenance of Contaminated Equipment – Follow practices indicated in Section VI. Make certain application equipment is locked and tagged-out safely. Decontaminate equipment before maintenance begins by a triple-rinse with water followed, if necessary, by using acid neutralizing agent and an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local regulations.

8. Exposure Controls/Personal Protection

Occupational Exposure :

Chemical Name: Hydrochloric Acid				
Exposure Limits (TWAs) in Air				
CAS Number	**IDLH**	**ACGIH TLV**	**OSHA PEL**	**STEL**
7647-01-0		2 ppm	5 ppm	N/A

Protective Equipment : In the event of a large release, don proper protective equipment, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard hat. Self-Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, Select NIOSH/MSHA approved based on actual or potential airborne

concentrations in accordance with latest OSHA and/or ANSI recommendations. The proper personal protective equipment for incidental releases (e.g.-1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, respirator and appropriate body protection.
Protective Clothing: Wear protective gloves such as rubber or neoprene to minimize skin contact. Use of rubberized coveralls and rubber shoes are suggested. Wash thoroughly after use. In case of emergency, or where there is a possibility of considerable exposure, wear complete acid suit with hood and forced air or self-contained breathing apparatus.

Eye Protection : Wear safety glasses with side shields or chemical goggles. Person subject to hydrochloric acid exposure should not wear contact lenses. Face shields are recommended when the operation can generate splashes, sprays or mists.

Respiratory Protection : Use approved organic vapor acid-gas respirator for areas where airborne exposure is excessive. For a higher level of protection use positive pressure supplied air respiration protection or self-contained breathing apparatus or if oxygen levels are below 19.5% or are unknown.

9. Physical and Chemical Properties

	5%	15%	31%	35%
Boiling Point °F (°C)	215 (102)	225 (107)	183 (84)	150 (66)
Freezing Point °F (°C)	-20 (-29)	-70 (-57)	-49 (-45)	-26 (-32)
Vapor Pressure mmHg@20°C	17	14	25	76
Sp. Gravity 60°F /15.2°C	1.0357	1.1154	1.1581	1.1779

Chemical Formula: HCL
Odor: Pungent, suffocating odor
Appearance: Colorless to yellowish clear liquid
Flash Point: None
Flammability: N/A
pH: < 1.0
Solubility in Water: Complete
Viscosity: N/A
% Volatiles: 100
Molecular Weight: 36.46

How to detect this compound: Litmus paper will turn red upon contact with even low concentrations of this solution.

10. Stability and Reactivity

Reactivity : Contact with metals cause generation of flammable concentrations of hydrogen gas.

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : Hazardous polymerization will not occur

Conditions to Avoid : Heat or fire, runoff to sewer, inhalation of gas, sparks where hydrogen may be present.

Incompatible Materials : Contact with metals and strong oxidizers. Reacts exothermically with alkalis, metal oxides, amines, active metals carbonates, and sulfides. Reacts with oxidizers to give chlorine gas. Reacts with cyanides to give hydrogen cyanide gas. Reacts with sulfides to give hydrogen sulfide gas. Reacts with formaldehyde to give bischloromethyl ether (an OSHA regulated carcinogen) Reacts with amines to form ammonia. Reacts with carbonates to form carbon dioxide. Other materials to avoid are: Bases, acetic anhydride, alkali metals, aluminum, copper, copper alloys, fluorine, iron, sodium hydroxide, steel, sulfites, sulfuric acid, vinyl acetate, zinc, potassium permanganate, cesium acetylene carbide, rubidium acetylene carbide, rubidium carbide, sodium, chlorosulfonic acid, oleum carbonates, perchloric acid, calcium phosphide, metal oxides, acetates, cesium carbide, beta-propiolactone, ethyleneimine, propylene oxide, lithium silicides, alcohols + hydrogen cyanide, 2-aminoethanol, ammonium hydroxide, calcium carbide, 1,1 -difluoroethylene, ethylene diamine, magnesium boride, mercuric sulfate, silver perchlorate + carbon tetrachloride, formaldehyde, uranium phosphide.

Hazardous Decomposition Products : Chlorine will be released by mixing with strong oxidizers. Hydrogen chloride, carbon monoxide, carbon dioxide. When heated to decomposition, emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

11. Toxicological Information

Acute and Chronic Effects : See Section 4

Routes of Exposure : This product may affect the body either through ingestion, inhalation, or contact with the eyes and/or skin.

- **Inhalation** : Yes
- **Ingestion** : Yes
- **Skin** : Yes
- **Eyes** : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : This solution is corrosive, and can burn and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion of large quantities may be fatal.

Numerical Measures of Toxicity : LD50 (rabbit): 900 mg/kg. @ 100% HCl.
LD50 (rat): 3124 ppm/1 hour @ 100% HCl.
LC50 (inhalation, mouse) = 1108 ppm/1 hr.

Chronic Toxicity : N/A

Carcinogenicity :

Product Name: Hydrochloric Acid					
ACGIH	**IARC**	**EPA**	**NIOSH**	**NTP**	**OSHA**
	IARC Monograph: *Hydrogen Chloride - Group 3 Carcinogen* *Hydrogen Chloride*			*No*	*No*

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : LC50 mosquito fish = 282 mg/l 96 hours
LC50 fathead minnow = 21900 ug/l 96 hours
LC50 trout = 10 mg/l 24 hours
LC50 shrimp = 100 to 330 mg/l 48 hours (salt water)
LC50 gold fish = 178 mg/l 48 hours (salt water)

Persistence and Degradability : Rapidly hydrolyzes when exposed to water.

Bioaccumulative Potential :

Product/Ingredient	Log $_{Pow}$	BCF	Potential
N/A	N/A	N/A	N/A

Mobility in Soil : Will exhibit extensive evaporation from soil surfaces. Upon transport through the soil, hydrochloric acid will dissolve some of the soil materials (especially those with carbonate bases) and the acid will neutralize to some degree.

13. Disposal Considerations

Disposal of Container : Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

UN# : UN1789
Proper Shipping Name : Hydrochloric Acid

Hazard Class/Division	:	8
Packing Group	:	PG II
Marine Pollutant	:	N/A
Special Precautions	:	N/A
Emergency Response Guidebook	:	N/A

Placard Advisory : 2012 ERG, Guide 157, pages 252-253

15. Regulatory Information

Section 302 Extremely Hazardous Substance (EHS)	:	TPQ: 500 Lbs.
Section 304 Extremely Hazardous Substance (EHS)	:	RQ: 5,000 Lbs.
CERCLA Hazardous Substance	:	5000 Pounds (2270 Kilograms) (527.42 Gals)
Section 313 Supplier Notification		
Clean Air Act (CAA)	:	TQ: 5,000 Lbs.
California Prop 65	:	N/A
Label Warning	:	N/A
EPA Registration	:	N/A

16. Other Information

Revision date	:	02/25/2015
Supersedes	:	05/21/2009
First Issue	:	12/01/1986
Chemical Family/Type	:	Inorganic Acid
Section(s) changed since last revision	:	MSDS to First Issue SDS Conversion

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.

Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Sodium Hydroxide, 25-50%, Liquid**
HBCC SDS number : CC12000
Synonym(s) : Sodium Hydroxide; Soda Lye; Lye; Caustic Soda
Product use and Restrictions : Refer to label or call
Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
1675 North Main Street
Orange, California 92867
714-998-8800
800-821-7234

Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone Number (Chemtrec) : 800-424-9300
Website : http://hillbrothers.com

2. Hazard Identification

Classification : Skin Corrosion/Irritation – Category 1
Serious Eye Damage/Eye Irritation – Category 1

Signal Word : DANGER

Pictogram(s) :

Hazard Statements : H314: Causes severe skin burns and eye damage.

Precautionary Statements

Response : P304+P340+P310: IF INHALED: Removed person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician.
P301+P310+P330+P331: IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303+P361+P353+P363+P310: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor.
P305+P351+P338+P310: 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 of doctor.

Prevention : P280: Wear protective gloves/protective clothing/eye protection/face protection.
P264: Wash hands thoroughly after handling.

Storage : P405: Store locked up.

Disposal : P501: Dispose of contents and container in accordance with all local/regional/national/international regulation.

3. Composition / Information on Ingredients

CAS Number	Ingredient Name	Weight %
1310-73-2	Sodium Hydroxide	25-50%

4. First Aid Measures

Ingestion : Do Not Induce Vomiting. If the person is conscious, give him large quantities of water immediately to dilute the sodium hydroxide. Do not attempt to make the exposed person vomit. DO NOT INDUCE VOMITING! GET MEDICAL ATTENTION IMMEDIATELY.

Inhalation : Move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Keep the affected person warm and at rest. GET MEDICAL ATTENTION IMMEDIATELY.

Skin : Immediately flush contaminated skin with water. If large areas of the body are contaminated or if clothing is penetrated, immediately use safety shower, removing clothing while under the shower. Flush exposed areas with large amounts of water for at least 15 minutes. GET MEDICAL ATTENTION IMMEDIATELY. Wash clothing before reuse.

Eyes : Immediately flush eyes with a directed stream of water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within 1 minute is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY. Contact lenses should not be worn when working with this chemical.

Medical Conditions : Sodium hydroxide is a respiratory irritant. Persons with pre-existing skin disorders or eye problems or impaired pulmonary function may be at increased risk from exposure, and should have limited exposure to this material.

Effects of Overexposure : N/A

Summary of Acute Health Hazards : N/A

Ingestion : Corrosive! Swallowing sodium hydroxide may cause severe burns of the mouth, throat, esophagus, and stomach. Death may result. Severe scarring

of the throat may occur on recovery after swallowing sodium hydroxide. Symptoms may include sneezing, bleeding, vomiting, diarrhea, fall in blood pressure. Damage may appear days after exposure. An increased number of esophageal cancer cases have been reported to occur in individuals who have scarring of the esophagus from swallowing sodium hydroxide.

Inhalation : Severe Irritant. Effects from inhalation of the dusts, mists, or spray will vary from mild irritation to destructive burns depending on the severity of exposure. Symptoms may include sneezing, sore throat or runny nose. Severe pneumonitis may occur.

Skin : Corrosive! Contact of the skin may cause skin irritation and, with greater exposure, severe burns with scarring.

Eyes : Corrosive! Sodium hydroxide is destructive to eye tissues on contact, will cause severe burns that result in damage to the eyes and even blindness. Contact lenses should not be worn when working with this chemical.

Note to Physicians : Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the uses of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.

Summary of Chronic Health : The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness. Effects may be delayed.

Signs and Symptoms of Exposure : A physician should be contacted if anyone develops any signs or symptoms and suspects that they are caused by exposure to sodium hydroxide.

5. Fire Fighting Measures

Extinguishing : Foam, carbon dioxide, or dry chemicals may be used where this product is stored. Adding water to caustic solution generates large amounts of heat. Do NOT get water inside containers.

Special Exposure Hazards : Not combustible but solid form in contact with moisture or water may generate sufficient heat to ignite combustible materials. Contact with some metals can generate hydrogen gas. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air.

Special Protective Equipment for Firefighters : This product is not combustible. Full protective clothing and self-contained breathing apparatus should be worn in areas where product is stored.

Fire Fighting Procedures : Use only flood quantities of water as spray. DO NOT use halogenated extinguishing agents. Use carbon dioxide or suitable dry chemical extinguishers.

NFPA Rating : Health - 3
Flammability - 0
Instability - 1

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : N/A

6. Accidental Release Measures

Personal Precautions : Avoid runoff into storm sewers and ditches which lead to waterways.

Emergency Procedures : Leaks should be stopped.

Methods of Containment And Clean-Up : Spills should be contained and cleaned up immediately. Spills should be removed by using a vacuum truck. Neutralize remaining traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, nitric, phosphoric, or acetic acid. The spill area should then be flushed with water, followed by liberal covering of sodium bicarbonate. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Spills on areas other than pavement (dirt or sand) may be handled by removing the affected soils and placing in approved containers.

7. Handling and Storage

Safe Handling : Prevent possible eye and skin contact by wearing protective clothing and equipment. Sodium hydroxide reacts with reducing sugars such as fructose, lactose, maltose, galactose, levulose, and arabinose to form carbon monoxide. While the potential for worker exposure to carbon monoxide may be small, a potential does exist during cleaning of certain dairy and possibly other industry equipment. Carbon monoxide gas can form upon contact with food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures.

Storage : Storage tanks must be vented and diked. Store drums of sodium hydroxide separate from acids, metals and explosives. Provide adequate drainage. When diluting, use agitation and add concentrated sodium hydroxide to water at a controlled rate to control heat of dilution and to avoid splattering. Do not add water to sodium hydroxide. Do not store with aluminum or magnesium. Store above 60°F (16°C) to prevent freezing.

Work/Hygienic Practices : Avoid contact with the skin and avoid breathing dust or mist. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using

toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Ventilation is not usually required for sodium hydroxide solutions. Avoid creation of mist or spray. If present wear appropriate safety clothing and provide local exhaust systems. Where carbon monoxide may be generated, special ventilation may be required.

Special Mixing and Handling Instructions : Considerable heat is generated when water is added to sodium hydroxide; therefore, when making solutions always add the sodium hydroxide to the water with constant stirring. The water should always be lukewarm (80° - 100° F). Never start with hot or cold water. If sodium hydroxide becomes concentrated in one area, or if added too rapidly, or if added to hot or cold water, a rapid temperature increase can result in dangerous boiling and/or spattering or may cause an immediate violent eruption.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits :

Chemical Name: Sodium Hydroxide Liquid				
Exposure Limits (TWAs) in Air				
CAS Number	**IDLH**	**ACGIH TLV**	**OSHA PEL**	**STEL**
1310-73-2	10mg/m^3	2 mg/m^3	2 mg/m^3	N/A

Protective Equipment : Persons not wearing protective equipment and clothing should be restricted from areas of spills until cleanup has been completed. Employees should be provided with and required to use impervious clothing, gloves, face shield (eight-inch minimum), and other appropriate protective clothing necessaryto prevent any possibility of skin contact with solutions of sodium hydroxide. Materials suggested for use are natural rubber, butyl rubber, neoprene, or vinyl. Employees should be provided with and required to use dust- and splash-proof safety goggles where there is any possibility of sodium hydroxide contacting the eyes. Contact lenses should not be worn when working with this chemical. Eyewash stations and safety showers must be available in the immediate work area for emergency use.

Eye Protection : Face shield (eight-inch minimum), and other appropriate protective clothing necessary to prevent any possibility of skin contact with solutions of sodium hydroxide. Employees should be provided with and required to use dust- and splash-proof safety goggles where there is any possibility of sodium hydroxide contacting the eyes.

Respiratory Protection : Good industrial hygiene practices recommend that engineering controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when they fail and need to be supplemented. If the use of respirators is necessary, the only respirators permitted are those that have been approved by the Mine Safety and Health Administration or by the National Institute for Occupational Safety and Health.

9. Physical and Chemical Properties

Concentration by Wt.%	25%	30%	33%	50%
Boiling Point °F (°C)	234 (112)	242 (117)	245 (118)	288 (142)
Freezing Point °F (°C)	-13.9 (-25.5)	36 (2.2)	44 (6.7)	54 (12)
Vapor Pressure mmHg@20 °C	17	14	25	76
Sp. Gravity 60°F / 15.2°C	1.2818	1.3362	1.3683	1.5372
% Volatiles	75%	70%	67%	50%

Chemical Formula: NaOH
Odor: No Odor
Appearance: Clear to slightly gray liquid
Flash Point: None
Flammability: N/A
pH: 14.0
Solubility in Water: Complete
Viscosity: N/A
Vapor Pressure mmHg@20°C: 1.5 -1.6
Molecular Weight: 40.0 (dry basis)

How to detect this Compound : Sampling and analyses may be performed by collection of sodium hydroxide in a glass bubbler containing hydrochloric acid, followed by subsequent titration. Also, detector tubes certified by NIOSH under 42 CFR Part 84 or other direct-reading devices calibrated to measure sodium hydroxide may be used.

10. Stability and Reactivity

Reactivity : Sodium hydroxide, even in fairly dilute solution, reacts readily with various sugars to produce carbon monoxide.

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : Hazardous polymerization will not occur

Conditions to Avoid : Overheating in storage accelerates corrosion.

Incompatible Materials : Contact with water, acids, flammable liquids, and organic halogen compounds, especially trichloroethylene, may cause fires and explosions. Contact with metals such as aluminum, tin, and zinc and alloys containing these metals cause formation of flammable hydrogen gas. Contact with nitromethane and other similar nitro compounds cause formation of shock -sensitive salts. Contact with water releases heat which can result in boiling and splattering.

Hazardous Decomposition Products : None

11. Toxicological Information

Acute and Chronic Effects : Sodium hydroxide is a strong alkali; the mist, dust and solutions cause severe injury to the eyes, mucous membranes, and skin. Although inhalation is usually of secondary importance in industrial exposures, the effects from the dust or mist will vary from mild irritation of the nose at 2 mg/m^3 to severe pneumonitis, depending on the severity of exposure. The greatest industrial hazard is rapid tissue destruction of eyes or skin upon contact with either the solid or with concentrated solutions. Contact with the eyes causes disintegration and sloughing of conjunctival and corneal epithelium, corneal opacification, marked edema, and ulceration; after 7 to 13 days either gradual recovery begins, or there is progression of ulceration and corneal opacification. Complications of severe eye burns are symblepharon (adhesion of the lid to the eyeball) with overgrowth of the cornea by a vascularized membrane, progressive or recurrent corneal ulceration, and permanent corneal opacification. On the skin, solutions of 25 to 50% cause the sensation of irritation within about 3 minutes; with solutions of 4%, this does not occur until after several hours. If not removed from the skin, severe burns with deep ulceration will occur; exposure to the dust or mist may cause multiple small burns, with temporary loss of hair. Ingestion produces severe pain in the esophagus and stomach, corrosion of the lips, mouth, tongue, and pharynx and the vomiting of large pieces of mucosa; cases of squamous cell carcinoma of the esophagus have occurred with latent periods of 12 to 42 years after ingestion; these cancers may have been sequelae of tissue destruction and possibly scar formation rather than from a direct carcinogenic action of sodium hydroxide itself.

Routes of Exposure

Ingestion : Yes
Inhalation : Yes
Skin : Yes
Eyes : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : Sodium hydroxide is a strong alkali and is corrosive to any tissue with which it comes in contact.

Numerical Measures of Toxicity : Sodium hydroxide: irritation data: skin, rabbit: 500 mg/24H; severe; eye rabbit: 50 ug/24H severe. Investigated as a mutagen.

Chronic Toxicity : N/A

Carcinogenicity :

Product Name:					
ACGIH	IARC	EPA	NIOSH	NTP	OSHA
No	No	No	No	No	No

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : N/A

Persistence and Degradability : N/A

Bioaccumulative Potential :

Product / Ingredient	Log $_{Pow}$	BCF	Potential
-	-	-	-

Mobility in Soil : N/A

13. Disposal Considerations

Disposal of Container : Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements. Do not flush to sewer.

14. Transport Information

UN# : UN1824
Proper Shipping Name : Sodium Hydroxide Solution
Hazard Class / Division : 8
Packing Group : II
Marine Pollutant : No
Special Provisions : B2, IB2, N34, T7, TP2
Emergency Response Guidebook : 2012 ERG, Guide 154, pages 246-247
Placard Advisory :

15. Regulatory Information

SARA 302 Extremely Hazardous Substance (EHS) : No chemicals in this material are subject to the reporting requirements of Sara Title III, Section 302.

SARA 304 Extremely Hazardous Substance (EHS) : No chemicals in this material are subject to the reporting requirements of Sara Title III, Section 304.

SARA 311/312 Hazard Classification :

Sara 311/312 Hazards				
Acute	Chronic	Flammability	Pressure	Reactivity
Yes	No	No	No	No

SARA 313 Supplier Notification : This product does not contain any chemical components with known CAS numbers that exceed the reporting requirements of SARA Title III, Section 313.

CERCLA Hazardous Substance Notification : This product contains a CERCLA reportable hazardous chemical: CAS #1310-73-2 Sodium Hydroxide (RQ) = 1,000 lbs. (454 kgs.)

Clean Air Act (CAA) : This product is not listed as a pollutant under the US Clean Air Act, Section 12 (40 CFR 61).

California Prop 65 : This product does not contain any chemicals known to the state of California to cause cancer.

Label Warning : Corrosive

EPA Registration : None

Maximum use level for Sodium Hydroxide under NSF/ANSI Standard 60

25% Liquid Caustic Soda	Maximum use	200 mg/L
30% Liquid Caustic Soda	Maximum use	167 mg/L
33% Liquid Caustic Soda	Maximum use	152 mg/L
50% Liquid Caustic Soda	Maximum use	100 mg/L

16. Other Information

Revision date : 04/15/2015
Supersedes : 02/23/2012
First Issue : 12/12/1986

Chemical Family/Type : Alkali

Section(s) changed since last revision : MSDS to First Issue SDS Conversion

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.

Section 1 Chemical Product and Company Identification

PRODUCT NAME: CARUSOL® C liquid permanganate **TRADE NAME:** CARUSOL® C liquid permanganate **SYNONYMS:** Permanganic acid sodium salt Sodium permanganate	**Revision Date: April 2008**
USES OF SUBSTANCE: CARUSOL® liquid permanganate is a liquid oxidant recommended for applications that require a concentrated permanganate solution.	
COMPANY NAME (Europe): CARUS NALON S.L.	**COMPANY ADDRESS:** Barrio Nalon, s/n 33100 Trubia-Oviedo Espana, Spain **INFORMATION:** (34) 985-785-513 **EMERGENCY TELEPHONE:** (34) 985-785-513
COMPANY NAME (US): CARUS CORPORATION	**COMPANY ADDRESS:** 315 Fifth Street Peru, IL 61354, USA **INFORMATION:** (815) 223-1500 (815) 224-6816 (FAX) www.caruscorporation.com (Web) salesmkt@caruscorporation.com (Email) **EMERGENCY TELEPHONE:** (800) 435 –6856 (USA) (815) 223-1500 (Other countries) (800) 424-9300(CHEMTREC®, USA) (703) 527-3887 (CHEMTREC®, Other countries)

Section 2 Hazards Identification

1. **EYE CONTACT**
   Sodium Permanganate is damaging to eye tissue on contact. It may cause burns that result in damage to the eye.

2. **SKIN CONTACT**
   Momentary contact of solution at room temperature may be irritating to the skin, leaving brown stains. Prolonged contact is damaging to the skin.

3. **INHALATION**
   Acute inhalation toxicity data are not available. However, airborne concentrations of sodium permanganate in the form of mist may cause irritation to the respiratory tract.

4. **INGESTION**
   Sodium permanganate solution, if swallowed, may cause burns to mucous membranes of the mouth, throat, esophagus, and stomach.

Section 3 Hazardous Ingredients

MATERIAL OR COMPONENT	CAS NO.	EINECS	%	HAZARD DATA
Sodium Permanganate	10101-50-5	233-251-1	39.5-41.0	**PEL/C** 5 mg Mn per cubic meter of air
				TLV-TWA 0.2 mg Mn per cubic meter of air

HAZARD SYMBOLS:


O


Xn


N

RISK PHRASES:

8 Contact with combustibles may case fire.
22 Harmful if swallowed.
50/53 Very toxic to aquatic organisms, may cause long-term effects in the aquatic environment.

SAFETY PHRASES:

17 Keep away from combustible materials.
24/25 Avoid contact with skin and eyes.
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Section 4 First Aid Measures

1. **EYES**
   Immediately flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Do not attempt to neutralize chemically. Seek medical attention immediately. **Note to physician**: Decomposition products are alkaline. Brown stain formed is insoluble manganese dioxide.

2. **SKIN**
   Immediately wash contaminated areas with water. Remove contaminated clothing and footwear. (**Caution:** Solution may ignite certain textiles). Wash clothing and decontaminate footwear before reuse. Seek medical attention if irritation is severe or persistent.

3. **INHALATION**
   Remove person from contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

4. **INGESTION**
   Never give anything by mouth to an unconscious or convulsing person. If person is conscious, give large quantities of water or milk. Seek medical attention immediately.

Section 5 Fire Fighting Measures

NFPA* HAZARD SIGNS

Health Hazard	1	=	Materials which under fire conditions would give off irritating combustion products. (less than 1 hour exposure) Materials that on the skin could cause irritation.
Flammability Hazard	0	=	Materials that will not burn.
Reactivity Hazard	0	=	Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.
Special Hazard	OX	=	Oxidizer

***National Fire Protection Association 704 (USA)**

FIRST RESPONDERS:	Wear protective gloves, boots, goggles, and respirator. In case of fire, wear positive pressure breathing apparatus. Approach incident with caution.
FLASHPOINT	None
FLAMMABLE OR EXPLOSIVE LIMITS	Lower: Nonflammable Upper: Nonflammable
EXTINGUISHING MEDIA	Use large quantities of water. Water will turn pink to purple if in contact with sodium permanganate. Dike to contain. Do not use dry chemicals, CO_2 Halon® or foams.
SPECIAL FIREFIGHTING PROCEDURES	If material is involved in fire, flood with water. Cool all affected containers with large quantities of water. Apply water from as far a distance as possible. Wear self-contained breathing apparatus and full protective clothing.
UNUSUAL FIRE AND EXPLOSION	Powerful oxidizing material. May decompose spontaneously if exposed to heat (135°C / 275°F). May be explosive in contact with certain other chemicals (Section 10). May react violently with finely divided and readily oxidizable substances. Increases burning rate of combustible material. May ignite wood and cloth.

Section 6 Accidental Release Measures

PERSONAL PRECAUTIONS

Personnel should wear protective clothing suitable for the task. Remove all ignition sources and incompatible materials before attempting clean up.

ENVIRONMENTAL PRECAUTIONS:

Do not flush into sanitary sewer system or surface water. If accidental release into the environment occurs, inform the responsible authorities. Keep the product away from drains, sewers, surface and ground water and soil.

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Contain spill by collecting the liquid in a pit or holding behind a dam (sand or soil). Dilute to approximately 6% with water, and then reduce with sodium thiosulfate, a bisulfite or ferrous salt solution. The bisulfite or ferrous salt may require some dilute sulfuric acid (10% w/w) to promote reduction. Neutralize with sodium carbonate to neutral pH, if acid was used. Decant or filter and deposit sludge in approved landfill. Where permitted, the sludge may be drained into sewer with large quantities of water. To clean contaminated floors, flush with abundant quantities of water into sewer, if permitted by federal, state, and local regulations. If not, collect water and treat as above.

Section 7 Handling and Storage

WORK/HYGIENIC PRACTICES

Wash hands thoroughly with soap and water after handling permanganate solution. Do not eat, drink or smoke when working with sodium permanganate. Wear proper protective equipment. Remove clothing, if it becomes contaminated.

VENTILATION REQUIREMETNS

Provide sufficient mechanical and/or local exhaust to maintain exposure below the TLV/TWA.

CONDITIONS FOR SAFE STORAGE

Store in accordance with NFPA 430 requirements for Class II oxidizers. Protect containers from physical damage. Store in a cool, dry area in closed containers. Segregate from acids, peroxides, formaldehyde, and all combustible, organic, or easily oxidizable materials including antifreeze and hydraulic fluid.

Section 8 Exposure Controls and Personal Protection

RESPIRATORY PROTECTION

In cases where overexposure to mist may occur, the use of an approved NIOSH-MSHA mist respirator or an air supplied respirator is advised. Engineering or administrative controls should be implemented to control mist.

EYE

Faceshield, goggles, or safety glasses with side shields should be worn. Provide eyewash in working area.

GLOVES

Rubber or plastic gloves should be worn.

OTHER PROTECTIVE EQUIPMENT

Chemically resistant clothing covering arms and legs, and rubber, or plastic apron should be worn. **Caution:** If clothing becomes contaminated, wash off immediately. Spontaneous ignition may occur with cloth or paper.

Section 9 Physical and Chemical Properties

APPEARANCE AND ODOR	Dark purple solution, odorless
BOILING POINT, 760 mm Hg	>101°C
VAPOR PRESSURE (mm Hg)	760 mm at 105°C
SOLUBILITY IN WATER % BY SOLUTION	Miscible in all proportions with water
PERCENT VOLATILE BY VOLUME	61-85% (as water)
EVAPORATION RATE	Same as water
FREEZING POINT	<-4.0 °C
SPECIFIC GRAVITY	1.36 - 1.39
pH	5-8
OXIDIZING PROPERTIES	Strong oxidizer. May ignite wood and cloth.
EXPLOSIVE PROPERTIES	Explosive in contact with sulfuric acid or peroxides, or readily oxidizable substances.

Section 10 Stability and Reactivity

STABILITY	Under normal conditions, the material is stable.
CONDITIONS TO AVOID	Contact with incompatible materials or heat (135°C / 275ºF) could result in violent exothermic chemical reaction.
INCOMPATIBLE MATERIALS	Acids, peroxides, and all combustible organic or readily oxidizable materials including inorganic oxidizable materials and metal powders. With hydrochloric acid, chlorine gas is liberated.
HAZARDOUS DECOMPOSITION PRODUCTS	When involved in a fire, sodium permanganate may form corrosive fumes.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	Material is not known to polymerize.

Section 11 Toxicological Information

SODIUM PERMANGANATE: Acute oral LD_{50} not known.

1. ACUTE TOXICITY

Irritating to body tissue with which it comes into contact. No acute toxicity data is available for sodium permanganate. Toxicity is expected to be similar to that of potassium permanganate. The toxicity data for potassium permanganate is given below:

INGESTION:

LD 50 oral rat: 780 mg/kg male (14 days); 525 mg/kg female (14 days).
Harmful if swallowed. ALD: 10g. Ingestion may cause nausea, vomiting, sore throat, stomach-ache and eventually lead to a perforation of the intestine. Liver and kidney injuries may occur.

SKIN CONTACT:

LD 50 dermal no data available.
Major effects of exposure: severe irritation, brown staining of skin.

INHALATION:

LC 50 inhal. no data available.
The product may be absorbed into the body by inhalation. Major effects of exposure: respiratory disorder, cough.

2. CHRONIC TOXICITY

No known cases of chronic poisoning due to permanganates have been reported. Prolonged exposure, usually over many years, to heavy concentrations of manganese oxides in the form of dust and fumes may lead to chronic manganese poisoning, chiefly involving the central nervous system.

3. CARCINOGENICITY

Sodium permanganate has not been classified as a carcinogen by ACGIH, NIOSH, OSHA, NTP, or IARC.

4. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

Sodium permanganate solution will cause further irritation of tissue, open wounds, burns or mucous membranes.

Section 12 Ecological Information

ENTRY TO THE ENVIRONMENT

Permanganate has a low estimated lifetime in the environment, being readily converted by oxidizable materials to insoluble MnO_2.

BIOCONCENTRATION POTENTIAL

In non-reducing and non-acidic environments, MnO_2 is insoluble and has a very low bioaccumulative potential.

AQUATIC TOXICITY

No aquatic toxicity data is available for sodium permanganate. Toxicity is expected to be similar to that of potassium permanganate. The toxicity data for potassium permanganate is given below:

Rainbow trout, 96 hour LC_{50} for potassium permanganate:	1.8 mg/L
Bluegill sunfish, 96 hour LC_{50} LC50 for potassium permanganate:	2.3 mg/L
Milk fish (Chanos Chanos)/ 96 hour LC_{50} LC50 for potassium permanganate:	>1.4mgl

Section 13 Disposal Considerations

WASTE DISPOSAL

When it becomes a waste, sodium permanganate is considered a D001 hazardous (ignitable) waste. For disposal of sodium permanganate solutions, follow procedures in Section 6 and deactivate the permanganate to insoluble manganese dioxide. Dispose of it in a permitted landfill. Contact Carus Chemical Company for additional recommendations.

Section 14 Transport Information

USA (land, D.O.T.)	**Proper Shipping Name:** 49 CFR172.101 Permanganates, inorganic, aqueous solution, n.o.s. (contains sodium permanganate) **Hazard Class:** 49 CFR172.101….Oxidizer **ID Number:** 49 CFR172.101….UN 3214 **Packing Group:** 49 CFR172.101….II **Division:** 49 CFR172.101….5.1
European Labeling in accordance Road/Rail Transport (ADR/RID)	**ID Number:** UN 3214 **ADR/RID Class** 5.1 **Description of Goods:** Permanganates, inorganic, aqueous solution, n.o.s. (contains sodium permanganate) **Hazard Identification No.** 50
European Labeling in accordance with EC directive (Water, I.M.O.)	**Proper Shipping Name:** Permanganates, inorganic, aqueous solution, n.o.s. (contains sodium permanganate) **Hazard Class:** Oxidizer **ID Number:** UN 3214 **Packing Group:** II **Division:** 5.1 **Marine Pollutant**: No

Section 14 Transport Information (contd.)

European Labeling in accordance with EC directive (Air, I.C.A.O.)	**Proper Shipping Name:** Permanganates, inorganic, aqueous solution, n.o.s (contains sodium permanganate) **Hazard Class:** Oxidizer **ID Number:** UN 3214 **Packing Group:** II **Division:** 5.1

Section 15 Regulatory Information

EUROPEAN AND INTERNATIONAL REGULATIONS:

MARKINGS ACCORDING TO EU GUIDELINES:

The product has been classified and marked in accordance with EU directives/ordinances on hazardous materials.

CHEMICAL NAME	CAS NO.	EINECS	UN NUMBER
Sodium Permanganate	10101-50-5	233-251-1	UN 3214

CODE LETTER AND HAZARD DESIGNATION OF THE PRODUCT:

Oxidizer

Harmful

Dangerous to the Environment

RISK PHRASES:

8 Contact with combustibles may case fire.
22 Harmful if swallowed.
50/53 Very toxic to aquatic organisms, may cause long-term effects in the aquatic environment.

SAFETY PHRASES:

17 Keep away from combustible materials.
24/25 Avoid contact with skin and eyes.
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Section 15 Regulatory Information (contd.)

US FEDERAL REGULATIONS:

CHEMICAL INVENTORY STATUS – PART 1

Ingredient	CAS. NO.	TSCA	EC	Japan	Australia
Sodium permanganate	10101-50-5	Yes	Yes		

CHEMICAL INVENTORY STATUS – PART 2 --- CANADA --

Ingredient	CAS. NO.	Korea	DSL	NDSL	PHIL
Sodium permanganate	10101-50-5	No	No	Yes	

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR, Canada) and the MSDS contains all of the information required by the CPR.

FEDERAL, STATE & INTERNATIONAL REGULATIONS – PART 1

		SARA 302		SARA 313	
Ingredient	CAS. NO.	RQ	TPQ	List	Chemical Catg.
Sodium permanganate	10101-50-5	N/A	N/A	No	Yes (Manganese compounds)

FEDERAL, STATE & INTERNATIONAL REGULATIONS – PART 2

Ingredient	CAS. NO.	CERCLA	RCRA	TSCA 8(d)
Sodium permanganate	10101-50-5	No	D001	No

Ingredient	CAS. NO.	CWC	TSCA 12(b)	CDTA	SARA 311/312
Sodium permanganate	10101-50-5	No	No		4545 Kg

Ingredient	CAS. NO.	Acute	Chronic	Fire	Pressure	Reactivity	Pure/Liquid
Sodium permanganate	10101-50-5	Yes	Yes	Yes	No	No	Liquid

Ingredient	CAS. NO.	Australian Hazchem Code	Poison Schedule	WHMIS
Sodium permanganate	10101-50-5			C, D2B

Section 16 Other Information

NIOSH	National Institute for Occupational Safety and Health
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer
PEL	Permissible Exposure Limit
C	Ceiling Exposure Limit
TLV-TWA	Threshold Limit Value-Time Weighted Average
CAS	Chemical Abstract Service
EINECS	Inventory of Existing Chemical Substances (European)

Chithambarathanu Pillai (S.O.F.)
April 2008

The information contained herein is accurate to the best of our knowledge. However, data, safety standards and government regulations are subject to change and, therefore, holders and users should satisfy themselves that they are aware of all current data and regulations relevant to their particular use of product. CARUS CORPORATION DISCLAIMS ALL LIABILITY FOR RELIANCE ON THE COMPLETENESS OR ACCURACY OR THE INFORMATION INCLUDED HEREIN. CARUS CORPORATION MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTIABILITY OR FITNESS FOR PARTICULAR USE OR PURPOSE OF THE PRODUCT DESCRIBED HEREIN. All conditions relating to storage, handling, and use of the product are beyond the control of Carus Corporation, and shall be the sole responsibility of the holder or user of the product.

Responsible Care®
Good Chemistry at Work

Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Sodium Bisulfite**
HBCC SDS number : CS05200
Synonym : Sodium Acid Sulfite, Sodium Hydrogen Sulfite
Product use and Restrictions : Refer to label or call
Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
1675 North Main Street
Orange, California 92867
714-998-8800
800-821-7234

Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone Number (Chemtrec) : 800-424-9300
Website : http://hillbrothers.com

2. Hazard Identification

Classification : Skin Corrosion/Irritation – Category 2
Serious Eye Damage/Eye Irritation – Category 2A
Specific Target Organ Toxicity (Single Exposure)(Respiratory tract irritation) – Category 3

Signal Word : Warning

Pictogram(s) :

Hazard Statements : H319 - Causes serious eye irritation.
H315 - Causes skin irritation.
H335 - May cause respiratory irritation.

Precautionary Statements

Response : P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
P302 + P352 + P362-2 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

rinsing.
P337 + P313 - If eye irritation persists: Get medical advice/attention.

Prevention : P280 - Wear protective gloves. Wear eye or face protection.
P271 - Use only outdoors or in a well-ventilated area.
P261 - Avoid breathing vapor.
P264 - Wash hands thoroughly after handling.

Storage : P405 - Store locked up.

Disposal : P501 - Dispose of contents and container in accordance with all local/regional/national and international regulation.

3. Composition/Information on Ingredients

CAS Number	Ingredient Name	Weight %
7631-90-5	Sodium Bisulfite	<40%
7757-83-7	Sodium Sulfite	<4%
7757-82-6	Sodium Sulfate	<1%
7732-18-5	Water	>55%

4. First Aid Measures

Summary of First Aid Measures

Ingestion : If this product is swallowed, call a poison control center or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control center or doctor. Have person drink several glasses of water if able to swallow. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of label and MSDS to health professional with victim.

Inhalation : If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferable mouth-to-mouth if possible. Remove or cover gross contamination to avoid exposure to rescuers. Do not give anything by mouth to an unconscious person.

Skin : If the product contaminates the skin, rinse skin immediately with plenty of water for 15 minutes. Take off contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention. Call a poison control center or doctor for treatment advice.

Eyes : If this product enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Remove contact lenses, if present after the first 5 minutes, then continue rinsing eye. Do not attempt to neutralize. Oils or ointments should not be used at this time. Call a poison control

center or doctor for treatment advice. Victim must seek immediate medical attention.

Medical Conditions : May also cause severe allergic reaction in some asthmatics and sulfite sensitive individuals.

Effects of Overexposure : N/A

Summary of Acute Health Hazards : N/A

Ingestion : This product may cause irritation to the gastro-intestinal tract. Large doses may cause diarrhea, Central Nervous System Depression colic and death. May also cause severe allergic reaction in some asthmatics and sulfite sensitive individuals.

Inhalation : If mists or sprays of this solution are inhaled, this product may cause irritation to respiratory tract. May cause allergic reaction in sensitive individuals. If mixed with acids, sodium bisulfite will release large amounts of sulfur dioxide gas. This gas can cause severe irritation of the nose and throat. Exposure to high levels of sulfur dioxide gas may result in severe lung damage.

Skin : Can cause burns and severe irritation to the skin and mucous membranes.

Eyes : Can cause severe irritation to the eyes.

Note to Physicians : N/A

Summary of Chronic Health : N/A

5. Fire Fighting Measures

Extinguishing : Carbon dioxide, dry chemical, foam, halon, or water spray.

Special Exposure Hazards : Sodium bisulfite solution is not flammable or combustible. Fires that occur in the presence of sodium bisulfite solution should be extinguished using means appropriate to the surroundings. When sodium bisulfite in solution decomposes (at very high temperatures), it liberates toxic sulfur dioxide and sulfur oxides. Not considered flammable or combustible. This material, when heated, may release sulfur dioxide gas. Run-off from fire control may cause pollution.
Keep fire-exposed containers cool with water spray to prevent rupture due to excessive heat. High pressure water hose may spread product from broken containers increasing contamination. Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment.

Special Protective Equipment : If involved in a fire, this product may decompose to produce a variety of compounds, i.e. sulfur dioxide, sodium oxide, oxygen), Emergency responders must wear the proper personal protective equipment suitable for

this situation to which they are responding. Products of combustion are irritating to the respiratory tract and may cause breathing difficulty.

Fire Fighting Procedures : If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, discard or decontaminate fire response equipment using before returning such equipment to service.

NFPA Rating : Health - 2
Flammability - 0
Instability - 0

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : N/A

6. Accidental Release Measures

Personal Precautions : Proper protective equipment should be used. The proper personal protective equipment for incidental releases (e.g. –1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, and appropriate body protection. In the event of a large release, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard-hat. Self-Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, select NIOSH/MSHA approved based on actual or potential airborne concentrations in accordance with latest OSHA and/or ANSI recommendations.

Emergency Procedures : Uncontrolled releases should be responded to by trained personnel using pre-planned procedures.

Methods of Containment And Clean-Up : In case of a spill, clear the affected area, protect people, and respond with trained personnel. Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with sodium bicarbonate and water rinse. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residue in a suitable container.

7. Handling and Storage

Safe Handling Storage : Sodium bisulfite solution continually liberates sulfur dioxide (SO2), a toxic gas. Proper care should be taken to prevent exposure to this toxic gas by using proper personal protective equipment of ensuring proper ventilation.

Exposures can occur at a sodium bisulfite solution manufacturing facility or a manufacturing, packaging or storage facility that handles sodium bisulfite solution. Exposure may also occur in the event of a transportation incident. Persons involved in maintenance, sampling and testing activities, or in the loading and unloading of sodium bisulfite solution containers are at greater risk of exposure. Following good industrial hygiene practices will minimize the likelihood of sodium bisulfite solution exposure; however, persons involved in higher risk activities should always wear proper personal protective equipment such as protective gloves and goggles. In instances where the potential for misting is high, proper respiratory protection should also be worn. Avoid all bodily contact. Do not take internally. Wash thoroughly after handling. Avoid breathing mist. Open containers carefully. Store away from acids and oxidizers.

Work/Hygienic Practices : Wash hands thoroughly with soap and water before eating, drinking, smoking or using toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Use ventilation to maintain TLV below 5 mg/m^3. If required use a corrosion resistant ventilation system separate from other exhaust ventilation systems to ensure that there is no potential for overexposure to sprays, mists of this product.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits :

Chemical Name: Sodium Bisulfite				
Exposure Limits (TWAs) in Air				
CAS Number	**Chemical**	**ACGIH TLV**	**OSHA PEL**	**STEL**
7631-90-5	Sodium Bisulfite	5 ppm as SO_2	5 ppm as SO_2	N/A
7757-82-6	Sodium Sulfate	N/A	N/A	N/A

Protective Equipment : Rubber gloves, rubber boots, and rubber apron.

Eye Protection : Chemical safety goggles.

Respiratory : None normally required. (Respirator if TLV above 5 mg/m^3) If adequate ventilation is not available or if there is potential for airborne exposure above the exposure limits (listed in Section II) a respirator may be worn up to respirator exposure limitations, check with respirator equipment manufacturer's recommendation/limitations. For a higher level of protection use positive pressure supplied air respiration protection or Self-Contained Breathing Apparatus or if oxygen levels are below 19.5% or are unknown.

9. Physical and Chemical Properties

Appearance: Yellow liquid	**Odor:** Slightly sulfurous odor
Odor Threshold: N/A	**pH:** 4.8 – 5.2
Melting Point/Freezing Point: 26° F	**Initial Boiling Point/Range:** 210 – 220° F
Flash Point: N/A	**Evaporation Rate (BuAc=1):** N/A
Flammability: N/A	**Lower/Upper Explosive Limit:** N/A
Vapor Pressure (mmHg @ 20° C): N/A	**Vapor Density (Air=1):** N/A
Density at 25° C **(77°** F**):** -10.9-11.7 lbs/gal	**Solubility in Water:** Complete
% Volatiles: N/A	**Specific Gravity (Water=1):** 1.1 - 1.4
Molecular Weight: 104.06 g/mol.	**VOC:** N/A

10. Stability and Reactivity

Reactivity : N/A

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : N/A

Conditions to Avoid : Temperature at or near boiling causes evolution of toxic and corrosive sulfur dioxide gas. Sulfur dioxide is also evolved slowly at ambient temperatures.

Incompatible Materials : Sodium nitrite, aluminum powder, acids, and oxidizing agents

Hazardous Decomposition Products : Sulfur dioxide gas

11. Toxicological Information

Mildly Toxic (LD [Human] = 10G)
This product is irritating to contaminated tissue.
Sodium Bisulfite may also cause severe allergic reaction in some asthmatics and sulfite sensitive individuals.

Acute and Chronic Effects : Spills of sodium bisulfite solution should be contained and isolated from waterways and sewers or drains. Sodium bisulfite solution releases sulfur dioxide, a poisonous gas. Spills should be recovered and placed in a compatible container. Dispose of waste or residues in accordance with applicable local, state or federal regulations. Persons attempting to clean up sodium bisulfite solution spills should wear proper personal protective equipment.

Routes of Exposure

Ingestion : Yes
Inhalation : Yes
Skin : Yes
Eyes : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : N/A

Numerical Measures of Toxicity : N/A

Chronic Toxicity : N/A

Carcinogenicity : N/A

Product Name: Sodium Bisulfite					
ACGIH	**IARC**	**EPA**	**NIOSH**	**NTP**	**OSHA**
No	No	No	No	No	No

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : N/A

Persistence and Degradability : N/A

Bioaccumulative Potential : N/A

Product/Ingredient	Log $_{Pow}$	BCF	Potential
-	-	-	-

Mobility in Soil : N/A

13. Disposal Considerations

Disposal of Container : If collected material can be dissolved, it may be discharged to an industrial waste water collection system. Consult local, state or federal regulatory agencies before disposing of any material.

14. Transport Information

UN# : UN2693
Proper Shipping Name : UN2693, Bisulfites, aqueous solutions, n.o.s., 8, PG III
Hazard Class/Division : 8
Packing Group : III
Marine Pollutant : No
Special Provisions : IB3, T7, TP1, TP28
Emergency Response Guidebook : 2012 ERG, Guide 154, pages 246-247
Placard Advisory :

15. Regulatory Information

SARA 302 Extremely Hazardous Substance (EHS) : No chemical in this product is listed as an Extremely Hazardous Substance (EHS) under Section 302 of EPCRA.

SARA 304 Extremely Hazardous Substance (EHS) : No chemical in this product is listed as an Extremely Hazardous Substance (EHS) which would require reporting under Section 304 of EPCRA if released to the environment in quantities at or above the RQ (reportable quantity).

SARA 311/312 Hazard Classifications :

Sara 311/312 Hazards				
Acute	Chronic	Flammability	Pressure	Reactivity
Yes	No	No	No	No

SARA 313 Supplier Notification : This product contains the following chemical(s) subject to the reporting requirements of Section 313 of EPCRA (40 CFR 372) and Section 6607 of the Pollution Prevention Act.
Sodium Bisulfite, CAS #7631-90-5

CERCLA Hazardous Substance : No chemical in this product is listed as a CERCLA hazardous substance subject to release reporting requirements to the National Response Center (NRC).

Clean Air Act (CAA) : No chemical in this product is listed as an air pollutant under the U.S. Clean Air Act, Section 112(r) (40 CFR 61).

California Prop 65 : This product does not contain any chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

Label Warning : This product does not require hazard label warnings.

TSCA (Toxic Substances Control Act) : All chemical substances in this product are listed on the U.S. TSCA Inventory List.

16. Other Information

Revision date : 06/29/2016
Supersedes : 05/26/2015
First Issue : 10/03/1996
Chemical Family/Type : Inorganic Salt

Section(s) changed since last revision : Section 14

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.

Vitec® 7000
SAFETY DATA SHEET

1. Company and Product Identification

1.1	Identification – Product Name:	**Vitec® 7000**
1.2	Other means of identification Synonym:	Sequestering compounds Mixture, none
1.3	Recommended Use of the Chemical and Restrictions on Use:	Reverse osmosis membrane antiscalant Use only as directed on the label.
1.4	Name, Address, and Telephone Number of the Manufacturer, or Other Responsible Party: Competent Person email Address:	**AVISTA TECHNOLOGIES** 140 Bosstick Street San Marcos, CA 92069 (760) 744-0536 klindsey@avistatech.com
1.5	24 Hour Emergency No.:	1-800-424-9300 (United States) 1-703-527-3887 (International Collect)

DRINKING WATER TREATMENT ADDITIVES CLASSIFIED BY NSF INTERNATIONAL TO ANSI/NSF 60 AS STANDARD DRINKING WATER TREATMENT CHEMICAL FOR USE IN REVERSE OSMOSIS SYSTEMS AT A MAXIMUM LEVEL OF 7 mg/l

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear, amber colored liquid. This product may irritate contaminated tissue. This product is neither reactive nor flammable.

Physical Hazards Summary	None
Potential Health Hazards Summary	Skin corrosion/irritation Category 2 H313 Causes skin irritation Eye irritation Category 2A H319 Causes serious eye irritation
Potential Ecological Effects Summary	None

2.1 Classification of Product

U.S. OSHA classification	Skin corrosion/irritation Category 2 Eye irritation Category 2A
Classification as per EC 1272/2008 (CLP/GHS)	Skin corrosion/irritation Category 2 Eye irritation Category 2A
WHMIS classification	Skin corrosion/irritation Category 2 Eye irritation Category 2A

Hazardous Materials Information System (HMIS) Rating	**Health**	**1**

Flammability	**0**
Physical Hazard	**0**
Protective Equipment	**B**

2.2 Label Elements OSHA/GHS

General Warnings	P101	If medical advice is needed, have product container or label at hand.
	P102	Keep out of reach of children.
	P103	Read label before use
Signal Word	WARNING	
Hazard statements	H313	May be harmful in contact with skin
	H 319	Causes serious eye irritation
Precautionary statements	P281	Use personal protective equipment as required.
	P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
	P302 + P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Hazard pictograms		

2.3 Unclassified Hazards: None

2.4 Ingredients with unknown acute toxicity: None

3. COMPOSITION and INFORMATION ON INGREDIENTS

Chemical name **CAS #** **EINECS #**	**% w/w**	**US OSHA**	**GHS/EU CLP**	**WHMIS**
Chelate compound Proprietary Proprietary	30 - 40	Eye Irritation Category 1 Metal Corrosion, Category 1 H319 Causes serious eye irritation H290 May cause corrosion to metals	Eye Irritation Category 1 Metal Corrosion, Category 1 H319 Causes serious eye irritation H290 May cause corrosion to metals	Eye Irritation Category 1 Metal Corrosion, Category 1 H319 Causes serious eye irritation H290 May cause corrosion to metals
Deflocculant & Sequestrant Proprietary Proprietary	20 - 30	Corrosive to Metals, Category 1; Skin Irritation, Category 2; Serious Eye Damage, Category 1 H290; May cause corrosion to metals. H315; Causes skin irritation H318 Causes serious eye damage	Corrosive to Metals, Category 1; Skin Irritation, Category 2; Serious Eye Damage, Category 1 H290; May cause corrosion to metals. H315; Causes skin irritation H318 Causes serious eye damage	Corrosive to Metals, Category 1; Skin Irritation, Category 2; Serious Eye Damage, Category 1 H290; May cause corrosion to metals. H315; Causes skin irritation H318 Causes serious eye damage
Product	100	Skin corrosion/irritation Category 2 H313 Causes skin irritation Eye irritation Category 2A H319 Causes serious eye irritation		

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.
HMIRA Registry Number: 3331808 Date filed: 5/31/2019

4. FIRST-AID MEASURES

4.1 Description of Necessary Measures

Skin exposure: If this product contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim should seek immediate medical attention if any adverse exposure symptoms develop.

Eye exposure: If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

Inhalation: If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

Ingestion: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

4.2 Most Important Symptoms/Effects: Immediate: Inhalation exposure may cause coughing or sneezing. Symptoms of skin and eye contact may include redness and irritation. Ingestion may cause stomach pains, cramps, and gastritis.

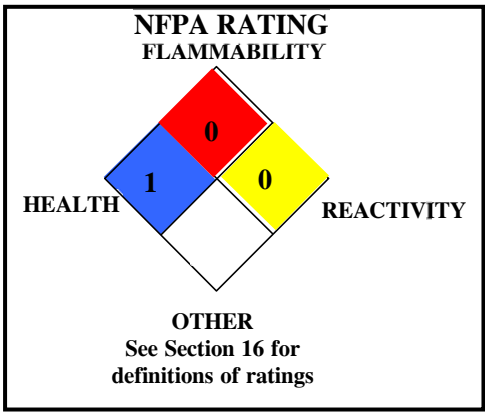
Delayed: Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin). Symptoms may include tingling, redness, and visible injury.

4.3 Indication Of Immediate Medical Attention And Special Treatment Needed, If Necessary: **TARGET ORGANS:** Acute: Eyes. Chronic: Eyes.

Victims of chemical exposure must be taken for medical attention if any adverse effects occur. Rescuers should be taken for medical attention if necessary. Take a copy of label and SDS to physician or health professional with victim.

5. FIRE-FIGHTING MEASURES

Flammable properties Non-flammable solution aqueous



Flash Point °C: Not applicable.

Autoignition Temperature °C: Not applicable.

Flammable Limits (in air by volume, %):
Upper: Not applicable.
Lower: Not applicable.

5.1 Suitable and Unsuitable Extinguishing Media: This material will not contribute to the intensity of a fire. Use extinguishing material suitable to the surrounding fire.

Water spray YES Carbon dioxide YES

Foam	YES	Dry chemical	YES
Halon	YES	Other	YES

5.2 Specific Hazards Arising from Chemical: When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (e.g., carbon monoxide, carbon dioxide, and phosphorous oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

5.3 Special Protective Equipment and Precautions for Fire-Fighters: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people.

Protective equipment: For small releases (< 5 gallons), clean up spilled liquid wearing gloves, goggles, faceshield, and suitable body protection. The minimum Personal Protective Equipment recommended for response to non-incidental releases (more than 5 gallons) should be Level C: triple-gloves (neoprene gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and full-face respirator with HEPA filter.

Emergency procedures: Monitoring must indicate that exposure levels are below those provided in Section 8 (Exposure Controls – Personal Protection) and that oxygen levels are above 19.5% before anyone is permitted in the area without Self-Contained Breathing Apparatus.

6.2 Methods and Materials for Containment and Cleaning Up: Soak up or wet vacuum spilled liquid. Neutralize residue with sodium bicarbonate or other neutralizing agent for very dilute acids. Decontaminate the area thoroughly. Test area with litmus paper to ensure neutralization. Place all spill residues in a suitable container. Dispose of in accordance with applicable U.S. Federal, State, or local procedures, or appropriate local standards (see Section 13, Disposal Considerations).

7. HANDLING and STORAGE

7.1 Precautions for Safe Handling: All employees who handle this material should be trained to handle it safely. Open containers carefully on a stable surface. Empty containers may contain residual liquid; therefore, empty containers should be handled with care.

As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid generating mists and sprays of this product. Remove contaminated clothing immediately.

During equipment maintenance follow practices indicated in Section 6 (Accidental Release Measures) to decontaminate equipment or clean-up small spills. Make certain that application equipment is locked and tagged-out safely if necessary. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures or appropriate local standards.

7.2 Conditions for Safe Storage: Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials. Material should be stored in secondary containers, or in a diked area, as appropriate. Storage and use areas should be covered with impervious materials. Keep container tightly closed when not in use. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

Incompatibilities: Strong bases, strong oxidizers, very strong acids, water reactive materials.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1 Control Parameters

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR					
		ACGIH-TLV		OSHA-PEL			
		TWA mg/m³	STEL mg/m³	TWA mg/m³	STEL mg/m³	IDLH mg/m³	OTHER mg/m³
Chelate compound	Proprietary	NE	NE	NE	NE	NE	NE
Deflocculant & Sequestrant	Proprietary	NE	NE	NE	NE	NE	NE
NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.							

8.2 Appropriate Engineering Controls. Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in this Section or as low as reasonably practical. Ensure eyewash/safety shower stations are available near areas where this product is used.

8.3 Personal Protective Equipment

Respiratory protection: None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control mists or vapor. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the applicable local standards. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-face piece pressure/demand SCBA or a full-face piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

Eye protection: Use approved safety goggles or safety glasses, as described in OSHA 29 CFR 1910.133. Splash goggles with a faceshield may be needed if splash hazards exist.

Hand protection: Wear chemical impervious gloves (e.g., Neoprene or Nitrile).

Body protection: If needed, use body protection appropriate for task (e.g., Tyvek suit, rubber apron) to protect from splashes and sprays.

9. PHYSICAL and CHEMICAL PROPERTIES

Appearance	This product is a clear, amber colored liquid.		
Odor	Light disinfectant odor	Odor Threshold	N/A
Melting Point ºC	Similar to water	pH (10% solution)	5.0 – 7.0
Initial Boiling Point ºC	100	Boiling Point Range ºC	N/A
Flammability	Non-flammable	Evaporation Rate (water = 1)	Similar to water
Vapor Density (air = 1)	Similar to water	Vapor Pressure mm Hg @ 20°C:	18
Solubility (in water)	Soluble	Relative density (water = 1)	1.15-1.25
Viscosity	Similar to water	Oil-Water Partition Coefficient	N/A
Decomposition Temperature	N/A		
How To Detect This Substance (Warning Properties):	The color and odor may act as warning properties associated with this product.		

10. STABILITY and REACTIVITY

10.1	Reactivity	Not considered reactive.
10.2	Chemical Stability	Stable
10.3	Possibility of hazardous reactions	Hazardous polymerization will not occur.
10.4	Conditions to avoid	Avoid mixing with incompatible materials.
10.5	Incompatible Materials	Strong bases, strong oxidizers, very strong acids, water reactive materials.
10.6	Hazardous Decomposition Products	Thermal decomposition of this product may generate carbon monoxide, carbon dioxide, and phosphorus oxides.

11. TOXICOLOGICAL INFORMATION

11.1	Information on Toxicological Effects					
	Toxicity data for hazardous ingredients	Oral LD_{50} mg/kg		Dermal LD_{50} mg/kg		Inhalation LD_{50} mg/kg
	Chelate compound	LD_{50} (Oral-Rat) 2100 mg/kg LD_{50} (Skin-Rabbit) > 6310 mg/kg LD_{50} (Oral-Quail) > 2510 mg/kg LD_{50} (Oral-Duck) > 2510 mg/kg		Standard Draize Test (Skin-Rabbit) 500 mg/24 hours Standard Draize Test (Eye-Rabbit) 100 mg: Moderate		N/A
		TDLo (Oral-Rat) 1302 mg/kg/31 days-intermittent: Kidney, Urethra, Bladder: other changes in urine composition; Nutritional and Gross Metabolic: weight loss or decreased weight gain, changes in sodium.				
	Deflocculant & Sequestrant	N/A		N/A		N/A
	Potential routes of exposure	Inhalation, skin contact, eye contact				
	Potential effects of acute over-exposure	Inhalation exposure may cause tingling, coughing, sneezing, and difficulty breathing. Symptoms of skin and eye contact may include redness and irritation. Ingestion may cause stomach pains, cramps, and gastritis.				
	Potential effects of chronic over-exposure	Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin). Symptoms may include tingling, redness, and visible injury.				
	Symptoms of over-exposure	Immediate: Inhalation exposure may cause tingling, coughing, sneezing, and difficulty breathing. Symptoms of skin and eye contact may include redness and irritation. Ingestion may cause stomach pains, cramps, and gastritis. Delayed: Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin). Symptoms may include tingling, redness, and visible injury.				
	Conditions aggravated by over-exposure	Preexisting dermatitis, other skin conditions, and respiratory conditions may be aggravated by exposures to this product.				
	Recommendations to physicians:	Treat symptoms and eliminate exposure.				
	Irritation	YES, this product can be irritating to contaminated tissue, especially the eyes.				
	Sensitization	NO				
	Carcinogenicity	NTP	IARC	US OSHA	CAL OSHA	67/548 EEC Annex 1
		NO	NO	NO	NO	NO
	Mutagenicity	NO				
	Reproductive toxicity	NO				
	Biological Exposure Index	N/A				
	Other potential health effects	Currently, there are no Biological Exposure Indices (BEIs) for any component of this product.				

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

12.1	Ecotoxicity	LC_{50}, mg/L	EC_{50}, mg/L
Chelate compound			
	Aquatic	N/A	N/A
	Terrestrial	N/A	N/A
Deflocculant & Sequestrant			
	Aquatic	N/A	N/A
	Terrestrial	N/A	N/A
12.2	Persistence and Degradability	The components of this product decompose in soil and water.	
12.3	Bioaccumulative Potential	The components of this product are not expected to bioaccumulate.	
12.4	Mobility in Soil	Moderately mobile.	
12.5	Other Adverse Ecological Effects	This product may be harmful to aquatic life if large volumes of it are released into an aquatic environment. Algae growth may be inhibited by complexation and removal of some nutrients, not by direct toxic effects.	

13. DISPOSAL CONSIDERATIONS

Preparing Wastes of this Product for Disposal	Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with local regulations. This product, if unaltered by the handling, may be disposed of by treatment at a permitted facility or as advised by your local waste regulatory authority.
Disposal of Contaminated Packaging	Cleaned containers can be recycled or disposed of as non-contaminated waste, if authorized by your local authorities. Dispose of containers as required by local regulations.
U.S. EPA Waste Number	Not applicable.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

14.1	UN Number	Not applicable
14.2	UN Proper Shipping Name	Not applicable
14.3	Transport Hazard Class(es)	Not applicable
	Transport label(s) required	Not applicable
14.4	Packing Group	Not applicable
14.5	Marine Pollutant	Not applicable
	NA Emergency Response Guide Number (2016)	Not applicable
14.6	Transport in Bulk (Annex II of MARPOL 73/78 and IBC Code)	Not applicable
14.7	Special Transport Precautions	Not applicable
	National Motor Freight Classification	#70

International Air Transport Association

UN Number	Not applicable
UN Proper Shipping Name	Not applicable
Transport Hazard Class(es)	Not applicable
Transport label(s) required	Not applicable
Packing Group	Not applicable
IATA Emergency Response Code	Not applicable
Excepted Quantity	Not applicable
Packaging Instructions	Not applicable

International Maritime Organization

UN Number	Not applicable
UN Proper Shipping Name	Not applicable
Transport Hazard Class(es)	Not applicable
Transport label(s) required	Not applicable
Packing Group	Not applicable
Marine Pollutant	Not applicable
NA Emergency Response Guide Number (2016)	Not applicable
Transport in Bulk (Annex II of MARPOL 73/78 and IBC Code)	Not applicable

15. SAFETY, HEALTH and ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE PRODUCT

PROGRAM	Chelate compound	Deflocculant & Sequestrant
US EPA PROGRAMS		
Clean Air Act Hazardous Air Pollutants	NO	NO
Safe Drinking Water Act	NO	NO
RCRA F, K, P, U or D-lists	NO	NO
SARA 302 RQ	NO	NO
SARA 302 TPQ	NO	NO
SARA 313 LISTED	NO	NO
SARA CHEMICAL CATEGORIES		
SARA 311/312 ACUTE	NO	NO
SARA 311/312 CHRONIC	NO	NO
SARA 311/312 FIRE	NO	NO
SARA 311/312 PRESSURE	NO	NO
SARA 311/312 REACTIVITY	NO	NO
EPA EXTREMELY HAZARDOUS SUBSTANCE	NO	NO
CALIFORNIA SAFE DRINKING WATER ACT (Proposition 65)		
This product does not contain any chemical listed on the California Safe Drinking Water Act list (Proposition 65)		
US OSHA PROGRAMS		
PEL	NO	NO
PSM	NO	NO
CHEMICAL SECURITY PROGRAMS		
DHS CFATS	NO	NO
CHEMICAL WEAPONS CONVENTION		
	NO	NO
US DRUG ENFORCEMENT ADMINISTRATION		
DEA Controlled Substances	NO	NO

CHEMICAL INVENTORY PROGRAMS		
DSL	YES	YES
REACH Pre-registered List	NO	NO
TSCA	YES	YES
TSCA Reset Rule	All ingredients in this product comply with the U.S. EPA TSCA Inventory Notification Requirements Rule (40 CFR 710 Subpart B.)	
European Inventory of Existing Commercial Chemical Substances (EINECS)	YES	YES
EU No-Longer Polymers List (NLP)	NO	NO
Philippines	YES	YES
Japan	YES	YES
Australia	YES	YES
Korea	YES	YES
China	NO	NO
New Zealand Inventory of Chemicals	YES	YES

16. OTHER INFORMATION

16.1	Original Preparation	28 Apr 2005;
16.2	Revision History	19 June, 2014 Reformatted to GHS Requirements 25 May 2016, Content corrections; October 7, 2016 format update, June 27, 2018 Logo revision; 18 Oct 18 TSCA Reset Rule update
16.3	Prepared by	ADVANCED CHEMICAL SAFETY, Inc. PO Box 152329 San Diego, CA 92195 (858)-874-5577
16.4	Date of Printing	July 15, 2019

DEFINITIONS OF TERMS

16.5	A large number of abbreviations and acronyms appear on an SDS. Some of these which are commonly used include the following:	
	Section 2	**GHS**: Global Harmonization System **OSHA:** U.S. Occupational Safety and Health Administration. **CLP**: Classification and Packaging **WHMIS**: Workplace Hazardous Materials Information System **STOT**: Specific Target Organ Toxicity
	Section 3	**CAS #:** Chemical Abstract Service index number **EINECS #:** European Chemical Substances Information System index number
	Section 5	**NFPA:** Nation Fire Protection Association **Health Hazard: 0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). **Flammability Hazard** **Reactivity Hazard:** Refer to definitions for "Hazardous Materials Identification System". **Flash Point**: Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. **Autoignition Temperature:** The minimum temperature required to initiate combustion in air with no other source of ignition. **LEL:** The lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL**: The highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.
	Section 8	**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV -** Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered **PEL -** Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order. **IDLH -** Immediately Dangerous to Life and Health **-** This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). NIOSH issues exposure guidelines called **R**ecommended **E**xposure **L**evels (**REL**s). When no exposure guidelines are established, an entry of **NE (Not Established)** is made for reference.
	Section 11	**LD_{50}** : Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** : Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm:** Concentration expressed in parts of material per million parts of air or water; **mg/m^3** : Concentration expressed in weight of substance per volume of air; **mg/kg:** Quantity of material, by weight, administered to a test subject, based on their body weight in kg **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.
	Section 12	**LC_{50}:** The lowest concentration in water which kills 50% of the test subjects. **EC_{50}:** The Effect Concentration in water at which 50% of the test species if affected.
	Section 13	**US EPA Hazardous Waste Codes**: refer to 40 CFR 261.20
	Section 14	**DOT**: US Department of Transportation **IATA**: International Air Transport Association **IMO**: International Maritime Organization **MARPOL:** International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 **IBC Code**: Merchant Shipping Code
	Section 15	**RCRA**: US Resource Conservation and Recovery Act **SARA:** US Superfund Amendments and Reauthorization Act **PSM**: US OSHA Process Safety Management **CFATS:** US Department of Homeland Security Chemical Facility Anti-Terrorism Standard **DSL:** Canadian Domestic Substances List **NDSL:** Canadian Non-Domestic Substances List **REACH**: European Registration, Evaluation, Authorization and Restriction of Chemicals list **TSCA:** US Toxic Substances Control Act

Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Calcium Chloride, Liquid NSF**
HBCC SDS number : CC06000
Synonym : Calcium Chloride-Liquid
Product use and Restrictions : Refer to label or call

Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
3000 E Birch St, Suite 108
Brea, California 92821
714-998-8800
800-821-7234

Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 – Office
623-535-9944 – Fax

Emergency telephone Number (CHEMTREC) : 800-424-9300
Website : https://www.hillbrothers.com

2. Hazard Identification

Classification(s) : EYE DAMAGE/IRRITATION

Hazard Category : 2A

Signal Word : WARNING

Pictogram(s) :

Hazard Statement(s) : H319: Causes serious eye irritation.

Precautionary Statements

Prevention : P280: Wear eye protection/face protection.
P264: Wash hands thoroughly after handling.

Response : P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical attention.

Storage : N/A
Disposal : N/A

3. Composition/Information on Ingredients

CAS Number	Ingredient Name	Weight %
10043-52-4	Calcium Chloride	26-38%
7732-18-5	Water	56-74%
N/A	Alkali Chlorides	<=6%

4. First Aid Measures

Ingestion : If swallowed will cause nausea and vomiting. If victim is conscious, have victim drink water. If victim is unconscious or having convulsions, do nothing except keep victim warm GET MEDICAL ATTENTION.

Inhalation : Move to fresh air; if breathing is difficult or discomfort persists, GET MEDICAL ATTENTION.

Skin : If necessary, remove contaminated clothing and shoes. Flush affected areas with plenty of water for at least 15 minutes.

Eyes : Promptly flood with water and continue washing for at least 15 minutes. Consult an ophthalmologist.

Medical Conditions : N/A

Effects of Overexposure : N/A

Summary of Acute Health Hazards : N/A

Ingestion : May irritate gastrointestinal tract and cause nausea and vomiting.

Inhalation : Causes irritation of nose and throat. Additional effects may include shortness of breath.

Skin : Causes mild irritation. May cause more severe response if skin is abraded (scratched or cut). Additional effects may include blisters or sores.

Eyes : Causes irritation and possible transient corneal injury. Tearing may occur.

Note to Physicians : If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Summary of Chronic Health : May cause perforation of the nasal septum and nosebleeds. Contact with heated product can cause thermal burns with resultant corneal injury.

5. Fire Fighting Measures

Extinguishing : This product is non-flammable.

Special Exposure Hazards : Avoid breathing corrosive vapors; keep upwind.

Special Protective Equipment for Firefighters : Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire-fighting clothing (includes fire-fighting helmet, coat, trousers, boots, and gloves).

Fire Fighting Procedures : N/A

NFPA Rating : Health - 1
Flammability - 0
Instability - 0

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : N/A

6. Accidental Release Measures

Personal Precautions : Keep authorized personnel from entering the area. Spilled material may cause a slipping hazard.

Emergency Procedures : Isolate area.

Methods of Containment And Clean-Up : Dike the spilled liquid, and either pump back into original container or cover with sand or clay-type substance for absorption.

7. Handling and Storage

Safe Handling : Store at ambient temperature. Eye wash and safety shower should be provided within the immediate work area for emergency use. Launder contaminated clothing before re-use. Prevent possible eye and skin contact by wearing protective clothing and equipment.

Storage : Protect from atmospheric moisture.

Work/Hygienic Practices : Avoid contact with the eyes, skin, and mucous membranes. Wash hands thoroughly with soap and water before eating, drinking, smoking or using toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Use local exhaust in enclosed areas. Natural ventilation for outdoor areas.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits :

Chemical Name: Calcium Chloride, Liquid				
Exposure Limits (TWAs) in Air				
CAS Number	**IDLH**	**ACGIH TLV**	**OSHA PEL**	**STEL**
10043-52-4	N/A	N/A	N/A	N/A

Protective Equipment : Employees should be provided with and use impervious clothing, rubber gloves, and rubber boots. Leather work boots and/or leather products will dehydrate with resultant shrinkage and possible destruction.

Eye Protection : Employees should be provided with and required to use splash-proof safety goggles and splash shields where there is any possibility of calcium chloride contacting the eyes.

Respiratory Protection : Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection as indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator.

9. Physical and Chemical Properties

Appearance: Clear to straw colored liquid	**Odor:** Odorless
Odor Threshold: N/A	**pH:** 5-9.5 @ 5% solution
Melting Point/Freezing Point: -51°C @29.6% $CaCl_2$; 9°C @ 38% $CaCl_2$	**Initial Boiling Point/Range:** 118°C (244°F) for 38% Solution; 115°C for 34.7% Solution
Flash Point: Non-Flammable	**Evaporation Rate (BuAc=1):** N/A
Flammability: N/A	**Lower/Upper Explosive Limit:** N/A
Vapor Pressure (mmHg): 9-16@ 25°C	**Vapor Density (Air=1):** N/A
Relative Density: N/A	**Solubility in Water:** 100%
Partition Coefficient: N/A	**Autoignition Temperature:** Non-Flammable
Decomposition Temperature: N/A	**Viscosity:** N/A
% Volatiles: 73-62%	**Specific Gravity (Water=1):** 1.26 @ 77°F 1.39@77°F
Molecular Weight: 110.99 (for pure $CaCl_2$)	**VOC:** N/A

10. Stability and Reactivity

Reactivity : N/A

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : Hazardous polymerization will not occur

Conditions to Avoid : N/A

Incompatible Materials : Boric acid and calcium oxide are incompatible.

Hazardous Decomposition Products : If liquid completely dries from fire, thermal decomposition products may include toxic and corrosive fumes of chlorine and hydrogen chloride. Product may react with some metals (aluminum, zinc, tin, etc.) to release flammable hydrogen gas.

11. Toxicological Information

Acute and Chronic Effects : See Section 4

Routes of Exposure

Ingestion : Yes
Inhalation : No
Skin : Yes
Eyes : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : N/A

Numerical Measures of Toxicity : Toxicity Data (anhydrous calcium chloride):

TDLO: 112 g/kg, oral, 20 weeks, rat
LDLO: 274 mg/kg, oral, rat
LD50: 2301 mg/kg, oral, rat (male/female)
LD50: 264 mg/kg, intraperitoneal, rat
LD50:>5000 mg/kg bw, dermal (rabbit, New Zealand White)

Moderately toxic by ingestion, slightly toxic by dermal absorption.

Chronic Toxicity : N/A

Carcinogenicity :

Product Name: Calcium Chloride, Liquid					
ACGIH	**IARC**	**EPA**	**NIOSH**	**NTP**	**OSHA**
No	No	No	No	No	No

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : N/A

Persistence and Degradability : N/A

Bioaccumulative Potential :

Product/Ingredient	Log $_{Pow}$	BCF	Potential
-	-	-	-

Mobility in Soil : N/A

13. Disposal Considerations

Disposal of Container : Dispose of in accordance will local, state and federal regulations.

14. Transport Information

This product is not regulated as a hazardous material, substance or dangerous good.

15. Regulatory Information

SARA 302 Extremely Hazardous Substances (EHS):

No chemical in this product is listed as an Extremely Hazardous Substance (EHS) under Section 302 of EPCRA.

SARA 304 Extremely Hazardous Substances (EHS) Release Notification:

No chemical in this product is listed as an Extremely Hazardous Substance (EHS) which, if released to the environment in quantities at or above the substance's Reportable Quantity (RQ), would require reporting to the SERC and LEPC under Section 304 of EPCRA.

SARA 311/312 Hazards:

SARA 311/312 Hazards				
Acute	Chronic	Flammability	Pressure	Reactivity
No	No	No	No	No

SARA 313 Reportable Chemicals:

No chemical in this product is subject to annual emissions, transfers, or waste management reporting under the Community-Right-to-Know provisions of EPCRA Section 313, also known as the Toxic Release Inventory (TRI) Report or Form R.

CERCLA Hazardous Substances:

No chemical in this product is listed as a CERCLA hazardous substance subject to the National Response Center (NRC) release reporting requirements.

Clean Air Act (CAA) Section 112(r) Air Pollutants:

No chemical in this product is listed as an air pollutant under the U.S. Clean Air Act, Section 112(r) (40 CFR 61).

California Prop 65 Chemicals:	This product does not contain any chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.
Hazard Label Warning:	This product does not require hazard label warnings.
TSCA (Toxic Substances Control Act):	All chemical substances in this product are listed on the U.S. TSCA Inventory List.

ACRONYMS:

CAS # – Chemical Abstract Services Registry Number
CFR – Code of Federal Regulations
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
EPCRA – Emergency Planning and Community Right-to-Know Act
LEPC – Local Emergency Planning Committee
SERC – State Emergency Response Commission

Maximum use level under NSF/ANSI Standard 60
Liquid Calcium Chloride 30-38% Maximum use 200 mg/L

16. Other Information

Revision date	:	05/28/2021
Supersedes	:	01/18/2018
First Issue	:	12/01/1985
Chemical Family/Type	:	Inorganic Salt
Section(s) changed since last revision	:	1, 2(GHS (Rev.7 (2017), 3, 9, 11, 15, 16

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.

BRENNTAG

SAFETY DATA SHEET

1. Identification

Other means of identification None known.

Product identifier **CITRIC ACID 50%**

Recommended use ALL PROPER AND LEGAL PURPOSES

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Brenntag Pacific Inc.

Address 10747 Patterson Place
Santa Fe Springs, CA 90670

Telephone 562-903-9626

E-mail Not available.

Emergency phone number 800-424-9300 CHEMTREC

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 2A

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Warning

Hazard statement Causes skin irritation. Causes serious eye irritation.

Precautionary statement

Prevention Wash thoroughly after handling. Wear eye protection/face protection. Wear protective gloves.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

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 50% of the mixture consists of component(s) of unknown acute dermal toxicity. 50% of the mixture consists of component(s) of unknown acute inhalation toxicity.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
1,2,3-PROPANETRICARBOXYLIC ACID, 2-HYDROXY-		77-92-9	50
Other components below reportable levels			50

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of 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. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. 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. 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	Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in 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 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. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

The following are recommendations for Personnel Protective Equipment (PPE). The employer/user of this product must perform a Hazard Assessment of the workplace according to OSHA regulations 29 CFR 1910.132 to determine the appropriate PPE for use while performing any task involving potential exposure to this product.

Eye/face protection	Wear safety glasses with side shields (or goggles). Face shield is recommended.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
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	
Physical state	Liquid.
Form	Liquid.
Color	CLEAR COLORLESS
Odor	ODORLESS
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	15 °F (-9.44 °C)
Initial boiling point and boiling range	212 °F (100 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
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	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	1850 °F (1010 °C) estimated
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	10.32 lbs/gal 1.24 g/ml
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	50 % estimated
Specific gravity	1.24

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	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Not known.

Components	Species	Test Results
1,2,3-PROPANETRICARBOXYLIC ACID, 2-HYDROXY- (CAS 77-92-9)		
Acute		
Oral		
LD50	Mouse	5040 mg/kg
	Rat	6730 mg/kg

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Due to partial or complete lack of data the classification is not possible.
Skin sensitization	Due to partial or complete lack of data the classification is not possible.
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.
Carcinogenicity	Due to partial or complete lack of data the classification is not possible.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - single exposure	Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - repeated exposure	Due to partial or complete lack of data the classification is not possible.
Aspiration hazard	Due to partial or complete lack of data the classification is not possible.

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.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
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.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. 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	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

Transport information on packaging may be different from that listed. Transportation information on packaging may be different from that listed.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

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 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	Yes
Classified hazard categories	Skin corrosion or irritation Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Not regulated.

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.

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
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).

16. Other information, including date of preparation or last revision

Issue date 04-08-2015

Revision date 01-21-2020

Version # 41

HMIS® ratings Health: 2
Flammability: 0
Physical hazard: 0

NFPA ratings Health: 3
Flammability: 0
Instability: 0

Disclaimer While Brenntag believes the information contained herein to be accurate, Brenntag makes no representation or warranty, express or implied, regarding, and assumes no liability for, the accuracy or completeness of the information. The Buyer assumes all responsibility for handling, using and/or reselling the Product in accordance with applicable federal, state, and local law. This SDS shall not in any way limit or preclude the operation and effect of any of the provisions of Brenntag's terms and conditions of sale.

Revision information Exposure controls/personal protection: Hand protection

RoClean P111
SAFETY DATA SHEET

1. Company and Product Identification

1.1	Identification – Product Name:	**RoClean P111**
1.2	Other means of identification Synonym:	Organic and Inorganic Salts Mixture, none
1.3	Recommended Use Of The Chemical and Restrictions On Use:	Membrane filtration or ultrafiltration process cleaner Use only as directed on the label.
1.4	Name, Address, And Telephone Number Of The Manufacturer, Or Other Responsible Party:	**AVISTA TECHNOLOGIES** 140 Bosstick Street San Marcos, CA 92069 (760) 744-0536
	Competent Person email address	klindsey@avistatech.com
1.5	24 Hour Emergency No.:	1-800-424-9300 (United States) 1-703 527-3887 (International Collect)

DRINKING WATER TREATMENT ADDITIVES CLASSIFIED BY NSF INTERNATIONAL TO ANSI/NSF 60 AS STANDARD DRINKING WATER TREATMENT CHEMICAL FOR USE OFF-LINE IN REVERSE OSMOSIS SYSTEMS

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is an odorless, white to cream colored solid. This product is a moderate oxidizer. This product can irritate contaminated skin, eyes, mucous membranes, and any other exposed tissues. This product is neither reactive nor flammable. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g., carbon oxides, phosphorus oxides, and sodium oxides). Emergency responders must wear personal protective equipment (and have appropriate fire-extinguishing protection) suitable for the situation to which they are responding.

Physical Hazards Summary	This product is a moderate oxidizer and skin or eye irritant
Potential Health Hazards Summary	Skin Corrosion/Irritation - Category 2 Serious Eye Damage Eye Irritation - Category 2A Oxidizing solid, Category 3 Acute toxicity oral, Category 3
Potential Ecological Effects Summary	Acute Hazards to the aquatic environment – Category 3

2.1 Classification Of Product

U.S. OSHA classification	Corrosive, oxidizer, skin/eye irritant
Classification as per EC 1272/2008 (CLP/GHS)	Skin Corrosion/Irritation - Category 2 Serious Eye Damage Eye Irritation - Category 2A Oxidizing solid, Category 3

WHMIS classification	Acute toxicity oral, Category 3 Xi Irritant E, Corrosive C - Oxidizing Materials D2B - Poisonous and infectious material - Other effects – Toxic

Hazardous Materials Information System (HMIS) Rating

Health	**2**
Flammability	**0**
Physical Hazard	**0**
Protective Equipment	**D**

2.2 Label Elements OSHA/GHS

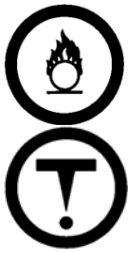
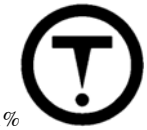
General Warnings	P101	If medical advice is needed, have product container or label at hand.
	P102	Keep out of reach of children.
	P103	Read label before use
	P403	Store in a well-ventilated place.
	P233	Keep container tightly closed
Signal Word	WARNING	
Hazard statements	H 272	May cause fire or explosion; oxidizer
	H 312	Harmful in contact with skin
	H315 + H320	Causes skin or eye irritation
	H319	Causes serious eye irritation
	H314-H335	Causes severe skin burns and eye damage. May cause respiratory irritation
	H318	Causes serious eye damage
	H335	May cause respiratory irritation
	H402	Harmful to aquatic life
Precautionary statements	P305	IF IN EYES, RINSE THOROUGHLY WITH RUNNING WATER
	P338	Remove contact lenses if present and easy to do. Continue rinsing.
	P261	Avoid breathing dust
	P280	Wear protective gloves/protective clothing/eye protection/face protection
	P271	Use only outdoors or in a well-ventilated area.
	P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P302/P352	
	P337 + P313	If eye irritation persists: Get medical advice/attention.
	P404	Store in a closed container.
	P273	Avoid release to the environment.

Hazard pictograms - GHS

Hazard pictograms - WHMIS

2.3	Unclassified Hazards	None
2.4	Ingredients with unknown acute toxicity	None

3. COMPOSITION and INFORMATION ON INGREDIENTS

Chemical name **CAS #** **EINECS #**	**% w/w**	**US OSHA**	**GHS/EU CLP**	**WHMIS**
Polyphosphate Proprietary Proprietary	25 - 30	Corrosive	Acute Hazards to the aquatic environment - Category 3 Specific Target Organ Toxicity Single Exposure - Category 3 Skin Corrosion/Irritation - Category 1B Serious Eye Damage Eye Irritation - Category 1	E, Corrosive 
Oxygenated inorganic salt Proprietary Proprietary	25 - 30	Oxidizer, Irritant	Acute Tox. 4 H302 Harmful if swallowed. Skin Irrit. 2 H315 Causes skin irritation. Eye Irrit. 2 H319 Causes serious eye irritation. Oxidizing solid Category 2 H272 May intensify fire; oxidiser. CLP: R22: Harmful if swallowed. R36/38: Irritating to eyes and skin. R8: Contact with combustible material may cause fire.	C: Oxidizer D2B - Poisonous and infectious material - Other effects – Toxic 
Chelate Proprietary Proprietary	25 - 30	Irritant	Eye Irritant, Category 2A H319 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	Class D2B: Toxic Material at  > 1%
Carbonate salt Proprietary Proprietary	20 - 25	Irritant	GHS: Eye Irritant Cat 2 CLP: Xi - irritant	D2B - Poisonous and infectious material - Other effects – Toxic
Surfactant Proprietary Proprietary	1 - 5	Corrosive, Combustible liquid	Skin sensitizer, Category 1 Acute toxicity, oral, Category 3 H317 May cause an allergic skin reaction Acute toxicity, oral, Category 3 H312 Harmful in contact with skin H332 Harmful if inhaled H314 Causes severe skin burns and eye damage P280 Wear protective gloves/protective clothing/eye protection/face protection. P305 IF IN EYES: rinse extensively with large amounts of water P351 Rinse cautiously with water for several minutes. P338 Remove contact lenses, if present and easy to do. Continue rinsing. P310 IF INGESTED or INHALED Immediately call a POISON CENTER or doctor/physician.	B3 Combustible E Corrosive 
PRODUCT CLASSIFICATION		Corrosive, oxidizer, skin/eye irritant	Skin Corrosion/Irritation - Category 2 Serious Eye Damage Eye Irritation - Category 2A Oxidizing solid, Category 3 Acute toxicity oral, Category 3 Acute Hazards to the aquatic Environment, Category 3	E, Corrosive C - Oxidizing Materials D2B - Poisonous and infectious material - Other effects – Toxic

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.

4. FIRST-AID MEASURES

4.1 Description of Necessary Measures

Skin exposure: If this product contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim should seek immediate medical attention if any adverse exposure symptoms develop.

Eye exposure: If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

Inhalation: If dusts of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

Ingestion: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

4.2 Most Important Symptoms/Effects:

Immediate: Inhalation exposure may cause coughing or sneezing. Symptoms of skin and eye contact may include redness and irritation. Ingestion may cause stomach pains, cramps, and gastritis.

Delayed: Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin). Symptoms may include tingling, redness, and visible injury.

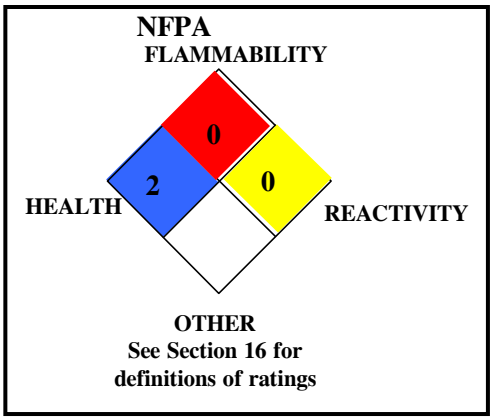
4.3 Indication Of Immediate Medical Attention And Special Treatment Needed, If Necessary:

TARGET ORGANS: Acute: Skin, eyes. Chronic: Skin.

Victims of chemical exposure must be taken for medical attention if any adverse effects occur. Rescuers should be taken for medical attention if necessary. Take a copy of label and MSDS to physician or health professional with victim.

5. FIRE-FIGHTING MEASURES

Flammable properties Non-flammable oxidizing solid



Flash Point °C: Not applicable.

Autoignition Temperature °C: Not applicable.

Flammable Limits (in air by volume, %):
Upper: Not applicable.
Lower: Not applicable.

5.1 Suitable And Unsuitable Extinguishing Media:

This material will contribute to the intensity of a fire. Use extinguishing material suitable to the surrounding fire.

Water spray	YES	Carbon dioxide	YES

Foam	YES	Dry chemical	YES
Halon	YES	Other	YES

5.2 Specific Hazards Arising From Chemical: When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (e.g., carbon monoxide, carbon dioxide, phosphorous oxides, and nitrogen oxides).

Explosion Sensitivity to Mechanical Impact: Not applicable.

Explosion Sensitivity to Static Discharge: Not applicable.

5.3 Special Protective Equipment And Precautions For Fire-Fighters: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. Be aware that mixing with acid could release chlorine or chlorine compounds.

Protective equipment: For small releases (< 20 kg), clean up spilled liquid wearing gloves, goggles, faceshield, and suitable body protection. The minimum Personal Protective Equipment recommended for response to non-incidental releases (more than 20 kg) should be Level C: triple-gloves (neoprene gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and full-face respirator with HEPA filter.

Emergency procedures: Monitoring must indicate that exposure levels are below those provided in Section 8 (Exposure Controls-Personal Protection) and that oxygen levels are above 19.5% before anyone is permitted in the area without Self-Contained Breathing Apparatus.

6.2 Methods and Materials for Containment and Cleaning Up: KEEP AWAY FROM ORGANIC READILY COMBUSTIBLE MATERIALS. Moisten to suppress dust. Shovel up solids into plastic container for recovery/disposal. Neutralize residue with sodium bicarbonate or other neutralizing agent for weak caustics. Decontaminate the area thoroughly. Test area with litmus paper to ensure neutralization. Place all spill residues in a suitable plastic container. Dispose of in accordance with applicable U.S. Federal, State, or local procedures, or appropriate local standards (see Section 13, Disposal Considerations).

7. HANDLING and STORAGE

7.1 Precautions for Safe Handling: All employees who handle this material should be trained to handle it safely. Open containers carefully on a stable surface. Empty containers may contain residual liquid; therefore, empty containers should be handled with care.

As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid generating dust of this product. Remove contaminated clothing immediately.

During equipment maintenance follow practices indicated in Section 6 (Accidental Release Measures) to decontaminate equipment or clean-up small spills. Make certain that application equipment is locked and tagged-out safely if necessary. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures or appropriate local standards.

7.2 Conditions For Safe Storage: Store at temperatures less than 45°C (113°F). Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials. Material should be stored in secondary containers, or in a diked area, as appropriate. Storage and use areas should be covered with impervious materials. Keep container tightly closed when not in use. Store in original vented shipping container. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

Incompatibilities: Strong acids, oxidizers, caustics. It may react with metals to generate pressure.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1 Control Parameters

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH-TLVs		OSHA-PELs			OTHER
			TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	IDLH mg/m^3	mg/m^3
Polyphosphate	Proprietary	25 - 30	NE	NE	NE	NE	NE	NE
Oxygenated inorganic salt	Proprietary	25 - 30	NE	NE	NE	NE	NE	NE
Chelate	Proprietary	25 - 30	NE	NE	NE	NE	NE	NE
Carbonate salt	Proprietary	20 - 25	10 (inhalable fraction); 3 (respirable fraction)	NE	50 mppcf or 5 (total dust) 15 mppcf or 5 (respirable fraction)	NE	NE	DFG MAK: TWA = 4 (inhalable fraction); 1.5 (respirable fraction)
Surfactant	Proprietary	1 - 5	NE	NE	NE	NE	NE	NE
Water and other components which are present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers and mutagens).		Balance	None of the other components contribute significant additional hazards at the concentration present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4).					

8.2 Appropriate Engineering Controls. Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in this Section or as low as reasonably achievable. Ensure eyewash/safety shower stations are available near areas where this product is used.

8.3 Personal Protective Equipment

Respiratory protection: None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control mists or vapor. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the applicable local standards. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-face piece pressure/demand SCBA or a full-face piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134).

Eye protection: Use approved safety goggles or safety glasses, as described in OSHA 29 CFR 1910.133. Splash goggles with a faceshield may be needed if splash hazards exist.

Hand protection: Wear chemical impervious gloves (e.g., Solvex™, Neoprene).

Body protection: If needed, use body protection appropriate for task (e.g., Tyvek suit, rubber apron) to protect from splashes and sprays.

9. PHYSICAL and CHEMICAL PROPERTIES

Appearance	This product is an odorless, white to cream colored solid.		
Odor	None	Odor Threshold	N/A
Melting Point ^oC (^oF)	NE	pH (2% aqueous solution)	10.5-11.5
Initial Boiling Point ^oC (^oF)	NE	Boiling Point Range ^oC (^oF)	N/A
Flammability	Non-flammable	Evaporation Rate (water = 1)	N/A
Vapor Density (air = 1)	N/A	Vapor Pressure mm Hg @ 20°C:	N/A
Solubility (in water)	Soluble	Relative density (water = 1)	NE
Viscosity	Flowing solid	Oil-Water Partition Coefficient	N/A
Decomposition Temperature	NE		
How To Detect This Substance (Warning Properties):	Litmus paper will turn blue when in contact with solutions of this product. Starch-iodide paper will turn dark.		

This product has been tested and shown NOT TO BE an oxidizer per the U.S. DOT specifications. It does exhibit moderate oxidizer properties and must be handled as such.

10. STABILITY and REACTIVITY

10.1	Reactivity	Not considered reactive. Moderate oxidizer
10.2	Chemical Stability	Stable
10.3	Possibility of hazardous reactions	Hazardous polymerization will not occur.
10.4	Conditions to avoid	Avoid mixing with incompatible materials.
10.5	Incompatible Materials	Strong acids, oxidizers, caustics. It may react with metals to generate pressure.
10.6	Hazardous Decomposition Products	Thermal decomposition of this product may generate carbon monoxide, carbon dioxide, phosphorous oxides and nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicity data for hazardous ingredients	Oral LD_{50} mg/kg	Dermal LD_{50} mg/kg	Inhalation LD_{50} mg/kg
Polyphosphate	LD_{50} (oral, rat) > 7400 mg/kg LDLo (Intravenous-Rabbit, adult) 1580 mg/kg	LDLo (skin, rabbit) > 300 mg/kg	N/A
	Sex Chromosome Loss and Nondisjunction (Oral-Drosophila melanogaster) 11 pph Standard Draize Test (Skin-rabbit) > 300 mg/kg		
Oxygenated inorganic salt	> 1034	> 2000	N/A
Chelate	LD_{50} (Intraperitoneal-Rat) 1548 mg/kg: Behavioral: convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration: cyanosis; Gastrointestinal: changes in structure or function of salivary glands	NE	NE
	Standard Draize Test (Skin-Rabbit, adult) 500 mg/24 hours: Moderate irritation effects Standard Draize Test (Eye -Rabbit, adult) 1900 mg Standard Draize Test (Eye-Rabbit, adult) 100 mg/24 hours: Moderate irritation effects		
Carbonate salt	4090	N/A	2300
Surfactant	N/A	N/A	N/A

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

12.1	Ecotoxicity	LC_{50}, mg/L	EC_{50}, mg/L
	RoClean P111	342 *P. promelas* Fathead minnow	NE
		41 *C. dubia* Water flea	
		250, NOEL, 96 hrs *P. promelas* Fathead minnow	
		31 NOEL,48 hrs, *C. dubia Water* flea	
12.3	Bioaccumulative Potential	The components of this product are not expected to bioaccumulate. Significant releases could have an adverse impact on the pH of an aquatic system.	
12.4	Mobility in Soil	When spilled onto soil, this product will infiltrate downward, the rate being greater with lower concentration because of reduced viscosity.	
12.5	Other Adverse Ecological Effects	This product may be harmful to aquatic life if large quantitites of it are released into an aquatic environment.	

13. DISPOSAL CONSIDERATIONS

Preparing Wastes of this Product for Disposal	Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with local regulations. This product, if unaltered by the handling, may be disposed of by treatment at a permitted facility or as advised by your local waste regulatory authority.
Disposal of Contaminated Packaging	Cleaned containers can be recycled or disposed of as non-contaminated waste, if authorized by your local authorities. Dispose of containers as required by local regulations.
U.S. EPA Waste Number	Not applicable.

14. TRANSPORT INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

14.1	UN Number	UN3262
14.2	UN Proper Shipping Name	Corrosive solid, basic, inorganic, n.o.s. (Soda ash, Sodium percarbonate)
14.3	Transport Hazard Class(es)	8 (Corrosive)
	Transport label(s) required	Corrosive Class 8
14.4	Packing Group	II
14.5	Marine Pollutant	Not applicable
	NA Emergency Response Guide Number (2012)	154
14.6	Transport in Bulk (Annex II of MARPOL 73/78 and IBC Code)	Not applicable
14.7	Special Transport Precautions	Not applicable
	National Motor Freight Classification	#70

International Air Transport Association

14.8	UN Number	UN3262
	UN Proper Shipping Name	Corrosive solid, basic, inorganic, n.o.s. (Soda ash, Sodium percarbonate)
	Transport Hazard Class(es)	8 (Corrosive)
	Transport label(s) required	Corrosive Class 8
	Packing Group	II
	Packaging Instructions	822

International Maritime Organization

14.9	UN Number	UN3262
	UN Proper Shipping Name	Corrosive solid, basic, inorganic, n.o.s. (Soda ash, Sodium percarbonate)
	Transport Hazard Class(es)	8 (Corrosive)
	Transport label(s) required	Corrosive Class 8
	Packing Group	II
	Marine Pollutant	Not applicable
	NA Emergency Response Guide Number (2012	154
	Transport in Bulk (Annex II of MARPOL 73/78 and IBC Code)	Not applicable

15. SAFETY, HEALTH and ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE PRODUCT

PROGRAM	Polyphosphate	Oxygenated inorganic salt	Chelate	Carbonate salt	Surfactant
US EPA PROGRAMS					
Clean Air Act Hazardous Air Pollutants	NO	NO	NO	NO	NO
Safe Drinking Water Act	NO	NO	NO	NO	NO
RCRA F, K, P, U or D-lists	NO	D001	NO	NO	NO
SARA 302 RQ	NO	NO	NO	NO	NO
SARA 302 TPQ	NO	NO	NO	NO	NO
SARA 313 LISTED	NO	NO	NO	NO	NO
SARA CHEMICAL CATEGORIES					
SARA 311/312 ACUTE	YES	YES	NO	YES	YES
SARA 311/312 CHRONIC	YES	YES	NO	YES	NO
SARA 311/312 FIRE	NO	NO	NO	NO	NO
SARA 311/312 PRESSURE	NO	NO	NO	NO	NO
SARA 311/312 REACTIVITY	NO	YES	NO	NO	NO
EPA EXTREMELY HAZARDOUS SUBSTANCE	NO	NO	NO	NO	NO
CALIFORNIA SAFE DRINKING WATER ACT (Proposition 65)					
This product does not contain any chemical listed on the California Safe Drinking Water Act list (Proposition 65)					
US OSHA PROGRAMS					
PEL	NO	NO	NO	YES	NO
PSM	NO	NO	NO	NO	NO
CHEMICAL SECURITY PROGRAMS					
DHS CFATS	NO	NO	NO	NO	NO
CHEMICAL WEAPONS CONVENTION					
	NO	NO	NO	NO	NO
US DRUG ENFORCEMENT ADMINISTRATION					
DEA Controlled Substances	NO	NO	NO	NO	NO
CHEMICAL INVENTORY PROGRAMS					
WHMIS	E	C, D2B	D2B	D2B	B3, E
DSL	YES	YES	YES	YES	YES
NDSL	N/A	N/A	N/A	N/A	N/A
REACH Pre-registered List	YES	YES	YES	YES	YES
TSCA	YES	YES	YES	YES	YES
European Inventory of Existing Commercial Chemical Substances (EINECS)	YES	YES	YES	YES	YES
EU No-Longer Polymers List (NLP)	N/A	N/A	N/A	N/A	N/A
EEC Classification Packaging, and Labeling of Dangerous Substances(Annex 1)	Xi	NO	Xi	Xi, Harmful	NO
Philippines	YES	YES	YES	YES	YES
Japan	YES	YES	YES	YES	YES

Australia	YES	YES	YES	YES	YES
Korea	YES	YES	YES	YES	YES
China	YES	YES	YES	YES	YES
New Zealand Inventory of Chemicals	YES	YES	YES	YES	YES

16. OTHER INFORMATION

16.1	Original Preparation	January 6, 2009
16.2	Revision History	26 Feb 2011; 25 July 2011; GHS 5 Nov 2013; 2 December 2013 minor correction section 12
16.3	Prepared by	ADVANCED CHEMICAL SAFETY, Inc. PO Box 152329 San Diego, CA 92195 (858)-874-5577
16.4	Date of Printing	April 22, 2015

DEFINITIONS OF TERMS

16.5	A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:	
	Section 2	**GHS**: Global Harmonization System **OSHA:** U.S. Occupational Safety and Health Administration. **CLP**: Classification and Packaging **WHMIS**: Workplace Hazardous Materials Information System **STOT**: Specific Target Organ Toxicity
	Section 3	**CAS #:** Chemical Abstract Service index number **EINECS #:** European Chemical Substances Information System index number
	Section 5	**NFPA:** Nation Fire Protection Association **Health Hazard: 0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). **Flammability Hazard** **Reactivity Hazard:** Refer to definitions for "Hazardous Materials Identification System". **Flash Point**: Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. **Autoignition Temperature:** The minimum temperature required to initiate combustion in air with no other source of ignition. **LEL:** The lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL**: The highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.
	Section 8	**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV -** Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered **PEL -** Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order. **IDLH -** Immediately Dangerous to Life and Health **-** This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). NIOSH issues exposure guidelines called **R**ecommended **E**xposure **L**evels (**REL**s). When no exposure guidelines are established, an entry of **NE (Not Established)** is made for reference.
	Section 11	**LD_{50}** : Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** : Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm:** Concentration expressed in parts of material per million parts of air or water; **mg/m^3** : Concentration expressed in weight of substance per volume of air; **mg/kg:** Quantity of material, by weight, administered to a test subject, based on their body weight in kg **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.
	Section 12	**LC_{50}:** The lowest concentration in water which kills 50% of the test subjects. **EC_{50}:** The Effect Concentration in water at which 50% of the test species if affected.
	Section 13	**US EPA Hazardous Waste Codes**: refer to 40 CFR 261.20
	Section 14	**DOT**: US Department of Transportation **IATA**: International Air Transport Association **IMO**: International Maritime Organization **MARPOL:** International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 **IBC Code** : Merchant Shipping Code
	Section 15	**RCRA**: US Resource Conservation and Recovery Act **SARA:** US Superfund Amendments and Reauthorization Act **PSM**: US OSHA Process Safety Management **CFATS:** US Department of Homeland Security Chemical Facility Anti-terrorism Standard **DSL:** Canadian Domestic Substances List **NDSL:** Canadian Non-Domestic Substances List **REACH**: European Registration, Evaluation, Authorization and Restriction of Chemicals list **TSCA:** US Toxic Substances Control Act

SAFETY DATA SHEET

Creation Date 14-Aug-2009 **Revision Date** 25-Dec-2021 **Revision Number** 4

1. Identification

Product Name **Calcium chloride**

Cat No. : **AC349610000; AC349610025; AC349610100; AC349610250; AC349615000**

CAS No 10043-52-4
Synonyms Dowflake; Calpus; Caltac

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious Eye Damage/Eye Irritation	Category 2
Combustible dust	Yes

Label Elements

Signal Word
Warning

Hazard Statements
May form combustible dust concentrations in air
Causes serious eye irritation

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Inhalation
Call a POISON CENTER or doctor/physician if you feel unwell
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Calcium chloride	10043-52-4	<=100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Ingestion Do NOT induce vomiting. Get medical attention.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

Hazardous Combustion Products
Chlorine. Hydrogen chloride gas.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
2	0	1	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Strong oxidizing agents. Metals.

8. Exposure controls / personal protection

Exposure Guidelines

Engineering Measures	Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	No protective equipment is needed under normal use conditions.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	Beige
Odor	Odorless
Odor Threshold	No information available
pH	8-10 100 g/L aq.sol
Melting Point/Range	782 °C / 1439.6 °F
Boiling Point/Range	> 1600 °C / > 2912 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Ca Cl2
Molecular Weight	110.99

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under recommended storage conditions. Hygroscopic.

Conditions to Avoid Incompatible products. Exposure to moist air or water. Excess heat. Avoid dust formation.

Incompatible Materials Strong oxidizing agents, Metals

Hazardous Decomposition Products Chlorine, Hydrogen chloride gas

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Calcium chloride	2301 mg/kg (Rat)	LD50 > 5000 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Severe eye irritant

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Calcium chloride	10043-52-4	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Mutagenic effects have occurred in experimental animals.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity

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Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Calcium chloride	Not listed	Lepomis macrochirus: LC50: 10650 mg/L/96h	Not listed	EC50: 52 mg/L/48h

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT Not regulated
TDG Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Calcium chloride	10043-52-4	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Calcium chloride	10043-52-4	X	-	233-140-8	X	X	X	X	X	KE-04496

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations Not applicable

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Calcium chloride	-	Use restricted. See item 75. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Calcium chloride	10043-52-4	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Calcium chloride	10043-52-4	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By

Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 14-Aug-2009
Revision Date 25-Dec-2021
Print Date 25-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

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

End of SDS

SAFETY DATA SHEET

Creation Date 24-Aug-2009 **Revision Date** 13-Oct-2023 **Revision Number** 8

1. Identification

Product Name **Hydrochloric acid**

Cat No. : **A481-212; A481-212LC; S71942SC; S71943; S71943ND; S80036; S80038; SA49**

CAS No 7647-01-0
Synonyms Muriatic acid; Hydrogen chloride; HCl (Technical/Certified ACS Plus/Optima/NF/FCC)

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals

Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Spills
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Water	7732-18-5	62-65
Hydrochloric acid	7647-01-0	35-38

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a

	pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Corrosive material. Causes burns by all exposure routes. Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products
Hydrogen chloride gas.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Do not get in eyes, on skin, or on clothing.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not ingest. If swallowed then seek immediate medical assistance.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Incompatible Materials. Metals. Strong oxidizing agents. Bases. sodium hypochlorite. Amines. Fluorine. Cyanides. Alkaline.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Hydrochloric acid	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m³ (Vacated) Ceiling: 5 ppm (Vacated) Ceiling: 7 mg/m³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m³	Ceiling: 2 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type: Particulates filter conforming to EN 143. or. Acid gases filter: Type E, Yellow.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	pungent
Odor Threshold	No information available
pH	< 1
Melting Point/Range	-35 °C / -31 °F
Boiling Point/Range	57 °C / 135 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	125 mbar @ 20 °C
Vapor Density	1.27
Specific Gravity	1.18
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	1.8 mPa.s @ 15°C
Molecular Formula	HCl

Molecular Weight 55.55

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Metals, Strong oxidizing agents, Bases, sodium hypochlorite, Amines, Fluorine, Cyanides, Alkaline

Hazardous Decomposition Products Hydrogen chloride gas

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions Contact with metals may evolve flammable hydrogen gas.

11. Toxicological information

Acute Toxicity

Product Information
Oral LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Vapor LC50 Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	-	-
Hydrochloric acid	238 - 277 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	1.68 mg/L (Rat) 1 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Hydrochloric acid	7647-01-0	Not listed	Not listed	Not listed	Not listed	Not listed

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Hydrochloric acid	-	282 mg/L LC50 96 h Gambusia affinis mg/L LC50 48 h Leucscus idus	-	56mg/L EC50 72h Daphnia

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1789
Proper Shipping Name HYDROCHLORIC ACID
Hazard Class 8
Packing Group II

TDG

UN-No UN1789
Proper Shipping Name HYDROCHLORIC ACID
Hazard Class 8
Packing Group II

IATA

UN-No UN1789
Proper Shipping Name Hydrochloric acid
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN1789
Proper Shipping Name Hydrochloric acid
Hazard Class 8
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Water	7732-18-5	X	ACTIVE	-
Hydrochloric acid	7647-01-0	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Water	7732-18-5	X	-	231-791-2	X	X		X	X	KE-35400
Hydrochloric acid	7647-01-0	X	-	231-595-7	X	X	X	X	X	KE-20189

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Hydrochloric acid	7647-01-0	35-38	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Hydrochloric acid	X	5000 lb	-	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Hydrochloric acid	X		-

OSHA - Occupational Safety and Health Administration Not applicable

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Hydrochloric acid	-	TQ: 5000 lb

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Hydrochloric acid	5000 lb	5000 lb

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	X	-	-
Hydrochloric acid	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ):	Y
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security This product contains the following DHS chemicals:
Legend - STQs = Screening Threshold Quantities, APA = A placarded amount

Component	DHS Chemical Facility Anti-Terrorism Standard
Hydrochloric acid	Release STQs - 15000lb (concentration >=37%) Release STQs - 5000lb (anhydrous) Theft STQs - 500lb (anhydrous)

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Water	7732-18-5	-	-	-
Hydrochloric acid	7647-01-0	-	Use restricted. See item 75. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Water	7732-18-5	Listed	Not applicable	Not applicable	Not applicable
Hydrochloric acid	7647-01-0	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Water	7732-18-5	Not applicable	Not applicable	Not applicable	Not applicable
Hydrochloric acid	7647-01-0	25 tonne	250 tonne	Not applicable	Annex I - Y34

16. Other information

Prepared By Regulatory Affairs

Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date	24-Aug-2009
Revision Date	13-Oct-2023
Print Date	13-Oct-2023
Revision Summary	SDS sections updated. 2. 3. 11.

Disclaimer

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

End of SDS

SAFETY DATA SHEET

HYDROGEN PEROXIDE

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	HYDROGEN PEROXIDE
Other means of identification	:	Not applicable
Recommended use	:	Laundry product
Restrictions on use	:	Reserved for industrial and professional use.
Product dilution information	:	Product is sold ready to use.
Company	:	Ecolab Inc. 1 Ecolab Place St. Paul, Minnesota USA 55102 1-800-352-5326
Emergency health information	:	1-800-328-0026 (US/Canada), 1-651-222-5352 (outside US)
Issuing date	:	03/14/2019

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Oxidizing liquids	:	Category 3
Acute toxicity (Oral)	:	Category 4
Serious eye damage	:	Category 1

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : May intensify fire; oxidizer.
Harmful if swallowed.
Causes serious eye damage.

Precautionary Statements :

Prevention:
Keep away from heat. Keep/Store away from clothing/ combustible materials. Take any precaution to avoid mixing with combustibles. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ eye protection/ face protection.

Response:
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. 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/doctor. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

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 (%)
Hydrogen peroxide	7722-84-1	33

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 : Rinse with plenty of water.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : If potential for exposure exists refer to Section 8 for specific personal protective equipment.

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. FIRE-FIGHTING 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 fire fighting : Oxidizer. Contact with other material may cause fire.

Hazardous combustion products : Decomposition products may include the following materials: Carbon oxides

Special protective equipment for fire-fighters : 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). Flush away traces with water. Isolate absorbed wastes contaminated with this product from other waste streams containing combustible materials (paper, wood fibers, cloth, etc.). Combustible materials exposed to this product should be rinsed immediately with large amounts of water to ensure that all product is removed. Residual product which is allowed to dry on organic materials such as rags, cloths, paper, fabrics, cotton, leather, wood, or other combustibles may spontaneously ignite and result in a fire.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not ingest. Do not get in eyes, on skin, or on clothing. Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. Use only with adequate ventilation. Wash hands thoroughly after handling.

Conditions for safe storage : Do not store on wooden pallets. 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.

Storage temperature : 0 °C to 50 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Hydrogen peroxide	7722-84-1	TWA	1 ppm	ACGIH
		TWA	1 ppm 1.4 mg/m3	NIOSH REL
		TWA	1 ppm 1.4 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Wear eye protection/ face protection.

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 : No special protective equipment required.

Respiratory protection	:	No personal respiratory protective equipment normally required.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. 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
Color	:	clear, colorless
Odor	:	pungent
pH	:	1.7 - 3.2, (100 %)
Flash point	:	Not applicable, Sustains combustion
Odor 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
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	1.08 - 1.18
Water solubility	:	soluble
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Thermal decomposition	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Molecular weight	:	No data available
VOC	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Contamination may result in dangerous pressure increases - closed containers may rupture.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.

Incompatible materials	:	Acids and bases Metals Organic materials
Hazardous decomposition products	:	Decomposition products may include the following materials: 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	:	Health injuries are not known or expected under normal use.
Ingestion	:	Harmful if swallowed.
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, Pain, Corrosion
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 : 1,462 mg/kg
Acute inhalation toxicity	:	4 h Acute toxicity estimate : 33.08 mg/l Test atmosphere: vapor
Acute dermal toxicity	:	No data available
Skin corrosion/irritation	:	No skin irritation
Serious eye damage/eye irritation	:	Irreversible effects on the eye
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 : 96 h LC50: 58.0 mg/l

Toxicity to daphnia and other aquatic invertebrates : No data available

Toxicity to algae : No data available

Components

Toxicity to algae : Hydrogen peroxide
72 h EC50: 1.38 mg/l

Persistence and degradability

Not applicable - inorganic

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : Do not contaminate ponds, waterways or ditches with chemical or used container. 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. Dispose of in accordance with local, state, and federal regulations.

RCRA - Resource Conservation and Recovery Authorization Act Hazardous waste : D002 (Corrosive)

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)

UN number : 2014

Description of the goods	:	Hydrogen peroxide, aqueous solutions
Class	:	5.1 (8)
Packing group	:	II
Environmentally hazardous	:	no

Sea transport (IMDG/IMO)

UN number	:	2014
Description of the goods	:	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Class	:	5.1 (8)
Packing group	:	II
Marine pollutant	:	no

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

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 : Oxidizer (liquid, solid or gas)
Acute toxicity (any route of exposure)
Serious eye damage or eye irritation

SARA 302 : The following components are subject to reporting levels established by SARA Title III, Section 302:

Hydrogen peroxide	7722-84-1	33 %

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 the State of California to cause cancer, birth, or any other reproductive defects.

California Cleaning Product Right to Know Act of 2017 (SB 258)

This regulation applies to this product.

Chemical Name	CAS-No.	Function	List(s)
water	7732-18-5	Diluent	Not Applicable
Hydrogen peroxide	7722-84-1	Cleaning Agent	Not Applicable

*refer to ecolab.com/sds for electronic links to designated lists

The ingredients of this product are reported in the following inventories:

United States TSCA Inventory :
On the inventory, or in compliance with the inventory

Canadian Domestic Substances List (DSL) :
All components of this product are on the Canadian DSL

Australia Inventory of Chemical Substances (AICS) :
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemical Substances :
On the inventory, or in compliance with the inventory

Japan. ENCS - Existing and New Chemical Substances Inventory :
On the inventory, or in compliance with the inventory

Korea. Korean Existing Chemicals Inventory (KECI) :
On the inventory, or in compliance with the inventory

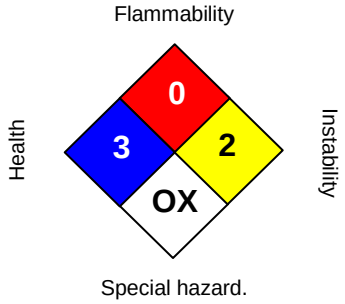
Philippines Inventory of Chemicals and Chemical Substances (PICCS) :
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances in China (IECSC) :
On the inventory, or in compliance with the inventory

Taiwan Chemical Substance Inventory (TCSI) :
On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	2

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Issuing date : 03/14/2019
Version : 1.2
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 Material 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.

SAFETY DATA SHEET

Preparation Date: 1/27/2017 **Revision Date:** 1/27/2017 **Revision Number:** G1

1. IDENTIFICATION

Product identifier

Product code: P2930
Product Name: Polyacrylamide (avg. M.W. 5,000,000)

Other means of identification
Synonyms: 2-Propenamide Homopolymer; PAA
CAS #: 9003-05-8
RTECS # AS3700000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: No information available.
Uses advised against No information available

Supplier:
Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000.
Order Online At: https://www.spectrumchemical.com
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Not classified

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Polyacrylamide	9003-05-8	100

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms May cause eye/skin irritation. May cause digestive (gastrointestinal) tract irritation. Dyspnea (Shortness of breath and difficulty breathing). May affect the liver. It may affect the kidneys. Ataxia. Convulsions.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Dioxide, Carbon Monoxide. Nitrogen Oxides.

Specific hazards: May be combustible at high temperatures.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent)

and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. All equipment used when handling the product must be grounded. Keep away from incompatible materials.

Safe Handling Advice
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not ingest. Do not breathe dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:
Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WHEEL
Polyacrylamide	9003-05-8	None	None	None	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Polyacrylamide	9003-05-8	None	None	None	None

Australia and Mexico

Components	CAS-No.	**Australia**	**Mexico**
Polyacrylamide	9003-05-8	None	None

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Safety glasses with side-shields or Goggles

Skin and body protection: Long sleeved clothing. Chemical resistant apron. Gloves.

Respiratory protection: Effective dust mask.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Solid

Appearance:
Crystals. Granules.

Color:
White. Off-white.

Odor:
Odorless.

Taste
No information available.

Formula:
[-CH2CH(CONH2]n

Molecular/Formula weight:
Av. M.W. = 5,000,000

Flammability:
No information available

Flashpoint (°C/°F):
No information available.

Flash Point Tested according to:
Not available

Autoignition Temperature (°C/°F):
No information available

Lower Explosion Limit (%):
No information available

Upper Explosion Limit (%):
No information available

Melting point/range(°C/°F):
No information available

Decomposition temperature(°C/°F):
No information available

Boiling point/range(°C/°F):
No information available

Bulk density:
No information available

Density (g/cm3):
No information available

Specific gravity:
1.3

pH:
No information available

Vapor pressure @ 20°C (kPa):
No information available

Evaporation rate:
No information available

Vapor density:
No information available

VOC content (g/L):
No information available

Odor threshold (ppm):
No information available

Partition coefficient (n-octanol/water):
No information available

Viscosity:
No information available

Miscibility:
No information available

Solubility:
Soluble in Water

10. STABILITY AND REACTIVITY

Reactivity
May react with strong oxidizers

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Incompatible materials.

Incompatible Materials: Strong oxidizing agents

Hazardous decomposition products: Carbon monoxide. Carbon dioxide. Nitrogen oxides (NOx).

Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion.

Acute Toxicity

Component Information

Polyacrylamide	
CAS-No.	9003-05-8

LD50/oral/rat = > 1 g/kg Oral LD50 Rat
LD50/oral/mouse = 12950 mg/kg
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No infomation available
Other LD50 or LC50information = 11250 mg/kg Oral LD50 Rabbit

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = > 1000 mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = 12950 mg/kg

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: May cause skin irritation.

Eye Contact: May cause eye irritation.

Inhalation May cause irritation of respiratory tract.

Ingestion May cause digestive (gastointestinal) tract irritation. May affect respiration (dyspnea - difficulty breathing and shortness of breath). May affect behavior/central nervous system (ataxia). May affect behavior/central nervous system (convulsions).

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated ingestion may affect the blood (pigmented or nucleated red blood cells). Prolonged or repeated ingestion may affect the liver, and kidneys.

Sensitization: No information available.

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Polyacrylamide	9003-05-8	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available.

STOT - repeated exposure No information available.
Target Organs: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Polyacrylamide	9003-05-8	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Class No information available
Packing group: No information available
Emergency Response Guide Number No information available
Marine Pollutant No data available
DOT RQ (lbs): No information available
Special Provisions No Information available
Symbol(s): No information available
Description: No information available

TDG (Canada)

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant No Information available
Description: No information available

ADR

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available

IMO / IMDG
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant No information available

RID
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

ICAO
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

IATA
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
ERG Code: No information available
Special Provisions No information available

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Polyacrylamide	9003-05-8	Present XU	Present KE-29375	Present	Present (6)-849	Present	Present	Not present

U.S. Regulations

Polyacrylamide
FDA - Direct Food Additives 21 CFR 172.255 21 CFR 173.315
FDA - 21 CFR - Total Food Additives 172.255 173.315 175.105 176.170 176.180

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Polyacrylamide	9003-05-8	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Polyacrylamide	9003-05-8	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Polyacrylamide	9003-05-8	Not Applicable	Not Applicable

Canada

WHMIS hazard class:
Non-controlled

Components
Polyacrylamide

WHIMHAZ
Uncontrolled product according to WHMIS classification criteria

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Polyacrylamide	9003-05-8	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Polyacrylamide	9003-05-8	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Polyacrylamide	9003-05-8	Not listed

EU Classification
R-phrase(s)
not determined (not applicable)

S -phrase(s)
none

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Polyacrylamide	9003-05-8		No information	

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Not dangerous

16. OTHER INFORMATION

Preparation Date: 1/27/2017
Revision Date: 1/27/2017
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: Polyaluminium Chloride **CAS #:** 1327-41-9

Formula: $[Al_2(OH)nCl_6\text{-}n]m$

Synonyms: Aluminum Chlorohydrate; Polyaluminium Hydroxychloride, Aluminium Chloride Hydroxide

Product Use: Water treatment chemical

COMPANY IDENTIFICATION

Manufacturer

HENAN XUNYU CHEMICAL CO.,LTD

NO.18,SHANGWU NEIHUAN RD, ZHENGDONG NEW DIS,ZHENGZHOU, HENAN,CHINA

Emergency Number: 86-371-63681121

Information Number: 86-371-63681125

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %	Hazardous
Polyaluminium Chloride	1327-41-9	29 – 32 (as Aluminium oxide) 40-90 (basicity)	No

SECTION 3 – HAZARD IDENTIFICATION

Emergency Overview: CORROSIVE! Inhalation, ingestion or skin contact with material may cause injury. Causes eye and skin irritation. Mist and Vapor: Causes respiratory tract and mucous membrane irritation.

Potential Health Effects:

Inhalation: Irritation to mucous membranes

Skin Contact: Possible irritation

Eye Contact: May cause irritation with redness and swelling.

Ingestion: Irritation of the mouth and stomach.

Sub-chronic Effects: No data available

Chronic Effects: None known

Carcinogenicity: Polyaluminum chloride is not classified as a carcinogen by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as a carcinogen by OSHA (Occupational Safety and Health Administration) and not listed as a carcinogen by NTP (National Toxicology Program).

SECTION 4 – FIRST AID MEASURES

General: If you feel unwell, seek medical advice (show the label where possible).

Inhalation: If symptoms are experienced, move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Obtain medical attention.

Skin Contact: Remove contaminated clothing, jewelry and shoes. Immediately wash skin with soap or mild detergent and running water for at least 15 minutes, until no evidence of chemical remains. For minor skin contact, avoid spreading material on unaffected skin. Obtain medical attention if irritation persists.

Eye Contact: Immediately flush eyes with running water for at least 15 minutes, occasionally lifting upper and lower lids, until no evidence of chemical remains. Obtain medical attention if irritation persists.

Ingestion: If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

NOTE TO PHYSICIAN: Antidote: There is no specific antidote for aluminum chlorohydrate. Treatment of overexposure should be directed at the control of symptoms and the clinical condition

SECTION 5 – FIRE FIGHTING MEASURES

Flash point	Not applicable.
Flammable Limits (Lower)	Not applicable
Flammable Limits (Upper)	Not applicable
Auto Ignition Temperature	Not applicable
Combustion and Thermal Decomposition Products	Hydrogen chloride, aluminum oxides
Rate of Burning	Does not burn
Explosive Power	Not applicable
Sensitivity to Static Discharge	Not available

Fire and Explosion Hazards: During a fire, irritating/toxic hydrogen chloride gas may be generated.

Extinguishing Media: Water spray, fog or regular foam appropriate for surrounding material. Cool any exposed containers with water.

Special Information:

Fire fighters should wear protective equipment and self-contained breathing apparatus with full-face piece operated in positive pressure mode. Move exposed containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

NOTE: Also see "Section 10 – Stability and Reactivity"

SECTION 6 – ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE:

Dike area to contain spill. Neutralize spilled material with alkali such as soda ash. When using carbonates for neutralization, adequate precautions should be taken to minimize hazards from carbon dioxide gas generation. Collect liquid and/or residue and dispose of in accordance with applicable regulations.

SECTION 7 – HANDLING AND STORAGE

Handling: Avoid contact with skin, eyes and clothing. Do not breathe product mists. Use with adequate ventilation. Handle as material of moderate oral toxicity. Do not smoke or eat while handling. Use good housekeeping and personal hygiene. Wash thoroughly after handling.

Storage Recommendations: Store at moderate temperatures in a dry, well-ventilated area. Protect from physical damage and from freezing. Keep containers tightly closed.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES

Recommendations listed in this section indicate the type of equipment, which will provide protection against over-exposure to this product. Conditions of use, adequacy of engineering or other control measures and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: A ventilation system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Ensure that eyewash station and safety showers are proximal to the workstation location.

PERSONAL PROTECTIVE EQUIPMENT

Eye Protection: Wear splash resistant chemical goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Recommended Protective Material: Neoprene or rubber

Respiratory Protection: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. For exposures under 20 mg/m^3, a NIOSH/MSHA approved air-purifying respirator with high efficiency particulate cartridge(s) may be used. For unknown concentration, use any supplied air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode.

EXPOSURE GUIDELINES

Product: ACGIH: TLV – 2mg/m3 (as Al) (Aluminum salts, soluble)

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Alternate Name	Aluminium Chloride Hydroxide
Chemical Name	Polyaluminium Chloride
Chemical Family	Inorganic salt
Molecular Formula	$[Al_2(OH)nC_{l6}\text{-}n]m$
Molecular Weight	133.5 -174.5
Appearance	Yellow to brown powder
Odor	Slight chlorine odor
pH(1% aqueous solution)	3.5-5.0
Melting Point	No Data
Solubility (Water)	100% Soluble
Solubility (Other)	Not available
Evaporation Rate	Not applicable
% Volatile Organic Compounds	Not applicable

SECTION 10 – STABILITY AND REACTIVITY

Hazardous Decomposition Products: Thermal decomposition: hydrochloric acid, aluminium oxides.

Chemical Stability: Stable at normal temperatures and pressure.

Conditions to Avoid: None

Incompatibility with other Substances: Bases (alkaline materials) such as ammonia and its solutions, carbonates, sodium hydroxide (caustic), and potassium hydroxide. Corrosive to common metals such as aluminium, stainless and mild steel, nickel, copper, and brass.

Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

Polyaluminum chloride: No data available

Aluminum chloride hydroxide: (base unit of polymer- monomer)

Irritation data:150mg/m^3 day(s)-intermittent skin-human mild

Toxicity data: 25mg/m^3/6 hour(s)-2 year(s) intermittent inhalation-rat TCLo;

25g/m3/6 hour(s)-2 year(s) intermittent inhalation-guinea pig TCLo

Mutagenicity: Not available

Reproductive Effects Data: ND

Teratogenicity and Fetotoxicity: Not available

Synergistic Materials: Not available

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological Information: fish toxicity: 10000 µg/L 24 week(s) (Mortality) Coho salmon, silver salmon (Oncorhynchus kisutch)

Persistence and Degradation: No data available

SECTION 13 – DISPOSAL CONSIDERATIONS

Review federal, state and local government requirements prior to disposal.

Whatever cannot be saved for recovery or recycling, including containers, should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options

RCRA: Hazardous if pH is less than 2. Test waste material for corrosivity, D002, prior to disposal.

SECTION 14 – TRANSPORT INFORMATION

Shipping information:

Not regulated as a hazardous material by DOT, IMO, or IATA.

Shipping Containers:

Tank Cars

Tank Trucks

Flexible Intermediate Bulk Containers

Tote Bins

Bags

SECTION 15 – REGULATORY INFORMATION

USA CLASSIFICATION:

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

SARA Regulations sections 313 and 40 CFR 372: N

SARA Hazard Categories, SARA SECTIONS 311/312 (40 CFR 370.21):

Acute: N

Chronic: N

Fire: N

Reactive: N

Sudden Release: N

OSHA Process Safety (29CFR1910.119): N

TSCA Inventory Status: Y

This product does not contain, nor is it manufactured with, ozone-depleting substances.

Other Regulations/Legislation which apply to this product:

California Proposition 65: N

CANADIAN CLASSIFICATION

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all information required by the CPR.

Controlled Products Regulation (WHMIS) Classification:

E: Corrosive

CEPA / Canadian Domestic Substances List (DSL): The substance in this product is on the Canadian Domestic Substances List (CEPA DSL).

EEC CLASSIFICATION

EINECS: 215-477-2

SECTION 16 – OTHER INFORMATION

This information is given without any warranty or representation. It is believed to be correct but does not claim to be all inclusive and shall be used only as a guide.HENAN XUNYU CHEMICAL CO.,LTD shall not be held liable for any damage resulting from gandling or for contact with the above product. It is offered solely for your consideration, investigation and verification.

National Fire Protection Association (NFPA) Rating

Hazardous Materials Identification System (HMIS) Rating

	NFPA	HMIS
HEALTH	1	1
FIRE	0	0
REACTIVITY	0	0

4 = Extreme/Severe
3 = High/Serious
2 = Moderate
1 = Slight
0 = Minimum

REFERENCES:

1. American Water Works Association, ANSI/AWWA B408-93, “Liquid Polyaluminum Chloride”, Colorado, Dec. 1993
2. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Doris V. Sweet, Ed., National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, Updated Nov 1998.
3. NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, June 1997
4. Sax, N.I., “Dangerous Properties of Industrial Materials”, 7th Edition, 1989
5. “1999 Threshold Limit Values and Biological Exposure Indices”, American Conference of Government Industrial Hygienists, 1999.
6. Merck, 11th Edition, 1989
7. Supplier's Material Safety Data Sheets.

Legend:

CAS # - Chemical Abstracts Service Registry Number

CERCLA- Comprehensive Environmental Response, Compensation, and Liability Act

CFR - Code of Federal Regulations

DOT- Department of Transportation

EPA - Environmental Protection Agency

LC_{50}- The concentration of material in air expected to kill 50% of a group of test animals

LD_{50}- Lethal Dose expected to kill 50% of a group of test animals

MSHA - Mine Safety and Health Administration

NIOSH - National Institute for Occupational Safety and Health

PEL - Permissible Exposure Limit

PVC - Polyvinyl chloride

RCRA - Resource Conservation and Recovery Act

SARA - Superfund Amendments and Reauthorization Act of the U.S. EPA

STEL - Short Term Exposure Limit

TDG- Transportation of Dangerous Goods Act/Regulations

TLV - Threshold Limit Value

TSCA - Toxic Substances Control Act

TWA - Time-Weighted Average

SAFETY DATA SHEET

Creation Date 14-May-2010 **Revision Date** 26-Dec-2021 **Revision Number** 7

1. Identification

Product Name **Sodium bisulfite**

Cat No. : **AC419440000; AC419440010; AC419440025; AC419440050; AC419441000**

CAS No 7631-90-5
Synonyms Sodium hydrogen sulfite

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Warning

Hazard Statements
Harmful if swallowed

May cause respiratory irritation

Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Contact with acids liberates toxic gas

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Sodium bisulfite	7631-90-5	>95

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Most important symptoms and effects None reasonably foreseeable.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Sulfur oxides. Sodium oxides.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	2	N/A

6. Accidental release measures

Personal Precautions Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation.
Environmental Precautions Should not be released into the environment.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Avoid dust formation. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

Storage. Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from acids. Incompatible Materials. Acids. Metals.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Sodium bisulfite	TWA: 5 mg/m^3	(Vacated) TWA: 5 mg/m^3	TWA: 5 mg/m^3	TWA: 5 mg/m^3

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	White
Odor	Rotten-egg like
Odor Threshold	No information available
pH	4-5 25% aq. sol
Melting Point/Range	150 °C / 302 °F
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	1.480
Solubility	300 g/l
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	H Na O3 S
Molecular Weight	104.06

10. Stability and reactivity

Reactive Hazard	Yes
Stability	Moisture sensitive.
Conditions to Avoid	Avoid dust formation. Excess heat. Exposure to air. Incompatible products. Exposure to moist air or water. Temperatures above 150°C. acids.
Incompatible Materials	Acids, Metals
Hazardous Decomposition Products	Sulfur oxides, Sodium oxides
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium bisulfite	LD50 = 1310 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation May cause skin, eye, and respiratory tract irritation

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Sodium bisulfite	7631-90-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

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Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium bisulfite	Not listed	Not listed	Not listed	EC50: = 119 mg/L, 48h (Daphnia magna)

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT Not regulated

TDG Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Sodium bisulfite	7631-90-5	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Sodium bisulfite	7631-90-5	X	-	231-548-0	X	X	X	X	X	KE-31484

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sodium bisulfite	X	5000 lb	-	-

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium bisulfite	5000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium bisulfite	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Sodium bisulfite	7631-90-5	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Sodium bisulfite	7631-90-5	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 14-May-2010
Revision Date 26-Dec-2021
Print Date 26-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
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

End of SDS

SAFETY DATA SHEET

Creation Date 16-Jun-2009 **Revision Date** 07-Sep-2023 **Revision Number** 8

1. Identification

Product Name **Sodium hydroxide**

Cat No. : **BP359-500; BP359-212**

CAS No 1310-73-2
Synonyms Caustic soda

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Skin Corrosion/Irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Spills
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Sodium hydroxide	1310-73-2	100

4. First-aid measures

General Advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call

a physician or poison control center immediately.

Ingestion Do NOT induce vomiting. Immediate medical attention is required. Never give anything by mouth to an unconscious person. Drink plenty of water.

Most important symptoms and effects Causes burns by all exposure routes. . Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire

Flash Point No information available
Method - No information available

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
The product causes burns of eyes, skin and mucous membranes. Reacts violently with water. Contact with metals may evolve flammable hydrogen gas.

Hazardous Combustion Products
Hydrogen. Sodium oxides.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	1	N/A

6. Accidental release measures

Personal Precautions Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

Environmental Precautions Do not allow material to contaminate ground water system. Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up Avoid dust formation. Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not get in eyes, on skin, or on clothing. Do not breathe dust. Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

Incompatible Materials. Strong oxidizing agents. Acids. Metals. Water.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Sodium hydroxide	Ceiling: 2 mg/m³	Ceiling: 2 mg/m³ TWA: 2 mg/m³	IDLH: 10 mg/m³ Ceiling: 2 mg/m³	Ceiling: 2 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tight sealing safety goggles. Face protection shield.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended Filter type: Particulates filter conforming to EN 143.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	14 (5 %)
Melting Point/Range	318 °C / 604.4 °F
Boiling Point/Range	1390 °C / 2534 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	Not flammable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mbar @ 700 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Bulk Density	2.13 g/cm3
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	H Na O

Molecular Weight 40

10. Stability and reactivity

Reactive Hazard Yes

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Acids, Metals, Water

Hazardous Decomposition Products Hydrogen, Sodium oxides

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium hydroxide	140 - 340 mg/kg (Rat)	1350 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes severe burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Sodium hydroxide	1310-73-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium hydroxide	Not listed	LC50: = 45.4 mg/L, 96h static (Oncorhynchus mykiss)	Not listed	Not listed

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1823
Proper Shipping Name SODIUM HYDROXIDE, SOLID
Hazard Class 8
Packing Group II

TDG

UN-No UN1823
Proper Shipping Name SODIUM HYDROXIDE, SOLID
Hazard Class 8
Packing Group II

IATA

UN-No UN1823
Proper Shipping Name Sodium hydroxide, solid
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN1823
Proper Shipping Name Sodium hydroxide, solid
Hazard Class 8
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Sodium hydroxide	1310-73-2	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Sodium hydroxide	1310-73-2	X	-	215-185-5	X	X	X	X	X	KE-31487

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sodium hydroxide	X	1000 lb	-	-

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium hydroxide	1000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium hydroxide	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Sodium hydroxide	1310-73-2	-	Use restricted. See item	-

			75. (see link for restriction details)	

https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Sodium hydroxide	1310-73-2	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Sodium hydroxide	1310-73-2	Not applicable	Not applicable	Not applicable	Annex I - Y35

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 16-Jun-2009
Revision Date 07-Sep-2023
Print Date 07-Sep-2023
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
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

End of SDS

SAFETY DATA SHEET

Creation Date 23-Jun-2009 **Revision Date** 26-Dec-2021 **Revision Number** 9

1. Identification

Product Name **Sulfuric acid**

Cat No. : **AC424520000; AC424520025; AC424520026; AC424520100; AC424525000; AC424525001, AC424528000**

CAS No 7664-93-9
Synonyms No information available

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/Irritation	Category 1
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements

Causes severe skin burns and eye damage
May cause respiratory irritation

Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)

WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Sulfuric acid	7664-93-9	>95

4. First-aid measures

General Advice
Immediate medical attention is required. Remove and isolate contaminated clothing and shoes.

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation
Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion	Rinse mouth. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Causes burns by all exposure routes. . Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.
Unsuitable Extinguishing Media	DO NOT USE WATER
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Corrosive material. Reacts violently with water. Reaction with water may generate much heat which will increase the concentration of fumes in the air. Contact with metals may evolve flammable hydrogen gas. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

Hazardous Combustion Products
Hydrogen. Sulfur oxides.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	2	W

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing.
Environmental Precautions	Avoid release to the environment. See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. After cleaning, flush away traces with water.

7. Handling and storage

Handling	Handle product only in closed system or provide appropriate exhaust ventilation. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

Incompatible Materials. Strong oxidizing agents. Combustible material. Bases. Organic materials. Reducing Agent. Finely powdered metals. Peroxides.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Sulfuric acid	TWA: 0.2 mg/m³	(Vacated) TWA: 1 mg/m³ TWA: 1 mg/m³	IDLH: 15 mg/m³ TWA: 1 mg/m³	TWA: 0.2 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Handle in a place equipped with local exhaust ventilation. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Odorless
Odor Threshold	No information available
pH	1 1N aq.sol
Melting Point/Range	10 °C / 50 °F
Boiling Point/Range	290 °C / 554 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 146 °C
Vapor Density	No information available
Specific Gravity	1.840
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	340 °C
Viscosity	21mPa.s @ 25 °C
Molecular Formula	H2 O4 S
Molecular Weight	98.07

10. Stability and reactivity

Reactive Hazard Yes

Stability Water reactive. Hygroscopic.

Conditions to Avoid Incompatible products. Excess heat. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Combustible material, Bases, Organic materials, Reducing Agent, Finely powdered metals, Peroxides

Hazardous Decomposition Products Hydrogen, Sulfur oxides

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions Contact with metals may evolve flammable hydrogen gas. Reacts violently with water.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuric acid	2140 mg/kg (Rat)	Not listed	LC50 = 0.375 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes severe burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Sulfuric acid	7664-93-9	Group 1	Known	A2	X	A2

IARC (International Agency for Research on Cancer)

ACGIH: (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sulfuric acid	-	LC50: > 500 mg/L, 96h static (Brachydanio rerio)	-	EC50: 29 mg/L/24h

Persistence and Degradability Miscible with water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

TDG

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

IATA

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Sulfuric acid	7664-93-9	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Sulfuric acid	7664-93-9	X	-	231-639-5	X	X	X	X	X	KE-32570

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Sulfuric acid	7664-93-9	>95	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sulfuric acid	X	1000 lb	-	-

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sulfuric acid	1000 lb	1000 lb

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Sulfuric acid	7664-93-9	Carcinogen	-	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sulfuric acid	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Sulfuric acid	-	Use restricted. See item 75. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Sulfuric acid	7664-93-9	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Sulfuric acid	7664-93-9	Not applicable	Not applicable	Not applicable	Annex I - Y34

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 23-Jun-2009
Revision Date 26-Dec-2021
Print Date 26-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

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End of SDS

ATTACHMENT M

ePay Vouchers
Admin Rpt 1.0, Item 1.e

Print this voucher for your records. If you are sending the TCEQ hardcopy documents related to this payment, include a copy of this voucher.

Transaction Information

Voucher Number:	732215
Trace Number:	582EA000635501
Date:	11/21/2024 09:12 AM
Payment Method:	CC - Authorization 0000067860
Voucher Amount:	$1,200.00
Fee Type:	WW PERMIT - MINOR FACILITY SUBJECT TO 40 CFR 400-471 - NEW
ePay Actor:	JENNI GRIESEL
Actor Email:	jgriesel@plummer.com
IP:	70.114.183.40

Payment Contact Information

Name:	CHAD UNRAU
Company:	SOLARIS WATER MIDSTREAM
Address:	9651 KATY FREEWAY SUITE 400, HOUTSON, TX 77024 1590
Phone:	806-663-3796

Site Information

Site Name:	RED BLUFF PRODUCED WATER TREATMENT FACILITY
Site Location:	1.8 MI ESE OF THE INTERSECTION OF US HWY 285 AND CATFISH RD REEVES COUNTY TX

Customer Information

Customer Name:	SOLARIS WATER MIDSTREAM LLC
Customer Address:	9651 KATY FREEWAY SUITE 400, HOUSTON, TX 77024 1590
State Franchise Tax ID:	32061259712

Close

Print this voucher for your records. If you are sending the TCEQ hardcopy documents related to this payment, include a copy of this voucher.

Transaction Information

Voucher Number:	732216
Trace Number:	582EA000635501
Date:	11/21/2024 09:12 AM
Payment Method:	CC - Authorization 0000067860
Voucher Amount:	$50.00
Fee Type:	30 TAC 305.53B WQ NOTIFICATION FEE
ePay Actor:	JENNI GRIESEL
Actor Email:	jgriesel@plummer.com
IP:	70.114.183.40

Payment Contact Information

Name:	CHAD UNRAU
Company:	SOLARIS WATER MIDSTREAM
Address:	9651 KATY FREEWAY SUITE 400, HOUTSON, TX 77024 1590
Phone:	806-663-3796

Close

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

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

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

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

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

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

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

Solaris Water Midstream, LLC proposes to operate Red Bluff Produced Water Treatment Facility, a facility that treats water produced during oil and gas exploration and production (produced water). The facility will be located 1.8 miles east-southeast of the intersection of US Hwy 285 and Catfish Road, in Reeves County, Texas 79770. This application is for a new permit to authorize the treatment and discharge of produced water at a volume not to exceed an annual average flow of 10,000,000 gallons per day.

Discharges from the facility are expected to contain total dissolved solids, chloride, and sulfate. Produced water will be treated by pretreatment, desalination, and post-treatment.

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

AGUAS RESIDUALES INDUSTRIALES /AGUAS PLUVIALES

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

Solaris Water Midstream, LLC propone operar la planta de tratamiento de agua producida de Red Bluff, una instalación que trata el agua producida durante la exploración y producción de petróleo y gas (agua producida). La instalación estará ubicada a 1,8 millas al este-sureste de la intersección de la US Hwy 285 y Catfish Road, en el Condado de Reeves, Texas 79770. Esta solicitud es para un nuevo permiso para autorizar el tratamiento y descarga de agua producida en un volumen que no exceda un flujo promedio anual de 10.000.000 de galones por día.

Se espera que las descargas de la instalación contengan sólidos disueltos totales, cloruro y sulfato. Agua producida estará tratado por pretratamiento, desalinización y post-tratamiento.

INSTRUCTIONS

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

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

Example

Individual Industrial Wastewater Application

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

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

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

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

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

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

BENECKE ANNA MARY
VIOLA M JENSEN
5820 LINCOLN VILLAGE DR
APT 717
RACINE, WI 53406

KESSLER A D AND JACLYN S TR
PO BOX L
RANCHO SANTA FE, CA 92067

TEXAS PACIFIC RESOURCES LLC
1700 PACIFIC AVE
STE 2900
DALLAS, TX 75201

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TEXAS PACIFIC RESOURCES LLC
1700 PACIFIC AVE
STE 2900
DALLAS, TX 75201

Leah Whallon

From: Griesel, Jenni <jgriesel@plummer.com>
Sent: Thursday, December 5, 2024 10:38 AM
To: Leah Whallon
Cc: Pierce-Walsh, Meg; Chad Unrau (CONTRACTOR); Lisa Henthorne
Subject: Re: Application for Proposed Permit No. WQ0005471000; Solaris Water Midstream, LLC; Red Bluff Produced Water Treatment Facility
Attachments: Admin pg 6.pdf; Industrial Discharge New Spanish NORI.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning, Leah,

We would like to change the contact in the notice to "Mr. Drew Dixon, Senior Vice President, Land & Regulatory, at 832-304-7003."

Attached is a revised page 6 of the administrative report with Mr. Dixon as the contact in the notice and the Spanish translation of the NORI.

We have no further comments, thank you,

Jenni Griesel, P.E.
Project Engineer
Plummer

Our office has moved! Please see our new address below:
8911 N Capital of Texas Hwy, Bldg 1 - Ste 1250
Austin, Texas 78759

D: 512.687.2193
www.plummer.com

From: Pierce-Walsh, Meg <mpierce-walsh@plummer.com>
Sent: Monday, December 2, 2024 2:34 PM
To: Chad Unrau (CONTRACTOR) <chad.unrau@ariswater.com>; Lisa Henthorne <lisa.henthorne@ariswater.com>
Cc: Griesel, Jenni <jgriesel@plummer.com>
Subject: Fw: Application for Proposed Permit No. WQ0005471000; Solaris Water Midstream, LLC; Red Bluff Produced Water Treatment Facility

Chad and Lisa,

We will review and respond back to the TCEQ. Please note that this letter, while called a Notice of Deficiency, is always sent out to applicants as part of the administrative review process. The TCEQ is

requesting review of the public notice language and it does not necessarily indicate the application is deficient.

Thank you,

PLUMMER
Meg Pierce-Walsh
Environmental Services Practice Leader, Principal

Our office has moved! Please see new address below:
8911 N Capital of TX Hwy
Bldg 1 – Ste 1250
Austin, Texas 78759

P: 512.452.5905
D: 512.359.7764
C: 715.520.7630
www.plummer.com

From: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Sent: Monday, December 2, 2024 2:16 PM
To: lisa.henthorne@ariswater.com <lisa.henthorne@ariswater.com>
Cc: Pierce-Walsh, Meg <mpierce-walsh@plummer.com>
Subject: Application for Proposed Permit No. WQ0005471000; Solaris Water Midstream, LLC; Red Bluff Produced Water Treatment Facility

Good Afternoon,

Please see the attached Notice of Deficiency letter dated December 2, 2024 requesting additional information needed to declare the application administratively complete. Please send the complete response by December 16, 2024.

Please let me know if you have any questions.

Thank you,

Leah Whallon
Texas Commission on Environmental Quality
Water Quality Division
512-239-0084
leah.whallon@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at www.tceq.texas.gov/customersurvey

☐ Fax: N/A

☐ Regular Mail (USPS) – Mailing Address (include City/State/Zip): N/A

c. Contact in the Notice

Prefix: Mr. Full Name (Last/First Name: Dixon, Drew

Title: Senior Vice President, Land & Regulatory Credential: N/A

Organization Name: Solaris Water Midstream, LLC

Phone No.: 832-304-7003 E-mail: Drew.dixon@ariswater.com

d. Public Place Information

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

Public building name: Reeves County Library Location within the building: N/A

Physical Address of Building: 315 S. Oak Street

City: Pecos County: Reeves

e. Bilingual Notice Requirements:

This information **is required** for **new, major amendment, minor amendment or minor modification, and renewal 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? Spanish

Comisión de Calidad Ambiental del Estado de Texas

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

PERMISO PROPUESTO NO. WQ00_____

SOLICITUD. Solaris Water Midstream, LLC, 9651 Katy Freeway, Suite 400, Houston, Texas 77024, que posee una instalación que tratará el agua producida de múltiples instalaciones de exploración y producción de petróleo y gas, ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para el propuesto Permiso No. WQ0005471000 (EPA I.D. No. TX0146978) del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas residuales tratadas en un volumen que no sobrepasa un flujo promedio diario de 10.000.000 galones por día. La planta estará ubicada aproximadamente a 1,8 millas al este-sureste de la intersección de Catfish Road y la U.S. Highway 285, cerca de la ciudad de Pecos, en el condado de Reeves, Texas 79770. La ruta de descarga será desde el sitio de la planta directamente al embalse Red Bluff. La TCEQ recibió esta solicitud el 22 de noviembre de 2024. La solicitud para el permiso estará disponible para leerla y copiarla en la biblioteca del condado de Reeves, 315 South Oak Street, Pecos, en el condado de Reeves, Texas, antes de la fecha de publicación de este aviso en el periódico. La solicitud, incluidas todas las actualizaciones y los avisos asociados están disponibles electrónicamente en la siguiente página web:
https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications.

Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud.
https://gisweb.tceq.texas.gov/LocationMapper/?marker=-104.002222,31.992222&level=18

Include the following non-italicized sentence if the facility is located in the Coastal Management Program. The Coastal Management Program boundary is the area along the Texas Coast of the Gulf of México as depicted on the map in 31 TAC §503.1 and includes part or all of the following counties: Cameron, Willacy, Kenedy, Kleberg, Nueces, San Patricio, Aransas, Refugio, Calhoun, Victoria, Jackson, Matagorda, Brazoria, Galveston, Harris, Chambers, Jefferson y Orange. El Director Ejecutivo de la TCEQ ha revisado esta medida para ver si está de acuerdo con los objetivos y las regulaciones del Programa de Administración Costero de Texas (CMP) de acuerdo con

las regulaciones del Consejo Coordinador de la Costa (CCC) y ha determinado que la acción es conforme con las metas y regulaciones pertinentes del CMP.

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

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

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

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

para recibir correspondencia en el futuro; identificar el nombre y la dirección de un miembro del grupo que sería afectado adversamente por la planta o la actividad propuesta; proveer la información indicada anteriormente con respecto a la ubicación del miembro afectado y su distancia de la planta o actividad propuesta; explicar cómo y porqué el miembro sería afectado; y explicar cómo los intereses que el grupo desea proteger son pertinentes al propósito del grupo.

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

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

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

También se puede obtener información adicional del Solaris Water Midstream, LLC a la dirección indicada arriba o llamando al Sr. Drew Dixon, Vicepresidente Senior de Tierras y Regulación, al 832-304-7003.

Fecha de emisión _____ *[Date notice issued]*