Administrative Package Cover Page

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1. Summary of application (in plain language)
   - English
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2. First Notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
   - English
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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)
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2. Primer aviso (NORI, por sus siglas en inglés)
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3. Solicitud original

SUMMARY OF APPLICATION IN PLAIN LANGUAGE FOR TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) AND TEXAS LAND APPLICATION (TLAP) PERMIT APPLICATIONS

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.

Industrial Wastewater TPDES Permit Renewal Application

Southwestern Public Service Company (CN601481336) operates Nichols/Harrington Electric Station, gas-fired (1,018 mega-watts) and gas-fired (457 mega-watts) electric generation stations (RN100224641), an electric power generating complex. The facility is located at 8400 N. Lakeside Drive, Amarillo, TX 79108, in Amarillo, Potter County, Texas 79108. The facility complex is seeking a TPDES with TLAP component permit renewal. This permit will not authorize a discharge of pollutants into water in the state.

The draft permit renewal application authorizes the discharge of stormwater runoff on an intermittent and flow variable basis via Outfall 001; stormwater runoff commingled with cooling tower blowdown, low volume wastewater, metal cleaning waste, and chemical metal cleaning waste on an intermittent and flow-variable basis via Outfalls 003, 004, 005, 006, 007, 009, 011, 012 and 013; and the disposal of cooling tower blowdown, low volume wastewater, metal cleaning wastes, chemical metal cleaning wastes, boiler seal water, and stormwater routed into the irrigation system to water grass and other crops at a hydraulic application rate not to exceed 2.5 acre-feet/acre/year (total effluent) via irrigation of 1,239 acres of land equipped with tailwater ponds and berms. .

The discharge of process wastewater from the Nichols/Harrington Electric Station via Outfalls 003, 004, 005, 006, 007, 009, 011, 012, and 013 is subject to federal effluent limitation guidelines at 40 CFR Part 423 (Steam Electric Power Generating Point Source Category). The pollutants expected from these discharges based on 40 CFR Part 423 are: nitrate nitrogen, phosphorus, chlorides, and traces of total organic carbon, total aluminum, total barium, total copper, total iron, total nickel, total zinc, total suspended solids, total dissolved solids, and pH. Additional potential pollutants are included in the Industrial Wastewater Application Technical Report, Worksheet 2.0.

The Nichols - Harrington Station complex utilizes a common water supply and a common wastewater disposal system. The water supply sources are potable water and treated sewage effluent (obtained from the City of Amarillo) and recovered ground water. All sanitary sewage is routed into septic tank - drain field systems. For both Stations (Nichols and Harrington) the chemical metal cleaning wastes are neutralized in the process and mixed with the cooling tower blowdown prior to disposal by irrigation. All other non-hazardous low volume wastes, including fireside cleaning wastes, are either mixed with the cooling tower blowdown or recycled as cooling tower makeup. No treatment of wastewater is required prior to disposal by irrigation.

Translation to Spanish

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.

Solicitud de renovación del permiso TPDES de aguas residuales industriales

Compañía de Servicios Públicos del Suroeste (CN601481336). La instalación ubicada en , en , Condado, Texas El complejo de instalaciones está buscando un TPDES con renovación del permiso del componente TLAP. Este permiso no autorizará una descarga de contaminantes en el agua en el estado. CN601481336 Opera Nichols/ Harrington Electric Station, estaciones de generación eléctrica a gas (1,018 megavatios) y a gas (457 megavatios) RN100224641 un Complejo de generación de energía eléctrica es 8400 N. Lakeside Drive, Amarillo, TX 79108 Amarillo Alfarero 79108.

El borrador de la solicitud de renovación del permiso autoriza la descarga de escorrentía de aguas pluviales de forma intermitente y de flujo variable a través del desagüe 001; la escorrentía de aguas pluviales mezclada con la purga de la torre de enfriamiento, las aguas residuales de bajo volumen, los desechos de limpieza de metales y los desechos químicos de limpieza de metales de forma intermitente y de flujo variable a través de los desagües 003, 004, 005, 006, 007, 009, 011, 012 y 013; y la eliminación de la purga de la torre de enfriamiento, las aguas residuales de bajo volumen, los desechos de limpieza de metales, los desechos químicos de limpieza de metales, el agua del sello de la caldera y las aguas pluviales dirigidas al sistema de riego para regar el pasto y otros cultivos a una tasa de aplicación hidráulica que no exceda los 2.5 acres-pies/acre/año (efluente total) a través del riego de 1,239 acres de tierra equipada con estanques y bermas de aguas de cola. .

La descarga de aguas residuales de proceso de la estación eléctrica Nichols / Harrington a través de los desagües 003, 004, 005, 006, 007, 009, 011, 012 y 013 está sujeta a las pautas federales de limitación de efluentes en 40 CFR Parte 423 (Categoría de fuente puntual de generación de energía eléctrica de vapor). Los contaminantes esperados de estas descargas basadas en 40 CFR Parte 423 son: nitrógeno nítrico, fósforo, cloruros y trazas de carbono orgánico total, aluminio total, bario total, cobre total, hierro total, níquel total, zinc total, sólidos suspendidos totales, sólidos disueltos totales y pH. Los contaminantes potenciales adicionales se incluyen en el Informe técnico de aplicación de aguas residuales industriales, Hoja de trabajo 2.0.

El complejo de la estación Nichols - Harrington utiliza un suministro de agua común y un sistema común de eliminación de aguas residuales. Las fuentes de suministro de agua son agua potable y efluentes de aguas residuales tratadas (obtenidas de la ciudad de Amarillo) y aguas subterráneas recuperadas. Todas las aguas residuales sanitarias se dirigen a los sistemas de campo de drenaje de fosas sépticas. Para ambas estaciones (Nichols y Harrington), los desechos químicos de limpieza de metales se neutralizan en el proceso y se mezclan con la purga de la torre de enfriamiento antes de su eliminación por riego. Todos los demás desechos no peligrosos de bajo volumen, incluidos los desechos de limpieza junto al fuego, se mezclan con la purga de la torre

de enfriamiento o se reciclan como reposición de la torre de enfriamiento. No se requiere tratamiento de aguas residuales antes de su eliminación por riego.

Translation to Somali

SOO KOOBIDA CODSIGA LUUQADDA CAD EE NIDAAMKA TIRTIRKA DHEECAAN-BIXINTA EE TEXAS (TPDES) IYO CODSIYADA CODSIGA DHULKA (TLAP) CODSIYADA RUQSADAHA

Warbixin kooban oo soo socota ayaa la siiyaa codsigan ilaa iyo haatan ee ruqsada tayada biyaha oo ay dib u eegeen Guddiga Texas ee Tayada Deegaanka sida looga baahan yahay 30 TAC Cutubka 39. Macluumaadka ku qoran qoraalkan kooban waxaa laga yaabaa inay isbeddelaan marka lagu jiro dib u eegista farsamada ee codsiga mana aha matalaad xoojin oo federaal ah oo lagu fulin karo codsiga ruqsadaha.

Warshadaha Qasacadaynta TPDES Ogolaanshaha Cusboonaysiinta Codsiga

Southwstern Public Service Company (CN601481336), Xarunta ku taalla, gudaha, County, Texas Xarunta xarunta ayaa raadinaysa TPDES oo leh cusboonaysiinta ruqsada qaybta TLAP. Sharcigani ma ansixin doono in dheecaan ay wasaqeeysan ku soo shubaan biyaha gobolka. CN601481336 shaqeeya Nichols / Harrington Electric Station, gaaska lagu rasaasay (1,018 mega-watts) iyo gaaska lagu rasaaseeyay (457 mega-watts) xarumaha korontada RN100224641 an korontada korontada dhalinaya adag ah Amarilillo, TX 79108 N. Lakeside Drive, TX 79108 Jaale Potter 79108.

Codsiga cusboonaysiinta oggolaanshaha qabyada ah wuxuu ogolaanayaa soo daadinta biyaha roobka ee ku saabsan saldhig isdaba joog ah oo isdaba-joog ah oo isdaba-joog ah iyada oo loo marayo Outfall 001; daad biyo duufaanka commingled la qaboojinta buufiyo munaaraddii qaboojinta, biyaha qulqulka yar yahay, qashinka nadiifinta biraha, iyo qashinka nadiifinta biraha kiimikada ku salaysan go'aysa iyo socodka-variable salaysan via Outfalls 003, 004, 005, 006, 007, 007, 009, 011, 012 iyo 013; iyo nibiraha la rido munaarad qaboojiya. biyaha qubka mugga yar yahay, qashinka nadiifinta biraha, qashinka nadiifinta biraha kiimikada, biyaha seal kuleeliyaha, iyo biyaha duufaanka marin habka waraabka si ay u helaan cawska biyaha iyo dalagga kale ee heerka codsiga Haydarooliga aan ka badnayn 2.5 acre-feet / acre / acre / acre / sanadkii (wadarta effluent) via waraabka 1,239 acres oo dhul ah oo lagu qalabeeyay balliyada biyaha dabada iyo berms. .

Dheecaanka biyaha lagu daadiyo habka laga soo qaado Nichols / Harrington Electric Station iyada oo loo marayo Outfalls 003, 004, 005, 006, 007, 007, 009, 011, 012, iyo 013 wuxuu ku xiran yahay tilmaamaha xadaynta effluent federaalka ee 40 CFR Qeybta 423 (Steam Electric Power Generating Point Category). Wasakheeyeyaasha laga filayo dheecaanadan ku salaysan 40 CFR Part 423 waa: nitrate nitrate nitrogen, fosfooraska, chlorides, iyo raadka wadarta carbon organic, wadarta aluminium, wadarta barium, copper wadarta, wadarta copper, wadarta birta, wadarta nickel, wadarta zinc, wadarta guud ee adag ganaax, wadarta adag la kala diro, iyo pH. Wasaqda dheeraadka ah ee suurtagalka ah ayaa ku jira warbixinta farsamada codsiga biyaha wasakhda warshadaha, Worksheet 2.0.

Nichols - Xarrington Station complex wuxuu isticmaalaa biyo caadi ah iyo nidaam qashin oo caadi ah. Ilaha biyuhu waa biyo la cabi karo oo la daweeyey oo ah biyo-

mareenka biyaha (oo laga helo magaalada Amarillo) iyo biyaha dhulka la soo celiyay. Dhammaan bilaatada nadaafadda waxaa loo mariyaa taangiga septic - biyo-mareenka nidaamka beerta. Labada Saldhig (Nichols iyo Harrington) qashinka nadiifinta biraha kiimikada ayaa dhexdhexaadiya hawsha waxaana lagu daraa munaaraddii qaboojinta oo la garaacay ka hor inta aan la tuurin waraabka. Dhammaan qashinka kale ee aan khatarta aheyn mugga yar ee aan khatarta ahayn, oo ay ku jiraan qashinka nadiifinta dabka, waxaa lagu qasaa munaaraddii qaboojinta ama dib loo isticmaali karaa sida qurxinta munaaradaha qaboojinta. Uma baahnid wax daaweyn ah oo lagu daweeyo biyaha qashinka ah ka hor inta aan waraabka la tuurin.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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

PERMIT NO. WQ0001990000

APPLICATION. Southwestern Public Service Company, 790 South Buchanan Street, Amarillo, Texas 79101, which operates the Nichols/Harrington Steam Electric Station, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0001990000 (EPA I.D. No. TX0124575) to authorize the discharge of stormwater at an intermittent and flow-variable rate via Outfalls 001; the discharge of treated wastewater and stormwater at an intermittent and flow-variable rate via Outfalls 003, 004, 005, 006, 007, 008, 009, 012; and the discharge of treated wastewater at an intermittent and flow variable rate via Outfalls 011 and 013. The facility is located at 8400 North Lakeside Drive, near the city of Amarillo, in Potter County, Texas 79108. The discharge route is from the plant site via Outfalls 001, 003, 004, 011, 012, and 013 to an unnamed tributary, thence to Indian Creek, thence to impounded Indian Creek, thence to Indian Creek, thence to 6 Section Lake, thence to Indian Creek, thence to East Amarillo Creek; via Outfalls 006 and 007 to an unnamed tributary, thence to Bonita Creek; via Outfall 008 to an unnamed ditch, thence to Indian Creek, thence to impounded Indian Creek, thence to Indian Creek, thence to 6 Section Lake, thence to Indian Creek, thence to East Amarillo Creek, thence all outfalls to the Canadian River Above Lake Meredith; via Outfall 005 to an unnamed tributary, thence to Stalanaker Lake (a playa lake with no outlet within the watershed of the Canadian River Above Lake Meredith; and via Outfall 009 to an unnamed tributary, thence to McGee Lake (a playa lake with no outlet within the watershed of the North Fork Red River), thence to North Fork Red River. TCEQ received this application on September 4, 2025. The permit application will be available for viewing and copying at Amarillo Public Library-Central Branch Resources, 413 Southeast 4th Avenue, Amarillo, 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=-101.746111,35.283055&level=18

ALTERNATIVE LANGUAGE NOTICE. Alternative language notices in Spanish and Somalia are 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. Ogeysiiska luuqadda beddelka ah ee Soomaaliya waxa la heli karaa at 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.

TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.

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 Southwestern Public Service Company at the address stated above or by calling Mr. David Lorenz, CHMM, Environmental Analyst, at 806-378-2138.

Issuance Date: November 10, 2025

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
RENOVACIÓN

PERMISO NO. WQ0001990000

SOLICITUD. Southwestern Public Service Company, 790 South Buchanan Street, Amarillo, Texas 79101, que opera la Estación Eléctrica de Vapor Nichols/Harrington, ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0001990000 (Nº de identificación de la EPA). TX 0124575) del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas pluviales a una tasa intermitente y de flujo variable a través de los desagües 001; la descarga de aguas residuales tratadas y pluviales a una tasa intermitente y de flujo variable a través de los emisarios 003, 004, 005, 006, 007, 008, 009, 012, y la descarga de aguas residuales tratadas a una tasa intermitente y de flujo variable a través de los emisarios 011 y 013. La planta está ubicada en 8400 North Lakeside Drive, cerca de la ciudad de Amarillo en el Condado de Potter, Texas 79108. La ruta de descarga es del sitio de la planta a La ruta de descarga es desde el sitio de la planta a través de los desagües 001, 003, 004, 011, 012 y 013 a un afluente sin nombre, de allí a Indian Creek, de allí a Indian Creek embalsado, de allí a Indian Creek, de allí a East Amarillo Creek; a través de los desagües 006 y 007 a un afluente sin nombre, de allí a Bonita Creek; a través del desagüe 008 a una zanja sin nombre, de allí a Indian Creek, de allí a Indian Creek embalsado, de allí a Indian Creek, de allí a 6 Section Lake, de allí a Indian Creek, de allí a East Amarillo Creek, de allí todos los desagües al río Canadian sobre el lago Meredith; a través del desagüe 005 a un afluente sin nombre, de allí al lago Stalanaker (un lago de playa sin salida dentro de la cuenca del río Canadian sobre el lago Meredith; y a través del desagüe 009 a un afluente sin nombre, de allí al lago McGee (un lago de playa sin salida dentro de la cuenca del río North Fork Red), de allí al río North Fork Red. La TCEQ recibió esta solicitud el September 4, 2025. La solicitud para el permiso estará disponible para leerla y copiarla en Amarillo Public Library-Central Branch Resources, 413 Southeast 4th Avenue , Amarillo, Texas antes de la fecha de publicación de este aviso en el periódico. La solicitud está disponible para su visualización y copia 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=-101.746111,35.283055&level=18

ALTERNATIVE LANGUAGE NOTICE. Alternative language notices in Spanish and Somalia are 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. Ogeysiiska luuqadda beddelka ah ee Soomaaliya waxa la heli karaa at 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 enviados a los que están en la lista de correo de las personas a lo largo del condado que desean recibir los avisos y los que están en la lista de correo que desean recibir avisos de esta solicitud. El aviso dará la fecha límite para someter comentarios públicos.**

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

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

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

Después del cierre de todos los períodos de comentarios y de petición que aplican, el Director Ejecutivo enviará la solicitud y cualquier petición para reconsideración o para una audiencia de caso impugnado a los Comisionados de la TCEQ para su consideración durante una reunión programada de la Comisión.

La Comisión sólo puede conceder una solicitud de una audiencia de caso impugnado sobre los temas que el solicitante haya presentado en sus comentarios oportunos que no fueron retirados posteriormente. **Si se concede una audiencia, el tema de la audiencia estará limitado a cuestiones de hecho en disputa o cuestiones mixtas de hecho y de derecho relacionadas a intereses pertinentes y materiales de calidad del agua que se hayan presentado durante el período de comentarios. Si ciertos criterios se cumplen, la TCEQ puede actuar sobre una solicitud para renovar un permiso sin proveer una oportunidad de una audiencia administrativa de lo contencioso.**

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

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

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

También se puede obtener información adicional del Southwestern Public Service Company a la dirección indicada arriba o llamando a David Lorenz al 806-378-2138.

Fecha de emisión: 10 de noviembre de 2025

GUDDIGA TEXAS EE TAYADA DEEGAANKA

OGEYSIISKA HELITAANKA CODSIGA IYO
SI AAD U HESHO RUQSADDA TAYADA BIYAHA
CUSBOONAYSIINTA

OGOLAANSHAHA MAYA. WQ0001990000

CODSIGA. Shirkadda Adeegga Dadweynaha ee Koonfur-galbeed, 790 South Buchanan Street, Amarillo, Texas 79101, oo maamusha Saldhigga Korontada ee Nichols / Harrington Steam, ayaa codsatay Guddiga Texas ee Tayada Deegaanka (TCEQ) si loo cusbooneysiiyo Nidaamka Ciribtirka Dheecaanka Wasakhda ee Texas (TPDES) Ruqsadda No. WQ0001990000 (EPA I.D. No. TX0124575) si loo oggolaado dheecaanka biyaha duufaanka heerka isgoyska iyo qulqulka isbeddelka iyada oo loo marayo Outfalls 001; dheecaanka biyaha wasakhda ah ee la daweeyay iyo biyaha duufaanka ee heerka isgoyska ah iyo qulqulka isbeddelka iyada oo loo marayo Outfalls 003, 004, 005, 006, 007, 008, 009, 012; iyo dheecaanka biyaha wasakhda ah ee la daaweeyay oo ku saabsan heerka isbeddelka iyo qulqulka iyada oo loo marayo Outfalls 011 iyo 013. Xaruntu waxay ku taal 8400 North Lakeside Drive, oo u dhow magaalada Amarillo, oo ku taal Potter County, Texas 79108. Wadada dheecaanku waxay ka timaadaa goobta warshadda iyada oo loo marayo Outfalls 001, 003, 004, 011, 012, iyo 013 ilaa qayb aan la magacaabin, halkaas oo loo maro Indian Creek, halkaas oo loo xiray Indian Creek, halkaas oo loo maro Indian Creek, halkaas oo loo maro 6 Section Lake, halkaas oo loo maro Indian Creek, halkaas oo loo maro East Amarillo Creek; iyada oo loo marayo Outfalls 006 iyo 007 ilaa qayb aan la magacaabin, halkaas oo loo maro Bonita Creek; iyada oo loo marayo Outfall 008 ilaa godka aan la magacaabin, halkaas oo loo maro Indian Creek, halkaas oo la xiray Indian Creek, halkaas oo loo maro Indian Creek, halkaas oo dhan ilaa East Amarillo Creek, halkaas oo dhan waxay u baxaan Wabiga Canadian ee ka sarreeya harada Meredith; iyada oo loo marayo Outfall 005 ilaa qayb aan la magacaabin, halkaas oo loo maro harada Stalanaker (haro playa ah oo aan lahayn meel laga baxo webiga Kanada ee ka sarreeya harada Meredith; iyo iyada oo loo marayo Outfall 009 ilaa qayb aan la magacaabin, halkaas oo loo maro McGee Lake (haro playa ah oo aan lahayn meel laga baxo biyaha Waqooyiga Fork Red River), halkaas oo loo maro North Fork Red River. TCEQ waxay heshay codsigan Sebtember 4, 2025. Codsiga oggolaanshaha waxaa loo heli doonaa daawashada iyo nuqulka Maktabadda Dadweynaha ee Amarillo-Central Branch Resources, 413 Southeast 4th Avenue, Amarillo, Texas ka hor taariikhda ogeysiiskan lagu daabacay wargeyska. Codsiga, oo ay ku jiraan wixii cusbooneysiin ah, iyo ogeysiisyada la xiriira waxaa laga heli karaa si elektaroonig ah bogga soo socda: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications.

ALTERNATIVE LANGUAGE NOTICE. Alternative language notices in Spanish and Somalia are 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.

Ogeysiiska luuqadda beddelka ah ee Soomaaliya waxa la heli karaa at https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications.

OGEYSIIS DHEERAAD AH. Agaasimaha Fulinta ee TCEQ ayaa go'aamiyay in codsiga uu yahay mid maamul ahaan dhameystiran wuxuuna sameyn doonaa dib u eegis farsamo oo ku saabsan arjiga. Ka dib marka dib u eegista farsamo ee codsiga la dhammeeyo, Agaasimaha Fulinta wuxuu diyaarin karaa ruqsad qabyo ah wuxuuna soo saari doonaa go'aan horudhac ah oo ku saabsan arjiga. **Ogeysiiska Codsiga iyo Go'aanka Horudhaca ah ayaa la daabaci doonaa oo boostada loogu diri doonaa kuwa ku jira liiska boostada ee gobolka oo dhan iyo kuwa ku jira liiska boostada ee codsigan. Ogeysiiskaas waxaa ku jiri doona waqtiga kama dambaysta ah ee soo gudbinta faallooyinka dadweynaha.**

FAALLOOYINKA DADWEYNAHA / KULANKA DADWEYNAHA. Waxaad soo gudbin kartaa faallooyinka dadweynaha ama waxaad codsan kartaa kulan dadweyne oo ku saabsan codsigan. Ujeedada kulanka dadweynaha waa in la siiyo fursad aad ku soo gudbiso faallooyin ama lagu weydiiyo su'aalo ku saabsan codsiga. TCEQ waxay qaban doontaa kulan dadweyne haddii Agaasimaha Fulinta uu go'aamiyo inay jirto heer weyn oo dan guud ah oo ku saabsan arjiga ama haddii uu codsado sharci-dejiye maxalli ah. Kulanka dadweynaha ma aha dhageysiga kiiska lagu muransan yahay.

FURSAD DHAGEYSIGA KIISKA LAGU MURANSAN YAHAY. Ka dib waqtiga kama dambaysta ah ee soo gudbinta faallooyinka dadweynaha, Agaasimaha Fulinta wuxuu tixgelin doonaa dhammaan faallooyinka waqtigooda ku habboon wuxuuna diyaarin doonaa jawaab dhammaan khuseeya iyo waxyaabaha la xiriira, ama faallooyinka muhiimka ah ee dadweynaha. **Haddii aan si toos ah loogu gudbin codsiga dhageysiga kiiska lagu muransan yahay, jawaabta faallooyinka iyo go'aanka Agaasimaha Fulinta ee codsiga, waxaa loo diri doonaa qof kasta oo soo gudbiyay faallooyinka dadweynaha iyo dadka ku jira liiska boostada ee codsigan. Haddii faallooyinka la helo, boostada ayaa sidoo kale bixin doonta tilmaamaha codsashada dib u eegista go'aanka Agaasimaha Fulinta iyo codsashada dhageysiga kiiska lagu muransan yahay.** Dhageysiga kiiska lagu muransan yahay waa dacwad sharci oo la mid ah maxkamad madaniga ah oo ka socota maxkamadda degmada gobolka.

SI AAD U CODSATO DHAGEYSIGA KIISKA LAGU MURANSAN YAHAY, WAA INAAD KU DARTAA WAXYAABAHA SOO SOCDA CODSIGAAGA: magacaaga, cinwaankaaga, lambarka taleefankaaga; Magaca codsadaha iyo lambarka rukhsadda la soo jeediyay; meesha iyo masaafada hantidaada / waxqabadkaaga marka loo eego xarunta la soo jeediyay; Sharaxaad gaar ah oo ku saabsan sida aad si xun u saameyn lahayd xarunta qaab aan caadi ahayn dadweynaha guud; liiska dhammaan arrimaha lagu muransan yahay ee xaqiiqda ah ee aad soo gudbiso inta lagu jiro muddada faallooyinka iyo, bayaanka "[Aniga / annaga] waxaan codsaneynaa dhageysiga kiiska lagu muransan yahay." Haddii codsiga dhageysiga kiiska lagu muransan yahay lagu xareeyo isagoo matalaya koox ama urur, codsigu waa inuu u magacaabaa wakiilka kooxda si uu u helo waraaqaha mustaqbalka; aqoonsi magaca iyo cinwaanka jireed xubin ka mid ah kooxda oo si xun u saameyn doona xarunta ama waxqabadka la soo jeediyay; bixinta macluumaadka kor ku xusan ee ku saabsan meesha xubinta ay saameysey iyo masaafada ka fog xarunta ama waxqabadka; Sharax sida iyo sababta xubinta u saameyn lahaa; iyo sharaxaad sida danaha ay kooxdu doonayso inay ilaaliso ay ku habboon tahay ujeedada kooxda.

Ka dib markii la xiro dhammaan faallooyinka khuseeya iyo waqtiyada codsiga, Agaasimaha Fulinta wuxuu u gudbin doonaa codsiga iyo codsiyada dib u eegista ama dhageysiga kiiska lagu muransan yahay Guddoomiyeyaasha TCEQ si ay uga fiirsadaan kulanka Komishanka ee la qorsheeyay.

Komishanka wuxuu kaliya siin karaa codsi dhageysi kiis lagu muransan yahay oo ku saabsan arrimaha codsaduhu soo gudbiyay faallooyinkooda waqtigooda ku habboon oo aan markii dambe laga noqon. **Haddii dhageysiga la oggolaado, mawduuca dhageysiga wuxuu ku koobnaan doonaa arrimaha lagu muransan yahay ee xaqiiqda ama su'aalaha isku dhafan ee xaqiiqda iyo sharciga ee la xiriira walaacyada tayada biyaha ee la xiriira iyo waxyaabaha la soo gudbiyay inta lagu jiro muddada faallooyinka.**

TCEQ waxay ku dhaqmi kartaa codsi lagu cusbooneysiinayo ruqsadda daadinta biyaha wasakhda ah iyada oo aan la siinin fursad dhageysiga kiiska lagu muransan yahay haddii shuruudo gaar ah la buuxiyo.

LIISKA BOOSTADA. Haddii aad soo gudbiso faallooyinka dadweynaha, codsi dhageysiga kiiska lagu muransan yahay ama dib-u-eegista go'aanka Agaasimaha Fulinta, waxaa lagu dari doonaa liiska boostada ee codsigan gaarka ah si aad u hesho ogeysiisyada dadweynaha ee mustaqbalka ee boostada laga soo diro Xafiiska Madaxa Sare. Intaa waxaa dheer, waxaad codsan kartaa in lagu meeleeyaa: (1) liiska boostada joogtada ah ee magaca codsadaha gaarka ah iyo lambarka ogolaanshaha; iyo / ama (2) liiska boostada ee gobol gaar ah. Haddii aad rabto in lagu meeleeyo liiska boostada joogtada ah iyo / ama degmada, si cad u sheeg liiska (yada) oo u dir codsigaaga Xafiiska TCEQ ee Madaxa Sare cinwaanka hoose.

MACLUUMAADKA LAGA HELI KARO INTERNETKA. Wixii faahfaahin ah oo ku saabsan xaaladda arjiga, booqo Macluumaadka Isku-dhafan ee Komishanka ee www.tceq.texas.gov/goto/cid. Raadi keydka macluumaadka adoo adeegsanaya lambarka oggolaanshaha codsigan, kaas oo lagu bixiyo dusha sare ee ogeysiiskan.

XIRIIRADA HAY'ADDA IYO MACLUUMAADKA. Dhammaan faallooyinka iyo codsiyada dadweynaha waa in loo gudbiyaa si elektaroonig **ah https://www14.tceq.texas.gov/epic/eComment/**, ama qoraal ahaan Guddiga Texas ee Tayada Deegaanka, Xafiiska Madaxa Wakiilka, MC-105, PO Box 13087, Austin, Texas 78711-3087. Fadlan la soco in macluumaadka xiriirka ee aad bixiso, oo ay ku jiraan magacaaga, lambarka taleefankaaga, cinwaanka emaylkaaga iyo cinwaanka jireed ay qayb ka noqon doonaan diiwaanka dadweynaha ee hay'adda. Wixii macluumaad dheeraad ah oo ku saabsan codsigan oggolaanshaha ama habka oggolaanshaha, fadlan wac Barnaamijka Waxbarashada Dadweynaha ee TCEQ, Toll Free, 1-800-687-4040 ama booqo boggooda internetka www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Macluumaad dheeraad ah ayaa sidoo kale laga heli karaa Shirkadda Adeegga Dadweynaha ee Koonfur-galbeed cinwaanka kor ku xusan ama adoo wacaya Mr. David Lorenz, CHMM, Falanqeeyaha Deegaanka, 806-378-2138.

Taariikhda Bixinta: Noofambar 10, 2025

From: Lorenz, David R
To: Abesha Michael
Cc: Peter Schaefer; Snyder, Karalee D; Lorenz, David R
Subject: RE: Application to Renew Permit No. WQ0001990000 - Notice of Deficiency Letter
Date: Thursday, October 9, 2025 12:09:07 PM
Attachments: image002.png

Abesha,

After further review and evaluation of the outfall discharge routes, the discharge routes described in the Notice of Deficiency Letter (NOD) dated on September 16, 2025 (copied from the current permit) is correct and is to be used in the NORI.

Thank you for bringing the outfall discharge route descriptions to our attention. Please feel free to contact me if you have any other questions or concerns.

DAVID LORENZ
Xcel Energy
Environmental Analyst, Environmental Services
TX1408-05-MCB
790 S Buchanan Street Floor 5
Amarillo, TX 79101
P: 806.378.2138
C: 806.681.3285
E: david.lorenz@xcelenergy.com

From: Abesha Michael <Abesha.Michael@tceq.texas.gov>
Sent: Wednesday, October 8, 2025 3:18 PM
To: Lorenz, David R <david.lorenz@xcelenergy.com>
Cc: Peter Schaefer <peter.schaefer@tceq.texas.gov>
Subject: RE: Application to Renew Permit No. WQ0001990000 - Notice of Deficiency Letter

EXTERNAL - STOP & THINK before opening links and attachments.

Good afternoon,
Thank you for your response.

The discharge route which was indicated on the Notice of Deficiency Letter (NOD) dated on September 16, 2025, is copied from the existing permit. If the correction you made on your response on the discharge route is different from the existing permit, please discuss with Mr. Peter Schaefer at 512-239-4372, peter.schaefer@tceq.texas.gov.

APPLICATION. Southwestern Public Service Company, 790 South Buchanan Street, 5th Floor,
Amarillo, Texas 79101, which operates the Nichols/Harrington Steam Electric Stations, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination
System (TPDES) Permit No. WQ0001990000 (EPA I.D. No. TX0124575) to authorize the discharge
of treated wastewater and stormwater at an Intermittent and flow-variable rate. The facility is located at 8400 North Lakeside
Drive, near the city of Amarillo, in Potter County, Texas 79108. The discharge route is from the
plant site to via Outfalls 001, 003, 004, 011, 012, and 013 to an unnamed tributary, thence to
Indian Creek, thence to impounded Indian Creek, thence to Indian Creek, thence to 6 Section
Lake, thence to Indian Creek, thence to East Amarillo Creek; via Outfalls 006 and 007 to an
unnamed tributary, thence to Bonita Creek; via Outfall 008 to an unnamed ditch, thence to
Indian Creek, thence to impounded Indian Creek, thence to Indian Creek, thence to 6 Section
Lake, thence to Indian Creek, thence to East Amarillo Creek, thence all outfalls to the Canadian
River Above Lake Meredith; via Outfall 005 to an unnamed tributary, thence to Stalanaker Lake (a
playa lake with no outlet within the watershed of the Canadian River Above Lake Meredith; and
via Outfall 009 to an unnamed tributary, thence to McGee Lake (a playa lake with no outlet
within the watershed of the North Fork Red River), thence to North Fork Red River. TCEQ received this application on September 4, 2025. The permit application will be available for
viewing and copying at Amarillo Public Library-Central Branch Resources, 413 Southwest 4th

Street, Amarillo, 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/tpdesapplications.
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=-101.746111,35.283055&level=18

Thank you,

Abesha H. Michael
Applications Review & Processing Team
Water Quality Division Support Section
Water Quality Division, MC 148
PO Box 13087
Austin, Texas 78711
Phone: o: 512-239-4912
Email: abesha.michael@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at www.tceq.texas.gov/customersurvey

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From: Abesha Michael
Sent: Tuesday, September 16, 2025 2:56 PM
To: 'david.lorenz@xcelenergy.com' <david.lorenz@xcelenergy.com>
Subject: Application to Renew Permit No. WQ0001990000 - Notice of Deficiency Letter

Dear Mr. Lorenz:

The attached Notice of Deficiency letter sent on September 16, 2025, requests additional information needed to declare the application administratively complete. Please send the complete response to my attention by September 16, 2025.

Thank you,

Abesha H. Michael
Applications Review & Processing Team
Water Quality Division Support Section
Water Quality Division, MC 148
PO Box 13087
Austin, Texas 78711

Phone: o: 512-239-4912
Email: abesha.michael@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at www.tceq.texas.gov/customersurvey

Environmental Services
790 S. Buchanan St., TX1408-05-MCB
Amarillo, TX 79101

September 23, 2025

Texas Commission on Environmental Quality
Applications Review & Processing Team
Water Quality Division Support Section
Water Quality Division, MC 148
Attention: Abesha Michael
PO Box 13087
Austin, TX 78711-3087

Re: Application to Renew Permit No.: WQ0001990000 (EPA I.D. No. TX0124575)
Applicant Name: Southwestern Public Service Company (CN601481336)
Site Name: Nichols Harrington Electric Station (RN100224641)
Type of Application: Renewal without changes

Dear Ms. Michael,

Per your request for additional information, Southwestern Public Service Company is submitting the following responses. All items are sent via email as requested. The corrections requested are in bold for easier viewing.

Item 1. Electronic application / hard copy paper application:
Per instructions applicants may complete and submit an application using TCEQ's online e-permitting system STEERS.

Item 2. Administrative Report USGS map: **A USGS map with the required information** is **provided.**

Item 3. NORI information correction: **An updated NORI description is provided.**

Item 4. Updated NORI description Spanish translation: **An updated translated Spanish NORI description is provided in a Microsoft Word document.**

Item 5. Updated NORI description Somalia translation: **The English NORI will be translated into Somalia once an email is provided from TCEQ.**

I believe these responses address the concerns you had concerning the Administrative section of the permit application. If you have any further questions, please don't hesitate to contact me at (806) 378-2138 or email the questions to me.

Sincerely,

David Lorenz
Environmental Analyst

APPLICATION. Southwestern Public Service Company, 790 South Buchanan Street Amarillo, Texas 79101, which operates the Nichols/Harrington Steam Electric Stations, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0001990000 (EPA I.D. No. TX0124575) to authorize the discharge of treated wastewater and stormwater at a volume not to exceed a daily average flow of intermittent and flow-variable rate gallons per day. The facility is located at 8400 North Lakeside Drive, near the city of Amarillo, in Potter County, Texas 79108. The discharge route is from the plant site via Outfalls 001, 003, 004, and 012 to unnamed tributaries of Indian Creek, via Outfalls 011 and 013 to Indian Creek, thence to impounded Indian Creek; thence from these outfalls to Indian Creek, thence to 6 Section Lake, thence to Indian Creek, thence to East Amarillo Creek; via Outfalls 006 and 007 to unnamed tributaries of Bonita Creek, thence to Bonita Creek; thence all outfalls to the Canadian River Above Lake Meredith; via Outfall 005 to an unnamed tributary, thence to Stalanaker Lake (a playa lake with no outlet within the watershed of the Canadian River Above Lake Meredith; and via Outfall 009 to an unnamed tributary, thence to McGee Lake (a playa lake with no outlet within the watershed of the North Fork Red River), thence to North Fork Red River. TCEQ received this application on September 4, 2025. The permit application will be available for viewing and copying at Amarillo Public Library-Central Branch Resources, 413 Southwest 4th Street, Amarillo, 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/tpdesapplications.
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=-101.746111,35.283055&level=18
Further information may also be obtained from Southwestern Public Service Company at the address stated above or by calling Mr. David Lorenz, CHMM, Environmental Analyst, at 806-378-2138.

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
RENOVACION

PERMISO NO. WQ000

SOLICITUD. *Southwestern Public Service Company, 790 South Buchanan Street Amarillo, Texas 79101, which operates the Nichols/Harrington Steam Electric Stations,* ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0001990000 (EPA I.D. No. TX 0124575) 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 *intermittent and flow variable rate* galones por día. La planta está ubicada *8400 North Lakeside Drive* en el Condado de *Potter County*, Texas *79108*. La ruta de descarga es del sitio de la planta a *The discharge route is from the plant site via Outfalls 001, 003, 004, and 012 to unnamed tributaries of Indian Creek, via Outfalls 011 and 013 to Indian Creek, thence to impounded Indian Creek; thence from these outfalls to Indian Creek, thence to 6 Section Lake, thence to Indian Creek, thence to East Amarillo Creek; via Outfalls 006 and 007 to unnamed tributaries of Bonita Creek, thence to Bonita Creek; thence all outfalls to the Canadian River Above Lake Meredith; via Outfall 005 to an unnamed tributary, thence to Stalanaker Lake (a playa lake with no outlet within the watershed of the Canadian River Above Lake Meredith; and via Outfall 009 to an unnamed tributary, thence to McGee Lake (a playa lake with no outlet within the watershed of the North Fork Red River), thence to North Fork Red River.* La TCEQ recibió esta solicitud el *September 4, 2025*. La solicitud para el permiso estará disponible para leerla y copiarla en *Amarillo Public Library-Central Branch Resources, 413 Southwest 4th Street, Amarillo, Texas* antes de la fecha de publicación de este aviso en el periódico. La solicitud (cualquier actualización y aviso inclusive) está disponible electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.746111,35.283055&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. Si ciertos criterios se cumplen, la TCEQ puede actuar sobre una solicitud para renovar un permiso sin proveer una oportunidad de una audiencia administrativa de lo contencioso.

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

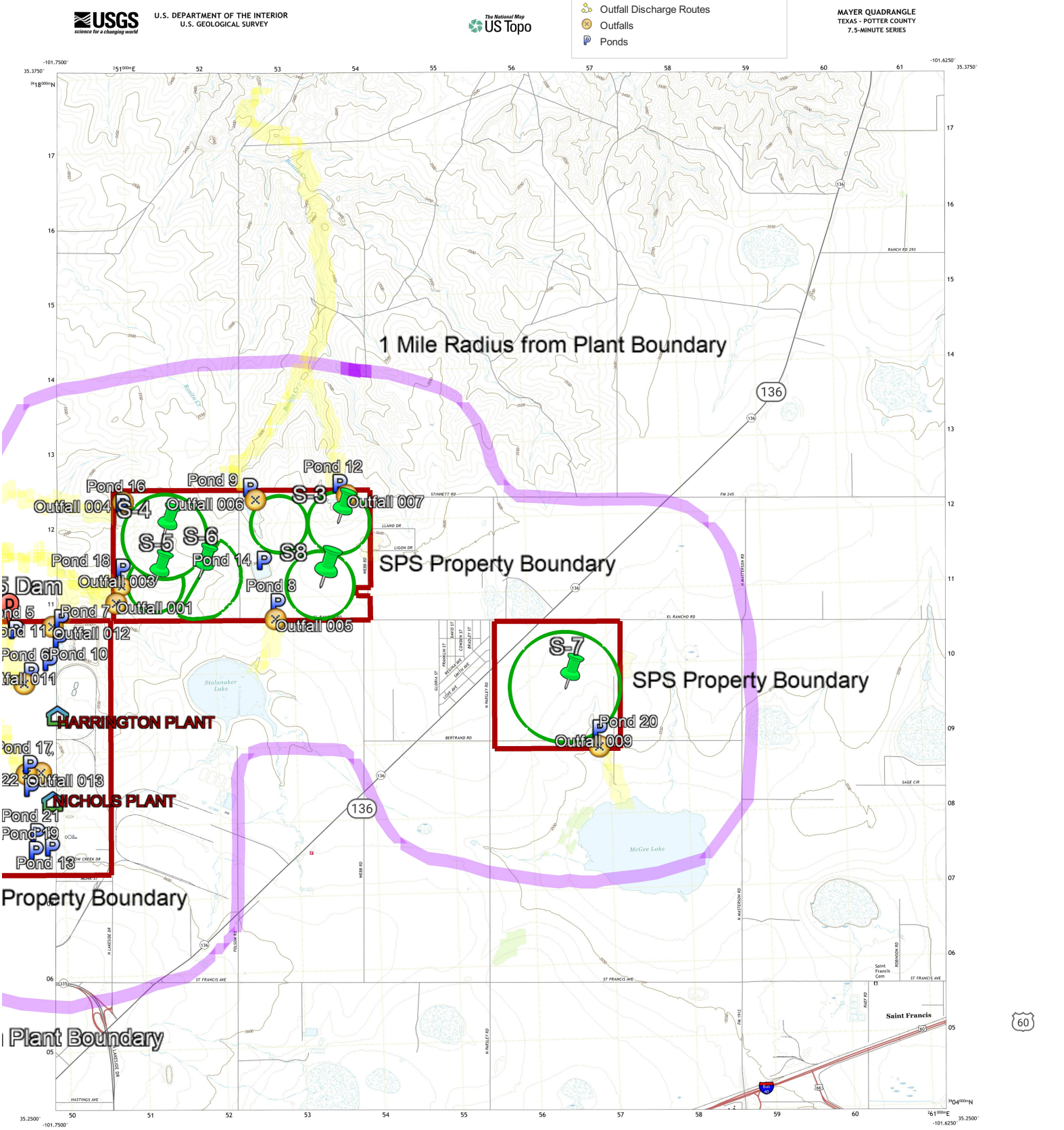
INFORMACIÓN DISPONIBLE EN LÍNEA. Para detalles sobre el estado de la solicitud, favor de visitar la Base de Datos Integrada de los Comisionados en www.tceq.texas.gov/goto/cid. Para buscar en la base de datos, utilizar el número de permiso para esta solicitud que aparece en la parte superior de este aviso.

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

También se puede obtener información adicional del *Southwestern Public Service Company* a la dirección indicada arriba o llamando a *David Lorenz* al *806-378-2138*.

Fecha de emisión: *[Date notice issued]*

USGS Topo Map



Legend

- Effluent Disposal Site
- Nichols/Harrington Station Power Plants
- Outfall Discharge Routes
- Outfalls
- Ponds

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

The National Map US Topo

MAYER QUADRANGLE
TEXAS - POTTER COUNTY
7.5-MINUTE SERIES

Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid:Universal Transverse Mercator, Zone 14S

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

Imagery.....NAIP, September 2016 - November 2016
Roads.....U.S. Census Bureau, 2015 - 2018
Names.....GNIS, 1979 - 2021
Hydrography.....National Hydrography Dataset, 2002 - 2018
Contours.....National Elevation Dataset, 2019
Boundaries.....Multiple sources; see metadata file 2019 - 2021

Wetlands.....FWS National Wetlands Inventory Not Available

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

ADJOINING QUADRANGLES

1 Chunky
2 Berry Sand Draw
3 Pomeroy
4 Pleasant Valley
5 Sevenmile Basin
6 Amarillo East
7 Pullman
8 Washburn

ROAD CLASSIFICATION

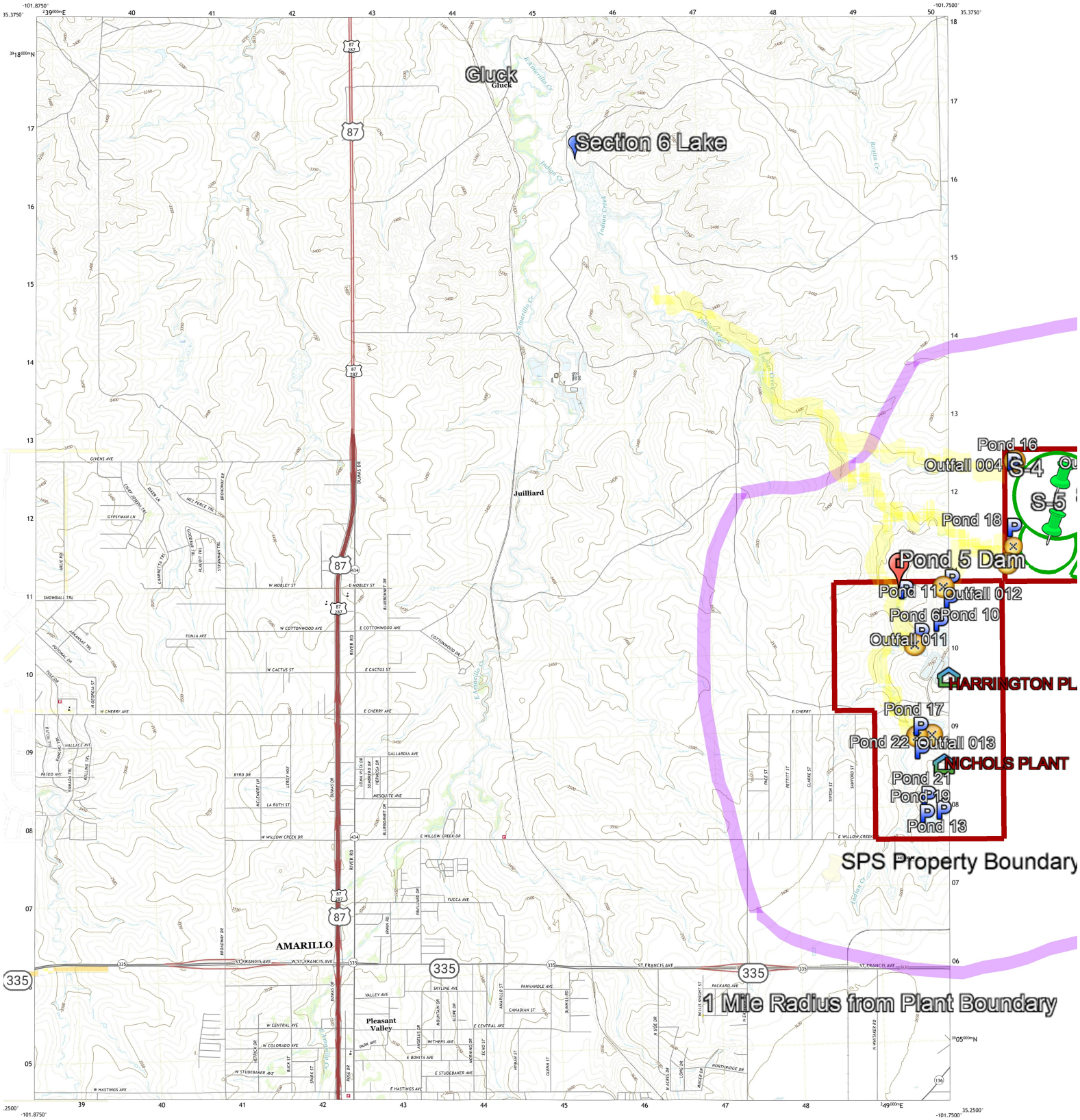
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

MAYER, TX
2022

NAD 1983 UTM ZONE 14S
NGS KEY NO. US G2K4281723

Google Earth
Image © 2025 Airbus
1 mi

USGS Topo Map



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

The National Map US Topo

PLEASANT VALLEY QUADRANGLE
TEXAS - POTTER COUNTY
7.5-MINUTE SERIES

Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid:Universal Transverse Mercator, Zone 14S

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

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

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

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

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

TEXAS
QUADRANGLE LOCATION

ADJOINING QUADRANGLES
1 Puente
2 Chunky
3 Berry Sand Draw
4 Cliffside
5 Mayer
6 Amarillo West
7 Amarillo East
8 Pullman

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

PLEASANT VALLEY, TX
2022

NSN 7643-01-465-3658
NGA REF NO. 97X24356S8

Google Earth
Image © 2025 Airbus

Brooke T. Paup, *Chairwoman*
Bobby Janecka, *Commissioner*
Catarina R. Gonzales, *Commissioner*
Kelly Keel, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 4, 2025

Dear Applicant:

Re: Confirmation of Submission of the New Industrial Wastewater Individual Permit Application

This is an acknowledgment that you have successfully completed the Industrial Wastewater Individual Permit Application.

ER Account Number: ER012399

Application Reference Number: 807413

Authorization Number: WQ0001990000

Site Name: Nichols Station Power Plant

Regulated Entity: RN100224641

Customer(s): Southwestern Public Service Company

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

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

Sincerely,
Applications Review and Processing Team
Water Quality Division

Texas Commission on Environmental Quality

Update Domestic or Industrial Individual Permit

WQ0001990000

Site Information (Regulated Entity)

What is the name of the site to be authorized?	NICHOLS HARRINGTON ELECTRIC STATION
Does the site have a physical address?	Yes
Physical Address	
Number and Street	8400 N LAKESIDE DR
City	AMARILLO
State	TX
ZIP	79108
County	POTTER
Latitude (N) (##.######)	35.283055
Longitude (W) (-###.######)	-101.746111
Primary SIC Code	4911
Secondary SIC Code	
Primary NAICS Code	
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	RN100224641
What is the name of the Regulated Entity (RE)?	NICHOLS STATION POWER PLANT
Does the RE site have a physical address?	Yes
Physical Address	
Number and Street	7201 N LAKESIDE DR
City	AMARILLO
State	TX
ZIP	79108
County	POTTER
Latitude (N) (##.######)	35.29861
Longitude (W) (-###.######)	-101.755
Facility NAICS Code	
What is the primary business of this entity?	STEAM ELECTRIC GENERATING FACILITY

Southwe-Customer (Applicant) Information (Owner)

How is this applicant associated with this site?	Owner
What is the applicant's Customer Number (CN)?	CN601481336
Type of Customer	Corporation
Full legal name of the applicant:	
Legal Name	Southwestern Public Service Company
Texas SOS Filing Number	1392306
Federal Tax ID	750575400
State Franchise Tax ID	17505754006
State Sales Tax ID	

Local Tax ID	
DUNS Number	7369713
Number of Employees	501+
Independently Owned and Operated?	
I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas.	Yes
Responsible Authority Contact	
Organization Name	Southwestern Public Service Company
Prefix	MS
First	KARALEE
Middle	
Last	SNYDER
Suffix	
Credentials	
Title	MANAGER OF ENVIRONMENTAL SERVICES
Responsible Authority Mailing Address	
Enter new address or copy one from list:	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	790 S BUCHANAN ST FL 5
Routing (such as Mail Code, Dept., or Attn:)	
City	AMARILLO
State	TX
ZIP	79101
Phone (###-###-####)	8063782195
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	Karalee.D.Snyder@xcelenergy.com

Billing Contact

Responsible contact for receiving billing statements:	
Select the permittee that is responsible for payment of the annual fee.	CN601481336, Southwestern Public Service Company
Organization Name	SOUTHWESTERN PUBLIC SERVICE COMPANY
Prefix	MR
First	DAVID
Middle	
Last	LORENZ
Suffix	
Credentials	CHMM
Title	Environmental Analyst
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	790 S BUCHANAN ST
Routing (such as Mail Code, Dept., or Attn:)	
City	AMARILLO

State	TX
ZIP	79101
Phone (###-###-####)	8063782138
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	david.lorenz@xcelenergy.com

Application Contact

Person TCEQ should contact for questions about this application:

Same as another contact?	Billing Contact
Organization Name	SOUTHWESTERN PUBLIC SERVICE COMPANY
Prefix	MR
First	DAVID
Middle	
Last	LORENZ
Suffix	
Credentials	CHMM
Title	Environmental Analyst
Enter new address or copy one from list:	

Mailing Address

Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	790 S BUCHANAN ST
Routing (such as Mail Code, Dept., or Attn:)	
City	AMARILLO
State	TX
ZIP	79101
Phone (###-###-####)	8063782138
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	david.lorenz@xcelenergy.com

Technical Contact

Person TCEQ should contact for questions about this application:

Same as another contact?	Billing Contact
Organization Name	SOUTHWESTERN PUBLIC SERVICE COMPANY
Prefix	MR
First	DAVID
Middle	
Last	LORENZ
Suffix	
Credentials	CHMM
Title	Environmental Analyst
Enter new address or copy one from list:	

Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	790 S BUCHANAN ST
Routing (such as Mail Code, Dept., or Attn:)	
City	AMARILLO
State	TX
ZIP	79101
Phone (###-###-####)	8063782138
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	david.lorenz@xcelenergy.com

DMR Contact

Person responsible for submitting Discharge Monitoring Report Forms:	
Same as another contact?	Technical Contact
Organization Name	SOUTHWESTERN PUBLIC SERVICE COMPANY
Prefix	MR
First	DAVID
Middle	
Last	LORENZ
Suffix	
Credentials	CHMM
Title	Environmental Analyst
Enter new address or copy one from list:	
Mailing Address:	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	790 S BUCHANAN ST
Routing (such as Mail Code, Dept., or Attn:)	
City	AMARILLO
State	TX
ZIP	79101
Phone (###-###-####)	8063782138
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	david.lorenz@xcelenergy.com

Section 1# Permit Contact

Permit Contact#: 1

Person TCEQ should contact throughout the permit term.

1) Same as another contact?	Technical Contact
2) Organization Name	SOUTHWESTERN PUBLIC SERVICE COMPANY
3) Prefix	MR

4) First	DAVID
5) Middle	
6) Last	LORENZ
7) Suffix	
8) Credentials	CHMM
9) Title	Environmental Analyst
Mailing Address	
10) Enter new address or copy one from list	
11) Address Type	Domestic
11.1) Mailing Address (include Suite or Bldg. here, if applicable)	790 S BUCHANAN ST
11.2) Routing (such as Mail Code, Dept., or Attn:)	
11.3) City	AMARILLO
11.4) State	TX
11.5) ZIP	79101
12) Phone (###-###-####)	8063782138
13) Extension	
14) Alternate Phone (###-###-####)	
15) Fax (###-###-####)	
16) E-mail	david.lorenz@xcelenergy.com

Owner Information

Owner of Treatment Facility	
1) Prefix	
2) First and Last Name	
3) Organization Name	Southwestern Public Service Company
4) Mailing Address	790 S Buchanan St TX1408-05-MCB
5) City	Amarillo
6) State	TX
7) Zip Code	79101
8) Phone (###-###-####)	8063782195
9) Extension	
10) Email	karalee.d.snyder@xcelenergy.com
11) What is ownership of the treatment facility?	Private
Owner of Land (where treatment facility is or will be)	
12) Prefix	
13) First and Last Name	
14) Organization Name	Southwestern Public Service Company
15) Mailing Address	790 S Buchanan St TX1408-05-MCB
16) City	AMARILLO
17) State	TX
18) Zip Code	79101
19) Phone (###-###-####)	8063782195
20) Extension	
21) Email	karalee.d.snyder@xcelenergy.com
22) Is the landowner the same person as the facility owner or co-applicant?	Yes

General Information Renewal-Amendment

1) Current authorization expiration date:	03/29/2026
2) Current Facility operational status:	Active
3) Is the facility located on or does the treated effluent cross American Indian Land?	No
4) What is the application type that you are seeking?	Renewal without changes
5) Current Authorization type:	Industrial Wastewater
5.1) What is your EPA facility classification?	Major
5.1.1) Select the applicable fee	Renewal - $2,015
6) What is the classification for your authorization?	TPDES and TLAP
6.1) What is the EPA Identification Number?	TX0124575
6.2) Is the wastewater treatment facility location in the existing permit accurate?	Yes
6.3) Are the point(s) of discharge and the discharge route(s) in the existing permit correct?	Yes
6.4) City nearest the outfall(s):	Amarillo
6.5) County where the outfalls are located:	POTTER
6.6) Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?	No
6.7) Is the daily average discharge at your facility of 5 MGD or more?	No
6.8) Is the location of the effluent disposal site in the existing permit accurate?	Yes
6.9) City nearest the disposal site:	AMARILLO
6.10) County in which the disposal site is located:	POTTER
6.11) Describe the routing of effluent from the treatment facility to the disposal site:	Effluent from the Nichols and Harrington Plants is piped to synthetic lined storage ponds and thence to irrigation. All runoff control facilities are designed to contain runoff from a 25-year storm. No discharge of the effluents is expected except during periods of rainfall in excess of a 25-year storm event.
6.12) Identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained:	Unnamed tributary to Bonita Creek in Segment 0103 Canadian River. Unnamed tributary to Stalanaker Lake which has no discharge, Unnamed tributary to McGee Lake which has no discharge
6.13) If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?	Not Applicable
Owner of Effluent TLAP Disposal Site	
6.14) Prefix	
6.15) First and Last Name	
6.16) Organization Name	SOUTHWESTERN PUBLIC SERVICE COMPANY
6.17) Mailing Address	790 S Buchanan St TX1408-05-MCB
6.18) City	Amarillo
6.19) State	TX
6.20) Zip Code	79101
6.21) Phone (###-###-####)	8063782195
6.22) Extension	
6.23) Email	karalee.d.snyder@xcelenergy.com
6.24) Is the landowner the same person as the facility owner or co-applicant?	Yes

7) Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?	No

Public Notice Information

Individual Publishing the Notices	
1) Prefix	MR
2) First and Last Name	David Lorenz
3) Credential	CHMM
4) Title	Environmental Analyst
5) Organization Name	Southwestern Public Service Company
6) Mailing Address	790 S BUCHANAN ST # 5
7) Address Line 2	
8) City	AMARILLO
9) State	TX
10) Zip Code	79101
11) Phone (###-###-####)	8063782138
12) Extension	
13) Fax (###-###-####)	
14) Email	david.lorenz@xcelenergy.com
Contact person to be listed in the Notices	
15) Prefix	MR
16) First and Last Name	David Lorenz
17) Credential	CHMM
18) Title	Environmental Analyst
19) Organization Name	Southwestern Public Service Company
20) Phone (###-###-####)	8063782138
21) Fax (###-###-####)	
22) Email	david.lorenz@xcelenergy.com
Bilingual Notice Requirements	
23) Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?	Yes
23.1) Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?	No
23.2) Do the students at these schools attend a bilingual education program at another location?	Yes
23.3) Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC 89.1205(g)?	Yes
23.4) Which language is required by the bilingual program?	Waived out of Spanish and Somali but offers ESL

Section 1# Public Viewing Information

County#: 1

1) County	POTTER
2) Public building name	Amarillo Public Library, Central Branch
3) Location within the building	Resources
4) Physical Address of Building	413 Southwest 4th Street
5) City	Amarillo

6) Contact Name	David Lorenz
7) Phone (###-###-####)	8063782138
8) Extension	
9) Is the location open to the public?	Yes

Plain Language

1) Plain Language

[File Properties]

File Name	LANG_20972_SUMMARY IN PLAIN LANGUAGE.docx
Hash	64E309EC8BF4B2EB17F1626A73F118A14BED8ECCB6C6154577870574CBE28A27
MIME-Type	application/vnd.openxmlformats-officedocument.wordprocessingml.document

Supplemental Permit Information Form

1) Supplemental Permit Information Form (SPIF)

[File Properties]

File Name	SPIF_20971.docx
Hash	6D17686843E7B737C5FD78B8F2D2BE6135B777D4DA910A9FC7C1A0C127B3A75A
MIME-Type	application/vnd.openxmlformats-officedocument.wordprocessingml.document

Industrial Attachments

1) Attach an 8.5"x11", reproduced portion of the most current and original USGS Topographic Quadrangle Map(s) that meets the 1:24,000 scale.

[File Properties]

File Name	MAP_Mayer_SPIF USGS Map.pdf
Hash	020E3DA50E03886E5C0B501D72BF6E64BB7CF6422D0057180FF02FA30167FFE3
MIME-Type	application/pdf

[File Properties]

File Name	MAP_PLEASA~1.PDF
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MIME-Type	application/pdf

[File Properties]

File Name	MAP_SPIF ProjectAreaMap.jpg
Hash	5FFE550BEB5E11CE785CC20CF0E612A8F652BBE7A57543F125D265FE0879EB60
MIME-Type	image/jpeg

[File Properties]

File Name	MAP_Area Map1.tif
Hash	974BF23A19F744AF2D34C14B9081F3470B228C20087F9C0A366C96199901FBEF
MIME-Type	image/tiff

[File Properties]

File Name	MAP_Area Map 2.tif
Hash	65FEDA3E2915763BDC0CC4DB5374A9E02D6037161EAFACB92B63484F943EF01B
MIME-Type	image/tiff

2) I confirm that all required sections of Technical Report 1.0 are complete and will be included in the Technical Attachment.	Yes
2.1) I confirm that Worksheet 2.0 (Pollutant Analyses Requirements) is complete and included in the Technical Attachment.	Yes
2.2) I confirm that Worksheet 3.0 (Land Application of Effluent) is complete and included in the Technical Attachment.	Yes
2.3) I confirm that Worksheet 4.0 (Receiving Waters) is complete and included in the Technical Attachment.	Yes
2.4) Are you planning to include Worksheet 4.1 (Waterbody Physical Characteristics) in the Technical Attachment?	No
2.5) Are you planning to include Worksheet 6.0 (Industrial Waste Contribution) in the Technical Attachment?	No
2.6) Are you planning to include Worksheet 7.0 (Stormwater Discharges Associated with Industrial Activities) to the Technical Attachment?	Yes
2.7) Are you planning to include Worksheet 8.0 (Aquaculture) in the Technical Attachment?	No
2.8) Are you planning to include Worksheet 9.0 (Class V Injection Well Inventory/Authorization) in the Technical Attachment?	No
2.9) Are you planning to include Worksheet 10.0 (Quarries in the John Graves Scenic Riverway) in the Technical Attachment?	No
2.10) Are you planning to include Worksheet 11.0 (Cooling Water System Information) in the Technical Attachment?	No
2.11) Are you planning to include Worksheet 11.1 (Impingement Mortality) in the Technical Attachment?	No
2.12) Are you planning to include Worksheet 11.2 (Source Water Biological Data) in the Technical Attachment?	No
2.13) Are you planning to include Worksheet 11.3 (Entrainment) in the Technical Attachment?	No

2.14) Technical Attachment

[File Properties]

File Name	TECH_Impoundments_Tab 11 T1.pdf
Hash	D1EF06722FE0175DD53BE1CD5FB2232B76D4739B70294B41354DCC7099D9576F
MIME-Type	application/pdf

[File Properties]

File Name	TECH_Tab 11 Tables 15 15-16.pdf
Hash	46D1E32CA6058715328B594C34181C0714344E8FB380FA0252B9B0494A2057C0
MIME-Type	application/pdf

[File Properties]

File Name	TECH_Wastestreams_Tab 11 T2.pdf
Hash	131704029C9672645090AD3D0A46E6EDE30195B64667ADD1043F6DE48912ADFD
MIME-Type	application/pdf

[File Properties]

File Name	TECH_ReceivingWat.PDF
Hash	734710BB4B11F9AB415B27B49B10AED133D6D8C1725061917875F667E2DD6577
MIME-Type	application/pdf

[File Properties]

File Name	TECH_Technical Report_10055.pdf
Hash	B93AFF66663791DC181CD48037452552F981D41A7C407EBF6D7A2D0B59C2DF4D
MIME-Type	application/pdf

3) Flow Diagram

[File Properties]	
File Name	FLDIA_Flow Schematic.pdf
Hash	B5AF16BD3C08DBC946678F85C12B4B07F181B5F515CF63C797AEB37AC5710944
MIME-Type	application/pdf

4) Site Drawing

[File Properties]	
File Name	SITEDR_Site Diagram.pdf
Hash	923F831DDDDCAE635F796CAAEC997ADBD7C05F66654A31264D9BDD82B8EBF00F
MIME-Type	application/pdf

5) Design Calculations

[File Properties]	
File Name	DES_CAL_Design Calculations and SLM Not Applicable.docx
Hash	CFA1E7676127BC74DE40B01A619365E210FA4011F55ADE78ED41D4EEC2CAB76F
MIME-Type	application/vnd.openxmlformats-officedocument.wordprocessingml.document

6) Solids Management Plan

[File Properties]	
File Name	SMP_Design Calculations and SLM Not Applicable.docx
Hash	CFA1E7676127BC74DE40B01A619365E210FA4011F55ADE78ED41D4EEC2CAB76F
MIME-Type	application/vnd.openxmlformats-officedocument.wordprocessingml.document

7) Water Balance

[File Properties]	
File Name	WB_Flow Schematic.pdf
Hash	B606BBE98F5AE6ED6F0D0E8637A4ECC716E5B641C777975A0B44F9B0050407C6
MIME-Type	application/pdf

8) Other Attachments

[File Properties]	
File Name	OTHER_Soil Rpt_WQ0001990000.pdf
Hash	8B463CE0D56FBA1DEF85FEA6DF03D2F4230756B8859D12826CD6B61C5928287F
MIME-Type	application/pdf

[File Properties]	
File Name	OTHER_Engineering Water_Balance and Nitrogen.pdf
Hash	076B96C6F0D87253161834ED04B7D1DFB9627F7A9338611F76F9946D55545A1C
MIME-Type	application/pdf

[File Properties]	
File Name	OTHER_Tab 7 Well Map Information.pdf

Hash	DB69857BAFE8CBDDCBD11B7C9780FA009531093299C004F7893966073F682483
MIME-Type	application/pdf

[File Properties]

File Name	OTHER_Core Data_10400.pdf
Hash	E89363EAD9F99C5AF3AC250AFB7AA694CABD1CA0D5282F85E0CC681D4D78E506
MIME-Type	application/pdf

[File Properties]

File Name	OTHER_Attachment T4_Pond Liner Information.pdf
Hash	C36FD8060E63DA9F5222A47576E34E885C34734410C85851B8D6A4D7F93DAF66
MIME-Type	application/pdf

[File Properties]

File Name	OTHER_Tab 12_Monitor Well Rpt.pdf
Hash	9D01FB1F2305E65A572D6B74CABDA2EDC324E22AC155F8E122ADA5714DCB61B2
MIME-Type	application/pdf

[File Properties]

File Name	OTHER_SPIF_20971.pdf
Hash	9DA2737E4C4351CD7EFA232F96BB8417EA3B6D9D8A18CC392A263A0644DDB247
MIME-Type	application/pdf

[File Properties]

File Name	OTHER_Cropping Plan.pdf
Hash	C76908F4E0BF8195F1B383C125A175F4B92F74C91828BEB9A7C33E635B1DFD9A
MIME-Type	application/pdf

[File Properties]

File Name	OTHER_Tab 13_WQ0001990000Application_2025.pdf
Hash	25080B3314E08607FBA0E8545C7E8D59901ED73707196030AB7F9113E337A1D9
MIME-Type	application/pdf

Certification

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

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

1. I am Karalee Snyder, the owner of the STEERS account ER012399.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.

7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.
8. I am knowingly and intentionally signing Update Domestic or Industrial Individual Permit WQ0001990000.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OWNER Signature: Karalee Snyder OWNER	
Customer Number:	CN601481336
Legal Name:	Southwestern Public Service Company
Account Number:	ER012399
Signature IP Address:	208.87.234.201
Signature Date:	2025-09-04
Signature Hash:	24647467A5D26155EE50131806A9BFE73D3CF03CD36848877B16C9D7B7D55D43
Form Hash Code at time of Signature:	423B4FACF305702C28DCF0885ED27E0607903E8793EE40C9E4D3858EF796D364

Fee Payment

Transaction by:	The application fee payment transaction was made by ER000829/David R Lorenz
Paid by:	The application fee was paid by DAVID RAY LORENZ
Fee Amount:	$2000.00
Paid Date:	The application fee was paid on 2025-09-04
Transaction/Voucher number:	The transaction number is 582EA000683754 and the voucher number is 782099

Submission

Reference Number:	The application reference number is 807413
Submitted by:	The application was submitted by ER000829/David R Lorenz
Submitted Timestamp:	The application was submitted on 2025-09-04 at 13:00:50 CDT
Submitted From:	The application was submitted from IP address 208.87.233.201
Confirmation Number:	The confirmation number is 675894
Steers Version:	The STEERS version is 6.92
Permit Number:	The permit number is WQ0001990000

Additional Information

Application Creator: This account was created by David R Lorenz

Tab 10

Core Data Form

TCEQ Core Data Form

TCEQ Use Only

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 601481336		RN 100224641

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:*

SOUTHWESTERN PUBLIC SERVICE COMPANY

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
00013923-06	17505754006	750575400	7369713

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

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

13. Independently Owned and Operated?
☒ Yes ☐ No

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

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

15. Mailing Address:

790 SOUTH BUCHANAN STREET

City	State	ZIP	ZIP + 4
AMARILLO	TX	79101	2510

16. Country Mailing Information (*if outside USA*)

17. E-Mail Address (*if applicable*)

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)
(806) 378-2195		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

NICHOLS-HARRINGTON ELECTRIC STATION

23. Street Address of the Regulated Entity: *(No PO Boxes)*	8400 NORTH LAKESIDE DRIVE							
	City	AMARILLO	State	TX	ZIP	79108	ZIP + 4	
24. County								

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	N/A				
26. Nearest City			State		Nearest ZIP Code
27. Latitude (N) In Decimal:	35.283056		28. Longitude (W) In Decimal:	-101.746200	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
4911		221122	

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

TWO NATURAL GAS FIRED ELECTRIC STEAM POWER PLANTS

34. Mailing Address:	790 SOUTH BUCHANAN STREET							
	City	AMARILLO	State	TX	ZIP	79101	ZIP + 4	2510
35. E-Mail Address:	david.lorenz@xcelenergy.com							
36. Telephone Number	37. Extension or Code		38. Fax Number *(if applicable)*					
(806) 378-2138			( ) -					

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
				30099
☐ Municipal Solid Waste	☒ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
	45589			
☐ Sludge	☒ Storm Water	☒ Title V Air	☐ Tires	☐ Used Oil
	TXR05V301	13		
☐ Voluntary Cleanup	☒ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:
	WQ0001990000			

SECTION IV: Preparer Information

40. Name:	DAVID LORENZ	41. Title:	ENVIRONMENTAL ANALYST

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(806) 378-2138		( ) -	david.lorenz@xcelenergy.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:	SOUTHWESTERN PUBLIC SERVICE COMPANY	Job Title:	MANAGER, ENVIRONMENTAL SERVICES
Name*(In Print)* :	KARALEE SNYDER	Phone:	(806) 378-2195
Signature:	Karalee Snyder	Date:	8/21/2025

Design calculations and Solids Management Plan are not applicable.

SUMMARY OF APPLICATION IN PLAIN LANGUAGE FOR TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) AND TEXAS LAND APPLICATION (TLAP) PERMIT APPLICATIONS

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.

Industrial Wastewater TPDES Permit Renewal Application

Southwestern Public Service Company (CN601481336) operates Nichols/Harrington Electric Station, gas-fired (1,018 mega-watts) and gas-fired (457 mega-watts) electric generation stations (RN100224641), an electric power generating complex. The facility is located at 8400 N. Lakeside Drive, Amarillo, TX 79108, in Amarillo, Potter County, Texas 79108. The facility complex is seeking a TPDES with TLAP component permit renewal. This permit will not authorize a discharge of pollutants into water in the state.

The draft permit renewal application authorizes the discharge of stormwater runoff on an intermittent and flow variable basis via Outfall 001; stormwater runoff commingled with cooling tower blowdown, low volume wastewater, metal cleaning waste, and chemical metal cleaning waste on an intermittent and flow-variable basis via Outfalls 003, 004, 005, 006, 007, 009, 011, 012 and 013; and the disposal of cooling tower blowdown, low volume wastewater, metal cleaning wastes, chemical metal cleaning wastes, boiler seal water, and stormwater routed into the irrigation system to water grass and other crops at a hydraulic application rate not to exceed 2.5 acre-feet/acre/year (total effluent) via irrigation of 1,239 acres of land equipped with tailwater ponds and berms. .

The discharge of process wastewater from the Nichols/Harrington Electric Station via Outfalls 003, 004, 005, 006, 007, 009, 011, 012, and 013 is subject to federal effluent limitation guidelines at 40 CFR Part 423 (Steam Electric Power Generating Point Source Category). The pollutants expected from these discharges based on 40 CFR Part 423 are: nitrate nitrogen, phosphorus, chlorides, and traces of total organic carbon, total aluminum, total barium, total copper, total iron, total nickel, total zinc, total suspended solids, total dissolved solids, and pH. Additional potential pollutants are included in the Industrial Wastewater Application Technical Report, Worksheet 2.0.

The Nichols - Harrington Station complex utilizes a common water supply and a common wastewater disposal system. The water supply sources are potable water and treated sewage effluent (obtained from the City of Amarillo) and recovered ground water. All sanitary sewage is routed into septic tank - drain field systems. For both Stations (Nichols and Harrington) the chemical metal cleaning wastes are neutralized in the process and mixed with the cooling tower blowdown prior to disposal by irrigation. All other non-hazardous low volume wastes, including fireside cleaning wastes, are either mixed with the cooling tower blowdown or recycled as cooling tower makeup. No treatment of wastewater is required prior to disposal by irrigation.

Translation to Somali

SOO KOOBIDA CODSIGA LUUQADDA CAD EE NIDAAMKA TIRTIRKA DHEECAAN-BIXINTA EE TEXAS (TPDES) IYO CODSIYADA CODSIGA DHULKA (TLAP) CODSIYADA RUQSADAHA

Warbixin kooban oo soo socota ayaa la siiyaa codsigan ilaa iyo haatan ee ruqsada tayada biyaha oo ay dib u eegeen Guddiga Texas ee Tayada Deegaanka sida looga baahan yahay 30 TAC Cutubka 39. Macluumaadka ku qoran qoraalkan kooban waxaa laga yaabaa inay isbeddelaan marka lagu jiro dib u eegista farsamada ee codsiga mana aha matalaad xoojin oo federaal ah oo lagu fulin karo codsiga ruqsadaha.

Warshadaha Qasacadaynta TPDES Ogolaanshaha Cusboonaysiinta Codsiga

Southwstern Public Service Company () (), . Xarunta ku taalla, gudaha, County, Texas Xarunta xarunta ayaa raadinaysa TPDES oo leh cusboonaysiinta ruqsada qaybta TLAP. Sharcigani ma ansixin doono in dheecaan ay wasaqeeysan ku soo shubaan biyaha gobolka. CN601481336 shaqeeya Nichols / Harrington Electric Station, gaaska lagu rasaasay (1,018 mega-watts) iyo gaaska lagu rasaaseeyay (457 mega-watts) xarumaha korontada RN100224641 an korontada korontada dhalinaya adag ah Amarilillo, TX 79108 N. Lakeside Drive, TX 79108 Jaale Potter 79108.

Codsiga cusboonaysiinta oggolaanshaha qabyada ah wuxuu ogolaanayaa soo daadinta biyaha roobka ee ku saabsan saldhig isdaba joog ah oo isdaba-joog ah oo isdaba-joog ah iyada oo loo marayo Outfall 001; daad biyo duufaanka commingled la qaboojinta buufiyo munaaraddii qaboojinta, biyaha qulqulka yar yahay, qashinka nadiifinta biraha, iyo qashinka nadiifinta biraha kiimikada ku salaysan go'aysa iyo socodka-variable salaysan via Outfalls 003, 004, 005, 006, 007, 007, 009, 011, 012 iyo 013; iyo nibiraha la rido munaarad qaboojiya. biyaha qubka mugga yar yahay, qashinka nadiifinta biraha, qashinka nadiifinta biraha kiimikada, biyaha seal kuleeliyaha, iyo biyaha duufaanka marin habka waraabka si ay u helaan cawska biyaha iyo dalagga kale ee heerka codsiga Haydarooliga aan ka badnayn 2.5 acre-feet / acre / acre / acre / sanadkii (wadarta effluent) via waraabka 1,239 acres oo dhul ah oo lagu qalabeeyay balliyada biyaha dabada iyo berms. .

Dheecaanka biyaha lagu daadiyo habka laga soo qaado Nichols / Harrington Electric Station iyada oo loo marayo Outfalls 003, 004, 005, 006, 007, 007, 009, 011, 012, iyo 013 wuxuu ku xiran yahay tilmaamaha xadaynta effluent federaalka ee 40 CFR Qeybta 423 (Steam Electric Power Generating Point Category). Wasakheeyeyaasha laga filayo dheecaanadan ku salaysan 40 CFR Part 423 waa: nitrate nitrate nitrogen, fosfooraska, chlorides, iyo raadka wadarta carbon organic, wadarta aluminium, wadarta barium, copper wadarta, wadarta copper, wadarta birta, wadarta nickel, wadarta zinc, wadarta guud ee adag ganaax, wadarta adag la kala diro, iyo pH. Wasaqda dheeraadka ah ee suurtagalka ah ayaa ku jira warbixinta farsamada codsiga biyaha wasakhda warshadaha, Worksheet 2.0.

Nichols - Xarrington Station complex wuxuu isticmaalaa biyo caadi ah iyo nidaam qashin oo caadi ah. Ilaha biyuhu waa biyo la cabi karo oo la daweeyey oo ah biyo-

mareenka biyaha (oo laga helo magaalada Amarillo) iyo biyaha dhulka la soo celiyay. Dhammaan bilaatada nadaafadda waxaa loo mariyaa taangiga septic - biyo-mareenka nidaamka beerta. Labada Saldhig (Nichols iyo Harrington) qashinka nadiifinta biraha kiimikada ayaa dhexdhexaadiya hawsha waxaana lagu daraa munaaraddii qaboojinta oo la garaacay ka hor inta aan la tuurin waraabka. Dhammaan qashinka kale ee aan khatarta aheyn mugga yar ee aan khatarta ahayn, oo ay ku jiraan qashinka nadiifinta dabka, waxaa lagu qasaa munaaraddii qaboojinta ama dib loo isticmaali karaa sida qurxinta munaaradaha qaboojinta. Uma baahnid wax daaweyn ah oo lagu daweeyo biyaha qashinka ah ka hor inta aan waraabka la tuurin.

Translation to Spanish

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.

Solicitud de renovación del permiso TPDES de aguas residuales industriales

Compañía de Servicios Públicos del Suroeste () (), . La instalación ubicada en , en , Condado, Texas El complejo de instalaciones está buscando un TPDES con renovación del permiso del componente TLAP. Este permiso no autorizará una descarga de contaminantes en el agua en el estado. CN601481336 Opera Nichols/Harrington Electric Station, estaciones de generación eléctrica a gas (1,018 megavatios) y a gas (457 megavatios) RN100224641 un Complejo de generación de energía eléctrica es 8400 N. Lakeside Drive, Amarillo, TX 79108 Amarillo Alfarero 79108.

El borrador de la solicitud de renovación del permiso autoriza la descarga de escorrentía de aguas pluviales de forma intermitente y de flujo variable a través del desagüe 001; la escorrentía de aguas pluviales mezclada con la purga de la torre de enfriamiento, las aguas residuales de bajo volumen, los desechos de limpieza de metales y los desechos químicos de limpieza de metales de forma intermitente y de flujo variable a través de los desagües 003, 004, 005, 006, 007, 009, 011, 012 y 013; y la eliminación de la purga de la torre de enfriamiento, las aguas residuales de bajo volumen, los desechos de limpieza de metales, los desechos químicos de limpieza de metales, el agua del sello de la caldera y las aguas pluviales dirigidas al sistema de riego para regar el pasto y otros cultivos a una tasa de aplicación hidráulica que no exceda los 2.5 acres-pies/acre/año (efluente total) a través del riego de 1,239 acres de tierra equipada con estanques y bermas de aguas de cola. .

La descarga de aguas residuales de proceso de la estación eléctrica Nichols / Harrington a través de los desagües 003, 004, 005, 006, 007, 009, 011, 012 y 013 está sujeta a las pautas federales de limitación de efluentes en 40 CFR Parte 423 (Categoría de fuente puntual de generación de energía eléctrica de vapor). Los contaminantes esperados de estas descargas basadas en 40 CFR Parte 423 son: nitrógeno nítrico, fósforo, cloruros y trazas de carbono orgánico total, aluminio total, bario total, cobre total, hierro total, níquel total, zinc total, sólidos suspendidos totales, sólidos disueltos totales y pH. Los contaminantes potenciales adicionales se incluyen en el Informe técnico de aplicación de aguas residuales industriales, Hoja de trabajo 2.0.

El complejo de la estación Nichols - Harrington utiliza un suministro de agua común y un sistema común de eliminación de aguas residuales. Las fuentes de suministro de agua son agua potable y efluentes de aguas residuales tratadas (obtenidas de la ciudad de Amarillo) y aguas subterráneas recuperadas. Todas las aguas residuales sanitarias se dirigen a los sistemas de campo de drenaje de fosas sépticas. Para ambas estaciones (Nichols y Harrington), los desechos químicos de limpieza de metales se neutralizan en el proceso y se mezclan con la purga de la torre de enfriamiento antes de su eliminación por riego. Todos los demás desechos no peligrosos de bajo volumen, incluidos los desechos de limpieza junto al fuego, se mezclan con la purga de la torre

de enfriamiento o se reciclan como reposición de la torre de enfriamiento. No se requiere tratamiento de aguas residuales antes de su eliminación por riego.

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Scale 1:120,000

Counties on Page: Armstrong, Carson, Potter, Randall

SPS Property Boundries

209

210

184

27

211

POTTER

CARSON

RANDALL

ARMSTRONG

Stinnett

El Rancho

Bertrand

Webb

Masterson

McGee Lake

Pantex

St. Francis

Liberty

Parsley

Reef

Amarillo

Texas State Technical Institute

Rick Husband Amarillo International Airport

Panhandle

Burlington Northern Santa Fe Corporation

McClellan Creek

McClellan Creek

Conway

Lark

Washburn

Bravo

Claude

Salt Fork Red River

Mulberry Creek

Pistol Creek

Echo

CR 110

CR 121

CR 155

CR 125

CR 124

CR 115

CR 123

CR 119

CR 127

CR 126

CR 129

CR 130

CR 131

CR 132

CR 134

CR 136

CR 138

CR 139

CR 142

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CR 310

CR 1000

CR 101

CR 102

CR 103

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CR 146

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CR 5001

CR 695

CR 665

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CR 671

CR 1

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CR 3

CR 5

CR 7

CR 8

CR 9

CR 10

CR 11

CR 13

CR 155

CR 116

2373

2161

2462

2880

2250

3330

1912

2575

1151

683

245

136

60

40

287

207

293

294

228

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Scale 1:120,000

Counties on Page: Deaf Smith, Oldham, Potter, Randall

183

184

158

210

185

SPS Property Boundries

Harrington Station

Nichols Station

OLDHAM

POTTER

DEAF SMITH

RANDALL

Amarillo

Bushland

Wildorado

Bishop Hills

Palo Duro Wildorado

Amarillo College

Price Memorial College

Martin Lake

Willow Creek

Stinnett

El Rancho

Bertrand

Stalnaker Lake

Rich Husband Amarillo International Airport

Palo Duro

Tradewind

Hollywood

La Fayette

Sundown

Costilay

Beacon

Wheatstraw

Wheeler

Venetta

Mobley

Cottonwood

Cactus

Cherry

Yucca

Cliffside

Hastings

Givens

Reding

Diaz Ranch

Grande

Lake

Sierra Hills

Mile View

Ranch View

Estates

Patrick

Shannon

Durrett

Soncy

Hestair

Smeltzer

Glenn

Eastern

Whitaker

Folsom

Parsley

Webb

Monk

Horizon

Farmers

Farmer

Haimes

Chase

Grand

Tradewinds

Georgia

Chapman

Western

Bell

San Saba

Coulter

Dowell

Hill

Helium

Girl Scout

Jim Line

Laramie

Indian Spring

Indian Hill

Slaughter

Wildorado Creek

Dalhart Creek

Prefontaine Creek

Spring Creek

Rocky Creek

Thomas Draw

Negra Arroyo

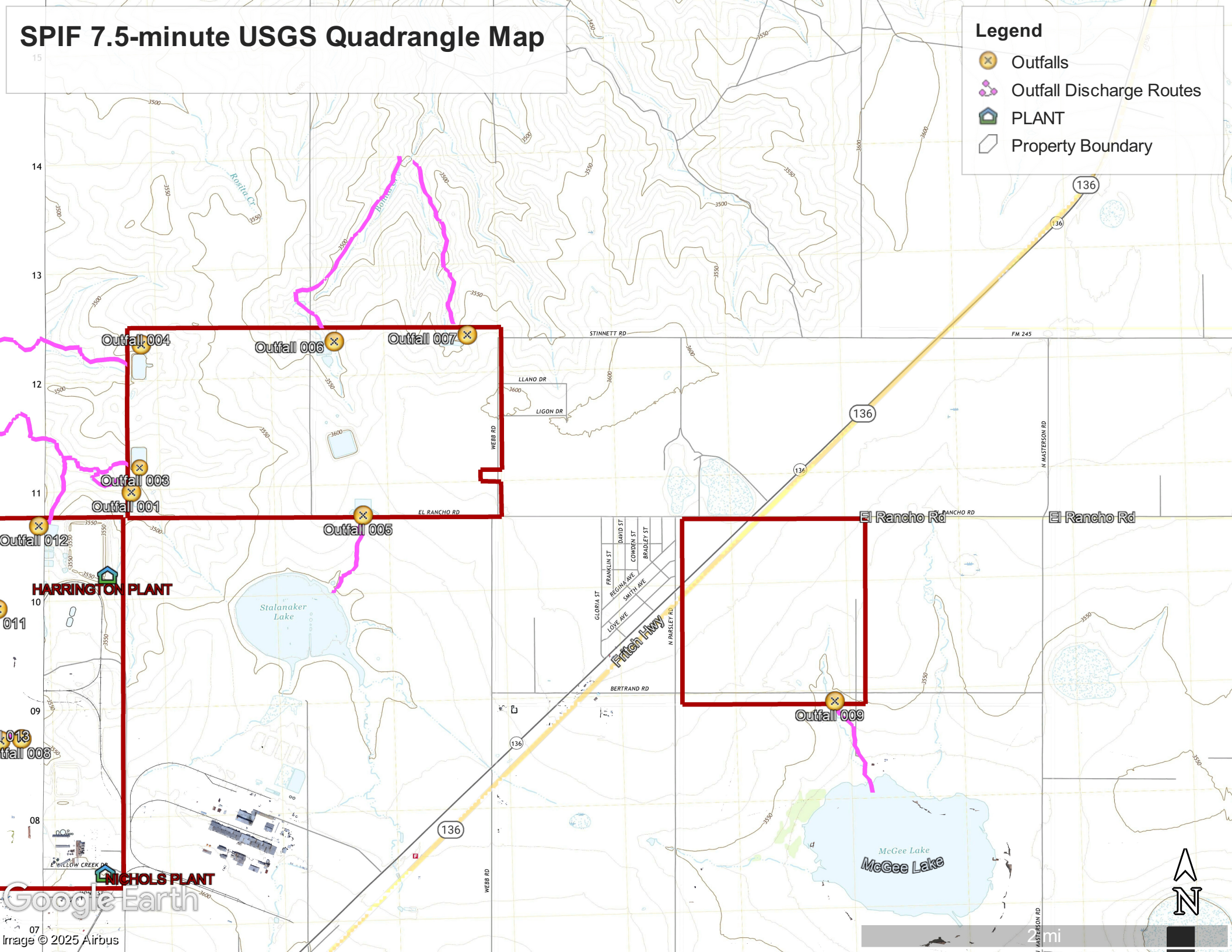
North Palo Duro Creek

Burlington Northern Santa Fe Corporation

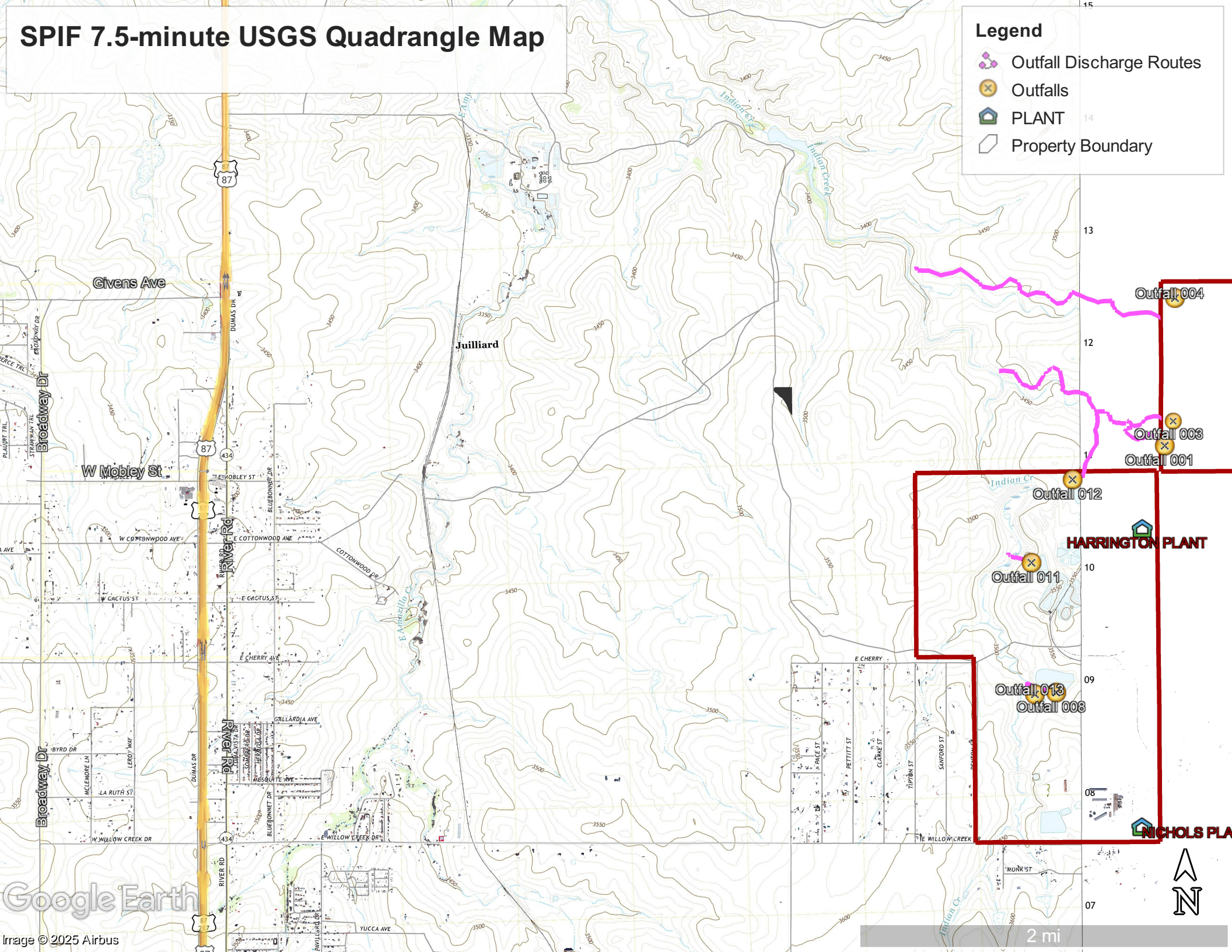
Burlington Northern Santa Fe Corporation

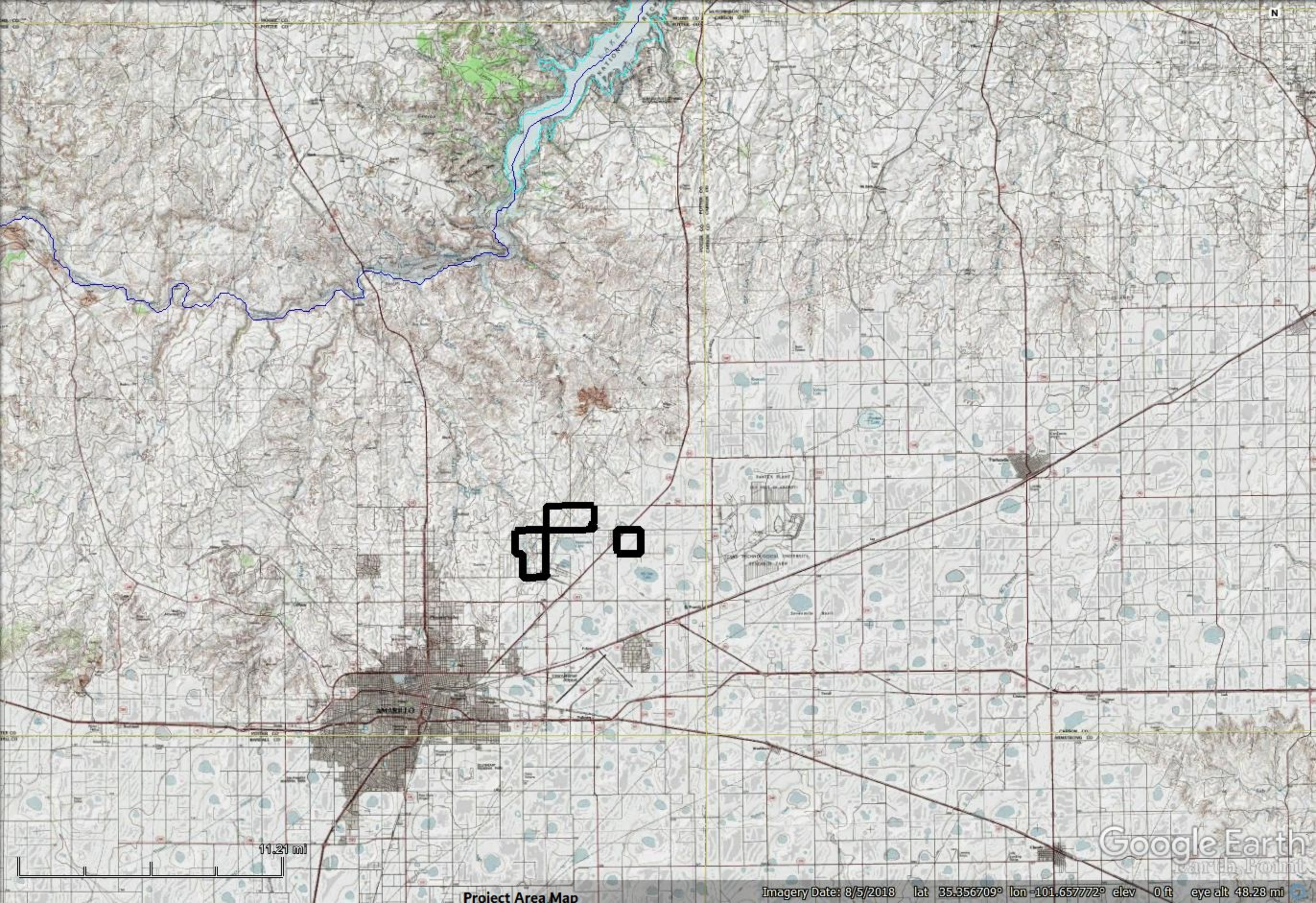
Burlington Northern Santa Fe Corporation

SPIF 7.5-minute USGS Quadrangle Map



SPIF 7.5-minute USGS Quadrangle Map





Project Area Map

Attachment T4
Pond Liner Descriptions

Pond 7

Liner in Pond 7 is a 24-inch fly ash soil cement along the sides and bottom. Placed in 4-9 inch lifts to a proctor density of 95% at optimum moisture per ASTM D-690-70. All lifts are 8% fly ash and topsoil.

Pond 10

Liner in Pond 10 is an 18-inch compacted clay liner placed in 3-8 inch lifts. The liner will meet a permeability equal to or less than 1×10^{-7} cm/sec. All lifts are 4% Bentonite and topsoil. The liner extends 8 ft. into the inner toe of the perimeter berm.

Pond 11

Liner in Pond 11 is a 24-inch compacted clay liner. Placed in 4-9 inch lifts to a proctor density of 95%. This liner will meet a permeability equal to or less than 1×10^{-7} cm/sec. All lifts are 4% Bentonite and clay topsoil. The upstream slope of the dam is protected with 24 inches of 100% fly ash cement.

Pond 15

Liner in Pond 15 is a 6-inch compacted clay liner along the inside slopes and bottom of topsoil and 4% Bentonite compacted to a proctor density of 98% at optimum moisture. A 6-inch layer of moistened and compacted 100% fly ash is then placed over the compacted clay. Authorization for the construction of this pond was received from the Texas Water Commission in July of 1987.

Pond 19

Liner in Pond 19 is a 12-inch compacted clay liner along the inside slopes and bottom of native clay and 2% Bentonite, placed in 6-inch lifts. A 6-inch layer of moistened and compacted 100% fly ash is then placed over the compacted clay. Authorization for construction of this pond was received from the Texas Water Commission in June of 1992.

Tab 6 T1

Cropping Plan

Crop Plan for

Southwestern Public Service Company

Nichols – Harrington Station

TCEQ Permit # WQ0001990000

May 2025

List of Tables

Table 1……Nichols – Harrington Irrigation Types, Crops, and Acreage
Table 2A…….Crop Information
Table 2B…….Nitrogen Requirements of Selected Crops
Table 3A…….Published Salt Tolerance of Selected Crops
Table 3B…….WAP Electrical Conductivity at 0-30” Depths for 2018 - 2022
Table 4……..2020-2021 NO_3 Projected Uptake Rates

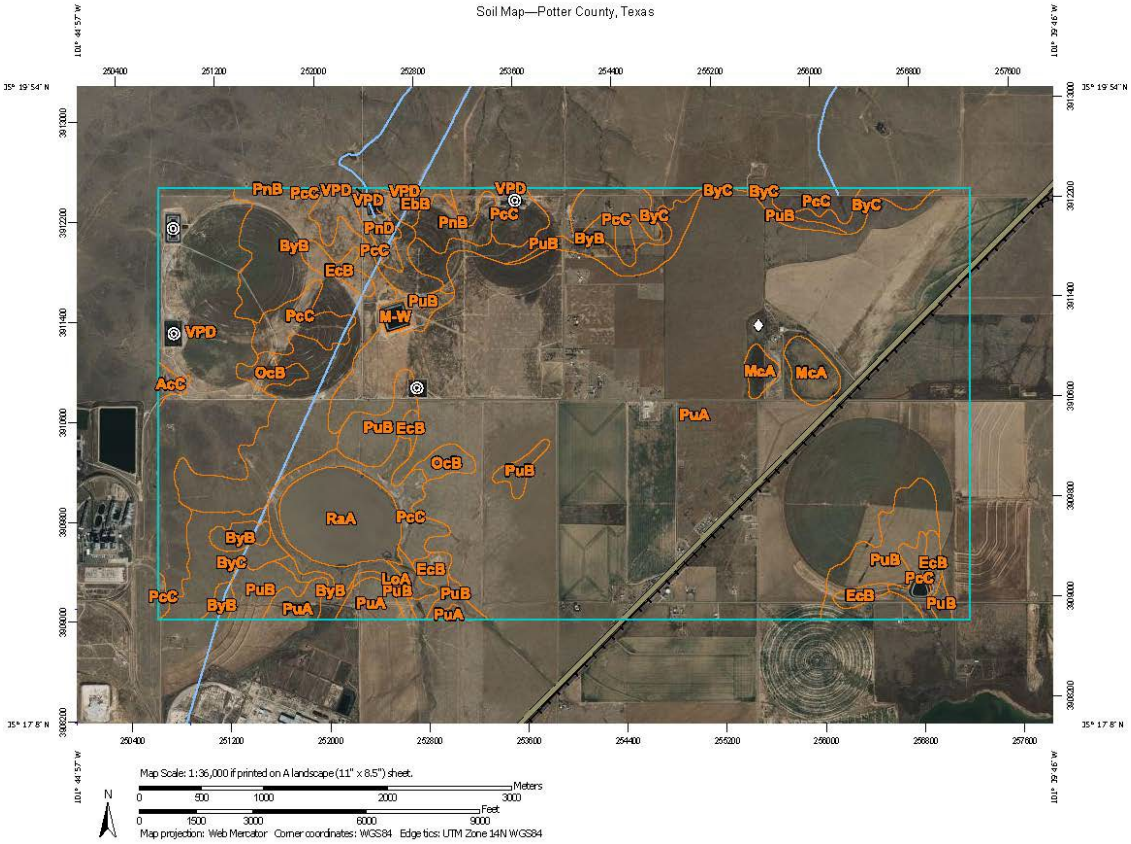
Part 1. Soil Maps and Descriptive Text

This section includes a general description of the soils being irrigated at the Nichols/Harrington Complex. Maps of each of the sections of land irrigated are included that show the soil series on each wastewater application plot (WAP). According to the Panhandle Groundwater Conservation District all land disposal areas at the Nichols/Harrington Complex are located at a minimum of 150 ft from potable and private water wells. The soil type overview map immediately below shows the approximate 150 ft buffer zone around the property and not the WAPs. There are no known recharge features on SPS property. Along with the maps are estimates of the acreage included in each area of interest (AOI). Each AOI is approximately equal to one of the sections of irrigated land. A description of each of the soil series encountered on the Nichols/Harrington irrigation system follows the soil maps.

After the soils information are tables that summarize information on the types and acreage of crops currently grown on the Nichols/Harrington Complex. All crops currently grown are perennial grasses. Table 1. contains information on the irrigation methods, crops grown, and acreage under cultivation for each WAP. Tables 2A and 2B have information on the types of crops grown including the growing seasons, nitrogen requirements, yield potential, leaching requirements, and harvesting methods. Tables 3A and 3B provides information on published salt tolerances of the selected crops and soil electrical conductivity data at the Wastewater Application Plots.

General Description– Soils at the Nichols – Harrington Plant are mainly in two map units – the Acuff-Paloduro-Olton group and the Pullman group. These two soils share the Estacado map units, and a generally high potential for cropland. There are six soil series that are involved in irrigation at this plant. They are Acuff loam, Estacado clay loam, Olton clay loam, Posey clay loam, Pullman clay loam, and Veal-Palo Duro association. The individual map units are further subdivided primarily based on the slopes into eleven soil map units.

All of the soils share a moderately alkaline clay loam subsoil and loam or clay loam surface soils that limit the rate of infiltration of irrigation and have good water holding capacity.


101° 44' 57" W
101° 39' 46" W
35° 19' 54" N
35° 17' 8" N
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255200
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256800
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3911400
3910600
3909800
3909000
3908200
PnB
PcC
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EbB
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ByB
EcB
PuB
M-W
AcC
OcB
RaA
ByC
LoA
PuA
McA
Map Scale: 1:36,000 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 500 1000 2000 3000
Feet
0 1500 3000 6000 9000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 23, Aug 24, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

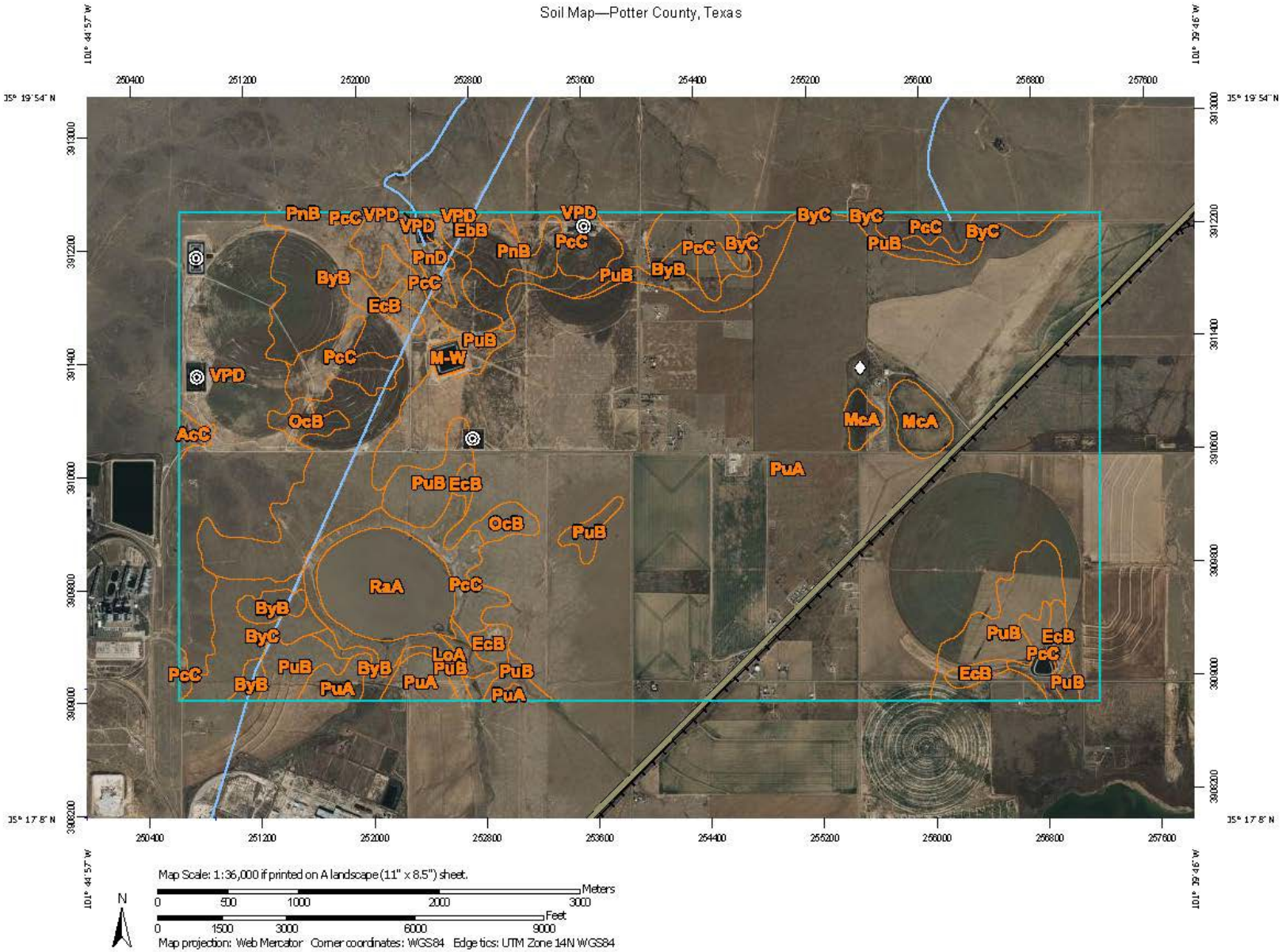
Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AcC	Acuff loam, 3 to 5 percent slopes	11.4	0.2%
ByB	Bovina clay loam, 1 to 3 percent slopes	537.9	9.6%
ByC	Bovina clay loam, 3 to 5 percent slopes	148.4	2.6%
EbB	Estacado clay loam, breaks, 1 to 3 percent slopes	19.9	0.4%
EcB	Estacado clay loam, 1 to 3 percent slopes	86.3	1.5%
LoA	Lofton clay loam, 0 to 1 percent slopes, occasionally ponded	13.5	0.2%
M-W	Water, miscellaneous	12.0	0.2%
McA	McLean clay, 0 to 1 percent slopes, occasionally ponded	60.2	1.1%
OcB	Olton clay loam, 1 to 3 percent slopes	45.1	0.8%
PcC	Pep clay loam, 3 to 5 percent slopes	424.6	7.6%
PnB	Plemons loam, 1 to 3 percent slopes	46.4	0.8%
PnD	Plemons loam, 5 to 8 percent slopes	28.9	0.5%
PuA	Pullman clay loam, 0 to 1 percent slopes	3,201.1	57.0%
PuB	Pullman clay loam, 1 to 3 percent slopes	368.2	6.6%
RaA	Randall clay, 0 to 1 percent slopes, frequently ponded	153.7	2.7%
VPD	Veal-Paloduro association, 3 to 8 percent slopes	453.7	8.1%
Totals for Area of Interest		**5,611.8**	**100.0%**

Soil overview maps showing the lateral extent of limiting soil properties superimposed on the lateral extent of the WAP and 150 ft buffer zones.


Soil Map—Potter County, Texas
101° 44' 57" W
101° 39' 49" W
35° 19' 54" N
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252800
253600
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255200
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3911400
3910600
3909800
3909000
3908200
PnB
PcC
VPD
EbB
PnD
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EcB
PuB
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AcC
RaA
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LoA
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McA
Map Scale: 1:36,000 if printed on A landscape (11" x 8.5") sheet.
Meters
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500
1000
2000
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Feet
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6000
9000
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

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- Streams and Canals

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- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

Nichols/Harrington Property Boundary

Nichols/Harrington 150' Buffer Zone

MAP INFORMATION

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Totals for Area of Interest		**5,611.8**	**100.0%**

Individual Soil Series Descriptions

AcB - Acuff loam, 1 to 3 percent slopes. This deep, well drained, gently sloping soil is on broad ridgetops and side slopes along drains in the Canadian Breaks. Slopes are convex and average about 2 percent. Areas are long and oval and range from 10 to 300 acres.

Typically the surface layer is dark brown, neutral loam about 11 inches thick. The subsoil extends to a depth of 80 inches or more. From 11 to 52 inches is brownish clay loam that is neutral in the upper part and moderately alkaline and calcareous below. From 52 to 65 inches is pink, calcareous clay loam that is about 40 percent calcium carbonate. From 65 to 80 inches is reddish yellow, calcareous sandy clay loam.

Under native range this soil is high in natural fertility. Permeability is moderate, and available water capacity is medium. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight The root zone is deep and is easily penetrated.

Included in some mapped areas are small tracts of Estacado, Paloduro, and Posey soils. Included soils make up less than 15 percent of any one mapped area.

Most of the acreage is rangeland. The production potential is moderate. The climax plant community is mainly short grasses and small amounts of mid grasses and perennial forbs. Proper stocking and controlled grazing are needed.

A few small areas are used for winter wheat, grain sorghum, and forage sorghum, mainly nonirrigated. The potential for row crops and small grain is high. In places, terraces, contour farming, and waterways are needed to reduce the hazard of water erosion. Crop residue on the surface and timely and limited tillage are effective in conserving moisture, slowing runoff, reducing the risk of soil blowing, and maintaining tilth. If the soil is irrigated, a well designed irrigation system, good water management, and fertilization are needed.

The potential is high for all urban use. Low strength, the only limitation, can be overcome through proper design and careful installation.

The capability subclass is IIIe irrigated and nonirrigated. The range site is Clay Loam.

AcC - Acuff loam, 3 to 5 percent slopes. This deep, well drained, gently sloping soil is on side slopes along draws in the Canadian Breaks. Slopes are convex. The gradient is dominantly 4 percent. Areas are long bands that range from 10 to 200 acres.

The surface layer is about 11 inches of dark brown, neutral clay loam. The subsoil extends to a depth of 80 inches or more. From 11 to 36 inches is reddish brown, moderately alkaline clay loam. From 36 to 64 inches is light brown, calcareous clay loam that is about 25 percent calcium carbonate. From 64 to 80 inches is reddish yellow, calcareous sandy clay loam.

Under native range this soil is high in natural fertility. Permeability is moderate, and available water capacity is medium. Runoff is medium, and the hazard of water erosion is severe. The hazard of soil blowing is slight. The root zone is deep and is easily penetrated.

Included in some mapped areas are small tracts of Estacado and Posey soils. Also included are a few small gravelly knolls of Tascosa soils. These included soils make up less than 15 percent of anyone mapped area.

The acreage is mainly rangeland. The production potential Is medium. The climax plant community is mainly short grasses and small amounts of mid grasses and forbs. Proper stocking and controlled grazing are needed.

A few small areas are used for winter wheat and forage sorghums, mainly nonirrigated. The potential for cultivated crops is medium. It is limited by the size of the field and by the slope. Terraces, waterways, and contour farming are needed to reduce the hazard of water erosion. Closely spaced high residue crops provide adequate cover and residue to protect the soil. Crop residue on the surface and minimum tillage are effective in con- serving moisture, slowing runoff, reducing the risk of soil blowing, and maintaining tilth.

The potential is high for urban use. Low strength and the slope, the only limitations, can be overcome through proper design and careful installation.

The capability subclass is IVe irrigated and nonirrigated. The range site is Clay Loam.

EsB - Estacado clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil occurs as bands on the side slopes of playas and near the outer margins of the High Plains. Slopes are convex. Areas range from 10 to 400 acres but are commonly less than 150 acres.

Typically the surface layer is about 12 inches of dark grayish brown-to-brown, moderately alkaline, calcareous clay loam. The subsoil extends to more than 80 inches. The upper 15 inches is brown, moderately alkaline, calcareous clay loam. The lower part is reddish yellow, moderately alkaline, calcareous clay loam that is about 25 percent calcium carbonate.

Under native range this soil is high in natural fertility. The high lime content, however, causes chlorosis, or yellowing of the leaves, in some plants. Permeability is moderate, and available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The root zone is deep and is easily penetrated.

Included in mapped areas are small tracts of Acuff, Olton, Posey, and Pullman soils. These included soils make up less than 15 percent of any one mapped area.
About half the acreage is cropland, both irrigated and non-irrigated. The principal crops are winter wheat and grain sorghum. The production potential is medium. Adequate amounts of crop residue on the surface and timely and limited tillage are effective in conserving moisture, slowing runoff, controlling soil blowing, and maintaining tilth. Terraces, waterways, and contour farming are used to dispose of excess rainfall. If the soil is to be irrigated, a properly designed irrigation system and good water management is needed. Fertilizer is also needed. Some crops respond to applications of trace elements, such as iron.
Some of the acreage is rangeland. The production potential is medium. The climax plant community is a mixture of short and mid grasses and small amounts of forbs. Proper stocking and controlled grazing are needed.
The potential is high for urban use. Surface texture, low strength, and the risk of corrosion are the main limitations. These limitations can be overcome by proper design and skillful installation.
The capability subclass is IIIe irrigated and non-irrigated. The range site is Clay Loam.

EsC - Estacado clay loam, 3 to 5 percent slopes. This deep, well-drained, gently sloping soil is on side slopes of playas and along creeks and draws. Slopes are convex. The dominant gradient is about 4 percent. Areas are long and oval and range from 10 to 200 acres.
Typically the surface layer is brown, moderately alkaline, calcareous clay loam about 9 inches thick. The subsoil extends to more than 60 inches. The upper 12 inches is light brown, moderately alkaline, calcareous clay loam. The lower part is light reddish brown, moderately alkaline, calcareous clay loam that is 20 to 50 percent visible calcium carbonate.
Under native range this soil is high in natural fertility. It has a high lime content. In some plants chlorosis, or yellowing of the leaves, is apparent because of a deficiency of trace elements such as iron. Permeability is moderate, and available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The root zone is deep and is easily penetrated.
Included in some mapped areas are small tracts of Palo Duro, Posey, and Potter soils. These included soils make up less than 15 percent of any one mapped area.
The acreage is mainly rangeland. The production potential is medium. The climax plant community is a mixture of short and mid grasses and a few forbs. Proper stocking and controlled grazing are needed.
A few small areas are used as cropland, mainly non-irrigated. The principal crops are winter wheat and grain sorghum. The potential for cultivated crops is moderate. Slope and the hazard of water erosion are .the main limitations. Skillful management is needed to control water erosion and soil blowing. Crop residue on the surface and minimum tillage are effective in conserving moisture, slowing runoff, controlling soil blowing and maintaining tilth. Terraces, waterways, and contour farming are needed to dispose of excess rainfall. If this soil is to be irrigated, a planned irrigation system, good water management, and fertilization are needed.
The potential is high for most urban use. Surface texture, low strength, and the risk of corrosion are the main limitations. These limitations can be overcome through proper planning and construction.
The capability subclass is IVe irrigated and non-irrigated. The range site is Clay Loam,

OcB - Olton clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil occurs along drains, above playas and ridges on the margins of the High Plains. Slopes are plane to concave. Areas are long and oval and range from 20 to 500 acres.
Typically the surface layer is about 10 inches of dark brown, mildly alkaline clay loam. The subsoil extends to a depth of 70 inches or more. The upper 45 inches is reddish brown, mildly alkaline clay loam. The next 19 inches is yellowish red, moderately alkaline, calcareous clay loam that is about 30 percent calcium carbonate. The lower 6 inches is reddish yellow, moderately alkaline, calcareous clay loam.
Natural fertility is high. Permeability is moderately slow, and available water capacity is high. Surface runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The root zone is deep and is easily penetrated.
Included in a few mapped areas are a few small tracts of Acuff, Amarillo, Estacado, and Pullman soils. These included soils make up less than 15 percent of any one mapped area.
Most of the acreage is rangeland. The production potential is medium. The climax plant community is mainly a dense cover of short grasses and a small amount of mid grasses and forbs. Proper stocking and controlled grazing are needed to prevent overuse.
Some areas of this soil are used as cropland, mainly non-irrigated. The chief crops are winter wheat, grail, sorghum, and com. The production potential is high. Terraces, waterways, and contour farming are needed to reduce the hazard of water erosion. Crop residue on the surface and minimum tillage are effective in conserving moisture, slowing runoff, controlling soil blowing, and maintaining tilth. If the soil is irrigated, a planned irrigation system, water management, and fertilization are needed.

The potential is medium for urban uses. Low strength and the shrink-swell potential, the main limitations, can be overcome through proper planning, design, and construction.
The capability subclass is IIIe irrigated and non-irrigated. The range site is Clay Loam.

PcB - Posey clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil is on ridgetops and side slopes of playas and along draws. Slopes are convex. Areas are long and oval and range from 20 to 1 00 acres.
Typically the surface layer is brown clay loam about 7 inches thick. The subsoil to 18 inches is reddish brown clay loam. Below this to a depth of 80 inches is yellowish red, calcareous clay loam that is about 25 percent calcium carbonate. This soil is moderately alkaline and calcareous throughout.
Natural fertility is medium. Permeability is moderate, and the available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The high lime content of this soil causes chlorosis, or yellowing of the leaves, in some plants. The root zone is deep and is easily penetrated.
Included in some mapped areas are small tracts of Acuff, Estacado, and Potter soils. These included soils make up less than 20 percent of any one mapped area.
The acreage is mainly rangeland. The production potential is medium. The climax plant community is mainly mid and short grasses and a few scattered shrubs and forbs. Proper stocking and controlled grazing are needed.
A few areas are used as cropland, mainly non-irrigated winter wheat A few irrigated areas are in grain sorghum and corn. The potential is medium for cultivated crops. Good management is needed to control water erosion and soil blowing. Residue producing crops, managing residue, minimum tillage, and contour farming and terracing are effective in protecting the soil. Stubble mulching is the best form of residue management. If the soil is irrigated, a well-planned irrigation system and water management is needed. Fertilizer is also needed. Some crops respond to trace elements such as iron.
The potential is high for most urban uses. Excess lime as it affects plants, the risk of corrosion, and the clayey surface texture are the only limitations.
The capability subclass Is IIIe irrigated and non-irrigated. The range site is Loamy.

PcC - Posey clay loam, 3 to 5 percent slopes. This deep, well-drained, gently sloping soil is on side slopes along creeks and draws. Slopes are smooth and convex. Areas are long and narrow and range from 15 to 200 acres.
The surface layer is brown, moderately alkaline, calcareous clay loam about 8 inches thick. From 8 to 17 inches is light brown, moderately alkaline, calcareous clay loam. Below this to a depth of 80 inches is a light reddish brown, moderately alkaline, calcareous clay loam that is about 30 percent calcium carbonate.
Natural fertility is medium. Permeability is moderate, and available water capacity is medium. Surface runoff is medium, and the hazard of water erosion is severe. The hazard of soil blowing is moderate. The high lime content causes deficiencies of trace elements such as iron in some plants. The root zone is deep and is easily penetrated.
Included in mapping are a few small areas of Bippus, Estacado, Palo Duro, and Potter soils. The included soils make up less than 15 percent of any one mapped area.
Most of the acreage is rangeland. The production potential is medium. The climax plant community is mid and short grasses and scattered shrubs and forbs. Proper stocking and controlled grazing are needed to maintain productivity.
A few areas of this soil are used as cropland, mainly non-irrigated. The principal crop is winter wheat, which is also grazed by livestock. Because of slope and the hazard of water erosion, the potential is low for use as cropland. Terracing, contour farming, and careful management of crop residue are needed to control water erosion and soil blowing. If this soil is irrigated, a closely spaced crop that produces large amounts of residue should be grown continuously.
The potential is high for urban uses. The risk of corrosion and low strength, the main limitations, can be offset by proper planning and special construction techniques.
The capability subclass is IVe irrigated and non-irrigated. The range site is Loamy.

PcD - Posey clay loam, 5 to 8 percent slopes. This deep, well drained sloping soil is along creeks and draws. The slopes are convex. Areas are long and narrow and range from 10 to 100 acres.
Typically the surface layer is about 7 inches of light brown clay loam. The subsoil extends to a depth of about 80 inches. It is reddish brown clay loam in the upper part and light reddish brown clay loam that is about 35 percent calcium carbonate in the lower part.
This soil is moderately alkaline and calcareous throughout.
Natural fertility is medium. Permeability is moderate, and available water capacity is medium. Surface runoff is rapid and the hazard of water erosion is severe. The hazard of soil blowing is moderate. The high lime con- tent of this soil causes chlorosis, or yellowing of the leaves, in some plants.
Included in mapping are small areas of Estacado and Veal soils. These included soils make up less than 15 percent of anyone mapped area.

The acreage is entirely rangeland. The production potential is medium. The climax plant community is a mixture of mid and short grasses and a few scattered shrubs and forbs. Proper stocking and controlled grazing are needed to help maintain productivity.
This soil is not suitable for use as cropland because of the slope and the hazard of water erosion.
The potential is high for most urban uses. The risk of corrosion and low strength are limitations that can be overcome through sound planning and construction.
The capability class is VIe. The range site is Loamy.

PuA - Pullman clay loam, 0 to 1 percent slopes. This deep, well-drained soil is on broad smooth plains. Most areas extend in a continuous pattern over several thousand acres, interrupted only by playa depressions. Slopes are plane to slightly convex and have dominant gradients of about 0.5 percent.
Typically, the surface layer is brown, neutral clay loam about 7 inches thick. From 7 to 33 inches is dark brown, mildly to moderately alkaline clay. From 33 to 54 inches is moderately alkaline, calcareous reddish brown clay. From 54 to 80 inches is pink, calcareous clay loam that is about 30 to 50 percent calcium carbonate.
Natural fertility is high. The soil is very slowly permeable and has a medium available water capacity. Surface runoff is slow. The hazards of water erosion and soil blowing are slight. The soil has a deep root zone that is not easily penetrated by plant roots because of the clayey texture.
Included in mapping are a few small areas of Estacado, Olton, Posey, and Randall soils. These included soils make up less than 10 percent of any one mapped area.
This soil is mainly used as cropland, both non-irrigated and irrigated. The potential is high. The principal crops are winter wheat, grain sorghum and corn. Crop residue left on the surface and minimum tillage are effective in conserving moisture, controlling soil blowing and maintaining tilth. If the soil is irrigated, a planned irrigation system, good water management, and fertilization are needed.
Some of the acreage is rangeland. The production potential is medium. The climax plant community is mainly short grasses and a small amount of mid grasses and forbs. Proper stocking and controlled grazing are effective in maintaining productivity.
The soil has low potential for most urban uses. The shrink-swell potential, low strength, and risk of corrosion are the main limitations. Sound planning, adequate design, and careful construction are needed.
The capability subclass is IIs irrigated and IIIe non-irrigated. The range site is Clay Loam.

PuB - Pullman clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil is near playas and on side slopes along draws. Slopes are smooth and slightly convex. Areas are long and narrow and range from 10 to 350 acres.
Typically, the surface layer is brown, mildly alkaline clay loam about 6 inches thick. The subsoil extends to a depth of 72 inches or more. The upper part is dark brown, moderately alkaline clay. The middle part is brown, calcareous clay loam. The lower part from about 42 to 72 inches is yellowish red, calcareous clay loam that is about 25 percent calcium carbonate masses and concretions.
Natural fertility is high. Permeability is very slow, and available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The soil has a deep root zone that is not easily penetrated by plant roots because of the clayey texture.
Included in some mapped areas are a few small tracts of Estacado, Olton, Posey, and Randall soils. These included soils make up less than 10 percent of any one mapped area.
This soil is mainly used for non-irrigated wheat and grain sorghum. A few areas are irrigated. The potential is high for crops. Adequate crop residue on the surface and minimum tillage are effective in controlling water erosion and conserving soil moisture. Terraces, water- ways, and contour farming are needed to control runoff. If the soil is irrigated, a well-designed irrigation system and good water management is needed. Most crops respond well to applications of fertilizer.
Some of the acreage is rangeland. The production potential is medium. The climax plant community is mainly a short grass prairie and small amounts of mid grasses and forbs. .
The potential is low for most urban uses. The shrink-swell potential, low strength, and risk of corrosion are the chief limitations. Good planning, adequate design, and skillful construction are needed.

VPD - Veal-Palo Duro association, undulating. This association consists of deep, well-drained soils on low hills and ridges that have gently sloping to sloping side slopes. The hills and ridges are separated by narrow, branching draws. Slopes are convex and range from 3 to 8 percent. The Veal soil is on ridgetops and upper side slopes, and the Palo Duro soil is on lower side slopes and foot slopes. Mapped areas are irregular in shape and range from 50 to 600 acres.
Veal and similar soils make up about 50 percent of this association, Palo Duro and similar soils 40 percent, and Bippus, Potter, and Tascosa soils 10 percent. Areas are large enough to be mapped separately. Because use and management are similar, however, separation is not justified.

The surface layer of this Veal soil is brown, moderately alkaline, calcareous loam about 6 inches thick. From 6 to 14 inches is light brown clay loam. Below this to a depth of 60 inches is pinkish gray, calcareous clay loam that is about 45 percent calcium carbonate.

Natural fertility of this Veal soil is low. Permeability is moderate, and available water capacity is medium. Surface runoff is medium. The hazard of water erosion is severe in areas bare of vegetation. The hazard of soil blowing is moderate. The high lime content causes chlorosis in some plants.

The Palo Duro soil typically has a dark brown, moderately alkaline, calcareous clay loam surface layer about 12 inches thick. From 12 to 80 inches is brown, moderately alkaline, calcareous clay loam that contains threads and films of calcium carbonate.

Natural fertility of this Palo Duro soil is high. Permeability is moderate, and available water capacity is high.

Surface runoff is rapid. The hazard of water erosion is severe. The hazard of soil blowing is moderate.

Rangeland is the main use of this association. The production potential is medium. The climax plant community is a mixture of mid and short grasses and scattered shrubs and forbs. Proper stocking and controlled grazing are needed.

This association is not suited to farming because of the slope and the hazard of erosion, and also because the Veal soil is high in lime content and is droughty.

The potential is high for most urban uses. Slope and low strength, the main limitations, can be overcome through proper design and construction.

The capability subclass is VIe. The range site is Loamy for Veal soil and Hardland Slopes for Palo Duro soil.

Types of crops and acreage of each crop (Permit item # 1, page 25)

Table 1.
Nichols – Harrington Irrigation Types, Crops, and Acreage

Plot No	Acreage		Type of Irrigation	Crop		
	2023	2024		2023	2024	2025
26	110.1	59	Row & Furrow	Native Grass/CRP Mix	Native Grass/CRP Mix	Native Grass/CRP Mix
27	88.1	12	Row & Furrow	Native Grass/CRP Mix	Native Grass/CRP Mix	Native Grass/CRP Mix
28	34.8	38	Row & Furrow	Native Grass/CRP Mix	Native Grass/CRP Mix	Native Grass/CRP Mix
29	39.5	19	Row & Furrow	Native Grass/CRP Mix	Native Grass/CRP Mix	Native Grass/CRP Mix
S2	99.6	99.6	Center Pivot	No irrigation	No irrigation	Evaluating
S3	93.2	93.2	Center Pivot	No irrigation	No irrigation	Evaluating
S4	219	219	Center Pivot	Irrigate Established Jose Wheat grass	Irrigate Established Jose Wheat grass	Irrigate Established-Jose Wheat grass
S5	60	60	Center Pivot	Irrigate Existing Jose Wheat grass	Irrigate Existing Jose Wheat grass	Irrigate Existing Jose Wheat grass
S6	103	103	Center Pivot	Irrigate Existing Jose Wheat grass	Irrigate Existing Jose Wheat grass	Irrigate Existing Jose Wheat grass
S7 (Quarters 1-3)	276	276	Center Pivot	Irrigate Existing Jose Wheat grass	Irrigate Existing Jose Wheat grass	Irrigate Existing Jose Wheat grass
S7 (4th Quarter - SE)	92	92	Center Pivot	Irrigate Existing Bermuda grass	Irrigate Existing Bermuda grass	Irrigate Existing Bermuda grass
S8	144.4	144.4	Center Pivot	Plant preconditioning hay grazer crop followed by planning Jose wheatgrass	Irrigate established Jose Wheat grass	Irrigate established Jose Wheat grass

Growing seasons (#2), harvesting methods (#6), number of harvests (#7) of each crop

Table 2A. Crop Information

Plot No	Acreage	Growing Season	Crop (2023-2024)	2023-2024 Harvesting Method	Crop Yield (tons/acre)	Leaching Required* (%)
S2	99.6		No Crop			15.7
S3	93.2		No Crop			15.7
S4	219	Mar. –May Sep.-Nov.	San Jose Wheatgrass	Grazing		15.9
S5	60	Mar. –May Sep.-Nov.	San Jose Wheatgrass	Grazing		15.9
S6	103	Mar. –May Sep.-Nov.	San Jose Wheatgrass	Grazing		15.9
S7 (Quarters 1-3)	276	Mar. –May Sep.-Nov.	San Jose Wheatgrass	Grazing		15.9
S7 (4th Quarter - SE)	92	Jun.-Sep.	Bermuda Grass	Grazing		19.0
S8	144.4	Mar. –May Sep.-Nov.	San Jose Wheatgrass	Grazing		15.9
Total wheatgrass	802.4					
Total Bermuda Grass	92					
Oats	192.9					

*Leaching Required determined by LR = ECw / (5 ECe - ECw) where ECe = maximum allowable conductivity of soil solution; and ECw is electrical conductivity of effluent.
Reference: Food and Agricultural Organization (FAO) of the United Nations papers 24 and 56.

LR = ECw / (5 ECe - ECw)

	Bermuda (dS/m)	Wheatgrass (dS/m)	Sorghum/ Haygrazer (dS/m)	Oats (dS/m)
ECw (Based on average irrigation pond conductivity values from 01/2020-08/2024.monthly irrigation data).	6.8	6.8	6.8	6.8
ECe (90% Yield from Table 3)	8.5	9.9	7.4	10*
LR =	0.190	0.159	0.226	0.158

*For Barley

Nutrient requirements of each crop (#3)

Annual soil analyses are used to determine if sufficient nutrient components are present in the soil to achieve desired yields. Commercial fertilizer would be added only when available nutrients in the soil and anticipated nutrient application from wastewater application are not adequate to maintain a viable crop. The wastewater from the Nichols/Harrington complex contains sufficient nitrogen for crop nutrient requirements.

Crop nitrogen needs at the N/H complex are determined from published data and summarized for multiple crops in Table 2B. Highlighted data are from those crops grown at the N/H WAP.

Table 2B: Nitrogen Requirements of Selected Crops

Crop	Potential uptake (kg/ha/year)	[1.] Adjusted uptake (kg/ha/year)	Potential uptake (lb/ac/year)	[1.] Adjusted uptake (lb/ac/year)	
Wheat, winter + crop	280	336	250	300	
Wheat, crop *	160	192	143	171	
J. wheat grass	238	286	212	255	
Hay grazer	169	203	151	181	
Coastal Bermuda* (low)	400	480	357	428	
Coastal Bermuda* (high)	675	810	602	723	
Tall Fescue*	325	390	290	348	**
Corn	202	242	180	216	
Alfalfa	499	599	445	534	
Soybeans	252	302	225	270	
Cotton	104	125	93	111	
Grain sorghum	250	300	223	268	
Oats (barley specifications) *	125	150	111.5	134	

Source: Borrelli and Fedler, 1988.

[1.] The plant's uptake plus additional 20% for denitrification and volatilization.

* EPA Process Design Manual Land Treatment of Municipal Wastewater 625/1-81-013, 1981

** Used Tall Fescue as a surrogate for Jose Tall Wheatgrass

IV. Supplemental watering requirements (#4) and TDS Speciation.

No areas will be irrigated more than the permitted allowable limit. No supplemental watering is planned.

TDS Speciation
The cation-anion balance and TDS to EC ratio are calculated as recommended by Standard Methods (1999) using the equation and acceptance criteria below:

Anion-Cation Balance

$$\% \text{ difference} = 100 \frac{\Sigma \text{ cations} - \Sigma \text{ anions}}{\Sigma \text{ cations} + \Sigma \text{ anions}}$$

and the typical criteria for acceptance are as follows:

Anion Sum *meq/L*	Acceptable Difference
0–3.0	±0.2 meq/L
3.0–10.0	± 2%
10.0–800	5%

QC/QA Results for September 2023 – August 2024 Pond Samples

Cation-anion charge balance ratio: -1.99%
Cation-anion ratio: 0.96
Measured TDS to EC Ratio: 0.59
Calculated TDE to EC Ratio: 0.71

The QC/QA evaluation of the analytical parameters described above demonstrates the water analysis is accurate and the results should not be skewed.

Salt tolerances of each crop (#5)
The crops being cultivated at the Nichols/Harrington Complex have good salt tolerance. Table 3A shows published data on salt tolerance of each crop type. The salinity of the soil saturation extracts from 2020 – 2024 soil samples collected at Nichols/Harrington WAPs at the 0 – 30-inch depth are shown in Table 3B. Comparing Tables 3A and soil conductivity 5-year average of 8.0 from Table 3B suggest 90% to ~100 % crop yields for the Bermuda and wheatgrass WAPs.

Table 3A. Published Salt Tolerance of Selected Crops

		Yield Potential				
	100%	90%	75%	60%	50%	0%
Crop	Soil Salinity ECe	Soil Salinity ECe	Soil Salinity ECe	Soil Salinity ECe	Soil Salinity ECe	Soil Salinity ECe
Tall Wheat Grass	7.5	9.9	13	16.8	19	31
Bermuda Grass	6.9	8.5	11	13.4	15	23
Sorghum/Hay grazer	6.8	7.4	8.4		9.9	13
Oats	8	10	13		18	28

Data from FAO Irrigation and Drainage Paper 29 - Water Quality for Agriculture

ECe means average root zone salinity as measured by electrical conductivity of the saturation extract of the soil, reported in dS/m.

Table 3B. WAP Electrical Conductivity at 0-30" Depths 5-Year Average

EC Average of EC (mmho/cm) Year / Soil Depth	Wastewater Application Plot S2	S3	S4	S5	S6	S7N	S7S	S8	Average
2020	**5.3**	**5.6**	**5.2**	**5.5**	**7.1**	**8.6**	**6.7**		**6.3**
0-6	4.9	5.2	4.4	4.5	4.6	6.2	5.7		5.1
6-18	4.9	5.3	4.5	5.2	6.5	8.5	6.4		5.9
18-30	6.1	6.2	6.6	6.9	10.2	11.1	8.0		7.9
2021	**5.8**	**6.7**	**5.7**	**5.9**	**6.0**	**9.5**	**7.5**		**6.8**
0-6	4.9	5.6	4.1	4.0	4.1	10.4	4.8		5.5
6-18	5.8	6.7	6.4	5.8	6.1	6.9	8.4		6.6
18-30	6.7	7.9	6.6	7.9	7.7	11.2	9.3		8.2
2022	**7.1**	**7.0**	**11.1**	**9.1**	**9.4**	**14.2**	**11.2**		**10.3**
0-6	7.2	7.2	9.8	8.3	9.1	12.8	10.3		9.5
6-18	6.8	6.5	12.8	10.1	8.8	14.1	11.6		10.7
18-30	7.3	7.3	10.8	9.0	10.4	15.5	11.7		10.6
2023	**7.1**	**8.3**	**9.5**	**8.8**	**8.1**	**8.9**	**7.1**		**8.4**
0-6	6.1	7.6	8.7	8.1	7.2	7.3	5.7		7.4
6-18	7.8	8.7	8.8	8.8	7.6	8.3	6.8		8.2
18-30	7.3	8.7	11.0	9.4	9.4	11.0	8.8		9.6
2024	**4.9**	**6.0**	**9.6**	**9.8**	**7.7**	**10.6**	**7.7**	**8.9**	**8.5**
0-6	3.2	4.0	8.9	8.4	5.2	8.7	6.1	9.8	7.1
6-18	5.1	6.2	9.4	10.2	7.1	10.1	7.5	7.7	8.2
18-30	6.6	7.7	10.6	11.0	10.8	12.9	9.6	9.3	10.1
Average	**6.0**	**6.7**	**8.2**	**7.8**	**7.6**	**10.3**	**8.0**	**8.9**	**8.0**

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Soil analysis for nutrients has shown phosphorous to be satisfactory.

Table 4 provides nitrogen removal rates and projected nitrogen in the soil for each plot as determined from soil nitrogen data and most recent nitrogen loading for each WAP.

Table 40: 2023-2024 NO_3 Projected Uptake Rates (Part 3, Cropping System, page 25 of permit)

Plot	Crop		Crop Nitrogen Permit Limit (lb/Ac)	2023 Soil Analysis Average (lbs/NO_3-N/Acre)			2023 Soil Analysis Average (lbs/NO_3-N/Acre) 0-30 " Depth	*Irrigation N Mass Loading Application Rate Mass (September 1, 2023-August 31, 2024)	2024 Soil Analysis Average (lbs/NO_3-N/Acre)			2024 Soil Analysis Average (lbs/NO_3-N/Acre) 0-30 " Depth
				0-6	6-18	18-30			0-6	6-18	18-30	
S2	Oats/no crop		272	128	143	78	348	2	112	173	66	351
S3	Oats/no crop		272	104	133	95	332	3	64	86	79	230
S4	Wheat		272	51	85	146	282	130	52	39	83	174
S5	Wheat		272	51	86	91	229	147	33	31	73	137
S6	Wheat		272	36	64	108	208	17	65	56	61	182
S7N	Wheat		272	48	109	144	302	56	49	21	72	142
S7S	Bermuda		272	18	36	58	112	69	13	10	32	55
S8	Haygrazer/ Wheetgrass		272	47	37	24	108	86	4	17	16	37

Projected Removal Rates

Average Uptake Rates (lb/Ac) From Column M		March 29, 2021 Permit	Standard Deviation (lb/Ac)		
Wheatgrass	251	272	187		
Bermudagrass	268	272	187		

Average uptake rates from 2013 -2024.

Tab T6 T2

Soil Monitoring Data Summary

EXECUTIVE SUMMARY

TPDES Permit WQ0001990000 OTHER REQUIREMENTS 15. J. Soil Testing Plan, (Page 23) requires upon the next permit action (renewal or amendment) the permittee shall summarize all soil monitoring data and submit this summary as an attachment to the permit application. Average yearly trend soil nitrate and conductivity charts from 2014-2025 are provided at three depths between 0-30 for each Wastewater Application Plot (WAP) as required in Other Requirement 25 (page 28) and reported. A facility map is also provided showing the location of the irrigation ponds and WAP. The trend for calculated Nitrate-Nitrogen at the 0 – 30" depth is downward. Once the nitrate loading reduction plan specified in OTHER REQUIREMENTS 24, (page 27) of the previous permit issued November 29, 2017, is fully implemented significant further reduction of soil nitrate in the soil profile should occur. The City of Amarillo Biological Nutrient Removal project construction was completed in January 2023. The conversion lowers total nitrate-N in the city effluent to < 10 ppm.

NITROGEN

Total Nitrogen (TN) (= Total Kjeldahl Nitrogen (TKN) + Nitrate-nitrogen) of the irrigation wastewater is measured monthly. Total Nitrogen (TN) of the soil profile at the 0 to 30-inch depths is determined annually from soil samples that are collected from April through June of each year.

CONDUCTIVITY

Conductivity of the saturated soil extract is measured annually from soil samples that are collected from April through June to provide an indication of the potential for reduction in yield because of soluble salt buildup in the soil. The annual Cropping Plan provides additional salt tolerance and crop yield information.

SODIUM ADSORPTION RATIO

SAR of the saturated soil extract is measured annually from soil samples that are collected from April through June to provide an indication of the potential for reduction in yield because of soluble salt buildup in the soil. The annual Cropping Plan provides additional salt tolerance and crop yield information.

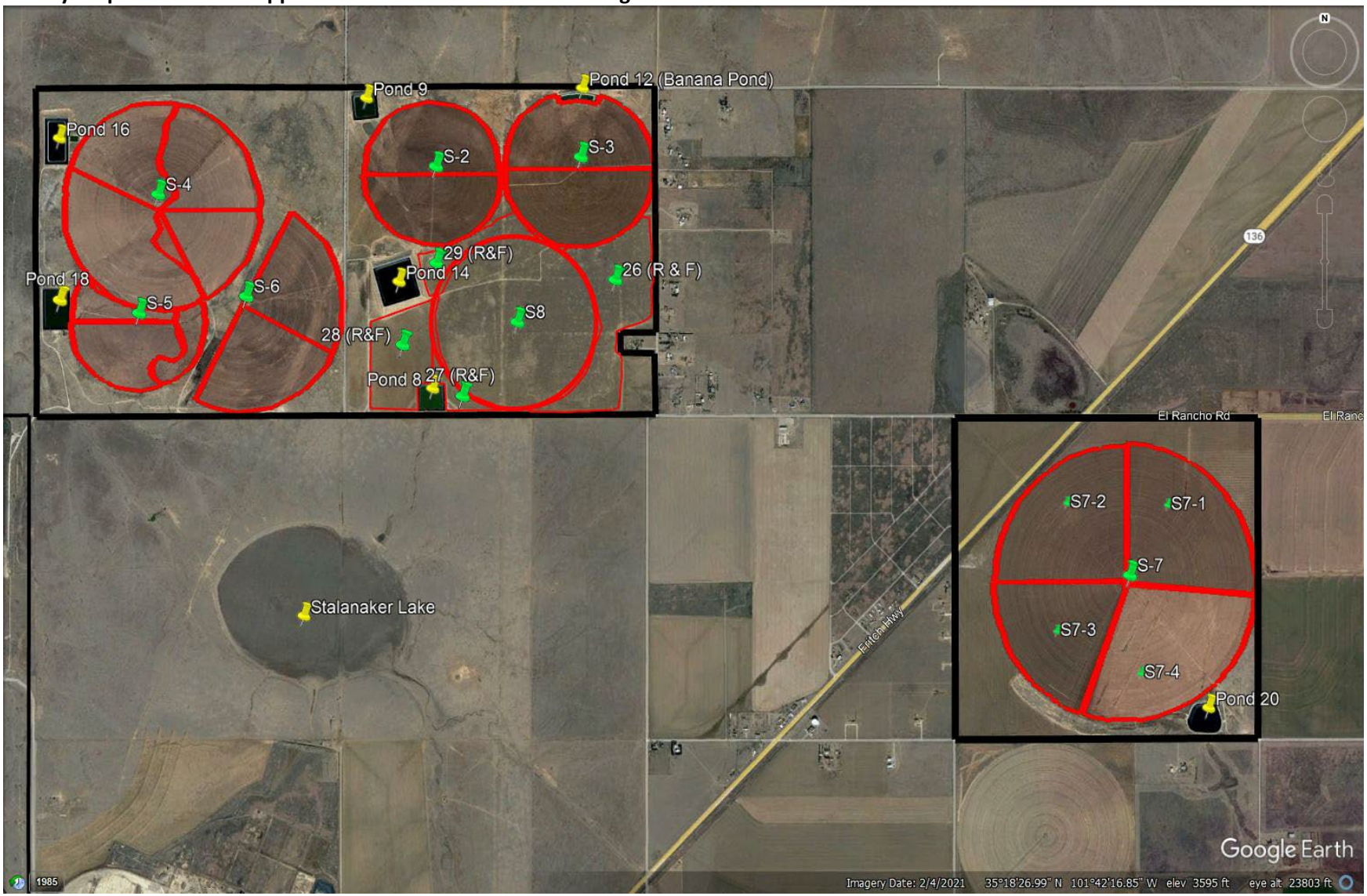
CALCIUM

CALCIUM of the saturated soil extract is measured annually from soil samples that are collected from April through June to provide an indication of the soil amendment applications e.g. gypsum, calcium chloride, to lower SAR in the soil profile. The annual Cropping Plan provides additional salt tolerance and crop yield information.

The charts below show the trends at depths of 0-30" from 2014-2025. A more detailed description is provided in the annually submitted Cropping Plan. Tables of data are also provided.

FACILITY MAP

Facility Map: Wastewater Application Plots & Ponds Used for Irrigation



NO_3-N at 0 – 30” DEPTH TREND GRAPHS

Overall NO_3 (as N) Trend of WAPs at 0-30” Depth

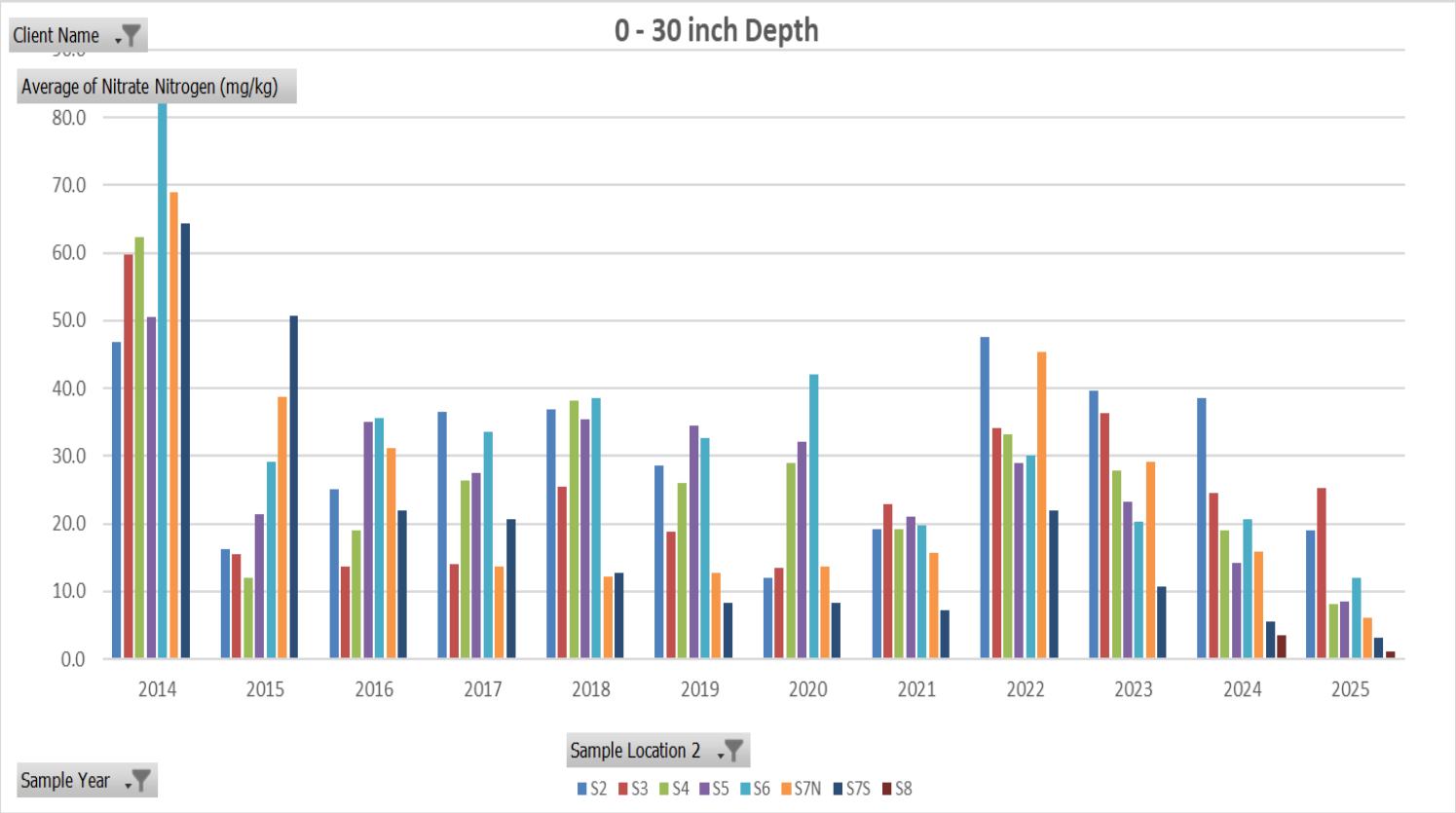


Table of Soil Nitrate-N Data

Average of NO3 Nitrogen (mg/kg)	WAP								
Year / Soil Depth	S2	S3	S4	S5	S6	S7N	S7S	S8	Average
2016	**25.0**	**13.7**	**18.9**	**35.0**	**35.7**	**31.2**	**22.0**		**25.7**
0-6	29.0	17.0	22.3	45.3	31.0	40.7	17.7		29.2
6-18	28.0	13.0	17.0	33.0	25.5	25.0	15.7		22.2
18-30	18.0	11.0	17.5	26.7	50.5	28.0	32.7		25.8
2017	**36.5**	**14.0**	**26.4**	**27.6**	**33.5**	**13.6**	**20.7**		**24.2**
0-6	34.5	22.0	17.8	18.0	21.5	6.7	7.7		17.1
6-18	40.0	11.0	30.5	29.7	31.0	13.0	16.3		24.4
18-30	35.0	9.0	31.0	35.0	48.0	21.0	38.0		31.1
2018	**36.8**	**25.5**	**38.3**	**35.3**	**38.5**	**12.1**	**12.7**		**28.2**
0-6	50.0	49.5	49.0	42.7	48.5	29.0	27.3		41.5
6-18	29.5	16.0	32.0	29.0	26.0	2.0	3.0		19.6
18-30	31.0	11.0	33.8	34.3	41.0	5.3	7.7		23.3
2019	**28.5**	**18.9**	**25.9**	**34.4**	**32.6**	**12.7**	**8.2**		**22.6**
0-6	32.0	17.4	19.4	35.8	24.0	8.9	5.9		19.8
6-18	24.4	21.0	21.4	34.6	30.3	16.3	9.1		21.9
18-30	29.2	18.3	37.1	32.8	43.7	13.0	9.8		26.2
2020	**12.0**	**13.4**	**28.9**	**32.0**	**42.0**	**13.7**	**8.3**		**21.7**
0-6	23.6	24.9	56.9	55.1	72.9	27.7	18.2		40.7
6-18	6.9	8.6	15.8	20.6	24.5	6.3	4.1		12.4
18-30	5.6	6.8	14.1	20.4	28.7	7.0	2.6		12.0
2021	**19.2**	**22.8**	**19.2**	**21.0**	**19.7**	**15.7**	**7.2**		**17.5**
0-6	23.9	29.3	7.2	20.5	11.2	12.9	7.3		14.7
6-18	19.0	19.1	20.4	16.3	17.4	19.3	7.8		17.0
18-30	14.7	20.1	30.0	26.2	30.6	15.0	6.7		20.7
2022	**47.5**	**34.1**	**33.3**	**29.0**	**30.0**	**45.4**	**21.9**		**33.9**
0-6	102.3	62.9	21.9	26.1	38.7	64.4	32.1		45.4
6-18	26.1	25.2	36.8	31.9	22.7	49.4	25.8		32.4
18-30	14.1	14.2	41.1	29.0	28.7	22.4	7.7		24.0
2023	**39.6**	**36.4**	**27.8**	**23.3**	**20.3**	**29.1**	**10.8**		**26.0**
0-6	63.8	52.1	25.6	25.5	18.0	24.0	8.8		28.7
6-18	35.7	33.2	21.3	21.6	16.1	27.4	9.1		22.6
18-30	19.5	23.9	36.5	22.9	27.0	36.1	14.4		26.7
2024	**38.6**	**24.5**	**18.9**	**14.2**	**20.6**	**15.9**	**5.6**	**3.5**	**17.0**
0-6	56.1	32.2	26.2	16.4	32.6	24.5	6.4	2.0	23.5
6-18	43.2	21.6	9.8	7.9	14.1	5.4	2.5	4.4	12.0
18-30	16.5	19.8	20.7	18.2	15.2	18.0	8.0	4.0	15.5
2025	**19.0**	**25.2**	**8.1**	**8.5**	**12.0**	**6.0**	**3.2**	**1.0**	**9.5**
0-6	7.5	35.1	8.4	9.7	15.2	2.5	1.6	1.1	9.2
6-18	16.0	18.9	3.8	5.1	7.2	5.3	3.1	1.0	6.7
18-30	33.5	21.7	12.1	10.8	13.7	10.2	4.7	1.0	12.6
Average	**30.3**	**22.8**	**24.6**	**26.0**	**28.5**	**19.6**	**12.1**	**2.2**	**22.4**

Overall EC Trend of WAPs at 0-30” Depth

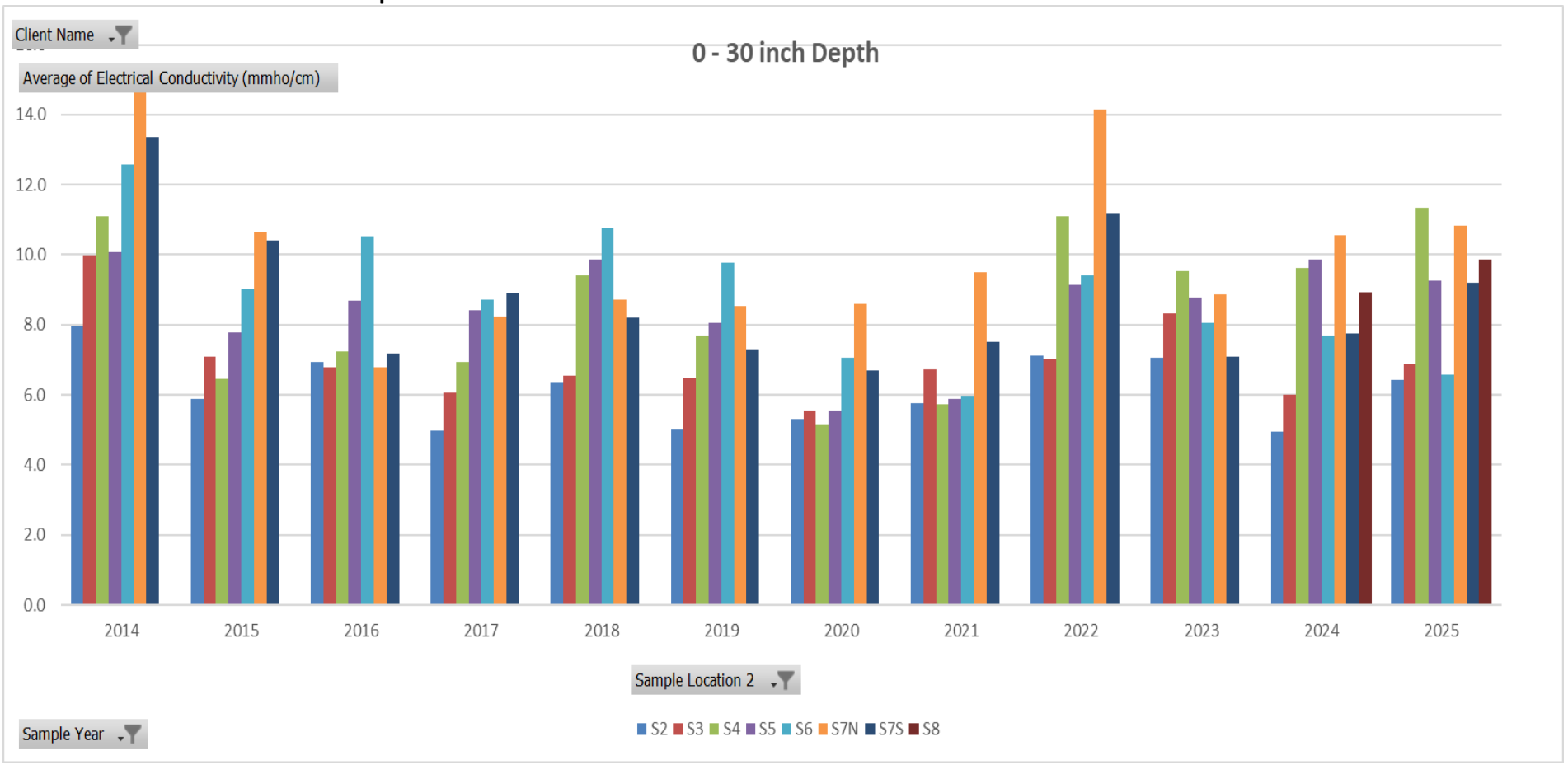
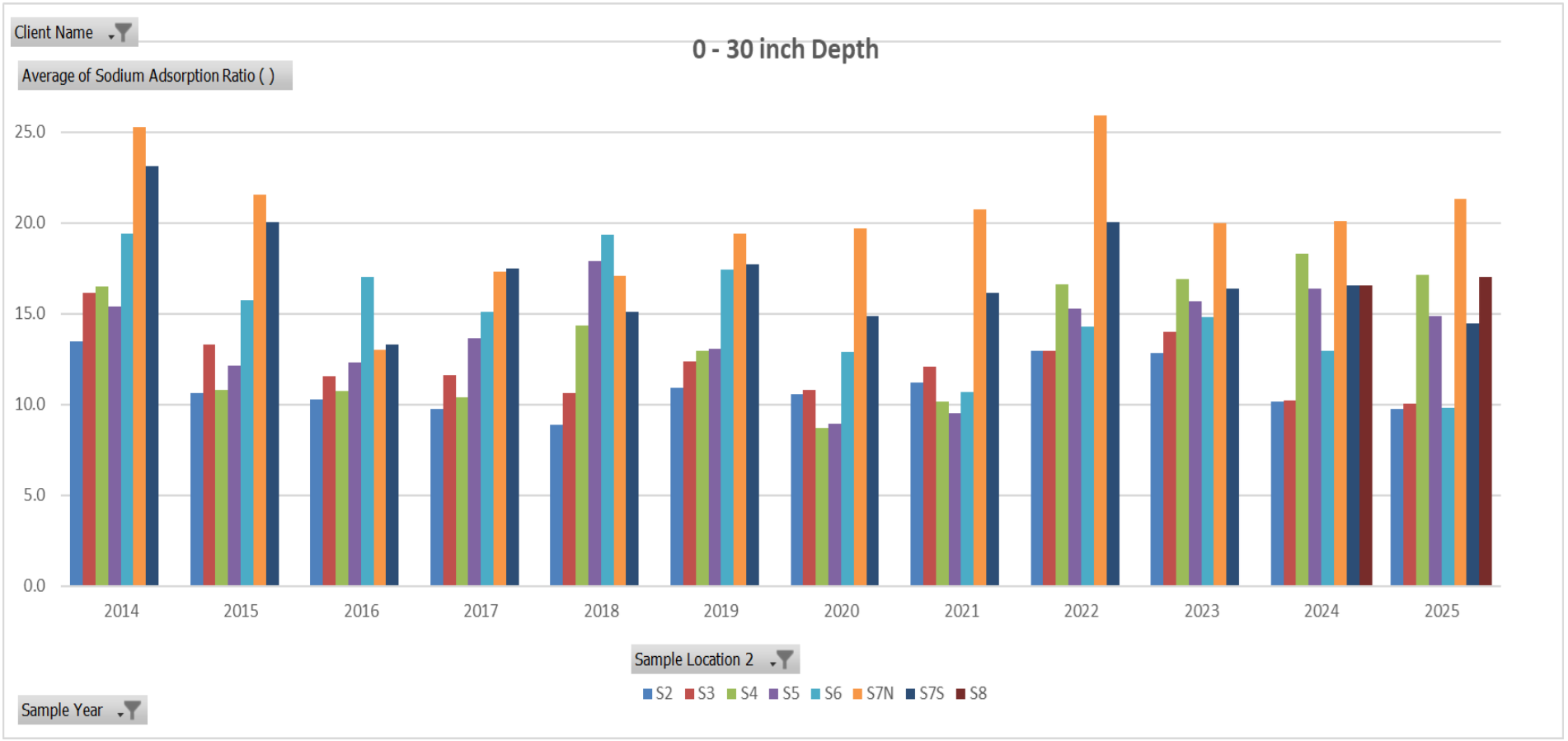


Table of Soil Electrical Conductivity Data

Average of Electrical Conductivity (mmho/cm)	Wastewater Application Plot								
Year / Soil Depth	**S2**	**S3**	**S4**	**S5**	**S6**	**S7N**	**S7S**	**S8**	**Average**
2016	**6.9**	**6.8**	**7.2**	**8.7**	**10.5**	**6.8**	**7.2**		**7.6**
0-6	7.1	5.1	7.0	7.9	7.4	4.9	5.5		6.4
6-18	6.7	7.2	7.3	8.5	10.5	7.1	7.0		7.7
18-30	7.0	8.1	7.4	9.6	13.7	8.3	9.0		8.8
2017	**5.0**	**6.1**	**6.9**	**8.4**	**8.7**	**8.2**	**8.9**		**7.6**
0-6	3.9	4.3	5.1	5.7	5.4	6.2	6.1		5.3
6-18	5.4	6.1	7.1	9.1	8.8	8.7	9.0		7.9
18-30	5.6	7.7	8.7	10.4	12.0	9.9	11.6		9.5
2018	**6.4**	**6.5**	**9.4**	**9.9**	**10.8**	**8.7**	**8.2**		**8.7**
0-6	7.2	6.6	10.0	8.5	9.2	8.2	7.5		8.3
6-18	5.8	5.9	8.4	10.3	9.4	7.6	7.2		7.9
18-30	6.1	7.1	9.9	10.8	13.8	10.4	9.9		9.8
2019	**5.0**	**6.5**	**7.7**	**8.1**	**9.8**	**8.5**	**7.3**		**7.6**
0-6	4.2	4.8	5.5	5.5	6.7	6.3	4.7		5.4
6-18	5.1	6.7	7.4	8.2	9.1	9.1	7.5		7.7
18-30	5.7	7.9	10.2	10.4	13.5	10.2	9.7		9.8
2020	**5.3**	**5.6**	**5.2**	**5.5**	**7.1**	**8.6**	**6.7**		**6.3**
2021	**5.8**	**6.7**	**5.7**	**5.9**	**6.0**	**9.5**	**7.5**		**6.8**
0-6	4.9	5.6	4.1	4.0	4.1	10.4	4.8		5.5
6-18	5.8	6.7	6.4	5.8	6.1	6.9	8.4		6.6
18-30	6.7	7.9	6.6	7.9	7.7	11.2	9.3		8.2
2022	**7.1**	**7.0**	**11.1**	**9.1**	**9.4**	**14.2**	**11.2**		**10.3**
0-6	7.2	7.2	9.8	8.3	9.1	12.8	10.3		9.5
6-18	6.8	6.5	12.8	10.1	8.8	14.1	11.6		10.7
18-30	7.3	7.3	10.8	9.0	10.4	15.5	11.7		10.6
2023	**7.1**	**8.3**	**9.5**	**8.8**	**8.1**	**8.9**	**7.1**		**8.4**
0-6	6.1	7.6	8.7	8.1	7.2	7.3	5.7		7.4
6-18	7.8	8.7	8.8	8.8	7.6	8.3	6.8		8.2
18-30	7.3	8.7	11.0	9.4	9.4	11.0	8.8		9.6
2024	**4.9**	**6.0**	**9.6**	**9.8**	**7.7**	**10.6**	**7.7**	**8.9**	**8.5**
0-6	3.2	4.0	8.9	8.4	5.2	8.7	6.1	9.8	7.1
6-18	5.1	6.2	9.4	10.2	7.1	10.1	7.5	7.7	8.2
18-30	6.6	7.7	10.6	11.0	10.8	12.9	9.6	9.3	10.1
2025	**6.4**	**6.9**	**11.3**	**9.2**	**6.6**	**10.8**	**9.2**	**9.9**	**9.2**
0-6	2.9	4.5	6.1	5.8	3.6	7.5	5.9	6.7	5.6
6-18	6.4	6.4	11.9	9.6	5.8	11.3	9.0	10.3	9.3
18-30	10.0	9.7	16.0	12.4	10.4	13.8	12.6	12.6	12.6
Average	**6.0**	**6.6**	**8.4**	**8.3**	**8.5**	**9.5**	**8.1**	**9.4**	**8.1**

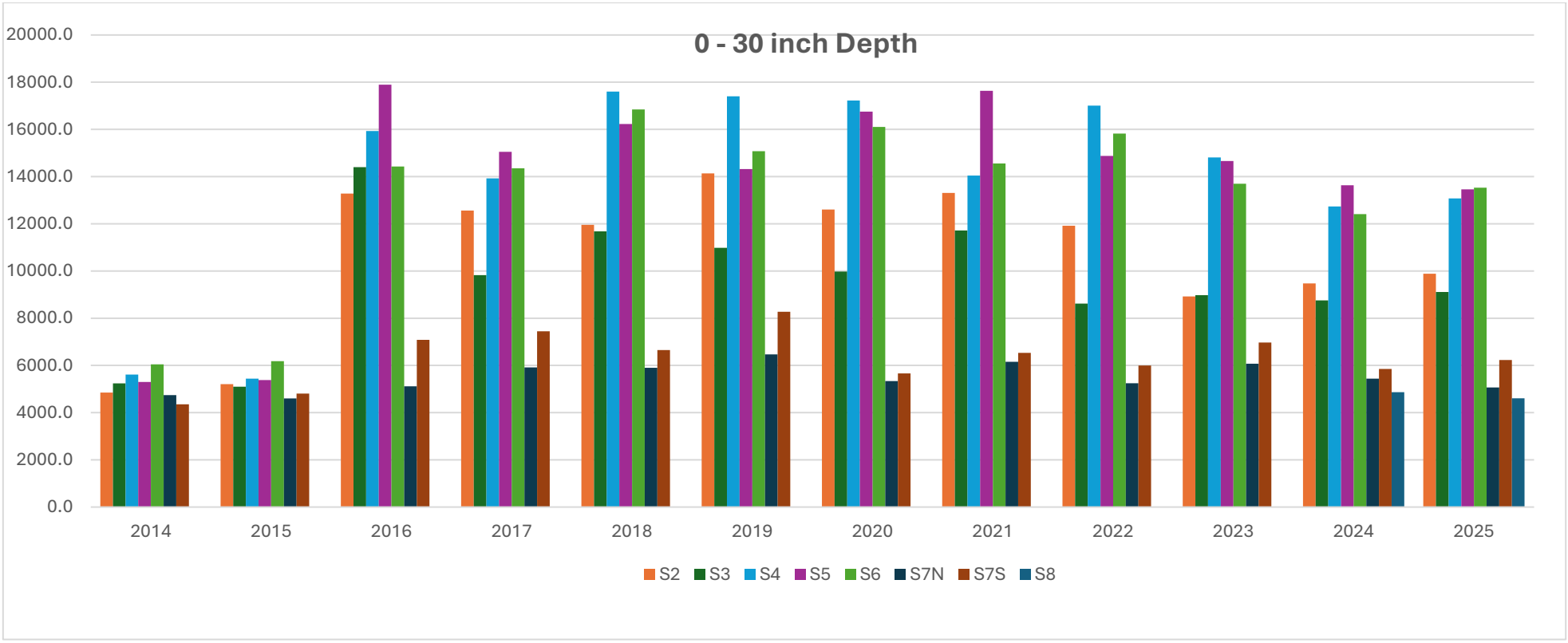
Overall SAR Trend of WAPs at 0-30” Depth



Client Name	N/H COMPLEX

Average of Sodium Adsorption Ratio ( )	Wastewater Application Plot								
Year / Soil Depth	**S2**	**S3**	**S4**	**S5**	**S6**	**S7N**	**S7S**	**S8**	**Average**
2021	**11.2**	**12.1**	**10.1**	**9.5**	**10.7**	**20.7**	**16.1**		**13.0**
0-6	11.0	9.1	8.6	6.3	6.3	10.1	8.5		8.5
6-18	11.4	11.5	10.1	9.7	9.8	20.7	17.6		13.1
18-30	11.3	15.7	11.7	12.5	16.0	31.3	22.3		17.4
2022	**12.9**	**12.9**	**16.6**	**15.3**	**14.3**	**25.9**	**20.0**		**17.4**
0-6	12.5	11.2	16.9	14.6	13.1	21.6	16.9		15.8
6-18	13.1	11.6	18.4	15.7	12.0	24.1	17.8		16.8
18-30	13.3	16.0	14.5	15.5	17.8	31.9	25.4		19.5
2023	**12.8**	**14.0**	**16.9**	**15.7**	**14.8**	**20.0**	**16.3**		**16.1**
0-6	12.4	12.0	15.1	14.2	12.3	14.3	11.7		13.4
6-18	13.3	14.0	17.5	16.5	14.1	19.7	16.5		16.4
18-30	12.8	16.0	18.1	16.3	18.2	26.0	20.9		18.7
2024	**10.2**	**10.2**	**18.3**	**16.4**	**13.0**	**20.1**	**16.5**	**16.5**	**15.8**
0-6	7.0	5.0	16.3	13.2	7.4	14.2	10.8	18.3	12.1
6-18	11.6	11.5	16.9	16.6	13.5	18.8	15.9	10.3	15.0
18-30	11.9	14.2	21.7	19.4	18.0	27.3	22.9	21.0	20.3
2025	**9.7**	**10.0**	**17.2**	**14.9**	**9.8**	**21.3**	**14.4**	**17.0**	**14.9**
0-6	4.4	3.9	9.7	8.9	2.8	12.4	8.6	14.9	8.6
6-18	10.8	10.6	19.6	16.0	9.5	22.6	15.5	15.6	15.9
18-30	14.1	15.6	22.2	19.7	17.2	28.9	19.2	20.6	20.3
Average	**11.4**	**11.8**	**15.8**	**14.3**	**12.5**	**21.6**	**16.7**	**16.8**	**15.5**

Overall Calcium Trend of WAPs at 0-30” Depth



Client Name	N/H COMPLEX

Average of Calcium (mg/kg)	Wastewater Application Plot								
Year / Soil Depth	S2	S3	S4	S5	S6	S7N	S7S	S8	Average
2021	**13310.0**	**11718.3**	**14043.3**	**17633.3**	**14555.0**	**6152.2**	**6533.3**		**11910.4**
0-6	5980.0	7070.0	5425.0	6173.3	7165.0	6013.3	5073.3		5995.3
6-18	15310.0	10335.0	14130.0	17726.7	14950.0	5576.7	5730.0		11832.1
18-30	18640.0	17750.0	22575.0	29000.0	21550.0	6866.7	8796.7		17903.7
2022	**11920.0**	**8620.0**	**17007.5**	**14874.4**	**15823.3**	**5244.4**	**5995.6**		**11531.6**
0-6	6035.0	6325.0	5647.5	6223.3	6570.0	4913.3	4606.7		5667.4
6-18	13470.0	9185.0	17950.0	17100.0	21550.0	5306.7	6180.0		12945.8
18-30	16255.0	10350.0	27425.0	21300.0	19350.0	5513.3	7200.0		15981.6
2023	**8921.7**	**8978.3**	**14811.7**	**14658.9**	**13700.0**	**6070.0**	**6967.8**		**10817.7**
0-6	5875.0	6440.0	5427.5	7470.0	6800.0	5280.0	5000.0		5957.4
6-18	9310.0	8500.0	14832.5	16873.3	14600.0	5696.7	5620.0		10985.3
18-30	11580.0	11995.0	24175.0	19633.3	19700.0	7233.3	10283.3		15510.5
2024	**9476.7**	**8753.3**	**12736.7**	**13630.0**	**12408.3**	**5438.9**	**5853.3**	**4865.0**	**9367.6**
0-6	6000.0	6650.0	4985.0	5856.7	6675.0	5236.7	4510.0	2930.0	5298.1
6-18	10400.0	9465.0	12325.0	13733.3	13950.0	5223.3	5920.0	5910.0	9684.8
18-30	12030.0	10145.0	20900.0	21300.0	16600.0	5856.7	7130.0	5755.0	13120.0
2025	**9885.0**	**9113.3**	**13073.3**	**13458.9**	**13528.3**	**5068.9**	**6231.1**	**4606.7**	**9563.7**
0-6	5765.0	6500.0	5477.5	6753.3	6935.0	4363.3	4410.0	2710.0	5348.1
6-18	10025.0	9840.0	13767.5	15090.0	15400.0	4990.0	5836.7	4785.0	10139.0
18-30	13865.0	11000.0	19975.0	18533.3	18250.0	5853.3	8446.7	6325.0	13203.8
Average	**10702.7**	**9436.7**	**14334.5**	**14851.1**	**14003.0**	**5594.9**	**6316.2**	**4735.8**	**10590.8**

TAB 9

Engineering Report

Water Balance and Storage Requirements

The water balance presented in Table 1 indicates that the irrigation system as it is currently configured can dispose at a maximum hydraulic application rate of 7.07 acre-ft./acre without infiltration past the root zone. The pond system representing ponds 8, 9, 12, 14, 16, 18, 20 and 22 can dispose of that amount of water covering 50.52 acres with a total capacity of 951.42 acre-feet of storage.

Table 2 is a water balance and storage requirement calculation for the blowdown and irrigation application using the average of the past five years of the average pond conductivity measurements during the 2020-May 2025 period. The water balance indicates that there is more pond storage available for irrigation than the total storage required, i.e. the storage volumes available will allow for adequate storage of wastewater.

Table 1 : Water Balance Calculations

Facility	=	Southwest Public Service Company (N/H Complex)										
Permit No.	=	WQ0001990000										
Curve Number	=	71		[1]Ce (dS/m)	=	6.64		Crop	=	Wheat Grass		
Irrigated area (acres)	=	1239		[2]Cl (dS/m)	=	8.00				Bermuda Grass		
*Reservoir area (acres)	=	50.52		K	=	0.85						
*Reservoir capacity (acre-ft)		951.42										
S = 1000/CN - 10	=	4.08						County	=	Potter		
Max. rainfall (in.)	=	36.61						Soil Type	=	Various		
Min. net 25 yr evap. (ft.)	=	2.15						AMC	=	Unknown		
Design Flow (MGD)	=	3.6										
**Gross Rate Effluent Available from Design Flow	=	3.25 (Based on 1239 irrigated acres)										
TWDB Quadrangle:		206										

Water Balance

LR = Ce/(5*Cl - Ce)

1	2	3	4	5		6b	7	8	9	10	11	12
Month	Avg. Rain	Avg. Runoff	Avg. Infilt.	Evapo-Transp.***	Borrelli & Fedler; FAO 29 LR	Other Needs	Total H2O Needs	Eff. rqd. in Root Zone	Net Evap. (feet)	Evap. from Reservoir Surface (in.)	Effluent to be Land Applied to Land (in)	Consumption from Reservoir (in)
			(2-3)				(5+6+6b)	(7-4)			(8/K)	(9b+10)
Jan	0.58	0.01	0.57	2.9566	0.48	0	3.43	2.87	0.14	0.07	3.37	3.44
Feb	0.66	0.01	0.65	3.2150	0.51	0	3.73	3.07	0.18	0.09	3.62	3.70
Mar	1.05	0.01	1.04	5.3219	0.85	0	6.17	5.14	0.31	0.15	6.04	6.19
Apr	1.43	0.08	1.35	7.2372	1.17	0	8.41	7.06	0.41	0.20	8.30	8.50
May	2.86	0.68	2.18	8.5335	1.27	0	9.80	7.62	0.31	0.15	8.96	9.11
June	3.07	0.80	2.27	9.4252	1.43	0	10.85	8.58	0.44	0.22	10.09	10.31
July	2.73	0.61	2.12	10.2959	1.63	0	11.92	9.80	0.56	0.27	11.53	11.81
Aug	2.81	0.65	2.16	8.9278	1.35	0	10.28	8.12	0.45	0.22	9.55	9.77
Sep	1.85	0.21	1.64	7.0128	1.07	0	8.08	6.44	0.40	0.19	7.58	7.78
Oct	1.74	0.17	1.57	5.9944	0.88	0	6.88	5.31	0.31	0.15	6.25	6.40
Nov	0.74	0.00	0.74	3.8486	0.62	0	4.47	3.73	0.24	0.12	4.39	4.51
Dec	0.68	0.00	0.67	2.9334	0.45	0	3.38	2.71	0.16	0.08	3.19	3.27
Total	20.20	3.25	16.95	75.70	11.70	0.00	87.40	70.45	3.90	1.91	82.89	84.80

Water Balance Table usually follows Table 1 of 30 TAC §309.20.

* Based on Ponds 8, 9, 12, 14, 16, 18, 20 & 22 which are/were used for irrigation.

**Converted Design Flow to ac-in/ac/month; based on 1239 acres

***Evapotranspiration data was obtained by the PENMAN-MONTEITH method.

[1]Based on average irrigation pond conductivity values from 2020-May 2025.

[2]Based on 30 TAC §309.20, Table 3 for wheat-grasses

Max. Calculated Application Rate:	**7.07**	acre-inch/acre/month or acre-feet/acre/year
Recommended and Rate for Permit:	**2.50**	acre-inch/acre/month or acre-feet/acre/year
**Gross Rate Effluent Available from Design Flow	**3.25**	(ac-in/ac/month)

Table 2 : Storage Volume Calculations

Storage Volume Requirements

13	13b	14	15	16	17	18	19	20			21	22
Month	Eff Rcd. for Appl.	Max. Rain. Dist. (%)	Max. Rain 25yrs	Max. Runoff 25 yrs	Infilt. Rainfall (14-15)	Total H2O Avail. (13+16)	Mean Net Evap. Dist. (%)	Minimum Net Evap. (inches)	Total H2O Needs (in,) (7)	Net H2O Needs (in.) (7-16)/k	Storage (13-18b) (inches)	Accum. Storage (inches)
Jan	3.25	2.9	1.05	0.01	1.04	4.29	3.59	0.04	3.43	2.82	0.40	1.03
Feb	3.25	3.3	1.19	0.03	1.16	4.42	4.64	0.05	3.73	3.02	0.19	1.22
Mar	3.25	5.2	1.91	0.23	1.68	4.93	7.87	0.08	6.17	5.29	-2.12	0.00
Apr	3.25	7.1	2.59	0.54	2.06	5.31	10.46	0.11	8.41	7.48	-4.33	0.00
May	3.25	14.2	5.19	2.26	2.93	6.18	7.87	0.08	9.80	8.08	-4.91	0.00
Jun	3.25	15.2	5.57	2.56	3.01	6.27	11.41	0.12	10.85	9.22	-6.09	0.00
Jul	3.25	13.5	4.95	2.08	2.87	6.13	14.35	0.15	11.92	10.65	-7.55	0.00
Aug	3.25	13.9	5.09	2.19	2.91	6.16	11.44	0.12	10.28	8.67	-5.54	0.00
Sep	3.25	9.1	3.35	0.97	2.38	5.63	10.19	0.11	8.08	6.71	-3.56	0.00
Oct	3.25	8.6	3.15	0.85	2.30	5.55	8.09	0.08	6.88	5.38	-2.21	0.00
Nov	3.25	3.6	1.34	0.06	1.28	4.53	6.17	0.06	4.47	3.75	-0.56	0.00
Dec	3.25	3.4	1.23	0.04	1.19	4.45	4.12	0.04	3.38	2.58	0.63	0.63
Total	39.06	100%	36.61	11.81	24.80	63.86	100%	1.05	87.40	73.65		1.22

Maximum Application Rate	=	7.07	acre-in/acre/month
Total Storage Required	=	125.88	acre-ft
Pond Storage Available	=	951.42	acre-ft

Nitrogen Balance

The expected nitrogen application rates are based on the 30 TAC 309.20 method. The nitrogen balance liquid loading rate based on permit is shown to be comparable to the yearly 2021-2024 hydraulic application rate (see tables below). The nitrogen concentration of the irrigation effluent is calculated from the average total nitrogen concentration of the irrigation ponds 3, 14, 16, 18, 20, & 22 during the 2020 – May 2025 period.

Hydraulic Application Rate Permit Cycle (acre-feet/acre)	
2024	1.61
2023	1.79
2022	1.69
2021	1.62

The tables show expected water applied during irrigation for all the crops is below the maximum annual liquid loading limit.

Nitrogen Balance Calculated from 30 TAC 309.20

*C	=	51.15

	Jose Wheatgrass	Bermuda Grass	Haygrazer	Oats
Permitted	272	272	181	134
Annual Theoretical Nitrogen crop requirement (lbs/acre/year)	212	602	151	111.5
Volatilization percentage considered (20%) (lbs/acre/year) = N	254.4	722.4	181.2	133.8
Annual liquid loading = L = N/(2.7C) (feet/year) based on permit rate	1.97	1.97	1.31	0.97
Permitted (acre - feet/year)	2.50	2.50	2.50	2.50
Annual liquid loading = L = N/(2.7C) (inches/year)	23.63	23.63	15.73	11.64

T30S309.20(b)(3)(C)

$$L = \frac{N}{2.7C}$$

where,

L = annual liquid loading – feet/year

C = effluent nitrogen concentration – mg/l

N = annual crop requirement of nitrogen plus 20% volatilization pound/acre/yr

Crop	Potential uptake (kg/ha/year)	[1] Adjusted uptake (kg/ha/year)	Potential uptake (lb/ac/year)	[1] Adjusted upt (lb/ac/year)
Wheat, winter + crop	280	336	250	300
Wheat, crop *	160	192	143	171
J. wheat grass	238	286	212	255
Haygrazer	169	203	151	181
Coastal Bermuda* (low)	400	480	357	428
Coastal Bermuda* (high)	675	810	602	723
Tall Fescue	325	390	290	348
Corn	202	242	180	216
Alfalfa	499	599	445	534
Soybeans	252	302	225	270
Cotton	104	125	93	111
Grain sorghum	250	300	223	268
Oats (barley specifications)	125	150	111.5	134

Source: Borrelli and Fedler, 1988.

[1] The plant's uptake plus additional 20% for denitrification and volatilization.

* EPA Process Design Manual Land Treatment of Municipal Wastewater 625/1-81-013, 1981

Tab 8

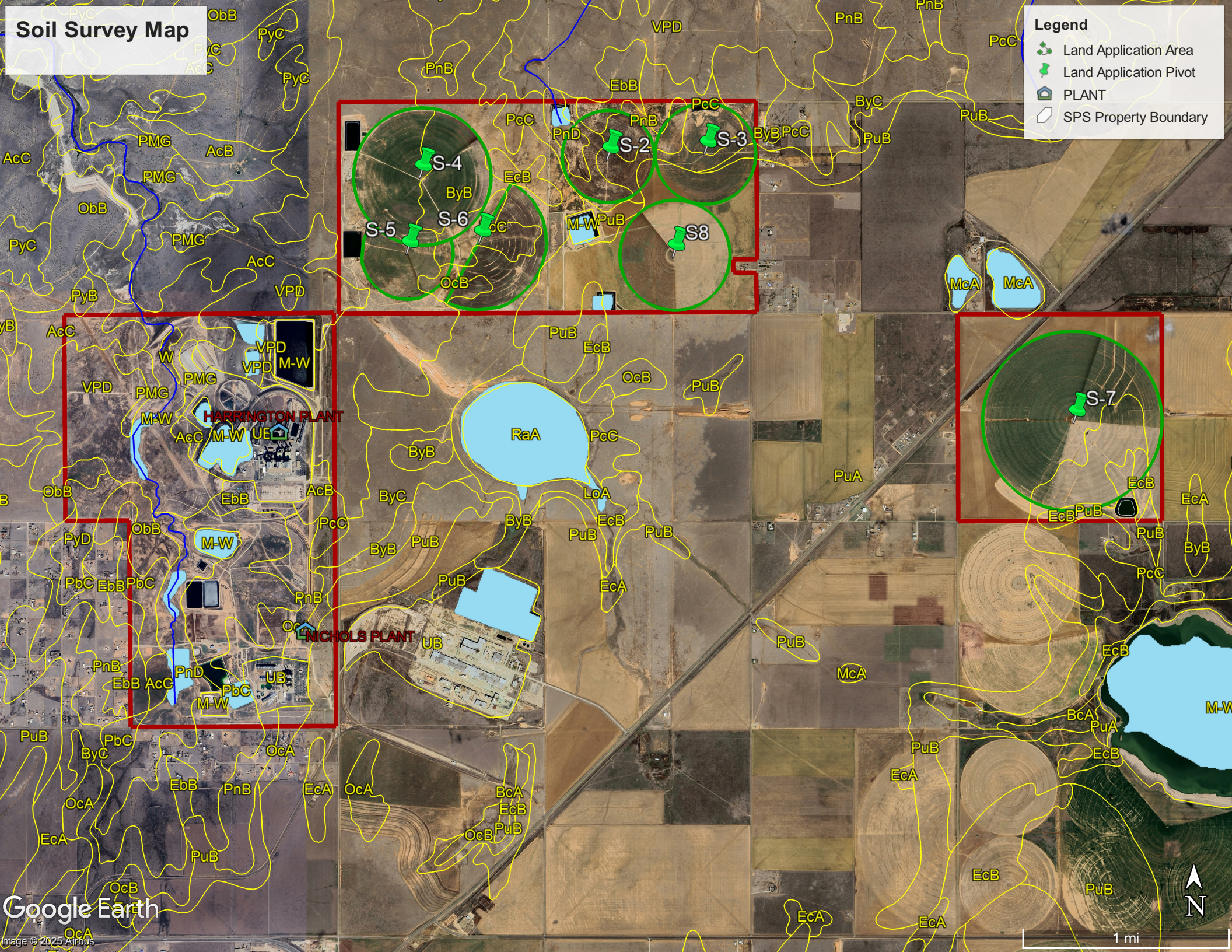
Soil and Map Information

Soil Maps and Descriptive Text

This section includes a general description of the soils being irrigated at the Nichols/Harrington Complex. Maps of each of the sections of land irrigated are included that show the soil series on each wastewater application plot (WAP). There are no known recharge features on SPS property. Along with the maps are engineering reports properties which include liquid limit and plasticity properties. A table is also included which provides a breakdown of each soil type for the irrigated areas and indicates the percentage of the total irrigated area for each soil type. Each AOI is approximately equal to one of the plots of irrigated land. A description of each of the soil series encountered on the Nichols/Harrington irrigation system is also provided. Soil analytical data for 2024 follows the engineering reports.

General Description– Soils at the Nichols – Harrington Plant are mainly in two map units – the Acuff-Paloduro-Olton group and the Pullman group. These two soils share the Estacado map units, and a generally high potential for cropland. There are six soil series that are involved in irrigation at this plant. They are Acuff loam, Estacado clay loam, Olton clay loam, Posey clay loam, Pullman clay loam, and Veal-Palo Duro association. The individual map units are further subdivided primarily based on the slopes into eleven soil map units.

All of the soils share a moderately alkaline clay loam subsoil and loam or clay loam surface soils that limit the rate of infiltration of irrigation, and have good water holding capacity.


Soil Survey Map
Legend
Land Application Area
Land Application Pivot
PLANT
SPS Property Boundary
S-2
S-3
S-4
S-5
S-6
S8
S-7
HARRINGTON PLANT
NICHOLS PLANT
M-W
RaA
McA
PuB
PuA
EcB
EcA
ByB
ByC
PcC
PnB
PnD
OcB
OcA
VPD
PMG
AcC
AcB
EbB
PbC
PyC
PyD
PyB
ObB
LoA
BcA
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Google Earth
Image © 2025 Airbus
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Individual Soil Series Descriptions

AcB - Acuff loam, 1 to 3 percent slopes. This deep, well drained, gently sloping soil is on broad ridgetops and side slopes along drains in the Canadian Breaks. Slopes are convex and average about 2 percent. Areas are long and oval and range from 10 to 300 acres.
Typically the surface layer is dark brown, neutral loam about 11 inches thick. The subsoil extends to a depth of 80 inches or more. From 11 to 52 inches is brownish clay loam that is neutral in the upper part and moderately alkaline and calcareous below. From 52 to 65 inches is pink, calcareous clay loam that is about 40 percent calcium carbonate. From 65 to 80 inches is reddish yellow, calcareous sandy clay loam.
Under native range this soil is high in natural fertility. Permeability is moderate, and available water capacity is medium. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight The root zone is deep and is easily penetrated.
Included in some mapped areas are small tracts of Estacado, Paloduro, and Posey soils. Included soils make up less than 15 percent of any one mapped area.
Most of the acreage is rangeland. The production potential is moderate. The climax plant community is mainly short grasses and small amounts of mid grasses and perennial forbs. Proper stocking and controlled grazing are needed.
A few small areas are used for winter wheat, grain sorghum, and forage sorghum, mainly nonirrigated. The potential for row crops and small grain is high. In places, terraces, contour farming, and waterways are needed to reduce the hazard of water erosion. Crop residue on the surface and timely and limited tillage are effective in conserving moisture, slowing runoff, reducing the risk of soil blowing, and maintaining tilth. If the soil is irrigated, a well designed irrigation system, good water management, and fertilization are needed.
The potential is high for all urban use. Low strength, the only limitation, can be overcome through proper design and careful installation.
The capability subclass is IIIe irrigated and nonirrigated. The range site is Clay Loam.

AcC - Acuff loam, 3 to 5 percent slopes. This deep, well drained, gently sloping soil is on side slopes along draws in the Canadian Breaks. Slopes are convex. The gradient is dominantly 4 percent. Areas are long bands that range from 10 to 200 acres.
The surface layer is about 11 inches of dark brown, neutral clay loam. The subsoil extends to a depth of 80 inches or more. From 11 to 36 inches is reddish brown, moderately alkaline clay loam. From 36 to 64 inches is light brown, calcareous clay loam that is about 25 percent calcium carbonate. From 64 to 80 inches is reddish yellow, calcareous sandy clay loam.
Under native range this soil is high in natural fertility. Permeability is moderate, and available water capacity is medium. Runoff is medium, and the hazard of water erosion is severe. The hazard of soil blowing is slight. The root zone is deep and is easily penetrated.
Included in some mapped areas are small tracts of Estacado and Posey soils. Also included are a few small gravelly knolls of Tascosa soils. These included soils make up less than 15 percent of anyone mapped area.
The acreage is mainly rangeland. The production potential Is medium. The climax plant community is mainly short grasses and small amounts of mid grasses and forbs. Proper stocking and controlled grazing are needed.
A few small areas are used for winter wheat and forage sorghums, mainly nonirrigated. The potential for cultivated crops is medium. It is limited by the size of the field and by the slope. Terraces, waterways, and contour farming are needed to reduce the hazard of water erosion. Closely spaced high residue crops provide adequate cover and residue to protect the soil. Crop residue on the surface and minimum tillage are effective in con- serving moisture, slowing runoff, reducing the risk of soil blowing, and maintaining tilth.
The potential is high for urban use. Low strength and the slope, the only limitations, can be overcome through proper design and careful installation.
The capability subclass is IVe irrigated and nonirrigated. The range site is Clay Loam.

EsB - Estacado clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil occurs as bands on the side slopes of playas and near the outer margins of the High Plains. Slopes are convex. Areas range from 10 to 400 acres but are commonly less than 150 acres.

Typically the surface layer is about 12 inches of dark grayish brown-to-brown, moderately alkaline, calcareous clay loam. The subsoil extends to more than 80 inches. The upper 15 inches is brown, moderately alkaline, calcareous clay loam. The lower part is reddish yellow, moderately alkaline, calcareous clay loam that is about 25 percent calcium carbonate.
Under native range this soil is high in natural fertility. The high lime content, however, causes chlorosis, or yellowing of the leaves, in some plants. Permeability is moderate, and available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The root zone is deep and is easily penetrated.
Included in mapped areas are small tracts of Acuff, Olton, Posey, and Pullman soils. These included soils make up less than 15 percent of any one mapped area.
About half the acreage is cropland, both irrigated and non-irrigated. The principal crops are winter wheat and grain sorghum. The production potential is medium. Adequate amounts of crop residue on the surface and timely and limited tillage are effective in conserving moisture, slowing runoff, controlling soil blowing, and maintaining tilth. Terraces, waterways, and contour farming are used to dispose of excess rainfall. If the soil is to be irrigated, a properly designed irrigation system and good water management is needed. Fertilizer is also needed. Some crops respond to applications of trace elements, such as iron.
Some of the acreage is rangeland. The production potential is medium. The climax plant community is a mixture of short and mid grasses and small amounts of forbs. Proper stocking and controlled grazing are needed.
The potential is high for urban use. Surface texture, low strength, and the risk of corrosion are the main limitations. These limitations can be overcome by proper design and skillful installation.
The capability subclass is IIIe irrigated and non-irrigated. The range site is Clay Loam.

EsC - Estacado clay loam, 3 to 5 percent slopes. This deep, well-drained, gently sloping soil is on side slopes of playas and along creeks and draws. Slopes are convex. The dominant gradient is about 4 percent. Areas are long and oval and range from 10 to 200 acres.
Typically the surface layer is brown, moderately alkaline, calcareous clay loam about 9 inches thick. The subsoil extends to more than 60 inches. The upper 12 inches is light brown, moderately alkaline, calcareous clay loam. The lower part is light reddish brown, moderately alkaline, calcareous clay loam that is 20 to 50 percent visible calcium carbonate.
Under native range this soil is high in natural fertility. It has a high lime content. In some plants chlorosis, or yellowing of the leaves, is apparent because of a deficiency of trace elements such as iron. Permeability is moderate, and available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The root zone is deep and is easily penetrated.
Included in some mapped areas are small tracts of Palo Duro, Posey, and Potter soils. These included soils make up less than 15 percent of any one mapped area.
The acreage is mainly rangeland. The production potential is medium. The climax plant community is a mixture of short and mid grasses and a few forbs. Proper stocking and controlled grazing are needed.
A few small areas are used as cropland, mainly non-irrigated. The principal crops are winter wheat and grain sorghum. The potential for cultivated crops is moderate. Slope and the hazard of water erosion are .the main limitations. Skillful management is needed to control water erosion and soil blowing. Crop residue on the surface and minimum tillage are effective in conserving moisture, slowing runoff, controlling soil blowing and maintaining tilth. Terraces, waterways, and contour farming are needed to dispose of excess rainfall. If this soil is to be irrigated, a planned irrigation system, good water management, and fertilization are needed.
The potential is high for most urban use. Surface texture, low strength, and the risk of corrosion are the main limitations. These limitations can be overcome through proper planning and construction.
The capability subclass is IVe irrigated and non-irrigated. The range site is Clay Loam,

OcB - Olton clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil occurs along drains, above playas and ridges on the margins of the High Plains. Slopes are plane to concave. Areas are long and oval and range from 20 to 500 acres.
Typically the surface layer is about 10 inches of dark brown, mildly alkaline clay loam. The subsoil extends to a depth of 70 inches or more. The upper 45 inches is reddish brown, mildly alkaline clay loam. The next 19 inches is yellowish red, moderately alkaline, calcareous clay loam that is about 30 percent calcium carbonate. The lower 6 inches is reddish yellow, moderately alkaline, calcareous clay loam.

Natural fertility is high. Permeability is moderately slow, and available water capacity is high. Surface runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The root zone is deep and is easily penetrated.
Included in a few mapped areas are a few small tracts of Acuff, Amarillo, Estacado, and Pullman soils. These included soils make up less than 15 percent of any one mapped area.
Most of the acreage is rangeland. The production potential is medium. The climax plant community is mainly a dense cover of short grasses and a small amount of mid grasses and forbs. Proper stocking and controlled grazing are needed to prevent overuse.
Some areas of this soil are used as cropland, mainly non-irrigated. The chief crops are winter wheat, grail, sorghum, and com. The production potential is high. Terraces, waterways, and contour farming are needed to reduce the hazard of water erosion. Crop residue on the surface and minimum tillage are effective in conserving moisture, slowing runoff, controlling soil blowing, and maintaining tilth. If the soil is irrigated, a planned irrigation system, water management, and fertilization are needed.
The potential is medium for urban uses. Low strength and the shrink-swell potential, the main limitations, can be overcome through proper planning, design, and construction.
The capability subclass is IIIe irrigated and non-irrigated. The range site is Clay Loam.

PcB - Posey clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil is on ridgetops and side slopes of playas and along draws. Slopes are convex. Areas are long and oval and range from 20 to 1 00 acres.
Typically the surface layer is brown clay loam about 7 inches thick. The subsoil to 18 inches is reddish brown clay loam. Below this to a depth of 80 inches is yellowish red, calcareous clay loam that is about 25 percent calcium carbonate. This soil is moderately alkaline and calcareous throughout
Natural fertility is medium. Permeability is moderate, and the available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The high lime content of this soil causes chlorosis, or yellowing of the leaves, in some plants. The root zone is deep and is easily penetrated.
Included in some mapped areas are small tracts of Acuff, Estacado, and Potter soils. These included soils make up less than 20 percent of any one mapped area.
The acreage is mainly rangeland. The production potential is medium. The climax plant community is mainly mid and short grasses and a few scattered shrubs and forbs. Proper stocking and controlled grazing are needed.
A few areas are used as cropland, mainly non-irrigated winter wheat A few irrigated areas are in grain sorghum and corn. The potential is medium for cultivated crops. Good management is needed to control water erosion and soil blowing. Residue producing crops, managing residue, minimum tillage, and contour farming and terracing are effective in protecting the soil. Stubble mulching is the best form of residue management. If the soil is irrigated, a well-planned irrigation system and water management is needed. Fertilizer is also needed. Some crops respond to trace elements such as iron.
The potential is high for most urban uses. Excess lime as it affects plants, the risk of corrosion, and the clayey surface texture are the only limitations.
The capability subclass Is IIIe irrigated and non-irrigated. The range site is Loamy.

PcC - Posey clay loam, 3 to 5 percent slopes. This deep, well-drained, gently sloping soil is on side slopes along creeks and draws. Slopes are smooth and convex. Areas are long and narrow and range from 15 to 200 acres.
The surface layer is brown, moderately alkaline, calcareous clay loam about 8 inches thick. From 8 to 17 inches is light brown, moderately alkaline, calcareous clay loam. Below this to a depth of 80 inches is a light reddish brown, moderately alkaline, calcareous clay loam that is about 30 percent calcium carbonate.
Natural fertility is medium. Permeability is moderate, and available water capacity is medium. Surface runoff is medium, and the hazard of water erosion is severe. The hazard of soil blowing is moderate. The high lime content causes deficiencies of trace elements such as iron in some plants. The root zone is deep and is easily penetrated.
Included in mapping are a few small areas of Bippus, Estacado, Palo Duro, and Potter soils. The included soils make up less than 15 percent of any one mapped area.
Most of the acreage is rangeland. The production potential is medium. The climax plant community is mid and short grasses and scattered shrubs and forbs. Proper stocking and controlled grazing are needed to maintain productivity.
A few areas of this soil are used as cropland, mainly non-irrigated. The principal crop is winter wheat, which is also grazed by livestock. Because of slope and the hazard of water erosion, the potential is low for use as cropland. Terracing, contour farming, and careful management of crop residue are needed to control water erosion and soil blowing. If this soil is irrigated, a closely spaced crop that produces large amounts of residue should be grown continuously.

The potential is high for urban uses. The risk of corrosion and low strength, the main limitations, can be offset by proper planning and special construction techniques.
The capability subclass is IVe irrigated and non-irrigated. The range site is Loamy.

PcD - Posey clay loam, 5 to 8 percent slopes. This deep, well drained sloping soil is along creeks and draws. The slopes are convex. Areas are long and narrow and range from 10 to 100 acres.
Typically the surface layer is about 7 inches of light brown clay loam. The subsoil extends to a depth of about 80 inches. It is reddish brown clay loam in the upper part and light reddish brown clay loam that is about 35 percent calcium carbonate in the lower part.
This soil is moderately alkaline and calcareous throughout.
Natural fertility is medium. Permeability is moderate, and available water capacity is medium. Surface runoff is rapid and the hazard of water erosion is severe. The hazard of soil blowing is moderate. The high lime con- tent of this soil causes chlorosis, or yellowing of the leaves, in some plants.
Included in mapping are small areas of Estacado and Veal soils. These included soils make up less than 15 percent of anyone mapped area.
The acreage is entirely rangeland. The production potential is medium. The climax plant community is a mixture of mid and short grasses and a few scattered shrubs and forbs. Proper stocking and controlled grazing are needed to help maintain productivity.
This soil is not suitable for use as cropland because of the slope and the hazard of water erosion.
The potential is high for most urban uses. The risk of corrosion and low strength are limitations that can be overcome through sound planning and construction.
The capability class is VIe. The range site is Loamy.

PuA - Pullman clay loam, 0 to 1 percent slopes. This deep, well-drained soil is on broad smooth plains. Most areas extend in a continuous pattern over several thousand acres, interrupted only by playa depressions. Slopes are plane to slightly convex and have dominant gradients of about 0.5 percent.
Typically, the surface layer is brown, neutral clay loam about 7 inches thick. From 7 to 33 inches is dark brown, mildly to moderately alkaline clay. From 33 to 54 inches is moderately alkaline, calcareous reddish brown clay. From 54 to 80 inches is pink, calcareous clay loam that is about 30 to 50 percent calcium carbonate.
Natural fertility is high. The soil is very slowly permeable and has a medium available water capacity. Surface runoff is slow. The hazards of water erosion and soil blowing are slight. The soil has a deep root zone that is not easily penetrated by plant roots because of the clayey texture.
Included in mapping are a few small areas of Estacado, Olton, Posey, and Randall soils. These included soils make up less than 10 percent of any one mapped area.
This soil is mainly used as cropland, both non-irrigated and irrigated. The potential is high. The principal crops are winter wheat, grain sorghum and corn. Crop residue left on the surface and minimum tillage are effective in conserving moisture, controlling soil blowing and maintaining tilth. If the soil is irrigated, a planned irrigation system, good water management, and fertilization are needed.
Some of the acreage is rangeland. The production potential is medium. The climax plant community is mainly short grasses and a small amount of mid grasses and forbs. Proper stocking and controlled grazing are effective in maintaining productivity.
The soil has low potential for most urban uses. The shrink-swell potential, low strength, and risk of corrosion are the main limitations. Sound planning, adequate design, and careful construction are needed.
The capability subclass is IIs irrigated and IIIe non-irrigated. The range site is Clay Loam.

PuB - Pullman clay loam, 1 to 3 percent slopes. This deep, well-drained, gently sloping soil is near playas and on side slopes along draws. Slopes are smooth and slightly convex. Areas are long and narrow and range from 10 to 350 acres.
Typically the surface layer is brown, mildly alkaline clay loam about 6 inches thick. The subsoil extends to a depth of 72 inches or more. The upper part is dark brown, moderately alkaline clay. The middle part is brown, calcareous clay loam. The lower part from about 42 to 72 inches is yellowish red, calcareous clay loam that is about 25 percent calcium carbonate masses and concretions.
Natural fertility is high. Permeability is very slow, and available water capacity is medium. Surface runoff is medium. The hazards of water erosion and soil blowing are moderate. The soil has a deep root zone that is not easily penetrated by plant roots because of the clayey texture.

Included in some mapped areas are a few small tracts of Estacado, Olton, Posey, and Randall soils. These included soils make up less than 10 percent of any one mapped area.
This soil is mainly used for non-irrigated wheat and grain sorghum. A few areas are irrigated. The potential is high for crops. Adequate crop residue on the surface and minimum tillage are effective in controlling water erosion and conserving soil moisture. Terraces, water- ways, and contour farming are needed to control runoff. If the soil is irrigated, a well-designed irrigation system and good water management is needed. Most crops respond well to applications of fertilizer.
Some of the acreage is rangeland. The production potential is medium. The climax plant community is mainly a short grass prairie and small amounts of mid grasses and forbs. .
The potential is low for most urban uses. The shrink-swell potential, low strength, and risk of corrosion are the chief limitations. Good planning, adequate design, and skillful construction are needed.

VPD - Veal-Palo Duro association, undulating. This association consists of deep, well-drained soils on low hills and ridges that have gently sloping to sloping side slopes. The hills and ridges are separated by narrow, branching draws. Slopes are convex and range from 3 to 8 percent. The Veal soil is on ridgetops and upper side slopes, and the Palo Duro soil is on lower side slopes and foot slopes. Mapped areas are irregular in shape and range from 50 to 600 acres.
Veal and similar soils make up about 50 percent of this association, Palo Duro and similar soils 40 percent, and Bippus, Potter, and Tascosa soils 10 percent. Areas are large enough to be mapped separately. Because use and management are similar, however, separation is not justified.
The surface layer of this Veal soil is brown, moderately alkaline, calcareous loam about 6 inches thick. From 6 to 14 inches is light brown clay loam. Below this to a depth of 60 inches is pinkish gray, calcareous clay loam that is about 45 percent calcium carbonate.
Natural fertility of this Veal soil is low. Permeability is moderate, and available water capacity is medium. Surface runoff is medium. The hazard of water erosion is severe in areas bare of vegetation. The hazard of soil blowing is moderate. The high lime content causes chlorosis in some plants.
The Palo Duro soil typically has a dark brown, moderately alkaline, calcareous clay loam surface layer about 12 inches thick. From 12 to 80 inches is brown, moderately alkaline, calcareous clay loam that contains threads and films of calcium carbonate.
Natural fertility of this Palo Duro soil is high. Permeability is moderate, and available water capacity is high. Surface runoff is rapid. The hazard of water erosion is severe. The hazard of soil blowing is moderate.
Rangeland is the main use of this association. The production potential is medium. The climax plant community is a mixture of mid and short grasses and scattered shrubs and forbs. Proper stocking and controlled grazing are needed.
This association is not suited to farming because of the slope and the hazard of erosion, and also because the Veal soil is high in lime content and is droughty.
The potential is high for most urban uses. Slope and low strength, the main limitations, can be overcome through proper design and construction.
The capability subclass is VIe. The range site is Loamy for Veal soil and Hardland Slopes for Palo Duro soil.

SOIL MAP AND SOIL INFORMATION
Soil Type for each Wastewater Application Plot

Plots	Total Acres	Soil Type (acres)										
		EcB	PcC	PuA	PuB	OcB	VPD	AcB	PnB	PnD	ByB	EbB
S2	99.6		31.2	4.6					21.9	13.5	21.8	6.6
S3	117.2		32.2	42.2	5.9				13.3		23.6	
S4	219.0	1.4	11.6				114.0				92	
S5	60.0		4.0			6.0	50.0					
S6	103.0	0.1	25.0			9.3					68.6	
S7	368.0	8.2	11.2	262.2	86.4							
S8	144.4			144.4								
26	44.0			44.0								
27	18.6			18.0	0.6							
28	31.2			27.0	4.2							
29	34.0		0.8	21.0	11.0						1.2	
	1239.0	9.7	116.0	563.4	108.1	15.3	164.0	0.0	35.2	13.5	207.2	6.6
Percentage of Total Irrigated Area for Each Soil Type		0.8	9.4	45.5	8.7	1.2	13.2	0.0	2.8	1.1	16.7	0.5

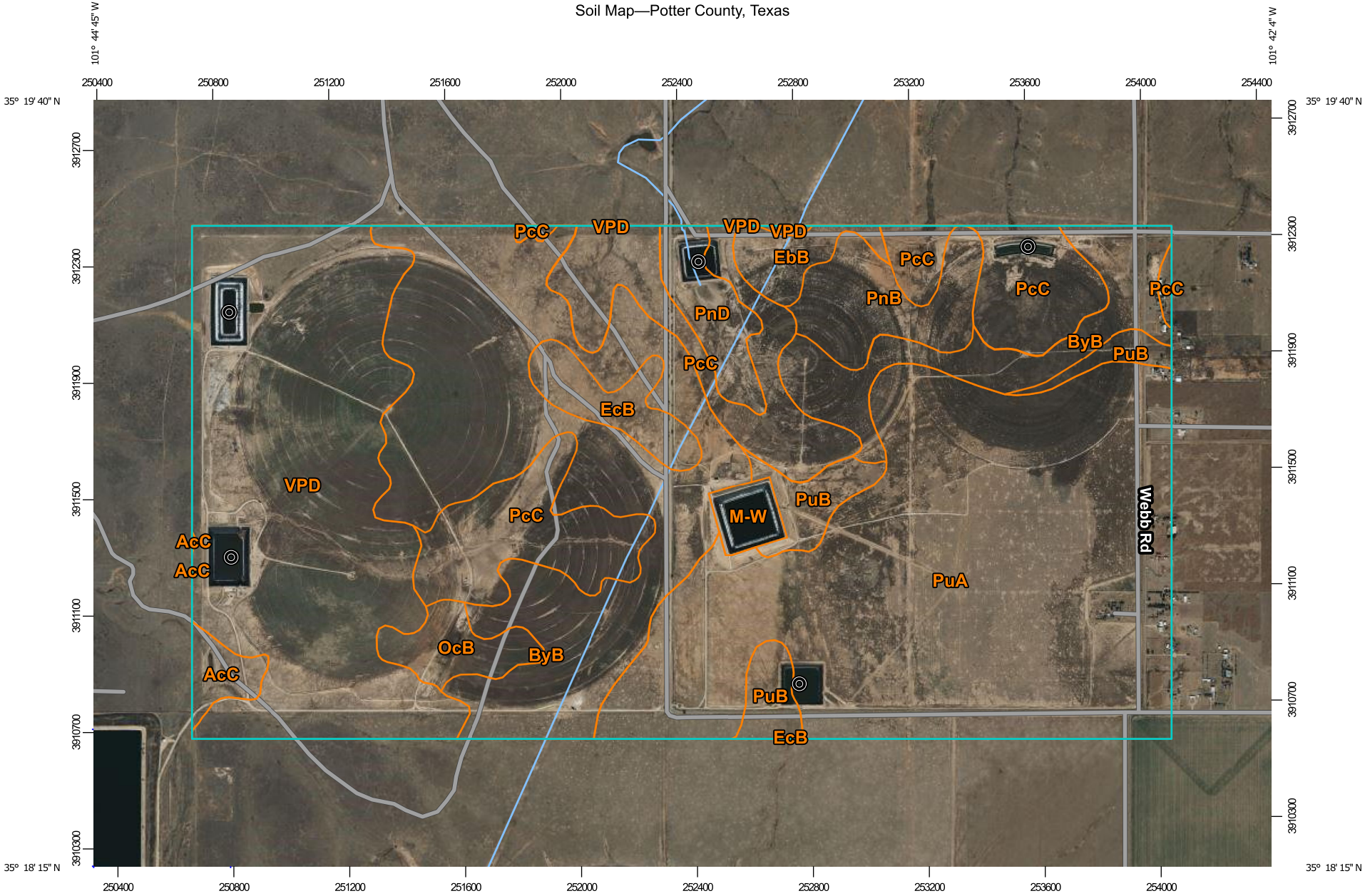
Types of Soil

AcB - Acuff loam
EsB - Estacado clay loam
OcB - Olton clay loam
PcC - Pep clay loam
PnB - Posey clay loam, 1 to 3 percent slopes
PuA - Pullman clay loam, 0 to 1 percent slopes
PuB - Pullman clay loam, 1 to 3 percent slopes
PnD - Posey clay loam, 5 to 8 percent slopes
VPD - Veal-Palo Duro association
EcB - Estacado Clay Loam
ByB - Bovina Clay Loam
EbB - Estacado Clay Loam

Soil Information for Sections 6 & 7

Wastewater Application Plot

Soil Map—Potter County, Texas



Map Scale: 1:18,600 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AcC	Acuff loam, 3 to 5 percent slopes	12.6	0.9%
ByB	Bovina clay loam, 1 to 3 percent slopes	337.9	22.9%
EbB	Estacado clay loam, breaks, 1 to 3 percent slopes	18.4	1.2%
EcB	Estacado clay loam, 1 to 3 percent slopes	27.0	1.8%
M-W	Water, miscellaneous	12.0	0.8%
OcB	Olton clay loam, 1 to 3 percent slopes	23.3	1.6%
PcC	Pep clay loam, 3 to 5 percent slopes	184.8	12.5%
PnB	Plemons loam, 1 to 3 percent slopes	46.3	3.1%
PnD	Plemons loam, 5 to 8 percent slopes	27.9	1.9%
PuA	Pullman clay loam, 0 to 1 percent slopes	438.9	29.7%
PuB	Pullman clay loam, 1 to 3 percent slopes	40.5	2.7%
VPD	Veal-Paloduro association, 3 to 8 percent slopes	308.0	20.8%
Totals for Area of Interest		**1,477.8**	**100.0%**

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 20, Sep 12, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 9, 2016—Nov 28, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
EcB	Estacado clay loam, 1 to 3 percent slopes	29.0	28.9%
PcC	Pep clay loam, 3 to 5 percent slopes	30.6	30.5%
PnB	Posey clay loam, 1 to 3 percent slopes	22.1	22.0%
PnD	Posey clay loam, 5 to 8 percent slopes	13.8	13.8%
PuA	Pullman clay loam, 0 to 1 percent slopes	4.9	4.9%
Totals for Area of Interest		**100.3**	**100.0%**

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
AcC—Acuff loam, 3 to 5 percent slopes														
Acuff	100	B	0-11	Loam	CL	A-6, A-4	0- 0- 0	0- 0- 0	100-100-100	95-98-100	95-98-100	51-61-70	24-28-32	8-12-16
			11-52	Clay loam, sandy clay loam, loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	95-98-100	50-63-75	28-34-40	12-17-22
			52-80	Clay loam, sandy clay loam, loam	CL	A-6	0- 0- 0	0- 0- 0	95-98-100	90-95-100	90-95-100	60-68-75	25-33-40	12-17-22
ByB—Bovina clay loam, 1 to 3 percent slopes														
Bovina	85	B	0-15	Clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	91-98-100	67-74-86	35-43-56	15-19-28
			15-24	Clay loam, sandy clay loam	CL, CH	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100-100	91-96-100	83-96-100	55-67-78	34-42-54	15-19-29
			24-45	Clay loam, sandy clay loam	SC, CH, CL	A-6, A-7-6	0- 0- 0	0- 0- 0	88-92-99	76-84-98	64-83-98	39-55-68	32-40-51	15-17-29
			45-80	Clay loam, sandy clay loam	CL, CH, SC	A-7-6, A-6	0- 0- 0	0- 0- 0	92-97-100	84-95-100	74-94-100	49-66-77	32-42-51	15-21-29

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
EbB—Estacado clay loam, breaks, 1 to 3 percent slopes														
Estacado	85	B	0-5	Clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	91-98-100	67-74-86	35-43-56	15-19-28
			5-37	Sandy clay loam, clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	85-99-100	62-75-81	34-46-54	15-22-29
			37-49	Clay loam, sandy clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	90-92-100	87-90-100	72-88-100	48-64-73	32-45-51	15-23-29
			49-80	Clay loam, sandy clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	88-94-99	84-91-98	67-89-98	41-61-76	32-44-60	15-21-36
EcB—Estacado clay loam, 1 to 3 percent slopes														
Estacado	85	B	0-5	Clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	91-98-100	67-74-86	35-43-56	15-19-28
			5-18	Sandy clay loam, clay loam	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	85-99-100	62-75-81	34-46-54	15-22-29
			18-37	Sandy clay loam, clay loam	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	85-99-100	62-75-81	34-46-54	15-22-29
			37-49	Clay loam, sandy clay loam	CL, CH, SC	A-7-6	0- 0- 0	0- 0- 0	90-92-100	87-90-100	72-88-100	48-64-73	32-45-51	15-23-29
			49-80	Clay loam, sandy clay loam	CH, CL, SC	A-7-6	0- 0- 0	0- 0- 0	88-94-99	84-91-98	67-89-98	41-61-76	32-44-60	15-21-36

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
OcB—Olton clay loam, 1 to 3 percent slopes														
Olton	85	C	0-7	Clay loam	CL, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	92-99-100	66-76-84	40-46-54	19-22-27
			7-30	Clay loam, clay	CH, CL	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-99-100	63-77-88	38-50-62	18-27-36
			30-47	Clay loam, silty clay loam	CL, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	96-99-100	95-98-100	84-97-100	59-74-85	36-47-50	16-25-28
			47-80	Clay loam, silty clay loam	CL, SC-SM	A-4, A-7-6	0- 0- 0	0- 0- 0	83-90-97	78-87-97	69-86-97	48-64-81	28-42-45	6-21-24
PcC—Pep clay loam, 3 to 5 percent slopes														
Pep	80	B	0-8	Clay loam	CL, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	91-98-100	65-74-82	37-44-55	16-21-28
			8-15	Loam, sandy clay loam, clay loam	CL-ML, CL	A-7-6, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	84-98-100	53-72-81	24-41-47	5-19-24
			15-30	Loam, sandy clay loam, clay loam	CL, SC-SM	A-7-6, A-4	0- 0- 0	0- 0- 0	95-97-100	93-97-100	72-94-97	48-68-71	22-42-45	4-21-24
			30-80	Loam, sandy clay loam, clay loam	CL, SM	A-4, A-7-6	0- 0- 0	0- 0- 0	88-90-97	84-87-97	63-85-97	41-61-71	21-41-47	2-20-26

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
PnB—Plemons loam, 1 to 3 percent slopes														
Plemons	85	B	0-7	Loam	ML, CL	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	95-99-100	94-98-99	72-82-90	23-39-44	8-13-16
			7-47	Silty clay loam, clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	95-99-100	94-98-99	76-86-92	32-41-48	12-16-21
			47-76	Silty clay loam, sandy clay loam, clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	95-98-100	90-95-100	90-94-98	74-84-92	30-46-48	13-25-28
			76-80	Clay loam, silty clay loam, clay	CH, CL	A-7-6	0- 0- 0	0- 0- 0	98-100-100	95-99-100	94-99-100	78-88-95	38-54-62	19-32-37
PnD—Plemons loam, 5 to 8 percent slopes														
Plemons	85	B	0-6	Loam	ML, CL	A-6, A-7-6, A-4	0- 0- 0	0- 0- 0	100-100-100	95-99-100	94-98-99	72-82-90	23-39-44	8-13-16
			6-46	Silty clay loam, clay loam	CL	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100-100	95-99-100	94-98-99	76-86-92	32-41-48	12-16-21
			46-76	Silty clay loam, sandy clay loam, clay loam	CL	A-7-6, A-6	0- 0- 0	0- 0- 0	95-98-100	90-95-100	90-94-98	74-84-92	30-46-48	13-25-28
			76-80	Clay loam, silty clay loam, clay	CL, CH	A-7-6, A-6	0- 0- 0	0- 0- 0	98-100-100	95-99-100	94-99-100	78-88-95	38-54-62	19-32-37

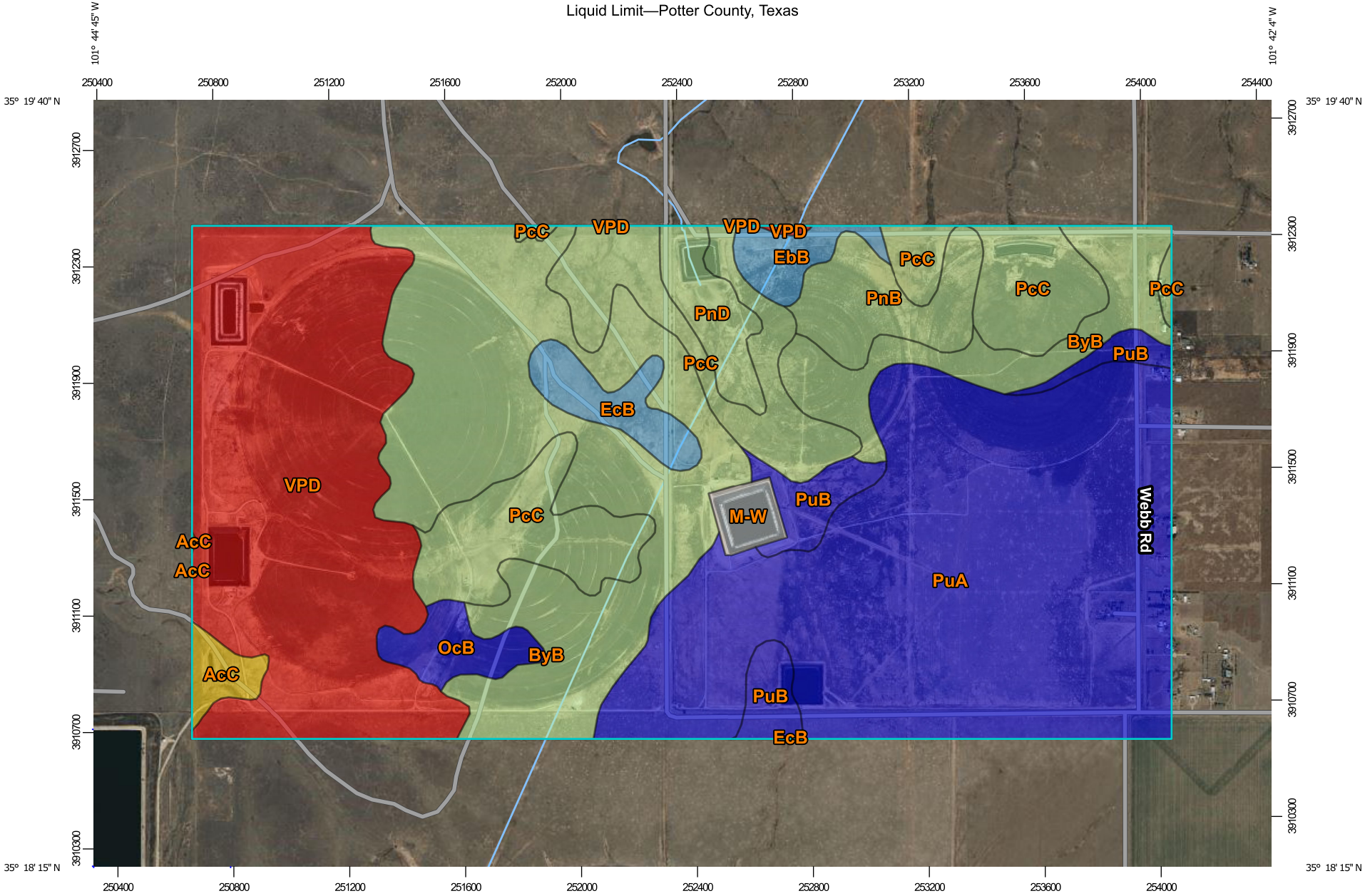
Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
PuA—Pullman clay loam, 0 to 1 percent slopes														
Pullman	90	C	0-5	Clay loam	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	96-100-100	80-87-93	41-47-56	19-23-28
			5-33	Clay, silty clay loam, silty clay	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-100-100	84-92-99	48-52-64	25-28-36
			33-52	Clay loam, clay, silty clay loam	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	79-87-97	43-48-60	23-27-36
			52-80	Clay, clay loam, silty clay loam	CL, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	80-88-97	36-42-55	13-19-31
PuB—Pullman clay loam, 1 to 3 percent slopes														
Pullman	90	C	0-4	Clay loam	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	96-100-100	80-87-93	41-47-56	19-23-28
			4-32	Silty clay loam, silty clay, clay	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-100-100	84-92-99	48-52-64	25-28-36
			32-51	Clay loam, silty clay loam, clay	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	79-87-97	43-48-60	23-27-36
			51-80	Clay, clay loam, silty clay loam	CL, CH	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	80-88-97	36-42-55	13-19-31

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
VPD—Veal-Paloduro association, 3 to 8 percent slopes														
Veal	50	B	0-3	Loam	CL, SC-SM	A-4, A-6	0- 0- 0	0- 0- 0	87-98-100	86-98-100	77-95-100	46-59-66	21-28-33	4-9 -13
			3-13	Gravelly loam, gravelly fine sandy loam, gravelly sandy clay loam	SC, SC-SM	A-2-4, A-6	0- 0- 0	0- 0- 0	67-77-81	66-76-81	56-72-81	26-34-44	21-26-31	4-8 -12
			13-54	Gravelly loam, gravelly sandy clay loam, gravelly fine sandy loam, very gravelly loam, very gravelly fine sandy loam, very gravelly sandy clay loam	GC, CL, GC-GM	A-4, A-6, A-1-b	0- 0- 0	0- 0- 0	43-69-82	41-67-81	36-65-81	21-42-54	21-26-31	4-8 -12

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
			54-80	Gravelly fine sandy loam, gravelly loam, very gravelly sandy clay loam, very gravelly loam, gravelly sandy clay loam, very gravelly fine sandy loam	GC-GM, CL, SC	A-6, A-1-b	0- 0- 0	0- 0- 0	44-78-82	42-77-81	37-75-81	21-48-54	21-31-31	4-12-12
Paloduro	40	B	0-12	Clay loam	CL	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	92-97-100	66-74-80	36-38-44	16-17-22
			12-72	Clay loam, loam, sandy clay loam	CL	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	87-97-100	59-74-81	30-38-43	11-17-21
			72-80	Sandy loam, clay loam, loam, sandy clay loam	CL, CL-ML	A-4, A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	83-97-100	54-74-81	21-37-42	4-16-21

Data Source Information

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024



Map Scale: 1:18,600 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 26.2

> 26.2 and <= 31.8

> 31.8 and <= 42.3

> 42.3 and <= 45.5

> 45.5 and <= 51.3

Not rated or not available

Soil Rating Lines

<= 26.2

> 26.2 and <= 31.8

> 31.8 and <= 42.3

> 42.3 and <= 45.5

> 45.5 and <= 51.3

Not rated or not available

Soil Rating Points

<= 26.2

> 26.2 and <= 31.8

> 31.8 and <= 42.3

> 42.3 and <= 45.5

> 45.5 and <= 51.3

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Liquid Limit

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
AcC	Acuff loam, 3 to 5 percent slopes	31.8	12.6	0.9%
ByB	Bovina clay loam, 1 to 3 percent slopes	42.1	337.9	22.9%
EbB	Estacado clay loam, breaks, 1 to 3 percent slopes	45.5	18.4	1.2%
EcB	Estacado clay loam, 1 to 3 percent slopes	45.5	27.0	1.8%
M-W	Water, miscellaneous		12.0	0.8%
OcB	Olton clay loam, 1 to 3 percent slopes	49.1	23.3	1.6%
PcC	Pep clay loam, 3 to 5 percent slopes	42.3	184.8	12.5%
PnB	Plemons loam, 1 to 3 percent slopes	40.6	46.3	3.1%
PnD	Plemons loam, 5 to 8 percent slopes	40.6	27.9	1.9%
PuA	Pullman clay loam, 0 to 1 percent slopes	51.1	438.9	29.7%
PuB	Pullman clay loam, 1 to 3 percent slopes	51.3	40.5	2.7%
VPD	Veal-Paloduro association, 3 to 8 percent slopes	26.2	308.0	20.8%
Totals for Area of Interest			**1,477.8**	**100.0%**

Description

Liquid limit (LL) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state. Generally, the amount of clay- and silt-size particles, the organic matter content, and the type of minerals determine the liquid limit. Soils that have a high liquid limit have the capacity to hold a lot of water while maintaining a plastic or semisolid state.

Liquid limit is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

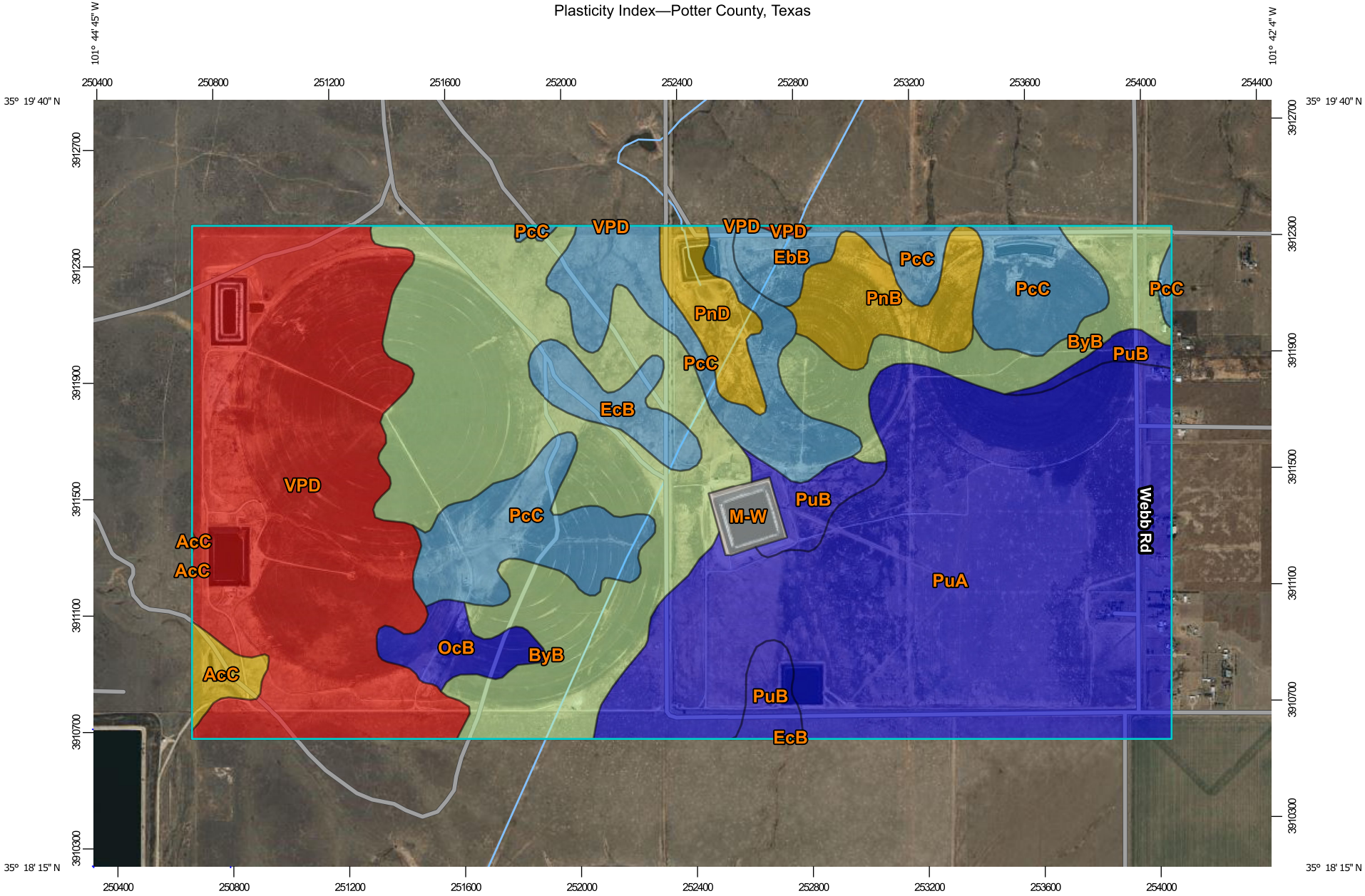
Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Inches



Map Scale: 1:18,600 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 8.1

> 8.1 and <= 15.4

> 15.4 and <= 18.6

> 18.6 and <= 21.5

> 21.5 and <= 27.3

Not rated or not available

Soil Rating Lines

<= 8.1

> 8.1 and <= 15.4

> 15.4 and <= 18.6

> 18.6 and <= 21.5

> 21.5 and <= 27.3

Not rated or not available

Soil Rating Points

<= 8.1

> 8.1 and <= 15.4

> 15.4 and <= 18.6

> 18.6 and <= 21.5

> 21.5 and <= 27.3

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
AcC	Acuff loam, 3 to 5 percent slopes	15.2	12.6	0.9%
ByB	Bovina clay loam, 1 to 3 percent slopes	18.6	337.9	22.9%
EbB	Estacado clay loam, breaks, 1 to 3 percent slopes	21.5	18.4	1.2%
EcB	Estacado clay loam, 1 to 3 percent slopes	21.5	27.0	1.8%
M-W	Water, miscellaneous		12.0	0.8%
OcB	Olton clay loam, 1 to 3 percent slopes	25.8	23.3	1.6%
PcC	Pep clay loam, 3 to 5 percent slopes	20.5	184.8	12.5%
PnB	Plemons loam, 1 to 3 percent slopes	15.3	46.3	3.1%
PnD	Plemons loam, 5 to 8 percent slopes	15.4	27.9	1.9%
PuA	Pullman clay loam, 0 to 1 percent slopes	27.1	438.9	29.7%
PuB	Pullman clay loam, 1 to 3 percent slopes	27.3	40.5	2.7%
VPD	Veal-Paloduro association, 3 to 8 percent slopes	8.1	308.0	20.8%
Totals for Area of Interest			**1,477.8**	**100.0%**

Description

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Inches

Soil Information for Section 44

Wastewater Application Plot

Map Scale: 1:12,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
EcB	Estacado clay loam, 1 to 3 percent slopes	25.5	4.0%
McA	McLean clay, 0 to 1 percent slopes, occasionally ponded	0.3	0.1%
PcC	Pep clay loam, 3 to 5 percent slopes	23.5	3.7%
PuA	Pullman clay loam, 0 to 1 percent slopes	485.1	76.1%
PuB	Pullman clay loam, 1 to 3 percent slopes	102.9	16.2%
Totals for Area of Interest		**637.4**	**100.0%**

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

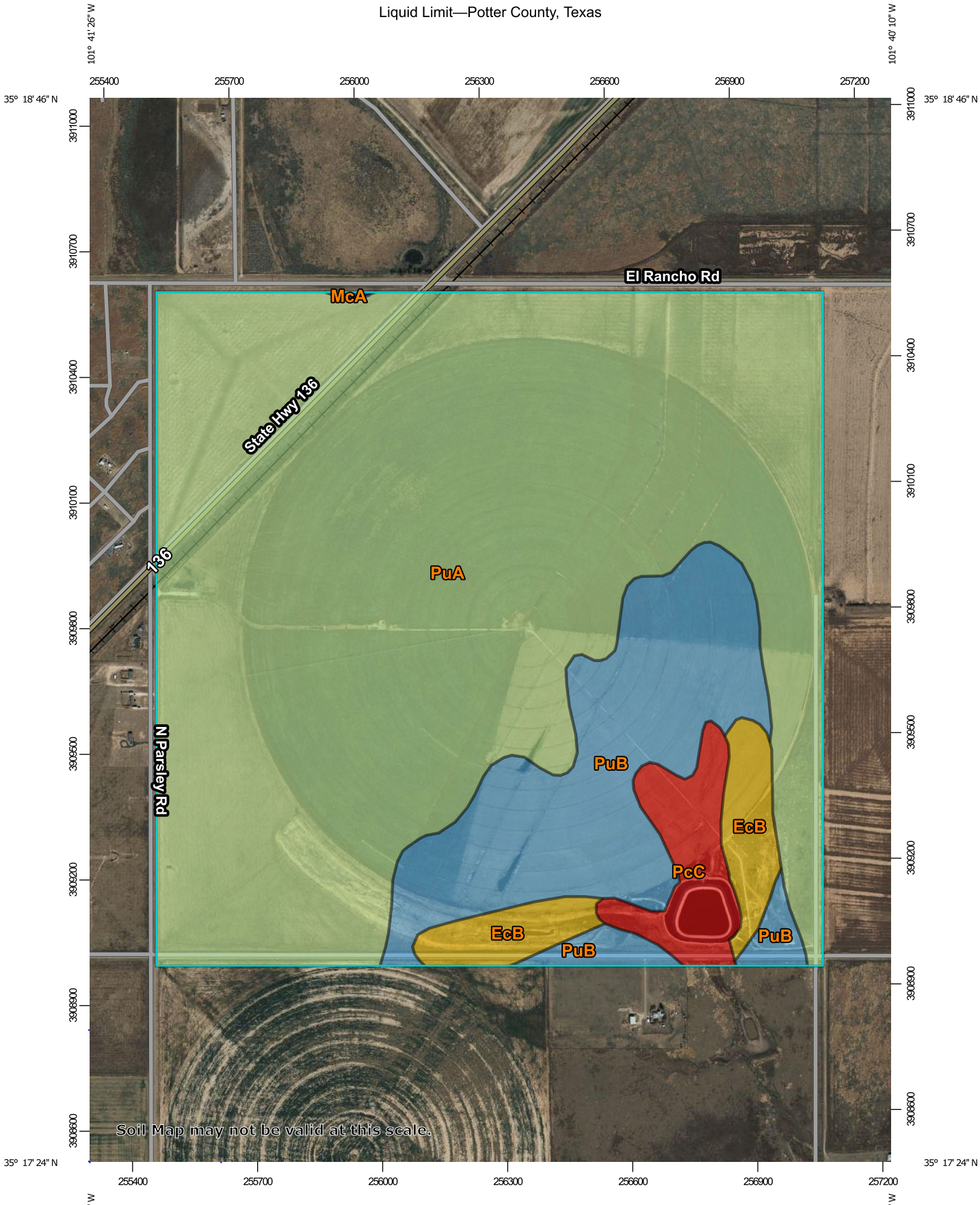
Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
EcB—Estacado clay loam, 1 to 3 percent slopes														
Estacado	85	B	0-5	Clay loam	CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	91-98-100	67-74-86	35-43-56	15-19-28
			5-18	Sandy clay loam, clay loam	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	85-99-100	62-75-81	34-46-54	15-22-29
			18-37	Sandy clay loam, clay loam	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	85-99-100	62-75-81	34-46-54	15-22-29
			37-49	Clay loam, sandy clay loam	CL, CH, SC	A-7-6	0- 0- 0	0- 0- 0	90-92-100	87-90-100	72-88-100	48-64-73	32-45-51	15-23-29
			49-80	Clay loam, sandy clay loam	CH, CL, SC	A-7-6	0- 0- 0	0- 0- 0	88-94-99	84-91-98	67-89-98	41-61-76	32-44-60	15-21-36

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
McA—McLean clay, 0 to 1 percent slopes, occasionally ponded														
Mclean, occasionally ponded	80	D	0-7	Clay	CH	A-7-6, A-7-5	0- 0- 0	0- 0- 0	100-100-100	98-100-100	94-99-100	89-96-100	66-75-83	40-45-49
			7-37	Clay	CH	A-7-5, A-7-6	0- 0- 0	0- 0- 0	100-100-100	98-100-100	93-99-100	88-95-100	65-72-81	40-44-49
			37-59	Clay	CH	A-7-6, A-7-5	0- 0- 0	0- 0- 0	100-100-100	98-100-100	93-99-100	88-95-100	65-73-81	40-44-49
			59-80	Clay	CH	A-7-6, A-7-5	0- 0- 0	0- 0- 0	100-100-100	98-100-100	95-99-100	90-96-100	63-69-80	39-43-49
PcC—Pep clay loam, 3 to 5 percent slopes														
Pep	80	B	0-8	Clay loam	CL, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	91-98-100	65-74-82	37-44-55	16-21-28
			8-15	Loam, sandy clay loam, clay loam	CL-ML, CL	A-7-6, A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	84-98-100	53-72-81	24-41-47	5-19-24
			15-30	Loam, sandy clay loam, clay loam	CL, SC-SM	A-7-6, A-4	0- 0- 0	0- 0- 0	95-97-100	93-97-100	72-94-97	48-68-71	22-42-45	4-21-24
			30-80	Loam, sandy clay loam, clay loam	CL, SM	A-4, A-7-6	0- 0- 0	0- 0- 0	88-90-97	84-87-97	63-85-97	41-61-71	21-41-47	2-20-26

Engineering Properties–Potter County, Texas														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
PuA—Pullman clay loam, 0 to 1 percent slopes														
Pullman	90	C	0-5	Clay loam	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	96-100-100	80-87-93	41-47-56	19-23-28
			5-33	Clay, silty clay loam, silty clay	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-100-100	84-92-99	48-52-64	25-28-36
			33-52	Clay loam, clay, silty clay loam	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	79-87-97	43-48-60	23-27-36
			52-80	Clay, clay loam, silty clay loam	CL, CH	A-6, A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	80-88-97	36-42-55	13-19-31
PuB—Pullman clay loam, 1 to 3 percent slopes														
Pullman	90	C	0-4	Clay loam	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	96-100-100	80-87-93	41-47-56	19-23-28
			4-32	Silty clay loam, silty clay, clay	CH, CL	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-100-100	84-92-99	48-52-64	25-28-36
			32-51	Clay loam, silty clay loam, clay	CL, CH	A-7-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	79-87-97	43-48-60	23-27-36
			51-80	Clay, clay loam, silty clay loam	CL, CH	A-7-6, A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	94-99-100	80-88-97	36-42-55	13-19-31

Data Source Information

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024



Map Scale: 1:12,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 42.3

> 42.3 and <= 45.5

> 45.5 and <= 51.1

> 51.1 and <= 51.3

> 51.3 and <= 72.7

Not rated or not available

Soil Rating Lines

<= 42.3

> 42.3 and <= 45.5

> 45.5 and <= 51.1

> 51.1 and <= 51.3

> 51.3 and <= 72.7

Not rated or not available

Soil Rating Points

<= 42.3

> 42.3 and <= 45.5

> 45.5 and <= 51.1

> 51.1 and <= 51.3

> 51.3 and <= 72.7

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Liquid Limit

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
EcB	Estacado clay loam, 1 to 3 percent slopes	45.5	25.5	4.0%
McA	McLean clay, 0 to 1 percent slopes, occasionally ponded	72.7	0.3	0.1%
PcC	Pep clay loam, 3 to 5 percent slopes	42.3	23.5	3.7%
PuA	Pullman clay loam, 0 to 1 percent slopes	51.1	485.1	76.1%
PuB	Pullman clay loam, 1 to 3 percent slopes	51.3	102.9	16.2%
Totals for Area of Interest			**637.4**	**100.0%**

Description

Liquid limit (LL) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state. Generally, the amount of clay- and silt-size particles, the organic matter content, and the type of minerals determine the liquid limit. Soils that have a high liquid limit have the capacity to hold a lot of water while maintaining a plastic or semisolid state.

Liquid limit is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Inches

Map Scale: 1:12,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 20.5
- > 20.5 and <= 21.5
- > 21.5 and <= 27.1
- > 27.1 and <= 27.3
- > 27.3 and <= 44.2
- Not rated or not available

Soil Rating Lines

- <= 20.5
- > 20.5 and <= 21.5
- > 21.5 and <= 27.1
- > 27.1 and <= 27.3
- > 27.3 and <= 44.2
- Not rated or not available

Soil Rating Points

- <= 20.5
- > 20.5 and <= 21.5
- > 21.5 and <= 27.1
- > 27.1 and <= 27.3
- > 27.3 and <= 44.2
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Potter County, Texas
Survey Area Data: Version 25, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2022—Nov 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
EcB	Estacado clay loam, 1 to 3 percent slopes	21.5	25.5	4.0%
McA	McLean clay, 0 to 1 percent slopes, occasionally ponded	44.2	0.3	0.1%
PcC	Pep clay loam, 3 to 5 percent slopes	20.5	23.5	3.7%
PuA	Pullman clay loam, 0 to 1 percent slopes	27.1	485.1	76.1%
PuB	Pullman clay loam, 1 to 3 percent slopes	27.3	102.9	16.2%
Totals for Area of Interest			**637.4**	**100.0%**

Description

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Inches

790 South Buchanan
Amarillo, TX 79101

APPENDIX V
SOIL TESTING RESULTS

LEGEND:

- Sample Location
- Irrigation Pivot Area
- ByB
- EbB
- EcB
- OcB
- PcC
- PnB
- PnD
- PuA
- PuB
- VPD

Soils Information Obtained from USDA Web Soil Survey

Xcel Energy

Apex TITAN, Inc.
6307 S. Western St.
Amarillo, Texas 79110
Phone: (806) 467-9300
www.apexcos.com
A Subsidiary of Apex Companies, LLC

Xcel Energy
Irrigation Pivot Point Soil Sampling
Potter County, Texas

FIGURE 1

Site and Soil Sampling Location Map

Service Layer Credits:
Esri, HERE, Garmin, (c) OpenStreetMap contributors
Aerial Photograph March 2024

Z:\GIS_Repository\Dallas\Projects\Xcel\Figure 1-Permanent Samples.mxd 8/7/2024 NAD 1983 2011 StatePlane Texas North FIPS 4201 Ft US Projected Coordinate System

SOIL ANALYSIS REPORT

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www.servitech.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52838 - 52847
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52838	S7S-1	0 - 6	7.6		2.05	Lo	3.3	14.3	26	15	862	1120	2020	3780	451	1030					
52839	S7S-1	6 - 18	8.1		2.63	Lo	0.9	3.9	14	5	673	1670	6010	4960	732	2140					
52840	S7S-1	18 - 30	8.4		3.35	Hi	0.6	18.0	65	9	361	902	3250	5470	967	3210					
52841	S7S-2	0 - 6	7.8		1.85	Lo	2.5	3.1	6	17	777	969	1740	4400	506	954					
52842	S7S-2	6 - 18	7.9		2.84	Lo	1.0	2.5	9	4	579	1850	6660	6060	728	1870					
52843	S7S-2	18 - 30	8.3		2.96	Hi	0.5	4.9	18	5	303	808	2910	5420	892	2690					
52844	S7S-3	0 - 6	7.7		2.10	Hi	3.0	1.8	3	11	684	889	1600	5350	456	1030					
52845	S7S-3	6 - 18	7.9		1.82	Hi	1.2	<1.0	<4	4	606	755	2720	6740	569	1440					
52846	S7S-3	18 - 30	8.4		1.80	Hi	0.7	1.1	<4	6	356	552	1990	10500	666	1650					
52847	S8-2	0 - 6	7.8		2.16	No	1.8	2.2	4	25	900	507	913	2880	540	1750					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	Ammonium Nitrogen lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52838	S7S-1	0 - 6	06/18/24	5	9	2529	2515	66	6.33	607	96	1090	1130	10.8	7.5						
52839	S7S-1	6 - 18	06/18/24	3	11	788	784	65	8.61	560	151	1900	1860	18.4	17						
52840	S7S-1	18 - 30	06/18/24	3	11	578	560	65	11.8	495	222	3010	2850	28.2	27						
52841	S7S-2	0 - 6	06/18/24	6	11	2348	2345	64	5.60	624	106	979	972	9.5	6.9						
52842	S7S-2	6 - 18	06/18/24	4	14	785	782	61	7.41	554	137	1570	1490	15.5	15						
52843	S7S-2	18 - 30	06/18/24	4	14	471	466	58	9.41	529	202	2550	2460	23.9	22						
52844	S7S-3	0 - 6	06/18/24	5	9	1867	1865	62	6.31	611	124	1260	1410	12.1	7.5						
52845	S7S-3	6 - 18	06/18/24	3	11	912	911	59	6.52	578	107	1380	1200	13.8	11						
52846	S7S-3	18 - 30	06/18/24	4	14	617	616	54	7.65	503	144	1640	1590	16.6	13						
52847	S8-2	0 - 6	06/18/24	3	5	1404	1402	57	9.06	621	147	1860	2500	17.4	14						

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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SOIL ANALYSIS REPORT

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6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52838 - 52847
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	Cation Exchange Capacity CEC	%H	%K	%Ca	%Mg	%Na
52838	S7S-1	WHEATGRASS HAY	3 tons				0	40	0		0			0		0		29	0	8	64	13	15
52838	S7S-1	SORGHUM SUDAN HAY	3 tons				0	45	0		0			0		0							
52838	S7S-1	TRITICALE HAY	3 tons/ac				0	35	0		0			0		0							
52839	S7S-1																	42	0	4	59	15	22
52840	S7S-1																	48	0	2	52	17	29
52841	S7S-2	WHEATGRASS HAY	3 tons				50	35	0		0			0		0		32	0	6	68	13	13
52841	S7S-2	SORGHUM SUDAN HAY	3 tons				5	45	0		0			0		0							
52841	S7S-2	TRITICALE HAY	3 tons/ac				25	35	0		0			0		0							
52842	S7S-2																	41	0	4	61	15	20
52843	S7S-2																	45	0	2	56	17	26
52844	S7S-3	WHEATGRASS HAY	3 tons				80	45	0		0			0		0		35	0	5	71	11	13
52844	S7S-3	SORGHUM SUDAN HAY	3 tons				35	55	0		0			0		0							
52844	S7S-3	TRITICALE HAY	3 tons/ac				55	45	0		0			0		0							
52845	S7S-3																	38	0	4	67	13	17
52846	S7S-3																	39	0	2	65	14	19
52847	S8-2	WHEATGRASS HAY	3 tons				50	25	0		0			0		0		29	0	8	50	16	26
52847	S8-2	SORGHUM SUDAN HAY	3 tons				5	30	0		0			0		0							
52847	S8-2	TRITICALE HAY	3 tons/ac				25	20	0		0			0		0							

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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www.servitech.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52848 - 52857
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52848	S8-2	6 - 18	7.8		2.16	Lo	0.9	3.6	13	6	635	1210	4360	5270	811	1360					
52849	S8-2	18 - 30	8.3		2.46	Hi	0.7	5.9	21	8	435	896	3230	5580	1040	2400					
52850	S4-2	0 - 6	8.1		1.59	Hi	3.1	20.6	37	17	553	363	653	4750	381	1120					
52851	S4-2	6 - 18	8.0		2.28	Hi	0.9	6.3	23	5	503	1970	7090	11900	321	1180					
52852	S4-2	18 - 30	8.0		2.12	Hi	0.6	17.9	64	4	440	1740	6260	21100	395	1250					
52853	S4-3	0 - 6	7.7		2.59	Hi	3.3	33.6	60	26	845	1150	2070	5380	499	1530					
52854	S4-3	6 - 18	7.8		2.44	Hi	1.5	10.0	36	9	673	2940	10600	12500	446	1350					
52855	S4-3	18 - 30	8.0		2.72	Hi	0.9	16.1	58	7	685	1580	5690	19500	586	1800					
52856	S4-4	0 - 6	7.7		2.49	Lo	3.2	29.5	53	26	879	1010	1820	4800	473	1510					
52857	S4-4	6 - 18	7.9		2.48	Hi	1.2	11.8	42	8	774	2190	7880	7900	425	1510					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52848	S8-2	6 - 18	06/18/24	4	14	746	742	57	7.81	722	179	1310	2470	11.3	10						
52849	S8-2	18 - 30	06/18/24	3	11	551	545	61	9.05	476	220	2200	1380	20.9	19						
52850	S4-2	0 - 6	06/17/24	3	5	1665	1644	53	7.87	543	123	1540	1820	15.5	8.5						
52851	S4-2	6 - 18	06/17/24	2	7	896	890	40	9.42	710	146	1850	2450	16.5	8.8						
52852	S4-2	18 - 30	06/17/24	2	7	571	553	38	9.77	696	147	2030	2680	18.2	9.8						
52853	S4-3	0 - 6	06/17/24	3	5	3032	2998	51	11.0	762	176	2250	3240	19.1	12						
52854	S4-3	6 - 18	06/17/24	2	7	1482	1472	48	8.99	694	153	1840	2120	16.5	10						
52855	S4-3	18 - 30	06/17/24	3	11	773	757	48	9.59	626	139	2350	2480	22.1	14						
52856	S4-4	0 - 6	06/17/24	2	4	2693	2663	55	9.53	746	159	1920	2660	16.6	12						
52857	S4-4	6 - 18	06/17/24	2	7	1127	1115	46	8.92	638	138	1940	2070	18.1	12						

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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www.servitech.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52848 - 52857
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	**Cation Exchange Capacity** CEC	%H	%K	%Ca	%Mg	%Na
52848	S8-2																	39	0	4	64	17	15
52849	S8-2																	45	0	2	55	19	23
52850	S4-2	WHEATGRASS HAY	3 tons				0	35	0		0			0		0		33	0	4	72	10	15
52850	S4-2	SORGHUM SUDAN HAY	3 tons				0	45	0		0			0		0							
52850	S4-2	TRITICALE HAY	3 tons/ac				0	35	0		0			0		0							
52851	S4-2																	34	0	4	73	8	15
52852	S4-2																	35	0	3	72	9	16
52853	S4-3	WHEATGRASS HAY	3 tons				0	25	0		0			0		0		38	0	6	66	11	18
52853	S4-3	SORGHUM SUDAN HAY	3 tons				0	30	0		0			0		0							
52853	S4-3	TRITICALE HAY	3 tons/ac				0	20	0		0			0		0							
52854	S4-3																	36	0	5	69	10	16
52855	S4-3																	39	0	4	63	12	20
52856	S4-4	WHEATGRASS HAY	3 tons				0	25	0		0			0		0		37	0	6	65	11	18
52856	S4-4	SORGHUM SUDAN HAY	3 tons				0	30	0		0			0		0							
52856	S4-4	TRITICALE HAY	3 tons/ac				0	20	0		0			0		0							
52857	S4-4																	37	0	5	67	10	18

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52858 - 52867
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52858	S4-4	18 - 30	8.1		3.09	Hi	0.9	31.5	113	7	573	1740	6260	20300	551	2000					
52859	S6-2	0 - 6	7.7		1.35	Hi	4.2	33.3	60	33	936	1070	1930	6320	476	619					
52860	S6-2	6 - 18	7.9		2.13	Hi	1.4	10.7	39	9	736	3540	12700	13100	385	1070					
52861	S6-2	18 - 30	8.2		2.16	Hi	0.7	12.2	44	7	802	1390	5000	16200	645	1570					
52862	S6-1	0 - 6	7.7		1.67	Hi	4.4	31.8	57	28	872	1440	2590	7030	450	683					
52863	S6-1	6 - 18	7.9		2.30	Hi	1.5	17.4	63	7	716	4010	14400	14800	425	1200					
52864	S6-1	18 - 30	8.0		2.54	Hi	0.8	18.2	66	6	721	2120	7630	17000	727	1580					
52865	S7N-3	0 - 6	7.6		2.49	Lo	2.6	19.7	35	20	945	1830	3290	5650	494	1350					
52866	S7N-3	6 - 18	8.0		2.95	Lo	1.0	9.7	35	4	636	1290	4640	6090	704	2280					
52867	S7N-3	18 - 30	8.5		3.19	Hi	0.8	26.1	94	6	279	612	2200	7340	863	3190					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	Ammonium Nitrogen lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52858	S4-4	18 - 30	06/17/24	3	11	784	752	47	11.6	650	167	2890	3430	26.1	16						
52859	S6-2	0 - 6	06/17/24	4	7	4027	3994	62	4.81	595	95	744	626	7.5	3.7						
52860	S6-2	6 - 18	06/17/24	3	11	1186	1175	52	6.43	551	86	1300	1010	13.6	7.5						
52861	S6-2	18 - 30	06/17/24	3	11	574	562	44	10.2	556	164	1970	2450	18.9	12						
52862	S6-1	0 - 6	06/17/24	5	9	4012	3980	60	5.52	626	88	740	824	7.3	4.4						
52863	S6-1	6 - 18	06/17/24	3	11	1339	1322	52	7.72	602	91	1340	1430	13.4	9.3						
52864	S6-1	18 - 30	06/17/24	3	11	619	601	45	11.4	692	219	2000	3310	17.0	12						
52865	S7N-3	0 - 6	06/17/24	4	7	2217	2197	54	9.14	710	139	1600	2360	14.4	10						
52866	S7N-3	6 - 18	06/17/24	4	14	1132	1122	59	10.7	612	166	2130	2620	19.7	18						
52867	S7N-3	18 - 30	06/17/24	3	11	580	554	56	15.0	539	261	3640	4230	32.2	27						

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Reviewed and Approved By: Amy Meier, Data Review Coordinator

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806.677.0093
Fax 806.677.0329

LAB NO:	52858 - 52867
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	Cation Exchange Capacity: CEC	%H	%K	%Ca	%Mg	%Na
52858	S4-4																	40	0	4	63	12	22
52859	S6-2	WHEATGRASS HAY	3 tons				0	0	0		0			0		0		34	0	7	73	12	8
52859	S6-2	SORGHUM SUDAN HAY	3 tons				0	0	0		0			0		0							
52859	S6-2	TRITICALE HAY	3 tons/ac				0	0	0		0			0		0							
52860	S6-2																	35	0	5	72	9	13
52861	S6-2																	39	0	5	64	14	17
52862	S6-1	WHEATGRASS HAY	3 tons				0	15	0		0			0		0		34	0	7	74	11	9
52862	S6-1	SORGHUM SUDAN HAY	3 tons				0	20	0		0			0		0							
52862	S6-1	TRITICALE HAY	3 tons/ac				0	15	0		0			0		0							
52863	S6-1																	36	0	5	70	10	15
52864	S6-1																	40	0	5	63	15	17
52865	S7N-3	WHEATGRASS HAY	3 tons				0	30	0		0			0		0		37	0	6	67	11	16
52865	S7N-3	SORGHUM SUDAN HAY	3 tons				0	40	0		0			0		0							
52865	S7N-3	TRITICALE HAY	3 tons/ac				0	25	0		0			0		0							
52866	S7N-3																	42	0	4	59	14	23
52867	S7N-3																	47	0	2	53	15	30

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Reviewed and Approved By: Amy Meier, Data Review Coordinator

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SOIL ANALYSIS REPORT

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6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52868 - 52877
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52868	S7N-2	0 - 6	7.7		2.51	Lo	3.0	15.3	28	12	947	1400	2520	4480	504	1320					
52869	S7N-2	6 - 18	8.0		2.68	Lo	1.0	2.5	9	4	732	1850	6660	4610	738	2380					
52870	S7N-2	18 - 30	8.4		3.21	Lo	0.6	18.3	66	10	365	788	2840	5110	867	3040					
52871	S7N-1	0 - 6	7.7		2.72	Lo	3.6	38.4	69	20	1030	1930	3470	5580	566	1400					
52872	S7N-1	6 - 18	7.9		2.98	Lo	1.0	3.9	14	4	786	2020	7270	4970	752	2120					
52873	S7N-1	18 - 30	8.6		1.68	Hi	0.7	9.6	35	7	426	487	1750	5120	882	2640					
52874	S5-1	0 - 6	8.0		1.68	Hi	3.3	20.2	36	23	605	539	970	6190	443	1150					
52875	S5-1	6 - 18	7.9		2.18	Hi	1.2	10.1	36	5	484	2330	8390	17900	388	1490					
52876	S5-1	18 - 30	8.0		2.15	Hi	0.7	14.8	53	4	485	2090	7520	21900	455	1620					
52877	S5-3	0 - 6	7.8		1.72	Hi	3.3	12.3	22	38	745	767	1380	5120	416	978					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	Ammonium Nitrogen lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52868	S7N-2	0 - 6	06/17/24	6	11	2212	2197	59	8.46	630	109	1550	2180	15.0	11						
52869	S7N-2	6 - 18	06/17/24	4	14	1049	1046	61	10.2	562	154	2050	2420	19.8	19						
52870	S7N-2	18 - 30	06/17/24	3	11	476	458	59	13.7	515	229	2980	3440	27.5	25						
52871	S7N-1	0 - 6	06/18/24	29	52	2496	2458	62	8.59	724	142	1470	1970	13.1	11						
52872	S7N-1	6 - 18	06/18/24	6	22	720	716	60	9.32	610	156	1810	2250	16.9	17						
52873	S7N-1	18 - 30	06/18/24	3	11	466	456	62	9.97	457	175	2210	2030	22.3	22						
52874	S5-1	0 - 6	06/17/24	4	7	3013	2993	55	8.62	629	145	1490	1990	13.9	8.3						
52875	S5-1	6 - 18	06/17/24	2	7	1001	991	43	11.6	759	171	2290	3470	19.5	12						
52876	S5-1	18 - 30	06/17/24	2	7	494	479	44	12.1	773	146	2370	3700	20.5	13						
52877	S5-3	0 - 6	06/17/24	3	5	2743	2731	50	7.81	678	99	1290	1860	12.2	6.8						

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Reviewed and Approved By: Amy Meier, Data Review Coordinator

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LAB NO:	52868 - 52877
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	Cation Exchange Capacity CEC	%H	%K	%Ca	%Mg	%Na
52868	S7N-2	WHEATGRASS HAY	3 tons				0	45	0		0			0		0		35	0	7	64	12	17
52868	S7N-2	SORGHUM SUDAN HAY	3 tons				0	50	0		0			0		0							
52868	S7N-2	TRITICALE HAY	3 tons/ac				0	45	0		0			0		0							
52869	S7N-2																	41	0	5	56	15	25
52870	S7N-2																	46	0	2	54	16	28
52871	S7N-1	WHEATGRASS HAY	3 tons				0	30	0		0			0		0		38	0	7	65	12	16
52871	S7N-1	SORGHUM SUDAN HAY	3 tons				0	40	0		0			0		0							
52871	S7N-1	TRITICALE HAY	3 tons/ac				0	25	0		0			0		0							
52872	S7N-1																	42	0	5	59	15	22
52873	S7N-1																	45	0	2	56	16	26
52874	S5-1	WHEATGRASS HAY	3 tons				0	30	0		0			0		0		35	0	4	71	10	14
52874	S5-1	SORGHUM SUDAN HAY	3 tons				0	35	0		0			0		0							
52874	S5-1	TRITICALE HAY	3 tons/ac				0	20	0		0			0		0							
52875	S5-1																	36	0	3	70	9	18
52876	S5-1																	37	0	3	67	10	19
52877	S5-3	WHEATGRASS HAY	3 tons				0	0	0		0			0		0		35	0	6	72	10	12
52877	S5-3	SORGHUM SUDAN HAY	3 tons				0	0	0		0			0		0							
52877	S5-3	TRITICALE HAY	3 tons/ac				0	0	0		0			0		0							

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LAB NO:	52878 - 52887
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52878	S5-3	6 - 18	7.9		2.05	Hi	1.0	5.5	20	10	502	1550	5580	10600	424	1370					
52879	S5-3	18 - 30	8.1		2.07	Hi	0.7	17.9	64	6	529	1250	4500	19100	582	1800					
52880	S5-2	0 - 6	8.0		1.80	Hi	2.5	16.8	30	21	539	685	1230	6260	410	1100					
52881	S5-2	6 - 18	7.9		2.34	Hi	0.9	8.0	29	6	418	1900	6840	12700	333	1080					
52882	S5-2	18 - 30	8.1		2.56	Hi	0.6	21.8	78	4	418	1770	6370	22900	406	1390					
52883	S4-1	0 - 6	8.2		1.41	Hi	1.8	21.2	38	15	539	306	551	5010	353	1020					
52884	S4-1	6 - 18	8.1		2.75	Hi	1.1	11.0	40	5	434	2360	8500	17000	334	1280					
52885	S4-1	18 - 30	8.2		2.70	Hi	0.6	17.4	63	3	437	1430	5150	22700	431	1540					
52886	S3-1	0 - 6	7.8		1.13	Lo	4.3	34.8	63	29	1090	466	839	5850	518	399					
52887	S3-1	6 - 18	7.9		2.04	Hi	1.1	7.2	26	6	754	1400	5040	7830	574	1110					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52878	S5-3	6 - 18	06/17/24	3	11	775	769	40	9.83	746	156	1870	2450	16.3	11						
52879	S5-3	18 - 30	06/17/24	2	7	537	519	47	10.3	643	156	2150	2320	19.7	14						
52880	S5-2	0 - 6	06/17/24	4	7	2382	2365	45	8.66	737	141	1520	2170	13.4	8.3						
52881	S5-2	6 - 18	06/17/24	2	7	836	828	38	9.12	772	146	1620	2510	14.0	8.0						
52882	S5-2	18 - 30	06/17/24	2	7	423	401	42	10.6	736	147	2030	2900	17.9	11						
52883	S4-1	0 - 6	06/17/24	3	5	1715	1694	47	7.14	507	88	1290	1670	13.9	7.3						
52884	S4-1	6 - 18	06/17/24	2	7	910	899	48	10.2	795	167	1940	2940	16.3	9.5						
52885	S4-1	18 - 30	06/17/24	1	4	420	403	38	11.4	743	159	2360	3420	20.5	12						
52886	S3-1	0 - 6	06/18/24	6	11	3455	3420	59	3.67	632	85	399	345	4.0	1.5						
52887	S3-1	6 - 18	06/18/24	6	22	930	923	53	5.23	531	87	955	487	10.1	8.0						

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806.677.0093
Fax 806.677.0329

LAB NO:	52878 - 52887
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	**Cation Exchange Capacity** CEC	%H	%K	%Ca	%Mg	%Na
52878	S5-3																	36	0	4	70	10	17
52879	S5-3																	39	0	3	64	12	20
52880	S5-2	WHEATGRASS HAY	3 tons				0	30	0		0			0		0		35	0	4	72	10	14
52880	S5-2	SORGHUM SUDAN HAY	3 tons				0	35	0		0			0		0							
52880	S5-2	TRITICALE HAY	3 tons/ac				0	25	0		0			0		0							
52881	S5-2																	34	0	3	75	8	14
52882	S5-2																	35	0	3	70	10	17
52883	S4-1	WHEATGRASS HAY	3 tons				0	40	0		0			0		0		34	0	4	74	9	13
52883	S4-1	SORGHUM SUDAN HAY	3 tons				0	45	0		0			0		0							
52883	S4-1	TRITICALE HAY	3 tons/ac				0	35	0		0			0		0							
52884	S4-1																	34	0	3	73	8	16
52885	S4-1																	36	0	3	69	10	18
52886	S3-1	WHEATGRASS HAY	3 tons				0	15	0		0			0		0		34	0	8	74	13	5
52886	S3-1	SORGHUM SUDAN HAY	3 tons				0	15	0		0			0		0							
52886	S3-1	TRITICALE HAY	3 tons/ac				0	10	0		0			0		0							
52887	S3-1																	37	0	5	68	13	13

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Amarillo, TX 79109
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806.677.0093
Fax 806.677.0329

LAB NO:	52888 - 52897
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52888	S3-1	18 - 30	8.3		2.25	Hi	0.7	8.3	30	7	571	934	3360	11200	738	1670					
52889	S3-2	0 - 6	7.9		1.06	Hi	3.6	29.6	53	25	842	570	1030	7450	504	534					
52890	S3-2	6 - 18	8.1		1.64	Hi	1.3	36.0	130	8	582	727	2620	11100	475	1160					
52891	S3-2	18 - 30	8.3		1.66	Hi	0.6	31.2	112	6	611	424	1530	9090	544	1270					
52892	S2-2	0 - 6	8.2		0.77	Hi	4.1	58.5	105	40	963	102	184	5810	520	476					
52893	S2-2	6 - 18	8.4		0.93	Hi	1.6	37.8	136	10	601	180	648	10600	405	817					
52894	S2-2	18 - 30	8.3		1.47	Hi	0.8	19.3	69	7	561	427	1540	15100	497	1040					
52895	S2-1	0 - 6	8.1		0.89	Hi	4.2	53.7	97	57	881	169	304	6190	508	595					
52896	S2-1	6 - 18	8.0		1.69	Hi	1.3	48.6	175	23	644	702	2530	10200	482	1070					
52897	S2-1	18 - 30	8.2		1.58	Hi	0.6	13.7	49	8	609	453	1630	8960	585	1180					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52888	S3-1	18 - 30	06/18/24	3	11	593	585	51	7.94	573	156	1590	1680	15.2	13						
52889	S3-2	0 - 6	06/18/24	5	9	2763	2733	57	4.42	617	90	588	414	5.9	2.9						
52890	S3-2	6 - 18	06/18/24	4	14	1090	1054	51	7.23	643	106	1340	1480	12.9	8.3						
52891	S3-2	18 - 30	06/18/24	3	11	488	457	51	7.54	616	134	1380	1700	13.1	9.5						
52892	S2-2	0 - 6	06/18/24	4	7	3253	3194	62	2.87	193	41	386	443	6.6	2.2						
52893	S2-2	6 - 18	06/18/24	3	11	1324	1286	52	3.82	193	36	710	600	12.3	5.7						
52894	S2-2	18 - 30	06/18/24	3	11	647	628	47	6.39	620	115	1220	1470	11.8	7.5						
52895	S2-1	0 - 6	06/18/24	4	7	3209	3155	60	3.48	268	52	506	559	7.4	3.7						
52896	S2-1	6 - 18	06/18/24	4	14	1189	1140	55	6.31	615	106	1110	1060	10.9	7.5						
52897	S2-1	18 - 30	06/18/24	3	11	603	589	47	6.75	588	130	1240	1450	12.0	8.8						

Analyses are representative of the samples submitted Samples are retained 30 days after report of analysis Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

The reported analytical results apply only to the sample as it was supplied. The report may not be reproduced, except in full, without permission of ServiTech.
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SOIL ANALYSIS REPORT

CLIENT: 33339	APEX TITAN INC 4901 HILLSIDE RD BUILDING A AMARILLO, TX 79109

servi tech
www.servitech.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52888 - 52897
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	Cation Exchange Capacity: CEC	%H	%K	%Ca	%Mg	%Na
52888	S3-1																	40	0	4	63	15	18
52889	S3-2	WHEATGRASS HAY	3 tons				0	25	0		0			0		0		34	0	6	74	12	7
52889	S3-2	SORGHUM SUDAN HAY	3 tons				0	30	0		0			0		0							
52889	S3-2	TRITICALE HAY	3 tons/ac				0	20	0		0			0		0							
52890	S3-2																	35	0	4	70	11	14
52891	S3-2																	37	0	4	68	12	15
52892	S2-2	WHEATGRASS HAY	3 tons				0	0	0		0			0		0		34	0	7	74	13	6
52892	S2-2	SORGHUM SUDAN HAY	3 tons				0	0	0		0			0		0							
52892	S2-2	TRITICALE HAY	3 tons/ac				0	0	0		0			0		0							
52893	S2-2																	33	0	5	75	10	11
52894	S2-2																	35	0	4	71	12	13
52895	S2-1	WHEATGRASS HAY	3 tons				0	0	0		0			0		0		34	0	7	73	12	8
52895	S2-1	SORGHUM SUDAN HAY	3 tons				0	0	0		0			0		0							
52895	S2-1	TRITICALE HAY	3 tons/ac				0	0	0		0			0		0							
52896	S2-1																	35	0	5	71	11	13
52897	S2-1																	37	0	4	68	13	14

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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SOIL ANALYSIS REPORT

CLIENT: 33339	APEX TITAN INC 4901 HILLSIDE RD BUILDING A AMARILLO, TX 79109

servi tech
www.servitech.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	52898 - 52900
INVOICE NO:	172326
DATE RECEIVED:	06/21/2024
DATE REPORTED:	06/27/2024

SOIL ANALYSIS RESULTS FOR: XCEL HARRINGTON/NICHOLS 2024 **FIELD ID:**

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP											
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
52898	S8-1	0 - 6	7.8		2.49	No	2.2	1.8	3	32	878	577	1040	2980	526	1810					
52899	S8-1	6 - 18	7.8		2.14	Lo	0.9	5.1	18	6	505	1150	4140	6550	783	1140					
52900	S8-1	18 - 30	8.4		2.35	Lo	0.6	2.1	8	7	355	797	2870	5930	997	2390					

METHOD USED:				KCl Extr.		Calculated	TKN	Sat. Paste													
Lab Number	Sample ID	Sample Depth	Date Sampled	Ammonium Nitrogen ppm	Ammonium Nitrogen lb. /A	Total N ppm	TKN ppm	Saturation % Sat	Electrical Conductivity mmho/cm	Calcium mg/L Ca	Magnesium mg/L Mg	Sodium mg/L Na	Chloride mg/L Cl	Sodium Adsorption Ratio	Gypsum Rec tons/ac						
52898	S8-1	0 - 6	06/20/24	4	7	1604	1602	54	10.5	703	156	2150	3380	19.1	15						
52899	S8-1	6 - 18	06/20/24	4	14	727	722	58	7.60	804	182	1120	2370	9.3	8.2						
52900	S8-1	18 - 30	06/20/24	2	7	512	510	62	9.53	455	217	2190	1360	21.1	19						

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl
52898	S8-1	WHEATGRASS HAY	3 tons				60	0	0		0			0		0	
52898	S8-1	SORGHUM SUDAN HAY	3 tons				15	0	0		0			0		0	
52898	S8-1	TRITICALE HAY	3 tons/ac				40	0	0		0			0		0	
52899	S8-1																
52900	S8-1																

Cation Exchange Capacity

CEC	%H	%K	%Ca	%Mg	%Na
29	0	8	51	15	27
38	0	3	66	17	13
45	0	2	56	19	23

Analyses are representative of the samples submitted | Samples are retained 30 days after report of analysis | Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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Servi-Tech Laboratories

CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 South Bell, Amarillo, TX 79109 | 800-557-7509

Required Client Information: **Section A**

Company: Apex TITAN

Address: 4901 Hillside Rd Bldg A, Amarillo, TX 79109

Phone: 806 570-0757 Fax:

Required Client Information: **Section B**

Report To: John T. Norman

Invoice To: Same as above

P.O.:

Project Name: Xcel Harrington - Nichols 2024

Project Number:

Page: 1 of 5

Client Information (Check quote/contract):

Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by Servi-Tech **Section C**

Quote Reference:

Subcontract Lab:

Carrier:

Shipping Cost:

Requested Analysis or Package:

Section D **Required** Client Information:

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; OTHER WATER AQ; ENV. SOIL SL; SOLID WASTE SW; AG SOIL AS; FEED FD; FERTILIZER FT; PLANT PT; OTHER OT

ITEM#	(Lab Use Only) LAB#	SAMPLE ID (Sample IDs MUST BE UNIQUE)		MATRIX CODE	DATE COLLECTED (mm / dd / yy)	TIME COLLECTED (hh: mm a/p)	# Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	See attached
1	52874	S5-1	0-6"	SL	6-17-24	0937								X
2	52875	"	6"-18"			0938								X
3	52876	"	18"-30"			0939								X
4	52877	S5-3	0-6"			1030								X
5	52878	"	6"-18"			1031								X
6	52879	"	18"-30"			1032								X
7	52880	S5-2	0-6"			1115								X
8	52881	"	6"-18"			1116								X
9	52882	"	18"-30"			1117								X
10	52883	S4-1	0-6"			1210								X
11	52884	"	6"-18"			1211								X
12	52885	"	18"-30"			1212								X

Remarks: See attached for analytical required!

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John T. Norman

SIGNATURE of SAMPLER: John T. Norman

DATE signed: (MM / DD / YY) 6-19-24

Lab Use Only — Paid

Sample Acceptable (Yes) No

Comments: CSX

Container: U B N S H O

Temp: 1 °C Date/Initial: 6/20 yR

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
John T. Norman/Apex	6-20-24	1133	Yahaira Reman	6/20/24	11:35

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CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 South Bell, Amarillo, TX 79109 | 800-557-7509

Required Client Information: **Section A**

Company: Apex TITAN
Address: 4901 Hillside Rd Bldg A
Amarillo, TX 79109
Phone: 806 570-0757 Fax:

Required Client Information: **Section B**

Report To: John T. Norman
Invoice To: Same as above
P.O.:
Project Name: Xcel Harrington - Nichols 2024
Project Number:

Page: 2 of 5

Client Information (Check quote/contract):
Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by Servi-Tech **Section C**

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Requested Analysis or Package: See attached

Section D **Required** Client Information:

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; OTHER WATER AQ; ENV. SOIL SL; SOLID WASTE SW; AG SOIL AS; FEED FD; FERTILIZER FT; PLANT PT; OTHER OT

ITEM#	(Lab Use Only) LAB#	SAMPLE ID (Sample IDs MUST BE UNIQUE)		MATRIX CODE	DATE COLLECTED mm/dd/yy	TIME COLLECTED hh:mm a/p	# Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Remarks
1	52850	S 4-2	0-6"	SL	6-17-24	1305		X						See attached for analytical required!
2	52851	"	6"-18"			1306		X						
3	52852	"	18"-30"			1307		X						
4	52853	S 4-3	0-6"			1400		X						
5	52854	"	6"-18"			1401		X						
6	52855	"	18"-30"			1402		X						
7	52856	S 4-4	0-6"			1440		X						
8	52857	"	6"-18"			1441		X						
9	52858	"	18"-30"			1442		X						
10	52859	S 6-2	0-6"			1533		X						
11	52860	"	6"-18"			1534		X						
12	52861	"	18"-30"			1535		X						

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John T. Norman
SIGNATURE of SAMPLER: John T. Norman
DATE signed: (MM / DD / YY) 6-19-24

Lab Use Only
Sample Acceptable (Yes) No
Comments: CSX
Container: U B N S H O
Temp: 1 °C Date/Initial: 6/20/24K

Paid

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
John T. Norman / Apex	6-20-24	1133	Yanaira Roman	6/20/24	11:35

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Revised April 8, 2011

Servi-Tech Laboratories

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CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 South Bell, Amarillo, TX 79109 | 800-557-7509

Required Client Information: **Section A**

Company: Apex TITAN
Address: 4901 Hillside Rd Bldg A, Amarillo, TX 79109
Phone: 806 570-0757 Fax:

Required Client Information: **Section B**

Report To: John T. Norman
Invoice To: Same as above
P.O.:
Project Name: Xcel Harrington - Nichols 2024
Project Number:

Page: 3 of 5

Client Information (Check quote/contract):
Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by Servi-Tech **Section C**

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Section D **Required** Client Information:

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; OTHER WATER AQ; ENV. SOIL SL; SOLID WASTE SW; AG SOIL AS; FEED FD; FERTILIZER FT; PLANT PT; OTHER OT

ITEM#	(Lab Use Only) LAB#	SAMPLE ID (Sample IDs MUST BE UNIQUE)		MATRIX CODE	DATE COLLECTED mm/dd/yy	TIME COLLECTED hh:mm a/p	#Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Requested Analysis or Package: see attached	Remarks
1	52862	S 6-1	0-6"	SL	6-17-24	1635								X	See attached for analytical required!
2	52863	"	6"-18"			1636								X	
3	52864	"	18"-30"			1637								X	
4	52865	S 7N-3	0-6"			1843								X	
5	52866	"	6"-18"			1844								X	
6	52867	"	18"-30"			1845								X	
7	52868	S 7N-2	0-6"			1933								X	
8	52869	"	6"-18"			1934								X	
9	52870	"	18"-30"			1935								X	
10	52871	S 7N-1	0-6"		6-18-24	0806								X	
11	52872	"	6"-18"			0807								X	
12	52873	"	18"-30"			0808								X	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John T. Norman
SIGNATURE of SAMPLER: John T. Norman
DATE signed: (MM / DD / YY) 6-19-24

Lab Use Only — Paid
Sample Acceptable (Yes) No
Comments: CSX
Container: U B N S H O
Temp: 1 °C Date/Initial: 6/20 YR

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
John T. Norman / Apex	6-20-24	1133	Yanaira Roman	6/20/24	11:35

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CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 South Bell, Amarillo, TX 79109 | 800-557-7509

Required Client Information: **Section A**

Company: Apex TITAN
Address: 4901 Hillside Rd Bldg A
Amarillo, TX 79109
Phone: 806 570-0757 Fax:

Required Client Information: **Section B**

Report To: John T. Norman
Invoice To: Same as above
P.O.:
Project Name: Xcel Harrington - Nichols
Project Number: 2024

Page: 4 of 5

Client Information (Check quote/contract):
Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by Servi-Tech **Section C**

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Requested Analysis or Package: See attached

Section D **Required** Client Information:

Valid Matrix Codes: DRINKING WATER DW; OTHER WATER AQ; ENV. SOIL SL; SOLID WASTE SW; AG SOIL AS; FEED FD; FERTILIZER FT; PLANT PT; OTHER OT

ITEM#	(Lab Use Only) LAB#	SAMPLE ID (Sample IDs MUST BE UNIQUE)		MATRIX CODE	DATE COLLECTED mm/dd/yy	TIME COLLECTED hh:mm a/p	#Containers Unpreserved	Preservatives H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Remarks
1	52838	S 7S-1	0-6"	SL	6-18-24	0847						X	See attached for analytical required!
2	52839	"	6"-18"			0848						X	
3	52840	"	18"-30"			0849						X	
4	52841	S 7S-2	0-6"			0936						X	
5	52842	"	6"-18"			0937						X	
6	52843	"	18"-30"			0938						X	
7	52844	S 7S-3	0-6"			1020						X	
8	52845	"	6"-18"			1021						X	
9	52846	"	18"-30"			1022						X	
10	52847	S 8-2	0-6"			1132						X	
11	52848	"	6"-18"			1133						X	
12	52849	"	18"-30"			1134						X	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John T. Norman
SIGNATURE of SAMPLER: John T. Norman
DATE signed: (MM / DD / YY) 6-19-24

Lab Use Only
Sample Acceptable (Yes) No
Comments: CSX
Container: U B N S H O
Temp: 1 °C Date/Initial 6/20 YR

Paid

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
John T. Norman / Apex	6-20-24	1133	Yanaira Roman	6/20/24	11:35

Revised April 8, 2011

LEGENDS

C- 21461

Servi-Tech Laboratories

CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 South Bell, Amarillo, TX 79109 | 800-557-7509

Required Client Information: **Section A**

Company: Apex TITAN
Address: 4901 Hillside Rd Bldg A
Amarillo, Tx 79109
Phone: 806 570-0757 Fax:

Required Client Information: **Section B**

Report To: John T. Norman
Invoice To: Same as above
P.O.:
Project Name: Xcel Harrington - Nichols
Project Number: 2024

Page: 5 of 5

Client Information (Check quote/contract):
Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by Servi-Tech **Section C**

Quote Reference:
Subcontract Lab:
Carrier:
Shipping Cost:

Section D **Required** Client Information:

SAMPLE ID

Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
OTHER WATER	AQ
ENV. SOIL	SL
SOLID WASTE	SW
AG SOIL	AS
FEED	FD
FERTILIZER	FT
PLANT	PT
OTHER	OT

ITEM #	(Lab Use Only) LAB#	SAMPLE ID		MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh: mm a/p	# Containers	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Requested Analysis or Package: See attached
1	52886	S 3-1	0-6"	SL	6-18-24	1232								X
2	52887	"	6"-18"			1233								X
3	52888	"	18"-30"			1234								X
4	52889	S 3-2	0-6"			1318								X
5	52890	"	6"-18"			1319								X
6	52891	"	18"-30"			1320								X
7	52892	S 2-2	0-6"			1402								X
8	52893	"	6"-18"			1403								X
9	52894	"	18"-30"			1404								X
10	52895	S 2-1	0-6"			1450								X
11	52896	"	6"-18"			1451								X
12	52897	"	18"-30"			1452								X

Remarks: See attached for analytical required!

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John T. Norman
SIGNATURE of SAMPLER: John T. Norman
DATE signed: (MM / DD / YY) 6-19-24

Lab Use Only
Sample Acceptable (Yes) No
Comments: CSX
Container: U B N S H O
Temp: 1 °C Date/Initial: 6/20 YE

Paid

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
John T Norman / Apex	6-20-24	1133	Yanaira Roman	6/20/24	11:35

Revised April 8, 2011

LEGEND

C- 21461

Servi-Tech Laboratories

CHAIN-OF-CUSTODY / ANALYTICAL REQUEST DOCUMENT

1602 Parkwest Drive, Hastings, NE 68901 | 1816 East Wyatt Earp, Dodge City, KS 67801 | 6921 South Bell, Amarillo, TX 79109 | 800-557-7509

Required Client Information: **Section A**

Company: Apex TITAN

Address: 4901 Hillside Rd Bldg. A, Amarillo, TX 79109

Phone: 806 570-0757 Fax:

Required Client Information: **Section B**

Report To: John T. Norman

Invoice To: same as above

P.O.:

Project Name: Xcel Harrington-Nichols

Project Number: 2027

Page: 1 of 1

Client Information (Check quote/contract):

Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

To Be Completed by Servi-Tech **Section C**

Quote Reference:

Subcontract Lab:

Carrier:

Shipping Cost:

Requested Analysis or Package:

Section D **Required** Client Information:

SAMPLE ID

Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
OTHER WATER	AQ
ENV. SOIL	SL
SOLID WASTE	SW
AG SOIL	AS
FEED	FD
FERTILIZER	FT
PLANT	PT
OTHER	OT

ITEM#	(Lab Use Only) LAB#	SAMPLE ID		MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh: mm a/p	Preservatives: #Containers	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	see Attached	Remarks
1	52898	S8-1	0-6"	SL	6-20-24	1500								X	See attached for analytical required!
2	52899	"	6"-18"	↓	↓	1501								X	
3	52900	"	18"-30"	↓	↓	1502								X	
4															
5															
6															
7															
8															
9															
10															
11															
12															

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John T. Norman

SIGNATURE of SAMPLER: John T. Norman DATE signed: (MM / DD / YY) 6-20-24

Lab Use Only Paid

Sample Acceptable Yes No

Comments: CSX

Container: U B N S H O

Temp: I °C Date/Initial:

Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
John T. Norman / Apex	6-20-24	1626	Yanaira Roman	6/20/24	16:27

LEGENDS

Revised April 8, 2011

Harrington Station –
Environmental
8300 N. Lakeside
Amarillo, TX 79108

June 4, 2024

Servi Tech Laboratories
6921 Bell St.
Amarillo, TX 79109-7015

Re: Xcel Energy – Harrington/Nichols Complex Annual Soil Sampling Event

To Whom It May Concern,

Please see the paragraph below in reference to the soil analyses required by Xcel Energy and the Texas Commission on Environmental Quality for the Harrington/Nichols Complex. The Soil Sampling Guidance paragraph below is listed in Xcel Energy's Wastewater Permit (WQ 00019900000), and specifies the Permit's sampling & analytical requirements. As stated in the bottom of the paragraph, a copy of the requirement is required to be submitted to the laboratory.

Please read the paragraph below for any clarification.

> "The permittee shall obtain representative soil samples from the root zones of the land application area receiving wastewater. Composite sampling techniques shall be used. Each composite sample shall represent no more than 80 acres with no less than 10 to 15 subsamples representing each composite sample. Subsamples shall be composited by like sampling depth, type of crop and soil type for analysis and reporting. Soil types are soils that have like topsoil or plow layer textures. These soils shall be sampled individually from 0 to 6 inches, 6 to 18 inches, and 18 to 30 inches below ground level. The permittee shall sample soils in April to June of each year. Soil samples shall be analyzed within 30 days of sample collection.
>
> The permittee shall provide annual soil analyses of the land application area according to the following table:

Parameter	Method	Minimum Analytical Level (MAL)	Reporting units
pH	2:1 (v/v) water to soil mixture		Reported to 0.1 pH units after calibration of pH meter
Electrical Conductivity	Obtained from the SAR water saturated paste extract	0.01	dS/m (same as mmho/cm)
Nitrate-nitrogen, ammonium-nitrogen	From a 1 N KCl soil extract	1	mg/kg (dry weight basis)
Total Kjeldahl Nitrogen (TKN)	For determination of Organic plus Ammonium Nitrogen. Procedures that use Mercury (Hg) are not acceptable.	20	mg/kg (dry weight basis)
Total Nitrogen	= TKN plus Nitrate-nitrogen		mg/kg (dry weight basis)
Plant-available: Phosphorus	Mehlich III with inductively coupled plasma	1	mg/kg (dry weight basis)
Plant-available: Potassium (K) Calcium (Ca) Magnesium (Mg) Sodium (Na) Sulfur (S)	May be determined in the same Mehlich III extract with inductively coupled plasma	5 (K) 10 (Ca) 5 (Mg) 10 (Na) 1 (S)	mg/kg (dry weight basis)
Water-soluble: Sodium (Na) Calcium (Ca) Magnesium (Mg)	Obtained from the SAR water saturated paste extract	1 (Na) 1 (Ca) 1 (Mg)	Water soluble constituents are *reported* in mg/L
Sodium Adsorption Ratio (SAR)	$SAR = \frac{Na}{\sqrt{\frac{(Ca + Mg)}{2}}}$		Express concentrations of Na, Ca and Mg in the water saturated paste extract in milliequivalents/liter (meq/L) to calculate the SAR. The SAR value is unit less.
Amendment addition, e.g., gypsum	Recommendation from analytical laboratory		Report in short tons/acre in the year effected

The permittee shall provide a copy of this plan to the analytical laboratory prior to sample analysis." [TPDES Permit No. WQ0001990000, 15. Irrigation Requirements, J.]

Also, please add Chlorides to the test list.

Please include this letter in the data package (Chain of Custody) as documentation.

Additionally, please include **Fertilizer and other crop recommendations or and crop warnings** when reporting results.

Please feel free to contact me for any concerns.

Thank you,

David Lorenz

David Lorenz
Xcel Energy | Responsible By Nature
Environmental Analyst
8300 N Lakeside Dr

Amarillo, TX 79108

P: 806.378.2138 **C:** 806.681.3285
E: david.lorenz@xcelenergy.com

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: Southwestern Public Service Company

   Permit No. WQ00 01990000 EPA ID No. TX 0124575

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

   8400 N. Lakeside Drive, Amarillo, TX 79108, Potter County

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: David Lorenz

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

Title: Environmental Analyst

Mailing Address: TX1408-05-MCB; 790 S Buchanan Street Floor 5

City, State, Zip Code: Amarillo, TX, 79101

Phone No.: 8063782138 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: David.Lorenz@xcelenergy.com

2. List the county in which the facility is located: Potter
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.

As described in the application, the facility is located at 8400 North Lakeside Drive, near the City of Amarillo, Potter County, Texas 79108. Discharge is via Outfalls 001, 003, 004, 011, 012, and 013 to an unnamed tributary, thence to Indian Creek, thence to impounded Indian Creek, thence to Indian Creek, thence to 6 Section Lake, thence to Indian Creek, thence to East Amarillo Creek; via Outfalls 006 and 007 to an unnamed tributary, thence to Bonita Creek; thence all (Outfalls 001, 003, 004, 006, 007, 011, 012, and 013) to the Canadian River Above Lake Meredith in Segment No. 0103 of the Canadian River Basin; via 005 to an unnamed tributary, thence to Stalanaker Lake (a playa lake with no outlet within the watershed of the Canadian River Above Lake Meredith) in Segment No. 0103 of the Canadian River Basin; and via Outfall 009 to an unnamed tributary, thence to McGee Lake (a playa with no outlet within the watershed of the North Fork Red River), thence to the North Fork Red River in Segment No. 0224 of the Red River Basin.

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

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

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

☐ Proposed access roads, utility lines, construction easements

☐ Visual effects that could damage or detract from a historic property's integrity

☐ Vibration effects during construction or as a result of project design

☐ Additional phases of development that are planned for the future

☐ Sealing caves, fractures, sinkholes, other karst features

☐ Disturbance of vegetation or wetlands

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

N/A

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

Facilities include power plants, and electrical substations. Sections 6, 7, and 44 are agricultural. Sections 6, 7, and 44 are used for irrigation of wastewater from the power plants. All wastewater is contained onsite, except during infrequent overflows from containment facilities due to large rainfall events

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:

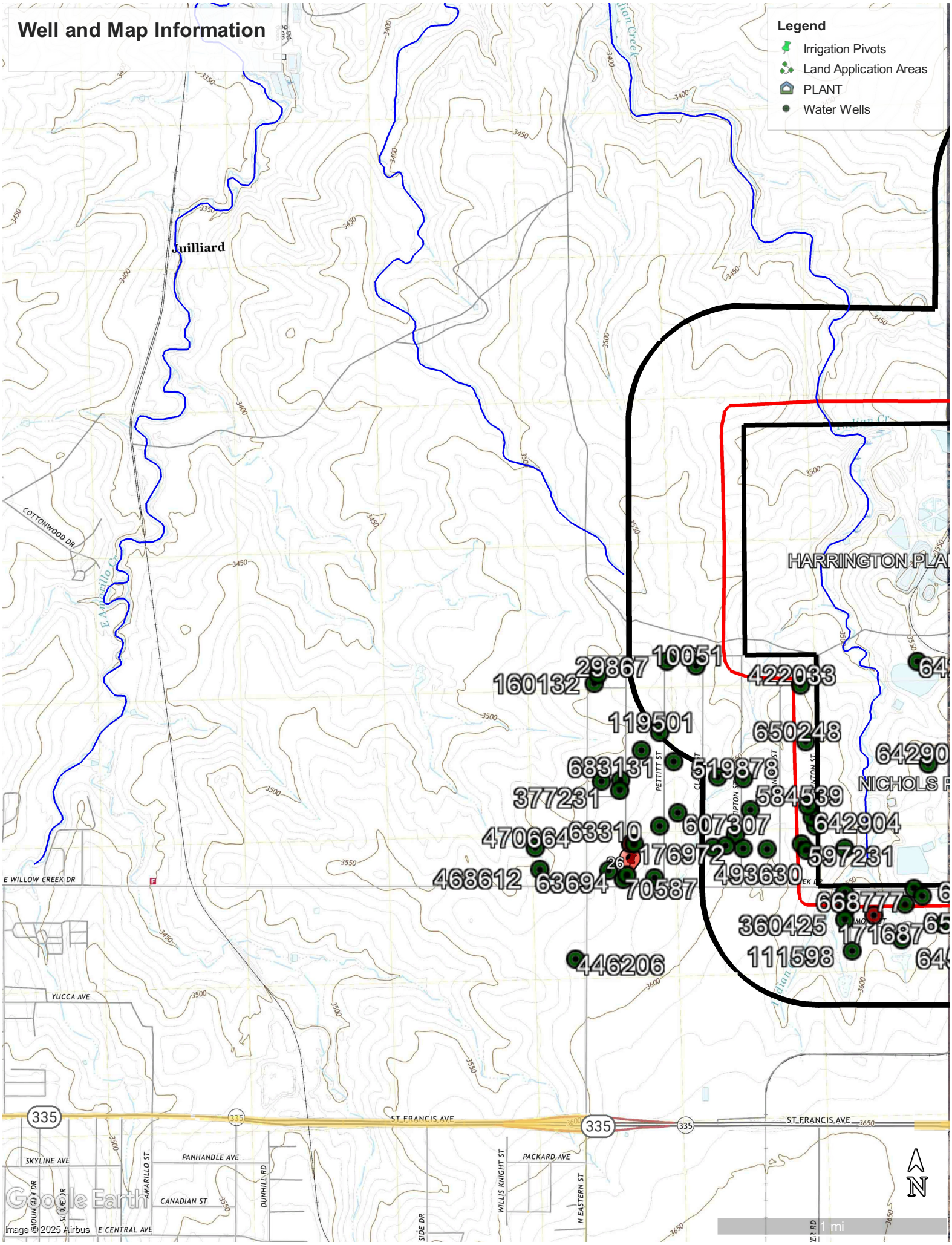
N/A

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

N/A

TAB 7

WELL AND MAP INFORMATION


Well and Map Information
Legend
Irrigation Pivots
Land Application Areas
PLANT
Water Wells
Juilliard
COTTONWOOD DR
E Amarillo Cr
HARRINGTON PLA
29867
10051
160132
422033
119501
650248
683131
519878
64290
377231
584539
642904
607307
470664
63310
176972
597231
468612
63694
70587
493630
668777
360425
171687
111598
446206
NICHOLS
E WILLOW CREEK DR
YUCCA AVE
ST FRANCIS AVE
335
SKYLINE AVE
PANHANDLE AVE
CANADIAN ST
E CENTRAL AVE
AMARILLO ST
DUNHILL RD
WILLIS KNIGHT ST
PACKARD AVE
N EASTERN ST
PETTITT ST
Google Earth
Image © 2025 Airbus
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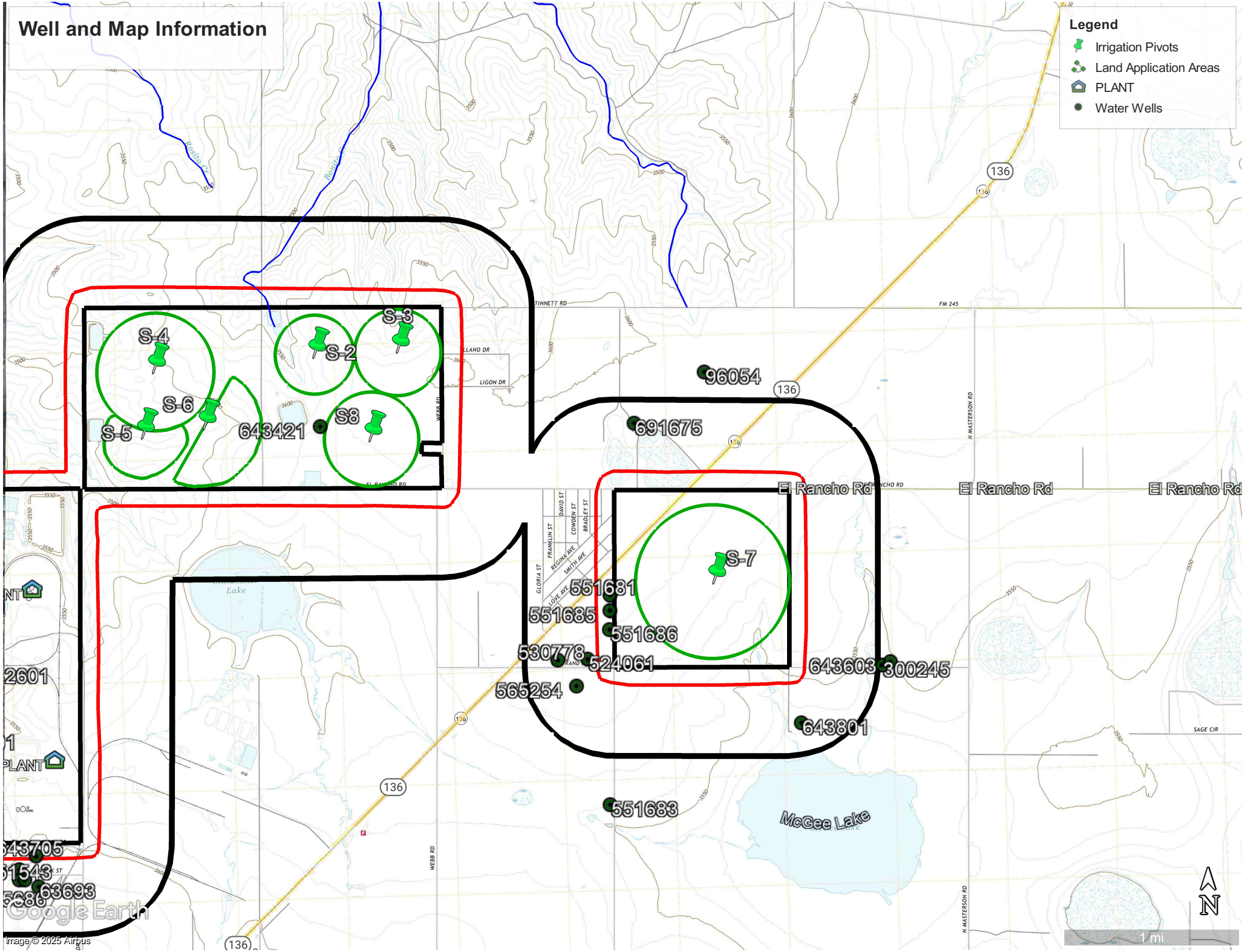
Well and Map Information
Legend
Irrigation Pivots
Land Application Areas
PLANT
Water Wells
S-4
S-3
S-2
S-6
S-5
S8
643421
96054
691675
S-7
El Rancho Rd
551681
551685
551686
530778
524061
643603
300245
565254
643801
551683
McGee Lake
136
FM 245
TINNETT RD
WEBB RD
N MASTERSON RD
SAGE CIR
Google Earth
Image © 2025 Airbus
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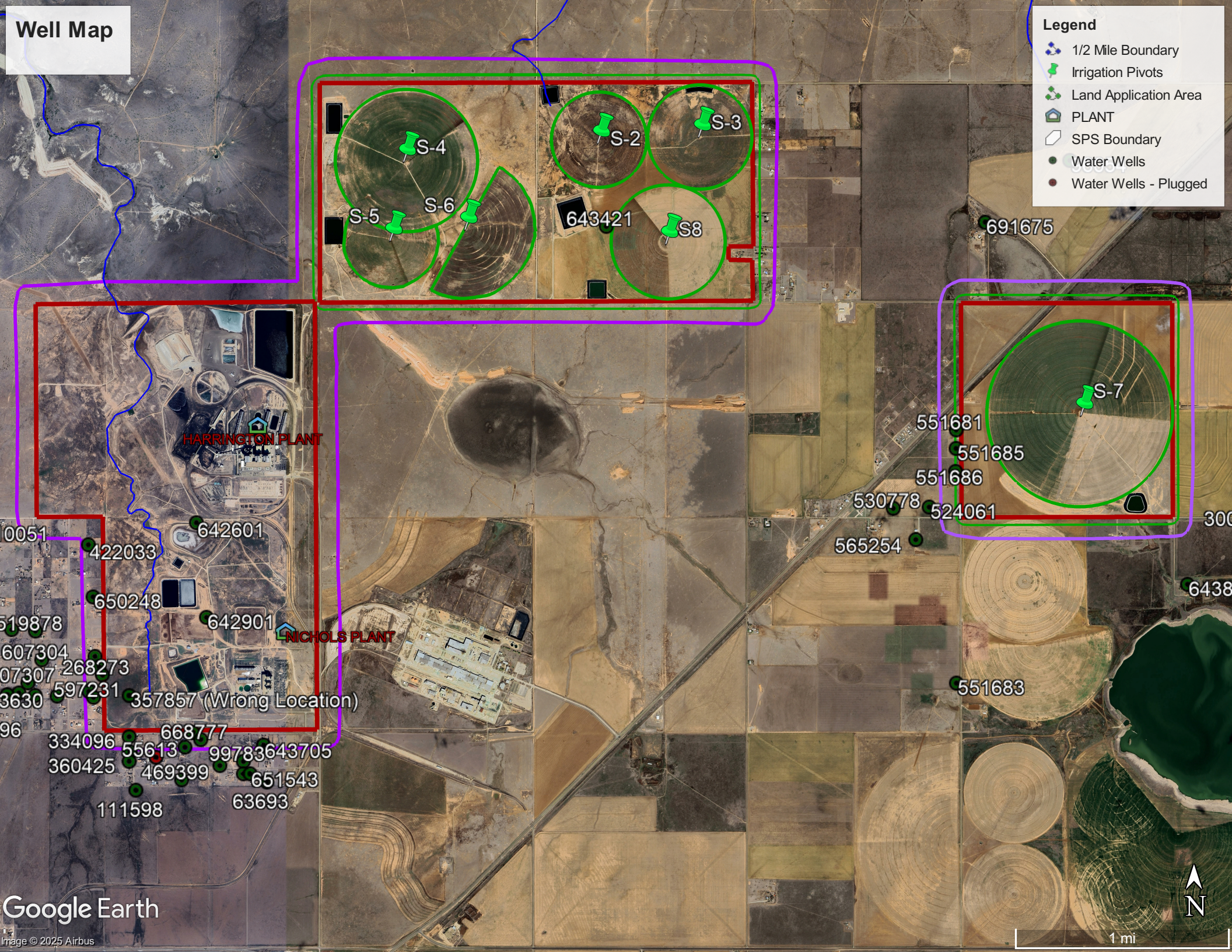
N


Well Map
Legend
1/2 Mile Boundary
Irrigation Pivots
Land Application Area
PLANT
SPS Boundary
Water Wells
Water Wells - Plugged
S-4
S-2
S-3
S-5
S-6
643421
S8
691675
S-7
551681
551685
551686
530778
524061
565254
HARRINGTON PLANT
642601
422033
650248
642901
NICHOLS PLANT
519878
607304
07307
268273
597231
3630
357857 (Wrong Location)
96
668777
334096
55613
99783
643705
360425
469399
651543
63693
111598
551683
N
1 mi
Google Earth
Image © 2025 Airbus

b. List and cross reference all water wells located on or within 500 feet of the disposal site, wastewater ponds, or property boundaries in the following table. Attach additional pages as necessary to include all of the wells.

Well and Map Information Table

Well ID	Well Use	Producing? Y/N/U	Open, cased, capped, or plugged?	Proposed Best Management Practice
48184	Irrigation	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
268273	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
334096	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
357857	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
422033	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
551681	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
551685	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
551686	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
559815	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
584539	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.

Well ID	Well Use	Producing? Y/N/U	Open, cased, capped, or plugged?	Proposed Best Management Practice
597231	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
646868	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
650248	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
668777	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
642601	Industrial	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
642901	Industrial	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
642903	Industrial	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
642904	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
643705	Domestic	Y	Cased	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.
55613	Domestic	No	Plugged	The buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet.

STATE OF TEXAS WELL REPORT for Tracking #268273

Owner:	**Eunabeth Williamson**	Owner Well #:	**No Data**
Address:	**7305 Denton Amarillo, TX 79108**	Grid #:	**06-42-9**
Well Location:	**7305 Denton Amarillo, TX 79108**	Latitude:	**35° 17' 02" N**
		Longitude:	**101° 45' 36" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **6/2/2011** Drilling End Date: **6/2/2011**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
9.875	**0**	**274**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
22	**274**	**Gravel**	**8/16**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
2	**22**	**5 cement**
110	**196**	**voclay grout**

Seal Method: **mixed**

Sealed By: **Mark**

Distance to Property Line (ft.): **50+**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **measured**

Surface Completion: **Pitless Adapter Used**

Water Level: **270 ft.** below land surface on **2011-06-02** Measurement Method: **Unknown**

Packers: **No Data**

Type of Pump: **Submersible**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **K- Ran Drilling**

5230 Hester
Amarillo, TX 79124

Driller Name: **Mark Randall** License Number: **2848**

Apprentice Name: **Lupe Limas** Apprentice Number: **57597**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**4**	**top soil**
4	**10**	**caliche rock**
10	**31**	**brown sandy clay**
31	**68**	**brown clay**
68	**78**	**light brown and white sandy clay**
78	**82**	**caprock**
82	**96**	**white sandy clay**
96	**107**	**light green sand & s/s sstrks**
107	**118**	**red clay**
118	**124**	**red & light green clay**
124	**149**	**green s/s with light brown sand**
149	**173**	**light green clay with light brown fine sand**
173	**198**	**red & yellow clay**
198	**215**	**red clay with brown s/s**
215	**241**	**red & white clay with brown s/s**
241	**265**	**yellow clay with shale**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
5	**new**	**pvc**	**0-204 200 cl**
5	**new**	**perf.035**	**204-254 200 cl**
20'blank on bottom			

265	276	red clay

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #334096

Owner:	**Frederico Saldana Jr.**	Owner Well #:	**1**
Address:	**7075 Worley Dr. Amarillo, TX 79108**	Grid #:	**06-42-9**
Well Location:	**7075 Worley Dr. Amarillo, TX**	Latitude:	**35° 16' 47" N**
		Longitude:	**101° 45' 28" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **9/6/2006** Drilling End Date: **9/6/2006**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
10	**0**	**280**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
220	**280**	**Gravel**	**#1 fine**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
3	**220**	**41 cement**

Seal Method: **Pressure**

Sealed By: **Magic Circle**

Distance to Property Line (ft.): **75**

Distance to Septic Field or other concentrated contamination (ft.): **no septic**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **measure**

Surface Completion: **Pitless Adapter Used**

Water Level: **180 ft.** below land surface on **2006-09-06** Measurement Method: **Unknown**

Packers: **No Data**

Type of Pump: **Submersible** Pump Depth (ft.): **280**

Well Tests: **Bailer** **Yield: 17 GPM with 2 ft. drawdown after 0 hours**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information:

Driller Name: **Charles Horner** License Number: **2614**

Comments: **Sec 96 Block 2 Track 31 AB & M Ponderosa Park Subdivision ^ch**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**35**	**topsoil**
35	**65**	**sand**
65	**96**	**red sandstone, cemented sand**
96	**126**	**sandstone, red clay streaks, red silt**
126	**157**	**red clay (L) white sand, 10 ft yellow clay**
157	**187**	**red clay, white sandstone mix-red clay**
187	**218**	**red clay**
218	**250**	**red sandy clay**
250	**280**	**red sandy clay (loose) & white sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
5	**New**	**PVC**	**- 20 Perf 260-280 .100**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #357857

Owner:	**B & J Construction**	Owner Well #:	**No Data**
Address:	**Box 55** **Wildorado, TX 79098**	Grid #:	**06-42-9**
Well Location:	**7108 Pace St - Willow Creek** **Amarillo, TX**	Latitude:	**35° 16' 57" N**
		Longitude:	**101° 45' 28" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **3/18/2014** Drilling End Date: **3/18/2014**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**9**	**0**	**272**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**22**	**272**	**Gravel**	

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**22**	**5**

Seal Method: **MIxed**

Sealed By: **Mark**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used**

Water Level: **170 ft.** below land surface on **2014-03-18** Measurement Method: **Unknown**

Packers: **No Data**

Type of Pump: **Submersible**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **K-Ran Drilling**

5230 Hester Road
Amarillo, TX 79124

Driller Name: **Mark Randall** License Number: **2848**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**3**	**Top Soil**
3	**9**	**Caliche**
9	**40**	**Reddish Sandy Clay**
40	**80**	**Brown Sandy Clay**
80	**102**	**White Rock**
102	**122**	**Light Brown Sand w/s/s**
122	**140**	**Light Brown Sand w/s/s & Red Clay Streaks**
140	**165**	**Red Clay**
165	**225**	**Light Brown Sand w/s/s & Red Clay Streaks**
225	**235**	**Red Clay**
235	**265**	**Brown s/s w/Brown Sand & Red Clay Streaks**
265	**272**	**Red Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
5" New PVC 0/205 200 CL			
5" New perf. 035 205/267 200 CL			
5' Blank on Bottom			

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #422033

Owner:	**OAKWOOD HOMES**	Owner Well #:	**No Data**
Address:	**8301 CANYON DRIVE Amarillo, TX 79110**	Grid #:	**06-42-6**
Well Location:	**DENTON RD Amarillo, TX**	Latitude:	**35° 17' 33.63" N**
	CORY SHARP	Longitude:	**101° 45' 40.16" W**
Well County:	**Potter**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Domestic**

Drilling Start Date: **3/11/2016** Drilling End Date: **3/11/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**10**	**0**	**260**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**23**	**260**	**Gravel**	**8/16**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**3**	**23**	**Bentonite 7 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **140 ft.** below land surface on **2016-03-11**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Pump** **Yield: 10 GPM with 155 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
140 - 260	GOOD

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **4-M Drilling**

Po Bx 701
Claude, TX 79019

Driller Name: **JOE MORROW** License Number: **54360**

Apprentice Name: **DILLON MORROW** Apprentice Number: **59130**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	40	GRAYISH BROWN CLAY
40	80	SAND
80	120	GRAY SANDSTONE
120	140	BROWN CLAY
140	160	BROWN AND GRAY CLAY WITH YELLOW SHALE
160	180	YELLOW SHALE
180	200	BROWN CLAY WITH YELLOW SHALE AND SAND STRIPS
200	255	SAND WITH STRIPS OF YELLOW CLAY
255	260	RED CLAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	Blank	New Steel	SCH 80	2	3
5	Blank	New Plastic (PVC)	SDR 21	3	220
5	Perforated or Slotted	New Plastic (PVC)	SDR 21 0.035	220	260

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #48184

Owner:	**Marlin Nickel**	Owner Well #:	**No Data**
Address:	**13898 FM 119 Sunray, TX 79086**	Grid #:	**06-42-9**
Well Location:	**NW corner section 60 Stratford, TX 79084**	Latitude:	**35° 16' 58" N**
		Longitude:	**101° 45' 40" W**
Well County:	**Sherman**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Irrigation**

Drilling Start Date: **5/13/2004** Drilling End Date: **5/13/2004**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
18	**0**	**508**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
0	**508**	**Gravel**	**fine**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**15**	

Seal Method: **Pour**

Sealed By: **L C Burkett, Jr**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: **280 ft.** below land surface on **No Data** Measurement Method: **Unknown**

Packers: **No Data**

Type of Pump: **Submersible**

Well Tests: **Unknown** **Yield: 500 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**Clear**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Burkett Drilling**

P.O. Box 630
Sunray, TX 79086

Driller Name: **L.C. Burkett, Jr.** License Number: **820**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	**283**	**Sand, sandy clay & clay**
283	**313**	**Med. to fine course sand & fine gravel**
313	**344**	**Fine course sand & fine gravel**
344	**374**	**Fine to med. course sand & fine**
		course gravel & big gravel
374	**405**	**Blue, pink clay & little fine sand**
405	**436**	**Fine sand , black gold & blue clay**
436	**468**	**Fine sand & pink clay**
468	**498**	**Fine sand , fine gravel, & red clay**
498	**508**	**Fine sand , fine gravel, & red clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
12 3/4"	**New**	**Steel**	**0/508**
Perf			**293/508**

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STATE OF TEXAS WELL REPORT for Tracking #551681

Owner:	**AMARILLO HOME CENTER**	Owner Well #:	**No Data**
Address:	**4634 E AMARILLO BLVD AMARILLO, TX 79107**	Grid #:	**06-43-5**
Well Location:	**8715 PARSLEY AMARILLO, TX**	Latitude:	**35° 18' 01.55" N**
		Longitude:	**101° 41' 21.83" W**
Well County:	**Potter**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Domestic**

Drilling Start Date: **7/27/2020** Drilling End Date: **7/27/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**9**	**0**	**355**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**23**	**355**	**Gravel**	**8/16**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**23**	**355**	**Bentonite 7 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **260 ft.** below land surface on **2020-07-27** Measurement Method: **Electric Line**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Bailer** **Yield: 10 GPM with 0 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
260 - 355	GOOD

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **4-M Drilling**

Po Bx 701
Claude, TX 79019

Driller Name: **JOE MORROW** License Number: **54360**

Apprentice Name: **DILLON MORROW** Apprentice Number: **59130**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	3	TOPSOIL
3	60	CALICHE WITH SAND STREAKS
60	120	SS WITH TAN SANDY CLAY
120	140	SAND
140	200	SAND WITH SANDY TAN CLAY STREAKS
200	250	SAND WITH SS STREAKS
250	280	SANDY YELLOW CLAY WITH RED CLAY
280	290	RED CLAY
290	350	SAND WITH GRAVEL ROCK STREAKS
350	355	RED CLAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	Blank	New Steel		2	3
5	Blank	New Plastic (PVC)		3	315
5	Perforated or Slotted	New Plastic (PVC)	0.035	315	355

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STATE OF TEXAS WELL REPORT for Tracking #551685

Owner:	**AMARILLO HOME CENTER**	Owner Well #:	**No Data**
Address:	**4634 E AMARILLO BLVD AMARILLO, TX 79107**	Grid #:	**06-43-5**
Well Location:	**8515 PARSLEY AMARILLO, TX**	Latitude:	**35° 17' 57.04" N**
		Longitude:	**101° 41' 21.88" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **7/16/2020** Drilling End Date: **7/16/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**9**	**0**	**405**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**23**	**405**	**Gravel**	**8/16**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**23**	**Bentonite 7 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **250 ft.** below land surface on **2020-07-16** Measurement Method: **Electric Line**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Bailer** **Yield: 10 GPM with 55 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
250 - 405	GOOD

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **4-M Drilling**

Po Bx 701
Claude, TX 79019

Driller Name: **JOE MORROW** License Number: **54360**

Apprentice Name: **DILLON MORROW** Apprentice Number: **59130**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	3	TOPSOIL
3	60	CALICHE
60	100	SAND
100	140	SS WITH SAND
140	160	BROWN CLAY WITH SAND
160	180	BROWN CLAY
180	200	SAND WITH TAN CLAY
200	240	SANDY LIGHT TAN CLAY
240	260	SAND & ORANGE CLAY
260	300	RED CLAY
300	330	LIGHT BLUE CLAY WITH SAND & ORANGE CLAY
330	380	RED CLAY WITH SAND STREAKS
380	405	SAND

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	Blank	New Steel		2	3
5	Blank	New Plastic (PVC)		3	245
5	Blank	New Plastic (PVC)		245	345
5	Perforated or Slotted	New Plastic (PVC)	0.035	345	405

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STATE OF TEXAS WELL REPORT for Tracking #551686

Owner:	**AMARILLO HOME CENTER**	Owner Well #:	**No Data**
Address:	**4634 E AMARILLO BLVD AMARILLO, TX 79107**	Grid #:	**06-43-5**
Well Location:	**8601 PARSLEY AMARILLO, TX**	Latitude:	**35° 17' 51.45" N**
		Longitude:	**101° 41' 22.05" W**
Well County:	**Potter**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Domestic**

Drilling Start Date: **7/13/2020** Drilling End Date: **7/13/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**9**	**0**	**330**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**23**	**330**	**Gravel**	**8/16**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**23**	**Bentonite 7 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **255 ft.** below land surface on **2020-07-13** Measurement Method: **Electric Line**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Bailer** **Yield: 10 GPM with 0 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
255 - 330	GOOD

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **4-M Drilling**

Po Bx 701
Claude, TX 79019

Driller Name: **JOE MORROW** License Number: **54360**

Apprentice Name: **DILLON MORROW** Apprentice Number: **59130**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	TOPSOIL
5	40	CALICHE
40	100	SAND & SS
100	140	SAND & GRAVEL
140	160	SAND & GRAVEL
160	200	SAND
200	240	SAND & SS
240	260	SAND WITH YELLOW CLAY STREAKS
260	280	RED CLAY
280	320	SAND
320	325	SAND & RED CLAY
325	330	RED CLAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	Blank	New Steel		2	3
5	Blank	New Plastic (PVC)		3	290
5	Perforated or Slotted	New Plastic (PVC)	0.035	290	330

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STATE OF TEXAS PLUGGING REPORT for Tracking #55613

Owner:	**Thrall, Carl**	Owner Well #:	**1**
Address:	**7201 Monk Amarillo, TX 79108**	Grid #:	**06-42-9**
		Latitude:	**35° 16' 42" N**
Well Location:	**7201 Monk Amarillo, TX 79108**	Longitude:	**101° 45' 20" W**
Well County:	**Potter**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data** Date Drilled: **No Data**

Driller: **Unkown** License Number: **No Data**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**6**		**200**

Plugging Information

Date Plugged: **5/27/2009** Plugger: **Larry Gregory**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
6	**3**	**200**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
3	**200**	**1.5 yds**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Larry Gregory**

6550 Lago
Amarillo, TX 79108

Driller Name: **Larry L. Gregory** License Number: **4441**

Comments: **^EO**

STATE OF TEXAS WELL REPORT for Tracking #559815

Owner:	**Lyndon Latham**	Owner Well #:	**No Data**
Address:	**4003 Lynette Amarillo, TX 79109**	Grid #:	**06-42-9**
		Latitude:	**35° 16' 43.3" N**
Well Location:	**6975 Worley Amarillo, TX 79108**	Longitude:	**101° 45' 27.71" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **10/20/2020** Drilling End Date: **10/20/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**9**	**0**	**310**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**22**	**100**	**Gravel**	

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**2**	**100**	**Cement 27 Bags/Sacks**

Seal Method: **Positive Displacement**

Sealed By: **Driller**

Distance to Property Line (ft.): **50+**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **197 ft.** below land surface on **2020-10-20**

Packers: **No Data**

Type of Pump: **Submersible** Pump Depth (ft.): **280**

Well Tests: **Pump** **Yield: 15.7 GPM with 7 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **K-Ran Drilling, LLC**

PO Box 32383
Amarillo, TX 79120

Driller Name: **Andrew Bay Wilson** License Number: **50676**

Apprentice Name: **Jose G Limas**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**1**	**top soil**
1	**4**	**caliche**
4	**19**	**brown sandy clay**
19	**81**	**light brown sand with s/s**
81	**98**	**coarse sand with gravel**
98	**116**	**red and light green clay**
116	**134**	**light brown fine sand with green s/s**
134	**192**	**red clay with shale**
192	**215**	**light green clay**
215	**271**	**red clay**
271	**297**	**red and light green clay with light brown fine sand**
297	**304**	**light green and purple clay**
304	**310**	**red clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	**Blank**	**New Plastic (PVC)**	**200**	**0**	**225**
5	**Perforated or Slotted**	**New Plastic (PVC)**	**200**	**225**	**305**
5	**Blank**	**New Plastic (PVC)**	**200**	**305**	**310**

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STATE OF TEXAS WELL REPORT for Tracking #584539

Owner:	**FELIPE PINEDA**	Owner Well #:	**No Data**
Address:	**7407 DENTON AMARILLO, TX 79108**	Grid #:	**06-42-9**
Well Location:	**SAME AS COORDINATES AMARILLO, TX**	Latitude:	**35° 17' 06.5" N**
		Longitude:	**101° 45' 38.2" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **9/10/2021** Drilling End Date: **9/13/2021**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
9	**0**	**270**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
22	**270**	**Gravel**	**#1 FINE**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
2	**22**	**Cement 7 Bags/Sacks**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **220 ft.** below land surface on **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Bailer** **Yield: 15 GPM**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **CURRIE DRILLING CO.,INC.**

3001 N. 23RD. ST.
CANYON, TX 79015

Driller Name: **BRIAN DAVIS**

License Number: **59529**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**5**	**TOPSOIL**
5	**25**	**CALICHE ROCK & SANDY CLAY**
25	**80**	**SAND & SANDY CLAY**
80	**100**	**BROWN CLAY**
100	**120**	**GREEN SANDSTONE & SAND**
120	**150**	**RED CLAY**
150	**200**	**GREEN SANDSTONE & SAND**
200	**220**	**RED CLAY**
220	**259**	**RED CLAY & SAND**
259	**270**	**RED CLAY**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	**Blank**	**New Steel**		**-2**	**3**
5	**Blank**	**New Plastic (PVC)**		**3**	**200**
5	**Perforated or Slotted**	**New Plastic (PVC)**	**0.035**	**200**	**260**
5	**Blank**	**New Plastic (PVC)**		**260**	**270**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #597231

Owner:	**JANO MITCHELL**	Owner Well #:	**1994**
Address:	**7111 DENTON ST AMARILLO, TX 79108**	Grid #:	**06-42-9**
Well Location:	**AB&M BLK 2 SEC 100 AMARILLO, TX**	Latitude:	**35° 16' 56.57" N**
		Longitude:	**101° 45' 38.62" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **2/8/2022** Drilling End Date: **2/8/2022**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.75	**0**	**310**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
20	**310**	**Gravel**	**#1 FINES**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**20**	**Cement 12 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Variance Number: **N/A**

Distance to Property Line (ft.): **50**

Distance to Septic Field or other concentrated contamination (ft.): **N/A**

Distance to Septic Tank (ft.): **N/A**

Method of Verification: **GPS**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **200 ft.** below land surface on **2022-02-08**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
200 - 300	CLEAN WATER

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **ETTER WATER WELL LLC**

PO BOX 977
CACTUS, TX 79013

Driller Name: **DANIEL MURGA** License Number: **60143**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	100	TOPSOIL, CALICHI, SAND
100	200	MED SAND WITH RED CLAY
200	300	FINE SAND WITH CLAY STRIPS
300	310	RED CLAY SOLID

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	Blank	New Plastic (PVC)	#200	3	240
5	Perforated or Slotted	New Plastic (PVC)	#200 0.032	240	300
5	Blank	New Plastic (PVC)	#200	300	310

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 06-42-601

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	0642601
County	Potter
River Basin	Canadian
Groundwater Management Area	1
Regional Water Planning Area	A - Panhandle
Groundwater Conservation District	Panhandle GCD
Latitude (decimal degrees)	35.294167
Latitude (degrees minutes seconds)	35° 17' 39" N
Longitude (decimal degrees)	-101.752223
Longitude (degrees minutes seconds)	101° 45' 08" W
Coordinate Source	+/- 1 Second
Aquifer Code	231DCKM - Dockum Formation
Aquifer	Dockum
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	3540
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	252
Well Depth Source	Owner
Drilling Start Date	
Drilling End Date	0/0/1958
Drilling Method	
Borehole Completion	Perforated or Slotted

Well Type	Withdrawal of Water
Well Use	Industrial
Water Level Observation	Miscellaneous Measurements
Water Quality Available	No
Pump	Turbine
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Southwestern Public Service Co.
Driller	Unknown
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	3/22/1972
Last Update Date	7/26/2000

Remarks	Owner's North well. Measured yield 50 GPM with 64 feet drawdown after pumping 52 hours in 1958.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
9	Blank	Steel			0	140
9	Screen	Steel			140	170
9	Blank	Steel			170	185
9	Screen	Steel			185	252

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

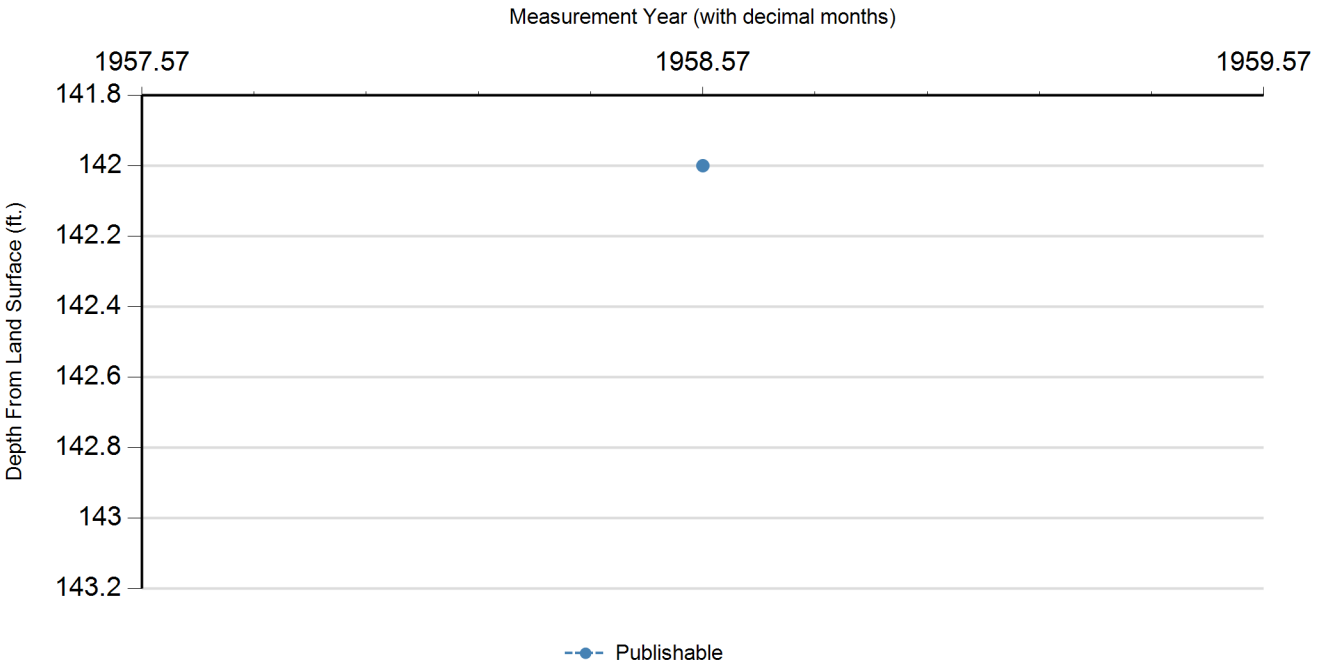
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	7/28/1958		142		3398	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis - No Data Available

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer _____ Field No. _____ State Well No. 06-42-601

Owner's Well No. North County Potter

1. Location: NE 1/4, NW 1/4 Sec. 97, Block 2 Survey AB & M

2. Owner: Southwestern Public Service Co. Address: Amarillo, Texas

Tenant: _____ Address: _____

Driller: _____ Address: _____

3. Elevation of LSD is 3540 ft. above msl, determined by 7½ Min. Topo

4. Drilled: _____ 19 ____; Dug, Cable Tool, Rotary, _____

5. Depth: Rept. 252 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type Turbine

No. Stages ____, Bowls Diam. ____ in., Setting _____ ft.

Column Diam. 2 in., Length Tailpipe _____ ft.

8. Motor: Fuel Elec Make & Model US Motors HP. 10

9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
8 5/8		0	252

11. Water Level: 142 ft. (trpl.) meas. 19 ____ above below _____ which is ____ ft. above below surface.

_____ ft. rept. meas. 19 ____ above below _____ which is ____ ft. above below surface.

_____ ft. rept. meas. 19 ____ above below _____ which is ____ ft. above below surface.

_____ ft. rept. meas. 19 ____ above below _____ which is ____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, (Ind.) Irr., Waterflooding, Observation, Not Used, _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. ____ °F, Date sampled for analysis _____ Laboratory _____

Temp. ____ °F, Date sampled for analysis _____ Laboratory _____

Temp. ____ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test, _____

WELL SCREEN

Screen Openings _____

Diam. (in.)	Type	Setting, ft. from	to
8 5/8	Perf	140	170
		185	252

15. Record by: D. Müller Date 3-22-1972

Source of Data Owner, Obs., old records

16. Remarks: _____

TWDBE-GW-49

(Sketch)

Plant NICHOLS Date AUG. 1969

Number of Active Wells 2

Total Number of Wells 2

Well No.	Static Level	Pumping Level	Flow Gal/Min	M Alk As $CaCO_3$	SO_4 as Na_2SO_4	Cl as NaCl	Ca Hard as $CaCO_3$	Tot Hard as $CaCO_3$	SiO_2 as SiO_2	Recover Level
#1 North	105	80	40	227	24	50	118	234	33	
#2 South	124	113	28	174	325	485	274	790	47	

226 - 230 clay - red
230 - 252 red clay - thin sandstone stringers
Static water level 138 feet

Casing - 8 5/8", .250" wall

blank casing	0 - 140'
perforated casing	140' - 170'
blank casing	170' - 185'
perforated casing	185' - 252'

Pumping Test

~~Well tested at 60 GPM for 40 hours then reduced speed~~

60 GPM	Lift in well	204 feet
40 GPM	Lift in well	188 feet
30 GPM	Lift in well	180 feet

Well was pumped for 40 hours continuously at 60 GPM, one hour at 40 GPM and the last four hours at 30 G.P.M.

Well #1 at Test Hole #4 Nichols Plant
Southwestern Public Service Co

13 3/4" Hole		252' G. L.
8 5/8 casing set at		252' "
Blank Pipe	0-140'	
Perforated Pipe	140-170'	
Blank Pipe	170-185'	
Perforated Pipe	185-252'	

1" Air line housing	242'
1/8" air line	239'

Perforations 1/8" X 6" 6" apart. 8 rows

Water level - 142'

Pumped 52 hours, 50 g.p.m. Draw Down 64'
More draw down does not increase capacity

Recovery			Lift
	2:00 P.M.	7/25/58	236'
	2:15 "		163'
	2:20 "		160'
	2:25 "		156'
	2:30 "		154'
	2:35 "		153'
	2:40 "		151'
	3:00 "		151'
July 28, 8:00 A.M.			142'

SOUTHWESTERN PUBLIC SERVICE COMPANY

NICHOLS STATION

WATER WELL NO. 2 (Abandoned - used as Cathodic Protection well)

T.H. #2 2400' E. & 50's. N.W. COR. SEC. 97

DRILLED JUNE, 1958

Soil	0' - 1'
Clay and caliche	1' - 20'
Clay and caliche	20' - 30'
Clay, sandy clay and caliche	30' - 55'
Sandstone	55' - 65'
Sandstone and clay stringers	65' - 90'
Brown and red clay - sandstone	90' -110'
Sandstone and clay BT	110' -120'
Hard red clay TR	120' -135'
Red clay and sandstone	135' -140'
Grey sandstone - red clay	140' -160'
Red clay	160' -174'
Red clay - sandstone stringers	174' -177'
Sandstone	177' -180'
Sandstone - streaks of clay	180' -190'
Soft sandstone - clay streaks	190' -210'
Soft sandstone	210' -212'
Clay	212' -220'
Red and yellow clay	
Sandstone streaks	220' -250'

Stalic water level 155'

CASING

8 5/8 inch O.D., .250 inch wall	# 2 to 145'
8 5/8 inch perforated casing	150' to 160'
8 5/8 inch blank casing	160' to 180'
8 5/8 inch perforated casing	180' to 230'
1 inch galvanized pipe airline housing	220'

Well was bailed for 24 hours with a capacity of 10 gallons per minute at maximum drawdown. On a two hour bailing test running a 20 gallon bailer at the rate of one bailer every two minutes water level held at 205 feet. No increase in capacity was noted when bailing at maximum drawdown. The well was then treated with 1000 gallons of acid and surged with the bailer every hour for seven hours. After surging, the acid was left in the well for thirty-nine hours. The well was then bailed for a period of four hours at no increase in capacity after acidizing.

D. L. McDonald Water Development Co.

By: W. C. McDonald 06-42-601

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY

Orga ation No. _____ Lab No. DOE?

Work No. _____

CHEMICAL WATER ANALYSIS REPORT

Send report to:

Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

Sr - 5.0
Ba - .01
Br - 1.4
As - .013

County 188 Potter

State Well No. 06-42-601

060 Well No. _____

Date Collected 02-21-85

Owner _____ Send copy to owner Sample No. _____ By NATIV

Address _____ Well Location _____

Date Drilled _____ Depth _____ ft. WBF _____ Source (type of well) _____

Producing intervals _____ Water level _____ ft. Sample depth _____ ft.

Sampled after pumping _____ hrs. Yield _____ GPM meas. est. Temperature _____ °F _____ °C

Point of collection _____ Appearance ☐ clear ☐ turbid ☐ colored ☐ other

Use _____ Remarks Copied from BEG OF-WTWI-1985-34 funded by DOE

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

Laboratory No. _____ Date Received _____ KEY PUNCHED Date Reported _____

		MG/L	ME/L
Silica	00955		
Calcium	00910	210	
Magnesium	00920	85	
Sodium	00929	1280	
	Total		
☐ Potassium	00937	7.2	
☐ Manganese	01055		
☐ Boron	01022		
☐ Total Iron	01045	<.01	
☐ (other) _____		MG/L	

%Na _____

SAR _____

RSC _____

Specific Conductance (micromhos/cm³) 00095 _____

Diluted Conductance (micromhos/cm³):

_____ x _____ = _____

☐ " items will be analyzed if checked.

		MG/L	ME/L
Carbonate	00445	0	
Bicarbonate	00440	120	
Sulfate	00945	2230	
Chloride	00940	1000	
Fluoride	00951	.5	
Nitrate	71850	2.00	
pH	00403	8.2	
			Total
[1] Dissolved Solids (~~residue on 180°C~~) Calc	70300		4873
Phenolphthalein Alkalinity as $CaCO_3$	00415		0
Total Alkalinity as $CaCO_3$	00410		918
Total Hardness as $CaCO_3$	00900		875
[2] Nitrogen Cycle			
Ammonia - N	00610		
Nitrite - N	00615		
Nitrate - N	00620		
Organic Nitrogen	00605		

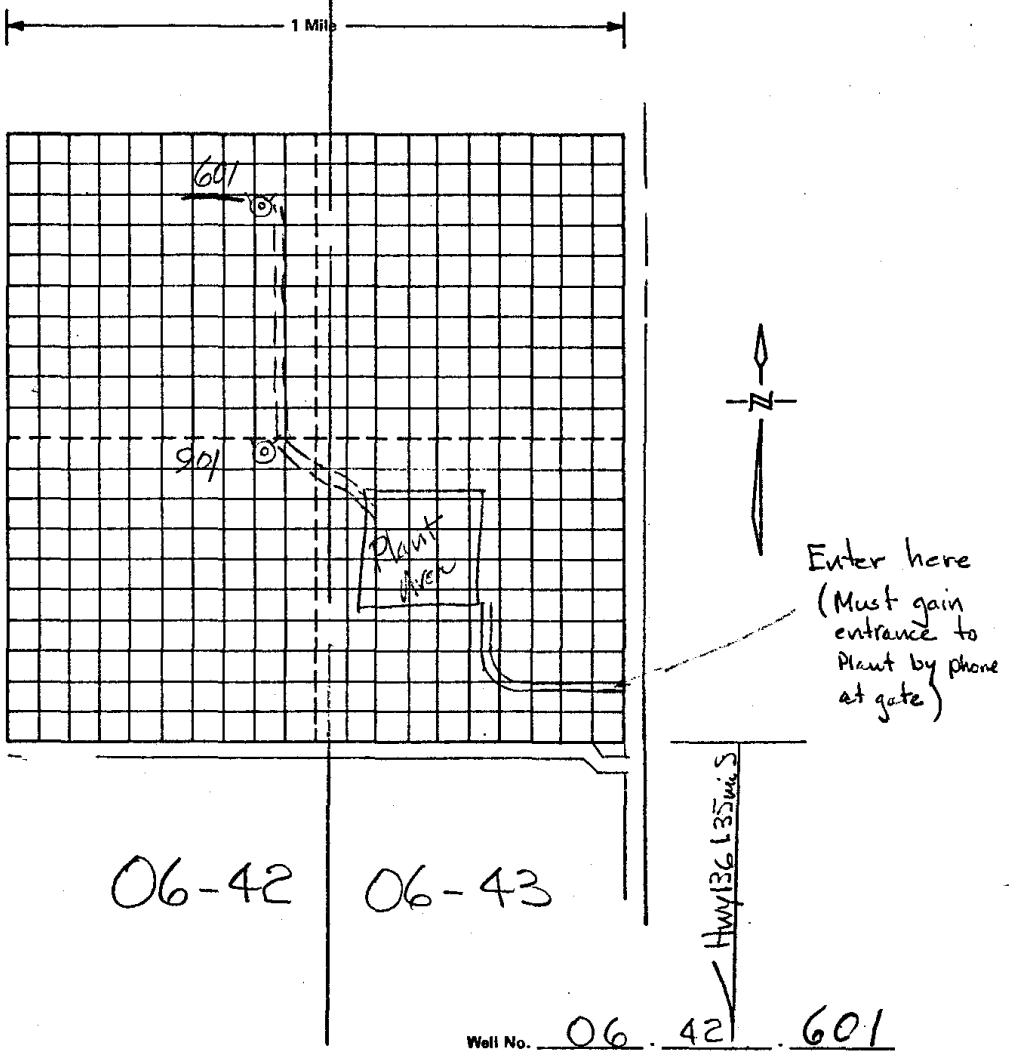
[1] The bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total Iron and Manganese require separate sample.

Analyst _____ Checked By _____

TWDB 0148 (Rev.04 07-86)

WATER WELL LOCATION SKETCH
TEXAS WATER DEVELOPMENT BOARD
GROUND WATER DATA & PROTECTION

Section 97 in Block 2
Potter County
2½-minute Quadrangle 6 & 9 in
7½-minute Quadrangle 42 & 43
Sketch by D. Müller Date 3-22-72



Well No. 06 . 42 . 601

TWDBE-WD-4
3 copies

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer _____ Field No. _____ State Well No. LIU 06 42 901

Owner's Well No. South County Potter

1. Location: NE 1/4, SW 1/4 Sec. 97, Block 2 Survey AB & M

2. Owner: Southwestern Public Service Co. Address: Amarillo, Texas

Tenant: _____ Address: _____

Driller: D.L. McDonald Water Development Co. Address: Amarillo, Texas

3. Elevation of LSD. is 3570 ft. above msl, determined by 7½ min topo

4. Drilled: _____ 19 ____; Dug, Cable Tool, Rotary, _____

5. Depth: Rept. 230 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed _____

7. Pump: Mfgr. _____ Type Turbine

No. Stages _____, Bowls Diam. ____ in., Setting _____ ft.

Column Diam. 2 in., Length Tailpipe _____ ft.

8. Motor: Fuel Elec. Make & Model GE HP. 7½

9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test ____ Made by _____

Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

CASING & BLANK PIPE

Cemented From _____ ft. to _____ ft.

Diam. (in.)	Type	Setting, ft. from	to
8 5/8		0	230

11. Water Level: 155 ft. (rept.) meas. 19 ____ above below _____ which is ____ ft. above below surface.

65.5 ft. rept. (meas.) 9-6 1979 above below _____ which is ____ ft. above below surface.

_____ ft. rept. meas. 19 ____ above below _____ which is ____ ft. above below surface.

_____ ft. rept. meas. 19 ____ above below _____ which is ____ ft. above below surface.

12. Use: Dom., Stock, Public Supply, (Ind.) Irr., Waterflooding, Observation, Not Used, _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. ____ °F, Date sampled for analysis _____ Laboratory _____

Temp. ____ °F, Date sampled for analysis _____ Laboratory _____

Temp. ____ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: (Driller's Log,) Radioactivity Log, Electric Log,

Formation Samples, Pumping Test, _____

15. Record by: D. Müller Date 3-22-1972

Source of Data Obs., owner, old records

16. Remarks: _____

WELL SCREEN

Screen Opening: _____

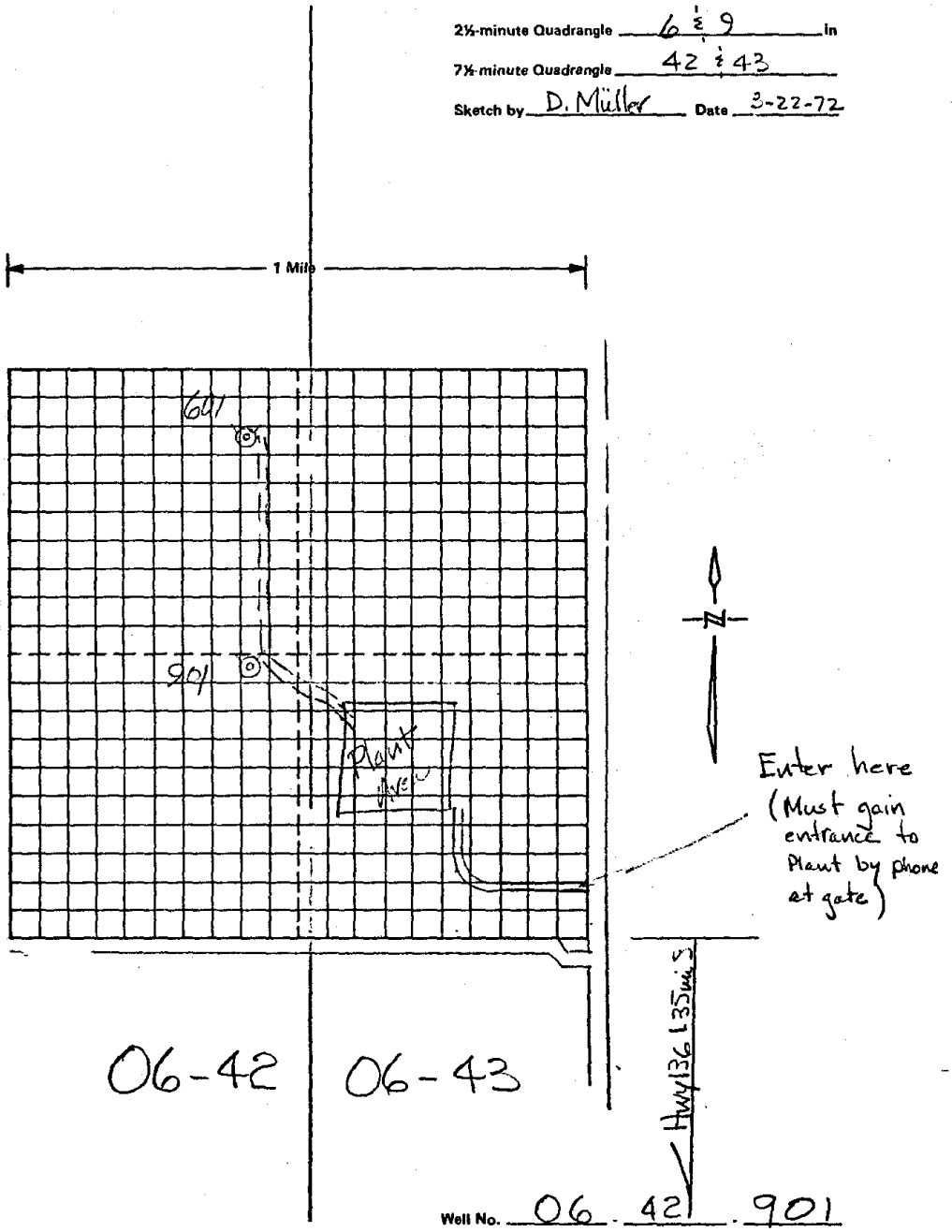
Diam. (in.)	Type	Setting, ft. from	to
8 5/8	Perf	150	160
8 5/8	Perf	180	230

TWDBE-GW-49

(Sketch)

WATER WELL LOCATION SKETCH
TEXAS WATER DEVELOPMENT BOARD
GROUND WATER DATA & PROTECTION

Section 97 in Block 2
Potter County
2½-minute Quadrangle 6 & 9 in
7½-minute Quadrangle 42 & 43
Sketch by D. Müller Date 3-22-72



Well No. 06 . 42 . 901

TWDBE-WD-4
3 copies

Water Quality Sampling Run

SWN: 06-42-901
County: POTTER
Aquifer(s): 231 DCKM

Sample No. 912
Name: SOUTHWESTERN PUBLIC SERVICE Date: 10-11-95
Address: BOX1261 By: BIRI
AMARILLO 79170
ATTN: GALE HENSLEE

	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6	Bottle 7	Total SUB-Samples
	1 liter Anions	1 liter Cations	1 liter Radioactivity	500 ml Nitrate	1 Qt.(glass) (TOC)Organics			
Preserve with:		2 ml HNO_3 (Nitric)	2 ml HNO_3 (Nitric)	1 ml H_2SO_4 (Sulfuric)				All filtered unless otherwise stipulated. All on ice.

Water Level: UTM LSD Remark:
Temperature (00010): 16.9 c
Specific Conductance (00094): 4230 umhos/cm
pH (00400): 7.24
Eh (00090): -103.4 mv.
Phenol ALK (82244): 0 mg/l
Total ALK (39086): 208 mg/l
Carbonate (00452): 0 meq/l 0 mg/l
Bicarbonate (00453): 4.16 meq/l 254 mg/l
Total Cations(+):
Total Anions (-):
Total Hardness (46570): 3475
Dissolved Solids(70301): 5350

Time in: 1200
Time out: 1340
Weather: DRY
Outside Temp: 70°
Sampling point: @ WELLHEAD

Starting pH 7.24
10.40 ml. of 0.02N to
50 ml. of Sample
Ending pH 4.50

								ml.	pH	ml.	pH	ml.	pH
Time:	1243	1251	1255					100	6.91	10.40	4.50		
pH:	7.25	7.25	7.24					2.00	6.69				
Temp:	17.7	17.4	16.9					3.00	6.50				
Eh:			-	103.4				4.00	6.37				
Cond.	4300	4210	4230					5.00	6.23				
								6.00	6.10				
								7.00	5.96				
								8.00	5.78				
								9.00	5.51				
								10.00	4.95				

INDUSTRIAL other notes: 35 17 16
SOBM 135 gal/min 101 45 03
30hp
GRUNDFOS
WELL PUMPED CONTINUOSLY

LCRA
THE POWER TO MAKE A DIFFERENCE.

FINAL ANALYSIS REPORT

DUPLICATE
LAB ID: 9603835
FACILITY: TWDB
ACCT NO: TWDB-PHIL NORDSTROM

SAMPLE TYPE: Water
ORIGINAL DATE REPORTED: 11/13/95
DUPLICATE DATE REPORTED: 01/04/96
DATE RECEIVED: 10/20/95
SAMPLE DATE: 10/11/95
SAMPLE TIME: 1300
DEPTH:

LOCATION ID: 06-42-901

PARAMETER	RESULTS	UNITS	STORET #	PQL in WATER	DATE ANALYZED
Alpha, Gross	47	pCi/L	01503	2	11/07/95
Aluminum, Dissolved	<10	ug/L	01106	10	11/01/95
Beta, Gross	<12	pCi/L	03503	3	11/07/95
Radium 226	<0.60	pCi/L	09503	0.60	11/08/95
Radium 228	<2	pCi/L	81366	1	11/08/95
Strontium, Dissolved	14.92	mg/L	~~01145~~	0.01	11/01/95
Alkalinity, Phenol.	<1	mg/L	00415	1	10/24/95
Alkalinity, Total	205	mg/L	00410	1	10/24/95
Bromide	2.70	mg/L	71870	0.05	10/24/95
Chloride	1879.0	mg/L	00941	0.5	12/21/95
Fluoride	0.60	mg/L	00950	0.05	10/24/95
Nit.,Nitrate/Nitrite	35.330	mg/L	00630	0.010	10/20/95
Nitrogen, Kjeldahl	0.571	mg/L	00623	0.010	10/30/95
Nitrogen, ammonia	0.507	mg/L	00608	0.010	11/06/95
Silica	35.54	mg/L	00955	1.00	10/31/95
Sulfate	1557.5	mg/L	00946	0.5	10/24/95
Antimony, Dis. ICPMS	<5.0	ug/L	01095	1.0	11/07/95
Arsenic, Diss. ICPMS	5.5	ug/L	01000	1.0	11/07/95
Barium, Diss. ICPMS	45.4	ug/L	01005	1.0	11/07/95
Beryllium, Dis ICPMS	<2.5	ug/L	01010	1.0	11/07/95
Boron, Diss. ICPMS	434.0	ug/L	01020	1.0	11/01/95
Cadmium, Diss. ICPMS	<2.5	ug/L	01025	1.0	11/07/95
Chromium, Diss ICPMS	21.8	ug/L	01030	1.0	11/07/95
Cobalt, Diss. ICPMS	<5.0	ug/L	01035	1.0	11/07/95
Copper, Diss. ICPMS	16.0	ug/L	01040	1.0	11/07/95
Iron, Diss. ICPMS	29.0	ug/L	01046	4.0	11/01/95
Lead, Diss. ICPMS	<5.0	ug/L	01049	1.0	11/07/95
Lithium, Diss. ICPMS	218.0	ug/L	01130	1.0	11/01/95
Manganese, Dis ICPMS	<5.0	ug/L	01056	1.0	11/07/95
Molybdenum Dis ICPMS	<5.0	ug/L	01060	1.0	11/07/95
Nickel, Diss. ICPMS	37.6	ug/L	01065	1.0	11/07/95
Selenium, Dis. ICPMS	37.9	ug/L	01145	4.0	11/07/95

BUCK HENDERSON
LABORATORY MANAGER

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The mission of the Lower Colorado River Authority (LCRA) is to provide reliable, low-cost utility and public services in partnership with our customers and communities and to use our leadership role and environmental authority to ensure the protection and constructive use of the area's natural resources. The LCRA is a Texas conservation and reclamation district operating with no taxing authority.

P.O. BOX 220 AUSTIN, TX 78767-0220 (512) 473-3200 (512) 473-3298 FAX

LCRA
THE POWER TO MAKE A DIFFERENCE.

FINAL ANALYSIS REPORT

DUPLICATE
LAB ID: 9603835
FACILITY: TWDB
ACCT NO: TWDB-PHIL NORDSTROM

SAMPLE TYPE: Water

ORIGINAL DATE REPORTED: 11/13/95
DUPLICATE DATE REPORTED: 01/04/96
DATE RECEIVED: 10/20/95
SAMPLE DATE: 10/11/95
SAMPLE TIME: 1300

LOCATION ID: 06-42-901
DEPTH:

PARAMETER	RESULTS	UNITS	STORET #	PQL in WATER	DATE ANALYZED
Silver, Diss. ICPMS	<5.0	ug/L	01075	1.0	11/07/95
Thallium, Diss ICPMS	<5.0	ug/L	01057	1.0	11/07/95
Vanadium, Diss ICPMS	20.6	ug/L	01085	1.0	11/07/95
Zinc, Diss. ICPMS	22.4	ug/L	01090	1.0	11/07/95
Calcium, Dissolved	518.82	mg/L	00915	0.02	12/20/95
Magnesium, Dissolved	525.26	mg/L	00925	0.05	11/01/95
Mercury, Diss.-AA	<0.2	ug/L	71890	0.2	11/06/95
Potassium, Dissolved	18.86	mg/L	00935	1.00	11/01/95
Sodium, Dissolved	518.82	mg/L	00930	0.10	12/20/95

COMMENTS: Chloride analyzed past holding time; initial analysis failed QC.
COMMENTS: Radiochemistry analyses subcontracted.

Roland Garcia for
BUCK HENDERSON
LABORATORY MANAGER

QA APPROVED

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SOUTHWESTERN PUBLIC SERVICE COMPANY

NICHOLS STATION

AMARILLO, TEXAS

SWPS T.H. No. 4

Water Supply Well No. 1 T.H. #4 2600' E. & 2750' N. of S.W. COR. SEC. 97 (NW/Corner of SW/4 of Section)

LOG

SPS #4 Drilled June, 1958

0- 1	Soil
1- 15	Clay & caliche
15- 50	Clay & sandy clay
50- 82	Clay, caliche, sandstone stringers
82- 85	Hard sandstone
85- 100	Sandstone
100- 115	Sandstone
115- 120	Hard sandstone
120- 130	Hard grey sandstone
130- 140	Hard grey sandstone- a little brown sandstone
140--153	Hard grey sandstone
153- 155	Soft white sand
155- 160	Sandstone with thin sand stringers
160- 167	Hard sandstone with thin sandstone stringers
167- 181	Red clay Tr (Trujillo)
181- 185	Red clay- sandstone stringers
185- 190	Red clay - white sandstone stringers
190- 197	Soft sandstone- red clay streaks
197- 198	Very hard sandstone
198- 200	Red clay
200- 209	White sandstone
209- 212	Hard sandstone
212- 220	Red clay- soft sandstone stringers
220- 226	Soft sandstone
226- 230	Red clay
230- 252	Red clay-thin sandstone stringers

Original Static Water Level 138'

CASING

8 5/8" O.D., .250" wall, blank casing	0 ' - 140'
8 5/8" perforated casing	140 ' - 170'
8 5/8" blank casing	170 ' - 185'
8 5/8" perforated casing	185 ' - 252'

Perforation: 1/8" x 6" slots, 6" apart, 8 rows.

06-42-901

SPS #4

PUMPING TEST

Started pumping at 9:45 am, 7-23-58. Well was pumped at various rates up to 75 GPM until 1:00 pm. Would not hold 75 GPM.

From 1:00 pm 7-23-58 to 8:00am, 7-25-58, well pumped 50 to 60 GPM continuously. At the end of 43 hours capacity was 50 GPM with a pumping level of 204'. Well was pumped at the rate of 40 GPM from 8:00am to 9:00am, 7-25-58 with a pumping level of 138' . From 9:00am to 1:00pm, 7-25-58, well pumped 30 GPM with a pumping level of 180'. Pump speed was then increased to pump well at maximum drawdown at 50GPM from 1:00pm to 2:00pm, 7-25-58. No increase in capacity when pumping from below 204'.

Pump shut down at 2:00pm, 7-25-58.

Recovery: 7-25-58

2:15 pm	Water level	163'
2:20 pm	Water level	160'
2:25 pm	Water level	156'
2:30 pm	Water level	154'
2:35 pm	Water level	152'
2:40 pm	Water level	151'
3:00 pm	Water level	151'

July 28, 1958, at 8:00am Water level 142'

PUMP RECORD

Peerless No. 42A Hi-lift, 7 ½ H.P., 220/440 volts, 3 phase, 60 cycle, 1800 RPM, VHS Motor, drip proof.

240'	of 2½" x 1" OLS column
6'	No. 42A Hi-Lift element
246'	Total setting

1" air line housing 242'

1/8" galvanized pipe air line 239'

06-42-901

LCRA Environmental Laboratory Services

Date: *11-Sep-00*

CLIENT: Texas Water Development Board **Client Sample ID:** 06-42-901
Lab Order: 0007126 **COC ID:** 13953
Project: TWDB 9/99 thru 8/00 **Collection Date:** 07/14/2000 1:50:00 PM
Lab ID: 0007126-11 **Matrix:** GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	QC Batch	Date Analyzed
ICP METALS, DISSOLVED		**E200.7**					Analyst: **BL**
Calcium	387	2.00		mg/L	10	R5733	09/08/2000
Magnesium	559	2.00		mg/L	10	R5733	09/08/2000
Potassium	25.8	0.200		mg/L	1	R5305	08/07/2000
Sodium	866	7.00		mg/L	10	R5305	08/07/2000
ICP METALS, DISSOLVED		**E200.7**					Analyst: **BL**
Boron	416	50.0		µg/L	1	R5306	08/07/2000
Iron	53.6	50.0		µg/L	1	R5306	08/07/2000
Strontium	15900	200		µg/L	10	R5306	08/07/2000
ICPMS METALS, DISSOLVED		**E200.8**					Analyst: **PJM**
Aluminum	ND	4.00		µg/L	1	R5379	08/11/2000
Antimony	ND	1.00		µg/L	1	R5338	08/08/2000
Arsenic	3.36	2.00		µg/L	1	R5338	08/08/2000
Barium	32.6	1.00		µg/L	1	R5338	08/08/2000
Beryllium	ND	1.00		µg/L	1	R5379	08/11/2000
Cadmium	ND	1.00		µg/L	1	R5338	08/08/2000
Chromium	4.69	1.00		µg/L	1	R5338	08/08/2000
Cobalt	1.51	1.00		µg/L	1	R5338	08/08/2000
Copper	11.4	2.00		µg/L	1	R5338	08/08/2000
Lead	ND	1.00		µg/L	1	R5338	08/08/2000
Lithium	290	2.00		µg/L	1	R5379	08/11/2000
Manganese	ND	1.00		µg/L	1	R5338	08/08/2000
Molybdenum	ND	1.00		µg/L	1	R5338	08/08/2000
Nickel	12.2	1.00		µg/L	1	R5338	08/08/2000
Selenium	13.1	4.00		µg/L	1	R5338	08/08/2000
Thallium	ND	1.00		µg/L	1	R5338	08/08/2000
Vanadium	14.6	1.00		µg/L	1	R5338	08/08/2000
Zinc	9.67	4.00		µg/L	1	R5338	08/08/2000
ANIONS BY ION CHROMATOGRAPHY		**E300**					Analyst: **AMJ**
Bromide	5.00	1.00		mg/L	50	R5267A	08/03/2000
Chloride	2280	75.0		mg/L	50	R5381	08/11/2000
Fluoride	1.00	0.500		mg/L	50	R5267A	08/03/2000
Sulfate	2130	75.0		mg/L	50	R5381	08/11/2000
ALKALINITY		**M2320 B**					Analyst: **WR**
Alkalinity, Phenolphthalein	ND	0		mg/L CaCO3	1	R5112	07/24/2000
Alkalinity, Total (As CaCO3)	222	2.00		mg/L CaCO3	1	R5112	07/24/2000
CATION/ANION BALANCE		**CALCULATION**					Analyst: **AMJ**

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

LCRA Environmental Laboratory Services

Date: *11-Sep-00*

CLIENT: Texas Water Development Board
Client Sample ID: 06-42-901
Lab Order: 0007126 **COC ID:** 13953
Project: TWDB 9/99 thru 8/00
Collection Date: 07/14/2000 1:50:00 PM
Lab ID: 0007126-11
Matrix: GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	QC Batch	Date Analyzed
Cation/Anion Balance	Balanced	0		Date	1	R5746	09/11/2000
NITRATE AND NITRITE		**E353.2**					Analyst: **CL**
Nitrogen, Nitrate & Nitrite	22.9	0.400		mg/L	20	R5154D	07/27/2000
RADIUM 226		**RADIOCHEM**					Analyst: **MPS**
Radium-226	0.30	0		pci/L	1	R5707	08/22/2000
RADIUM 228		**RADIOCHEM**					Analyst: **MPS**
Radium-228	0.30	0		pci/L	1	R5708	08/23/2000
GROSS ALPHA, GROSS BETA		**RADIOCHEM**					Analyst: **MPS**
ALPHA, Gross	62	0		pci/L	1	R5706	08/11/2000
BETA, Gross	56	0		pci/L	1	R5706	08/11/2000
SILICA		**E370.1**					Analyst: **CL**
Silica, Dissolved (as SiO2)	55.6	0.500		mg/L	1	R5135D	07/26/2000

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quanititation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TEL. 361-884-0371 PO BOX 2552 78403

JORDAN LABORATORIES, INCORPORATED
ANALYTICAL & ENVIRONMENTAL CHEMISTS
CORPUS CHRISTI, TEXAS
August 28, 2000

LCRA ENVIRONMENTAL LAB
P.O. Box 220
Austin, Texas 78767-0220

06-42-901

Report of Analysis

Identification: Groundwater 0007126-11D
7-14-00

Method Number		pci/L	Analyst	Analysis Date
SW-846 9310	Gross Alpha Activity ----------	62	Chapa	08-11-00
	Counting Error ---------- +/-	23		
SW-846 9310	Gross Beta Activity ----------	56	Chapa	08-11-00
	Counting Error ---------- +/-	21		
SM 7500-Ra C.	Radium 226 ----------	0.3	Chapa	08-22-00
	Counting Error ---------- +/-	0.1		
SW-846 9320	Radium 228 ----------	0.3	Chapa	08-23-00
	Counting Error ---------- +/-	0.6		

Lab. No. M38-3424

Respectfully Submitted,

Carl F. Crownover, Pres.

form: S2-9

TWDB Water Quality Field Data Sheet

New Well: no
State Well Number: 06-42-901
County: Potter
County Code: 375
Aquifer Code: 231DCKM
Aquifer Id: 26

Send Results To: Owner
Owner's Name: Southwestern Public Service
Lessee's Name: Nichols Station
Attention: Rick Gibson
Mailing Address: P.O. Box 1261
Amarillo, Tx. 79170
Well Number: SPS #4

Type of Sample: LCRA
Sample Number: BS-1318-2000
Date: 7/14/00
Sampler(s): Bryan Smith

***Add enough of the proper acid to each bottle that is pr ***

1 (on ice)	2	3 (on ice)	4 (on ice)	5
500ml (filtered)	500ml (filtered)	250ml (filtered)	40 ml (not filtered)	1 gallon (filtered)
Anions / Total Alkalinity	Cations	Nitrate/Nitrite	Atrazine	Radioactivity
no preservative	1ml Nitric (HNO3)	0.5 ml Sulfuric (H2SO4)	**no preservative**	10 ml Nitric (HNO3)

Daily Meter Calibration:

pH	7	7.01
	4 or 10	10.06
Conductivity	500	495
	1000	995
	2000	1980
	5000	

Time In: 13:15 — 14:20

W. L. depth from LSD (ft.): — W.L. remark:

Pumping Since: Last Week — Sampling Point: Faucet

Well Use: Industrial — Latitude: — N
Lift: Submersible — Longitude: — W
Power: Electric — Elevation: — ft.

Sample Time: 13:50 — Filter pressure: Line

Field Alkalinity Titration:

7.05 Start pH — 4.50 End pH
50 ml. Sample Size
11.1 ml. Acid added for Total
0 ml. Acid added for Phenol

Items below calculated from ml. acid added data:
Field Total Alkalinity: **222.0** mg/L
Field Phenol Alkalinity: **0.0** mg/L

Notes:

W. Q. Stabilization Parameters Table — ***Final Readings:***

Time:	13:35	13:40	13:45	13:45
pH:	7.02	7.06	7.07	7.07
Temperature:	12.4	12.4	12.5	12.5
Conductivity:	8980	9050	9000	9000
Conductivity Temperature:	18.3	19.1	19.2	19.2

Items Below Calculated Later From Results:
Total Hardness: 3285
Calculated TDS (mg/L): 6556

B

Data Entered By Sampler Into Database: yes / no

Texas Water Development Board
Well Schedule

State Well No. 06 42 903 Previous Well No. _____ County Potter 375

River Basin Canadian 01 Zone 2 Lat. 35 16 48 Long. 101 45 07 Source of Coord. M

Owner's Well No. #56 Location ____ 1/4, ____ 1.4, Section ____, Block ____, Survey ____

Owner SOUTHWESTERN PUBLIC SRVC. Driller D.L. McDONALD WATER

Address _____ Tenant/Oper. _____

Date Drilled 06 ____ 1958 Depth 240 Source of Depth Datum D Altitude 3582 Source of Alt. Datum M

Aquifer Dockum 231DCKM Well Type W User _____

Well Construction Const. Method _____ Casing Material _____

Completion _____ Screen Material _____

Lift Data Pump Mfr. G.E. Type Sub. S No. Stages ____

Bowls Diam. 8 5/8 in. Setting _____ ft. Column Diam. _____ in.

Motor Mfr. _____ Fuel or Power Elec E Horsepower ____

Yield Flow ____ GPM Pump 85 GPM Meas.,Repr.,Est. _____ Date ____

Performance Test Date 06-19-1958 Length of Test ____ Production 85 GPM

Static Level 115 ft. Pumping Level 208 ft. Drawdown 93 ft. Sp.Cap. ____ GPM/ft.

Quality (Remarks _____

Water Use Primary Indust. N Secondary _____ Tertiary _____

Other Data Available Water Level C Water Quality N Logs _____ Other Data _____

Water Levels Date ____ Meas. ____ Date ____ Meas. ____ Date ____ Meas. ____

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S)
Open Hole (O)
Cemented from ___ to ___

	Diam. (in.)	From	To
1	C 9	0	115
2	S 9	115	240
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

(20 max)

Recorded By C. Martz Date Record Collected or Updated 12 15 1995 Reporting Agency 01

Remarks

Aquifer DCKM

Well No. 06 42 903

93-0584
2/9/93

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

901 in center of section

Aquifer(s) Ogallala Group (056) Project No. WSW-#3 State Well No. 06-42-904903

Field No./Owner's Well No. SPS #56 County Potter

1. Location: 2200' FWL & 650' FSL, Section 97, Block 2, Survey AB&M, Lat. 37-17-10 N, Long. 101-45-02W (7½ Topo)
(2200' FWL & 650' North of South Line Section 97.)
FWL

2. Owner: Southwestern Public Service Co. Address: 6th at Tyler Amarillo TX.

Tenant (other): Address:

Driller: D.L. McDonald Water Devel. Co. Address: Amarillo TX

* 3. Land Surface Elevation: 3578 ft. above msl determined by 7½ Topo (See Note Below)

4. Drilled July-Aug 19 68; Dug, Cable Tool, Rotary, Air,

5. Depth: Rept. 230 ft. Meas. ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. Type ~~Turbine~~ Subm

Subm installed in 1978

No. Stages, Bowls Diam. in., Setting ft.

Column Diam. 2 in., Length Tailpipe ft.

8. Motor: Mfr. G.E. Fuel ELEC. HP. 7½

9. Yield: Flow gpm, Pump gpm, Meas., Rept., Est. Date

10. Performance Test: Date Length of Test Made by

Static Level ft. Pumping Level ft. Drawdown ft.

Production gpm Specific Capacity gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.)

Analyses

Date Laboratory TDS Sp Cond

Date Laboratory TDS Sp Cond

12. Other data available (as circled): Pumping Test, Power & Yield Test, (Drillers Log)

Formation Samples, Geophysical Log(s)

CASING, BLANK PIPE & WELL SCREEN
Cemented From ft. to ft.

Diam. (in.)	Type	Setting (feet) from	to
8 5/8	STEEL	0	220
	PERF	150	160
	PERF	180	220

Static Level 115.0 in 1958 (type)

13. Water Level(s): 65.50 ft. rept. (meas) 9-6 19 79 above (below) L.S.D. which is ft. above below Land Surface

ft. rept. meas. 19 above below which is ft. above below Land Surface

14. Use: Dom., Stock, Public Supply, (Ind.), Irr., Observation, Other (Test Hole, Oil Test, etc.)

15. Recorded by: C. Cornelius Source of data: Field Log, Old Sheet. Date: 2-20-80

16. Remarks: Old Schedule by D. Müller 3-22-72 Now No. 4 SWPS Watermill

* Elevation of SPS No 3 WW is 3528 ft Surveyed Elevation at well by SWPS is 3581.7 (LSD)

TOPO Sheet 06-42 Gale Hensley of SWPS Says

No. 4 well in Center of Section is Same Elevation.

17. Location or Sketch: Well No. 56 has been pumping Steadily since 9-21-81 - HEC

DOWNTOWN OFFICE

AMERICAN NATIONAL BANK (6th & TYLER)

~~Hensley~~ GALE HENSLEY } 378-1197

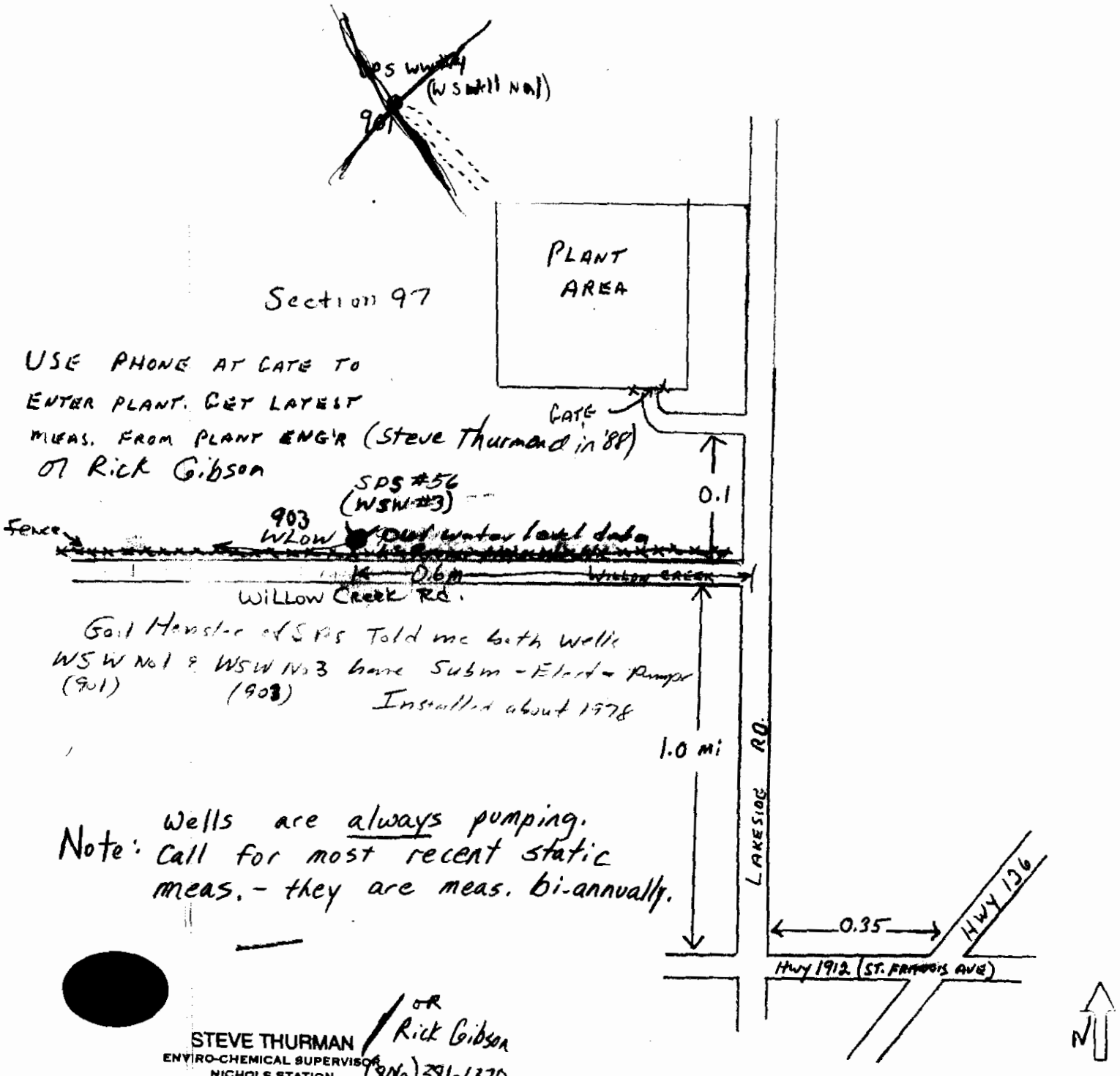
CHECK WITH PLANT ENGINEER'S OFFICE FOR LATEST MP.

MP on Well #56 given as 9.25' by Gale Hensley on 12-81

W/L Obs. Well ✓ W/Q Obs. Well

State Well No. 06-42-904903

TDWR-0308



Note: Wells are always pumping. Call for most recent static meas. - they are meas. bi-annually.

STEVE THURMAN / OR Rick Gibson
ENVIRO-CHEMICAL SUPERVISOR
NICHOLS STATION
(806) 381-6320

SOUTHWESTERN PUBLIC SERVICE COMPANY
BUS: (806) 381-6322
FAX: (806) 381-6394
TYLER AT 6TH
P. O. BOX 1261
AMARILLO, TEXAS 79170

06-42-903

Sec. 97
AB+M

(Water Well #2)
Abandoned

N

Sketch shows this well NW of Plant to be SWN-06-42-901
Elev = 3570 (Topo) SPS #4 T.H.
(Water Supply Well #1)
901
Sect. 97

Lakeside Drive

Dante

Nichols Station

903 - new SWN for this SPS well to place on Schedule, Sketches etc See DL attached

Elevation by Topo is 3570'

SPS #56
(Water Well #3)
Pump 35 GPM

Willow Creek Road

T22 S
R93 E

Gene - SPS #56 is the well we've been monitoring since 1979. We also pump + monitor SPS #4. The other well we talked about, Water well #2 was converted to a cathodic grounding well about 5 or 6 years ago and cannot be used for water level measurements any more.

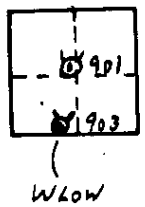
Gale Henslee

06-42-901 & 903

SOUTHWESTERN PUBLIC SERVICE COMPANY
NICHOLS STATION
AMARILLO, TEXAS

WATER WELL NO.3 2200' E. & 50' N. fr. S.W. COR. SEC. 4 97
(SW/4 of SE/4 of SE/4 of SW/4)
on South Section Line)

LOG 13 3/4" HOLE SPS #56 DRILLED JUNE, 1958



Soil	0' - 3'
Clay - some caliche	3' - 22'
Clay - sandstone stringers - hard	22' - 31'
Sandy clay - white rock	31' - 57'
Clay, sandy clay - white rock	
Hard	57' - 78'
Clay	78' - 82'
Sandstone	82' - 96'
Hard grey sandstone	96' - 149'
Soft white sand	149' - 151'
Hard sandstone	151' - 152'
Red clay TR	152' - 181'
Sandstone - red clay streaks	181' - 186'
Hard sandstone	186' - 194'
Red clay	194' - 196'
Sandstone - red clay streaks	196' - 206'
Sandstone - red and white clay	206' - 224'
Sandstone	224' - 229'
Red clay - streaks of sandstone	229' - 240'

Static water level 115'

CASING

8 5/8" O.D., .250" wall blank	0' - 115'
8 5/8" perforated casing 8 rows 1/2" x 6" long 6" apart	115' - 240'
One inch galvanized pipe air-line housing	225'
1/8" galvanized pipe air line	227'

06-42-903

Well # 3
Section 7
2200'fr W Line &
50'fr S Line of Section 97

SPS #56

PUMPING TEST

Start 8:00 A.M. 8-19-58
Static water level 115'
Started pumping at the rate of 85 G.P.M.
Capacity dropped to 75 G.P.M. by 9:45 A.M. with a pumping level of 208 feet, a drawdown of 93 feet. At 2:30 P.M., 8-19-58, capacity was 65 G.P.M. with a 93' drawdown. At 7:30 P.M., 8-19-58, capacity was 60 G.P.M. with a 93 foot drawdown, pumping level 208 feet.

The well capacity held at 60 G.P.M. from 7:30 P.M., 8-19-58 to 8:00 A.M., 8-21-58 with the drawdown remaining constant at 93 feet. At 8:00 A.M., 8-21-58 pumping rate was reduced to 45 G.P.M. and flow and drawdown as follows:

8:07 A.M.	45 G.P.M.	198' Lift	83' Drawdown
8:15 A.M.	45 G.P.M.	192' Lift	77' Drawdown
8:22 A.M.	45 G.P.M.	189' Lift	74' Drawdown
8:30 A.M.	45 G.P.M.	189' Lift	74' Drawdown
8:45 A.M.	45 G.P.M.	189' Lift	74' Drawdown
9:00 A.M.	45 G.P.M.	189' Lift	74' Drawdown

Capacity reduced to 30 G.P.M. at 9:00 A.M.

9:05 A.M.	30 G.P.M.	179' Lift	64' Drawdown
9:15 A.M.	30 G.P.M.	171' Lift	56' Drawdown
9:25 A.M.	30 G.P.M.	168' Lift	53' Drawdown
9:35 A.M.	30 G.P.M.	165' Lift	50' Drawdown
9:45 A.M.	30 G.P.M.	164' Lift	49' Drawdown
10:00 A.M.	30 G.P.M.	162' Lift	47' Drawdown
10:15 A.M.	30 G.P.M.	160' Lift	45' Drawdown
10:30 A.M.	30 G.P.M.	160' Lift	45' Drawdown
10:45 A.M.	30 G.P.M.	160' Lift	45' Drawdown

Capacity increased to 40 G.P.M. at 10:45 A.M.

10:50 A.M.	40 G.P.M.	167' Lift	52' Drawdown
11:00 A.M.	40 G.P.M.	168' Lift	53' Drawdown
11:30 A.M.	40 G.P.M.	169' Lift	54' Drawdown
11:45 A.M.	40 G.P.M.	170' Lift	55' Drawdown
12:00 A.M.	40 G.P.M.	171' Lift	56' Drawdown
			Shutdown

Water level recovered to 135' in five minutes. After the well was down one hour, the water level was 123 feet.

06-42-903

Well # 3
Location ?
SE/4 of SW/4 Sec. 27

SPS #56

PUMP

Peerless 4½" - Lift

10 H.P. U.S. Motor (Motorbo), 220/440 Volt, 3 phase, 60 cycle, 1500 R.P.M.

6 - B Discharge casting

225' of 3" x 1"	CLS column
6' - 9"	No. 52-A Hi-Lift Element
231' - 9"	Total length

Capacity 47 G.P.M. at 400' T.D.H.

06-42-903

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 06 42 904 Previous Well Number - County - Potter 375
River Basin - Canadian River - 01 Zone - 2 Latitude - 35 17 04 Longitude - 101 45 37 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Kenneth Williamson
Amarillo, TX

Driller -

Address _____ Tenant/Oper. _____
Date Drilled - / / Depth - ft. Source of Depth - Altitude - ft. Source of Alt. -
Aquifer - 1210GLL OGALLALA FORMATION Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

LIFT DATA - Pump Mfr. _____ Type - SUBMERSIBLE PUMP No. Stages ____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- DOMESTIC Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- N Quality- Y Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- 08/25/2003

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
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16		
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Reporting Agency - GROUND WATER CONSERVATION DISTRICTS
REMARKS -

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 06 42 904 Previous Well Number - County - Potter 375
River Basin - Canadian River - 01 Zone - 2 Latitude - 35 17 04 Longitude - 101 45 37 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Kenneth Williamson
Amarillo, TX

Driller -

Address _____ Tenant/Oper. _____
Date Drilled - / / Depth - ft. Source of Depth - Altitude - ft. Source of Alt. -
Aquifer - 1210GLL OGALLALA FORMATION Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____ Casing Material - _____
Completion - _____ Screen Material - _____

LIFT DATA - Pump Mfr. _____ Type - SUBMERSIBLE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.
Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- DOMESTIC Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- N Quality- Y Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

Recorded By PGCD Date Record Collected or Updated- 08/25/2003

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) | Setting(feet) From | To
1|
2|
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Reporting Agency - GROUND WATER CONSERVATION DISTRICTS
REMARKS -

Aquifer - 1210GLL
Well No. - 06 42 904

2003FY TWDB Water Quality Field Data Sheet

Newly Inventoried Well: Y

State Well Number: 06 42 904
County: Potter
County Code: 375
Aquifer Code: 1210GLLC
Aquifer Id: 21

Name: Kenneth Williamson
Address: 7309 Denton
Amarillo, TX 79108
Phone Number: 806-383-9408
Attention:
Well Name or #:

Sample ID Number: A-6
Date: 8-25-03
Sampler(s): A.S.

CIRCLE EACH SAMPLE FRACTION COLLECTED:				
1	2	3	4	5
500ml (filtered) **Anions / Total Alk.** Ice	500ml (filtered) **Cations** Nitric (HNO3)	250ml (filtered) **Nitrate** Ice + H2SO4	40 ml (unfiltered) **Atrazine** Ice and in dark	
Proper preservation requires adding enough of the correct acid to each sample fraction to bring the pH below 2.0 .				

Calibration Verification Readings

pH	7 =	
	4 or 10 =	
SLP =	7.38 =	
Conductivity	500 =	
	1000 =	
	2000 =	
	5000 =	

Time In: 12:35 Time Out: 1:10

W. L. depth from LSD (ft.): W.L. remark: M.P. =

Pumping Since: 11:00 Sampling Point: a faucet 40' west of well

Well Use: Dom
Lift: Sub
Power: elec.

FIELD G.P.S. readings
Latitude: 35° 17' 04. "
Longitude: 101° 45' 37. "

Casing Type: Steel Casing Size: 6 "

Sample Time: 12:55 Filter pressure: hand pump / line

Field Alkalinity Titration:

7.90	Start pH
4.48	End pH
50.0	mL Sample Size
0	mL Acid added for Phenol (> 8.3)
12	mL Acid added for Total (8.3 - 4.5)

Items below calculated from: mL acid added x 20 = Alkalinity

Phenol Alkalinity (82244): 0 mg/L
Total Alkalinity (39086): 240 mg/L

Items Below Calculated Later From Results:

Dissolved Solids (mg/L): 428
Hardness (as CaCO3): 169
Balanced: ✓

Water Quality Stabilization Parameters Table (at least 3 readings at five minute intervals)

Time:	12:40	12:45	12:50				
pH:	7.81	7.86	7.85				
Celsius Temp. (00010):	17	17.8	17.7				
Conductivity (uS/cm):	741	728	729				

Notes:

Data Entered By Sampler Into Database: ✓ yes / no

LCRA Environmental Laboratory Services

Date: *29-Oct-03*

CLIENT: Texas Water Development Board
Client Sample ID: 06-42-904
Lab Order: 0308497 **File No:** 26129
Project: TWDB FY04
Collection Date: 8/25/2003 12:55:00 PM
Lab ID: 0308497-18
Matrix: GROUNDWATER

Analyses	Storet	Result	Qual	PQL	Units	DF	Batch ID	Date Analyzed
ICP METALS DISSOLVED		**E200.7**						Analyst: **MLP**
Calcium		24.6		0.20	mg/L	1	21780	9/16/2003 5:13:38 PM
Magnesium		26.0		0.20	mg/L	1	21780	9/16/2003 5:13:38 PM
Potassium		6.23		0.20	mg/L	1	21780	9/16/2003 5:13:38 PM
Sodium		88.0		0.70	mg/L	1	21780	9/16/2003 5:13:38 PM
ICP METALS DISSOLVED		**E200.7**						Analyst: **MLP**
Boron		364		50	µg/L	1	21781	9/16/2003 5:13:38 PM
Iron		ND		50	µg/L	1	21781	9/16/2003 5:13:38 PM
Strontium		1230		20	µg/L	1	21781	9/16/2003 5:13:38 PM
ICPMS DISSOLVED METALS		**E200.8**						Analyst: **SW**
Aluminum		ND		4.00	µg/L	1	21700	9/11/2003
Antimony		ND		1.00	µg/L	1	21700	9/11/2003
Arsenic		2.13		2.00	µg/L	1	21700	9/11/2003
Barium		71.2		1.00	µg/L	1	21700	9/11/2003
Beryllium		ND		1.00	µg/L	1	21718	9/12/2003
Cadmium		ND		1.00	µg/L	1	21700	9/11/2003
Chromium		4.41		1.00	µg/L	1	21700	9/11/2003
Cobalt		ND		1.00	µg/L	1	21700	9/11/2003
Copper		2.03		1.00	µg/L	1	21700	9/11/2003
Lead		ND		1.00	µg/L	1	21700	9/11/2003
Lithium		109		2.00	µg/L	1	21718	9/12/2003
Manganese		1.41		1.00	µg/L	1	21700	9/11/2003
Molybdenum		2.84		1.00	µg/L	1	21700	9/11/2003
Nickel		ND		1.00	µg/L	1	21700	9/11/2003
Selenium		ND		4.00	µg/L	1	21700	9/11/2003
Thallium		ND		1.00	µg/L	1	21700	9/11/2003
Vanadium		30.5		1.00	µg/L	1	21700	9/11/2003
Zinc		11.6		4.00	µg/L	1	21700	9/11/2003
CATION/ANION BALANCES		**CALCULATION**						Analyst: **AMJ**
Cation/Anion Balance		Balanced		0	Date	1	21821	9/18/2003
ANIONS BY ION CHROMATOGRAPHY, DISSOLVE		**E300**						Analyst: **WR**
Bromide Dissolved		0.14		0.02	mg/L	1	21785	9/16/2003 2:17:21 PM
Chloride Dissolved		54.4		1.00	mg/L	1	21785	9/16/2003 2:17:21 PM
Fluoride Dissolved		1.89		0.01	mg/L	1	21785	9/16/2003 2:17:21 PM
Sulfate Dissolved		45.9		1.00	mg/L	1	21785	9/16/2003 2:17:21 PM
ALKALINITY		**M2320 B**						Analyst: **CMM**
Alkalinity, Phenolphthalein		ND		0	mg/L CaCO3	1	21562	9/3/2003
Alkalinity, Total (As CaCO3)		235		2	mg/L CaCO3	1	21562	9/3/2003

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

LCRA Environmental Laboratory Services

Date: *29-Oct-03*

CLIENT: Texas Water Development Board
Client Sample ID: 06-42-904
Lab Order: 0308497 **File No:** 26129
Project: TWDB FY04
Collection Date: 8/25/2003 12:55:00 PM
Lab ID: 0308497-18
Matrix: GROUNDWATER

Analyses	Storet	Result	Qual	PQL	Units	DF	Batch ID	Date Analyzed
NITRATE AND NITRITE			**E353.2**					Analyst: **WM**
Nitrogen, Nitrate & Nitrite		2.03		0.04	mg/L	2	21717	9/11/2003
SILICA			**E370.1**					Analyst: **WM**
Silica, Dissolved (as SiO2)		30.5		0.50	mg/L	1	21588	9/5/2003

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 06-42-904

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	0642904
County	Potter
River Basin	Canadian
Groundwater Management Area	1
Regional Water Planning Area	A - Panhandle
Groundwater Conservation District	Panhandle GCD
Latitude (decimal degrees)	35.284445
Latitude (degrees minutes seconds)	35° 17' 04" N
Longitude (decimal degrees)	-101.760278
Longitude (degrees minutes seconds)	101° 45' 37" W
Coordinate Source	Global Positioning System - GPS
Aquifer Code	121OGLL - Ogallala Formation
Aquifer	Ogallala
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	3574
Land Surface Elevation Method	Other (see remarks)
Well Depth (feet below land surface)	
Well Depth Source	
Drilling Start Date	
Drilling End Date	
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Domestic
Water Level Observation	None
Water Quality Available	Yes
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Kenneth Williamson
Driller	
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Groundwater Conservation District
Created Date	8/25/2003
Last Update Date	11/3/2003

Remarks	

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
6	Blank	Steel			0	

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements

No Data Available

Water Quality Analysis

Sample Date: 8/25/2003 **Sample Time:** **Sample Number:** 1 **Collection Entity:** Texas Commission on Environmental Quality

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Immunoassay at TCEQ **Reliability:** Sampled using TWDB protocols, but NOT filtered

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39033	ATRAZINE, TOTAL, UG/L	<	0.05	ug/L	
82612	METOLACHLOR, WHOLE WATER, TOTAL RECOVERABLE, UG/L	<	0.05	ug/L	

Water Quality Analysis

Sample Date: 8/25/2003 **Sample Time:** 1255 **Sample Number:** 1 **Collection Entity:** Panhandle GCD

Sampled Aquifer: Ogallala Formation

Analyzed Lab: LCRA - Lower Colorado River Authority **Reliability:** Sampled using TWDB protocols

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		240	mg/L as CACO3	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		235	mg/L as CACO3	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)	<	4	ug/L	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)		2.13	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		71.2	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		286.78	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		364	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.142	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		24.6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		54.4	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)		4.41	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)		2.03	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1.89	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		169	mg/L as CACO3	
01046	IRON, DISSOLVED (UG/L AS FE)	<	50	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		109	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		26	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)		1.41	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)		2.84	ug/L	
01065	NICKEL, DISSOLVED (UG/L AS NI)	<	1	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		8.99	mg/L as NO3	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)		2.03	mg/L as N	

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 06-42-904

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00400	PH (STANDARD UNITS), FIELD		7.85	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		6.23	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		1.33		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SI02)		30.5	mg/L as SIO2	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		2.95		
00932	SODIUM, CALCULATED, PERCENT		53	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		88	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		729	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		1230	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		45.9	mg/L as SO4	
00010	TEMPERATURE, WATER (CELSIUS)		17.7	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		428	mg/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)		30.5	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)		11.6	ug/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (https://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 06 43 705 Previous Well Number - County - Potter 375
River Basin - Canadian River - 01 Zone - 2 Latitude - 35 16 45 Longitude - 101 44 48 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Sammy Giddeon
Ammarillo, TX

Driller -

Address _____ Tenant/Oper. _____
Date Drilled - / / Depth - ft. Source of Depth - Altitude - ft. Source of Alt. -
Aquifer - 1210GLL OGALLALA FORMATION Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____
Completion - _____
Casing Material - _____
Screen Material - _____

LIFT DATA - Pump Mfr. _____ Type - SUBMERSIBLE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- DOMESTIC Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- N Quality- Y Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

Recorded By PGCD Date Record Collected or Updated- 08/25/2003

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____

Diam. (in.)	Setting(feet) From	To
1		
2		
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Reporting Agency - GROUND WATER CONSERVATION DISTRICTS
REMARKS -

~~2003FY~~ TWDB Water Quality Field Data Sheet

Newly Inventoried Well: Y

State Well Number: 06 43 705
County: ~~Potter~~
County Code: 375
Aquifer Code: 121 OGLL
Aquifer Id: 21

Name: Sammy Giddeon
Address: 8100 E Willow CR. DR.
Amarillo, TX 79108
Phone Number: 806-383-4732
Attention:
Well Name or #:

Sample ID Number: A-7
Date: 8-25-03
Sampler(s): A.S.

CIRCLE EACH SAMPLE FRACTION COLLECTED:				
1	2	3	4	5
500ml (filtered) **Anions / Total Alk.** Ice	500ml (filtered) **Cations** Nitric (HNO3)	250ml (filtered) **Nitrate** Ice + H2SO4	40 ml (unfiltered) **Atrazine** Ice and in dark	
Proper preservation requires adding enough of the correct acid to each sample fraction to bring the pH below 2.0 .				

Calibration Verification Readings		
pH	7 =	
	4 or 10 =	
SLP =	7.38 =	
Conductivity	500 =	
	1000 =	
	2000 =	
	5000 =	

Time In: 1:15 P.M
Time Out: 1:50 P.M

W. L. depth from LSD (ft.): N/A
W.L. remark:
M.P. =

Pumping Since: 1:00
Sampling Point: Faucet 50's w of well

Well Use: Domestic
Lift: Sub
Power: Elec.

FIELD G.P.S. readings
Latitude: 35 °16 '45. "
Longitude: 101 °44 '48. "

Casing Type: Steel
Casing Size: 6 "

Sample Time: 1:40 P.M
Filter pressure: hand pump / line

Field Alkalinity Titration:

9.72	Start pH
4.24	End pH
50.0	mL Sample Size
0	mL Acid added for Phenol (> 8.3)
9.8	mL Acid added for Total (8.3 - 4.5)

Items below calculated from: mL acid added x 20 = Alkalinity

Phenol Alkalinity (82244): 0 mg/L
Total Alkalinity (39086): 196 mg/L

Items Below Calculated Later From Results:
Dissolved Solids (mg/L): 272
Hardness (as CaCO3): 176
Balanced: ✓

Water Quality Stabilization Parameters Table (at least 3 readings at five minute intervals)

Time:	1:23	1:28	1:33	1:38			
pH:	7.68	7.68	7.68	7.71			
Celsius Temp. (00010)	25.1	22.7	22.6	22.5			
Conductivity (uS/cm):	458	439	451	455			

Notes:

Data Entered By Sampler into Database: ✓ yes / no

LCRA Environmental Laboratory Services

Date: *29-Oct-03*

CLIENT: Texas Water Development Board **Client Sample ID:** 06-43-705
Lab Order: 0308497 **File No:** 26129
Project: TWDB FY04 **Collection Date:** 8/25/2003 1:40:00 PM
Lab ID: 0308497-19 **Matrix:** GROUNDWATER

Analyses	Storet	Result	Qual	PQL	Units	DF	Batch ID	Date Analyzed
ICP METALS DISSOLVED				**E200.7**				Analyst: **MLP**
Calcium		34.3		0.20	mg/L	1	21780	9/16/2003 5:19:50 PM
Magnesium		21.8		0.20	mg/L	1	21780	9/16/2003 5:19:50 PM
Potassium		5.53		0.20	mg/L	1	21780	9/16/2003 5:19:50 PM
Sodium		25.5		0.70	mg/L	1	21780	9/16/2003 5:19:50 PM
ICP METALS DISSOLVED				**E200.7**				Analyst: **MLP**
Boron		148		50	µg/L	1	21781	9/16/2003 5:19:50 PM
Iron		ND		50	µg/L	1	21781	9/16/2003 5:19:50 PM
Strontium		881		20	µg/L	1	21781	9/16/2003 5:19:50 PM
ICPMS DISSOLVED METALS				**E200.8**				Analyst: **SW**
Aluminum		ND		4.00	µg/L	1	21700	9/11/2003
Antimony		ND		1.00	µg/L	1	21700	9/11/2003
Arsenic		ND		2.00	µg/L	1	21700	9/11/2003
Barium		168		1.00	µg/L	1	21700	9/11/2003
Beryllium		ND		1.00	µg/L	1	21718	9/12/2003
Cadmium		ND		1.00	µg/L	1	21700	9/11/2003
Chromium		1.99		1.00	µg/L	1	21700	9/11/2003
Cobalt		ND		1.00	µg/L	1	21700	9/11/2003
Copper		1.73		1.00	µg/L	1	21700	9/11/2003
Lead		ND		1.00	µg/L	1	21700	9/11/2003
Lithium		39.1		2.00	µg/L	1	21718	9/12/2003
Manganese		ND		1.00	µg/L	1	21700	9/11/2003
Molybdenum		3.18		1.00	µg/L	1	21700	9/11/2003
Nickel		ND		1.00	µg/L	1	21700	9/11/2003
Selenium		ND		4.00	µg/L	1	21700	9/11/2003
Thallium		ND		1.00	µg/L	1	21700	9/11/2003
Vanadium		13.4		1.00	µg/L	1	21700	9/11/2003
Zinc		ND		4.00	µg/L	1	21700	9/11/2003
CATION/ANION BALANCES				**CALCULATION**				Analyst: **AMJ**
Cation/Anion Balance		Balanced		0	Date	1	21821	9/18/2003
ANIONS BY ION CHROMATOGRAPHY, DISSOLVE				**E300**				Analyst: **WR**
Bromide Dissolved		ND		0.02	mg/L	1	21785	9/16/2003 2:29:14 PM
Chloride Dissolved		7.82		1.00	mg/L	1	21785	9/16/2003 2:29:14 PM
Fluoride Dissolved		1.07		0.01	mg/L	1	21785	9/16/2003 2:29:14 PM
Sulfate Dissolved		14.7		1.00	mg/L	1	21785	9/16/2003 2:29:14 PM
ALKALINITY				**M2320 B**				Analyst: **CMM**
Alkalinity, Phenolphthalein		ND		0	mg/L CaCO3	1	21562	9/3/2003
Alkalinity, Total (As CaCO3)		203		2	mg/L CaCO3	1	21562	9/3/2003

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

LCRA Environmental Laboratory Services

Date: *29-Oct-03*

CLIENT:	Texas Water Development Board	**Client Sample ID:**	06-43-705
Lab Order:	0308497 **File No:** 26129		
Project:	TWDB FY04	**Collection Date:**	8/25/2003 1:40:00 PM
Lab ID:	0308497-19	**Matrix:**	GROUNDWATER

Analyses	Storet	Result	Qual	PQL	Units	DF	Batch ID	Date Analyzed
NITRATE AND NITRITE			**E353.2**					Analyst: **WM**
Nitrogen, Nitrate & Nitrite		1.23		0.02	mg/L	1	21717	9/11/2003
SILICA			**E370.1**					Analyst: **WM**
Silica, Dissolved (as SiO2)		33.8		0.50	mg/L	1	21588	9/5/2003

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 06 43 705 Previous Well Number - County - Potter 375
River Basin - Canadian River - 01 Zone - 2 Latitude - 35 16 45 Longitude - 101 44 48 Source of Coords - 1

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Sammy Giddeon
Ammarillo, TX

Driller -

Address _____ Tenant/Oper. _____
Date Drilled - / / Depth - ft. Source of Depth - Altitude - ft. Source of Alt. -
Aquifer - 1210GLL OGALLALA FORMATION Well Type - W User -

WELL CONSTRUCTION
Const. Method - _____
Completion - _____
Casing Material - _____
Screen Material - _____

LIFT DATA - Pump Mfr. _____ Type - SUBMERSIBLE PUMP No. Stages ____
Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower -

YIELD Flow- _____ GPM Pump- _____ GPM Meas.,Rept.,Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____GPM

Static Level- _____ft. Pumping Level- _____ft. Drawdown- _____ft. Sp.Cap.- _____GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- DOMESTIC Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- N Quality- Y Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

Recorded By _____ Date Record Collected or Updated- 08/25/2003

| Casing or Blank Pipe (C)
| Well Screen or Slotted Zone (
| Open Hole (O)
| Cemented from_____to_____
| Diam. (in.) | Setting(feet) From | To

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	

Reporting Agency - GROUND WATER CONSERVATION DISTRICTS
REMARKS -

TWDB Water Quality Field Data Sheet

Newly Inventoried Well _____

State Well Number: 643705 | Name: PWCD | Sample ID Number: 2538
County: Potter | Address: | Date: 17 Aug 04
County Code: 375 | | Sampler(s): A Ruiz
Aquifer Code: 21 | Phone Number: 806 883 2501
Aquifer Id: 120ALLL | Attention:
Well Name or #:

CIRCLE EACH SAMPLE FRACTION COLLECTED:				
1	2	3	4	5
500ml (filtered)	500ml (filtered)	250ml (filtered)	40 ml (unfiltered)	1 L (unfiltered)
Anions / Total Alk.	**Cations**	**Nitrate**	**Atrazine**	**Alpha & Beta**
Ice	Nitric (HNO3)	Ice + H2SO4	Ice and in dark	Nitric (HNO3)
Proper Cation and Nitrate preservation requires adding enough of the correct acid to each sample fraction to bring the pH below 2.0				

Calibration Verification Readings		
pH	7 =	
	4 or 10 =	
SLP =	7.38 =	
Conductivity	500 =	
	1000 =	
	2000 =	
	5000 =	

Time In: 1100 | Time Out: 1130

W. L. depth from LSD (ft.): na | W.L. remark: na | M.P. = na

Pumping Since: na | Sampling Point: na

Well Use: Domestic
Lift: na
Power: na

FIELD G.P.S. readings
Latitude: 35 ° 16 · 39.7 " 3516.661
Longitude: 101 ° 44 · 46.7 " 101 44.778

Casing Type: na | Casing Size: na "

Sample Time: 1120 | Filter pressure: hand pump / line

Field Alkalinity Titration:
7.52 Start pH | 4.42 End pH
50.0 mL Sample Size
0 mL Acid added for Phenol (> 8.3)
11.3 mL Acid added for Total (to pH 4.5)
Items below calculated from: mL acid added x 20 = Alkalinity
Phenol Alkalinity (82244): 226 mg/L
Total Alkalinity (39086): 226 mg/L

Items Below Calculated Later From Results:
Dissolved Solids (mg/L): 267
Hardness (as CaCO3): 168
Balanced: yes

Water Quality Stabilization Parameters Table (at least 3 readings at five minute intervals)

Time:	1106	1111	1116				
pH:	7.47	7.54	7.57				
Celsius Temp. (00010)	22.9	23.1	23.2				
Conductivity (uS/cm):	457	455	454				

Notes:

Data Entered By Sampler Into Database: yes / no

LCRA Environmental Laboratory Services

Date: *13-Sep-04*

CLIENT: Texas Water Development Board **Client Sample ID:** 06-43-705
Lab Order: 0408448 **File No:** 32613
Project: TWDB FY04 **Collection Date:** 8/17/2004 11:20:00 AM
Lab ID: 0408448-003 **Matrix:** GROUNDWATER

Analyses	Storet	Result	Qual	PQL	Units	DF	Batch ID	Date Analyzed
ICP METALS DISSOLVED		**E200.7**						Analyst: **TH**
Calcium		33.6		0.20	mg/L	1	28676	8/31/2004 2:07:22 AM
Magnesium		20.1		0.20	mg/L	1	28676	8/31/2004 2:07:22 AM
Potassium		5.22		0.20	mg/L	1	28676	8/31/2004 2:07:22 AM
Sodium		25.8		0.71	mg/L	1	28676	8/31/2004 2:07:22 AM
ICP METALS DISSOLVED		**E200.7**						Analyst: **TH**
Boron		184		51	µg/L	1	28677	8/31/2004 2:07:22 AM
Iron		ND		51	µg/L	1	28677	8/31/2004 2:07:22 AM
Strontium		821		20	µg/L	1	28677	8/31/2004 2:07:22 AM
ICPMS DISSOLVED METALS		**E200.8**						Analyst: **SW**
Aluminum		ND		4.08	µg/L	1	28647	8/27/2004
Antimony		ND		1.02	µg/L	1	28589	8/25/2004
Arsenic		2.10		2.04	µg/L	1	28589	8/25/2004
Barium		159		1.02	µg/L	1	28589	8/25/2004
Beryllium		ND		1.02	µg/L	1	28647	8/27/2004
Cadmium		ND		1.02	µg/L	1	28589	8/25/2004
Chromium		3.17		1.02	µg/L	1	28647	8/27/2004
Cobalt		ND		1.02	µg/L	1	28589	8/25/2004
Copper		22.2		1.02	µg/L	1	28589	8/25/2004
Lead		ND		1.02	µg/L	1	28589	8/25/2004
Lithium		39.2		2.04	µg/L	1	28647	8/27/2004
Manganese		ND		1.02	µg/L	1	28589	8/25/2004
Molybdenum		3.41		1.02	µg/L	1	28589	8/25/2004
Nickel		1.30		1.02	µg/L	1	28589	8/25/2004
Selenium		ND		4.08	µg/L	1	28589	8/25/2004
Thallium		ND		1.02	µg/L	1	28589	8/25/2004
Vanadium		14.9		1.02	µg/L	1	28589	8/25/2004
Zinc		5.82		4.08	µg/L	1	28589	8/25/2004
CATION/ANION BALANCES		**CALCULATION**						Analyst: **WM**
Cation/Anion Balance		Balanced		0	Date	1	28857	9/8/2004
ANIONS BY ION CHROMATOGRAPHY, DISSOLVE		**E300**						Analyst: **WM**
Bromide Dissolved		ND		0.02	mg/L	1	28725	8/31/2004 7:55:00 PM
Chloride Dissolved		8.61		1.00	mg/L	1	28725	8/31/2004 7:55:00 PM
Fluoride Dissolved		1.36		0.01	mg/L	1	28725	8/31/2004 7:55:00 PM
Sulfate Dissolved		17.2		1.00	mg/L	1	28725	8/31/2004 7:55:00 PM
ALKALINITY		**M2320 B**						Analyst: **WR**
Alkalinity, Phenolphthalein		ND		0	mg/L CaCO3	1	28646	8/27/2004
Alkalinity, Total (As CaCO3)		194		2	mg/L CaCO3	1	28646	8/27/2004

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

LCRA Environmental Laboratory Services

Date: *13-Sep-04*

CLIENT:	Texas Water Development Board	**Client Sample ID:**	06-43-705
Lab Order:	0408448 **File No:** 32613		
Project:	TWDB FY04	**Collection Date:**	8/17/2004 11:20:00 AM
Lab ID:	0408448-003	**Matrix:**	GROUNDWATER

Analyses	Storet	Result	Qual	PQL	Units	DF	Batch ID	Date Analyzed
NITRATE AND NITRITE			**E353.2**					Analyst: **LW**
Nitrogen, Nitrate & Nitrite		1.30		0.02	mg/L	1	28736	9/1/2004
SILICA			**E370.1**					Analyst: **WM**
Silica, Dissolved (as SiO2)		31.9		0.50	mg/L	1	28527	8/24/2004

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
S	Spike Recovery outside accepted recovery limits		

STATE OF TEXAS WELL REPORT for Tracking #646868

Owner:	**John Gregory/Ralph Knotts**	Owner Well #:	**No Data**
Address:	**6550 Lago Dr Amarillo, TX 79108**	Grid #:	**06-42-9**
Well Location:	**7500 E Willow Creek Amarillo, TX 79108**	Latitude:	**35° 16' 44.47" N**
		Longitude:	**101° 45' 11.4" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **8/18/2023** Drilling End Date: **8/18/2023**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
9	**0**	**300**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
22	**300**	**Gravel**	

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
2	**22**	**Cement 5 Bags/Sacks**

Seal Method: **Positive Displacement**

Sealed By: **Driller**

Distance to Property Line (ft.): **50+**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **150 ft.** below land surface on **2023-08-18**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Bailer** **Unspecified yield with 65 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **K-Ran Drilling, LLC**

PO Box 32383
Amarillo, TX 79120

Driller Name: **Andrew Bay Wilson** License Number: **50676**

Apprentice Name: **Jorge Gonzalez-Resendiz**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**3**	**top soil**
3	**7**	**caliche**
7	**50**	**reddish sandy clay**
50	**60**	**rock (hard)**
60	**106**	**red sandy clay**
106	**144**	**red clay**
144	**226**	**light brown snad with s/s and green clay streaks**
226	**274**	**red clay**
274	**292**	**fine brown sand with s/s and red clay streaks**
292	**300**	**red clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	**Blank**	**New Plastic (PVC)**	**200**	**0**	**215**
5	**Perforated or Slotted**	**New Plastic (PVC)**	**0.035**	**215**	**295**
5	**Blank**	**New Plastic (PVC)**	**200**	**295**	**300**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #650248

Owner:	**Henry Herrera/Edgar Lara**	Owner Well #:	**No Data**
Address:	**2504 N Wilson Amarillo, TX 79107**	Grid #:	**06-42-9**
Well Location:	**Denton St Amarillo, TX 79108**	Latitude:	**35° 17' 20.95" N**
		Longitude:	**101° 45' 38.75" W**
Well County:	**Potter**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **9/29/2023** Drilling End Date: **9/29/2023**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
9	**0**	**280**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
22	**280**	**Gravel**	

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
2	**22**	**Cement 5 Bags/Sacks**

Seal Method: **Positive Displacement**

Sealed By: **Driller**

Distance to Property Line (ft.): **50+**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **140 ft.** below land surface on **2023-09-29**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **Bailer** **Unspecified yield with 20 ft. drawdown after 1 hours**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **K-Ran Drilling, LLC**

PO Box 32383
Amarillo, TX 79120

Driller Name: **Andrew Bay Wilson** License Number: **50676**

Apprentice Name: **Jorge Gonzalez-Resendiz**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**3**	**top soil**
3	**9**	**caliche**
9	**76**	**reddish sandy clay**
76	**82**	**caprock**
82	**125**	**green s/s with green clay**
125	**140**	**red and green clay**
140	**155**	**yellow and white clay, shale**
155	**180**	**red and yellow clay**
180	**205**	**brown sandy clay with brown s/s**
205	**255**	**brown sand with s/s and clay streaks**
255	**265**	**yellow clay and shale**
265	**280**	**red clay and shale**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5	**Blank**	**New Plastic (PVC)**	**200**	**0**	**195**
5	**Perforated or Slotted**	**New Plastic (PVC)**	**0.035**	**195**	**275**
5	**Blank**	**New Plastic (PVC)**	**200**	**275**	**280**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #668777

Owner:	**DAVID NOGUEZ**	Owner Well #:	**No Data**
Address:	**7660 W WILLOW CREEK AMARILLO, TX 79108**	Grid #:	**06-42-9**
		Latitude:	**35° 16' 46.3" N**
Well Location:	**2379 AMARILLO, TX**	Longitude:	**101° 45' 06.7" W**
	AB&M BLK2 SEC96 35 16 46.3 -101 45 06.7	Elevation:	**No Data**
Well County:	**Potter**		

Type of Work: **New Well** Proposed Use: **Domestic**

Drilling Start Date: **6/17/2024** Drilling End Date: **6/17/2024**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.75	**0**	**318**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
20	**318**	**Gravel**	**#1 FINE**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**20**	**Cement 12 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **218**

Distance to Septic Field or other concentrated contamination (ft.): **N/A**

Distance to Septic Tank (ft.): **N/A**

Method of Verification: **N/A**

Surface Completion: **Pitless Adapter Used** **Surface Completion by Driller**

Water Level: **130 ft.** below land surface on **2024-06-17** Measurement Method: **Weighted Line**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
130 - 318	CLEAN WATER

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **ETTER WATER WELL LLC**

PO BOX 977
CACTUS, TX 79013

Driller Name: **DANIEL MURGA** License Number: **60143**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	100	SAND W/CLAY, HARD CALICHE, ROCK, SAND W/ROCK
100	140	RED CLAY W/ SAND STKS
140	160	SAND W/ RED CLAY STRIPS
160	180	RED CLAY
180	200	FINE SAND W/ RED CLAY STRIPS
200	220	FINE TIGHT SAND
220	240	RED SHALE W/SAND STRIPS
240	260	RED CLAY & SHALE
260	280	MED TIGHT SAND W/RED SHALE STKS
280	300	RED CLAY W/SAND STKS
300	310	RED SHALE

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
5		New PITLESS	2.5	2	3
5		New Plastic (PVC)	2.5	3	248
5	Perforated or Slotted	New OTHER	2.5	248	308
5		New Plastic (PVC)	2.5	308	318

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

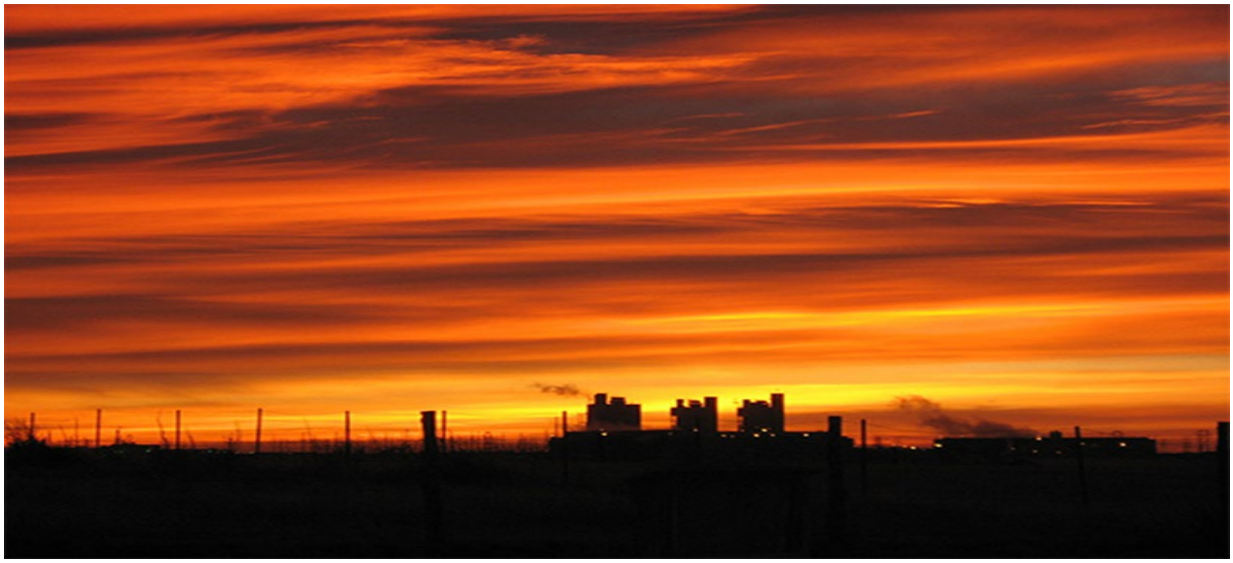
Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Southwestern Public Service Co.

Nichols/Harrington Complex
Amarillo, TX
Groundwater Monitoring Plan

Harrington Station

Nichols Station



Revised 04/23/2025

April 23, 2025

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WELL MAP LOCATIONS

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Groups 6, 7, & 44…… 10

Irrigation Monitoring Wells and Wastewater Application Plots …… 11

I Analysis Plan

Depth to water and water chemistry is determined annually (once per year). The water chemistry is determined from a single grab sample collected once per year from wells 6-1 ,6-2 ,6-3, 6-4, 6-5, 6-6, 7-7, 7-8, 7-9, 44-1, 44-2. The analysis to be determined can be found in Table 1.

II Sampling Locations

Well locations can be found on the attached maps. The sample should be collected from the wellhead.

III Groundwater Compliance Directive Requirement

In accordance with the Enforcement Compliance Directive, issued by the Texas Department of Water Resources on October 11, 1979, Xcel Energy is required to submit a semiannual report of the groundwater recovery project.

This project's requirements are described in the report entitled, "Nichols/Harrington Area - Groundwater Contamination Formal Proposal to Implement Correction Action Not Specified in SPS Report of June 1, 1979."

The requirements are:

- Semiannual pumping data of the groundwater recovery project
- Analysis of quarterly samples from all groundwater recovery well

Table 1
Sampling Plan (Annual Groundwater Sampling and Reporting)

N/H Permit 01990

Monitor Wells Annual Monitoring requirements

Date | Well No.

	Sampler Name	Depth to Water, ft.	Start Pump Time	Stop Pump Time	Pump Rate (gpm)	Gallons Pumped	Sample Time		Constituent	Minimum Analytical Level	Lab Analyst	Date and Time of Analysis	Result	units
									Total Petroleum Hydrocarbons	1				mg/L
									Oil and Grease	5				mg/L
									Arsenic	0.5				ug/L
									Barium	3				ug/L
									Cadmium	1				ug/L
									Chromium (Cr, total)	3				ug/L
									Lead	0.5				ug/L
									Mercury	0.005				ug/L
									Selenium	5				ug/L
									Silver	0.5				ug/L
									Boron	20				mg/L
									Calcium	1				mg/L
									Magnesium	1				mg/L
									Potassium	1				mg/L
									Sodium	1				mg/L
									Chloride	1				mg/L
									Sulfate	1				mg/L
									Nitrate-N	1				mg/L
									Ammonia-N	1				mg/L
									Total Kjeldahl Nitrogen	1				mg/L
									Specific Conductance	20				umhos/cm
									Total Hardness	1				mg/L
									Total Dissolved Solids	10				mg/L
									pH					std. units
									M Alkalinity-ppm as CaCO3					mg/L
									P Alkalinity-ppm as CaCO3					mg/L

Sample Containers		Preservative		Refrigera	Methods
RCRA Metals + B	250 ml polyethylene	pH<2	HNO3		
O&G	1-L glass with PTFE lined screw cap	pH<2	H2SO4 or HCl	0^o - 6^o C	EPA Method 1664, Revision B (n-Hexane Extraction)Collect Field Blank, and 1/20 sample duplicates,1/20 Matrix spike samples
TPH	VOA Vial	pH<2	H2SO4 or HCl	2^o - 6^o C	TCEQ Method 1005
Minerals, conductance, pH	500 ml polyethylene	none			
pH	polyethylene or glass	measure in the field immediately			
N	polyethylene or glass	pH<2	H2SO4 or HCl	4^oC	EPA - 1687, EPA 351.1

Field Notes:																
Lat.																
Long.																
Total Depth of Well																
Pump Inlet Depth																
Sample Appearance (color, turbidity, odor)																

Table 2

Required Containers, Preservation Techniques, and Holding Times (Per 40 CFR Part 136.3, Table II)	Minimum Sample Volumes		
	Required Sample Volume (ml)		
Parameter No./Name Container Preservation Maximum holding time			
Inorganic Tests:			
Alkalinity P, G Cool, 4°C 14 days		200	
Ammonia P, G Cool, 4°C , to pH <2 28 days.		500	
Boron P, PFTE, or Quartz HNO3 to pH <2 6 months.		200	
Chloride P, G None required 28 days		200	
Hardness P, G HNO3 to pH<2, to pH<2 6 months		200	
Hydrogen ion (pH) P, G None required Analyze immediately		100	
Kjeldahl and organic nitrogen. P, G Cool, 4°C , to pH <2 28 days		500	
Nitrate P, G. Cool, 4°C 48 hours		200	
Oil and grease G Cool, 4°C , HCl or to pH<2 28 days.		1000	
Organic Carbon P, G Cool, 4°C , HCl or H2SO4 to pH<2, 28 days.		100	
Residue, Filterable (TDS) P, G Cool, 4°C 7days		200	
Sulfate P, G Cool, 4°C 28 days.		200	
Specific Conductance		100	
Metals:			
Mercury P, G HNO3 to pH<2 28 days		200	
Metals, except boron, chromium VI, and mercury P, G. HNO3 to pH<2 6 months		1000	
Organic Tests:			
VOA (Volatile Organic) (TPH) G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days		40 (use VOA bottle)	
BTEX (Benzene, Tolulene, Ethlybenzene, Xylene G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days			
Semi-volatiles (Includes acid and base neutral extractables, polynuclear aromatics, haloethers, and phenol compounds) G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 7 days until extraction, 40 days after extraction			

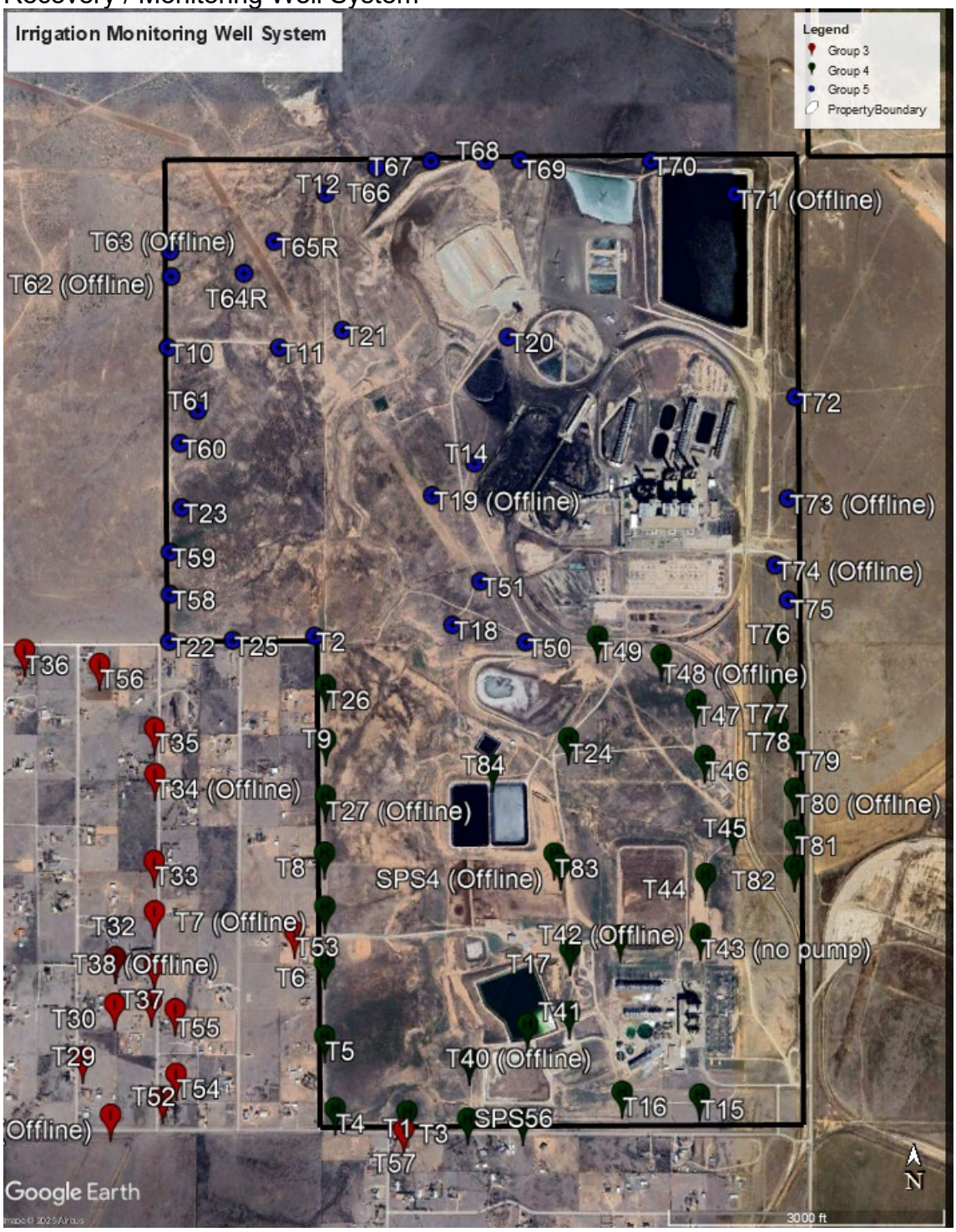
Table 3 Groundwater Compliance Directive Sampling Schedule

Group	Well IDs	Sample Frequency	General Level Frequency
3	T28, T29, T30, T31, T32, T33, T34, T35, T36, T37, T38, T52, T53, T54, T55, T56, T57	Jan, Apr, Jul, Oct	Weekly
4	SPS 4, SPS 56, T1, T3, T4, T5, T6, T7, T8, T9, T15, T16, T17, T24, T26, T27, T39, T40, T41, T42, T43, T44, T45, T46, T47, T48, T49, T76, T77, T78, T79, T80, T81, T82, T83, T84	Feb, May Aug, Nov	Weekly
5	T2, T10, T11, T12, T14, T18, T19, T20, T21, T22, T23, T25, T50, T51, T58, T59, T60, T61, T62, T63, T64R, T65R, T66, T67, T68, T69, T70, T71, T72, T73, T74, T75	Mar, Jun, Sep, Dec	Weekly
6	O44-1, O44-2, O6-1, O6-2, O6-3, O6-4, O6-5, O6-6, O7-7, O7-8, O7-9	Jun, Dec	Jun, Dec
7	O1, O2, O3, O4, O5, O6, O7, O8, O9, O10, O11, O12, O13, O14, O15, O16, O17, O18, O19, O20, O21, O22, O23, O24, O25, O26, O27, O28, O29, O30, O31, O32, O33, O34, O35, O36, O37, O38, O39, O40, O41, O42, O43, O44, O45, O46, O47, O48, O49L, O50, O51, O52, O53L, O54, O55, O56, O57, O58L, O59, O60, O61, O62, O63, O64, O65, O66, O67, O68, O69, O70, O71, O72, O73, O74, O75L, O76, O77L	N/A	Jan, Apr, Jul, Oct

Groundwater Compliance Directive Well Maps

Observation Well System

Recovery / Monitoring Well System



Irrigation Monitor Well System

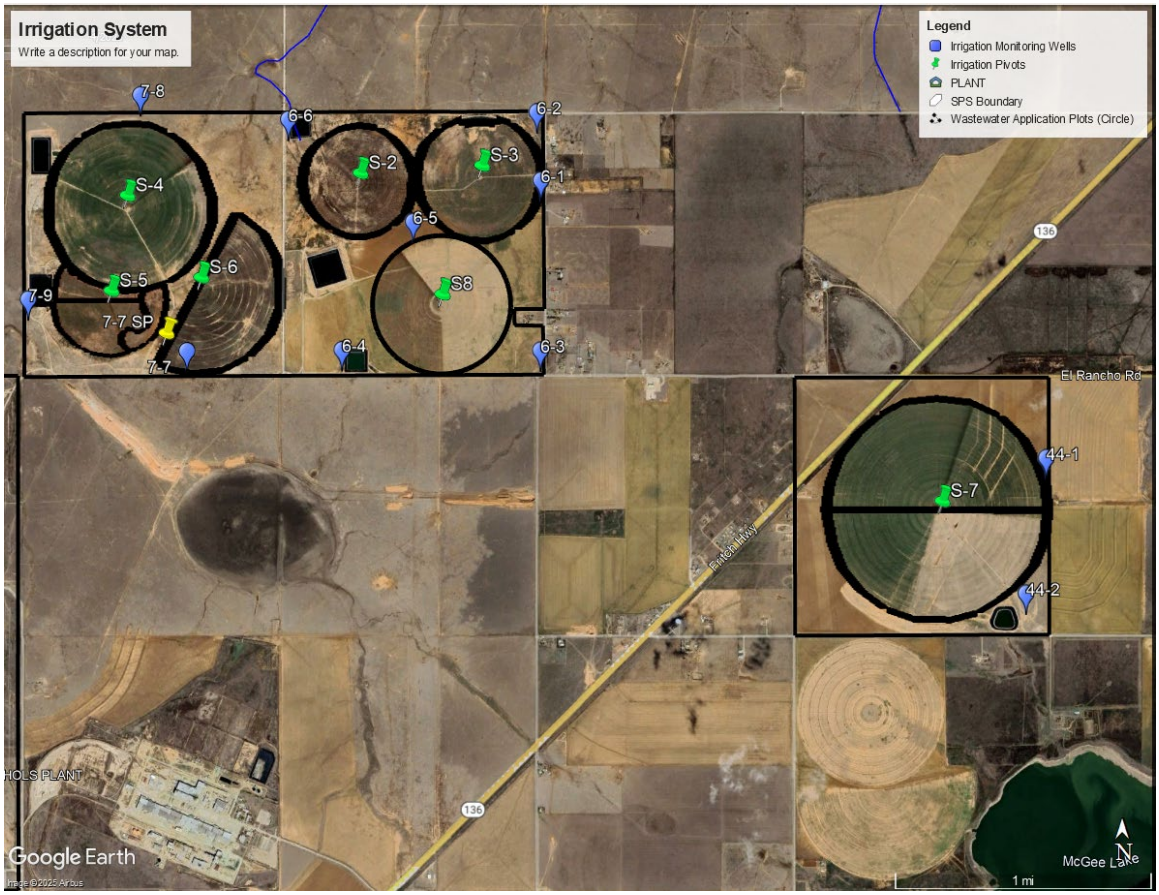


Figure 2
Nichols-Harrington Complex
Location of Irrigation Monitor Wells

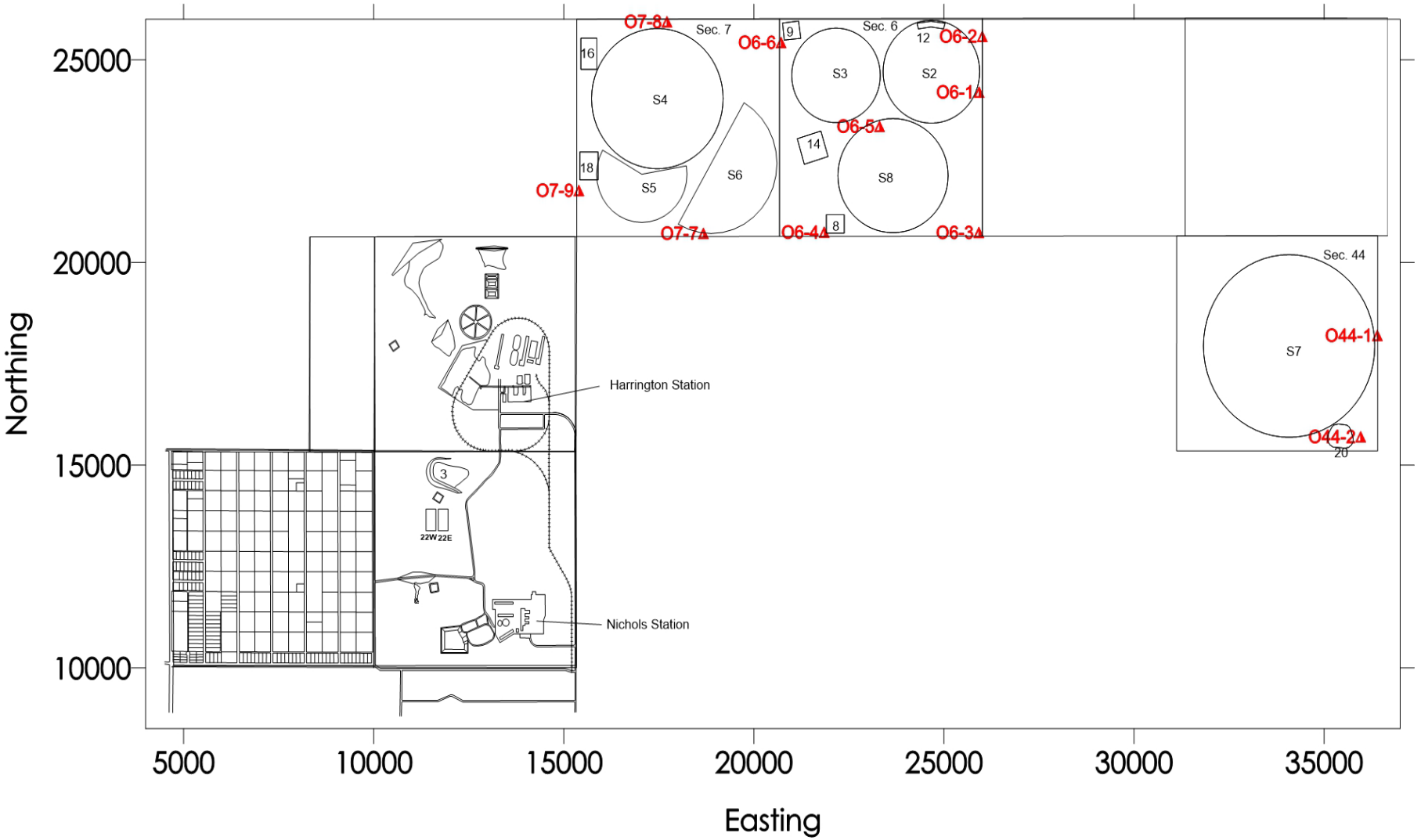


Table 4 Monitor Well Information

Nichols Harrington Generating Complex
Irrigation Monitoring Wells Sections 6, 7, and 44
Estimated pumping time required prior to sampling

0.041 : conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

Well id	Date Drilled	Total Depth	Hole Diam.	Casing I.D. **(r3)**	Casing O.D.	Casing Length	Screen Interval	Cement Interval	Bottom of Cement	2024 Water Level	Discharge pipe I.D.	Casing Volume, gal.	Annulus Volume, gal.	**h**	Discharge Pipe Volume	Calculated Maximum Volume to Pump, gal	Pump rate, gpm	Calculated Minutes Required	Minutes Pumped	Volume Pumped, gal
O6-1	8/20/1980	260	9.75	4.1875	4.6875	255	255 - 193	168 - 0	168	215.1	1	28.5	82.3	44.9	10.0	96.8	2.4	40	69	168.9
O6-2	8/25/1980	270	9.75	4.1875	4.6875	262	263 -180	153 - 0	153	202.1	1	42.9	104.7	67.9	10.3	146.4				
O6-3	8/27/1980	272	9.75	4.1875	4.6875	254	254 - 170	147 - 0	147	193.9	1	43.0	111.8	78.1	10.0	168.4	3.0	56	56	169.4
O6-4	9/2/1980	355	9.75	4.1875	4.6875	241	241 - 160	140 - 0	140	167.6	1	52.5	192.3	187.4	9.4	404.2	5.0	81	66	331.2
O6-5	9/5/1980	301	9.75	4.1875	4.6875	284	284 - 178	168 - 0	168	191.7	1	66.0	119.0	109.3	11.2	235.7	4.3	55	78	334.3
O6-6	9/12/1980	280	9.75	4.1875	4.6875	258	258 - 154	140 - 0	140	160.5	1	69.8	125.2	119.5	10.1	257.7	2.0	129	58	115.5
O7-7	9/15/1980	300	9.75	4.1875	4.6875	220	220 - 136	125 - 0	125	117.1	1	73.6	156.6	182.9	8.6					
O7-8	9/19/1980	280	9.75	4.1875	4.6875	254	254 - 150	130 - 0	130	153.9	1	71.6	134.2	126.1	10.0	272.0	5.2	52	51	265.7
O7-9	9/23/1980	180	9.75	4.1875	4.6875	179	179 - 79	60 - 0	60	58.8	1	86.0	107.4	121.2	6.9	261.4	4.8	55	54	258.2
O44-1	2/29/2000	400	12.25	6	6.5	400	365 - 285	275 - 217	275	266.8	1	195.6	165.0	133.2	15.9	589.8	9.3	63	50	467.5
								23 - 2											
O44-2	3/8/2000	400	12.25	6	6.5	400	385 - 325	310 - 280	310	252	1	217.4	118.8	148.0	15.9	655.3	5.9	111	84	495.4
							280 - 260	22 - 2												
O6-18																				
O7-16																				

Estimated volume to pump before sampling = 3 X (Casing Volume + Annulus Volume) + Discharge pipe volume

Sampling Procedure

Water-Level Sampling

Samples are to be taken when three casing volumes or pH, SC, and Specific Conductance readings have stabilized as discussed below.

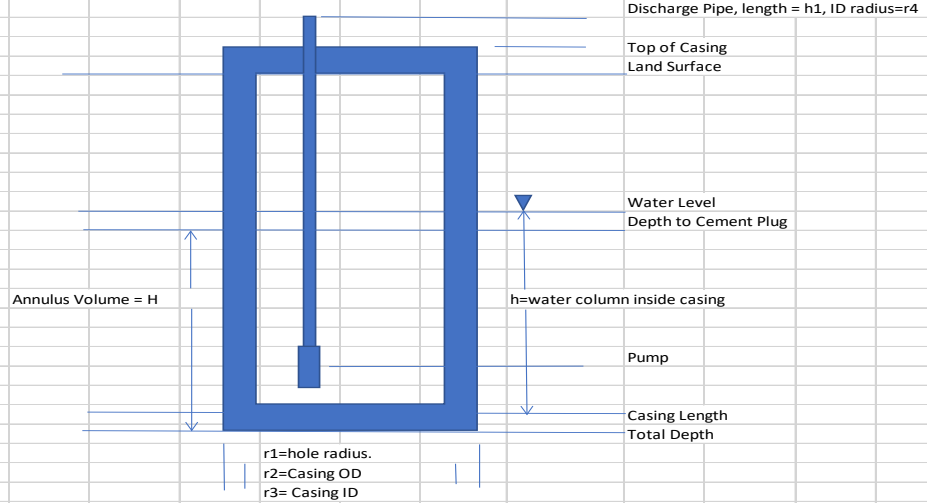
- It is generally agreed that a minimum of three casing volumes of water should be evacuated as well as attaining the stabilization of pH, temperature and electrical conductivity of the discharging water.
- Calculate the volume of water to be purged using the following equation:

  $V = 3 \times 0.041\ d^2h$

  where:

  V = volume of water, in gallons
  d = diameter of well casing, in inches
  h = length of water column (total well depth minus depth to water, measured during preliminary work stage of sampling event), in feet
  0.041 = conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

- Close ball valve to separate from gathering system.
- Attach tubing line to purge.
- Disconnect tubing and sample at pump.
- At least three pH, SC, and T readings of the discharging water should be taken at three (3) -to five (5) -minute intervals. These parameters are deemed to have stabilized when three successive measurements, taken at intervals of three (3) to five (5) minutes, are within the following ranges:
  - ➢ pH: ±0.1 pH units
  - ➢ Temperature: ±3%
  - ➢ Specific Conductance: ±3%



ATTACHMENT T10

Groundwater Technical Report

Title 30, Part 1, Chapter 309, Subchapter c, Section 20, (a)(4)

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(4) Groundwater quality. The technical report shall fully assess the impact of the wastewater application operation on the uses of local groundwater resources. In regard to performing this assessment, the report shall systematically address subparagraphs (A) and (B) of this paragraph.

(A) All water wells within a 1/2 mile radius of the application site boundaries shall be located. If available, the water uses from each well shall be identified. In addition, aspects of construction such as well logs, casing, yield, static elevation, water quality, and age shall be furnished and evaluated in the technical report. Local groundwater resources below the wastewater application site shall be monitored to establish preoperational baseline groundwater quality when monitoring wells are available. Monitoring shall provide the following analytical determination: total dissolved solids, nitrate nitrogen, chlorides, sulfates, pH, and Escherichia coli bacteria.

Groundwater Technical Report Summary

All water wells within a 1/2 mile radius of the application site boundaries have been identified based on data from the Texas Water Development Board and are included in the well map section found in Tab 7. Water uses for those wells obtained from the TWDB are primarily for domestic water use. SPS wells include observation, recovery (as required from the Compliance Directive), or monitoring. Monitoring well information discussing resources and groundwater quality data below the wastewater application plots (WAP) is supplied in Tab 12 Monitor Well Data. Other well information is in Tab 7 Well and Map Information.

(B) Groundwater resources serving as sources or potential sources of domestic raw water supply will be protected by limiting wastewater application rates. Effluent storage and/or treatment ponds presenting seepage hazards to these groundwater resources shall be constructed with adequate liners.

Groundwater Technical Report Summary

Wastewater application rates are monitored with volume amounts applied to the WAP annually reported to the TCEQ. Also, since the buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet groundwater resources are protected. All ponds used to irrigate the WAP are lined as specified by permit WQ0001990000 and detailed in the below table.

Pond	Surface Area (acres)	Capacity (Million gallons)	Associated Wastes	Liner Type
8	4.75	21.7	Industrial wastewater, tailwater, stormwater	Synthetic

Pond	Surface Area (acres)	Capacity (Million gallons)	Associated Wastes	Liner Type
9	4.0	20.5	Industrial wastewater, tailwater, stormwater	Synthetic
12	1.8	6.4	Industrial wastewater, tailwater, stormwater	Synthetic
14	9.4	83.0	Industrial wastewater	Synthetic
16	6.2	35.0	Industrial wastewater, tailwater, stormwater	Synthetic
18	6.2	43.5	Industrial wastewater, tailwater, stormwater	Synthetic
20	3.8	20.0	Industrial wastewater, tailwater, stormwater	Synthetic
22	14.4	79.9	Industrial wastewater, stormwater	Synthetic

Tab 12

Monitoring Well Data

TECHNICAL REPORT 1.0
INDUSTRIAL

Technical Report 1.0 Industrial 3.0 Impoundments asks if any groundwater monitoring wells are in place or are planned and states to attach any existing groundwater monitoring data. The data should be summarized and evaluated to determine whether there is a statistically significant trend in concentrations or a statistically significant difference compared with background-concentrations. The summary should also include information on the monitoring wells such as the driller's logs, well completion data, groundwater elevations, sampling procedures, etc.

Monitor well reports have been submitted to TCEQ for 2018 through 2024 reporting periods. The 2024 report is included in this permit application to satisfy the requested information. The report includes information on groundwater elevations in the form of piezometric surface maps, detailed sampling and testing procedures, analytical data, and water quality evaluations. A Groundwater monitoring plan is also included.

Southwestern Public Service Co.

Nichols/Harrington Complex
Amarillo, TX
Groundwater Monitoring Plan

Harrington Station

Nichols Station

Revised 04/23/2025

August 13, 2025

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I Analysis Plan

Depth to water and water chemistry is determined annually (once per year). The water chemistry is determined from a single grab sample collected once per year from wells 6-1 ,6-2 ,6-3, 6-4, 6-5, 6-6, 7-7, 7-8, 7-9, 44-1, 44-2. The analysis to be determined can be found in Table 1.

II Sampling Locations

Well locations can be found on the attached maps. The sample should be collected from the wellhead.

III Groundwater Compliance Directive Requirement

In accordance with the Enforcement Compliance Directive, issued by the Texas Department of Water Resources on October 11, 1979, Xcel Energy is required to submit a semiannual report of the groundwater recovery project.

This project's requirements are described in the report entitled, "Nichols/Harrington Area - Groundwater Contamination Formal Proposal to Implement Correction Action Not Specified in SPS Report of June 1, 1979."

The requirements are:

- Semiannual pumping data of the groundwater recovery project
- Analysis of quarterly samples from all groundwater recovery well

Table 1
Sampling Plan (Annual Groundwater Sampling and Reporting)

N/H Permit 01990

Monitor Wells Annual Monitoring requirements

Date | Well No.

	Sampler Name	Depth to Water, ft.	Start Pump Time	Stop Pump Time	Pump Rate (gpm)	Gallons Pumped	Sample Time		Constituent	Minimum Analytical Level	Lab Analyst	Date and Time of Analysis	Result	units
									Total Petroleum Hydrocarbons	1				mg/L
									Oil and Grease	5				mg/L
									Arsenic	0.5				ug/L
									Barium	3				ug/L
									Cadmium	1				ug/L
									Chromium (Cr, total)	3				ug/L
									Lead	0.5				ug/L
									Mercury	0.005				ug/L
									Selenium	5				ug/L
									Silver	0.5				ug/L
									Boron	20				mg/L
									Calcium	1				mg/L
									Magnesium	1				mg/L
									Potassium	1				mg/L
									Sodium	1				mg/L
									Chloride	1				mg/L
									Sulfate	1				mg/L
									Nitrate-N	1				mg/L
									Ammonia-N	1				mg/L
									Total Kjeldahl Nitrogen	1				mg/L
									Specific Conductance	20				umhos/cm
									Total Hardness	1				mg/L
									Total Dissolved Solids	10				mg/L
									pH					std. units
									M Alkalinity-ppm as CaCO3					mg/L
									P Alkalinity-ppm as CaCO3					mg/L

Sample Containers		Preservative		Refrigera	Methods
RCRA Metals + B	250 ml polyethylene	pH<2	HNO3		
O&G	1-L glass with PTFE lined screw cap	pH<2	H2SO4 or HCl	0^o - 6^o C	EPA Method 1664, Revision B (n-Hexane Extraction)Collect Field Blank, and 1/20 sample duplicates,1/20 Matrix spike samples
TPH	VOA Vial	pH<2	H2SO4 or HCl	2^o - 6^o C	TCEQ Method 1005
Minerals, conductance, pH	500 ml polyethylene	none			
pH	polyethylene or glass	measure in the field immediately			
N	polyethylene or glass	pH<2	H2SO4 or HCl	4^oC	EPA - 1687, EPA 351.1

Field Notes:																
Lat.																
Long.																
Total Depth of Well																
Pump Inlet Depth																
Sample Appearance (color, turbidity, odor)																

Table 2

Required Containers, Preservation Techniques, and Holding Times (Per 40 CFR Part 136.3, Table II)	Minimum Sample Volumes		
	Required Sample Volume (ml)		
Parameter No./Name Container Preservation Maximum holding time			
Inorganic Tests:			
Alkalinity P, G Cool, 4°C 14 days		200	
Ammonia P, G Cool, 4°C , to pH <2 28 days.		500	
Boron P, PFTE, or Quartz HNO3 to pH <2 6 months.		200	
Chloride P, G None required 28 days		200	
Hardness P, G HNO3 to pH<2, to pH<2 6 months		200	
Hydrogen ion (pH) P, G None required Analyze immediately		100	
Kjeldahl and organic nitrogen. P, G Cool, 4°C , to pH <2 28 days		500	
Nitrate P, G. Cool, 4°C 48 hours		200	
Oil and grease G Cool, 4°C , HCl or to pH<2 28 days.		1000	
Organic Carbon P, G Cool, 4°C , HCl or H2SO4 to pH<2, 28 days.		100	
Residue, Filterable (TDS) P, G Cool, 4°C 7days		200	
Sulfate P, G Cool, 4°C 28 days.		200	
Specific Conductance		100	
Metals:			
Mercury P, G HNO3 to pH<2 28 days		200	
Metals, except boron, chromium VI, and mercury P, G. HNO3 to pH<2 6 months		1000	
Organic Tests:			
VOA (Volatile Organic) (TPH) G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days		40 (use VOA bottle)	
BTEX (Benzene, Tolulene, Ethlybenzene, Xylene G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days			
Semi-volatiles (Includes acid and base neutral extractables, polynuclear aromatics, haloethers, and phenol compounds) G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 7 days until extraction, 40 days after extraction			

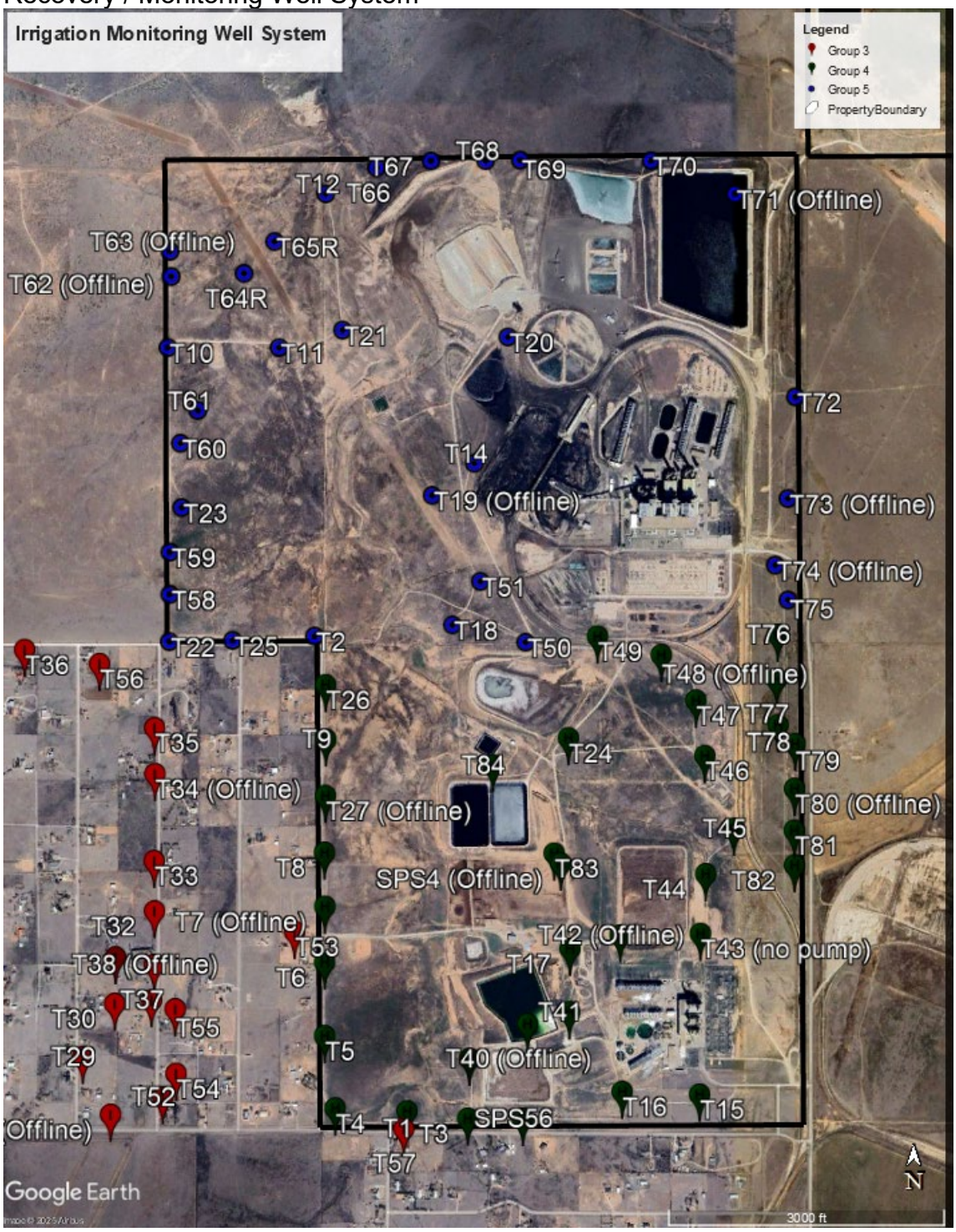
Table 3 Groundwater Compliance Directive Sampling Schedule

Group	Well IDs	Sample Frequency	General Level Frequency
3	T28, T29, T30, T31, T32, T33, T34, T35, T36, T37, T38, T52, T53, T54, T55, T56, T57	Jan, Apr, Jul, Oct	Weekly
4	SPS 4, SPS 56, T1, T3, T4, T5, T6, T7, T8, T9, T15, T16, T17, T24, T26, T27, T39, T40, T41, T42, T43, T44, T45, T46, T47, T48, T49, T76, T77, T78, T79, T80, T81, T82, T83, T84	Feb, May Aug, Nov	Weekly
5	T2, T10, T11, T12, T14, T18, T19, T20, T21, T22, T23, T25, T50, T51, T58, T59, T60, T61, T62, T63, T64R, T65R, T66, T67, T68, T69, T70, T71, T72, T73, T74, T75	Mar, Jun, Sep, Dec	Weekly
6	O44-1, O44-2, O6-1, O6-2, O6-3, O6-4, O6-5, O6-6, O7-7, O7-8, O7-9	Jun, Dec	Jun, Dec
7	O1, O2, O3, O4, O5, O6, O7, O8, O9, O10, O11, O12, O13, O14, O15, O16, O17, O18, O19, O20, O21, O22, O23, O24, O25, O26, O27, O28, O29, O30, O31, O32, O33, O34, O35, O36, O37, O38, O39, O40, O41, O42, O43, O44, O45, O46, O47, O48, O49L, O50, O51, O52, O53L, O54, O55, O56, O57, O58L, O59, O60, O61, O62, O63, O64, O65, O66, O67, O68, O69, O70, O71, O72, O73, O74, O75L, O76, O77L	N/A	Jan, Apr, Jul, Oct

Groundwater Compliance Directive Well Maps

Observation Well System

Recovery / Monitoring Well System



Irrigation Monitor Well System

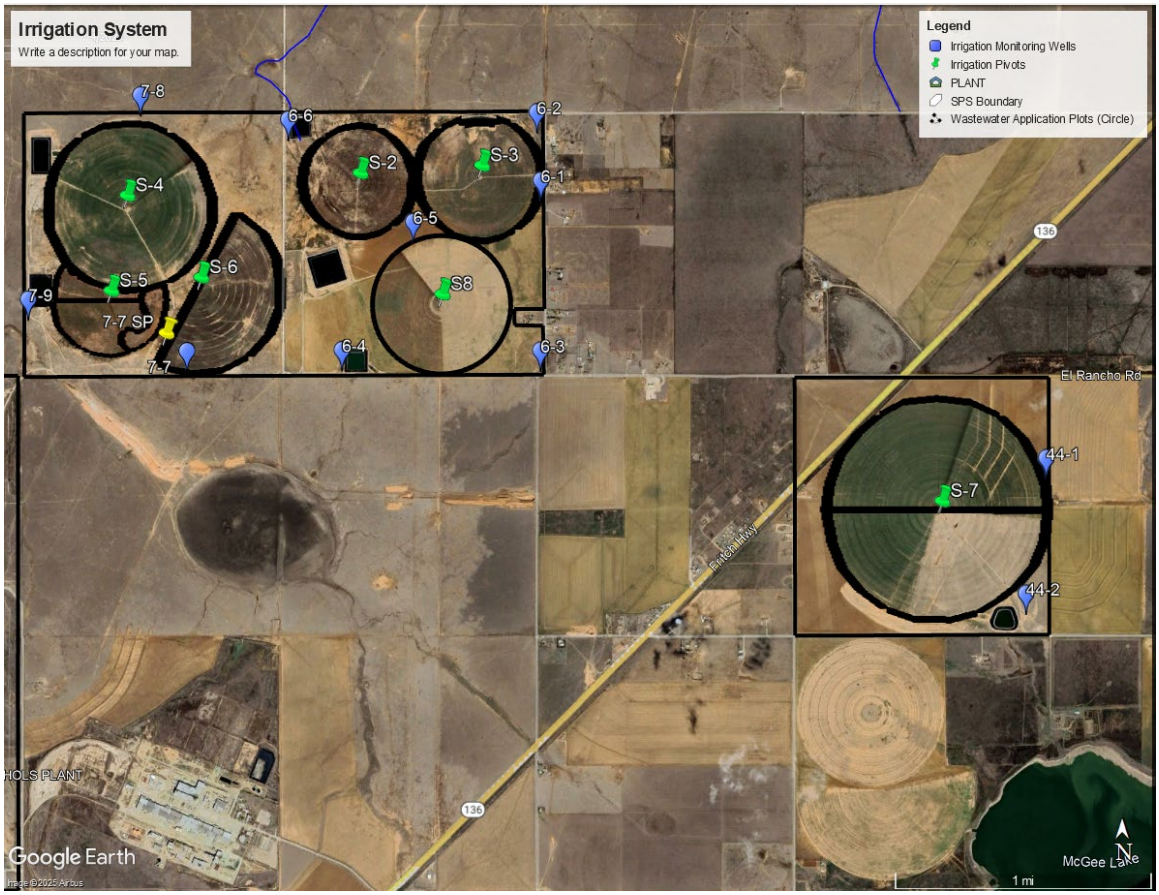


Figure 2
Nichols-Harrington Complex
Location of Irrigation Monitor Wells

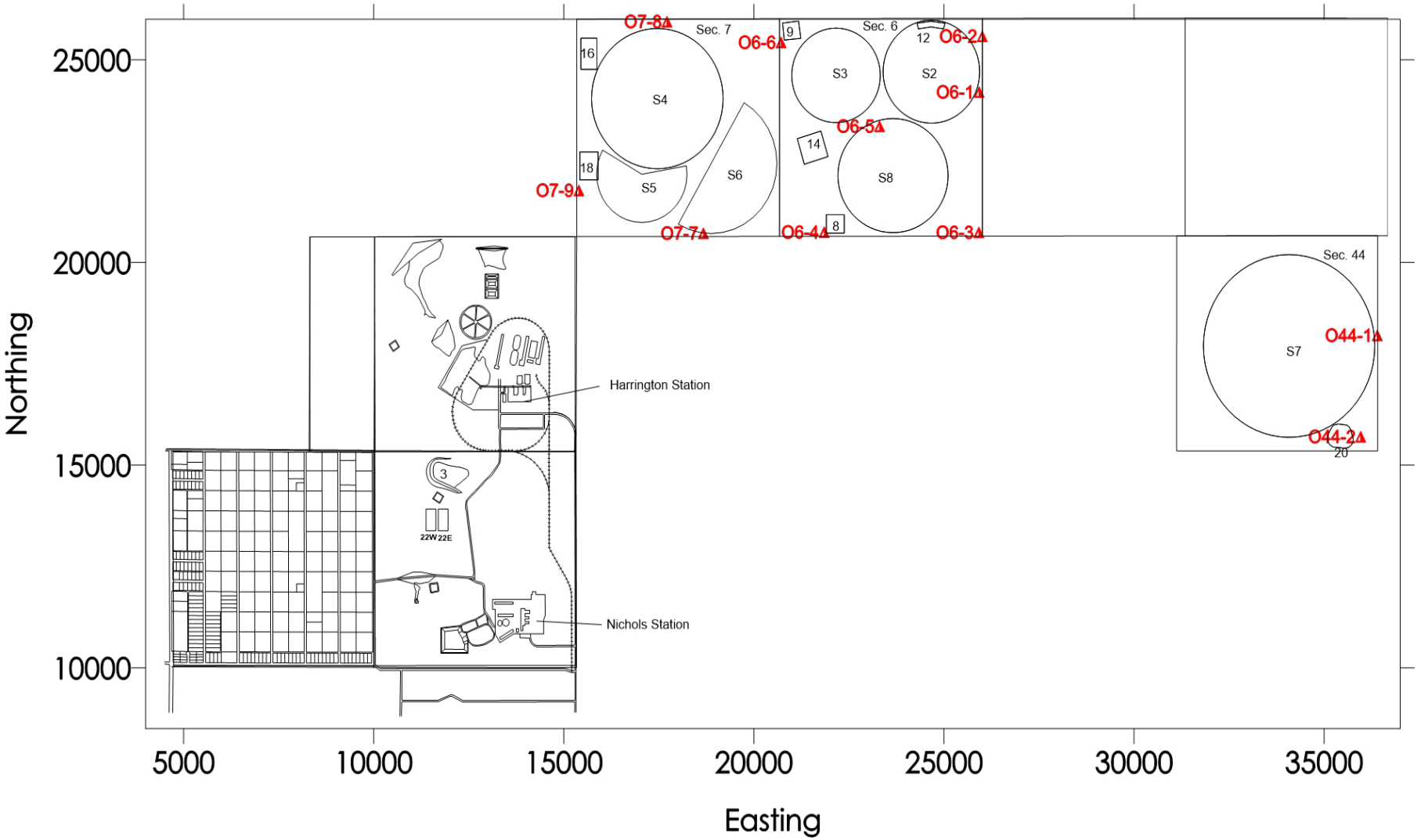


Table 4 Monitor Well Information

Nichols Harrington Generating Complex
Irrigation Monitoring Wells Sections 6, 7, and 44
Estimated pumping time required prior to sampling

0.041 : conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

Well id	Date Drilled	Total Depth	Hole Diam.	Casing I.D. **(r3)**	Casing O.D.	Casing Length	Screen Interval	Cement Interval	Bottom of Cement	2024 Water Level	Discharge pipe I.D.	Casing Volume, gal.	Annulus Volume, gal.	**h**	Discharge Pipe Volume	Calculated Maximum Volume to Pump, gal	Pump rate, gpm	Calculated Minutes Required	Minutes Pumped	Volume Pumped, gal
O6-1	8/20/1980	260	9.75	4.1875	4.6875	255	255 - 193	168 - 0	168	215.1	1	28.5	82.3	44.9	10.0	96.8	2.4	40	69	168.9
O6-2	8/25/1980	270	9.75	4.1875	4.6875	262	263 -180	153 - 0	153	202.1	1	42.9	104.7	67.9	10.3	146.4				
O6-3	8/27/1980	272	9.75	4.1875	4.6875	254	254 - 170	147 - 0	147	193.9	1	43.0	111.8	78.1	10.0	168.4	3.0	56	56	169.4
O6-4	9/2/1980	355	9.75	4.1875	4.6875	241	241 - 160	140 - 0	140	167.6	1	52.5	192.3	187.4	9.4	404.2	5.0	81	66	331.2
O6-5	9/5/1980	301	9.75	4.1875	4.6875	284	284 - 178	168 - 0	168	191.7	1	66.0	119.0	109.3	11.2	235.7	4.3	55	78	334.3
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O44-1	2/29/2000	400	12.25	6	6.5	400	365 - 285	275 - 217	275	266.8	1	195.6	165.0	133.2	15.9	589.8	9.3	63	50	467.5
								23 - 2											
O44-2	3/8/2000	400	12.25	6	6.5	400	385 - 325	310 - 280	310	252	1	217.4	118.8	148.0	15.9	655.3	5.9	111	84	495.4
							280 - 260	22 - 2												
O6-18																				
O7-16																				

Estimated volume to pump before sampling = 3 X (Casing Volume + Annulus Volume) + Discharge pipe volume

Sampling Procedure

Water-Level Sampling

Samples are to be taken when three casing volumes or pH, SC, and Specific Conductance readings have stabilized as discussed below.

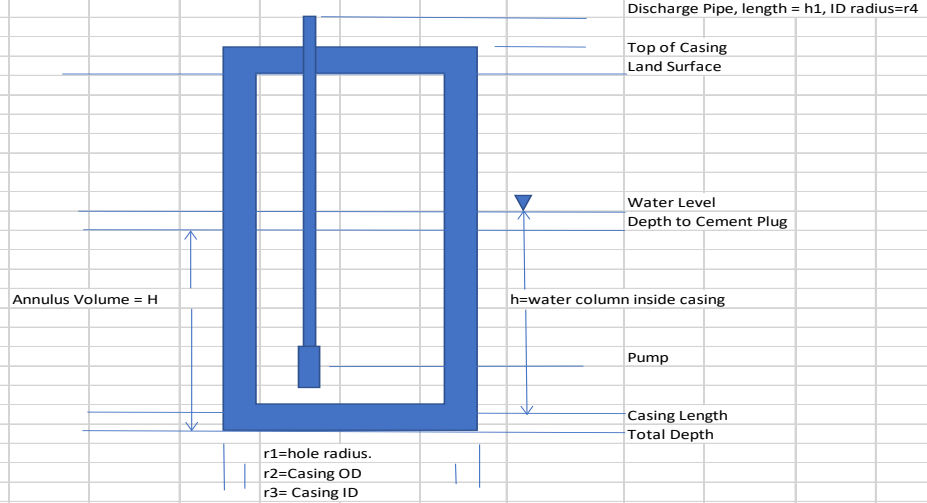
- It is generally agreed that a minimum of three casing volumes of water should be evacuated as well as attaining the stabilization of pH, temperature and electrical conductivity of the discharging water.
- Calculate the volume of water to be purged using the following equation:

  $V = 3 \times 0.041\ d^2h$

  where:

  V = volume of water, in gallons
  d = diameter of well casing, in inches
  h = length of water column (total well depth minus depth to water, measured during preliminary work stage of sampling event), in feet
  0.041 = conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

- Close ball valve to separate from gathering system.
- Attach tubing line to purge.
- Disconnect tubing and sample at pump.
- At least three pH, SC, and T readings of the discharging water should be taken at three (3) -to five (5) -minute intervals. These parameters are deemed to have stabilized when three successive measurements, taken at intervals of three (3) to five (5) minutes, are within the following ranges:
  - ➢ pH: ±0.1 pH units
  - ➢ Temperature: ±3%
  - ➢ Specific Conductance: ±3%



790 South Buchanan
Amarillo, TX 79101

September 24, 2024

Water Quality Assessment Team (MC-150)
Water Quality Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: Permit No. WQ0001990000, 7th Annual Report of Irrigation Monitor Wells

To Whom It May Concern:

Southwestern Public Service Company submits the attached report as required by condition 20 Other Requirements of the Wastewater Permit issued on March 29, 2021, for the Nichols/Harrington Steam Electric Plant in Potter County.

Please direct any questions you may have about this report to me at (806)378-2138 or Patty Hill at (806)272-8028.

Sincerely,

David Lorenz
Environmental Analyst

cc: TCEQ Compliance Monitoring Section (MC-224)
Eddy Vance, TCEQ Region 1 Office
Dennis Buchanan, Plant Director
Karalee Snyder, Manager Environmental Services
Michael Graham, Plant Environmental Analyst

Certified Mail # **9589 0710 5270 0336 7231 20**

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790 South Buchanan
Amarillo, TX 79101

September 24, 2024

Compliance Monitoring Section (MC-224)
Texas Commission on Environmental Quality
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David Lorenz
Environmental Analyst

cc: Eddy Vance, TCEQ Region 1 Office
TCEQ Compliance Monitoring Section (MC-224)
Dennis Buchanan, Plant Director
Karalee Snyder, Manager Environmental Services
Michael Graham, Plant Environmental Analyst

Certified Mail # **9589 0710 5270 0336 7231 37**

790 South Buchanan
Amarillo, TX 79101

September 24, 2024

Eddy Vance
Texas Commission on Environmental Quality
Region 1
3918 Canyon Drive
Amarillo, Texas 79109-4933

Re: Permit No. WQ0001990000, 7th Annual Report of Irrigation Monitor Wells

Dear Mr. Vance,

Southwestern Public Service Company submits the attached report as required by condition 20 Other Requirements of the Wastewater Permit issued on March 29, 2021, for the Nichols/Harrington Steam Electric Plant in Potter County.

Please direct any questions you may have about this report to me at (806)378-2138 or Patty Hill at (806)272-8028.

Sincerely,

David Lorenz
Environmental Analyst

cc: TCEQ Water Quality Assessment Team (MC-150)
TCEQ Compliance Monitoring Section (MC-224)
Dennis Buchanan, Plant Director
Karalee Snyder, Manager Environmental Services
Michael Graham, Plant Environmental Analyst

Certified Mail # **9589 0710 5270 0336 7231 44**

790 South Buchanan
Amarillo, TX 79101

Permit No. WQ0001990000 **Report Name** Nichols/Harrington, 7th Annual Report of Irrigation Monitor Wells

SIGNATURE PAGE

I, **Karalee Snyder** **Manager, Environmental Services**
Typed or printed name *Title*

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 gathered and evaluated 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 known violations.

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

Signature: Karalee Snyder Date: September 24, 2024

790 South Buchanan
Amarillo, TX 79101

2024 Report of Irrigation Monitor Wells
For TPDES Permit WQ00010990000

Southwestern Public Service Company
Nichols/Harrington Complex
Potter County, Texas

September 19, 2024

Report Prepared by: Environmental Services Department
David Lorenz, Environmental Analyst

Sampled by: B&B Pump

Analytical Services by: Xcel Energy Amarillo Testing Laboratory
ServiTech Laboratories

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Introduction

The Nichols and Harrington Steam Electric Generating Plants (the Nichols/Harrington Complex) are located in Potter County, Texas, approximately 8 miles northeast of Amarillo. The plants employ cooling towers to dissipate heat from the condensation of steam, using recycled water (treated sewage effluent) from the City of Amarillo as the cooling medium. Irrigation of salt tolerant crops is one of the primary methods to dispose the wastewater (blowdown) from the cooling towers. Irrigation quality and quantity is regulated by TPDES Permit WQ0001990000, and condition #20 Other Requirements requires annual monitoring of groundwater under the irrigated areas as follows:

20. The permittee shall conduct annual groundwater sampling from Irrigation Monitoring Wells 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 7-7, 7-8, 7-9, 44-1, and 44-2. Sample parameters shall include, but are not limited to, the following:

Total petroleum hydrocarbons	pH	Total Hardness
Oil and grease	M Alkalinity	Total Dissolved Solids
RCRA-8 metals+boron	P Alkalinity	Sulfate
Calcium	Sodium	Ammonia-N
Potassium	Chloride	Total Kjeldahl Nitrogen
Magnesium	Nitrate-N	Specific Conductance

The permittee shall submit a report that includes the laboratory results of the sampling, a base map of the monitoring well locations, a groundwater potentiometric surface map, and a narrative of the groundwater sampling event.

These reports shall be submitted annually to the TCEQ Water Quality Assessment Team (MC-150), the TCEQ Compliance Monitoring Section (MC-224), and the TCEQ Regional office by September 30 of each year.

If it is determined that infiltration from the land application is negatively impacting groundwater quality, the permittee may be required to initiate corrective action.

Location of the Wells

The eleven (11) Irrigation Monitoring Wells (“the wells”), designated as O6-1. O6-2, O6-3, O6-4, O6-5, O6-6, O7-7, O7-8, O7-9, O44-1 and O44-2 were sampled from July 9 through July 16, 2024 for the parameters listed in the permit. The intent of the sampling is to determine whether infiltration from the land application is negatively impacting groundwater quality. **Figure 1** is and **Figure 2** are maps showing the locations of the monitoring wells in relation to the Nichols/Harrington Complex.

Analytical Parameters

The listed parameters, **Table 1**, include several tests that were first requested in 2018, and at least one test that is usually performed on soil samples rather than groundwater (Total Petroleum Hydrocarbons, or TPH). The test protocol was reviewed prior to sampling in order to evaluate the sample procedure, the sample containers, lab procedures to be used and desired minimum analytical levels. MAL values are from Table 1 of Permit WQ0001990000. **Table 2** lists the required sample containers and volumes.

Estimated Purge Volumes

TCEQ Regulatory Guidance RG-074 was used as guidance for purge volumes prior to sampling. **Appendix 4** contains the well sampling procedure. Generally, it is estimated that the volume of water to be pumped is to evacuate three well volumes prior to sampling. Since the purge volume estimate is not exact during the sampling event, pH, temperature, and conductivity of the water from each well was tested in the field to assess whether the water quality had reached a stable value. **Figure 4** illustrates the method used to calculate the estimated purge volume needed for each well and summarizes calculated minutes to pump, actual total minutes pumped, calculated gallons to be pumped, actual gallons pumped, and pump rate (gallons per minute). The actual volume purged from each well is shown on the included raw data sheets.

Well Construction

The wells were drilled in two groups, first, the nine wells on sections 6 and 7 during August and September 1980, when those sections were being developed or irrigation, and then in March of 2000 for the two wells on section 44. Well logs for the wells were provided in the 2018 report.

The group of 9 wells on sections 6 and 7 were drilled in August and September 1980. They were drilled using mud-rotary drilling technique with a hole diameter of 9.75 inches, cased with 4-inch I.D. steel, with 0.060-inch slots in the slotted interval. The annulus was filled with 3/16-inch Vega gravel, and the holes were cemented from top of gravel pack to the surface.

The two wells on section 44 were drilled in March 2000. They were also drilled using mud-rotary drilling, but with a much larger 12.25-inch hole diameter, and a 6-inch I.D. PVC casing. The screen was a spiral wrapped PVC well screen with 0.050-inch openings. The annulus was cemented 30 to 50 feet above the gravel pack, and then gravel packed to 20 feet below the surface and cemented to the surface.

Description of Sampling Event

The eleven (11) Irrigation Monitoring Wells ("the wells"), designated as O6-1. O6-2, O6-3, O6-4, O6-5, O6-6, O7-7, O7-8, O7-9, O44-1 and O44-2 were sampled from July 9 through July 16, 2024 for the parameters listed in the permit. Monitoring wells O6-18 and O7-16 were also sampled.

The general procedure was to arrive at the well, make electrical connections as needed, connect a discharge hose, and measure static depth to water. Then start the pump and measure depth to water, volumetric pump rate and conductivity at increasing time intervals until time to collect the samples, shut off the well, and return the samples to the laboratory. Volumetric pump rate was determined by a flow meter attached to the discharge hose. As **Figure 4** shows, the wells were pumped between 50 and 84 minutes prior to sample collection. Samples were collected when generally consistent conductivity readings were obtained. Data was recorded on field sheets located in **Appendix 1**. Charts of Conductivity, pH, and Depth to Water verses time for the sampling event are also included at the end of **Figure 5.**

Day 1, 7/09/2024 Wells O6-3, O6-4, 07-7, O44-1 and O44-2 were pumped.

Day 2, 7/11/2024 Well O6-1, O6-2, O6-5 were pumped.

Day 3, 7/12/2024 Wells O6-6, O6-18, O7-9 were pumped.

Day 4, 7/16/2024 Wells O7-8 and O7-16 were pumped.

Potentiometric Surface Map

A map was created using SURFER to generate contours of the potentiometric surface (static levels). Initial well level measurements were used as static level. Select observation wells were included from the 89th Semi-Annual Groundwater Recovery and Monitoring Report (August 1, 2024). These water levels are included in the contour software mapping and produce a more accurate map.

The observation wells used in the development of the potentiometric surface map were:

- O1, O8, O12, O16, O17, O34, O40, O64, O69, O70

An uncertified potentiometric surface is shown in **FIGURE 3.**
The P.E. certified version of the groundwater potentiometric surface map is found in **Appendix 3**.

Water Quality – Analytical Results and Discussion

The complete lab reports including chain of custody, analytical results, and quality assurance reports are attached as **Appendix 2**. **Table 3** presents a summary of the analytical results for each well.

Figures

FIGURE 1

Nichols/Harrington Complex

Location of Irrigation Monitoring Wells (Imagery)

FIGURE 2

Figure 2
Nichols-Harrington Complex
Location of Irrigation Monitor Wells

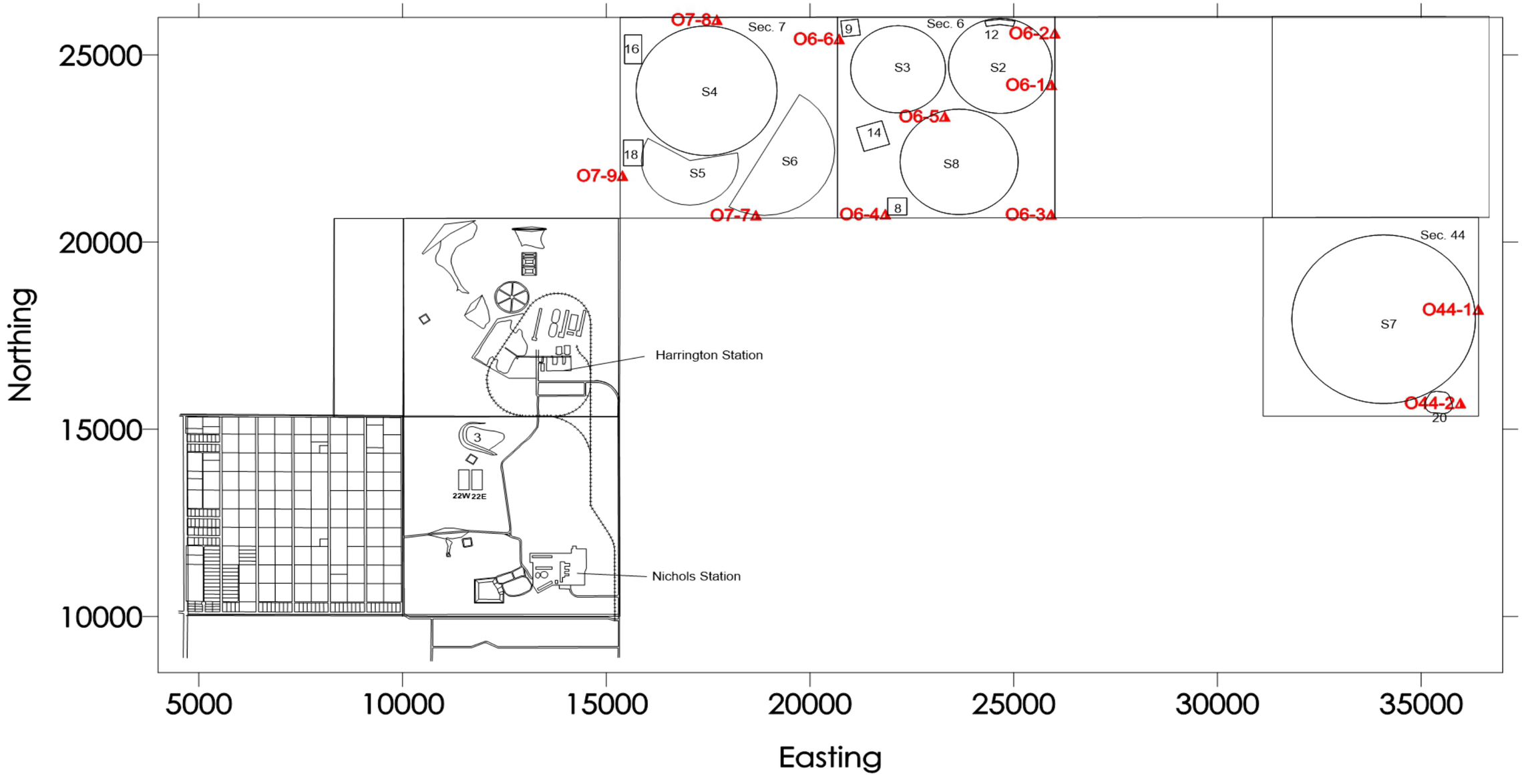

FIGURE 3

FIGURE 3
Nichols-Harrington Complex
Potentiometric Water Table Elevations (ft.) 2024

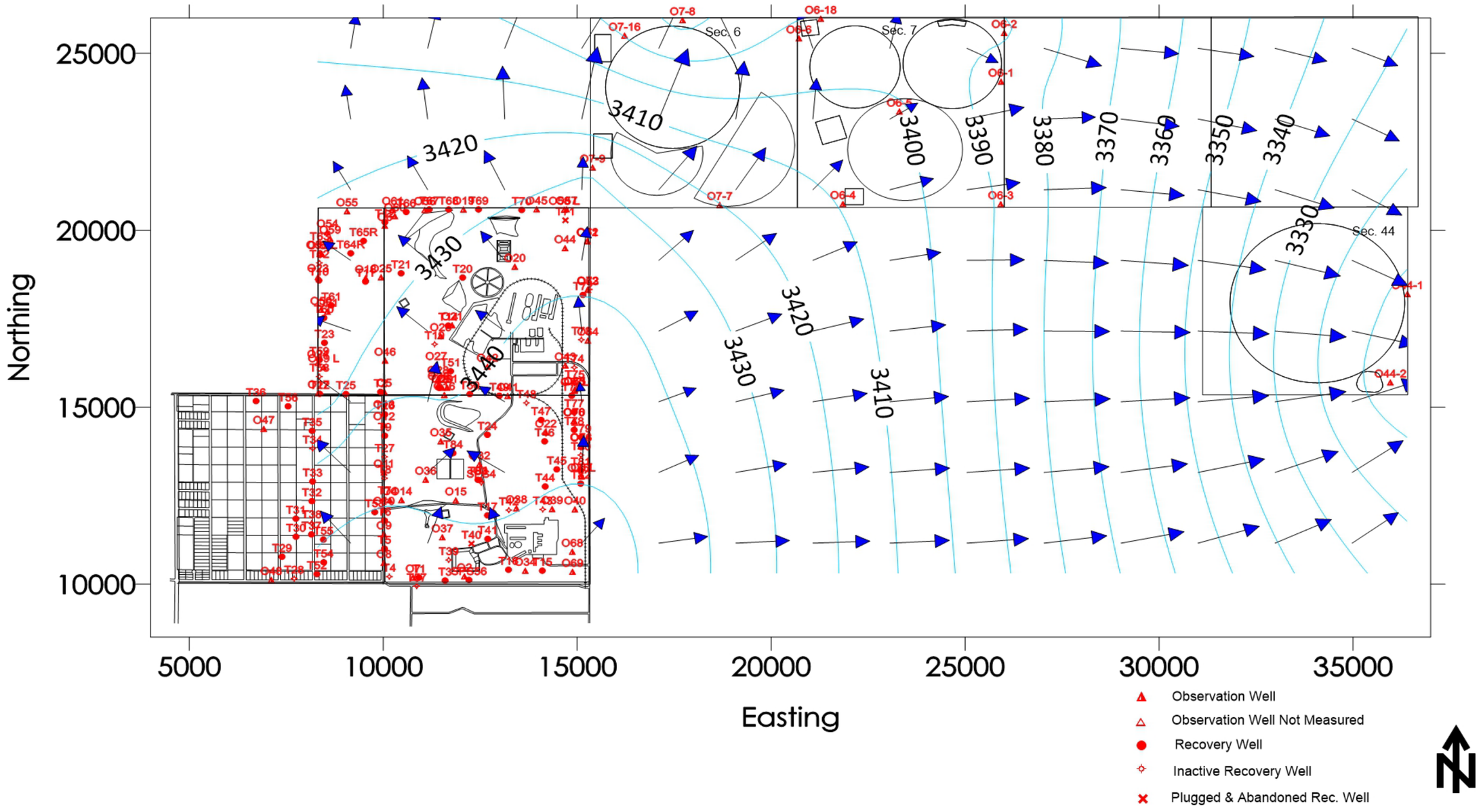

FIGURE 4

Nichols Harrington Generating Complex
Irrigation Monitoring Wells Sections 6, 7, and 44
Estimated pumping time required prior to sampling

0.041 : conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

Well id	Date Drilled	Total Depth	Hole Diam.	Casing I.D. **(r3)**	Casing O.D.	Casing Length	Screen Interval	Cement Interval	Bottom of Cement	2024 Water Level	Discharge pipe I.D.	Casing Volume, gal.	Annulus Volume, gal.	**h**	Discharge Pipe Volume	Calculated Maximum Volume to Pump, gal	Pump rate, gpm	Calculated Minutes Required	Minutes Pumped	Volume Pumped, gal
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Sampling Procedure

Water-Level Sampling

Samples are to be taken when three casing volumes or pH, SC, and Specific Conductance readings have stabilized as discussed below.

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- Calculate the volume of water to be purged using the following equation:

  $V = 3 \times 0.041\ d^2h$

  where:

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  d = diameter of well casing, in inches
  h = length of water column (total well depth minus depth to water, measured during preliminary work stage of sampling event), in feet
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- Attach tubing line to purge.
- Disconnect tubing and sample at pump.
- At least three pH, SC, and T readings of the discharging water should be taken at three (3) -to five (5) -minute intervals. These parameters are deemed to have stabilized when three successive measurements, taken at intervals of three (3) to five (5) minutes, are within the following ranges:

  - pH: ±0.1 pH units
  - Temperature: ±3%
  - Specific Conductance: ±3%

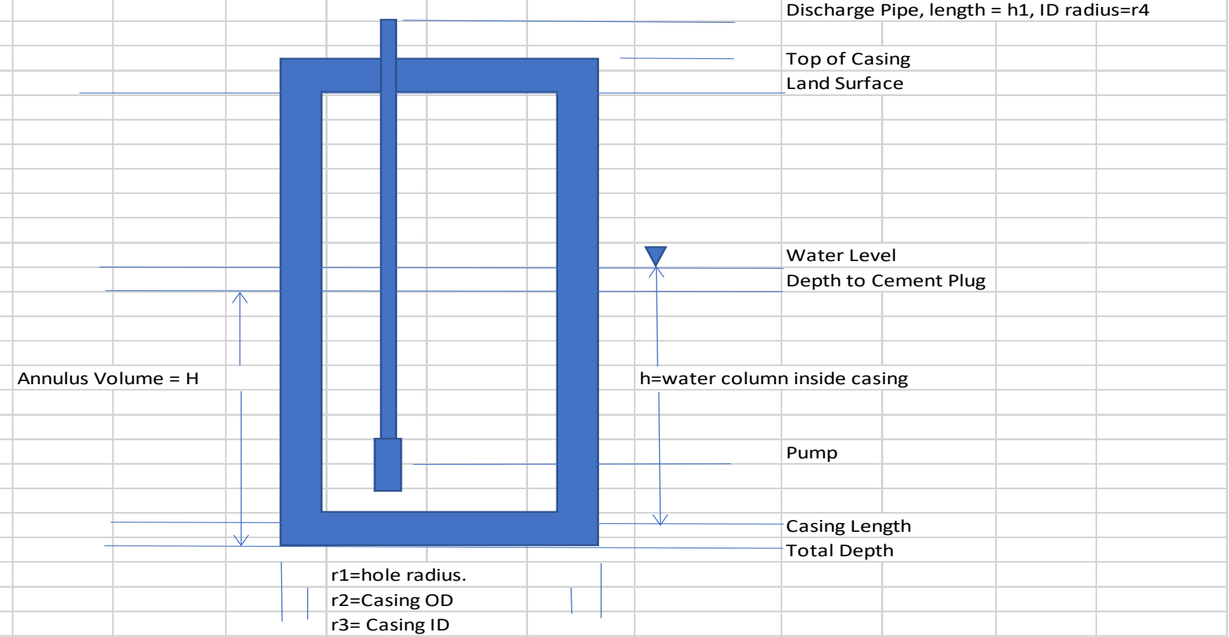
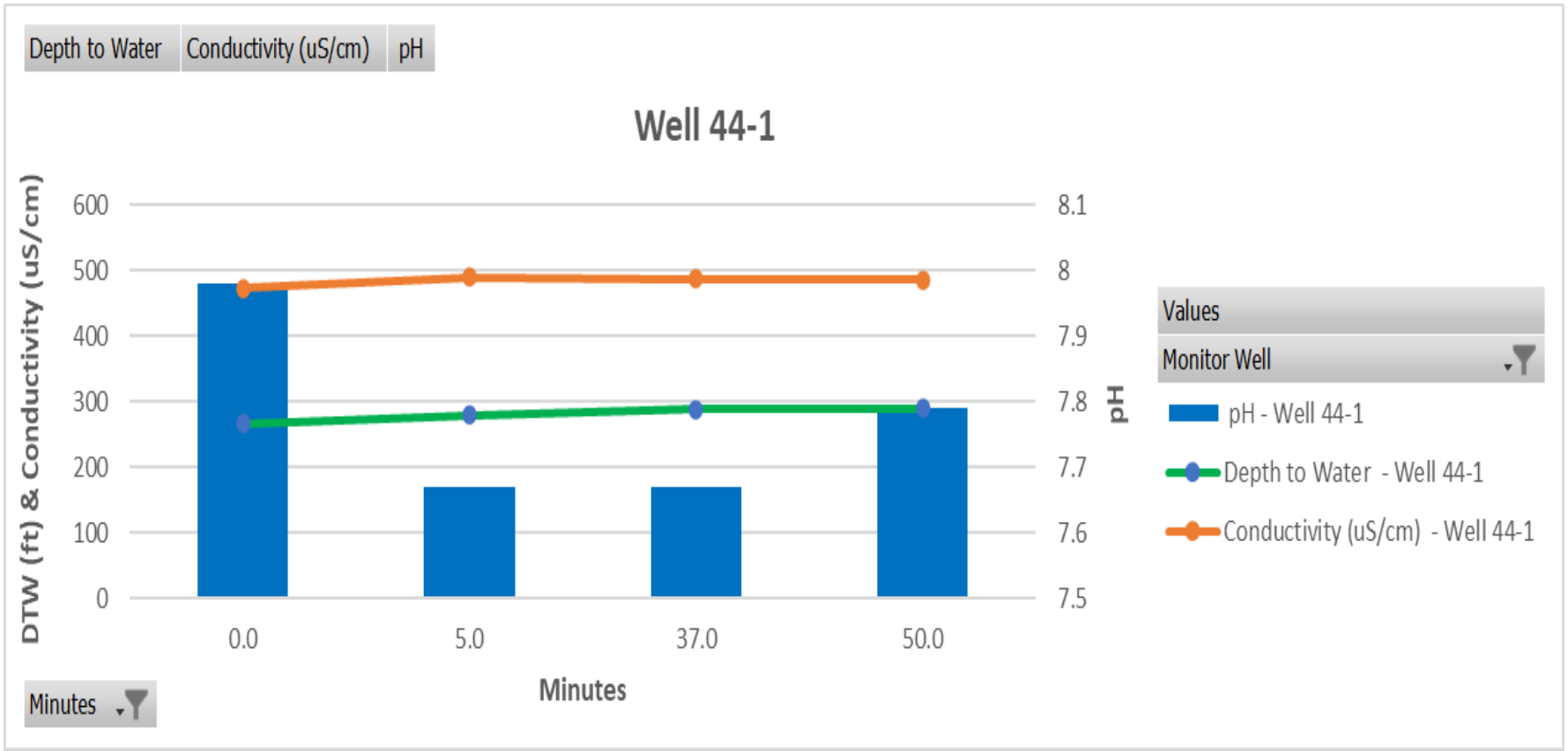
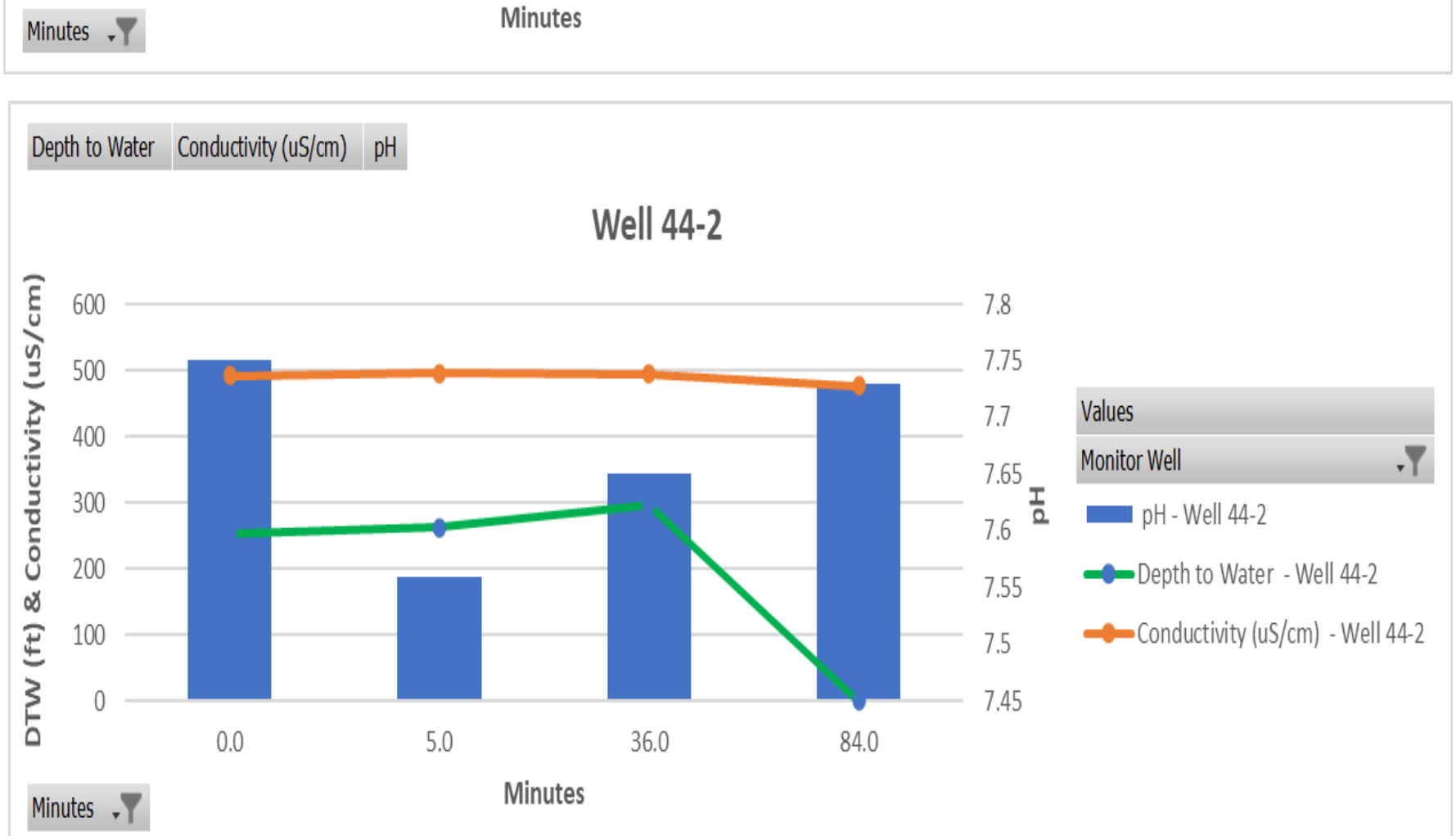
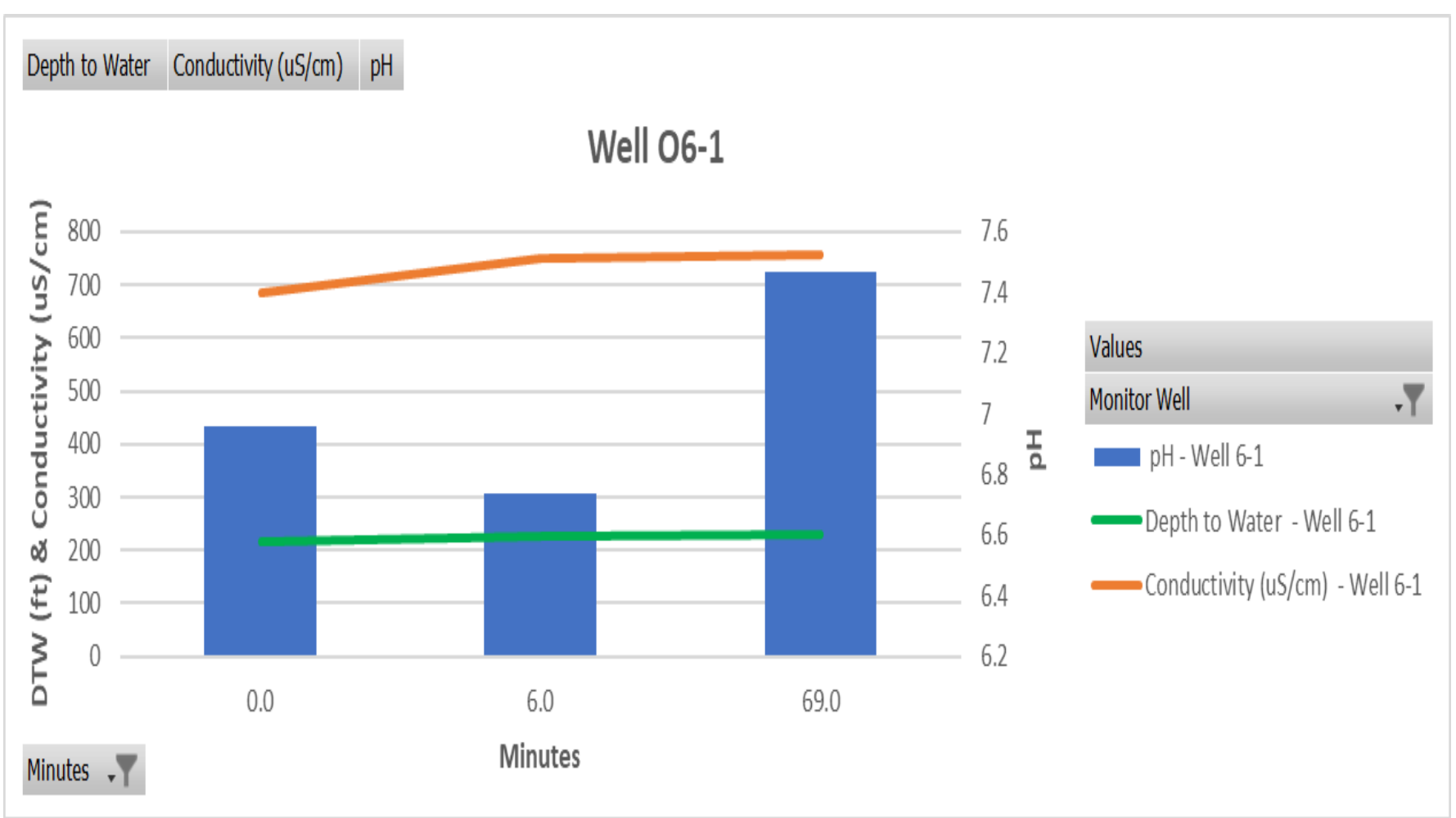


FIGURE 5

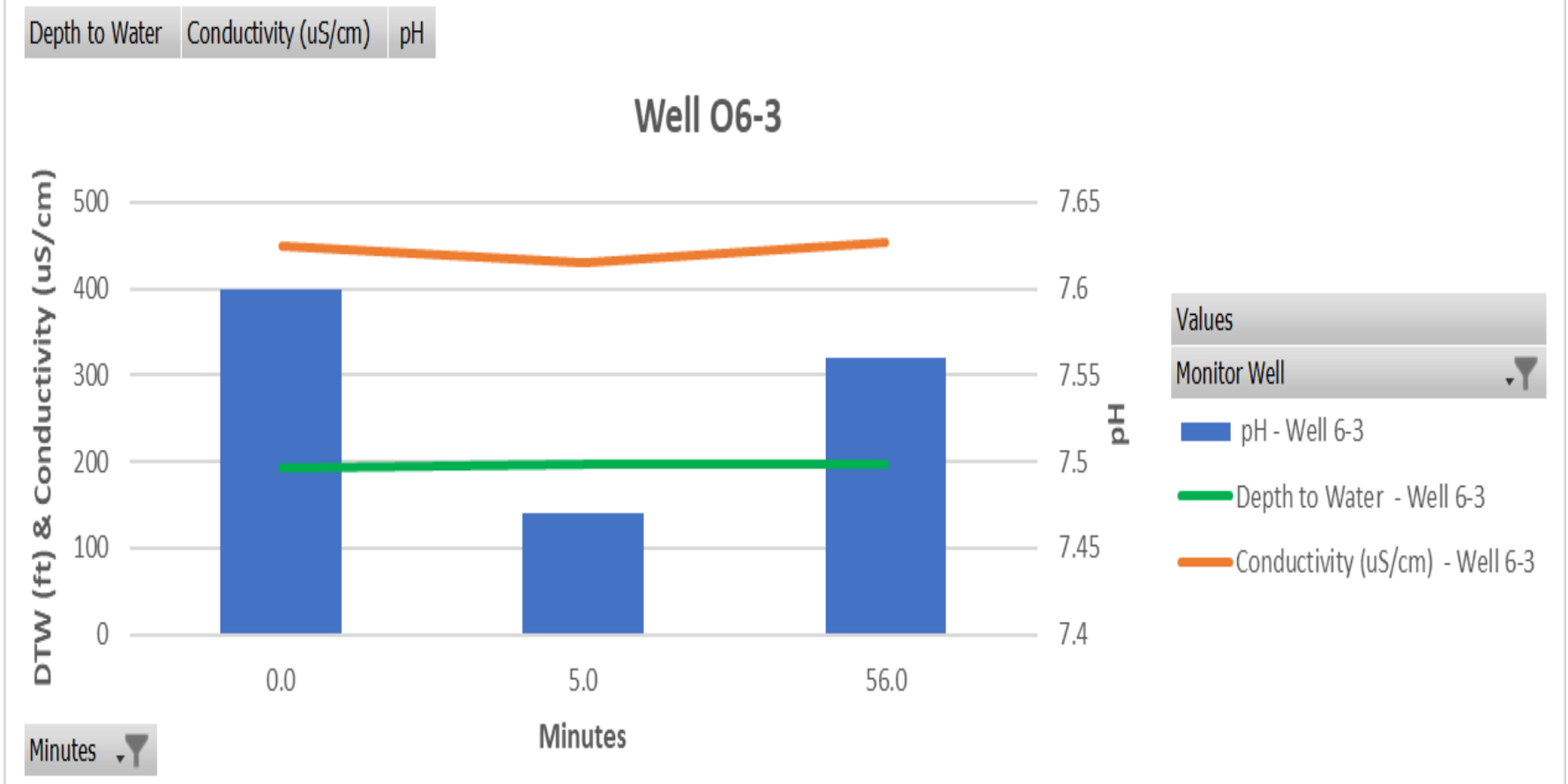
Charts of Conductivity, pH, and Depth to Water verses time for Sampling Event

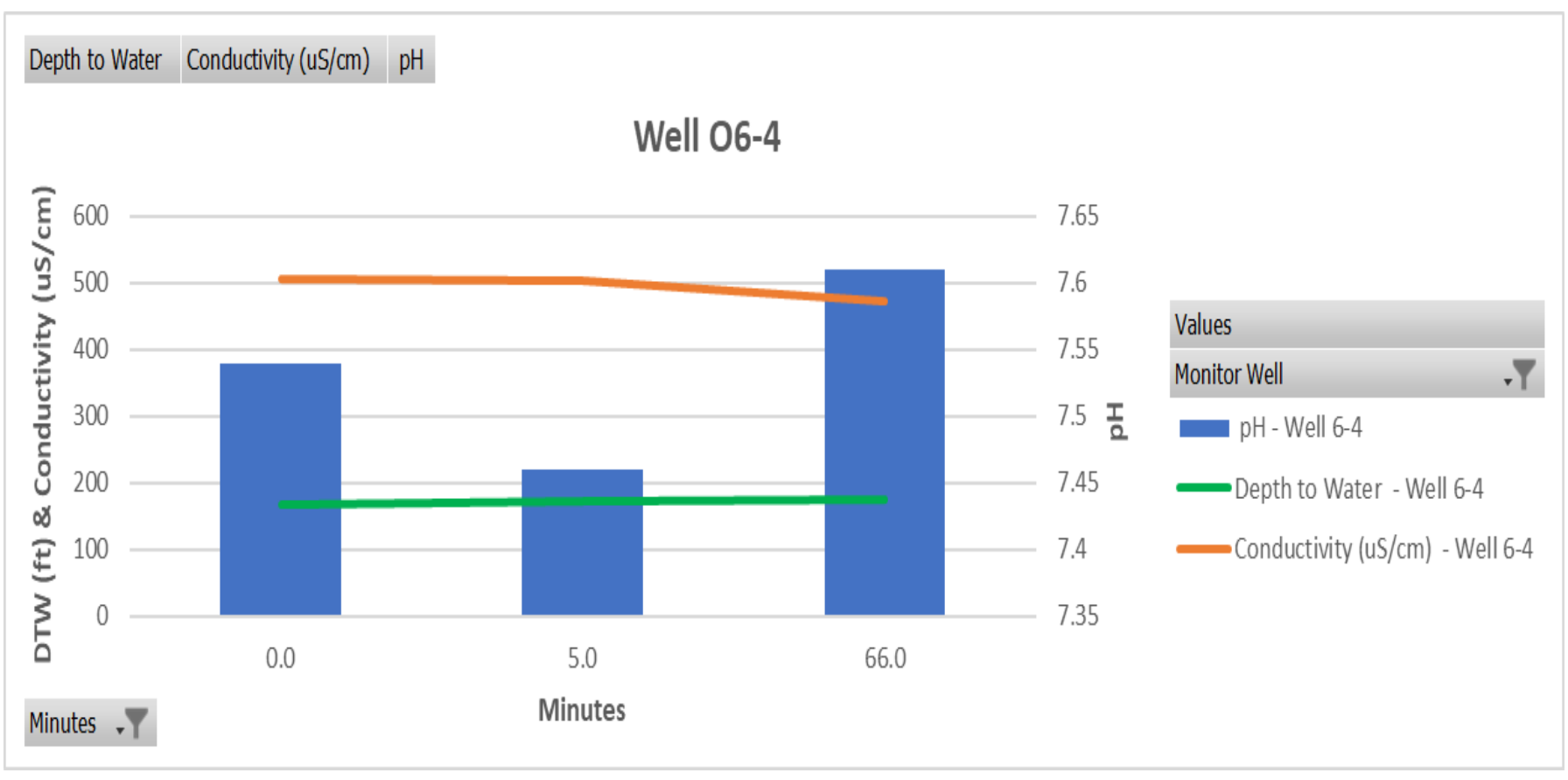

Depth to Water
Conductivity (uS/cm)
pH
Well 44-1
DTW (ft) & Conductivity (uS/cm)
600
500
400
300
200
100
0
8.1
8
7.9
7.8
7.7
7.6
7.5
pH
0.0
5.0
37.0
50.0
Minutes
Minutes
Values
Monitor Well
pH - Well 44-1
Depth to Water - Well 44-1
Conductivity (uS/cm) - Well 44-1

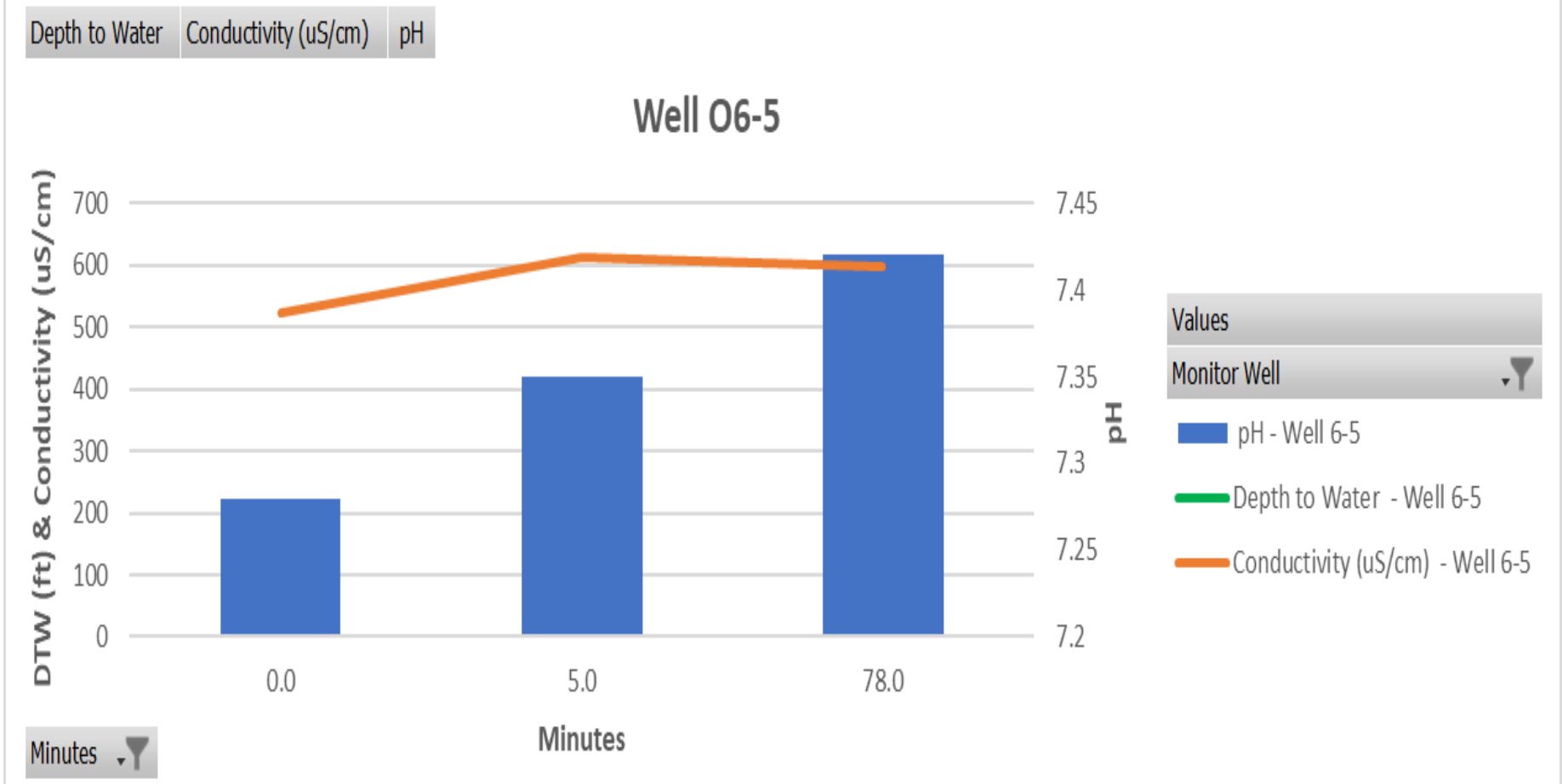

Depth to Water
Conductivity (uS/cm)
pH
Well 44-2
DTW (ft) & Conductivity (uS/cm)
600
500
400
300
200
100
0
7.8
7.75
7.7
7.65
7.6
7.55
7.5
7.45
pH
0.0
5.0
36.0
84.0
Minutes
Minutes
Values
Monitor Well
pH - Well 44-2
Depth to Water - Well 44-2
Conductivity (uS/cm) - Well 44-2

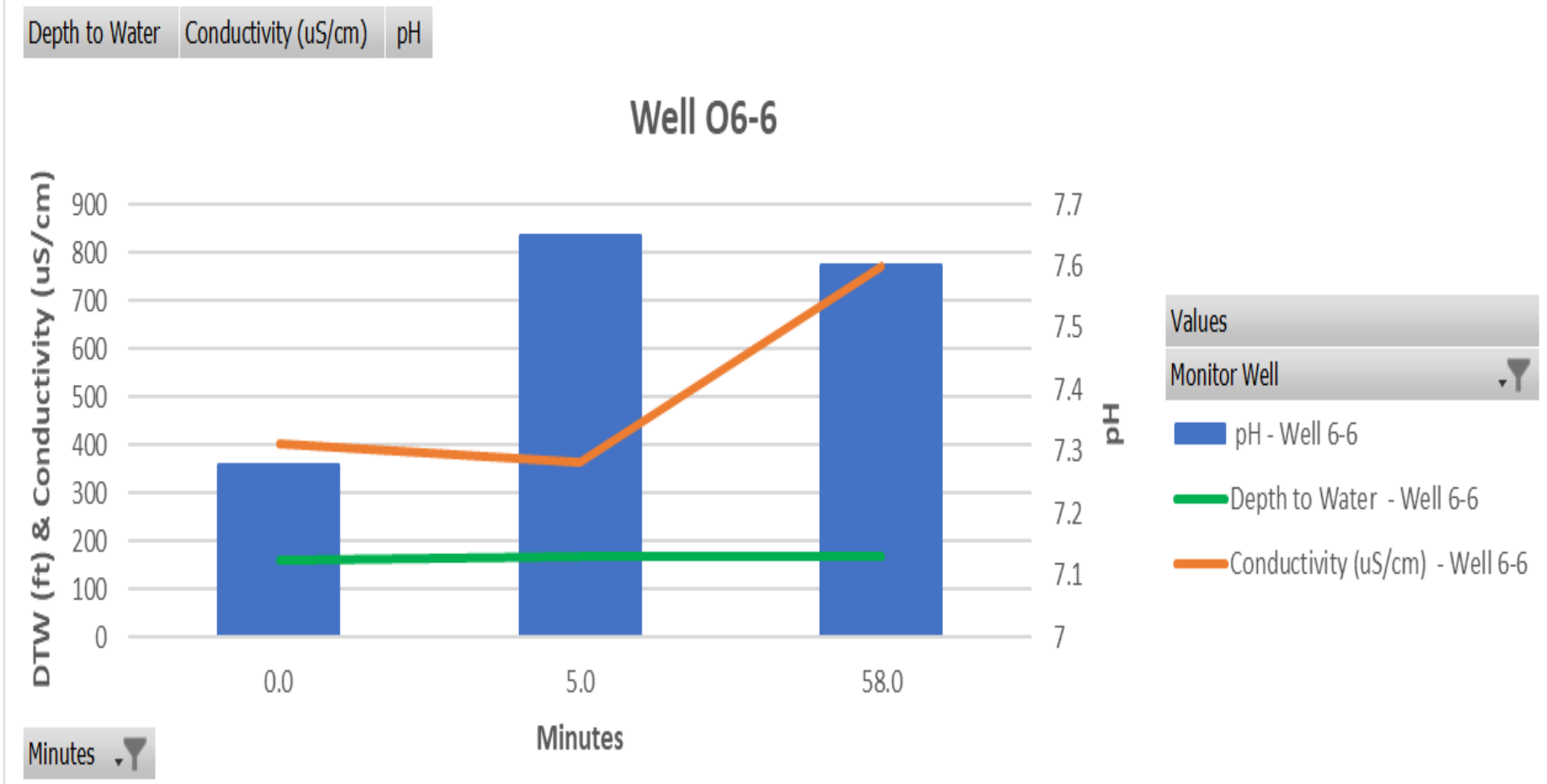

Depth to Water
Conductivity (uS/cm)
pH
Well 06-1
DTW (ft) & Conductivity (uS/cm)
800
700
600
500
400
300
200
100
0
7.6
7.4
7.2
7
6.8
6.6
6.4
6.2
pH
0.0
6.0
69.0
Minutes
Minutes
Values
Monitor Well
pH - Well 6-1
Depth to Water - Well 6-1
Conductivity (uS/cm) - Well 6-1

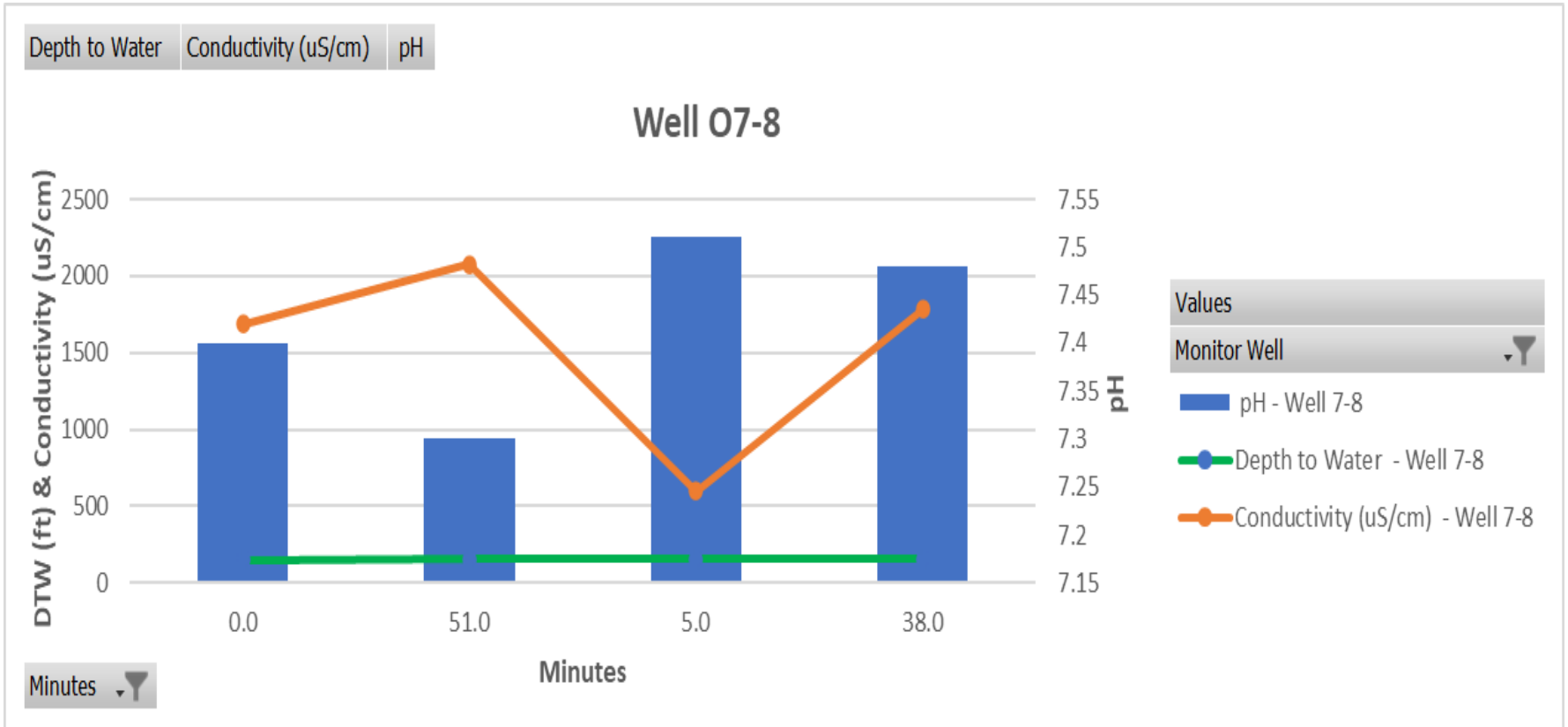
Depth to Water
Conductivity (uS/cm)
pH
Well O6-2
DTW (ft) & Conductivity (uS/cm)
3000
2500
2000
1500
1000
500
0
7.5
7.45
7.4
7.35
7.3
7.25
7.2
7.15
7.1
7.05
7
pH
0.0
6.0
55.0
Minutes
Values
Monitor Well
pH - Well 6-2
Depth to Water - Well 6-2
Conductivity (uS/cm) - Well 6-2
Minutes

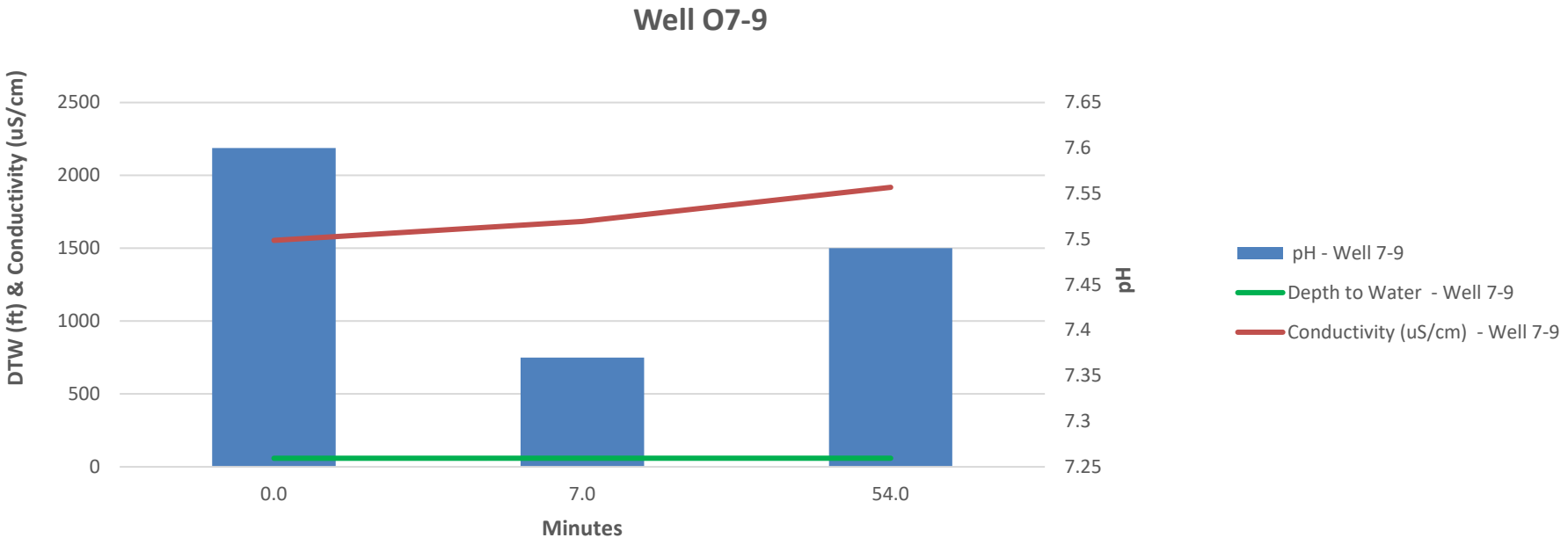

Depth to Water
Conductivity (uS/cm)
pH
Well O6-3
DTW (ft) & Conductivity (uS/cm)
500
400
300
200
100
0
7.65
7.6
7.55
7.5
7.45
7.4
pH
0.0
5.0
56.0
Minutes
Values
Monitor Well
pH - Well 6-3
Depth to Water - Well 6-3
Conductivity (uS/cm) - Well 6-3
Minutes

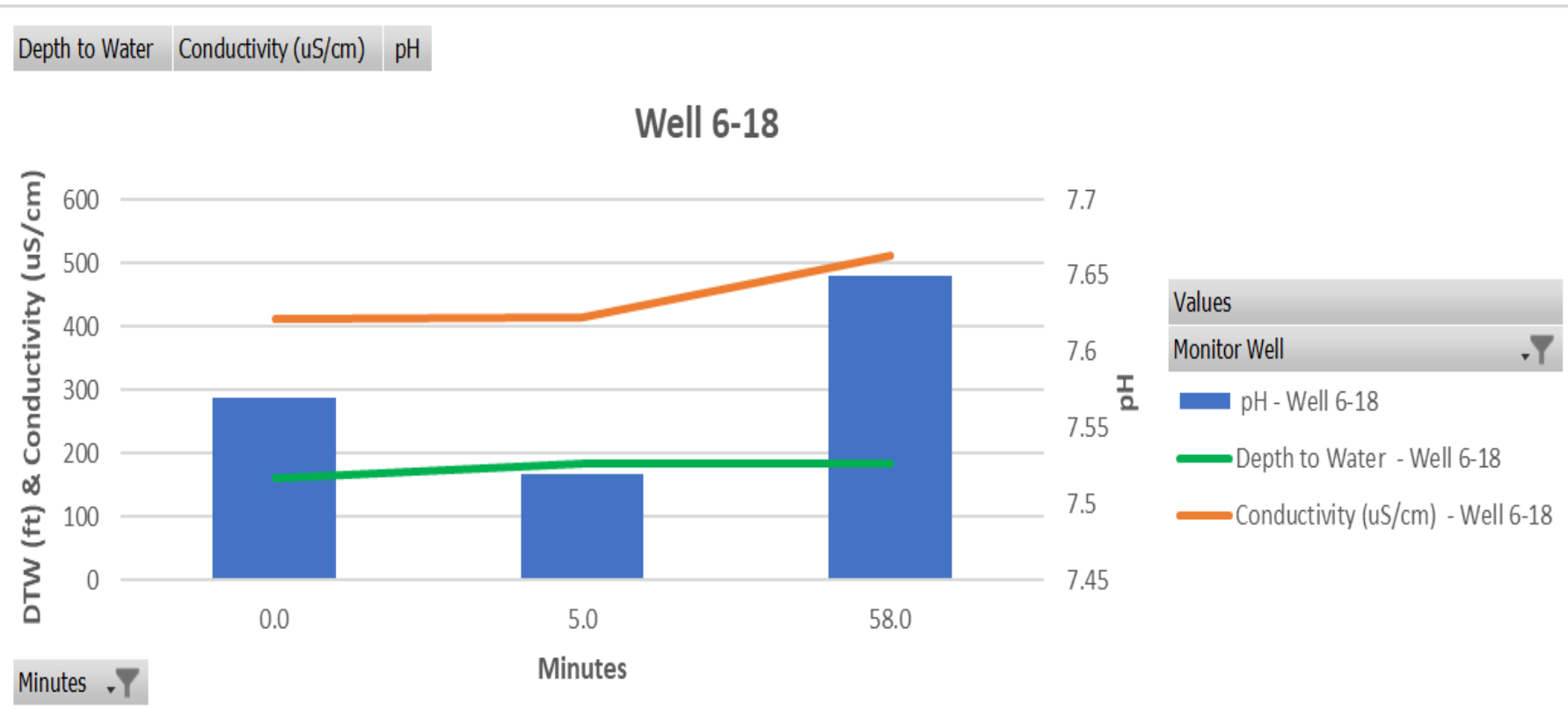

Depth to Water
Conductivity (uS/cm)
pH
Well O6-4
DTW (ft) & Conductivity (uS/cm)
600
500
400
300
200
100
0
7.65
7.6
7.55
7.5
7.45
7.4
7.35
pH
0.0
5.0
66.0
Minutes
Values
Monitor Well
pH - Well 6-4
Depth to Water - Well 6-4
Conductivity (uS/cm) - Well 6-4
Minutes

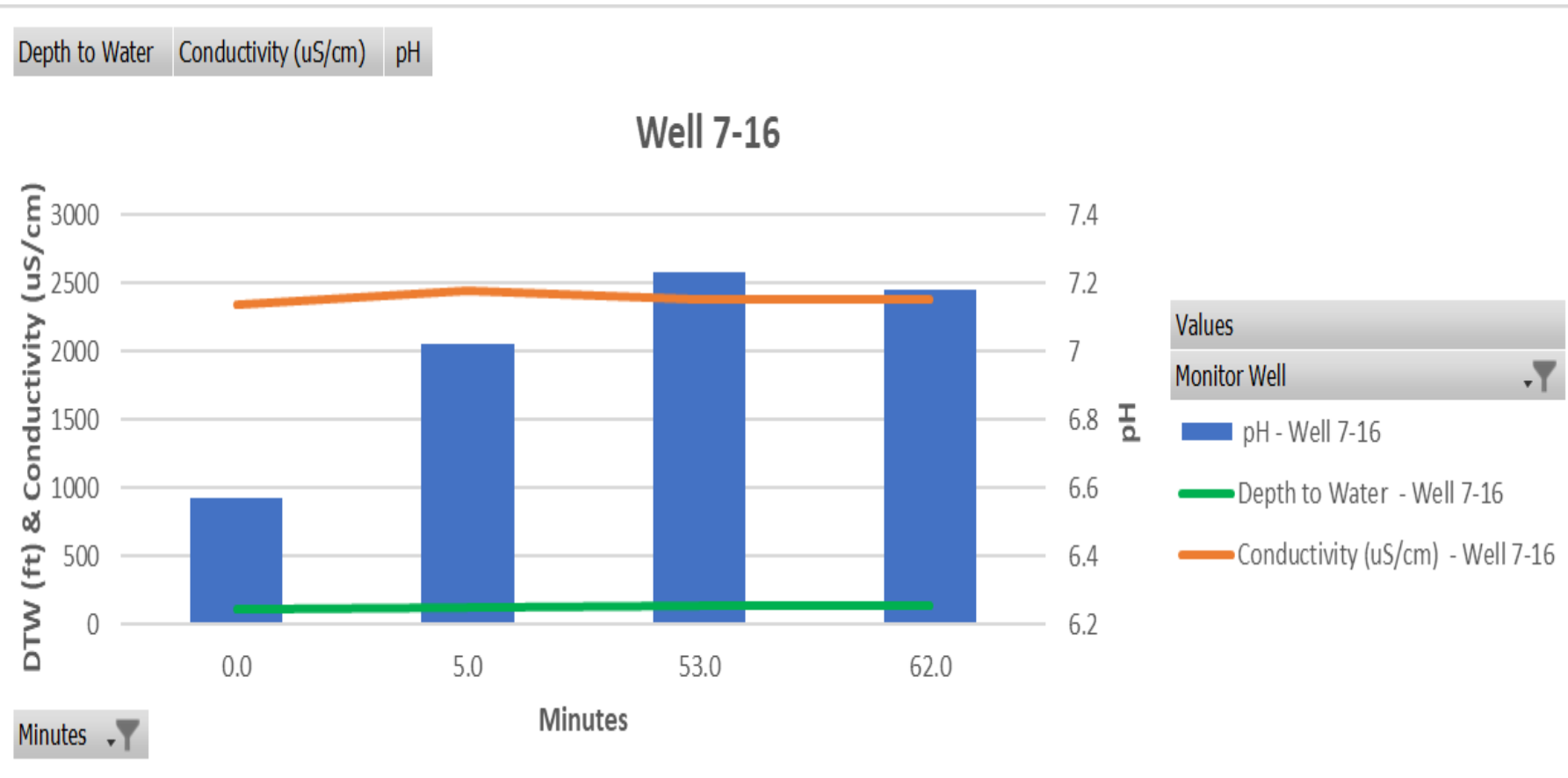

Depth to Water
Conductivity (uS/cm)
pH
Well O6-5
DTW (ft) & Conductivity (uS/cm)
700
600
500
400
300
200
100
0
7.45
7.4
7.35
7.3
7.25
7.2
pH
0.0
5.0
78.0
Minutes
Values
Monitor Well
pH - Well 6-5
Depth to Water - Well 6-5
Conductivity (uS/cm) - Well 6-5
Minutes


Depth to Water
Conductivity (uS/cm)
pH
Well O6-6
DTW (ft) & Conductivity (uS/cm)
900
800
700
600
500
400
300
200
100
0
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7
pH
0.0
5.0
58.0
Minutes
Values
Monitor Well
pH - Well 6-6
Depth to Water - Well 6-6
Conductivity (uS/cm) - Well 6-6
Minutes


Depth to Water
Conductivity (uS/cm)
pH
Well O7-8
DTW (ft) & Conductivity (uS/cm)
2500
2000
1500
1000
500
0
7.55
7.5
7.45
7.4
7.35
7.3
7.25
7.2
7.15
pH
0.0
51.0
5.0
38.0
Minutes
Values
Monitor Well
pH - Well 7-8
Depth to Water - Well 7-8
Conductivity (uS/cm) - Well 7-8
Minutes







Notes:

Monitoring well O6-5: initial depth measurement was incorrect and remeasured at a later date.
Monitoring well O7-7: Always running since the well is for cattle stock water.
Monitoring well 44-2: Final water level >300 feet.

Tables

Table 1

Constituent	Minimum Analytical Level (MAL)	Detection Limit	Units	Method
Total Petroleum Hydrocarbons		0.9	mg/L	TCEQ 1005
Oil and Grease		5	mg/L	EPA 1664A
Arsenic	0.5	0.5	ug/L	EPA 200.8
Barium	3		ug/L	EPA 200.8
Cadmium	1	0.1	ug/L	EPA 200.8
Boron	20		ug/L	EPA 200.8
Chromium (Cr, total)	3		ug/L	EPA 200.8
Lead	0.5	0.1	ug/L	EPA 200.8
Mercury	0.005	0.5	ug/L	EPA 245.1
Selenium	5	1	ug/L	EPA 200.8
Silver	0.5	0.05	ug/L	EPA 200.8
Boron	20		ug/L	EPA 200.8
Calcium		2.5	mg/L	EPA 200.7
Magnesium		20	mg/L	EPA 200.7
Potassium		12.5	mg/L	EPA 200.7
Sodium		2.5	mg/L	EPA 200.7
Chloride		1	mg/L	EPA 300.0
Sulfate		1	mg/L	EPA 300.0
Nitrate-N	0.1	4.52	mg/L	EPA 300.0
Ammonia-N		0.5	mg/L	SM 4500-NH3 D
Total Kjeldahl Nitrogen		5	mg/L	SM 4500-NH3 D
Specific Conductance		28.2	umhos/cm	Varies
Total Hardness		16.5	mg/L	SM 2340 B
Total Dissolved Solids		10	mg/L	SM 2540 C
pH			std. units	Varies
M Alkalinity-ppm as CaCO3			mg/L	SM 2320 B
P Alkalinity-ppm as CaCO3			mg/L	SM 2320 B

Table 2

Required Containers, Preservation Techniques, and Holding Times (Per 40 CFR Part 136.3, Table II)		Minimum Sample Volumes
		Required Sample Volume (ml)
Parameter No./Name	Container Preservation Maximum holding time	
Inorganic Tests:		
Alkalinity	P, G Cool, 4°C 14 days	200
Ammonia	P, G Cool, 4°C , to pH <2 28 days.	500
Boron	P, PFTE, or Quartz HNO3 to pH <2 6 months.	200
Chloride	P, G None required 28 days	200
Hardness	P, G HNO3 to pH<2, to pH<2 6 months	200
Hydrogen ion (pH)	P, G None required Analyze immediately	100
Kjeldahl and organic nitrogen.	P, G Cool, 4°C , to pH <2 28 days	500
Nitrate	P, G. Cool, 4°C 48 hours	200
Oil and grease	G Cool, 4°C , HCl or to pH<2 28 days.	1000
Organic Carbon	P, G Cool, 4°C , HCl or H2SO4 to pH<2, 28 days.	100
Residue, Filterable (TDS)	P, G Cool, 4°C 7days	200
Sulfate	P, G Cool, 4°C 28 days.	200
Specific Conductance		100
Metals:		
Mercury	P, G HNO3 to pH<2 28 days	200
Metals, except boron, chromium VI, and mercury	P, G. HNO3 to pH<2 6 months	1000
Organic Tests:		
VOA (Volatile Organic) (TPH)	G, Telflon-linedseptum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days	40 (use VOA bottle)
BTEX (Benzene, Tolulene, Ethlybenzene, Xylene	G, Telflon-linedseptum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days	
Semi-volatiles (Includes acid and base neutral extractables, polynuclear aromatics, haloethers, and phenol compounds)	G, Telflon-linedseptum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 7 days until extraction, 40 days after extraction	

Table 3

Nichols/Harrington Complex														
Parameters	**Unit**	**Groundwater Monitoring Wells**												
Monitoring Well		**44-1**	**44-2**	**6-1**	**6-2**	**6-3**	**6-4**	**6-5**	**6-6**	**6-18**	**7-16**	**7-7**	**7-8**	**7-9**
Analyte Sampe Date		7/9/24	7/9/24	7/11/24	7/11/24	7/9/24	7/9/24	7/11/24	7/12/24	7/12/24	7/16/24	7/9/24	7/16/24	7/12/24
Arsenic (Total) -	ug/L	3.62	<2.50	<2.50	2.89	2.91	<2.50	<2.50	<2.50	<2.50	<2.50	18.8	3.15	<2.50
Barium (Total) -	ug/L	96.6	3.75	374	653	253	296	241	353	197	106	408	340	106
Boron (total) -	ug/L	279	225	124	187	139	161	109	125	118	106	157	116	212
Cadmium (Total) -	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Calcium (dissolved) -	mg/L	26.7	29.4	86.5	334	53.9	69.6	90.1	98.6	57.8	236	82.8	187	193
Chloride -	mg/L	6.6	14	134	790	5.5	12.2	132	138	57.3	580	61.7	404	360
Chromium (Total) -	ug/L	4.75	<2.50	<2.50	106	<2.50	<2.50	<2.50	9.23	<2.50	3.15	10.3	<2.50	<2.50
Conductivity	umho/cm	485.3	476.5	756.1	2847	453.6	473.2	598.2	772.5	510.9	2382	627.2	2073	1918
Hardness (Total) -	mg/L	136	177	323	1310	230	237	282	369	248	998	264	840	807
M Alkalinity -	mg/L	244	220	172	108	228	224	200	196	204	168	200	196	184
Magnesium (dissolved) -	mg/L	17	25.2	26	115	23.3	15.4	13.9	29.7	25.3	99.3	14	90.6	78.9
Nitrate -	mg/L	5.5	12.0	13.0	<20.0	5.2	8.47	12.1	13.1	7.54	27.4	<20.0	19.5	55.1
Nitrate (as N) -	mg/L	1.24	2.7	2.94	<4.52	1.17	1.91	2.74	2.96	1.7	6.18	<4.52	4.39	12.4
Oil & Grease -	mg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
pH	S.U.	7.79	7.73	7.47	7.16	7.56	7.61	7.42	7.6	7.65	7.18	7.49	7.3	7.49
Potassium (Dissolved) -	mg/L	5.8	7.23	6.49	12.9	6.32	5.7	6.04	9.72	6.32	<12.5	6.68	9.27	8.54
Selenium (Total) -	ug/L	<5.00	<5.00	<5.00	5.04	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	7.21
Silver (Total) -	ug/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
Sodium (Dissolved) -	mg/L	62.6	37.5	15.7	32.3	18.8	10.5	7.5	19.8	13.4	78.3	18.5	62.8	80.9
Sulfate -	ug/L	20.8	17.1	9.81	48.1	12.1	12.1	28.2	28.3	40.1	170	33.5	210	217
Total Dissolved Solids -	mg/L	245	290	493	2950	255	245	388	593	325	2170	338	1570	1480
Total Mercury -	ug/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Lead (Total) -	ug/L	<0.500	3.75	<0.500	0.79	<0.500	<0.500	1.7	1.22	<0.500	4.69	<0.500	<0.500	0.52
Nitrogen, ammonia total [as N]	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nitrogen, Kjeldahl, total [as N]	mg/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Petrol hydrocarbons, total recoverable	mg/L	<3.00	20.0	<3.00	<3.00	<3.00	<3.08	<3.08	<3.08	<3.00	<3.08	<3.00	<3.16	<3.08

APPENDIX 1: Field Sample Data Sheets (Raw Data)

Xcel Energy®

Nº 294911

Amarillo Testing Laboratory
7201 N. Lakeside Road, Amarillo, TX 79108
Phone (806) 381-6461 – Fax (806) 381-6468

Chain of Custody

Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholet/Hennepin Cooper Cop. 6
Project Manager/Requestor: David Lorenz - John Lomas
Phone #/E-mail Address:
Sampled By (print/signature): Emily Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time
	44-2	7/9/24	11:13
	44-1		11:01
	6-3		12:42
	6-4		1:88
	9-7		12:25

Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Emily Brown	7/9/24 1:45		7/9/24 1:45	
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups ~~3, 4, & 5~~ 6			Depth to screen		
Well Number: 44-2			Date: 7-9-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)	Sub	
Measurement Point:	TOC					Total Volume Purged, gal	495.4	

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
9:49	252.0	0	6.28	0	17.5	491.7	7.75	clear	
9:54	262.8	5	6.00	91.7	18.5	496.0	7.56		
10:25	297.5	36	5.83	219.5	18.9	494.9	7.65		
11:13	300+	84	5.67	495.4	19.7	476.5	7.73		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 3, 4, & 5 6			Depth to screen		
Well Number: 44-1			Date: 7-9-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)	Sub	
Measurement Point:	TOC					Total Volume Purged, gal	467.5	

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
10:11	266.8	0	9.7	0	17.7	471.9	7.98	clear	
10:16	279.0	5	9.8	54.2	19.1	489.3	7.67		
10:48	288.2	37	9.7	355.9	19.6	486.8	7.67		
11:01	289.5	50	9.5	467.5	20.2	485.3	7.79		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 6, 1, & 6			Depth to screen		
Well Number: 6-3			Date: 7-9-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		Sub
Measurement Point:	TOC					Total Volume Purged, gal		169.4

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
11:46	193.9	0	2.55	0	18.9	450.2	7.60	clear	
11:51	196.8	5	2.81	19.6	19.2	430.2	7.47		
12:42	197.4	56	3.17	169.4	18.9	453.6	7.56		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 2, 4, & 6			Depth to screen		
Well Number: 6-4			Date: 7-9-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		Sub
Measurement Point:	TOC					Total Volume Purged, gal		331.2

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
12:02	167.6	0	4.6	0	17.6	505.6	7.54	clear	
12:07	172.9	5	4.7	23.3	18.5	503.1	7.46		
1:08	174.3	66	5.2	331.2	19.1	478.2	7.61		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 7, 1, & 3 6			Depth to screen		
Well Number: 7-7			Date: 7-9-24			(Below MP)		top: bottom:
Field Personnel:						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)	Sub	
Measurement Point:	TOC					Total Volume Purged, gal		

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
12:25	117.1	0		0	18.9	627.2	7.49		Can't shut well off, STOCK WATER

µSiemens per cm (same as µmhos/cm) at 25°C.

Xcel Energy®

Nº 294912

Chain of Custody

Amarillo Testing Laboratory
7201 N. Lakeside Road, Amarillo, TX 79108
Phone (806) 381-6461 – Fax (806) 381-6468

Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholas Humphrey Complex Grp. 6

Project Manager/Requestor: Dustin Lorenz - John Lorenz

Phone #/E-mail Address:

Sampled By (print/signature): Kody Brown

Copies of Report to:

LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s)	Fuels:	Asbestos:					** Sample Temperature °C	** Sample pH
	6-1	7-11-24	10:17																			
	6-5		11:04																			
	6-2		11:36																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Kody Brown	7-11-24	Kody Brown	7-11-24 15:15	
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 1, 4, & 6			Depth to screen		
Well Number: 6-1			Date: 7-11-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		Sub
Measurement Point:	TOC					Total Volume Purged, gal		168.9

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
9:08	215.1	0	3.4	0	16.7	685.7	6.96	clear	
9:14	225.4	6	2.8	19.0	18.5	750.5	6.74		
10:17	229.3	69	2.2	168.9	19.9	756.1	7.47		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 3, 4, & 8 6			Depth to screen		
Well Number: 6-5			Date: 7-11-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		Sub
Measurement Point:	TOC					Total Volume Purged, gal		334.3

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
9:46	127.1	0	4.45	0	17.7	522.2	7.28	red	
9:51	127.3	5	4.30	23.0	18.9	614.2	7.35		
11:04	127.4	78	4.21	334.3	19.2	598.2	7.42		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups ~~1, 2, & 5~~ 6			Depth to screen		
Well Number: 6-2			Date: 7-11-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)	Sub	
Measurement Point:	TOC					Total Volume Purged, gal		

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
10:41	201.1	0	J.T	0	20.8	2508	7.43		JUST A TRICKLE
10:47	201.1	6	J.T		20.9	2569	7.37		
11:36	201.3	55	J.T		24.6	2847	7.16		

µSiemens per cm (same as µmhos/cm) at 25°C.

Xcel Energy®

Nº 294900

Chain of Custody

Amarillo Testing Laboratory
7201 N. Lakeside Road, Amarillo, TX 79108
Phone (806) 381-6461 – Fax (806) 381-6468

Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Ne Wis-Mauvoka Cooler Cp. 6
Project Manager/Requestor: Devil Morenz - John Lomis
Phone #/E-mail Address:
Sampled By (print/signature): Ricky Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	6-6	7-12-24	9:17																			
	6-15		9:42																			
	7-9		11:13																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Ricky Brown	7-12-24 11:3			40
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 1, 4, & 6			Depth to screen		
Well Number: 6-6			Date: 7-12-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		Sub
Measurement Point:	TOC					Total Volume Purged, gal		111.5

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
8:19	160.5	0	1.2	0	18.4	401.6	7.28	clear	
8:24	166.5	5	1.9	19.9	20.0	364.9	7.65		
9:17	167.5	58	1.7	111.5	20.7	772.5	7.60		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups ~~1~~, ~~4~~, & ~~5~~ 6			Depth to screen		
Well Number: 6-18			Date: 7-12-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		SUB
Measurement Point:	TOC					Total Volume Purged, gal		442.9

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
8:44	160.2	0	8.27	0	18.5	412.5	7.57	clear	
8:49	182.8	5	7.80	69.4	18.1	414.7	7.52		
9:42	182.9	58	7.65	442.9	18.8	510.9	7.65		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 1, 2, & 5 6			Depth to screen		
Well Number: 7-9			Date: 7-12-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		S.b
Measurement Point:	TOC					Total Volume Purged, gal		258.2

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
10:19	58.8	0	5.19	0	18.9	1554	7.60	clear	
10:26	59.1	7	5.32	43.5	18.8	1684	7.37		
11:13	59.1	54	5.15	258.2	19.2	1918	7.49		

µSiemens per cm (same as µmhos/cm) at 25°C.

Xcel Energy®

Nº 294913

Chain of Custody

Amarillo Testing Laboratory
7201 N. Lakeside Road, Amarillo, TX 79108
Phone (806) 381-6461 – Fax (806) 381-6468

Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Dunlap/Harvest, Cooper Cyp. 6
Project Manager/Requestor: David Nevenz - John Long
Phone #/E-mail Address:
Sampled By (print/signature): Rudy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	7-16	7/16/24	10:02																			
	7-8		11:07																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Rudy Brown	7/16/24 1140		7/16/24 1140	
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: **White:** Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 3, 4, & 5 6			Depth to screen		
Well Number: 7-16			Date: 7-16-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lee						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)		Sub
Measurement Point:	TOC					Total Volume Purged, gal		471.7

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
9:00	107.5	0	10.6	0	17.9	2340	6.57	clear	
9:05	120.3	5	10.2	51.6	18.6	2445	7.02		
9:53	133.3	53	7.5	402.2	18.7	2384	7.23		
10:02	133.3	62	7.6	471.7	18.3	2382	7.18		

µSiemens per cm (same as µmhos/cm) at 25°C.

WELL PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)			N/H Monitor Wells Groups 7, 6, & 8 6			Depth to screen		
Well Number: 7-8			Date: 7-16-24			(Below MP)		top: bottom:
Field Personnel: Randy, Lea						Pump Intake Depth below MP		
Sampling Organization:	B&B Pump					Purging Device (Pump Type)	Sub	
Measurement Point:	TOC					Total Volume Purged, gal	265.7	

pH Buffer Solution	pH reading before calibration	pH reading after calibration	Conductivity Standard	Conductivity reading before calibration	Conductivity reading after calibration	Temperature Standard	Temperature reading before calibration	Temperature reading after calibration
4.0								
7.0								
10.0								

Clock Time 24HR	Depth to Water ft.	delta t, min	Purge Rate (gpm)	Meter Reading	Temp °C	Spec. Cond. uS/cm	pH	Color (clear, brown, yellow, black, red)	Comments
10:16	153.9	0	6.1	0	17.8	1684	7.40	clear	
10:21	156.3	5	6.0	36.5	18.3	598.9	7.51		
10:54	156.7	38	6.0	231.5	18.8	1783	7.48		
11:07	156.7	51	5.9	265.7	18.7	2073	7.30		

µSiemens per cm (same as µmhos/cm) at 25°C.

APPENDIX 2: Lab Analytical Reports

:

Amarillo Testing Laboratory
7201 N Lakeside Rd,
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

16 September 2024
David Lorenz
Harrington
Interoffice
Interoffice, TX 79108
RE: N/H Complex Group 6

cc: John Lomas
Michael Graham

Enclosed are the results of analyses for samples received by the laboratory on 07/09/2024 13:45-07/16/2024 11:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Glen Green
Lab Manager

Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Well 6-3		AJG0007-01	Water	07/09/2024 12:42	07/09/2024 13:45
Well 6-4		AJG0007-02	Water	07/09/2024 13:08	07/09/2024 13:45
Well 7-7		AJG0007-03	Water	07/09/2024 12:25	07/09/2024 13:45
Well 44-1		AJG0007-04	Water	07/09/2024 11:01	07/09/2024 13:45
Well 44-2		AJG0007-05	Water	07/09/2024 11:13	07/09/2024 13:45
Well 6-1		AJG0008-01	Water	07/11/2024 10:17	07/11/2024 12:15
Well 6-2		AJG0008-02	Water	07/11/2024 11:36	07/11/2024 12:15
Well 6-5		AJG0008-03	Water	07/11/2024 11:04	07/11/2024 12:15
Well 6-6		AJG0009-01	Water	07/12/2024 9:17	07/12/2024 11:40
Well 6-18		AJG0009-02	Water	07/12/2024 9:42	07/12/2024 11:40
Well 7-9		AJG0009-03	Water	07/12/2024 11:13	07/12/2024 11:40
Well 7-8		AJG0015-01	Water	07/16/2024 11:07	07/16/2024 11:40
Well 7-16		AJG0015-02	Water	07/16/2024 10:02	07/16/2024 11:40

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-3

AJG0007-01 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	5.5	1.0	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 16:38	EPA 300.0	RDM
Nitrate (as N)	1.17	0.226	mg/L as N		1	[CALC]	7/12/24 14:18	7/15/24 16:38	EPA 300.0	RDM
Nitrate	5.20	1.00	mg/L	A_H	1	BJG0263	7/12/24 14:18	7/15/24 16:38	EPA 300.0	RDM
Sulfate	12.1	1.00	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 16:38	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	228	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	255	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	2.91	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	253	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	139	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	230	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 14:54	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	53.9	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:54	EPA 200.7	RDM
Magnesium	23.3	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:54	EPA 200.7	RDM
Potassium	6.32	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:54	EPA 200.7	RDM
Sodium	18.8	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:54	EPA 200.7	RDM

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-3

AJG0007-01 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-4

AJG0007-02 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	12.2	1.0	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 17:48	EPA 300.0	RDM
Nitrate (as N)	1.91	0.226	mg/L as N		1	[CALC]	7/12/24 14:18	7/15/24 17:48	EPA 300.0	RDM
Nitrate	8.47	1.00	mg/L	A_H	1	BJG0263	7/12/24 14:18	7/15/24 17:48	EPA 300.0	RDM
Sulfate	12.1	1.00	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 17:48	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	224	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	245	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	296	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	161	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	237	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 14:56	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	69.6	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:56	EPA 200.7	RDM
Magnesium	15.4	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:56	EPA 200.7	RDM
Potassium	5.70	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:56	EPA 200.7	RDM
Sodium	10.5	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 14:56	EPA 200.7	RDM

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Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-4

AJG0007-02 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-7

AJG0007-03 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	61.7	20.0	mg/L		20	BJG0263	7/12/24 14:18	7/15/24 18:11	EPA 300.0	RDM
Nitrate (as N)	< 4.52	4.52	mg/L as N		20	[CALC]	7/12/24 14:18	7/15/24 18:11	EPA 300.0	RDM
Nitrate	< 20.0	20.0	mg/L	A_H	20	BJG0263	7/12/24 14:18	7/15/24 18:11	EPA 300.0	RDM
Sulfate	33.5	20.0	mg/L		20	BJG0263	7/12/24 14:18	7/15/24 18:11	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	200	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	338	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	18.8	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	408	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	157	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	10.3	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	264	33.1	mg/L	Z	2	[CALC]	7/23/24 16:09	7/25/24 14:58	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	82.8	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 14:58	EPA 200.7	RDM
Magnesium	14.0	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 14:58	EPA 200.7	RDM
Potassium	6.68	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 14:58	EPA 200.7	RDM
Sodium	18.5	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 14:58	EPA 200.7	RDM

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Amarillo Testing Laboratory
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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-7

AJG0007-03 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo Testing Laboratory
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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 44-1

AJG0007-04 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	6.6	1.0	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 18:35	EPA 300.0	RDM
Nitrate (as N)	1.24	0.226	mg/L as N		1	[CALC]	7/12/24 14:18	7/15/24 18:35	EPA 300.0	RDM
Nitrate	5.50	1.00	mg/L	A_H	1	BJG0263	7/12/24 14:18	7/15/24 18:35	EPA 300.0	RDM
Sulfate	20.8	1.00	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 18:35	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	244	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	245	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	3.62	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	96.6	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	279	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	4.75	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	136	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:03	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	26.7	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:03	EPA 200.7	RDM
Magnesium	17.0	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:03	EPA 200.7	RDM
Potassium	5.80	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:03	EPA 200.7	RDM
Sodium	62.6	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:03	EPA 200.7	RDM

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Amarillo Testing Laboratory
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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 44-1

AJG0007-04 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo Testing Laboratory
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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 44-2

AJG0007-05 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	14.0	1.0	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 18:58	EPA 300.0	RDM
Nitrate (as N)	2.70	0.226	mg/L as N		1	[CALC]	7/12/24 14:18	7/15/24 18:58	EPA 300.0	RDM
Nitrate	12.0	1.00	mg/L	A_H	1	BJG0263	7/12/24 14:18	7/15/24 18:58	EPA 300.0	RDM
Sulfate	17.1	1.00	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 18:58	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	220	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	290	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	3.75	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	225	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	3.75	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	177	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:09	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	29.4	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:09	EPA 200.7	RDM
Magnesium	25.2	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:09	EPA 200.7	RDM
Potassium	7.23	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:09	EPA 200.7	RDM
Sodium	37.5	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:09	EPA 200.7	RDM

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 44-2

AJG0007-05 (Water) - Chain of Custody Number: 294911

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-1

AJG0008-01 (Water) - Chain of Custody Number: 294912

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	134	1.0	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 19:21	EPA 300.0	RDM
Nitrate (as N)	2.94	0.226	mg/L as N		1	[CALC]	7/12/24 14:18	7/15/24 19:21	EPA 300.0	RDM
Nitrate	13.0	1.00	mg/L	A_H	1	BJG0263	7/12/24 14:18	7/15/24 19:21	EPA 300.0	RDM
Sulfate	9.81	1.00	mg/L		1	BJG0263	7/12/24 14:18	7/15/24 19:21	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	172	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	493	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	374	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	124	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	323	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:11	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	86.5	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:11	EPA 200.7	RDM
Magnesium	26.0	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:11	EPA 200.7	RDM
Potassium	6.49	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:11	EPA 200.7	RDM
Sodium	15.7	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:11	EPA 200.7	RDM

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-1

AJG0008-01 (Water) - Chain of Custody Number: 294912

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo Testing Laboratory
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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-2

AJG0008-02 (Water) - Chain of Custody Number: 294912

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	790	20.0	mg/L		20	BJG0263	7/12/24 14:18	7/15/24 19:45	EPA 300.0	RDM
Nitrate (as N)	< 4.52	4.52	mg/L as N		20	[CALC]	7/12/24 14:18	7/15/24 19:45	EPA 300.0	RDM
Nitrate	< 20.0	20.0	mg/L	A_H	20	BJG0263	7/12/24 14:18	7/15/24 19:45	EPA 300.0	RDM
Sulfate	48.1	20.0	mg/L		20	BJG0263	7/12/24 14:18	7/15/24 19:45	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	108	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	2950	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	2.89	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	653	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	187	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	106	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	0.790	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	5.04	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	1310	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:13	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	334	2.50	mg/L	A_J(Cal)	1	BJG0421	7/23/24 16:09	7/25/24 15:13	EPA 200.7	RDM
Magnesium	115	2.50	mg/L	A_J(Cal)	1	BJG0421	7/23/24 16:09	7/25/24 15:13	EPA 200.7	RDM
Potassium	12.9	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:13	EPA 200.7	RDM
Sodium	32.3	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:13	EPA 200.7	RDM

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Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-2

AJG0008-02 (Water) - Chain of Custody Number: 294912

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-5

AJG0008-03 (Water) - Chain of Custody Number: 294912

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	132	10.0	mg/L		10	BJG0263	7/12/24 14:18	7/15/24 20:08	EPA 300.0	RDM
Nitrate (as N)	2.74	2.26	mg/L as N		10	[CALC]	7/12/24 14:18	7/15/24 20:08	EPA 300.0	RDM
Nitrate	12.1	10.0	mg/L	A_H	10	BJG0263	7/12/24 14:18	7/15/24 20:08	EPA 300.0	RDM
Sulfate	28.2	10.0	mg/L		10	BJG0263	7/12/24 14:18	7/15/24 20:08	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	200	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	388	10	mg/L	A_H	1	BJG0363	7/19/24 14:00	7/19/24 15:30	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	241	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	109	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	1.70	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	282	33.1	mg/L	Z	2	[CALC]	7/23/24 16:09	7/25/24 15:16	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	90.1	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:16	EPA 200.7	RDM
Magnesium	13.9	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:16	EPA 200.7	RDM
Potassium	6.04	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:16	EPA 200.7	RDM
Sodium	7.50	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:16	EPA 200.7	RDM

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-5

AJG0008-03 (Water) - Chain of Custody Number: 294912

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo Testing Laboratory
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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-6

AJG0009-01 (Water) - Chain of Custody Number: 294900

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	138	10.0	mg/L		10	BJG0263	7/12/24 14:18	7/15/24 20:31	EPA 300.0	RDM
Nitrate (as N)	2.96	2.26	mg/L as N		10	[CALC]	7/12/24 14:18	7/15/24 20:31	EPA 300.0	RDM
Nitrate	13.1	10.0	mg/L	A_H	10	BJG0263	7/12/24 14:18	7/15/24 20:31	EPA 300.0	RDM
Sulfate	28.3	10.0	mg/L		10	BJG0263	7/12/24 14:18	7/15/24 20:31	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	196	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	593	10	mg/L	A_H	1	BJG0417	7/23/24 15:09	7/23/24 15:45	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	353	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	125	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	9.23	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	1.22	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	369	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:18	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	98.6	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:18	EPA 200.7	RDM
Magnesium	29.7	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:18	EPA 200.7	RDM
Potassium	9.72	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:18	EPA 200.7	RDM
Sodium	19.8	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:18	EPA 200.7	RDM

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-6

AJG0009-01 (Water) - Chain of Custody Number: 294900

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-18

AJG0009-02 (Water) - Chain of Custody Number: 294900

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	57.3	5.0	mg/L		5	BJG0263	7/12/24 14:18	7/15/24 20:55	EPA 300.0	RDM
Nitrate (as N)	1.70	1.13	mg/L as N		5	[CALC]	7/12/24 14:18	7/15/24 20:55	EPA 300.0	RDM
Nitrate	7.54	5.00	mg/L	A_H	5	BJG0263	7/12/24 14:18	7/15/24 20:55	EPA 300.0	RDM
Sulfate	40.1	5.00	mg/L		5	BJG0263	7/12/24 14:18	7/15/24 20:55	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	204	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	325	10	mg/L	A_H	1	BJG0417	7/23/24 15:09	7/23/24 15:45	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	197	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	118	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	248	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:20	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	57.8	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:20	EPA 200.7	RDM
Magnesium	25.3	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:20	EPA 200.7	RDM
Potassium	6.32	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:20	EPA 200.7	RDM
Sodium	13.4	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:20	EPA 200.7	RDM

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Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 6-18

AJG0009-02 (Water) - Chain of Custody Number: 294900

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-9

AJG0009-03 (Water) - Chain of Custody Number: 294900

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	360	10.0	mg/L		10	BJG0263	7/12/24 14:18	7/15/24 22:05	EPA 300.0	RDM
Nitrate (as N)	12.4	2.26	mg/L as N		10	[CALC]	7/12/24 14:18	7/15/24 22:05	EPA 300.0	RDM
Nitrate	55.1	10.0	mg/L	A_H	10	BJG0263	7/12/24 14:18	7/15/24 22:05	EPA 300.0	RDM
Sulfate	217	10.0	mg/L		10	BJG0263	7/12/24 14:18	7/15/24 22:05	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	184	20	mg/L	Z,A_H	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	1480	10	mg/L	A_H	1	BJG0417	7/23/24 15:09	7/23/24 15:45	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	106	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	212	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	0.520	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	7.21	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	807	33.1	mg/L	Z	2	[CALC]	7/23/24 16:09	7/25/24 15:21	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	193	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:21	EPA 200.7	RDM
Magnesium	78.9	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:21	EPA 200.7	RDM
Potassium	8.54	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:21	EPA 200.7	RDM
Sodium	80.9	5.00	mg/L		2	BJG0421	7/23/24 16:09	7/25/24 15:21	EPA 200.7	RDM

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-9

AJG0009-03 (Water) - Chain of Custody Number: 294900

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-8

AJG0015-01 (Water) - Chain of Custody Number: 294913

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	404	10.0	mg/L		10	BJG0331	7/17/24 15:57	7/17/24 20:22	EPA 300.0	RDM
Nitrate (as N)	4.39	2.26	mg/L as N		10	[CALC]	7/17/24 15:57	7/17/24 20:22	EPA 300.0	RDM
Nitrate	19.5	10.0	mg/L		10	BJG0331	7/17/24 15:57	7/17/24 20:22	EPA 300.0	RDM
Sulfate	210	10.0	mg/L		10	BJG0331	7/17/24 15:57	7/17/24 20:22	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	196	20	mg/L	Z	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	1570	10	mg/L	A_H	1	BJG0417	7/23/24 15:09	7/23/24 15:45	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	3.15	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	340	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	116	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	840	16.5	mg/L	Z	1	[CALC]	7/23/24 16:09	7/25/24 15:24	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	187	2.50	mg/L	A_J(Cal)	1	BJG0421	7/23/24 16:09	7/25/24 15:24	EPA 200.7	RDM
Magnesium	90.6	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:24	EPA 200.7	RDM
Potassium	9.27	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:24	EPA 200.7	RDM
Sodium	62.8	2.50	mg/L		1	BJG0421	7/23/24 16:09	7/25/24 15:24	EPA 200.7	RDM

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Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-8

AJG0015-01 (Water) - Chain of Custody Number: 294913

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-16

AJG0015-02 (Water) - Chain of Custody Number: 294913

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Anions by Ion Chromatography										
Chloride	580	10.0	mg/L		10	BJG0331	7/17/24 15:57	7/17/24 20:46	EPA 300.0	RDM
Nitrate (as N)	6.18	2.26	mg/L as N		10	[CALC]	7/17/24 15:57	7/17/24 20:46	EPA 300.0	RDM
Nitrate	27.4	10.0	mg/L		10	BJG0331	7/17/24 15:57	7/17/24 20:46	EPA 300.0	RDM
Sulfate	170	10.0	mg/L		10	BJG0331	7/17/24 15:57	7/17/24 20:46	EPA 300.0	RDM
Wet Chemistry										
Alkalinity, Total	168	20	mg/L	Z	1	BJG0537	7/29/24 13:00	7/29/24 13:00	SM 2320B	RDM
Oil and Grease	< 5.00	5.00	mg/L		1	BJI0042	8/2/24 9:07	8/2/24 10:23	EPA 1664A	EHS
Total Dissolved Solids	2170	10	mg/L	A_H	1	BJG0417	7/23/24 15:09	7/23/24 15:45	SM 2540C	RDM
Total Metals by ICPMS										
Arsenic	< 2.50	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Barium	106	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Boron	106	50.0	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Cadmium	< 0.500	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Chromium	3.15	2.50	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Lead	4.69	0.500	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Selenium	< 5.00	5.00	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Silver	< 0.250	0.250	ug/L		5	BJI0057	8/30/24 15:14	9/9/24 13:18	EPA 200.8	EHS
Calculated Analytes										
Total Hardness	998	82.7	mg/L	Z	5	[CALC]	7/23/24 16:09	7/25/24 15:26	SM 2340B	RDM
Dissolved Metals by ICP										
Calcium	236	12.5	mg/L		5	BJG0421	7/23/24 16:09	7/25/24 15:26	EPA 200.7	RDM
Magnesium	99.3	12.5	mg/L		5	BJG0421	7/23/24 16:09	7/25/24 15:26	EPA 200.7	RDM
Potassium	< 12.5	12.5	mg/L		5	BJG0421	7/23/24 16:09	7/25/24 15:26	EPA 200.7	RDM
Sodium	78.3	12.5	mg/L		5	BJG0421	7/23/24 16:09	7/25/24 15:26	EPA 200.7	RDM

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Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Well 7-16

AJG0015-02 (Water) - Chain of Custody Number: 294913

Analyte	Result	Reporting Limit	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Mercury										
Mercury	< 0.500	0.500	ug/L		1	BJI0187	7/26/24 14:12	7/26/24 14:18	EPA 245.1	EHS

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Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJG0263 - Wet Prep										
LCS (BJG0263-BS1)				Prepared: 07/12/2024 Analyzed: 07/15/2024						
Nitrate	20.1		mg/L	20.0		101	90-110			
Chloride	20.1		mg/L	20.0		101	90-110			
Sulfate	20.0		mg/L	20.0		100	90-110			
Duplicate (BJG0263-DUP1)		**Source: AJG0007-01**		Prepared: 07/12/2024 Analyzed: 07/15/2024						
Chloride	5.42	1.0	mg/L		5.46			0.644	20	
Sulfate	12.0	1.00	mg/L		12.1			0.715	20	
Nitrate	5.15	1.00	mg/L		5.20			0.966	20	
Duplicate (BJG0263-DUP2)		**Source: AJG0009-03**		Prepared: 07/12/2024 Analyzed: 07/15/2024						
Chloride	360	10.0	mg/L		360			0.117	20	
Nitrate	55.2	10.0	mg/L		55.1			0.199	20	
Sulfate	217	10.0	mg/L		217			0.429	20	
Matrix Spike (BJG0263-MS1)		**Source: AJG0007-01**		Prepared: 07/12/2024 Analyzed: 07/15/2024						
Sulfate	22.2		mg/L	10.0	11.8	103	80-120			
Nitrate	15.0		mg/L	10.0	5.10	99.5	80-120			
Chloride	15.5		mg/L	10.0	5.35	101	80-120			
Matrix Spike (BJG0263-MS2)		**Source: AJG0009-03**		Prepared: 07/12/2024 Analyzed: 07/15/2024						
Nitrate	15.6		mg/L	10.0	5.40	102	80-120			
Sulfate	31.9		mg/L	10.0	21.3	106	80-120			
Chloride	46.2		mg/L	10.0	35.3	110	80-120			
Batch BJG0331 - Wet Prep										
LCS (BJG0331-BS1)				Prepared & Analyzed: 07/17/2024						
Nitrate	19.9		mg/L	20.0		99.4	90-110			
Sulfate	19.9		mg/L	20.0		99.4	90-110			
Chloride	20.0		mg/L	20.0		99.9	90-110			

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Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Anions by Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJG0331 - Wet Prep										
Duplicate (BJG0331-DUP1)		**Source: AJG0014-01**		Prepared & Analyzed: 07/17/2024						
Chloride	1910	40.0	mg/L		1880			1.45	20	
Nitrate	159	40.0	mg/L		158			0.884	20	
Sulfate	1240	40.0	mg/L		1220			1.51	20	
Matrix Spike (BJG0331-MS1)		**Source: AJG0014-01**		Prepared & Analyzed: 07/17/2024						
Sulfate	40.5		mg/L	10.0	29.8	107	80-120			
Chloride	56.9		mg/L	10.0	46.1	108	80-120			
Nitrate	13.8		mg/L	10.0	3.86	99.2	80-120			

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Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJG0363 - Wet Prep										
Blank (BJG0363-BLK1)				Prepared & Analyzed: 07/19/2024						
Total Dissolved Solids	<10	10	mg/L							
LCS (BJG0363-BS1)				Prepared & Analyzed: 07/19/2024						
Total Dissolved Solids	670.00		mg/L	746		89.8	80-120			
Duplicate (BJG0363-DUP1)		**Source: AJG0007-01**		Prepared & Analyzed: 07/19/2024						
Total Dissolved Solids	210.00	10	mg/L		255.00			19.4	20	
Batch BJG0417 - Wet Prep										
Blank (BJG0417-BLK1)				Prepared & Analyzed: 07/23/2024						
Total Dissolved Solids	<10	10	mg/L							
LCS (BJG0417-BS1)				Prepared & Analyzed: 07/23/2024						
Total Dissolved Solids	732.50		mg/L	746		98.2	80-120			
Duplicate (BJG0417-DUP1)		**Source: AJG0009-01**		Prepared & Analyzed: 07/23/2024						
Total Dissolved Solids	517.50	10	mg/L		592.50			13.5	20	
Batch BJG0537 - Wet Prep										
Blank (BJG0537-BLK1)				Prepared & Analyzed: 07/29/2024						
Alkalinity, Total	<20	20	mg/L							
Blank (BJG0537-BLK2)				Prepared & Analyzed: 07/29/2024						
Alkalinity, Total	<20	20	mg/L							

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Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Wet Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJG0537 - Wet Prep										
LCS (BJG0537-BS1)				Prepared & Analyzed: 07/29/2024						
Alkalinity, Total	84.000		mg/L	79.3		106	90-110			
LCS (BJG0537-BS2)				Prepared & Analyzed: 07/29/2024						
Alkalinity, Total	80.000		mg/L	79.3		101	90-110			
Duplicate (BJG0537-DUP1)		**Source: AJG0007-01**		Prepared & Analyzed: 07/29/2024						
Alkalinity, Total	228.00	20	mg/L		228.00			0.00	20	
Duplicate (BJG0537-DUP2)		**Source: AJG0031-08**		Prepared & Analyzed: 07/29/2024						
Alkalinity, Total	252.00	20	mg/L		260.00			3.13	20	
Batch BJI0042 - * DEFAULT PREP *** **										
Blank (BJI0042-BLK1)				Prepared & Analyzed: 08/02/2024						
Oil and Grease	<5.00	5.00	mg/L							
LCS (BJI0042-BS1)				Prepared & Analyzed: 08/02/2024						
Oil and Grease	36.100		mg/L	40.0		90.3	78-114			
Matrix Spike (BJI0042-MS1)		**Source: AJG0007-01**		Prepared & Analyzed: 08/02/2024						
Oil and Grease	35.790		mg/L	40.0	2.6500	82.9	78-114			

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Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJI0057 - EPA 200.2, EPA 3005										
Blank (BJI0057-BLK1)				Prepared: 08/30/2024 Analyzed: 09/09/2024						
Boron	15.766	10.0	ug/L							A_B
Chromium	<0.500	0.500	ug/L							
Arsenic	<0.500	0.500	ug/L							
Selenium	<1.00	1.00	ug/L							
Silver	<0.0500	0.0500	ug/L							
Cadmium	<0.100	0.100	ug/L							
Barium	<0.500	0.500	ug/L							
Lead	<0.100	0.100	ug/L							
LCS (BJI0057-BS1)				Prepared: 08/30/2024 Analyzed: 09/09/2024						
Boron	52.046	10.0	ug/L	50.0		104	85-115			
Chromium	52.753	0.500	ug/L	50.0		106	85-115			
Arsenic	52.504	0.500	ug/L	50.0		105	85-115			
Selenium	50.378	1.00	ug/L	50.0		101	85-115			
Silver	25.469	0.0500	ug/L	25.0		102	85-115			
Cadmium	49.808	0.100	ug/L	50.0		100	80-120			
Barium	50.485	0.500	ug/L	50.0		101	85-115			
Lead	51.766	0.100	ug/L	50.0		104	85-115			
Duplicate (BJI0057-DUP1)			**Source: AJH0019-01**	Prepared: 08/30/2024 Analyzed: 09/09/2024						
Boron	43.182	10.0	ug/L		42.595			1	20	
Chromium	<0.500	0.500	ug/L		<0.500				20	
Arsenic	1.3060	0.500	ug/L		1.2860			2	20	
Selenium	<1.00	1.00	ug/L		<1.00				20	
Silver	<0.0500	0.0500	ug/L		<0.0500				20	
Cadmium	<0.100	0.100	ug/L		<0.100				20	
Barium	57.671	0.500	ug/L		59.517			3	20	
Lead	0.30000	0.100	ug/L		0.31200			4	20	

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Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Total Metals by ICPMS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJI0057 - EPA 200.2, EPA 3005										
Duplicate (BJI0057-DUP2)		**Source: AJG0007-01**		Prepared: 08/30/2024 Analyzed: 09/09/2024						
Boron	119.62	50.0	ug/L		138.84			15	20	
Chromium	<2.50	2.50	ug/L		<2.50				20	
Arsenic	2.8050	2.50	ug/L		2.9050			4	20	
Selenium	<5.00	5.00	ug/L		<5.00				20	
Silver	<0.250	0.250	ug/L		<0.250				20	
Cadmium	<0.500	0.500	ug/L		<0.500				20	
Barium	252.86	2.50	ug/L		252.70			0.06	20	
Lead	<0.500	0.500	ug/L		<0.500				20	
Matrix Spike (BJI0057-MS1)		**Source: AJH0019-01**		Prepared: 08/30/2024 Analyzed: 09/09/2024						
Boron	82.211	10.0	ug/L	50.0	42.595	79	70-130			
Chromium	49.994	0.500	ug/L	50.0	<0.500	100	70-130			
Arsenic	50.622	0.500	ug/L	50.0	1.2860	99	70-130			
Selenium	50.179	1.00	ug/L	50.0	<1.00	100	70-130			
Silver	24.572	0.0500	ug/L	25.0	<0.0500	98	70-130			
Cadmium	47.648	0.100	ug/L	50.0	<0.100	95	75-125			
Barium	108.00	0.500	ug/L	50.0	59.517	97	70-130			A_MS
Lead	48.951	0.100	ug/L	50.0	0.31200	97	70-130			
Matrix Spike (BJI0057-MS2)		**Source: AJG0007-01**		Prepared: 08/30/2024 Analyzed: 09/09/2024						
Boron	349.89	50.0	ug/L	250	138.84	84	70-130			
Chromium	250.18	2.50	ug/L	250	<2.50	100	70-130			
Arsenic	255.86	2.50	ug/L	250	2.9050	101	70-130			
Selenium	247.01	5.00	ug/L	250	<5.00	99	70-130			
Silver	123.50	0.250	ug/L	125	<0.250	99	70-130			
Cadmium	235.94	0.500	ug/L	250	<0.500	94	75-125			
Barium	486.30	2.50	ug/L	250	252.70	93	70-130			
Lead	246.60	0.500	ug/L	250	<0.500	99	70-130			

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Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJG0421 - Dissolved Metals										
Blank (BJG0421-BLK1)				Prepared: 07/23/2024 Analyzed: 07/25/2024						
Potassium	<2.50	2.50	mg/L							
Magnesium	<2.50	2.50	mg/L							
Sodium	<2.50	2.50	mg/L							
Calcium	<2.50	2.50	mg/L							
LCS (BJG0421-BS1)				Prepared: 07/23/2024 Analyzed: 07/25/2024						
Magnesium	25.2		mg/L	25.0		101	85-115			
Potassium	24.3		mg/L	25.0		97.2	85-115			
Sodium	74.9		mg/L	75.0		99.9	85-115			
Calcium	48.7		mg/L	50.0		97.4	85-115			
Duplicate (BJG0421-DUP1)		**Source: AJF0007-01**		Prepared: 07/23/2024 Analyzed: 07/25/2024						
Sodium	216	12.5	mg/L		219			1.38	20	
Calcium	181	12.5	mg/L		185			2.30	20	
Potassium	32.9	12.5	mg/L		33.3			1.36	20	
Magnesium	130	12.5	mg/L		132			1.53	20	
Duplicate (BJG0421-DUP2)		**Source: AJG0007-04**		Prepared: 07/23/2024 Analyzed: 07/25/2024						
Calcium	26.3	2.50	mg/L		26.7			1.25	20	
Magnesium	16.7	2.50	mg/L		17.0			1.54	20	
Potassium	5.69	2.50	mg/L		5.80			1.91	20	
Sodium	61.7	2.50	mg/L		62.6			1.55	20	
Matrix Spike (BJG0421-MS1)		**Source: AJF0007-01**		Prepared: 07/23/2024 Analyzed: 07/25/2024						
Sodium	334	12.5	mg/L	125	219	92.0	70-130			
Potassium	160	12.5	mg/L	125	33.3	101	70-130			
Magnesium	249	12.5	mg/L	125	132	93.4	70-130			
Calcium	302	12.5	mg/L	125	185	93.4	70-130			

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Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJG0421 - Dissolved Metals										
Matrix Spike (BJG0421-MS2)	**Source: AJG0007-04**			Prepared: 07/23/2024 Analyzed: 07/25/2024						
Potassium	31.3	2.50	mg/L	25.0	5.80	102	70-130			
Magnesium	40.2	2.50	mg/L	25.0	17.0	93.0	70-130			
Calcium	49.2	2.50	mg/L	25.0	26.7	90.1	70-130			
Sodium	83.2	2.50	mg/L	25.0	62.6	82.4	70-130			

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Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Mercury - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BJI0187 - EPA 245.1, EPA 7470A										
Blank (BJI0187-BLK1)				Prepared & Analyzed: 07/26/2024						
Mercury	<0.500	0.500	ug/L							
LCS (BJI0187-BS1)				Prepared & Analyzed: 07/26/2024						
Mercury	1.9600	0.500	ug/L	2.00		98.0	85-115			
Duplicate (BJI0187-DUP1)		**Source: AJG0007-01**		Prepared & Analyzed: 07/26/2024						
Mercury	<0.500	0.500	ug/L		<0.500				20	
Duplicate (BJI0187-DUP2)		**Source: AJG0009-01**		Prepared & Analyzed: 07/26/2024						
Mercury	<0.500	0.500	ug/L		<0.500				20	
Matrix Spike (BJI0187-MS1)		**Source: AJG0007-01**		Prepared & Analyzed: 07/26/2024						
Mercury	1.9600	0.500	ug/L	2.00	<0.500	98.0	70-130			
Matrix Spike (BJI0187-MS2)		**Source: AJG0009-01**		Prepared & Analyzed: 07/26/2024						
Mercury	1.9100	0.500	ug/L	2.00	<0.500	95.5	70-130			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amarillo Testing Laboratory
7201 N Lakeside Rd
Amarillo, TX 79108
Certificate # T104704351-20-17
Glen Green, Manager (806) 381-6485

Harrington	Project Name/Location: N/H Complex Group 6 Annual 2024	
Interoffice		**Reported:**
Interoffice TX, 79108	Project Manager: David Lorenz	09/16/2024 07:55

Qualifiers and Definitions

A_MS	The percent recovery and/or RPD were outside the acceptance limits for the MS/MSD possibly due to matrix interferences.
A_J(Cal)	The result is above the instrument calibration range and is an estimate.
A_H	The extraction or analysis was performed outside of the EPA recommended holding time.
A_B	Blank contamination. The analyte was found in the method blank as well as in the sample. The reported result may be biased high.
Z	Non Accredited Analyte
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

AJG0007 SDGT0709 SDGT NH60709 24

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N° 294911

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9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholet/Harrington Coupler Grp. 6
Project Manager/Requestor: David Lorenz - John Lamos
Phone #/E-mail Address:
Sampled By (print/signature): Lindy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	44-2	7/9/24	11:13																			
	44-1		11:01																			
	6-3		12:42																			
	6-4		1:08																			
	7-7		12:25																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Lindy Brown	7/9/24 1:45		7/09/24 1:45	On ice 18.6/19.6 FED6400497J received < 2 HC601354
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	Bottle prep 7/08/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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SDG# NH6070924

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Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholas Herrington Circle Cap. b
Project Manager/Requestor: David Lorenz - John Lanoa
Phone #/E-mail Address:
Sampled By (print/signature): Rocky Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	6-1	7-11-24	10:17																			
	6-5		11:04																			
	6-2		11:36																			

Relinquished by: Rocky Brown Date/Time 7-11-24 1215 — Received by: Wendy Wald Date/Time 7-11-24 12-15

Relinquished by: Date/Time — Received by: Date/Time

Relinquished by: Date/Time — Received by: Date/Time

Comments: On ice C
Temp 14.8/15.8
E0004004973
Preserved 22 HCl only
Bottle prep 7/8/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nichols/Farrington Cooper Cap 6
Project Manager/Requestor: David Moreno – John Lomas
Phone #/E-mail Address:
Sampled By (print/signature): Rudy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	6-6	7-12-24	9:17																			
	6-18		9:42																			
	7-9		11:13																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Rudy Brown	7-12-24 11:40		7/12/24 11:40	Temp 15.9/16.9
Relinquished by:	Date/Time	Received by:	Date/Time	E00640049 73
Relinquished by:	Date/Time	Received by:	Date/Time	present 22 ctl 6a354 m Bottle pg 7/08/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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AJG0015 SDG# NH60709 24

Nº 294913

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Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholas/Harrington Complex Grp. 6
Project Manager/Requestor: David Norenz – Jim Lomas
Phone #/E-mail Address:
Sampled By (print/signature): Randy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	7-16	7/16/24	10:02																			
	7-8		11:07																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Randy Brown	7/16/24 1140		7/16/24 1140	Onice Temp 13.4/14.7
Relinquished by:	Date/Time	Received by:	Date/Time	E20640049[illegible]
Relinquished by:	Date/Time	Received by:	Date/Time	Preserved per HC601354 — Bottle Lot 7/08/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: _____

Project Manager/Requestor: _____

Phone #/E-mail Address: _____

Sampled By (print/signature): _____

Copies of Report to: _____

LSR #: _____

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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Xcel Energy

N° 296439

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Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: _____

Project Manager/Requestor: _____

Phone #/E-mail Address: _____

Sampled By (print/signature): _____

Copies of Report to: _____

LSR #: _____

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses												** Sample Temperature ° C	** Sample pH
									Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:						

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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AJG0007 SDGT0709 SDGT NH60709 24

N° 294911

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Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholet/Harrington Coupler Grp. 6
Project Manager/Requestor: David Lorenz - John Lamos
Phone #/E-mail Address:
Sampled By (print/signature): Lindy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	44-2	7/9/24	11:13																			
	44-1		11:01																			
	6-3		12:42																			
	6-4		1:08																			
	7-7		12:25																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Lindy Brown	7/9/24 1:45		7/09/24 1:45	On ice 18.6/19.6 FED6400497J
Relinquished by:	Date/Time	Received by:	Date/Time	received < 2 HC601354
Relinquished by:	Date/Time	Received by:	Date/Time	Bottle prep 7/08/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

Form 17-9084 Revision 01/29/14

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AJG0008

SDG# NH6070924

Nº 294912

Chain of Custody

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Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholas Herrington Cogley Corp. 6

Project Manager/Requestor: David Lorenz - John Lanoa

Phone #/E-mail Address:

Sampled By (print/signature): Rocky Brown

Copies of Report to:

LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	6-1	7-11-24	10:17																			
	6-5		11:04																			
	6-2		11:36																			

Relinquished by:	Date/Time	Received by:	Date/Time
Rocky Brown	7-11-24 1215	Wendy Wald	7-11-24 12:15
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: On ice C
Temp 14.8/15.8
E00040049773
preserved 22 HCl only
Bottle prep 7/8/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)iltered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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AJG0009 SDG# NH6070924

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Nº 294900

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9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nichols/Farrington Cooler Cap-2
Project Manager/Requestor: David Moreno – John Lomas
Phone #/E-mail Address:
Sampled By (print/signature): Rudy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	6-6	7-12-24	9:17																			
	6-18		9:42																			
	7-9		11:13																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Rudy Brown	7-12-24 11:40		7/12/24 11:40	Temp 15.9/16.9
Relinquished by:	Date/Time	Received by:	Date/Time	E00640049 73
Relinquished by:	Date/Time	Received by:	Date/Time	present 22 ctg 0354 m Bottle pg 7/08/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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AJG0015 SDG# NH60709 24

Nº 294913

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Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: Nicholas/Harrington Complex Grp. 6
Project Manager/Requestor: David Norenz – Jim Lomas
Phone #/E-mail Address:
Sampled By (print/signature): Randy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	7-16	7/16/24	10:02																			
	7-8		11:07																			

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Randy Brown	7/16/24 1140		7/16/24 1140	Onice Temp 13.4/14.7
Relinquished by:	Date/Time	Received by:	Date/Time	E20640049
Relinquished by:	Date/Time	Received by:	Date/Time	Preserved in HCl 001354 – Bottle Lot 7/08/24

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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N° 296438

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Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: _____

Project Manager/Requestor: _____

Phone #/E-mail Address: _____

Sampled By (print/signature): _____

Copies of Report to: _____

LSR #: _____

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

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Nº 296439

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Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Facility/Project/Location: _____

Project Manager/Requestor: _____

Phone #/E-mail Address: _____

Sampled By (print/signature): _____

Copies of Report to: _____

LSR #: _____

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses												** Sample Temperature ° C	** Sample pH
									Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:						

Relinquished by:	Date/Time	Received by:	Date/Time	Comments:
Relinquished by:	Date/Time	Received by:	Date/Time	
Relinquished by:	Date/Time	Received by:	Date/Time	

Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink**: Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative**: **(I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)
Note: ** - indicates lab use only

Form 17-9084 Revision 01/29/14

Refractive Index of HD Liquid _____ %

Fibers Pre...

Xcel Energy®

Amarillo Testing Laboratory
7201 N. Lakeside Road, Amarillo, TX 79108
Phone (806) 381-6461 – Fax (806) 381-6468

Chain of Custody

Pg 1

Denver Testing Laboratory
9500 Interstate 76, Henderson, CO 80640
Phone (303) 628-2606 – Fax (303) 628-2926

Minneapolis Testing Laboratory
1518 Chestnut Avenue North, Minneapolis, MN 55403
Phone (612) 630-4506 – Fax (612) 630-4367

Nº 296438

Facility/Project/Location: Nichols Wells Group 6
Project Manager/Requestor: Glen Green
Phone #/E-mail Address: 406-381-6485
Sampled By (print/signature): Randy Brown
Copies of Report to:
LSR #:

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:	TKN	NH3	TPH		** Sample Temperature ° C	** Sample pH
	AJG 0007-01 well 6-3	7-4-24	12:42		W	Yn	2							/			X	X	X			
	AJG 0007-02 well 6-4	7-9-24	13:00																			
	AJG 0007-03 well 7-7	7-9-24	12:25																			
	AJG 0007-04 well 44-1	7-9-24	11:01																			
	AJG 0007-05 well 44-2	7-9-24	11:13																			
	AJG 0008-01 well 6-1	7-11-24	10:17																			
	AJG 0008-02 well 6-2	7-11-24	11:36																			
	AJG 0008-03 well 6-5	7-11-24	11:04		↓	↓	↓										↓	↓	↓			

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[signature]	7-18-24 [illegible]	[signature]	7/15 1509	
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Distribution: White: Return Original (electronic or hard copy) to Project Manager with Analytical Results; **Canary:** Laboratory; **Pink:** Generator's Copy
Matrix: **(W)** Water **(S** Solid **(SL)** Sludge **(O)** Other (Specify) **Preservative: (I)** Ice **(N)** Nitric Acid **(S)** Sulfuric Acid **(H)** Hydrochloric Acid **(D)** Sodium Hydroxide **(X)** Other (Specify)
(F)filtered **(F15)** filtered within 15 minutes (O-PO4)

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Refractive Index of HD Liquid _____ %

Fibers Pre...

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**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions:	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:	TKN	NH3	TPH		** Sample Temperature ° C	** Sample pH
	AJG 0007-01 well 6-3	7-4-24	12:42		W	HN	2							/			X	X	X			
	AJG 0007-02 well 6-4	7-9-24	13:08																			
	AJG 0007-03 well 7-7	7-9-24	12:25																			
	AJG 0007-04 well 44-1	7-9-24	11:01																			
	AJG 0007-05 well 44-2	7-9-24	11:13																			
	AJG 0008-01 well 6-1	7-11-24	10:17																			
	AJG 0008-02 well 6-2	7-11-24	11:36																			
	AJG 0008-03 well 6-5	7-11-24	11:04		↓	↓	↓										↓	↓	↓			

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Minneapolis Testing Laboratory
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Phone (612) 630-4506 – Fax (612) 630-4367

Nº 296439

See Accounts # 2916438

Facility/Project/Location: _____

Project Manager/Requestor: _____

Phone #/E-mail Address: _____

Sampled By (print/signature): _____

Copies of Report to: _____

LSR #: _____

**LIMS ID	Sample ID/Location	Date	Time	Safety Related (Nuclear)	Matrix	Preservative	# of Containers	Volume/Amount	Analyses: Anions	Wet Chem.:	Metals:	PCBs	Oil Testing: (Comp)	DGA Furans (circle selection(s))	Fuels:	Asbestos:					** Sample Temperature ° C	** Sample pH
	AJG0009-01 well 6-6	7-12-24	9:17		W	½H	2										TKN	NH3	TPH			
	AJG0009-02 well 6-18	7-12-24	9:42																			
	AJG0009-03 well 7-9	7-12-24	11:13																			
	AJG0015-01 well 7-6	7-16-24	11:07																			
	AJG0015-02 well	7-16-24	10:02		↓	↓	↓										↓	↓	↓			

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Relinquished by:	Date/Time	Received by:	Date/Time	

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	AJG0009-03 well 7-9	7-12-24	11:13																			
	AJG0015-01 well 7-6	7-16-24	11:07																			
	AJG0015-02 well	7-16-24	10:02		↓	↓	↓										↓	↓	↓			

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	AJG0009-03 well 7-9	7-12-24	11:13																			
	AJG0015-01 well 7-6	7-16-24	11:07																			
	AJG0015-02 well	7-16-24	10:02		↓	↓	↓										↓	↓	↓			

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2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
Office: 903-984-0551 * Fax: 903-984-5914

Project
1111520

SVTL-P

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Printed 08/08/2024
16:49

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1111520_r03_03_ProjectResults	SPL Kilgore Project P:1111520 C:SVTL Project Results t:304	13
1111520_r10_05_ProjectQC	SPL Kilgore Project P:1111520 C:SVTL Project Quality Control Groups	2
1111520_r99_09_CoC__1_of_1	SPL Kilgore CoC SVTL 1111520_1_of_1	2
	Total Pages:	21

Email: Kilgore.ProjectManagement@spllabs.com

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
Office: 903-984-0551 * Fax: 903-984-5914

SAMPLE CROSS REFERENCE

Project
1111520

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Sample	Sample ID	Taken	Time	Received
2318532	*4302*	07/09/2024	12:42:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (40 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318534	*4303*	07/09/2024	13:08:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318535	*4304*	07/09/2024	12:25:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (40 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318536	*4305*	07/09/2024	11:01:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (40 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318537	*4306*	07/09/2024	11:13:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

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SAMPLE CROSS REFERENCE

Project
1111520

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Sample	Sample ID	Taken	Time	Received
2318537	*4306*	07/09/2024	11:13:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318538	*4307*	07/11/2024	10:17:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (40 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318539	*4308*	07/11/2024	11:34:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (40 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318540	*4309*	07/11/2024	11:04:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318541	*4310*	07/12/2024	09:17:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

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SAMPLE CROSS REFERENCE

Project
1111520

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Sample	Sample ID	Taken	Time	Received
2318541	*4310*	07/12/2024	09:17:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318542	*4311*	07/12/2024	09:42:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (40 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318543	*4312*	07/12/2024	11:13:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318544	*4313*	07/16/2024	11:07:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (38 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

Sample	Sample ID	Taken	Time	Received
2318545	*4314*	07/16/2024	10:02:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

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1

SAMPLE CROSS REFERENCE

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ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Sample	Sample ID	Taken	Time	Received
2318545	*4314*	07/16/2024	10:02:00	07/23/2024

Bottle 01 Client supplied glass
Bottle 02 Prepared Bottle: 2 mL Glass vial (Batch 1131342) Volume: 3.00000 mL <== Derived from 01 (39 ml)

Method	Bottle	PrepSet	Preparation	QcGroup	Analytical
TX Method 1005	02	1131342	08/01/2024	1132338	08/08/2024

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SPL The Science of Sure

1
2

SVTL-P

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Project
1111520

Printed: 08/08/2024

RESULTS

Sample Results

2318532 4302 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/09/2024 12:42:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 03:04:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.00	mg/L	3.00	H		02
NELAC	C28 to C36 TPH (ORO)	<3.00	mg/L	3.00	H		02
NELAC	C6 to C12 TPH (GRO)	<3.00	mg/L	3.00	H		02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.00	mg/L	3.00	E		02

2318534 4303 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/09/2024 13:08:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 03:14:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.08	mg/L	3.08	H		02
NELAC	C28 to C36 TPH (ORO)	<3.08	mg/L	3.08	H		02
NELAC	C6 to C12 TPH (GRO)	<3.08	mg/L	3.08	H		02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.08	mg/L	3.08	E		02

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Printed: 08/08/2024

2318535 4304 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/09/2024 12:25:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 03:24:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.00	mg/L	3.00	H		02
NELAC	C28 to C36 TPH (ORO)	<3.00	mg/L	3.00	H		02
NELAC	C6 to C12 TPH (GRO)	<3.00	mg/L	3.00	H		02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.00	mg/L	3.00	E		02

2318536 4305 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/09/2024 11:01:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 03:34:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.00	mg/L	3.00	H		02
NELAC	C28 to C36 TPH (ORO)	<3.00	mg/L	3.00	H		02
NELAC	C6 to C12 TPH (GRO)	<3.00	mg/L	3.00	H		02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.00	mg/L	3.00	E		02

2318537 4306 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/09/2024 11:13:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 03:54:00 BRU

Parameter	Results	Units	RL	Flags	CAS	Bottle

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2318537 4306 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/09/2024 11:13:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 03:54:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	10.1	mg/L	3.08	H		02
NELAC	C28 to C36 TPH (ORO)	9.90	mg/L	3.08	H		02
NELAC	C6 to C12 TPH (GRO)	<3.08	mg/L	3.08	H		02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	20.00	mg/L	3.08	E		02

2318538 4307 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/11/2024 10:17:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:04:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.00	mg/L	3.00			02
NELAC	C28 to C36 TPH (ORO)	<3.00	mg/L	3.00			02
NELAC	C6 to C12 TPH (GRO)	<3.00	mg/L	3.00			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.00	mg/L	3.00			02

2318539 4308 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/11/2024 11:34:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:14:00 BRU

Parameter	Results	Units	RL	Flags	CAS	Bottle

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2318539 4308 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/11/2024 11:34:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:14:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.00	mg/L	3.00			02
NELAC	C28 to C36 TPH (ORO)	<3.00	mg/L	3.00			02
NELAC	C6 to C12 TPH (GRO)	<3.00	mg/L	3.00			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.00	mg/L	3.00			02

2318540 4309 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/11/2024 11:04:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:24:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.08	mg/L	3.08			02
NELAC	C28 to C36 TPH (ORO)	<3.08	mg/L	3.08			02
NELAC	C6 to C12 TPH (GRO)	<3.08	mg/L	3.08			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.08	mg/L	3.08			02

2318541 4310 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/12/2024 09:17:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:34:00 BRU

Parameter	Results	Units	RL	Flags	CAS	Bottle

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2318541 4310 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/12/2024 09:17:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:34:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.08	mg/L	3.08			02
NELAC	C28 to C36 TPH (ORO)	<3.08	mg/L	3.08			02
NELAC	C6 to C12 TPH (GRO)	<3.08	mg/L	3.08			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.08	mg/L	3.08			02

2318542 4311 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/12/2024 09:42:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:44:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.00	mg/L	3.00			02
NELAC	C28 to C36 TPH (ORO)	<3.00	mg/L	3.00			02
NELAC	C6 to C12 TPH (GRO)	<3.00	mg/L	3.00			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.00	mg/L	3.00			02

2318543 4312 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/12/2024 11:13:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:53:00 BRU

Parameter	Results	Units	RL	Flags	CAS	Bottle

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2318543 4312 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/12/2024 11:13:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 04:53:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.08	mg/L	3.08			02
NELAC	C28 to C36 TPH (ORO)	<3.08	mg/L	3.08			02
NELAC	C6 to C12 TPH (GRO)	<3.08	mg/L	3.08			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.08	mg/L	3.08			02

2318544 4313 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/16/2024 11:07:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 05:03:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.16	mg/L	3.16			02
NELAC	C28 to C36 TPH (ORO)	<3.16	mg/L	3.16			02
NELAC	C6 to C12 TPH (GRO)	<3.16	mg/L	3.16			02

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.16	mg/L	3.16			02

2318545 4314 — Received: 07/23/2024

Non-Potable Water — Collected by: Client — ServiTech Labs — PO:
Taken: 07/16/2024 10:02:00

TX Method 1005 — Prepared: 1131342 08/02/2024 09:39:00 — Analyzed 1132338 08/08/2024 05:13:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle

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Printed: 08/08/2024

2318545 4314 Received: 07/23/2024

Non-Potable Water Collected by: Client ServiTech Labs PO:
Taken: 07/16/2024 10:02:00

TX Method 1005 Prepared: 1131342 08/02/2024 09:39:00 Analyzed 1132338 08/08/2024 05:13:00 BRU

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C12 to C28 TPH (DRO)	<3.08	mg/L	3.08			02
NELAC	C28 to C36 TPH (ORO)	<3.08	mg/L	3.08			02
NELAC	C6 to C12 TPH (GRO)	<3.08	mg/L	3.08			02

TX Method 1005 Prepared: 1131342 08/02/2024 09:39:00 Calculated 1132338 08/08/2024 15:15:07 CAL

	Parameter	Results	Units	RL	Flags	CAS	Bottle
NELAC	C06 to C36 TPH	<3.08	mg/L	3.08			02

Sample Preparation

2318532 4302 Received: 07/23/2024

07/09/2024

Prepared: 07/23/2024 11:07:00 Calculated 07/23/2024 11:07:00 CAL

z	Environmental Fee (per Project)	Verified					

TX 1005 Prepared: 1131342 08/02/2024 09:39:00 Analyzed 1131342 08/02/2024 09:39:00 PEV

NELAC	TexasTX 1005 TPH Extraction	3/40	ml		W		01

TX Method 1005 Prepared: 1131342 08/02/2024 09:39:00 Analyzed 1132338 08/08/2024 03:04:00 BRU

NELAC	Texas1005 TPH Expansion - C36	Entered			H		02

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Printed: 08/08/2024

2318534 4303 Received: 07/23/2024

07/09/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:39:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/39**	**ml**			W				01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*03:14:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**				H				02

2318535 4304 Received: 07/23/2024

07/09/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:40:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:40:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/40**	**ml**			W				01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*03:24:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**				H				02

2318536 4305 Received: 07/23/2024

07/09/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:41:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:41:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/40**	**ml**			W				01

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Printed: 08/08/2024

2318536 4305 Received: 07/23/2024

07/09/2024

TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*03:34:00*		*BRU*
NELAC	**Texas1005 TPH Expansion - C36**	**Entered**			H					02

2318537 4306 Received: 07/23/2024

07/09/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:42:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:42:00*		*PEV*
NELAC	**TexasTX 1005 TPH Extraction**	**3/39**	**ml**		W					01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*03:54:00*		*BRU*
NELAC	**Texas1005 TPH Expansion - C36**	**Entered**			H					02

2318538 4307 Received: 07/23/2024

07/11/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:43:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:43:00*		*PEV*
NELAC	**TexasTX 1005 TPH Extraction**	**3/40**	**ml**		W					01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*04:04:00*		*BRU*
NELAC	**Texas1005 TPH Expansion - C36**	**Entered**								02

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2318539 4308 Received: 07/23/2024

07/11/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:44:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:44:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/40**	**ml**			W				01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*04:14:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**								02

2318540 4309 Received: 07/23/2024

07/11/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:44:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:44:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/39**	**ml**			W				01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*04:24:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**								02

2318541 4310 Received: 07/23/2024

07/12/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:45:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:45:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/39**	**ml**			W				01

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2318541 4310 Received: 07/23/2024

07/12/2024

TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*04:34:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**								02

2318542 4311 Received: 07/23/2024

07/12/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:46:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:46:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/40**	**ml**			W				01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*04:44:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**								02

2318543 4312 Received: 07/23/2024

07/12/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:47:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:47:00*	*PEV*
NELAC **TexasTX 1005 TPH Extraction**	**3/39**	**ml**			W				01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*04:53:00*	*BRU*
NELAC **Texas1005 TPH Expansion - C36**	**Entered**								02

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2318544 4313 Received: 07/23/2024

07/16/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:47:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:47:00*	*PEV*	
NELAC	**TexasTX 1005 TPH Extraction**	**3/38**	**ml**		W					01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*05:03:00*	*BRU*	
NELAC	**Texas1005 TPH Expansion - C36**	**Entered**								02

2318545 4314 Received: 07/23/2024

07/16/2024

TX 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:48:00*	*Analyzed*	*1131342*	*08/02/2024*	*09:48:00*	*PEV*	
NELAC	**TexasTX 1005 TPH Extraction**	**3/39**	**ml**		W					01
TX Method 1005	*Prepared:*	*1131342*	*08/02/2024*	*09:39:00*	*Analyzed*	*1132338*	*08/08/2024*	*05:13:00*	*BRU*	
NELAC	**Texas1005 TPH Expansion - C36**	**Entered**								02

2600 Dudley Rd. Kilgore, Texas 75662
24 Waterway Avenue, Suite 375 The Woodlands, TX 77380
*Office: 903-984-0551 * Fax: 903-984-5914*

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SVTL-P

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Project
1111520

Printed: 08/08/2024

Qualifiers:

E - Estimated Value W - Sample bottle does not match recommended type/preservative.
H - Sample started outside recommended holding time

We report results on an As Received (or Wet) basis unless marked Dry Weight.

Unless otherwise noted, testing was performed at SPL, Inc.- Kilgore laboratory which holds International, Federal, and state accreditations. Please see our Websites for details.

(N)ELAC - Covered in our NELAC scope of accreditation
z -- Not covered by our NELAC scope of accreditation

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of SPL Kilgore. Unless otherwise specified, these test results meet the requirements of NELAC.
RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column. MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Bill Peery

Bill Peery, MS, VP Technical Services

QUALITY CONTROL

SVTL-P

ServiTech Labs
6921 South Bell St
Amarillo, TX 79109

Project
1111520

Printed 08/08/2024

Analytical Set 1132338 — TX Method 1005

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
C12 to C28 TPH (DRO)	1131342	8.91	0.193	1.00	mg/L	126635531
C28 to C36 TPH (ORO)	1131342	1.98	0.400	4.00	mg/L	126635531
C6 to C12 TPH (GRO)	1131342	ND	0.228	1.00	mg/L	126635531

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
C12 to C28 TPH (DRO)	458	500	mg/L	91.6	70.0 - 130	126635530
C12 to C28 TPH (DRO)	421	500	mg/L	84.2	70.0 - 130	126635542
C12 to C28 TPH (DRO)	494	500	mg/L	98.8	70.0 - 130	126635552
C12 to C28 TPH (DRO)	618	500	mg/L	124	70.0 - 130	126635553
C12 to C28 TPH (DRO)	585	500	mg/L	117	70.0 - 130	126635556
C6 to C12 TPH (GRO)	396	500	mg/L	79.2	70.0 - 130	126635530
C6 to C12 TPH (GRO)	374	500	mg/L	74.8	70.0 - 130	126635542
C6 to C12 TPH (GRO)	471	500	mg/L	94.2	70.0 - 130	126635552
C6 to C12 TPH (GRO)	487	500	mg/L	97.4	70.0 - 130	126635553
C6 to C12 TPH (GRO)	526	500	mg/L	105	70.0 - 130	126635556

LCS Dup

Parameter	PrepSet	LCS	LCSD	Known	Limits%	LCS%	LCSD%	Units	RPD	Limit%
C12 to C28 TPH (DRO)	1131342	406	478	500	75.0 - 125	81.2	95.6	mg/L	16.3	20.0
C6 to C12 TPH (GRO)	1131342	445	409	500	75.0 - 125	89.0	81.8	mg/L	8.43	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
C12 to C28 TPH (DRO)	2321442	6.46	3.79	0.230	12.2	75.0 - 125	51.1 *	29.2 *	mg/L	54.5 *	20.0
C6 to C12 TPH (GRO)	2321442	3.31	0.188	ND	12.2	75.0 - 125	27.1 *	1.54 *	mg/L	179 *	20.0

Surrogate

Parameter	Sample	Type	Reading	Known	Units	Recover%	Limits%	File
1-Chlorooctane (Surrogate)		CCV	310	250	mg/L	124	50.0 - 150	126635530
1-Chlorooctane (Surrogate)		CCV	287	250	mg/L	115	50.0 - 150	126635542
1-Chlorooctane (Surrogate)		CCV	267	250	mg/L	107	50.0 - 150	126635552
1-Chlorooctane (Surrogate)		CCV	286	250	mg/L	114	50.0 - 150	126635553
1-Chlorooctane (Surrogate)		CCV	290	250	mg/L	116	50.0 - 150	126635556
oTerphenyl (Surrogate)		CCV	255	250	mg/L	102	50.0 - 150	126635530
oTerphenyl (Surrogate)		CCV	230	250	mg/L	92.0	50.0 - 150	126635542
oTerphenyl (Surrogate)		CCV	227	250	mg/L	90.8	50.0 - 150	126635552
oTerphenyl (Surrogate)		CCV	284	250	mg/L	114	50.0 - 150	126635553
oTerphenyl (Surrogate)		CCV	263	250	mg/L	105	50.0 - 150	126635556
1-Chlorooctane (Surrogate)	1131342	Blank	36.0	25.0	mg/L	144	50.0 - 150	126635531
1-Chlorooctane (Surrogate)	1131342	LCS	24.0	25.0	mg/L	96.0	50.0 - 150	126635554
1-Chlorooctane (Surrogate)	1131342	LCS Dup	26.5	25.0	mg/L	106	50.0 - 150	126635555
oTerphenyl (Surrogate)	1131342	Blank	23.6	25.0	mg/L	94.4	50.0 - 150	126635531
oTerphenyl (Surrogate)	1131342	LCS	19.2	25.0	mg/L	76.8	50.0 - 150	126635554
oTerphenyl (Surrogate)	1131342	LCS Dup	23.8	25.0	mg/L	95.2	50.0 - 150	126635555

Email: Kilgore.ProjectManagement@spllabs.com

QUALITY CONTROL

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Amarillo, TX 79109

Project
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Surrogate

Parameter	*Sample*	*Type*	*Reading*	*Known*	*Units*	*Recover%*	*Limits%*	*File*
1-Chlorooctane (Surrogate)	2318532	Unknown	18.8	18.8	mg/L	100	50.0 - 150	126635538
oTerphenyl (Surrogate)	2318532	Unknown	12.5	18.8	mg/L	66.5	50.0 - 150	126635538
1-Chlorooctane (Surrogate)	2318534	Unknown	30.2	19.2	mg/L	157 *	50.0 - 150	126635539
oTerphenyl (Surrogate)	2318534	Unknown	19.0	19.2	mg/L	99.0	50.0 - 150	126635539
1-Chlorooctane (Surrogate)	2318535	Unknown	28.9	18.8	mg/L	154 *	50.0 - 150	126635540
oTerphenyl (Surrogate)	2318535	Unknown	19.6	18.8	mg/L	104	50.0 - 150	126635540
1-Chlorooctane (Surrogate)	2318536	Unknown	24.9	18.8	mg/L	132	50.0 - 150	126635541
oTerphenyl (Surrogate)	2318536	Unknown	16.5	18.8	mg/L	87.8	50.0 - 150	126635541
1-Chlorooctane (Surrogate)	2318537	Unknown	40.7	19.2	mg/L	212 *	50.0 - 150	126635543
oTerphenyl (Surrogate)	2318537	Unknown	25.0	19.2	mg/L	130	50.0 - 150	126635543
1-Chlorooctane (Surrogate)	2318538	Unknown	31.4	18.8	mg/L	167 *	50.0 - 150	126635544
oTerphenyl (Surrogate)	2318538	Unknown	23.0	18.8	mg/L	122	50.0 - 150	126635544
1-Chlorooctane (Surrogate)	2318539	Unknown	24.6	18.8	mg/L	131	50.0 - 150	126635545
oTerphenyl (Surrogate)	2318539	Unknown	16.2	18.8	mg/L	86.2	50.0 - 150	126635545
1-Chlorooctane (Surrogate)	2318540	Unknown	29.8	19.2	mg/L	155 *	50.0 - 150	126635546
oTerphenyl (Surrogate)	2318540	Unknown	23.9	19.2	mg/L	124	50.0 - 150	126635546
1-Chlorooctane (Surrogate)	2318541	Unknown	30.2	19.2	mg/L	157 *	50.0 - 150	126635547
oTerphenyl (Surrogate)	2318541	Unknown	20.5	19.2	mg/L	107	50.0 - 150	126635547
1-Chlorooctane (Surrogate)	2318542	Unknown	24.9	18.8	mg/L	132	50.0 - 150	126635548
oTerphenyl (Surrogate)	2318542	Unknown	16.2	18.8	mg/L	86.2	50.0 - 150	126635548
1-Chlorooctane (Surrogate)	2318543	Unknown	33.7	19.2	mg/L	176 *	50.0 - 150	126635549
oTerphenyl (Surrogate)	2318543	Unknown	22.3	19.2	mg/L	116	50.0 - 150	126635549
1-Chlorooctane (Surrogate)	2318544	Unknown	34.2	19.7	mg/L	174 *	50.0 - 150	126635550
oTerphenyl (Surrogate)	2318544	Unknown	25.9	19.7	mg/L	131	50.0 - 150	126635550
1-Chlorooctane (Surrogate)	2318545	Unknown	30.1	19.2	mg/L	157 *	50.0 - 150	126635551
oTerphenyl (Surrogate)	2318545	Unknown	18.3	19.2	mg/L	95.3	50.0 - 150	126635551
1-Chlorooctane (Surrogate)	2321442	MS	7.65	6.10	mg/L	125	50.0 - 150	126635536
1-Chlorooctane (Surrogate)	2321442	MSD	6.40	6.10	mg/L	105	50.0 - 150	126635537
oTerphenyl (Surrogate)	2321442	MS	4.90	6.10	mg/L	80.3	50.0 - 150	126635536
oTerphenyl (Surrogate)	2321442	MSD	4.92	6.10	mg/L	80.7	50.0 - 150	126635537

* Out RPD is Relative Percent Difference: abs(r1-r2) / mean(r1,r2) * 100% Recover% is Recovery Percent: result / known * 100%

Blank - Method Blank (reagent water or other blank matrices that contains all reagents except standard(s) and is processed simultaneously with and under the same conditions as samples; carried through preparation and analytical procedures exactly like a sample; monitors); CCV - Continuing Calibration Verification (same standard used to prepare the curve; typically a mid-range concentration; verifies the continued validity of the calibration curve); MSD - Matrix Spike Duplicate (replicate of the matrix spike; same solution and amount of target analyte added to the MS is added to a third aliquot of sample; quantifies matrix bias and precision.); LCS Dup - Laboratory Control Sample Duplicate (replicate LCS; analyzed when there is insufficient sample for duplicate or MSD; quantifies accuracy and precision.); Surrogate - Surrogate (mimics the analyte of interest but is unlikely to be found in environmental samples; added to analytical samples for QC purposes. **ANSI/ASQC E4 1994 Ref #4 TRADE QA Resources Guide.)

1111520 CoC Print Group 001 of 001

SPL

Chain of Custody Record

1825 East Plano Parkway
Suite 160
Plano, TX 75074
P: (972) 424-6422
customerservice@SPL.com

Page _____ of _____

Send Report To

Company Name: Servitech Labs
Address: 6921 S Bell
City: Amarillo | State: TX | Zip: 79109
Contact Name:
Contact Email: amarillo.receiving@servitech.com
Phone: 806-677-0093 | Fax:

Send Invoice To (Only if Different from above)

Company Name:
Address:
City: | State: | Zip:
Contact Name:
Phone: | Fax:

Project / Report Information

Circle Requested Turn Around Time (Less than 2 Days must be verified with lab)
☐ 7-10 Days RUSH ☐ 5-7 Days ☐ 3-4 Days ☐ 2 Days ☐ ASAP

Project Name:
Project Location:
Project #: | PO #:
Sampler Name: | Sampler Company:
Sampler Signature:

Matrix Codes: L - Liquid S - Solid W - Wipes A - Air
Preservation Codes: 1 - None 4 - HCl 2 - HNO_3 5 - NaOH 3 - H_2SO_4 6 - Ice 7 - Other _____
Container Codes: P - Plastic G - Glass O - Other _____

Special Instructions *

*Please confirm conditional requests prior to additional analysis

SPL Order ID	Customer Sample ID		Sample Info Date	Sample Info Time	Matrix	# of Containers	Container Type	Pres Code	(C)omp / (G)rab	Parts / Interval	Requested Analysis: Hold	TPH TX 1005								Total Solids / Dry Weight	Laboratory Review Checklist	Chromatograms / Data Pages
2318532	1	4302	7/9/24	1242	L	1	G	4				X									
2318534	2	4303	7/9/24	1308								X									
2318535	3	4304	7/9/24	1225								X									
2318536	4	4305	7/9/24	1101								X									
2318537	5	4306	7/9/24	1113								X									
2318538	6	4307	7/11/24	1017								X									
2318539	7	4308	7/11/24	1124								X									
2318540	8	4309	7/11/24	1104								X									
2318541	9	4310	7/12/24	0917								X									
2318542	10	4311	7/12/24	0942								X									
2318543	11	4312	7/12/24	1113								X									
2318544	12	4313	7/16/24	1107								X									
2318545	13	4314	7/16/24	1002								X									
	14																				
	15																				

Relinquished by	Affiliation	Date	Time	Received by	Affiliation	Date	Time
x	SVT	7/22/24	1504	x UPS			
Relinquished by	Affiliation	Date	Time	Received by	Affiliation	Date	Time
x UPS				x		7/23/24	955
Relinquished by	Affiliation	Date	Time	Received for SPL by		Date	Time
x				x			

Submittal of samples signifies acceptance of SPL's Standard Terms and Conditions.
SPL cannot accept verbal changes to this document. Please fax or email written modifications.

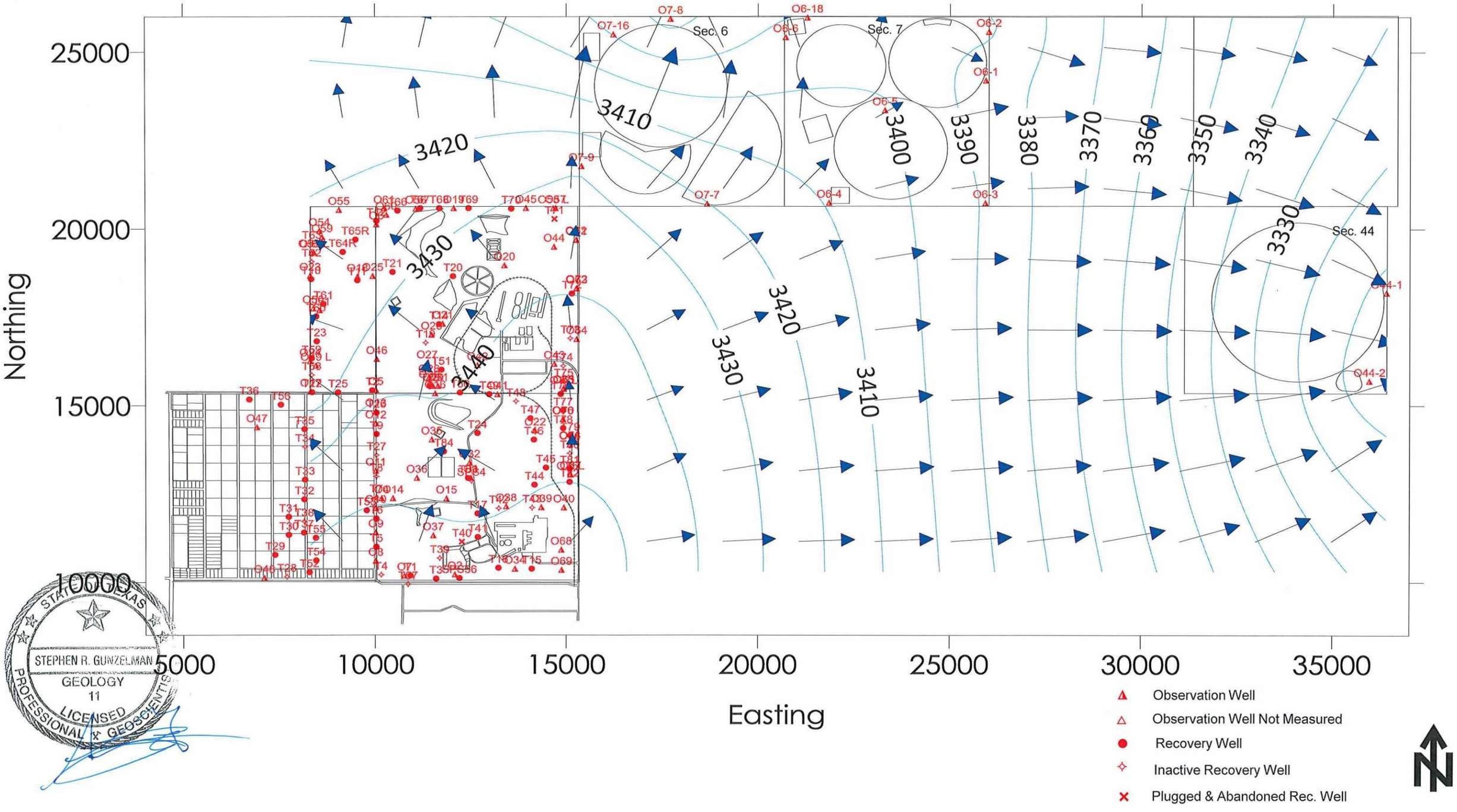
092222 - Rev. 5.0

Temp at Reciept _____ °C

1111520 CoC Print Group 001 of 001

APPENDIX 3: P.E. Certified Groundwater Potentiometric Surface Map

FIGURE 2
Nichols-Harrington Complex
Potentiometric Water Table Elevations (ft.) 2024



STATE OF TEXAS
STEPHEN R. GUNZELMAN
GEOLOGY
11
LICENSED
PROFESSIONAL GEOSCIENTIST

APPENDIX 4

APPENDIX 4: Well Sampling Procedure

Water-Level Sampling

Samples are to be taken when three casing volumes or pH, SC, and Specific Conductance readings have stabilized as discussed below.

- It is generally agreed that a minimum of three casing volumes of water should be evacuated as well as attaining the stabilization of pH, temperature and electrical conductivity of the discharging water.
- Calculate the volume of water to be purged using the following equation:

  $V = 3 \times 0.041\ d^2h$

  where:

  V = volume of water, in gallons

  d = diameter of well casing, in inches

  h = length of water column (total well depth minus depth to water, measured during preliminary work stage of sampling event), in feet

  0.041 = conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

- Take static water level of well.
- Connect flow meter to the hose bib.
- Attach tubing line with flow meter to hose bib.
- A gate is attached after the flow meter to regulate flow.
- Turn pump on.
- At least three pH, SC, and T readings of the discharging water should be taken at three (3) -to five (5) -minute intervals. These parameters are deemed to have stabilized when three successive measurements, taken at intervals of three (3) to five (5) minutes, are within the following ranges:

  - pH: ±0.1 pH units
  - Temperature: ±3%
  - Specific Conductance: ±3%

- Disconnect tubing and sample at pump.

Tab 13

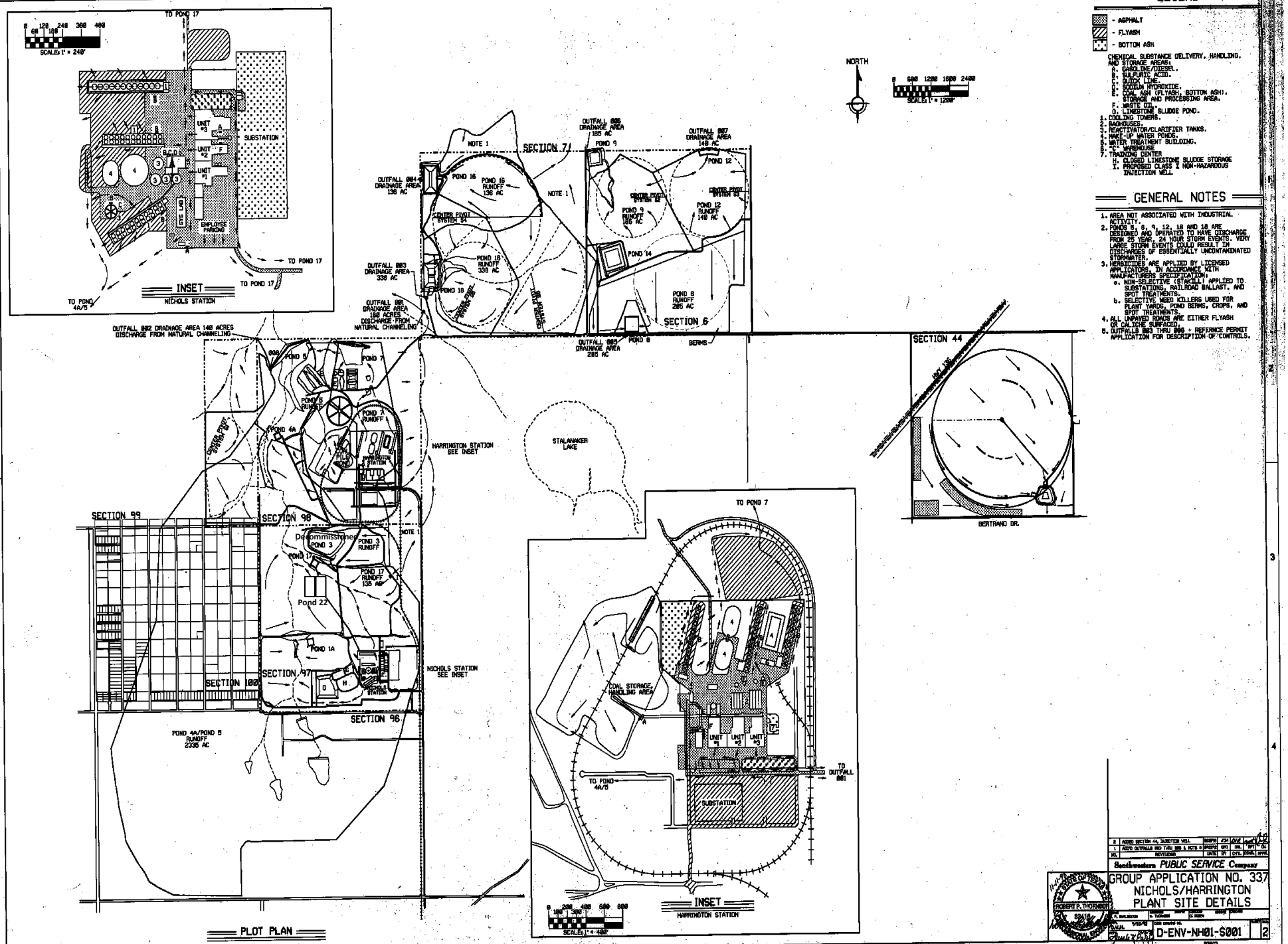
ATTACHMENTS

ATTACHMENT T1

Chemicals List

Chemicals Used Onsite	CAS No.
Disodium Phosphate	7558-79-4
Trisodium Phosphate, Anhydrous	7601-54-6
Calcium Oxide	1305-78-8
Aluminum Sulfate	Mixture
Sulfuric Acid	7664-93-9
Calcium Hypochlorite	7778-54-3
Citric Acid 50% NSF	77-92-9
Sodium Bisulfite 38%	7631-90-5
Sodium Hydroxide 50%	1310-73-2
Nalco 7330	Mixture
VPC1 649	Proprietary Mixture
Anodamine	Polyamines Mixture

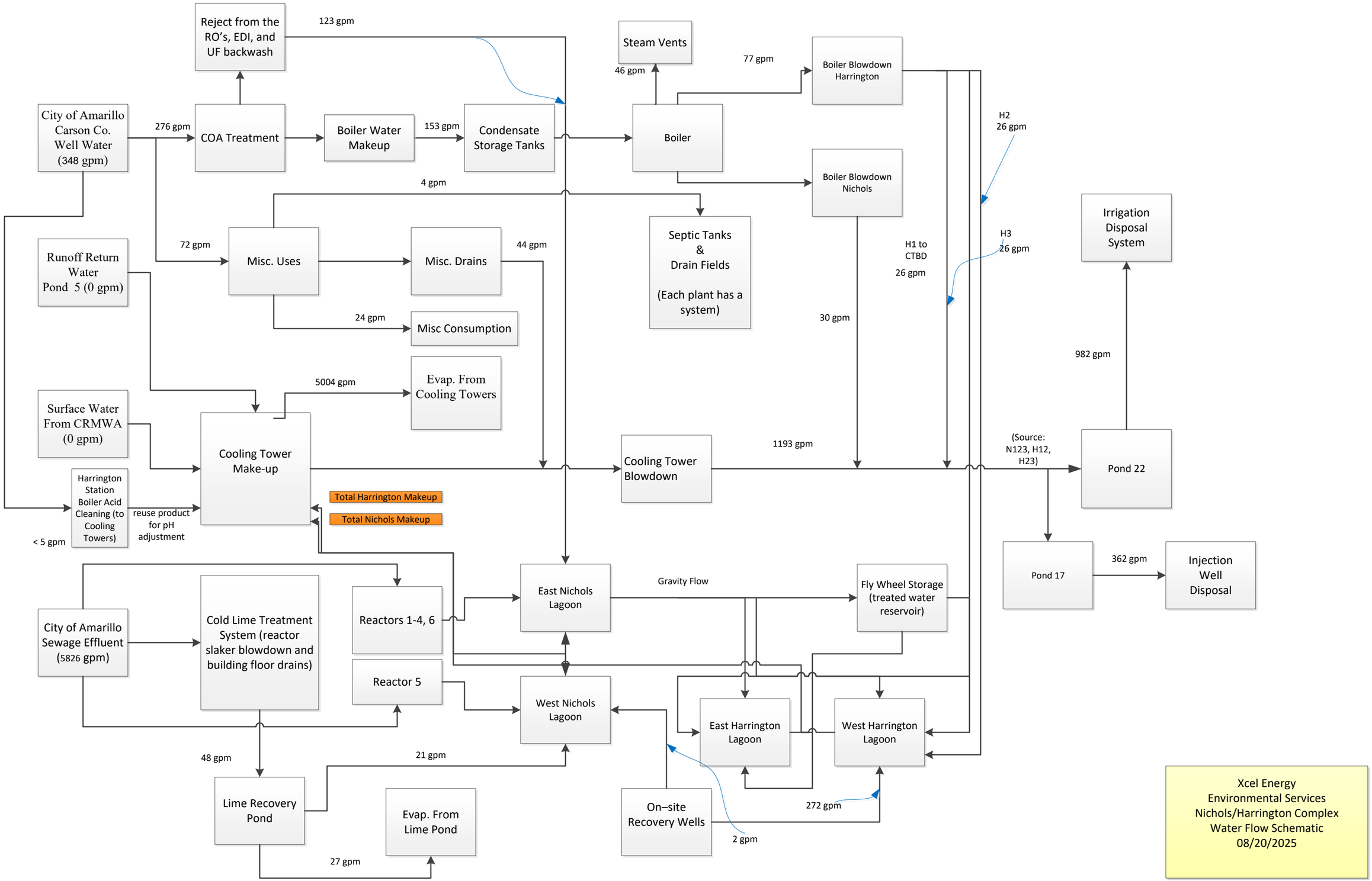
ATTACHMENT T2


LEGEND
- ASPHALT
- FLYASH
- BOTTOM ASH
CHEMICAL SUBSTANCE DELIVERY, HANDLING, AND STORAGE AREAS:
A. GASOLINE/DIESEL.
B. SULFURIC ACID.
C. QUICK LIME.
D. SODIUM HYDROXIDE.
E. COAL ASH (FLYASH, BOTTOM ASH).
STORAGE AND PROCESSING AREA.
F. WASTE OIL.
G. LIMESTONE SLUDGE POND.
1. COOLING TOWERS.
2. BAGHOUSES.
3. REACTIVATOR/CLARIFIER TANKS.
4. MAKE-UP WATER PONDS.
5. WATER TREATMENT BUILDING.
6. "I" WAREHOUSE
7. TRAINING CENTER
H. CLOSED LIMESTONE SLUDGE STORAGE
I. PROPOSED CLASS I NON-HAZARDOUS INJECTION WELL
GENERAL NOTES
1. AREA NOT ASSOCIATED WITH INDUSTRIAL ACTIVITY.
2. PONDS 5, 8, 9, 12, 16 AND 18 ARE DESIGNED AND OPERATED TO HAVE DISCHARGE FROM 25 YEAR, 24 HOUR STORM EVENTS. VERY LARGE STORM EVENTS COULD RESULT IN DISCHARGES OF ESSENTIALLY UNCONTAMINATED STORMWATER.
3. HERBICIDES ARE APPLIED BY LICENSED APPLICATORS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION:
a. NON-SELECTIVE (STACKLL) APPLIED TO SUBSTATIONS, RAILROAD BALLAST, AND SPOT TREATMENTS.
b. SELECTIVE WEED KILLERS USED FOR PLANT YARDS, POND BERMS, CROPS, AND SPOT TREATMENTS.
4. ALL UNPAVED ROADS ARE EITHER FLYASH OR CALICHE SURFACED.
5. OUTFALLS 003 THRU 006 - REFERNCE PERMIT APPLICATION FOR DESCRIPTION OF CONTROLS.
NORTH
SCALE: 1" = 1200'
INSET
NICHOLS STATION
TO POND 17
SUBSTATION
EMPLOYEE PARKING
UNIT #1
UNIT #2
UNIT #3
TO POND 4A/5
SECTION 71
SECTION 6
SECTION 44
SECTION 99
SECTION 98
SECTION 97
SECTION 100
SECTION 96
OUTFALL 004 DRAINAGE AREA 135 AC
OUTFALL 005 DRAINAGE AREA 185 AC
OUTFALL 007 DRAINAGE AREA 148 AC
OUTFALL 003 DRAINAGE AREA 338 AC
OUTFALL 001 DRAINAGE AREA 198 ACRES DISCHARGE FROM NATURAL CHANNELING
OUTFALL 002 DRAINAGE AREA 148 ACRES DISCHARGE FROM NATURAL CHANNELING
OUTFALL 008 DRAINAGE AREA 285 AC
POND 16 RUNOFF 136 AC
POND 9 RUNOFF 185 AC
POND 12 RUNOFF 148 AC
POND 18 RUNOFF 338 AC
POND 8 RUNOFF 285 AC
POND 7 RUNOFF
POND 17 RUNOFF 135 AC
POND 4A/POND 5 RUNOFF 2335 AC
CENTER PIVOT SYSTEM 84
CENTER PIVOT SYSTEM 82
HARRINGTON STATION SEE INSET
NICHOLS STATION SEE INSET
STALANAKER LAKE
BERMS
BERTRAND DR.
Decommissioned
Pond 22
COAL STORAGE HANDLING AREA
TO POND 7
TO POND 4A/5
TO OUTFALL 001
SUBSTATION
INSET
HARRINGTON STATION
SCALE: 1" = 400'
PLOT PLAN
Southwestern PUBLIC SERVICE Company
GROUP APPLICATION NO. 337
NICHOLS/HARRINGTON
PLANT SITE DETAILS
ROBERT P. THORNBERY
92418
D-ENV-NH01-S001
2

ATTACHMENT T3

NICHOLS – HARRINGTON COMPLEX WATER AND WASTEWATER FLOW SCHEMATIC - 5 YEAR AVG.

(2020-2025)



Attachment T4
Pond Liner Descriptions

Pond 7

Liner in Pond 7 is a 24-inch fly ash soil cement along the sides and bottom. Placed in 4-9 inch lifts to a proctor density of 95% at optimum moisture per ASTM D-690-70. All lifts are 8% fly ash and topsoil.

Pond 10

Liner in Pond 10 is an 18-inch compacted clay liner placed in 3-8 inch lifts. The liner will meet a permeability equal to or less than 1×10^{-7} cm/sec. All lifts are 4% Bentonite and topsoil. The liner extends 8 ft. into the inner toe of the perimeter berm.

Pond 11

Liner in Pond 11 is a 24-inch compacted clay liner. Placed in 4-9 inch lifts to a proctor density of 95%. This liner will meet a permeability equal to or less than 1×10^{-7} cm/sec. All lifts are 4% Bentonite and clay topsoil. The upstream slope of the dam is protected with 24 inches of 100% fly ash cement.

Pond 15

Liner in Pond 15 is a 6-inch compacted clay liner along the inside slopes and bottom of topsoil and 4% Bentonite compacted to a proctor density of 98% at optimum moisture. A 6-inch layer of moistened and compacted 100% fly ash is then placed over the compacted clay. Authorization for the construction of this pond was received from the Texas Water Commission in July of 1987.

Pond 19

Liner in Pond 19 is a 12-inch compacted clay liner along the inside slopes and bottom of native clay and 2% Bentonite, placed in 6-inch lifts. A 6-inch layer of moistened and compacted 100% fly ash is then placed over the compacted clay. Authorization for construction of this pond was received from the Texas Water Commission in June of 1992.

ATTACHMENT T5

Safety Data Sheets

Safety Data Sheet compliant with OSHA Hazardous Communication Standard, 2012 (OSHA-HCS)

SECTION 1: Identification of substance / mixture and of the company / undertaking

1.1 Product identifier

Trade name	Anodamine HPFG
Alternative Names	Surface-active polyamines.

Relevant Identified uses of the substance / mixture and uses advised against

1.2

Identified Uses	High-pressure boiler metal passivation scale and corrosion inhibition for industrial water treatment.

1.3 Details of the supplier of the safety data sheet

Supplier	Anodamine Inc, 2590 Oakmont Drive, Building 300, Round Rock, Texas, USA 78665
Telephone and Fax	Tel: + 1 (512) 244 2318
Contact details of person responsible for SDS	Technical Support Services contact (info@anodamine.com) Tel: + 1 (512) 244 2318

1.4 Emergency telephone number

	For USA: **Chemtrec: +1-800-424-9300** For Canada: CanuTec: 613-996-6666 e-mail: ers@chemtelinc.com
Opening Hours	24 hours
Other Comments (e.g. Language of the phone service)	English

SECTION 2: Hazards Identification

2.1 Classification of the substance or mixture

GHS-US classification	Not classified
Additional Information	For full text of Hazard statements: See Section 16

2.2 Label elements

GHS-US labelling:

Hazard Pictogram	No hazard pictograms required
Signal Word	No signal word required
Hazard Statements	No hazard phrases required
Precautionary Statements	Response: None Storage: None Disposal: None
Supplemental Hazard Information	None

2.3 Other Hazards — Not a PBT or vPvB

2.4 Unknown Acute toxicity (GHS-US) — No data available

SECTION 3: Composition / Information on ingredients

3.2 Mixture:

Chemical Characterisation: Surface Active Polyamines

Remarks: **No hazardous ingredients present according to OSHA-GHS 2012.**

SECTION 4: First Aid Measures

4.1 Description of first aid measures

General Notes	Immediately call doctor/physician if required.
Inhalation	No effects or symptoms are expected when handling the product. No respiratory PPE is required. Remove to fresh air if irritation occurs get medical attention.
Skin Contact	Remove contaminated clothing and shoes and immediately wash affected area with plenty of soap and rinse area with large amounts of water. Get medical aid if required.
Eye Contact	Remove any contact lenses and continue flushing eyes with plenty of soap and water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.
Ingestion	Do NOT induce vomiting. If victim is conscious and alert, wash out mouth with water, give several glasses of water. Get medical aid immediately if necessary.

4.2 Most important symptoms and effects, both acute and delayed

Refer to section 11 for more information on health effects and symptoms.

4.3 Indication of immediate medical attention and special treatment needed: None specific

SECTION 5: Fire fighting measures

5.1 Extinguishing media:

Suitable extinguishing media: Use water fog or spray, dry chemical foam or carbon dioxide

Unsuitable extinguishing media: None known

5.2 Special Hazards arising from the substance / mixture: Under fire conditions it may produce irritating fumes and/or gases if heated to 600 ^{0}C (1112 ^{0}F) or above.

Hazardous Combustion Product: Thermal decomposition products may release toxic and/or hazardous fumes or gases including carbon oxides (CO & CO2), amine.

5.3 Advise for fire fighters: Wear self-contained breathing apparatus and acid resistant clothing

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non emergency personnel:

Protective Equipment: Use personal protection recommended in section 8

Emergency Procedures: Evacuate the spill area safely to permit authorised personnel to handle the spill.

For Emergency Responders: Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

6.2 Environmental precautions:

Avoid release to the environment. Collect leaking substance with suited acid proof containers. Do not allow entering into drain or surface waters. Collect contaminated material in suited acid proof containers. Dispose of contaminated material and its container as waste according to local regulations.

Water Spill: The material will not cause any adverse environmental impact if it riches waterways however avoid release in to waterways. The product is considered non-hazardous to aquatic environment based on third-party test results.

Land spill: None

Air Spill: None known

6.3 Methods and material for containment and cleaning up:

Contain large spills with containment walls and transfer the material to appropriate containers for reclamation or disposal. Collect by sweep, scoop or vacuum and remove. Flush spill area with water. The spill area may be slippery. Soak up liquid residue with suitable absorbent such as clay or saw dusts

6.4 References to other sections: Refer section 13 for disposal consideration

Additional information: Avoid contact with skin and eyes as part of safe handling. If spillage occurs on the public highway, indicate the danger and notify the authorities (police, fire brigade).

SECTION 7: Handling and storage

7.1 Precautions for safe handling:

Protective measures: Avoid repeated contact with skin and eyes. Avoid inhalation of vapours or fumes.
Do not open the containers until ready for use. Close the containers properly.
Handle in accordance with good industrial hygiene and safety practices as mentioned in section 8.2. These practices include using appropriate personal protection, avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Do not eat, drink or smoke when handling this product.
Observe all recommended safety precautions until container is cleaned, reconditioned or destroyed. The reuse of this material's container for non-industrial purposes is prohibited and any reuse must be in consideration of the data provided in this material safety data sheet.

Advice on general occupational Hygiene	Keep personal protective equipment in a clean place, away from the work area. Use clean and correctly maintained personal protective equipment. Always wash your hands after handling the product. Do NOT eat or drink in the workplace.

7.2 Conditions for safe storage including any incompatibilities:

Technical measures and storage conditions	Take all necessary precautions to avoid the accidental release of the product outside due to the rupture of containers or transfer systems. Ensure there is a suitable retention system. Storage facilities should be dry.
Packing Material:	
Suitable packing and storage material	SS 304 or 316, original containers or metal containers with glass, PVC, PP, PE or GRP lining
Unsuitable packing and storage material	None.
Requirements for storage rooms and vessels	Storage should be done in original containers. Store the containers in cool and dry place at ambient temperature at temperature > 37 ^{0}F (freezing protection) or < 180 ^{0}F typically ensure a useable shelf life of 3-5 years. Even after freezing, thawing allows re-use of the product without limitations
Advice on common storage	No special restriction on storage with other products
Storage Class	12
Further information on storage conditions	Shelf life: 3-5 years

7.3 Specific end Use(s) — Refer section 1.2

SECTION 8: Exposure control / personal protection

8.1 Control Parameters

No specific occupational exposure limit is known or established on components present in the product.

8.2 Exposure controls

Appropriate engineering controls	No specific additional engineering controls are required. Provide good natural or artificial ventilation.
Personal Protection equipment	
Eye / face protection	Use safety glasses or chemical goggles. Have eye wash facilities immediately available at any location where eye contact can occur.
Skin protection Hand Protection: Other skin protection:	Wear natural rubber or latex gloves. Wear suitable protective clothing including boots and safety glasses – acid resistant chemical clothing is not required. Wash thoroughly after handling. Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practice.
Respiratory protection	Avoid breathing vapour / mist. Use approved respiratory protection equipment when air borne exposure is excessive. Consult respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer. In case of insufficient ventilation, wear suitable respiratory equipment
Environmental Protection Control	Avoid direct discharge into drains

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Liquid
Colour	Clear liquid to light straw colour
Odour	Characteristic or limited
Odour Threshold	Not available
pH	~6.0 of 2% solution at 25 ^{0}C

Freezing point / range	< 37 ^{0}F
Initial boiling point / range	>100 ^{0}C (Similar to water)
Flash point	Not available
Evaporation rate	Not determined
Flammability (solid, gas)	Not flammable or combustible
Upper/lower flammability or explosive limit	Not applicable
Vapour Pressure	Same as water
Vapour Density	Not available
VOC content	No data available
Specific gravity@ 25C	0.98
Solubility(ies)	Miscible in water
Partition coefficient (N-Octanol / Water)	No data available
Auto ignition temperature	Not applicable
Decomposition temperature	Not available
Viscosity	No data available
Explosive Properties	No data available
Oxidising Properties	No data available
Percentage of Volatile components	1% of non-hazardous active in water steam phase at > 250 ^{0}C

9.2 Other information — Please refer technical datasheet

SECTION 10: Stability and reactivity

10.1	Reactivity	Reacts with acids, metals and strong oxidising agents
	Hazardous polymerisation	None
10.2	Chemical Stability	Stable under recommended storage and handling conditions.
10.3	Possibility of hazardous reactions	Hazardous polymerization is not expected to occur under normal temperature and pressure.
10.4	Conditions to avoid	None.
10.5	Incompatible materials	Strong acids and oxidizers
10.6	Hazardous decomposition products	Carbon oxide fumes (CO, CO_2)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Toxicological results bioassays on corrosion inhibitor Anodamine HPFG**.** (19 September 2014)

Investigative Species	*Observations*
	LC50
Daphnia Pulex 24 hour 100 g/l 48 hour 75.79 g/l	95 % Lower Confidence Limit: 80.32 – 124.50 ppm 95 % Upper Confidence Limit: 66.45 – 86.44 ppm
Pimephales Promelas 48 hour 139 g/l 96 hour 136.6 g/l	95 % Lower Confidence Limit: 55,755.86 ppm 95 % Upper Confidence Limit: 43,433.46 ppm

Environmental Protection Agency's Trimmed Spearman-Karber statistical program was used to analyze all data.
Both the lethal and sub-lethal endpoints were statistically calculated according to their respective EPA guidelines. The Chronic Freshwater organisms were calculated according to EPA-821-R-02-013, October 2002 Fourth Edition. The Chronic Marine and Estuarine organisms were calculated according to EPA-821-R-02-014, October 2002 Third Edition. The Acute Freshwater and Marine organisms were calculated according to EPA-821-R-02-012, October 2002 Fifth Edition.

Acute oral toxicity

Species: rat
Route of administration: oral
LD50: >5000 mg/kg
Not classified for acute oral toxicity as per OSHA-GHS

	regulation
Acute inhalation toxicity	No test data available
Acute dermal toxicity	Species: rat Route of administration: Dermal LD50: >5000 mg/kg Not classified for acute dermal toxicity as per OSHA-GHS regulation
Skin irritation	Species: Rabbit Exposure: 4 hour Result: Not irritating Not classified for skin irritation as per OSHA-GHS regulation
Serious eye damage / irritation	Species: Rabbit Result: Not irritating Not classified for Eye irritation/damage as per GHS regulation
Respiratory irritation	No data available
Sensitisation	Species: Guinea Pig Result: Not sensitizing Not classified for skin/respiratory sensitization as per OSHA-GHS regulation
Repeated dose toxicity	No classification is required for Repeated dose toxicity
Germ cell mutagen city	Negative results obtained in Ames, CHO HGPRT forward mutation and micronucleus tests.
Carcinogenicity	Not expected to be a carcinogen
Reproductive toxicity	No classification is required for Reproductive toxicity
Specific target organ toxicity – single exposure (STOT SE)	No data available
Specific target organ toxicity – repeated exposure (STOT RE)	No data available
Aspiration hazard	No data available

SECTION 12: Ecological information

12.1	Toxicity	Toxicity on Fish: Species: Pimephales promelas Duration: 96 h LC50: >100mg/l Toxicity on Invertebrates: Species: Daphnia magna Duration: 48 h EC50: >100 mg/l Toxicity on Algae: Species: Algae Duration: 72 h EC50: >100 mg/l (Data extrapolated from similar products or equivalent analogues)	
12.2	Persistence and degradability	Test Method OECD 301D (Ready Biodegradability: Closed Bottle Test) 28 d	Degree of Removal 91%
12.3	Bio accumulative potential	No data available	

12.4	Mobility in Soil	No data available
12.5	Results of PBT and vPvB assessment	This substance does not fulfil the criteria for PBT or vPvB
12.6	Other adverse effects	No information available

13. Disposal considerations

13.1	Waste treatment methods	All local and national regulations should be followed. Consult regulatory officials for disposal requirement. For small quantities flush away with plenty of water. For large quantities send to special waste disposal system and burn in proper incinerator. This product should not be dumped in public storage and sewers / waterways.
13.2	US EPA RCRA Status	This material when discarded is not a hazardous waste as that term is defined by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261.
13.2.1	US EPA RCRA Hazardous waste number	Not applicable
13.2.2	Compound/Characteristic	Not applicable
13.3	Disposal considerations	Incineration

SECTION 14: Transport information

The Product does not meet for classification as dangerous good according to local or International transport regulations. The product is classified as not dangerous goods.

	US DOT (Road & Air) ADR/RID/GGVSE Canada TDG	**Mexican regulation for Land transport of Hazardous materials and wastes**	**(IMDG-Code/GGVSee**	**ICAO-IATA/DGR**
14.1 UN Number	-	-	-	-
14.2 UN Proper Shipping Name	Not applicable	Not applicable	Not applicable	Not applicable
14.3 Transport Hazard Class	Not applicable	Not applicable	Not applicable	Not applicable
14.4 Packing Group	-	-	-	-
14.5 Environmental hazards	No	No	No	No
14.6 Special precautions for user	-	-	-	-
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available				

15. Regulatory information

Inventory status: All components are on the following inventories: US TSCA, Canadian DSL, EU EINECS

US Federal Regulations

US TSCA (12b): This product does not contain any chemical substances subjected to the US Toxic Substance Control Act (TSCA) 12 (b) export reporting requirements.

Product is compliance with TSCA regulation.

SARA Hazard Notification:

Hazard Categories Under Title III Rules (40 CFR 370)	Not applicable
SARA Section 311/312 Hazard Categories	Not applicable

SARA Title III Section 302 Extremely Hazardous Substances	None
SARA Title III Section 313 Toxic Chemicals	This product does not contain any chemical with known CAS numbers that exceeds the threshold (De Minimis) reporting levels established SARA Title III, Section 313.
US EPA CERCLA Hazardous Substances (40 CFR 302)	None
OSHA Process Safety Management, 29 CFR 1910.119	Not applicable
CERCLA Reportable Quantity	Not applicable
California proposition 65	To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.
Hazardous air pollutants (Clean Air Act)	The product does not contain any hazardous air pollutants as listed under section 112 of the Clean Air Act
Clean water act (CWA)	None listed

The product does not contains any chemicals which are listed as a carcinogen by IARA, NTP & OSHA

NFPA Rating

HMIS	Health: 1 Flammability:0 Physical hazards:0 Special Hazard: NA
HAZCOM Standard Status	This material is not considered to be hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other International regulations
Canada:

Canadian WHMIS classification	Not regulated or classified
National Pollutants Release Inventory (NPRI)	The product does not contain any components listed on Environment Canada's NPRI
Priority Substances List 1 and Priority Substances List 2 (PSL 1 and PSL2)	The product does not contain any components listed on Environment Canada's PSL1 and PSL2

EU regulations

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Not a hazardous substance or mixture according Regulation (EC) No. 1272/2008
Classification according to Directive 67/548/EEC	Not classified
SVHC or restricted substances list as per REACH regulation	No substances on this list have been intentionally added to the product. Concentration of impurities, if any, is expected to be below 0.1%.

Water Hazard Class (Germany) WGK: Slightly water endangering

SECTION 16: Other information

Indication of changes	All sections revised to meet OSHA-GHS requirements
Last revision date	-

Procedure used to derive the classification according GHS Revision no: 3 (adopted guidance by OSHA)

Classification	**Judgement**
Not classified	On basis of weight of evidence

Abbreviations and acronyms	CSR = Chemical Safety Report DNEL = Derived No Effect Level LD50 = Median lethal dose PNEC = Predicted No Effect Concentration STEL = Short term exposure limit TLV = Threshold limits TWA = time weighted average IATA = International Air Transport Association IMDG = International Maritime Dangerous Goods Code PBT = Persistent Bioaccumulative Toxic vPvB = very Persistent and very Bioaccumulative GHS = OSHA = Occupational Safety and Health Administration IARC = International Agency for Research NTP = The National Toxicology program TSCA = US Toxic Substance Control Act
Key literature references for data	Environmental properties and safety assessment of organic surface-active polyamines detergent and water treatment Applications----W.E. Gledhill and T.C.J. Feijtel
Relevant Risk Phrases (in full)	Not applicable
Relevant H Statements (in full)	Not applicable
Further information	-

Although the information and recommendations are presented in good faith and believed to be correct as of the date hereof, Anodamine Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Anodamine Inc, be responsible for damages of any nature whatsoever resulting from the use of or reliance upon this information. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which this information refers. The data here is based on literature information.

For all-purpose the English version is final ***Version No: 1 US-GHS 2014***

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier **ALUM COMPONENT**

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 Southwest, Inc.

Address 610 Fisher Road
Longview, TX 75604

Telephone 903-759-7151

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 1

Serious eye damage/eye irritation Category 1

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes severe skin burns and eye damage. Causes serious eye damage.

Precautionary statement

Prevention Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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. Wash contaminated clothing before reuse.

Storage 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 23.91% of the mixture consists of component(s) of unknown acute oral toxicity. 37.38% of the mixture consists of component(s) of unknown acute dermal toxicity.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
SULFURIC ACID		7664-93-9	23.912
Other components below reportable levels			76.088

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

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. 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. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. 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	Foam. 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. 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	Respiratory protection is “only required” when sprays are present in the air.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). 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
SULFURIC ACID (CAS 7664-93-9)	PEL	1 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
SULFURIC ACID (CAS 7664-93-9)	TWA	0.2 mg/m3	Thoracic fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
SULFURIC ACID (CAS 7664-93-9)	TWA	1 mg/m3

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

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) and a face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other Wear appropriate chemical resistant clothing.

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 TO YELLOW TO GREENISH BLUE

Odor FAINT TO SHARP

Odor threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range 306.51 °F (152.51 °C) estimated

Flash point 200.0 °F (93.3 °C)

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure 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	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	11.08 lbs/gal
Explosive properties	Not explosive.
Flammability class	Combustible IIIB estimated
Oxidizing properties	Not oxidizing.
Percent volatile	62.62 % estimated
Specific gravity	1.33

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	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
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	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not likely, due to the form of the product.

Chronic effects 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.

Components		Species	Test Results
SULFURIC ACID (CAS 7664-93-9)			
Aquatic			
Crustacea	EC50	Daphnia magna	> 100 mg/l, 48 hours
	LC50	Aesop shrimp (Pandalus montagui)	42.5 mg/l, 48 hours
		Cockle (Cerastoderma edule)	200 - 500 mg/l, 48 hours
		Common shrimp, sand shrimp (Crangon crangon)	70 - 80 mg/l, 48 hours
		Green or European shore crab (Carcinus maenas)	70 - 80 mg/l, 48 hours
Fish	LC50	Starry, european flounder (Platichthys flesus)	100 - 330 mg/l, 48 hours
		Western mosquitofish (Gambusia affinis)	42 mg/l, 24 hours
			42 mg/l, 48 hours
			42 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

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 UN3264

UN proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINUM SULFATE)

Transport hazard class(es)

Class 8

Subsidiary risk -

Packing group III

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

ERG number 154

Transportation information on packaging may be different from that listed.

IATA

UN number UN3264

UN proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINUM SULFATE)

Transport hazard class(es)

Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	154
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN2796
UN proper shipping name	SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT

IATA; IMDG

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)

SULFURIC ACID (CAS 7664-93-9) Listed.

SARA 304 Emergency release notification

SULFURIC ACID (CAS 7664-93-9) 1000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
SULFURIC ACID	7664-93-9	1000	1000		

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
SULFURIC ACID	7664-93-9	23.912

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.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

SULFURIC ACID (CAS 7664-93-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

SULFURIC ACID (CAS 7664-93-9) 20 %WV

DEA Exempt Chemical Mixtures Code Number

SULFURIC ACID (CAS 7664-93-9) 6552

US state regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (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 Toxic Chemical Substances (TCS)	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 02-28-2019

Revision date 03-01-2019

Version # 02

HMIS® ratings Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings Health: 3
Flammability: 1
Instability: 1

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.

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • **Calcium Hypochlorite Granular**

Synonyms • All-Clear™ ChlorRight; All-Clear™ Shock Clear; AmeriChlor Calcium Hypochlorite Granules; Assalt 73; BioGuard Burn Out 73; BioGuard CLC Classic; Ca(OCl)2; Cal Hypo Granules; Calcium Hypochlorite; Calcium Hypochlorite Granular; Ideal Pool Products Super Shock 73; Induclor™; Induclor™ 70; More Chlor 65; Nature's Way Super Pool Shock; Pittclor 70; Pittclor®; Power Powder® Plus; Power Powder® Pro; Prestochlor™; Pro Team Power 73; ProGuard; Refresh Dry Chlorinating Granular; Re-Fresh®; Regal®; Repak™ + Granules; Repak™ Dry Chlorinating Granules; Super Pool Shock; Super Shock-It®; Super Shock-It® 73; Super Zappit™; Sustain® Shock Treatment; Tropiclear; Vanguard® Plus Calcium Hypochlorite Granules; Zappit™; Zappit™ 73

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) • Industrial Application, Chlorine Disinfectant, Pool Chemicals

1.3 Details of the supplier of the safety data sheet

Manufacturer • Axiall, LLC

2801 Post Oak Blvd., Suite 600
Houston, TX 77056
United States
www.westlake.com
SDSinfo@westlake.com

Telephone (General) • +1 713-960-9111

1.4 Emergency telephone number

Manufacturer • +1 304-455-6882

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]

2.1 Classification of the substance or mixture

CLP • Oxidizing Solids 2 - H272
Acute Toxicity Oral 4 - H302
Skin Corrosion 1B - H314
Serious Eye Damage 1 - H318
Hazardous to the aquatic environment Acute 1 - H400

2.2 Label Elements

CLP

DANGER

Hazard statements •
H272 - May intensify fire; oxidizer
H302 - Harmful if swallowed
H318 - Causes serious eye damage
H314 - Causes severe skin burns and eye damage.
H400 - Very toxic to aquatic life

Precautionary statements

Prevention •
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220 - Keep/Store away from clothing and other combustible materials.
P221 - Take any precaution to avoid mixing with combustibles
P260 - Do not breathe dusts or mists.
P264 - Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response •
P370+P378 - In case of fire: Use appropriate media to extinguish.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P321 - Specific treatment, see supplemental first aid information.
P363 - Wash contaminated clothing before reuse.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P312 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.
P330 - Rinse mouth.
P331 - Do NOT induce vomiting.
P391 - Collect spillage.

Storage/Disposal •
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information • 0 - 3 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other Hazards

CLP • According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

UN GHS Revision 3

According to: UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Third Revised Edition

2.1 Classification of the substance or mixture

UN GHS •
Oxidizing Solids 2
Acute Toxicity Oral 4
Skin Corrosion 1B
Serious Eye Damage 1
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Hazardous to the aquatic environment Acute 1
Hazardous to the aquatic environment Chronic 1

2.2 Label elements

UN GHS

DANGER

Hazard statements •
May intensify fire; oxidizer
Harmful if swallowed
Causes serious eye damage
May cause respiratory irritation
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects
Causes severe skin burns and eye damage.

Precautionary statements

Prevention •
Keep away from heat.
Keep/Store away from clothing and other combustible materials.
Take any precaution to avoid mixing with combustibles .
Do not breathe dusts or mists.
Avoid breathing dust, fume, gas, mist, vapours and/or spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.

Response •
In case of fire: Use appropriate media for extinction.
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.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
Specific treatment, see supplemental first aid information.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
Collect spillage.

Storage/Disposal •
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information •
0-3 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

UN GHS •
According to the Globally Harmonized System for Classification and Labeling (GHS) this product is considered hazardous

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 •
Oxidizing Solids 2
Acute Toxicity Oral 4
Skin Corrosion 1B
Serious Eye Damage 1
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements •
May intensify fire; oxidizer
Harmful if swallowed
Causes severe skin burns and eye damage.
Causes serious eye damage
May cause respiratory irritation

Precautionary statements

Prevention •
Keep away from heat.
Keep/Store away from clothing and other combustible materials.
Take any precaution to avoid mixing with combustibles
Do not breathe dust.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

Response •
In case of fire: Use appropriate media to extinguish.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER/doctor/ physician if you feel unwell.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
Specific treatment, see supplemental first aid information.
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/ physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage/Disposal •
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information •
0 - 3 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

OSHA HCS 2012 •
Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS 2015

2.1 Classification of the substance or mixture

WHMIS 2015 •
Oxidizing Solids 2
Acute Toxicity Oral 4
Skin Corrosion 1B
Serious Eye Damage 1
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation

2.2 Label elements

WHMIS 2015

DANGER

Hazard statements •
May intensify fire; oxidizer

Harmful if swallowed
Causes severe skin burns and eye damage.
Causes serious eye damage
May cause respiratory irritation

Precautionary statements

Prevention

- Keep away from heat
  Take any precaution to avoid mixing with combustibles
  Keep away from clothing and other combustible materials.
  Do not breathe dust.
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Use only outdoors or in a well-ventilated area.
  Wear protective gloves/protective clothing/eye protection/face protection.
  Wear fire resistant or flame retardant clothing.

Response

- In case of fire: Use appropriate media to extinguish.
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  Call a POISON CENTER/doctor if you feel unwell.
  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/doctor.
  Specific treatment, see supplemental first aid information.
  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage/Disposal

- Store in a well-ventilated place. Keep container tightly closed.
  Store locked up.
  Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Supplemental information

- 0 - 3 percent of this product consists of an ingredient of unknown toxicity.

2.3 Other hazards

WHMIS 2015

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance.

3.2 Mixtures

Composition				
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**
Calcium hypochlorite	**CAS:**7778-54-3 **EC Number:**231-908-7 **EU Index:**017-012-00-7	65% TO 76%	NDA	**EU CLP:** Annex VI, Table 3.1: Ox. Sol. 2, H272; Acute Tox. 4 *, H302; Skin Corr. 1B, H314; Aquatic Acute 1, H400 **UN GHS Revision 3:** Ox. Sol. 2; Skin Corr. 1B; Eye Dam. 1; Acute Tox. 4 (orl); STOT SE 3: Resp. Irrit; Aquatic Acute 1; Aquatic Chronic 1 **OSHA HCS 2012:** Ox. Sol. 2; Skin Corr. 1B; Eye Dam. 1; Acute Tox. 4 (Orl); STOT SE 3: Resp. Irrit. **WHMIS 2015:** Ox. Sol. 2; Skin Corr. 1B; Eye Dam. 1; Acute Tox. 4 (Orl); STOT SE 3: Resp. Irrit.

Sodium chloride	**CAS:**7647-14-5 **EC Number:**231-598-3	10% TO 30%	Ingestion/Oral-Rat LD50 • 3000 mg/kg	**EU CLP:** Eye Irrit. 2, H319 **UN GHS Revision 3:** Acute Tox. 5 (oral); Eye Irrit. 2; Skin Irrit. 3 **OSHA HCS 2012:** Eye Irrit. 2 **WHMIS 2015:** Eye Irrit. 2
Calcium hydroxide	**CAS:**1305-62-0 **EC Number:**215-137-3	1% TO 3%	Ingestion/Oral-Rat LD50 • 7340 mg/kg	**EU CLP:** Eye Dam. 1, H318; Skin Corr. 1, H314; Aquatic Chronic 3, H412 **UN GHS Revision 3:** Eye Dam. 1; Skin Corr. 1; **OSHA HCS 2012:** Skin Corr. 1; Eye Dam. 1 **WHMIS 2015:** Skin Corr. 1; Eye Dam. 1
Calcium chlorate	**CAS:**10137-74-3 **EINECS:**233-378-2	0% TO 3%	NDA	**EU CLP:** Ox. Sol. 2, H272 **UN GHS Revision 3:** Ox. Sol. 2; **OSHA HCS 2012:** Ox. Sol. 2 **WHMIS 2015:** Ox. Sol. 2
Calcium carbonate	**CAS:**471-34-1 **EC Number:**207-439-9	1% TO 3%	Ingestion/Oral-Rat LD50 • 6450 mg/kg	**EU CLP:** Skin Irrit. 2, H315; Eye Irrit. 2, H319 **UN GHS Revision 3:** Skin Irrit. 2; Eye Irrit. 2 **OSHA HCS 2012:** Skin Irrit. 2; Eye Irrit. 2 **WHMIS 2015:** Skin Irrit. 2; Eye Irrit. 2
Calcium chloride	**CAS:**10043-52-4 **EC Number:**233-140-8 **EU Index:**017-013-00-2	0.1%	Ingestion/Oral-Rat LD50 • 1 g/kg	**EU CLP:** Annex VI, Table 3.1: Eye Irrit. 2, H319 **UN GHS Revision 3:** Eye Irrit. 2; Acute Tox. 4 (orl); **OSHA HCS 2012:** Eye Irrit. 2; Acute Tox. 4 (Orl) **WHMIS 2015:** Eye Irrit. 2; Acute Tox. 4 (Orl)

See Section 16 for full text of H-statements.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

- Move victim to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration. Do not use mouth-to-mouth method if victim 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 poison control center or doctor for further treatment advice.

Skin

- For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing. Call a poison center or doctor for treatment advice.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. Remove contact lenses, if present after the first 5 minutes. Continue Rinsing. Call a poison control center or doctor for further treatment advice.

Ingestion

- If swallowed, seek medical attention immediately from poison control center or doctor. Have a person sip a glass of water, if able to swallow. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless told to do so by the poison control center or doctor.

4.2 Most important symptoms and effects, both acute and delayed

- If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during, or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Safety Data Sheet information available. Never give anything by mouth to an unconscious or convulsing person. Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- Probable mucosal damage may contraindicate the use of gastric lavage. All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
- Drench with large quantities of water only.

Unsuitable Extinguishing Media
- Do not use dry chemicals or foams. Product supplies own oxygen, therefore attempts to smother fire with a wet blanket, carbon dioxide, dry chemical extinguisher or other means are not effective. Product has the potential to cause a violent reaction if dry chemical fire extinguishers are used.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
May explode from heat or contamination.
May ignite combustibles (wood, paper, oil, clothing, etc.)
Runoff may create fire or explosion hazard.
Some will react explosively with hydrocarbons (fuels)
These substances will accelerate burning when involved in a fire.
Emits toxic fumes under fire conditions.
Chlorine gas may be generated.

Hazardous Combustion Products
- Depending on conditions, decomposition products may include the following materials: carbon oxides; halogenated compounds; metal oxide/oxides.

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
Wear positive pressure self-contained breathing apparatus (SCBA).
SMALL FIRES: Move containers from fire area if you can do it without risk.
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.
No action shall be taken involving any personal risk or without suitable training.
This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Use extreme caution in handling spilled material. Ventilate the area before entry. Use spark-proof tools and explosion-proof equipment. Do not walk through spilled material. Do not mix this product with any other chemicals, including any other pool chemicals of any kind, such as other disinfection or "shock" pool products. Contamination with moisture, acids, organic matter, other chemicals (including, but not limited to cleaning chemicals and other pool chemicals), petroleum or paint products or other easily combustible materials may start a chemical reaction with generation of heat, liberation of hazardous gases and possible violent reaction leading to fire or explosion. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up
- Avoid generating dust.

Measures

If fire or decomposition occurs in area of spill, immediately douse with plenty of water. Otherwise, sweep up all visible material using a clean (new, if possible), dry shovel and broom and immediately dissolve material in a water-filled container.
Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed.

6.4 Reference to other sections

- Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use extreme caution in handling spilled material. Use only with adequate ventilation. Keep away from combustible material. Strong oxidizer. Contact with other material may cause fire. Use spark-proof tools and explosion-proof equipment. Do not mix this product with any other chemicals, including any other pool chemicals of any kind, such as other disinfection or "shock" pool products. Contamination with moisture, acids, organic matter, other chemicals (including, but not limited to cleaning chemicals and other pool chemicals), petroleum or paint products or other easily combustible materials may start a chemical reaction with generation of heat, liberation of hazardous gases and possible violent reaction leading to fire or explosion. Always add product to large quantities of water to fully dissolve product. Do not pour water into product, always add product to water. Use only a clean (new, if possible), dry scoop made of metal or plastic each time product is taken from the container. Do not use with stabilized chlorine or bromine tablet chemical feeders. Do not add this product to any dispensing device containing remnants of any other product or pool chemical. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not ingest. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Empty containers retain product residue and can be hazardous. Do not reuse container. Residual material remaining in empty container can react to cause fire. Thoroughly flush empty container with water then destroy by placing in trash collection.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Ventilate enclosed areas. Keep only in the original container. Keep container closed. Separate from acids, alkalis, reducing agents and combustibles. Product is an NFPA Class 3 oxidizer which can cause a severe increase in fire intensity. Store in a cool, dry, well-ventilated place. If product becomes contaminated or decomposes do not reseal container. If possible isolate container in open air or well-ventilated area.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada British Columbia	Canada Ontario	Canada Quebec	NIOSH
Calcium chloride (10043-52-4)	TWAs	Not established	Not established	5 mg/m3 TWA	Not established	Not established
Calcium hydroxide (1305-62-0)	TWAs	5 mg/m3 TWA	5 mg/m3 TWA	5 mg/m3 TWA	5 mg/m3 TWAEV	5 mg/m3 TWA
Calcium carbonate (471-34-1)	TWAs	Not established	Not established	Not established	10 mg/m3 TWAEV (total dust)	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)

Exposure Limits/Guidelines (Con't.)		
	Result	OSHA
Calcium hydroxide (1305-62-0)	TWAs	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

8.2 Exposure controls

Engineering Measures/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.

Personal Protective Equipment

Respiratory

- If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Eye/Face

- Wear chemical splash goggles and face shield.

Skin/Body

- Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. HANDS: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. GLOVES: Nitrile, neoprene, and butyl rubber.

Environmental Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
STEV = Short Term Exposure Value
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures
TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Various colored solid (granular solid) with a slight chlorine odor.
Color	Various colors.	Odor	Slight chlorine odor.
Odor Threshold	No data available		
General Properties			
Boiling Point	170 to 180 °C(338 to 356 °F) Decomposes	Melting Point/Freezing Point	No data available
Decomposition Temperature	170 to 180 °C(338 to 356 °F)	pH	Alkaline
Specific Gravity/Relative Density	No data available	Bulk Density	1 to 1.07 g/cm³
Water Solubility	Soluble 100 %	Viscosity	No data available
Volatility			

Vapor Pressure	No data available	Vapor Density	No data available
Evaporation Rate	No data available	Volatiles (Wt.)	0 %
Volatiles (Vol.)	0 %		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	No data available
Self-Accelerating Decomposition Temperature (SADT)	60 °C(140 °F)	Flammability (solid, gas)	No data available
Environmental			
Octanol/Water Partition coefficient	No data available		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- The product may not be stable under certain conditions of storage or use. Product decomposes at approximately 170-180°C (338-356°F) releasing oxygen gas and some chlorine gas.

10.3 Possibility of hazardous reactions

- Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following: contact with combustible materials, contact with acids/ammonia. Reactions may include the following: risk of causing or intensifying fire, liberation of toxic gas.

10.4 Conditions to avoid

- Heating may cause a fire or explosion. Excessive heat will cause decomposition resulting in the release of oxygen and chlorine gas.

10.5 Incompatible materials

- Highly reactive or incompatible with the following materials: moisture, combustible materials, organic materials, metals, acids, alkalis, oxidizing materials, reducing materials, ammonia, petroleum products, paint products, wood and paper, and pool chemicals. Acid or ammonia contamination will release toxic gases.

10.6 Hazardous decomposition products

- Depending on conditions, product slowly releases chlorine gas.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Calcium chloride (0.1%)	10043-52-4	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 1 g/kg
Calcium hydroxide (1% TO 3%)	1305-62-0	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 7340 mg/kg; **Irritation:** Eye-Rabbit • 10 mg • Severe irritation
Calcium carbonate (1% TO 3%)	471-34-1	**Irritation:** Eye-Rabbit • 750 µg 24 Hour(s) • Severe irritation
		Acute Toxicity: Ingestion/Oral-Rat LD50 • 3000 mg/kg;

Sodium chloride (10% TO 30%)	7647-14-5	**Irritation:** Eye-Rabbit • 100 mg 24 Hour(s) • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Mild irritation; **Multi-dose Toxicity:** Ingestion/Oral-Rat TDLo • 201.6 g/kg 6 Week(s)-Intermittent; *Vascular*:**BP elevation not characterized in autonomic section**; **Mutagen:** Unscheduled DNA synthesis • Ingestion/Oral-Rat • 16800 mg/kg 4 Week(s)-Continuous; **Reproductive:** Ingestion/Oral-Rat TDLo • 56400 mg/kg (5D pre-21D post); *Reproductive Effects:Maternal Effects*:**Postpartum**; *Reproductive Effects:Effects on Newborn*:**Biochemical and metabolic**
Calcium hypochlorite (65% TO 76%)	7778-54-3	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 850 mg/kg

GHS Properties	Classification
Acute toxicity	**EU/CLP** • Acute Toxicity - Oral 4 - ATEmix (Orl) = 1118 mg/kg **UN GHS 3** • Acute Toxicity - Oral 4 - ATEmix (Orl) = 1054 mg/kg **OSHA HCS 2012** • Acute Toxicity - Oral 4 - ATEmix (Orl) = 1054 mg/kg **WHMIS 2015** • Acute Toxicity - Oral 4 - ATEmix (Orl) = 1054 mg/kg
Skin corrosion/Irritation	**EU/CLP** • Skin Corrosion 1B **UN GHS 3** • Skin Corrosion 1B **OSHA HCS 2012** • Skin Corrosion 1B **WHMIS 2015** • Skin Corrosion 1B
Serious eye damage/Irritation	**EU/CLP** • Serious Eye Damage 1 **UN GHS 3** • Serious Eye Damage 1 **OSHA HCS 2012** • Serious Eye Damage 1 **WHMIS 2015** • Serious Eye Damage 1
Skin sensitization	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available
Respiratory sensitization	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available
Aspiration Hazard	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available
Carcinogenicity	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available
Germ Cell Mutagenicity	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available
Toxicity for Reproduction	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available
	EU/CLP • No data available **UN GHS 3** • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract

STOT-SE	Irritation **OSHA HCS 2012** • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation **WHMIS 2015** • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
STOT-RE	**EU/CLP** • No data available **UN GHS 3** • No data available **OSHA HCS 2012** • No data available **WHMIS 2015** • No data available

Potential Health Effects

Inhalation

Acute (Immediate)
- May cause corrosive burns - irreversible damage. May cause respiratory irritation.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Skin

Acute (Immediate)
- Causes severe skin burns.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Eye

Acute (Immediate)
- Causes serious eye damage. Direct contact with the eyes can cause irreversible damage, including blindness.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Ingestion

Acute (Immediate)
- Harmful or fatal if swallowed. May cause irreversible damage to mucous membranes.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal disturbances.

Carcinogenic Effects
- This material contains components that may cause cancer, however, based on regulatory criteria this material is not classified as a carcinogen.

Key to abbreviations

LD = Lethal Dose

TD = Toxic Dose

Section 12 - Ecological Information

12.1 Toxicity

	CAS	
Calcium Hypochlorite Granular	NDA	**Aquatic Toxicity-Fish:** 96 Hour(s) LC50 *Bluegill - Lepomis macrochirus* 57-60 µg/L [Fresh water] Comments: Calcium hypochlorite 96 Hour(s) LC50 *Atlantic silverside - Menidia menidia* 37 µg/L [Marine water] Comments: Calcium hypochlorite 96 Hour(s) LC50 *Bluegill - Lepomis macrochirus* 1294600 µg/L [Fresh water] Comments: Sodium chloride 96 Hour(s) LC50 *Guppy - Poecilia reticulata* 356 mg/L [Marine water] Comments: Calcium hydroxide 96 Hour(s) NOEC *Guppy - Poecilia reticulata* 56 mg/L [Marine water] Comments: Calcium hydroxide **Aquatic Toxicity-Crustacea:** 48 Hour(s) EC50 *Water flea - Daphnia magna* 402600-469200 µg/L [Fresh water] Comments: Sodium chloride 48 Hour(s) EC50 *Water flea - Daphnia magna* 0.073-0.079 µg/L [Marine water] Comments: Calcium hypochlorite

- LC50: 0.088 mg/L (96 hr, Bluegill Sunfish) Very toxic to aquatic life. Do not allow to enter groundwater, surface water or drains.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste

- The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed. If this is not possible, material may be neutralized. Please contact Axiall Corporation Emergency Response team for guidance at 304-455-6882. Note: Only properly neutralized material should be flushed to sewer. Unneutralized material can cause environmental damage to receiving water or can interfere with treatment plant operation. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. Empty containers retain product residue and can be hazardous. Residual material remaining in empty container can react to cause fire. Thoroughly flush empty container with water then destroy by placing in trash collection. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN2880	Calcium hypochlorite, hydrated	5.1	II	Marine Pollutant
TDG	UN2880	CALCIUM HYPOCHLORITE, HYDRATED	5.1	II	Marine Pollutant
IMO/IMDG	UN2880	CALCIUM HYPOCHLORITE, HYDRATED	5.1	II	Marine Pollutant
IATA/ICAO	UN2880	Calcium hypochlorite, hydrated	5.1	II	Chronic Aquatic Toxicity

14.6 Special precautions for user

- Under 49 CFR (DOT), non-bulk U.S. domestic shipments by ground do not require Marine Pollutant markings or labels, nor does Marine Pollutant need to be mentioned on shipping papers.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

- Data lacking.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications • Acute, Fire

FIFRA – Pesticide Labeling

This chemical is a pesticide product registered by the Environmental Protection Agency and is regulated under FIFRA. Pesticide products are exempt from TSCA and not subject to inventory requirements.

- This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**EU EINECS**	**EU ELNICS**	**TSCA**
Calcium chloride	10043-52-4	Yes	No	Yes	No	Yes
Calcium hydroxide	1305-62-0	Yes	No	Yes	No	Yes
Calcium carbonate	471-34-1	Yes	No	Yes	No	Yes
Calcium chlorate	10137-74-3	No	No	Yes	No	No
Calcium hypochlorite	7778-54-3	Yes	No	Yes	No	Yes
Sodium chloride	7647-14-5	Yes	No	Yes	No	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Calcium chloride	10043-52-4	D2B
• Calcium hypochlorite	7778-54-3	C, E
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	E
• Sodium chloride	7647-14-5	Uncontrolled product according to WHMIS classification criteria
• Calcium carbonate	471-34-1	Uncontrolled product according to WHMIS classification criteria

Canada - WHMIS - Ingredient Disclosure List

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	1 %
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

Environment

Canada - CEPA - Priority Substances List

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed

• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	10 lb final RQ; 4.54 kg final RQ
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - TSCA (Toxic Substances Control Act) - Section 12(b) - Export Notification

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed

• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
• Calcium chloride	10043-52-4	Not Listed
• Calcium hypochlorite	7778-54-3	Not Listed
• Calcium chlorate	10137-74-3	Not Listed
• Calcium hydroxide	1305-62-0	Not Listed
• Sodium chloride	7647-14-5	Not Listed
• Calcium carbonate	471-34-1	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

15.3 Other Information

Section 16 - Other Information

Relevant Phrases (code & full text)

- H315 - Causes skin irritation
  H319 - Causes serious eye irritation
  H412 - Harmful to aquatic life with long lasting effects

Revision Date

- 17/July/2018

Preparation Date

- 13/October/2015

Disclaimer/Statement of Liability

- The technical data given herein 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. No guarantee is being given as to the end use performance. The product is sold on the basis that buyers test the product for their specific purposes. This information related to the material designated and may not be valid for such material used in combination with any other materials or in any process.

Key to abbreviations

NDA = No Data Available

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier **CITRIC ACID 50% 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 Southwest, Inc.

Address 610 Fisher Road
Longview, TX 75604

Telephone 903-759-7151

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 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 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

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

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. 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 original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station. Eye wash fountain and emergency showers are recommended.

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	Face shield is recommended. Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	For prolonged or repeated skin contact use suitable protective 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	NONE
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	10.42 lbs/gal 1.25 g/ml
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	50 % estimated
Specific gravity	1.25

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	No dangerous reaction known under conditions of normal use.
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	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	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

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

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.

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 1910.1001-1052)

Not regulated.

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 2016 (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 Toxic Chemical Substances (TCS)	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 05-29-2015

Revision date 06-26-2019

Version # 11

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 Hazard(s) identification: Hazard statement
Hazard(s) identification: Response
Hazard(s) identification: GHS Symbols
Exposure controls/personal protection: Eye/face protection
Exposure controls/personal protection: Hand protection
Exposure controls/personal protection: Other
Exposure controls/personal protection: PPE Symbols
Toxicological information: Eye contact
Toxicological information: Eye contact

Safety Data Sheet

acc. to US OSHA GHS

Printing date 04/26/2018 **Reviewed on 04/26/2018**

1 Identification

. **Product identifier**

. **Trade name: Disodiumphosphate**
Article number: BK1120B

. **Article number:** BK1120B
. **CAS Number:**
7558-79-4
. **Application of the substance / the mixture**
Formulation additive
Corrosion inhibitors
Detergents
Water treatment
Water conditioner
Additive for cosmetic or pharmaceutic preparations
Food additives
. **Uses advised against** Uses other than those recommended.
. **Manufacturer/Supplier:**
ICL
622 Emerson Road - Suite 500
St. Louis, Missouri 63141, USA

. **Information department:** General information: +1 800 244 6169 (Worldwide)
. **Emergency telephone number:**
In USA call CHEMTREC: (800) 424 9300
Outside the USA, including ships at sea, call CHEMTREC's international and maritime telephone number (collect calls accepted):
+1 (703) 527-3887
In Canada call CANUTEC: 1 613 996 6666

2 Hazard(s) identification

. **Classification of the substance or mixture** Void
. **GHS label elements** Void
. **Hazard pictograms** Void
. **Signal word** Void
. **Hazard statements** Void

3 Composition/information on ingredients

. **Chemical characterization: Substances**
. **CAS No. Description**
7558-79-4 Disodiumphosphate

4 First-aid measures

. **Description of first aid measures**
. **General information:** Immediately remove any clothing soiled by the product.
. **After inhalation:** Supply fresh air; consult doctor in case of complaints.
. **After skin contact:**
Wash with water and acidic soap.
If symptoms persist consult doctor.
. **After eye contact:** Rinse opened eye for 15 minutes under running water. If symptoms persist, consult a doctor.
. **After swallowing:**
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.

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Trade name: Disodiumphosphate
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Do not induce vomiting.
. **Most important symptoms and effects, both acute and delayed**
Gastric or intestinal disorders
Diarrhea
. **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

. **Extinguishing media**
. **Suitable extinguishing agents:**
Use fire fighting measures that suit the environment.
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
. **For safety reasons unsuitable extinguishing agents:** Water with full jet
. **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Phosphorus oxides (PxOy)
sodium oxide
. **Advice for firefighters**
. **Protective equipment:**
Wear self-contained respiratory protective device.
Do not inhale explosion gases or combustion gases.
. **Additional information**
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

. **Personal precautions, protective equipment and emergency procedures**
Avoid formation of dust.
Wear protective clothing.
. **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
. **Methods and material for containment and cleaning up:** Pick up mechanically.
. **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
. **Protective Action Criteria for Chemicals**
. **PAC-1:**
Substance is not listed.
. **PAC-2:**
Substance is not listed.
. **PAC-3:**
Substance is not listed.

7 Handling and storage

. **Handling:**
. **Precautions for safe handling**
Prevent formation of dust.
Ensure good ventilation/exhaustion at the workplace.

(Contd. on page 3)

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Trade name: Disodiumphosphate
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(Contd. of page 2)

. **Information about protection against explosions and fires:**
The product is not flammable.
No special measures required.

. **Conditions for safe storage, including any incompatibilities**
. **Storage:**
. **Further information about storage conditions:**
Store in cool, dry conditions in well sealed receptacles.
This product is hygroscopic.
. **Specific end use(s)** No further relevant information available.

* 8 Exposure controls/personal protection

. **Additional information about design of technical systems:** No further data; see item 7.

. **Control parameters**
. **Components with limit values that require monitoring at the workplace:** Not required.
. **Additional information:** The lists that were valid during the creation were used as basis.

. **Exposure controls**
. **Appropriate engineering controls** Provide suction extractors if dust is formed.
. **Personal protective equipment:**
. **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
. **Respiratory Protection:**
Use suitable respiratory protective device in case of insufficient ventilation.
Dust mask according to DIN EN 140 or 149 (FFP1 or FFP2)
. **Protection of hands:** Protective gloves
. **Material of gloves**
Butyl rubber, BR
Fluorocarbon rubber (Viton)
Nitrile rubber, NBR
Natural rubber, NR
Chloroprene rubber, CR
. **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
. **Eye protection:** Safety glasses
. **Skin Protection** Light weight protective clothing

9 Physical and chemical properties

. **Information on basic physical and chemical properties**
. **General Information**
. **Appearance:**

Form:	Powder
Color:	White
. **Odor:**	Odorless
. **Odor threshold:**	Not applicable
. **pH-value:**	~9
. **Change in condition**	
Melting point/Melting range:	~ 250 °C (~482 °F)

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Boiling point/Boiling range:	Undetermined.
. **Flash point:**	Not applicable
. **Flammability (solid, gaseous):**	Product is not flammable.
. **Auto-ignition temperature:**	Not applicable
. **Decomposition temperature:**	Not determined
. **Auto igniting:**	Not applicable
. **Danger of explosion:**	Product does not present an explosion hazard.
. **Explosion limits:**	
Lower:	Not applicable
Upper:	Not applicable
. **Oxidizing properties**	None
. **Vapor pressure:**	Not applicable
. **Density:**	
Bulk density:	~ 1000 kg/m³
Evaporation rate	Not applicable
. **Solubility in / Miscibility with**	
Water at 20 °C (68 °F):	~ 70 g/l
. **Partition coefficient (n-octanol/water):**	~ - 2 log POW
. **Viscosity:**	
Dynamic:	Not applicable
Kinematic:	Not applicable
VOC content:	0.00 %
. **Other information**	No further relevant information available.

10 Stability and reactivity

. **Reactivity** No further relevant information available.
. **Chemical stability**
. **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
. **Possibility of hazardous reactions** Exothermic reaction.
. **Conditions to avoid** Exposure to moisture.
. **Incompatible materials:**
Exothermic reaction with acid.
alkaloids
lead acetate
chloral hydrate
pyrogallol
resorcinol
Phenazone
. **Hazardous decomposition products:**
In case of fire, the following can be released:
Phosphorus oxides (PxOy)
sodium oxide

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. **Additional information:** This product is hygroscopic.

* 11 Toxicological information

. **Information on toxicological effects**
. **Acute toxicity:**
. **LD/LC50 values that are relevant for classification:**

7558-79-4 Disodiumphosphate
Oral LD50 >2,000 mg/kg (rat) (OECD 420)
Dermal LD50 >2,000 mg/kg (rat) (OECD 402 (READ ACROSS))

. **Primary irritant effect:**
. **on the skin:** Based on available data, the classification criteria are not met.
. **on the eye:** Based on available data, the classification criteria are not met.
. **Sensitization:** Based on available data, the classification criteria are not met.
. **Additional toxicological information:**

. **Carcinogenic categories**
. **IARC (International Agency for Research on Cancer)**
Substance is not listed.
. **NTP (National Toxicology Program)**
Substance is not listed.
. **OSHA-Ca (Occupational Safety & Health Administration)**
Substance is not listed.

12 Ecological information

. **Toxicity**
. **Aquatic toxicity:**

7558-79-4 Disodiumphosphate
LC50 (96 h) >100 mg/L (rainbow trout) (OECD 203 (READ-ACROSS))
EC50 (48 h) >100 mg/L (daphnia magna) (OECD 202 (READ ACROSS))

. **Persistence and degradability** Inorganic salts are basicly not biodegradable.
. **Other information:** Easy elimination possible by flocculation or adsorption by sludge.
. **Behavior in environmental systems:**
. **Components:**
Product should not get in higher quantities into waste water because it may act as a plant nutrient and precipitate heavy metals.
. **Bioaccumulative potential**
Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.
. **Mobility in soil** No further relevant information available.
. **Ecotoxical effects:**
. **Other information:**
No COD, no BOD, no AOX
No VOC according to EC-directive 1999/13/EC
. **Additional ecological information:**
. **General notes:**
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
. **Other adverse effects** No further relevant information available.

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Trade name: Disodiumphosphate
Article number: BK1120B

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13 Disposal considerations

. **Waste treatment methods**
. **Recommendation:**
Can be disposed of with household garbage after consulting with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations.
Smaller quantities can be disposed of with household waste.
The data provided in this section is for information only. Please apply the appropriate classification for your waste.

This material when discarded is not a hazardous waste as that term is defined by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261. Dry material may be landfilled or recycled in accordance with local, state and federal regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

. **Uncleaned packagings:**
. **Recommendation:**
Dispose of packaging according to regulations on the disposal of packagings.
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.
Packagings that cannot be cleansed are to be disposed of in the same manner as the product.
. **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

. **UN-Number**
. **DOT, ADN, IMDG, IATA** Void
. **UN proper shipping name**
. **DOT, ADR/RID/ADN, ADN, IMDG, IATA** Void
. **Transport hazard class(es)**

. **DOT, ADR/RID/ADN, ADN, IMDG, IATA**
. **Class** Void
. **Packing group**
. **DOT, ADR/RID/ADN, IMDG, IATA** Void
. **Environmental hazards:** Not applicable.
. **Special precautions for user** Not applicable.
. **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
. **Transport/Additional information:** Not dangerous according to the above specifications.

. **DOT**
. **Hazardous substance:** 5000 lbs, 2270 kg
. **UN "Model Regulation":** Void

* 15 Regulatory information

. **Safety, health and environmental regulations/legislation specific for the substance or mixture**
. **TSCA (Toxic Substances Control Act):** All ingredients are listed.

. **National regulations:** Not determined
. **Other regulations, limitations and prohibitive regulations**
. **Chemical inventories:**
Europe (EINECS): yes
Australia (AICS): yes
Canada (DSL): yes
Japan (ENCS): yes

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China (IECSC): yes
Korea (KECI): yes
USA (TSCA): yes
Philippines (PICCS): yes
New Zealand (NZIOCL): yes

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

. **Department issuing SDS:** Hazard Communication
. **Contact:** MSDS@icl-group.com
. **Date of preparation / last revision** 04/26/2018 / 5
. **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
. **Sources** source ECHA: European Chemicals Agency, http://echa.europa.eu/
. *** Data compared to the previous version altered.**

SAFETY DATA SHEET

SECTION 1	IDENTIFICATION

Product

Name: High Calcium Quicklime (all sizes)

Other Names: Lime, Pebble Lime; Hi-cal Lime, Hi-cal quicklime, Calcium Oxide

Recommended Uses: Steel, Pulp/ Paper, Water treatment, pH adjustment, FGT, Construction

Company Identification:

US Operations:

Lhoist North America, Inc.
5600 Clearfork Main St, Ste. 300
Fort Worth, TX 76109
817-732-8164

Canadian Operations:

Lhoist North America of Canada, Inc.
20303-102B Ave.
Langley, BC V1M 3H1
604-888-4333

Emergency Phone Number:

Chemtrec 1-800-424-9300

SECTION 2	HAZARDS(S) IDENTIFICATION

Classification

Eye Damage – Category 1

Carcinogen – Category 1

Skin Irritation – Category 2

Specific Target Organ Toxicity Single Exposure – Category 3 (Respiratory System)

Specific Target Organ Toxicity Repeat Exposure – Category 1 (Respiratory System)

Labeling:

Pictograms:

Signal Word(s): Danger

Hazard Statements: Causes serious eye damage.

Causes skin irritation.

May cause respiratory irritation.

Causes damage to lungs through prolonged or repeated exposure when inhaled.

May cause cancer through inhalation.

Reacts vigorously with water and releases heat, which can ignite combustible material.

Precautionary Statements:

Wear protective gloves and eye protection. Wash exposed skin thoroughly after handling. Do not breathe dust. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product.

If on skin: wash exposed skin with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash it before reuse.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention immediately. If inhaled: Remove person to fresh air and keep comfortable for breathing. Seek medical attention if you feel unwell.

If exposed or concerned: Get medical advice

Dispose of contents or containers in accordance with applicable regulations. Do not use water on material spills.

Other Hazards: Quicklime reacts vigorously with water, releasing heat that may ignite combustible materials in certain instances.

SECTION 3	COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical Name: Calcium Oxide

Common names and synonyms: Lime, Hi-cal Lime, Burnt Lime, Calcium Oxide

Chemical Identity	CAS #	Concentration, % Wt.
Calcium Oxide	1305-78-8	> 87
Magnesium Oxide	1309-48-4	< 5
Crystalline Silica	14808-60-7	< 2

SECTION 4	FIRST AID MEASURES

Eye Contact: Contact can cause severe irritation or burning of eyes, including permanent damage. Immediately flush eyes with generous amounts of water for as long as needed. This may take several minutes. Pull back the eyelid to ensure that all lime dust has been washed out. Seek medical attention immediately. Do not rub eyes.

Inhalation: This product can cause severe irritation of the respiratory system. Move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration.

Skin Contact: Contact can cause severe irritation or burning of skin, especially in the presence of moisture. Wash exposed area with large amounts of water. Seek medical attention immediately.

Ingestion: This product can cause severe irritation or burning of gastrointestinal tract if swallowed. Do not induce vomiting. Seek medical attention immediately. Never give anything by mouth unless instructed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Irritation of skin, eyes, gastrointestinal tract or respiratory tract. Long-term exposure by inhalation may cause permanent damage. This product contains crystalline silica, which has been classified by IARC as (Group I) carcinogenic to humans when inhaled. Inhalation of silica can also cause a chronic lung disorder, silicosis.

Note to Physician: Provide general supportive measures and treat symptomatically.

SECTION 5	FIREFIGHTING MEASURES

Extinguishing Media

Appropriate Extinguishing Media: Use dry chemical fire extinguisher

Inappropriate Extinguishing Media: Do not use water or halogenated compounds, except that large amounts of water may be used to deluge small quantities of quicklime.

Firefighting

Fire Hazards: Quicklime is not combustible or flammable. However, quicklime reacts vigorously with water and can release sufficient energy to ignite combustible products. Quicklime is not considered to be an explosive hazard, although reaction with water or other incompatible materials may rupture containers.

Hazardous Combustion Products: None

Special Protective Equipment and Fire Fighting Instructions: Keep personnel away from and upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear), and respiratory protection (SCBA).

SECTION 6	ACCIDENTAL RELEASE MEASURES

Personal Precautions: Do NOT use water on bulk material spills. Lime reacts vigorously with water, releasing heat. Use proper protective equipment.

Environmental Precautions: For large spills, as much as possible, avoid the generation of dusts. Prevent release to sewers or waterways.

Methods and Materials for Containment and Cleaning Up:

Small Spills: Use dry methods to collect spilled materials. Avoid generating dust. Do not clean up with compressed air. Store collected materials in dry, sealed plastic or metal containers. Residue on surfaces may be washed with water or vinegar solution.

Large Spills: Use dry methods to collect spilled materials. Evacuate area downwind of clean-up operations to minimize dust exposure. Store spilled materials in dry, sealed plastic or metal containers.

SECTION 7	HANDLING AND STORAGE

Precautions for Safe Handling: Keep in tightly closed containers. Protect containers from physical damage. Avoid direct skin contact with the material.

Conditions for Safe Storage, Including any Incompatibilities: Store in a cool, dry, and well-ventilated location. Do not store near incompatible materials (see Section 10 below). Keep away from moisture. Do not store or ship in aluminum containers.

SECTION 8	EXPOSURE CONTROLS/ PERSONAL PROTECTION

Control Parameters:

Component	CAS #	Exposure Limits
Calcium Oxide	1305-78-8	OSHA PEL: 5 mg/m3 ACGIH TLV: 2 mg/m3
Magnesium Oxide	1309-48-4	OSHA PEL: 15 mg/m3 ACGIH TLV: 10 mg/m3
Crystalline Silica	14808-60-7	OSHA PEL: 0.050 mg/m3 as an 8 hr. TWA (respirable) ACGIH TLV: 0.025 mg/m3 (respirable)

Appropriate Engineering Controls: Provide ventilation adequate to maintain PELs.

Personal Protection

Respiratory Protection: Use NIOSH approved respirators if airborne concentration exceeds PEL.

Eye Protection: Use safety glasses with side shields or safety goggles. Contact lenses should not be worn when working with lime products.

Skin Protection: If there is a risk of skin contact, wear appropriate clothing and gloves to prevent contact.

Other: Eye wash fountain and emergency showers are recommended.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State:	Solid
Color:	White or grayish-white
Odor:	Odorless
Odor Threshold:	N/ A
pH:	12.44 @ 25° C when made into a saturated solution
Melting Point:	4658° F, 2570° C
Initial Boiling Point:	5162° F, 2850° C
Freezing Point:	N/ A
Flash Point:	N/ A
Evaporation Rate:	N/ A

Flammability (solid, gas): Non-flammable

Explosion Limits:	N/ A
Vapor Pressure:	N/ A
Vapor Density:	N/ A
Relative Density:	1.6 – 2.8 g/ cm^3 (apparent)

Solubility(ies): Reacts with water to produce $Ca(OH)_2$ with large amounts of heat. Solubility is 1.2 g/L at 25° C

Partition coefficient: Relatively insoluble

Auto-ignition Temperature: N/ A

Decomposition Temperature: N/ A

Viscosity: N/A

SECTION 10	STABILITY AND REACTIVITY

Reactivity: Quicklime reacts vigorously with water to form calcium hydroxide, generating heat. See also Incompatibility below.

Chemical Stability: Quicklime is chemically stable.

Possibility of Hazardous Reactions: See reactivity above

Conditions to Avoid: Do not allow quicklime to come into contact with incompatible materials.

Incompatible Materials: Quicklime should not be mixed or stored with the following materials, due to the potential for violent reaction and release of heat:

Water and acids (unless in a controlled process)
Reactive Fluoridated Compounds
Reactive Brominated Compounds
Reactive Powdered Metals
Organic Acid Anhydrides
Nitro-Organic Compounds
Reactive Phosphorous Compounds
Interhalogenated Compounds

Hazardous Decomposition Products: None

SECTION 11	TOXICOLOGICAL INFORMATION

Health Effects: see First Aid discussion in Section 4

Routes of Exposure: see First Aid discussion in Section 4

Symptoms Related to Exposure: see First Aid discussion in Section 4

Carcinogen Listing: Quicklime is not listed by MSHA, OSHA, or IARC as a carcinogen, but this product contains crystalline silica, which has been classified by IARC as (Group I) carcinogenic to humans when inhaled.

SECTION 12	ECOLOGICAL INFORMATION

Ecotoxicity: Because of the high pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems in high concentrations.

Persistence and Degradability: Reacts with atmospheric CO_2 over time to form calcium carbonate

Bioaccumulation Potential: This material shows no bioaccumulation effect or food chain concentration toxicity.

Mobility in Soil: Minimal mobility in soil. Reacts with clay portion of soil to form calcium silicates and calcium aluminates

Other Adverse Effects: This material is alkaline and if released into water or moist soil will cause an increase in pH

SECTION 13	DISPOSAL CONSIDERATIONS

Disposal Recommendations: Dispose of in accordance with all applicable federal, state, and local environmental regulations.

Regulatory Disposal Information: If this product as supplied, and unmixed, becomes a waste, it will not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act.

SECTION 14	TRANSPORT INFORMATION

UN Number: UN1910

UN Proper Shipping Name: Calcium Oxide

Transport Hazard Class(es): When transported by air only: Hazard Class 8 - Corrosive

Packing Group: When transported by air only: Packing Group III

Marine Pollutant (y/n): This material is alkaline and if released into water or moist soil will cause an increase in pH.

Special Precautions: When being transported by air, quicklime is classified in the Department of Transportation (DOT) regulations as a hazardous material (49 CFR 172.101). For aircraft transport only, Calcium Oxide is classified as Hazard Class 8-Corrosive, UN1910, Packing Group III. For passenger aircraft, the maximum net quantity allowed per container is 25 kg. For cargo aircraft, the maximum net quantity allowed per container is 100 kg. For quantities greater than 25 kg up to and including 100 kg, the container shall be labeled with CARGO AIRCRAFT ONLY.) Because express carriers (i.e., Federal Express, Airborne Express, and United Parcel Service) ship by air, quicklime presented to these carriers for shipment must be packaged, marked, and labeled in accordance with IATA requirements,

and must be accompanied by the appropriate shipping documentation. Only personnel trained and certified under applicable DOT Hazardous Materials Regulations (contained in Title 49 of the Code of Federal Regulations) may prepare any quicklime product for air transport. Quicklime is not classified as a hazardous material by DOT when transported by means other than by air.

SECTION 15	REGULATORY INFORMATION

National Chemical Inventory Listings:

All chemical ingredients are listed on the USEPA TSCA Inventory List.

US Regulations:

RCRA Hazardous Waste Number: not listed (40 CFR 261.33)
RCRA Hazardous Waste Classification (40 CFR 261): not classified
CERCLA Hazardous Substance (40 CFR 302.4) unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311 (b) (4); CWA, Sec. 307(a), CAA, Sec. 112
CERCLA Reportable Quantity (RQ) not listed.
SARA 311/312 Codes: not listed.
SARA Toxic Chemical (40 CFR 372.65): not listed.
SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed, Threshold Planning Quantity (TPQ): not listed

Specific State Regulations: Consult State and Local authorities for guidance.

⚠WARNING: This product can expose you to chemicals, including crystalline silica, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov
These naturally occurring impurities may also be regulated by other States.

Canadian DSL: Listed

Canadian NPRI: None of the components are listed

CEPA Toxic Substances: None of the components are listed

SECTION 16	OTHER INFORMATION

Prepared By: Lhoist North America Technical Services

Date Prepared: January 27, 2020

Revision: 2020-1

Abbreviations:

N/A	Not Available or Not Applicable
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association

ACGIH	ACGIH American Conference of Governmental Industrial Hygienists
TWA	Time Weighted Average
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
REL	Recommended Exposure Limit

Lhoist North America provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must consult their own technical and legal advisors and/ or exercise their own judgment in determining its appropriateness for a particular purpose. Lhoist North America makes no representations or warranties, either express or implied, including without limitation and warranties of merchantability or fitness for a particular purpose with respect to the Information set forth herein or the product(s) to which the information refers. Accordingly, Lhoist North America will not be responsible or liable for any claims, losses or damages resulting from the use of or reliance upon or failure to use this information.

NALCO Water
An Ecolab Company

SAFETY DATA SHEET

NALCO® 7330

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NALCO® 7330
Other means of identification	:	Not applicable.
Recommended use	:	BIOCIDE
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Company 1601 W. Diehl Road Naperville, Illinois 60563-1198 USA TEL: (630)305-1000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	01/22/2019

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Inhalation)	:	Category 4
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1
Skin sensitization	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Harmful if inhaled.

Precautionary Statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or doctor/ physician. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse.
Storage:
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Magnesium Nitrate	10377-60-3	1 - 5
5-Chloro-2-Methyl-4-Isothiazolin-3-one	26172-55-4	1.1
2-Methyl-4-Isothiazolin-3-one	2682-20-4	0.4

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products	:	Carbon oxides nitrogen oxides (NOx) Hydrogen chloride metal oxides
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and 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. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. DEACTIVATION SOLUTION - prepare a fresh solution of 5% sodium bicarbonate and 5% sodium hypochlorite in water (i.e. add 50 grams of sodium bicarbonate per 1 liter of household bleach, seal container then shake well for 1 minute) away from the immediate area of spill. Prepare 10 times the estimated volume of the residual spill. The materials and equipment for preparing solutions should be kept available for use in areas where spills may occur.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.
Suitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: HDPE (high density polyethylene), PTFE, Perfluoroelastomer, Polyvinylidene difluoride, Polypropylene, CPVC (rigid), Plexiglass
Unsuitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Carbon steel, Stainless Steel 304, Stainless Steel 316L, Nitrile, Brass, Nylon, Neoprene, EPDM, Fluoroelastomer, Plasite 7122

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	:	Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	:	Safety goggles Face-shield
Hand protection	:	Wear the following personal protective equipment: butyl-rubber Nitrile rubber Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	:	No personal respiratory protective equipment normally required. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	colourless
Odour	:	pungent
Flash point	:	Not applicable.
pH	:	2 - 5
Odour Threshold	:	no data available
Melting point/freezing point	:	-4 °C, ASTM D-1177
Initial boiling point and boiling range	:	100 °C, Method: ASTM D 86
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	similar to water
Relative vapour density	:	no data available
Relative density	:	1.026, (25 °C),
Density	:	8.5 lb/gal

Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition	:	no data available
Viscosity, dynamic	:	3 mPa.s (25 °C)
Viscosity, kinematic	:	no data available
Molecular weight	:	no data available
VOC	:	0 %, EPA Method 24

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Hazardous decomposition products	:	In case of fire, hazardous decomposition products may be produced such as: Carbon oxides nitrogen oxides (NOx) metal oxides Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction.
Ingestion	:	Causes digestive tract burns.
Inhalation	:	Harmful if inhaled. May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 rat: 13.7 mg/l Exposure time: 4 hrs Test atmosphere: vapour Test substance: Product LC50: 13.7 mg/l Test atmosphere: vapour Acute toxicity estimate: 20.39 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Very toxic to aquatic life.

Product

Toxicity to fish	:	LC50 Cyprinodon variegatus (sheepshead minnow): 32.000 mg/l Exposure time: 96 hrs Test substance: Product

LC50 Pimephales promelas (fathead minnow): 8 mg/l
Exposure time: 144 hrs
Test substance: Product (estimated)

LC50 Lepomis macrochirus (Bluegill sunfish): 18.67 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Rainbow Trout: 12.67 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Inland Silverside: 16.62 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Cyprinodon variegatus (sheepshead minnow): 0.3 mg/l
Exposure time: 96 hrs
Test substance: Active Substance

NOEC Cyprinodon variegatus (sheepshead minnow): 18.000 mg/l
Exposure time: 96 hrs
Test substance: Product

NOEC Inland Silverside: 12.5 mg/l
Exposure time: 96 hrs
Test substance: Product

Toxicity to daphnia and other aquatic invertebrates : LC50 Mysid Shrimp (Mysidopsis bahia): 18.000 mg/l
Exposure time: 96 hrs
Test substance: Product

LC50 Ceriodaphnia dubia: 13 mg/l
Exposure time: 48 hrs
Test substance: Product

LC50 Daphnia magna (Water flea): 8.7 - 12 mg/l
Exposure time: 48 hrs
Test substance: Product (estimated)

LC50 Blue Mussel: 865 mg/l
Exposure time: 48 hrs
Test substance: Product (estimated)

LC50 American Oyster: 1,730 mg/l
Exposure time: 48 hrs
Test substance: Product (estimated)

NOEC Mysid Shrimp (Mysidopsis bahia): < 10 mg/l
Exposure time: 96 hrs
Test substance: Product

NOEC Ceriodaphnia dubia: 10 mg/l
Exposure time: 48 hrs

Test substance: Product (estimated)

Toxicity to algae : EC50 Marine Algae (Skeletonema costatum): 0.003 mg/l
Exposure time: 72 h
Test substance: Active Substance

EC50 Green Algae (Pseudokirchneriella subcapitata, previously Selenastrum capricornutum): 0.018 mg/l
Exposure time: 72 h
Test substance: Active Substance

Persistence and degradability

Total Organic Carbon (TOC) : 7,850 mg/l

Chemical Oxygen Demand (COD): 20,000 mg/l

Biochemical Oxygen Demand (BOD):

Incubation Period	Value	Test Descriptor
	20 mg/l	

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 30 - 50%
Soil : 50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

no data available

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.
Disposal methods : The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in

an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s) : 5-Chloro-2-Methyl-4-Isothiazolin-3-one
UN/ID No. : UN 3265
Transport hazard class(es) : 8
Packing group : II

Air transport (IATA)

Proper shipping name : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s) : 5-Chloro-2-Methyl-4-Isothiazolin-3-one
UN/ID No. : UN 3265
Transport hazard class(es) : 8
Packing group : II

Sea transport (IMDG/IMO)

Proper shipping name : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s) : 5-Chloro-2-Methyl-4-Isothiazolin-3-one
UN/ID No. : UN 3265
Transport hazard class(es) : 8
Packing group : II

*Marine pollutant : 5-Chloro-2-Methyl-4-Isothiazolin-3-one

* Note: This product is regulated as a Marine Pollutant when shipped by Rail or Highway (in bulk quantities), and when shipped by water in all quantities.

Section: 15. REGULATORY INFORMATION

TSCA list : No substances are subject to a Significant New Use Rule.

The following substance(s) is/are subject to TSCA 12(b) export notification requirements: 5-Chloro-2-Methyl-4-Isothiazolin-3-one

EPA Reg. No. : 1706-153

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This product does not contain a RQ substance, or this product contains a substance with a RQ, however the calculated RQ exceeds the reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitisation

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop. 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

United States TSCA Inventory
This product is exempted under TSCA and regulated under FIFRA. The inerts are on the Inventory List.

Australia. Industrial Chemical (Notification and Assessment) Act
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

Canadian Domestic Substances List (DSL)
Substances regulated under the Pest Control Products Act are exempt from CEPA New Substance Notification requirements.

Japan. ENCS - Existing and New Chemical Substances Inventory
All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

Korea. Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

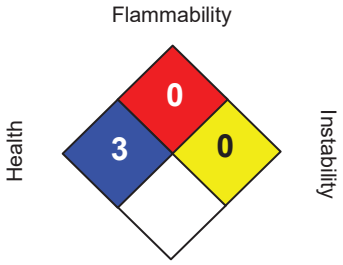
China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996,and are listed on or are exempt from the New Zealand Inventory of Chemicals.

Taiwan Chemical Substance Inventory
All substances in this product comply with the Taiwan Existing Chemical Substances Inventory (ECSI).

Section: 16. OTHER INFORMATION

NFPA:



Special hazard.

HMIS III:

HEALTH	3*
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	01/22/2019
Version Number	:	1.6
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an SDS visit www.nalco.com and request access.

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier **SODIUM BISULFITE 38% 1-WAY**

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 Southwest, Inc.

Address 610 Fisher Road
Longview, TX 75604

Telephone 903-759-7151

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 1

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes skin irritation. Causes serious eye damage.

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. Immediately call a poison center/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash 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 36% of the mixture consists of component(s) of unknown acute dermal toxicity. 64% 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	%
SULFUROUS ACID, SODIUM SALT (1:1)		7631-90-5	36
Other components below reportable levels			64

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

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 immediately.

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. Permanent eye damage including blindness could result. 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. 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 Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
SULFUROUS ACID, SODIUM SALT (1:1) (CAS 7631-90-5)	TWA	5 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
SULFUROUS ACID, SODIUM SALT (1:1) (CAS 7631-90-5)	TWA	5 mg/m3

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. Provide eyewash station. Eye wash fountain and emergency showers are recommended.

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) and a face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other Wear appropriate chemical resistant clothing.

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 TO HAZY YELLOW

Odor PUNGENT SULFUR DIOXIDE

Odor threshold Not available.

pH Not available.

Melting point/freezing point 50 °F (10 °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	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	11.26 lbs/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	64 % estimated
Specific gravity	1.35

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	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye damage.
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. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Not known.

Components	Species	Test Results
SULFUROUS ACID, SODIUM SALT (1:1) (CAS 7631-90-5)		
Acute		
Oral		
LD50	Rat	2 g/kg

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	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	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.

Components	Species	Test Results
SULFUROUS ACID, SODIUM SALT (1:1) (CAS 7631-90-5)		
Aquatic		
Fish	LC50	Western mosquitofish (Gambusia affinis) 240 mg/l, 96 hours

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	UN2693
UN proper shipping name	BISULFITES, AQUEOUS SOLUTIONS, N.O.S.
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
ERG number	154

Transport information on packaging may be different from that listed. Transportation information on packaging may be different from that listed.

IATA

UN number	UN2693
UN proper shipping name	BISULFITES, AQUEOUS SOLUTIONS, N.O.S.
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	154
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

Not regulated as dangerous goods.

DOT; IATA

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)

SULFUROUS ACID, SODIUM SALT (1:1) (CAS 7631-90-5) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

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 2016 (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

Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Toxic Chemical Substances (TCS)	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	04-06-2016
Revision date	10-09-2018
Version #	03
HMIS® ratings	Health: 3 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	This document has undergone significant changes and should be reviewed in its entirety.

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier **SODIUM HYDROXIDE 50% DIA 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 Southwest, Inc.

Address 610 Fisher Road
Longview, TX 75604

Telephone 903-759-7151

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 1

Serious eye damage/eye irritation Category 1

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes severe skin burns and eye damage. Causes serious eye damage.

Precautionary statement

Prevention Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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. Wash contaminated clothing before reuse.

Storage 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 50% of the mixture consists of component(s) of unknown acute oral 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	%
SODIUM HYDROXIDE (NA(OH))		1310-73-2	50
Other components below reportable levels			50

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

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. 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. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. 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 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	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. 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	Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). 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
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)	Ceiling	2 mg/m3

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

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) and a face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Other Wear appropriate chemical resistant clothing.

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 COLORLESS TO SLIGHTLY COLORED

Odor ODORLESS

Odor threshold Not available.

pH 14

Melting point/freezing point 58 °F (14.44 °C)

Initial boiling point and boiling range 1371.2 °F (744 °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	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	12.76 lbs/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	50 % estimated
Specific gravity	1.53

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 acids.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
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	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects 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.

Components		Species	Test Results
SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours

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 UN1824
UN proper shipping name SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group II
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
ERG number 154

Transport information on packaging may be different from that listed. Transportation information on packaging may be different from that listed.

IATA

UN number UN1824
UN proper shipping name SODIUM HYDROXIDE SOLUTION
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group II
Environmental hazards No.
ERG Code 154

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1824
UN proper shipping name SODIUM HYDROXIDE SOLUTION (SODIUM HYDROXIDE (NA(OH)))
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group II
Environmental hazards
Marine pollutant No.
EmS F-A, S-B
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

DOT

IATA; IMDG

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)

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Acute toxicity (any route of exposure)
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 2016 (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.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

SODIUM HYDROXIDE (NA(OH)) (CAS 1310-73-2)

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 Toxic Chemical Substances (TCS)	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 05-03-2016

Revision date 01-11-2019

Version # 07

HMIS® ratings Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings Health: 3
Flammability: 0
Instability: 1

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 Physical and chemical properties: Color

BRENNTAG

SAFETY DATA SHEET

1. Identification

Other means of identification None known.

Product identifier **SULFURIC ACID 66 BE**

Recommended use ALL PROPER AND LEGAL PURPOSES

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Brenntag Southwest, Inc.

Address 610 Fisher Road
Longview, TX 75604

Telephone 903-759-7151

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 1

Serious eye damage/eye irritation Category 1

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes severe skin burns and eye damage. Causes serious eye damage.

Precautionary statement

Prevention Do not breathe mist/vapors. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. 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. Wash contaminated clothing before reuse.

Storage 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 93% of the mixture consists of component(s) of unknown acute oral toxicity. 93% of the mixture consists of component(s) of unknown acute dermal toxicity. 100% 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	%
SULFURIC ACID		7664-93-9	93
Other components below reportable levels			7

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. 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. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. 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	Foam. 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 breathe mist/vapors. 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	Respiratory protection is “only required” when sprays are present in the air.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in tightly closed container. 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
SULFURIC ACID (CAS 7664-93-9)	PEL	1 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
SULFURIC ACID (CAS 7664-93-9)	TWA	0.2 mg/m3	Thoracic fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
SULFURIC ACID (CAS 7664-93-9)	TWA	1 mg/m3

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

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) and a face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

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 TO LIGHT YELLOW

Odor NO ODOR

Odor threshold Not available.

pH 0

Melting point/freezing point -31 °F (-35 °C)

Initial boiling point and boiling range 530.06 °F (276.7 °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	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Density	15.30 lbs/gal 1.83 g/ml
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	7 % estimated
Specific gravity	1.83

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	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.

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.

Chronic effects 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.

Product		Species	Test Results
SULFURIC ACID 66 BE			
Aquatic			
Crustacea	EC50	Daphnia magna	107.5269 mg/l, 48 hours estimated
Fish	LC50	Western mosquitofish (Gambusia affinis)	45.1613 mg/l, 96 hours estimated

Components		Species	Test Results
SULFURIC ACID (CAS 7664-93-9)			
Aquatic			
Crustacea	EC50	Daphnia magna	> 100 mg/l, 48 hours
	LC50	Aesop shrimp (Pandalus montagui)	42.5 mg/l, 48 hours
		Cockle (Cerastoderma edule)	200 - 500 mg/l, 48 hours
		Common shrimp, sand shrimp (Crangon crangon)	70 - 80 mg/l, 48 hours
		Green or European shore crab (Carcinus maenas)	70 - 80 mg/l, 48 hours
Fish	LC50	Starry, european flounder (Platichthys flesus)	100 - 330 mg/l, 48 hours
		Western mosquitofish (Gambusia affinis)	42 mg/l, 24 hours
			42 mg/l, 48 hours
			42 mg/l, 96 hours

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

UN number UN1830

UN proper shipping name SULFURIC ACID

Transport hazard class(es)

Class 8

Subsidiary risk -

Packing group II
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
ERG number 137
Transport information on packaging may be different from that listed. Transportation 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.

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)

SULFURIC ACID (CAS 7664-93-9) Listed.

SARA 304 Emergency release notification

SULFURIC ACID (CAS 7664-93-9) 1000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
SULFURIC ACID	7664-93-9	1000	1000		

SARA 311/312 Hazardous chemical Yes

Classified hazard categories
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
SULFURIC ACID	7664-93-9	93

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.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

SULFURIC ACID (CAS 7664-93-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

SULFURIC ACID (CAS 7664-93-9) 20 %WV

DEA Exempt Chemical Mixtures Code Number

SULFURIC ACID (CAS 7664-93-9) 6552

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.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

SULFURIC ACID (CAS 7664-93-9)

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 05-05-2015

Revision date 02-21-2020

Version # 41

HMIS® ratings
Health: 3
Flammability: 0
Physical hazard: 0

NFPA ratings
Health: 3
Flammability: 0
Instability: 1
Special hazards: ~~W~~

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Revision information This document has undergone significant changes and should be reviewed in its entirety.

ICL
Where needs take us

Safety Data Sheet

RESPONSIBLE CARE®
OUR COMMITMENT TO SUSTAINABILITY

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Identification

Product Name: TRISODIUM PHOSPHATE ANHYDROUS
Reference Number: AST10064
Date: August 31, 2015

Use of the substance or preparation

Industrial and household cleaners, water conditioner, photograph developer bath ingredient, paint remover, denture cleaners, emulsifier and pH control agent for foods. May be used to treat drinking water.

Company/Undertaking Identification

ICL PERFORMANCE PRODUCTS LP
622 Emerson Road - Suite 500
St. Louis, Missouri 63141

Emergency telephone

In USA call CHEMTREC: 1 800 424 9300

Outside the USA, including ships at sea, call CHEMTREC's international and maritime telephone number (collect calls accepted): +1 (703) 527-3887

In Canada call CANUTEC: 1 613 996 6666

General Information: +1 800 244 6169 (Worldwide)

2. HAZARDS IDENTIFICATION

Classification of the substance/preparation

GHS

Warning

GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.

Prevention:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	CAS No.	%w/w	EINECS No.
Trisodium Phosphate Anhydrous	7601-54-9	100	231-509-8

4. FIRST AID MEASURES

General

Treatment is symptomatic and supportive.

Eye contact

In case of contact with eyes, immediately flush the eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation, pain, swelling, lacrimation, or photophobia persists.

Skin contact

Immediately remove this material from skin and wash with plenty of water. Remove contaminated clothing. Wash clothing and thoroughly clean shoes before reuse.

Inhalation

Inhalation of the dust may cause coughing and sneezing. Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion

If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical attention immediately. Contact a Poison Control Center. Swallowing this product may cause severe nausea, vomiting, abdominal discomfort, and burning sensation.

5. FIRE FIGHTING MEASURES

Extinguishing media

Non-combustible. No special requirement. To extinguish fire use water spray, dry chemical, carbon dioxide, or appropriate foam.

Unsuitable extinguishable media

Non-combustible. No special requirement.

Exposure hazards

No special considerations.

Protective equipment

As a general precaution, firefighters and others exposed, wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid unnecessary exposure and remove all material from eyes, skin and clothing.

Environmental precautions

Small quantities: Avoid discharge into the environment
Large quantities: Avoid discharge into the environmental – See section 15

Method for cleaning up

Sweep, scoop or vacuum spill material, contaminated soil and other contaminated material and place in clean, dry containers for removal. If possible, complete cleanup on a dry basis.

7. HANDLING AND STORAGE

Handling

Do not get in eyes, on skin, or on clothing. Avoid breathing dust. Do not taste or swallow. Use only in adequate ventilation. Wash thoroughly after handling. Remove material from clothing.

Engineering measures

Ensure adequate ventilation. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment.

Storage

Store in cool, dry place to maintain product performance. Product should be stored in sealed containers and be kept free of water due to product corrosivity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure limit

OSHA and ACGIH have not established specific exposure limits for this material. However, OSHA and ACGIH have established limits for particulates not otherwise regulated (PNOR) and particulates not otherwise classified (PNOC) which are the least stringent exposure limits applicable to dusts.

ACGIH TLV	10 mg/m^3 (inhalable) 8-hr TWA, 3 mg/m^3 (respirable) 8-hr TWA
OSHA PEL	15 mg/m^3 (total dust) 8-hr TWA, 5 mg/m^3 (respirable) 8-hr TWA

Respiratory protection

Avoid breathing dust. In case of insufficient ventilation, use approved respiratory protective equipment as described in OSHA 29 CFR 1910.134 or European Standard EN149.

Hand/Skin protection

Wear protective gloves is recommended; wash hands and contaminated skin thoroughly after handling.

Eye protection

Wear appropriate protective eyeglasses or chemical safety goggles as described in OSHA eye and face regulation in 29 CFR 1910.133 or European Standard EN166.

9. PHYSICAL AND CHEMICAL PROPERTIES

a) Appearance: White free-flowing granular product
b) Odor: None
c) Odor threshold: N/A
d) pH: (as a 1% solution): 11.5 – 12.0
e) Melting point/freezing point: 1340 °C
f) Initial boiling point and boiling range: Undetermined.
g) Flash point: Undetermined
h) Evaporation rate: Undetermined.
i) Flammability (solid, gas) : Undetermined.
j) Upper/lower flammability or explosive limits: Undetermined.
k) Vapor pressure: Undetermined.
l) Vapor density: Undetermined.
m) Relative density: 2.54
n) Solubility(ies) : (g/100g $_{H2O}$): 5.4 @ 0 °C
14.5 @ 25 °C
23.3 @ 40 °C
54.3 @ 60 °C
94.6 @ 100 °C
o) Partition coefficient: n-octanol/water: Undetermined.
p) Auto-ignition temperature: Undetermined.
q) Decomposition temperature: Undetermined.
r) Viscosity: Undetermined.

Chemical Formula: Na_3PO_4

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

Product is stable under normal conditions of storage and handling.

Conditions to avoid

Store product in dry areas away from moisture. This product could be corrosive to aluminum surfaces due to high pH. When wet, mild steel and brass may be corroded.

Materials to avoid

Incompatible with strong mineral acids, aluminum and moisture.

Hazardous decomposition

Oxides of sodium and phosphorus may form when heated to decomposition

11. TOXICOLOGICAL INFORMATION

Data from ICL Performance Products LP single-dose (acute) animal studies with this material are given below:

Oral - rat LD_{50}:	4,150 mg/kg; slightly toxic
Dermal - rabbit LD_{50}:	>7,940 mg/kg; practically nontoxic
Eye Irritation - rabbit:	corrosive
Skin Irritation - rabbit:	2.2/8.0 (24-hr. exp.); slightly irritating

This product produced no mutagenic effects is standard assays using fruit flies.

12. ECOLOGICAL INFORMATION

Environmental toxicity

The following data have been classified using the criteria adopted by the European Economic Community (EEC) for aquatic organism toxicity.

Invertebrate: 50-hr EC_{50} Daphnia magna:	177 mg/L; Practically Nontoxic
Warmwater fish: 96-hr LC_{50} Bluegill sunfish:	220 mg/L; Practically Nontoxic
Coldwater fish: 96-hr LC_{50} Rainbow trout:	120 mg/L; Practically Nontoxic

No definitive algal data was available for this material.

Environmental fate

Inorganic compounds in contact with the soil, sub-surface or surface waters may be taken up by plants and utilized as essential nutrients. Phosphates may also form precipitates, usually with calcium or magnesium. The resultant compounds are insoluble in water and become a part of the soil or sediment. The term biodegradability, as such, is not applicable to inorganic compounds.

13. DISPOSAL CONSIDERATIONS

This material when discarded is not a hazardous waste as that term is defined by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261. Dry material may be landfilled or recycled in accordance with local, state and federal regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Road/Rail, Sea and Air

IMDG/UN	Not regulated.
ICAO/IATA passenger aircraft	UN 3077, Environmentally hazardous substance, solid, n.o.s. (contains sodium phosphate, tribasic), 9, PG III*
RID/ADR	Not regulated.
Canadian TDG	Not regulated.
US DOT	UN 3077, Environmentally hazardous substance, solid, n.o.s. (contains sodium phosphate, tribasic), 9, PG III*

* Applies only to a package containing a Reportable Quantity (RQ) of 5000 lbs or more.

15. REGULATORY INFORMATION

Chemical Inventory

USA TSCA:	Listed	Australia	Listed
Canada DSL:	Listed	Korea	Listed
EC:	Listed	Philippines	Listed
Japan	Listed	China	Listed

Other information

Germany: WGK = 1

WHMIS Classification: D2(B) – Materials Causing Other Toxic Effects

SARA Hazard Notification

Hazard Categories under Title III Rules (40 CFR 370):	Immediate
Section 302 Extremely Hazardous Substances:	Not Applicable
Section 313 Toxic Chemical(s):	Not Applicable

CERCLA Reportable Quantity: 5,000 lb. RQ of sodium phosphate, tribasic

Release of more than 5000 pounds of sodium phosphate, tribasic to the environment in a 24-hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation and the MSDS contain all the information required by the Canadian Controlled Products Regulation.

16. OTHER INFORMATION

	Health	Fire	Reactivity	Additional Information
Suggested NFPA Rating	3	0	0	
Suggested HMIS Rating	3	0	0	E E = safety glasses, gloves, dust respirator

Reason for revision: Section 14. Supersedes MSDS dated: May 21, 2015

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ATTACHMENT T6

Inventory of Materials List

Gasoline
Diesel Fuel
Sulfuric Acid
New and Used Oils
Solvents
Herbicides
Sodium Hydroxide

Attachment T7
Narrative of Industrial Processes

Nichols and Harrington Stations share a common water supply and wastewater disposal system. Water sources include potable water, treated sewage effluent from the City of Amarillo, and recovered groundwater. The wastewater is disposed of either through land Application (Irrigation) or Deep-Well Injection. Below is a description of the industrial processes and activities involving the materials that may occur outdoors or in some manner that may result in exposure of the materials to precipitation or runoff.

Gasoline is used for plant vehicle fuel and miscellaneous uses such as lawn mowers and portable pumps. It is stored on-site in a double-walled aboveground storage tank and is delivered by tank truck. The occasional overfill/spill does occur; however, all spills are immediately reported and cleaned up.

Diesel fuel is used for diesel powered vehicle fuel, miscellaneous equipment operation, and as fuel for emergency generators. These generators provide lighting and electricity to give the plant emergency shutdown capability. The emergency generators have integral fuel tanks of 500 to 750-gallon capacity. The emergency generators and their tanks are enclosed, but they are located outside the main facility. Diesel fuel for vehicles and equipment is stored outside in a double-walled aboveground tank and is dispensed by suction pumps (no pressurized piping). The fuel is delivered by tank truck. All spills are reported and immediately cleaned up.

Sulfuric acid is used to adjust pH in the cooling towers. It is fed into the towers by gravity flow. All acid tanks are elevated and have spill containment berms built beneath them. Acid is delivered to the plants in chemical trucks and fed into storage tanks on site.

Sodium hydroxide is used primarily for water treatment and chemical cleaning purposes.

New oils are used primarily for Lubrication of turbines and rotating equipment, in hydraulic systems, boiler and generator maintenance, and transformer and switchgear insulation. These oils are typically mineral-based or synthetic and are stored in designated tanks or drums.

Used oils: Low volume waste materials including used oils and hazardous waste are placed in DOT specification containers. Used oils are generated from routine maintenance of mechanical systems, oil changes in turbines, compressors, and pumps, transformer flushes and dielectric fluid replacements. These oils and wastes are collected and stored in labeled containers and disposed of or recycled through approved vendors in accordance with EPA and TCEQ regulations. The facilities also conduct training to ensure proper handling of used oils.

Herbicides are applied by licensed applicators in accordance with manufacturer's label specifications. Non-selective herbicides are applied to substations and used for spot treatment. Selective week killers are used at plant yards, pond berms, crops, and spot treatments.

ATTACHMENT T8

Monitor Well Locations

Southwestern Public Service Co.

Nichols/Harrington Complex
Amarillo, TX
Groundwater Monitoring Plan

Harrington Station

Nichols Station

Revised 04/23/2025

August 13, 2025

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I Analysis Plan

Depth to water and water chemistry is determined annually (once per year). The water chemistry is determined from a single grab sample collected once per year from wells 6-1 ,6-2 ,6-3, 6-4, 6-5, 6-6, 7-7, 7-8, 7-9, 44-1, 44-2. The analysis to be determined can be found in Table 1.

II Sampling Locations

Well locations can be found on the attached maps. The sample should be collected from the wellhead.

III Groundwater Compliance Directive Requirement

In accordance with the Enforcement Compliance Directive, issued by the Texas Department of Water Resources on October 11, 1979, Xcel Energy is required to submit a semiannual report of the groundwater recovery project.

This project's requirements are described in the report entitled, "Nichols/Harrington Area - Groundwater Contamination Formal Proposal to Implement Correction Action Not Specified in SPS Report of June 1, 1979."

The requirements are:

- Semiannual pumping data of the groundwater recovery project
- Analysis of quarterly samples from all groundwater recovery well

Table 1
Sampling Plan (Annual Groundwater Sampling and Reporting)

N/H Permit 01990

Monitor Wells Annual Monitoring requirements

Date | Well No.

	Sampler Name	Depth to Water, ft.	Start Pump Time	Stop Pump Time	Pump Rate (gpm)	Gallons Pumped	Sample Time		Constituent	Minimum Analytical Level	Lab Analyst	Date and Time of Analysis	Result	units
									Total Petroleum Hydrocarbons	1				mg/L
									Oil and Grease	5				mg/L
									Arsenic	0.5				ug/L
									Barium	3				ug/L
									Cadmium	1				ug/L
									Chromium (Cr, total)	3				ug/L
									Lead	0.5				ug/L
									Mercury	0.005				ug/L
									Selenium	5				ug/L
									Silver	0.5				ug/L
									Boron	20				mg/L
									Calcium	1				mg/L
									Magnesium	1				mg/L
									Potassium	1				mg/L
									Sodium	1				mg/L
									Chloride	1				mg/L
									Sulfate	1				mg/L
									Nitrate-N	1				mg/L
									Ammonia-N	1				mg/L
									Total Kjeldahl Nitrogen	1				mg/L
									Specific Conductance	20				umhos/cm
									Total Hardness	1				mg/L
									Total Dissolved Solids	10				mg/L
									pH					std. units
									M Alkalinity-ppm as CaCO3					mg/L
									P Alkalinity-ppm as CaCO3					mg/L

Sample Containers		Preservative		Refrigera	Methods
RCRA Metals + B	250 ml polyethylene	pH<2	HNO3		
O&G	1-L glass with PTFE lined screw cap	pH<2	H2SO4 or HCl	0^o - 6^o C	EPA Method 1664, Revision B (n-Hexane Extraction)Collect Field Blank, and 1/20 sample duplicates,1/20 Matrix spike samples
TPH	VOA Vial	pH<2	H2SO4 or HCl	2^o - 6^o C	TCEQ Method 1005
Minerals, conductance, pH	500 ml polyethylene	none			
pH	polyethylene or glass	measure in the field immediately			
N	polyethylene or glass	pH<2	H2SO4 or HCl	4^oC	EPA - 1687, EPA 351.1

Field Notes:																
Lat.																
Long.																
Total Depth of Well																
Pump Inlet Depth																
Sample Appearance (color, turbidity, odor)																

Table 2

Required Containers, Preservation Techniques, and Holding Times (Per 40 CFR Part 136.3, Table II)	Minimum Sample Volumes		
	Required Sample Volume (ml)		
Parameter No./Name Container Preservation Maximum holding time			
Inorganic Tests:			
Alkalinity P, G Cool, 4°C 14 days		200	
Ammonia P, G Cool, 4°C , to pH <2 28 days.		500	
Boron P, PFTE, or Quartz HNO3 to pH <2 6 months.		200	
Chloride P, G None required 28 days		200	
Hardness P, G HNO3 to pH<2, to pH<2 6 months		200	
Hydrogen ion (pH) P, G None required Analyze immediately		100	
Kjeldahl and organic nitrogen. P, G Cool, 4°C , to pH <2 28 days		500	
Nitrate P, G. Cool, 4°C 48 hours		200	
Oil and grease G Cool, 4°C , HCl or to pH<2 28 days.		1000	
Organic Carbon P, G Cool, 4°C , HCl or H2SO4 to pH<2, 28 days.		100	
Residue, Filterable (TDS) P, G Cool, 4°C 7days		200	
Sulfate P, G Cool, 4°C 28 days.		200	
Specific Conductance		100	
Metals:			
Mercury P, G HNO3 to pH<2 28 days		200	
Metals, except boron, chromium VI, and mercury P, G. HNO3 to pH<2 6 months		1000	
Organic Tests:			
VOA (Volatile Organic) (TPH) G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days		40 (use VOA bottle)	
BTEX (Benzene, Tolulene, Ethlybenzene, Xylene G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 14 days			
Semi-volatiles (Includes acid and base neutral extractables, polynuclear aromatics, haloethers, and phenol compounds) G, Teflon-lined septum, no air bubbles Cool, 4°C , 0.008% Na2S2O3 7 days until extraction, 40 days after extraction			

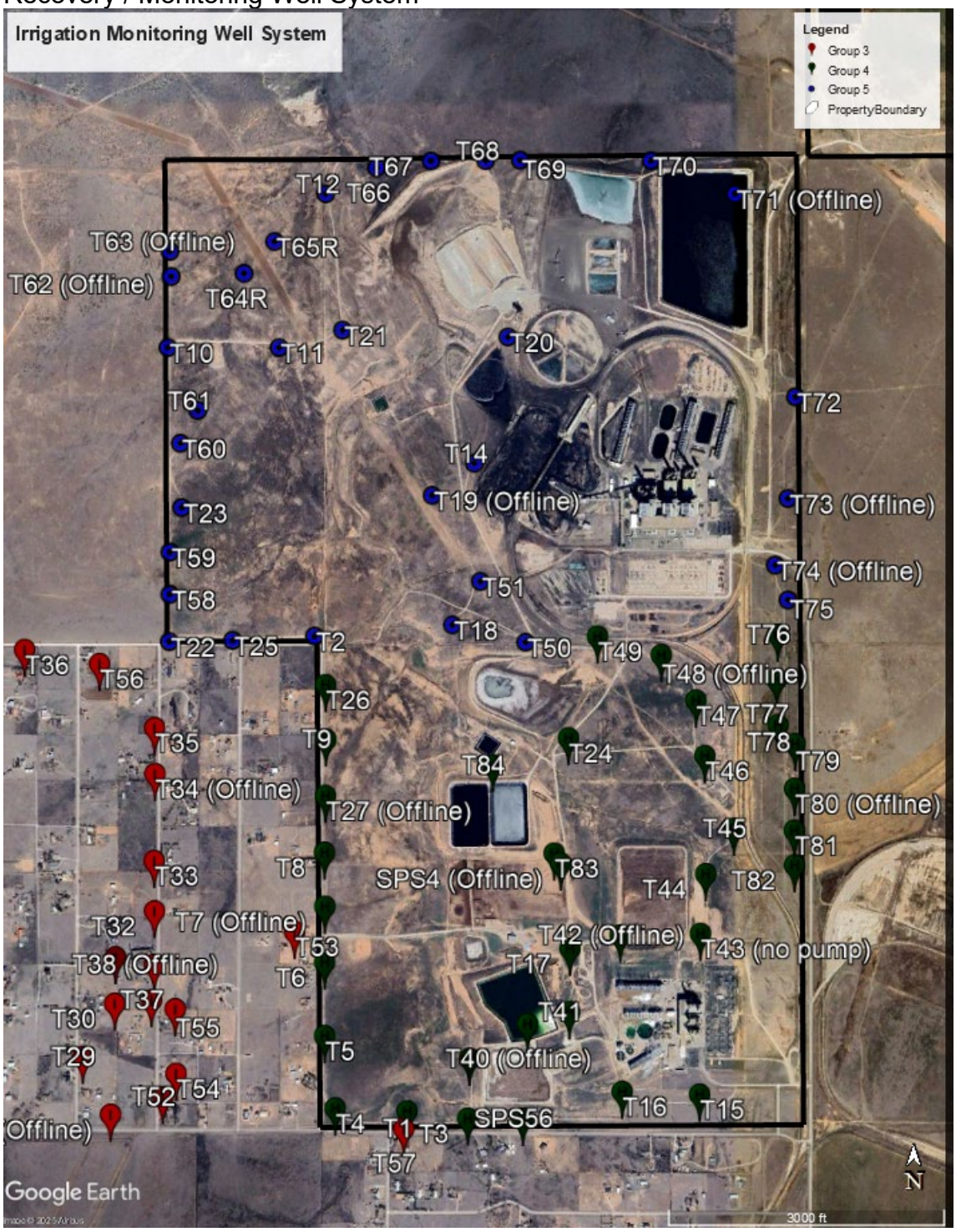
Table 3 Groundwater Compliance Directive Sampling Schedule

Group	Well IDs	Sample Frequency	General Level Frequency
3	T28, T29, T30, T31, T32, T33, T34, T35, T36, T37, T38, T52, T53, T54, T55, T56, T57	Jan, Apr, Jul, Oct	Weekly
4	SPS 4, SPS 56, T1, T3, T4, T5, T6, T7, T8, T9, T15, T16, T17, T24, T26, T27, T39, T40, T41, T42, T43, T44, T45, T46, T47, T48, T49, T76, T77, T78, T79, T80, T81, T82, T83, T84	Feb, May Aug, Nov	Weekly
5	T2, T10, T11, T12, T14, T18, T19, T20, T21, T22, T23, T25, T50, T51, T58, T59, T60, T61, T62, T63, T64R, T65R, T66, T67, T68, T69, T70, T71, T72, T73, T74, T75	Mar, Jun, Sep, Dec	Weekly
6	O44-1, O44-2, O6-1, O6-2, O6-3, O6-4, O6-5, O6-6, O7-7, O7-8, O7-9	Jun, Dec	Jun, Dec
7	O1, O2, O3, O4, O5, O6, O7, O8, O9, O10, O11, O12, O13, O14, O15, O16, O17, O18, O19, O20, O21, O22, O23, O24, O25, O26, O27, O28, O29, O30, O31, O32, O33, O34, O35, O36, O37, O38, O39, O40, O41, O42, O43, O44, O45, O46, O47, O48, O49L, O50, O51, O52, O53L, O54, O55, O56, O57, O58L, O59, O60, O61, O62, O63, O64, O65, O66, O67, O68, O69, O70, O71, O72, O73, O74, O75L, O76, O77L	N/A	Jan, Apr, Jul, Oct

Groundwater Compliance Directive Well Maps

Observation Well System

Recovery / Monitoring Well System



Irrigation Monitor Well System

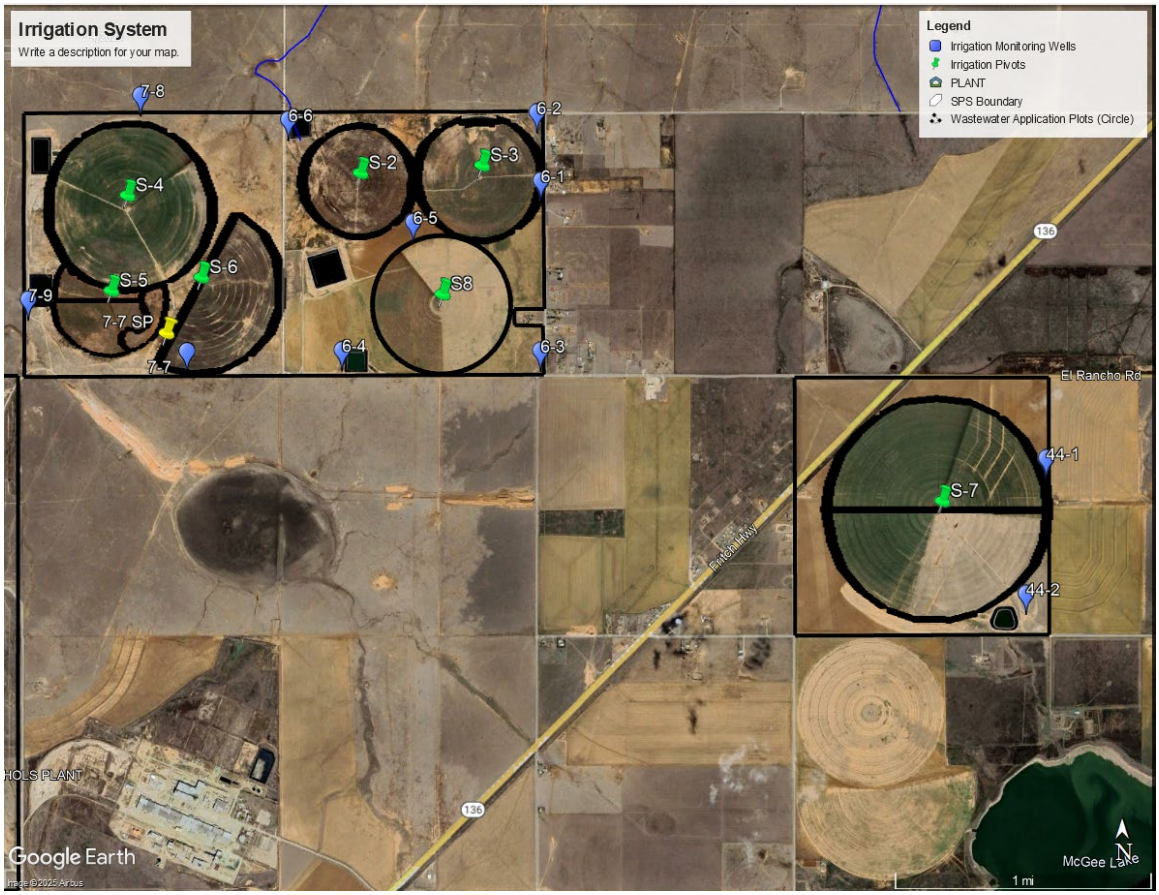


Figure 2
Nichols-Harrington Complex
Location of Irrigation Monitor Wells

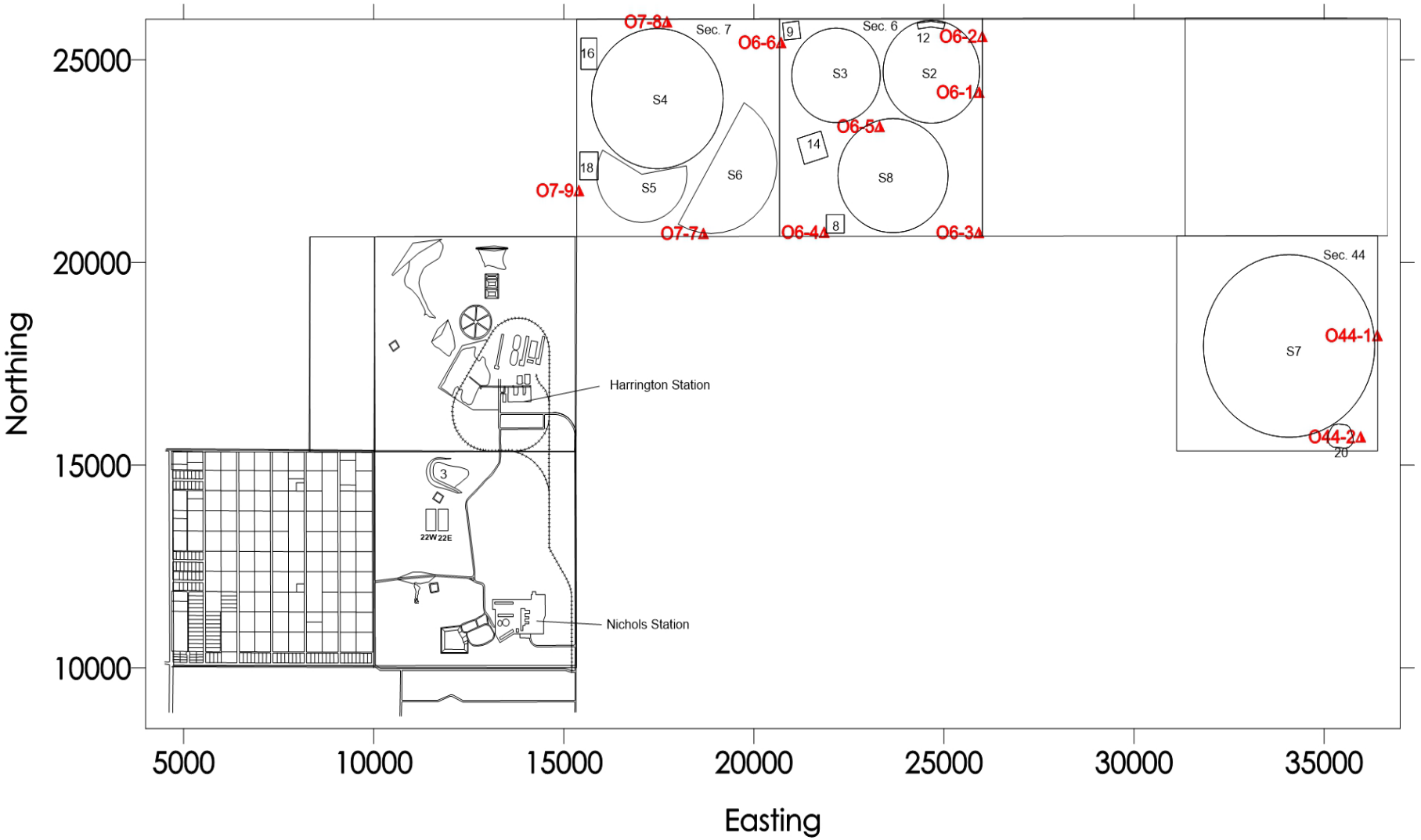


Table 4 Monitor Well Information

Nichols Harrington Generating Complex
Irrigation Monitoring Wells Sections 6, 7, and 44
Estimated pumping time required prior to sampling

0.041 : conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

Well id	Date Drilled	Total Depth	Hole Diam.	Casing I.D. **(r3)**	Casing O.D.	Casing Length	Screen Interval	Cement Interval	Bottom of Cement	2024 Water Level	Discharge pipe I.D.	Casing Volume, gal.	Annulus Volume, gal.	**h**	Discharge Pipe Volume	Calculated Maximum Volume to Pump, gal	Pump rate, gpm	Calculated Minutes Required	Minutes Pumped	Volume Pumped, gal
O6-1	8/20/1980	260	9.75	4.1875	4.6875	255	255 - 193	168 - 0	168	215.1	1	28.5	82.3	44.9	10.0	96.8	2.4	40	69	168.9
O6-2	8/25/1980	270	9.75	4.1875	4.6875	262	263 -180	153 - 0	153	202.1	1	42.9	104.7	67.9	10.3	146.4				
O6-3	8/27/1980	272	9.75	4.1875	4.6875	254	254 - 170	147 - 0	147	193.9	1	43.0	111.8	78.1	10.0	168.4	3.0	56	56	169.4
O6-4	9/2/1980	355	9.75	4.1875	4.6875	241	241 - 160	140 - 0	140	167.6	1	52.5	192.3	187.4	9.4	404.2	5.0	81	66	331.2
O6-5	9/5/1980	301	9.75	4.1875	4.6875	284	284 - 178	168 - 0	168	191.7	1	66.0	119.0	109.3	11.2	235.7	4.3	55	78	334.3
O6-6	9/12/1980	280	9.75	4.1875	4.6875	258	258 - 154	140 - 0	140	160.5	1	69.8	125.2	119.5	10.1	257.7	2.0	129	58	115.5
O7-7	9/15/1980	300	9.75	4.1875	4.6875	220	220 - 136	125 - 0	125	117.1	1	73.6	156.6	182.9	8.6					
O7-8	9/19/1980	280	9.75	4.1875	4.6875	254	254 - 150	130 - 0	130	153.9	1	71.6	134.2	126.1	10.0	272.0	5.2	52	51	265.7
O7-9	9/23/1980	180	9.75	4.1875	4.6875	179	179 - 79	60 - 0	60	58.8	1	86.0	107.4	121.2	6.9	261.4	4.8	55	54	258.2
O44-1	2/29/2000	400	12.25	6	6.5	400	365 - 285	275 - 217	275	266.8	1	195.6	165.0	133.2	15.9	589.8	9.3	63	50	467.5
								23 - 2											
O44-2	3/8/2000	400	12.25	6	6.5	400	385 - 325	310 - 280	310	252	1	217.4	118.8	148.0	15.9	655.3	5.9	111	84	495.4
							280 - 260	22 - 2												
O6-18																				
O7-16																				

Estimated volume to pump before sampling = 3 X (Casing Volume + Annulus Volume) + Discharge pipe volume

Sampling Procedure

Water-Level Sampling

Samples are to be taken when three casing volumes or pH, SC, and Specific Conductance readings have stabilized as discussed below.

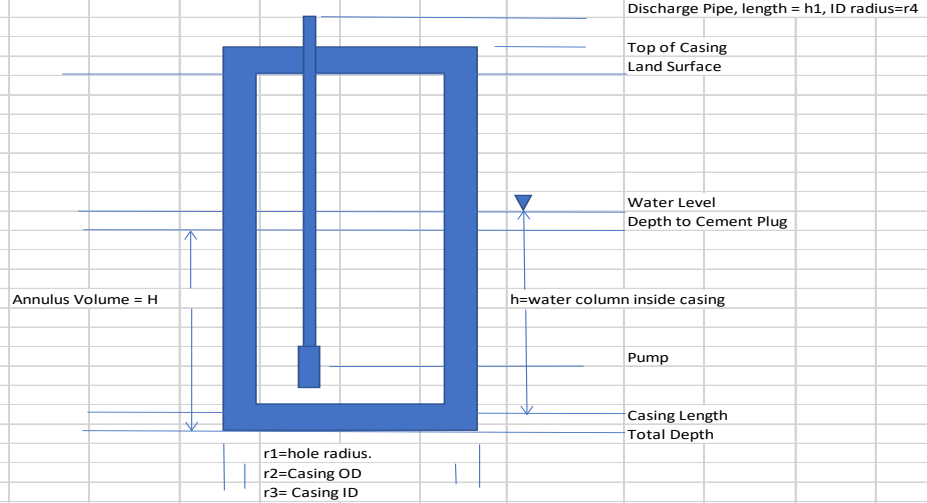
- It is generally agreed that a minimum of three casing volumes of water should be evacuated as well as attaining the stabilization of pH, temperature and electrical conductivity of the discharging water.
- Calculate the volume of water to be purged using the following equation:

  $V = 3 \times 0.041\ d^2h$

  where:

  V = volume of water, in gallons
  d = diameter of well casing, in inches
  h = length of water column (total well depth minus depth to water, measured during preliminary work stage of sampling event), in feet
  0.041 = conversion factor = well-casing diameter squared ÷ 4 × π (well cross-sectional area, in inches) ÷ 144 square inches per square foot × 7.4805 gallons per cubic foot

- Close ball valve to separate from gathering system.
- Attach tubing line to purge.
- Disconnect tubing and sample at pump.
- At least three pH, SC, and T readings of the discharging water should be taken at three (3) -to five (5) -minute intervals. These parameters are deemed to have stabilized when three successive measurements, taken at intervals of three (3) to five (5) minutes, are within the following ranges:
  - ➢ pH: ±0.1 pH units
  - ➢ Temperature: ±3%
  - ➢ Specific Conductance: ±3%



ATTACHMENT T9

WORKSHEET 2.0 POLLUTANT ANALYSIS REQUIREMENTS

A contract laboratory, BAT Laboratories, LLC , performed the following:
testing:
Chromium Hexavalent
E. Coli
Fecal Coliform Nitrogen
Ammonia
Total Kjeldahl Nitrogen, TKN
Total organic Carbon

Address of BAT Laboratories, LLC:
5935 Glenoak Ln.
Amarillo, TX 79109
TEL: (806)353-4425
Phone: 806-794-1296

A contract laboratory, Bio-Aquatic Testing, Inc. performed 24 & 48- hour
Acute Biomonitoring WET Testing.

Address of Bio-Aquatic:
2501 Mayes Rd. Ste. 200
Carrollton, Texas 75006

A contract laboratory, Pace Analytical performed the following:
Total Kjeldahl Nitrogen, TKN
Ammonia Nitrogen
Coliform, Total'
E. Coli
Fluoride
Total Organic Carbon
Volatile Organic Compounds
Pesticides
Semi Volatile Compounds
Polychlorinated Biphenyls

Address of Pace:
12065 Lebanon Rd
Mount Juliet, TN 37122
615-758-5858; 800-767-5859

ATTACHMENT T10

Groundwater Technical Report

Title 30, Part 1, Chapter 309, Subchapter c, Section 20, (a)(4)

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(4) Groundwater quality. The technical report shall fully assess the impact of the wastewater application operation on the uses of local groundwater resources. In regard to performing this assessment, the report shall systematically address subparagraphs (A) and (B) of this paragraph.

(A) All water wells within a 1/2 mile radius of the application site boundaries shall be located. If available, the water uses from each well shall be identified. In addition, aspects of construction such as well logs, casing, yield, static elevation, water quality, and age shall be furnished and evaluated in the technical report. Local groundwater resources below the wastewater application site shall be monitored to establish preoperational baseline groundwater quality when monitoring wells are available. Monitoring shall provide the following analytical determination: total dissolved solids, nitrate nitrogen, chlorides, sulfates, pH, and Escherichia coli bacteria.

Groundwater Technical Report Summary

All water wells within a 1/2 mile radius of the application site boundaries have been identified based on data from the Panhandle Groundwater Conservation District and Southwestern Public Service Company and are included in the well map section found in Tab 7. Water uses for those wells obtained from the PGCD are for domestic water use. The SPS identified wells are either residential, observation, recovery (as required from the Compliance Directive), or monitoring. Monitoring well information discussing resources and groundwater quality data below the wastewater application plots (WAP) is supplied in Tab 12 Monitor Well Data. Other well information is in Tab 7 Well and Map Information.

(B) Groundwater resources serving as sources or potential sources of domestic raw water supply will be protected by limiting wastewater application rates. Effluent storage and/or treatment ponds presenting seepage hazards to these groundwater resources shall be constructed with adequate liners.

Groundwater Technical Report Summary

Wastewater application rates are monitored with volume amounts applied to the WAP annually reported to the TCEQ. Also, since the buffer zone from any potable water supply well or irrigation fields is greater that the required minimum distance of 150 feet groundwater resources are protected. All ponds used to irrigate the WAP are lined as specified by permit WQ0001990000 and detailed in the below table.

Pond	Surface Area (acres)	Capacity (Million gallons)	Associated Wastes	Liner Type
8	4.75	21.7	Industrial wastewater, tailwater, stormwater	Synthetic
9	4.0	20.5	Industrial wastewater, tailwater, stormwater	Synthetic
12	1.8	6.4	Industrial wastewater, tailwater, stormwater	Synthetic
14	9.4	83.0	Industrial wastewater	Synthetic
16	6.2	35.0	Industrial wastewater, tailwater, stormwater	Synthetic
18	6.2	43.5	Industrial wastewater, tailwater, stormwater	Synthetic
20	3.83	20.0	Industrial wastewater, tailwater, stormwater	Synthetic
22	14.4	79.9	Industrial wastewater, tailwater, stormwater	Synthetic

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: Southwestern Public Service Company

   Permit No. WQ00 01990000 EPA ID No. TX 0124575

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

   8400 N. Lakeside Drive, Amarillo, TX 79108, Potter County

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: David Lorenz

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

Title: Environmental Analyst

Mailing Address: TX1408-05-MCB; 790 S Buchanan Street Floor 5

City, State, Zip Code: Amarillo, TX, 79101

Phone No.: 8063782138 Ext.: Click here to enter text. Fax No.: Click here to enter text.

E-mail Address: David.Lorenz@xcelenergy.com

2. List the county in which the facility is located: Potter
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.

As described in the application, the facility is located at 8400 North Lakeside Drive, near the City of Amarillo, Potter County, Texas 79108. Discharge is via Outfalls 001, 003, 004, 011, 012, and 013 to an unnamed tributary, thence to Indian Creek, thence to impounded Indian Creek, thence to Indian Creek, thence to 6 Section Lake, thence to Indian Creek, thence to East Amarillo Creek; via Outfalls 006 and 007 to an unnamed tributary, thence to Bonita Creek; thence all (Outfalls 001, 003, 004, 006, 007, 011, 012, and 013) to the Canadian River Above Lake Meredith in Segment No. 0103 of the Canadian River Basin; via 005 to an unnamed tributary, thence to Stalanaker Lake (a playa lake with no outlet within the watershed of the Canadian River Above Lake Meredith) in Segment No. 0103 of the Canadian River Basin; and via Outfall 009 to an unnamed tributary, thence to McGee Lake (a playa with no outlet within the watershed of the North Fork Red River), thence to the North Fork Red River in Segment No. 0224 of the Red River Basin.

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

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

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

☐ Proposed access roads, utility lines, construction easements

☐ Visual effects that could damage or detract from a historic property's integrity

☐ Vibration effects during construction or as a result of project design

☐ Additional phases of development that are planned for the future

☐ Sealing caves, fractures, sinkholes, other karst features

☐ Disturbance of vegetation or wetlands

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

N/A

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

Facilities include power plants, and electrical substations. Sections 6, 7, and 44 are agricultural. Sections 6, 7, and 44 are used for irrigation of wastewater from the power plants. All wastewater is contained onsite, except during infrequent overflows from containment facilities due to large rainfall events

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

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

N/A

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).

Southwestern Public Service Company generates and sells electric power in a 52,000 square mile service territory located in the Texas Panhandle and Eastern New Mexico.

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

The Nichols - Harrington Station complex utilizes a common water supply and a common wastewater disposal system. The water supply sources are potable water and treated sewage effluent (obtained from the City of Amarillo) and recovered ground water. The wastewater from Nichols Station consists of cooling tower blowdown, boiler blowdown, demineralizer regeneration wastes and limestone sludge from treating the plant source water. The cooling tower blowdown and boiler blowdown are collected and routed into the irrigation system. The limestone sludge is pumped to either Pond 15,19 or 21with the demineralizer regenerate. The decant water is reclaimed and used as cooling tower makeup. The wastewater from Harrington Station, located one mile north of the Nichols Station, consists of cooling tower blowdown, boiler blowdown and boiler seal water. All the cooling tower blowdown and Unit 1 boiler blowdown is piped into the irrigation system. Units 2 and 3 boiler blowdown is routed to the cooling tower makeup water supply. Any overflow from pond 6 is routed into Pond 5, where it can be pumped to the cooling tower makeup system. Overflow from the boiler seal troughs is piped to the lined pond (Pond 11). Pond 11 overflow is routed into the plant runoff pond (Pond 7). Pond 7 water is routed into the cooling tower makeup system. The wastewater is used to irrigate grass and other crops planted on

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

approximately 1239 acres of land equipped with tailwater ponds and berms. All sanitary sewage is routed into septic tank - drain field systems. For both Stations (Nichols and Harrington) the chemical metal cleaning wastes are neutralized in the process and mixed with the cooling tower blowdown prior to disposal by irrigation. All other non-hazardous low volume wastes, including fireside cleaning wastes, are either mixed with the cooling tower blowdown or recycled as cooling tower makeup.

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

Materials List

Raw Materials	Intermediate Products	Final Products

Attachment: See Tab 13 Attachment T1

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: See Tab 13 Attachment T2

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

☐ Yes ☒ No

If **yes**, provide background discussion: Click to enter text.

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

☒ Yes ☐ No

List source(s) used to determine 100-year frequency flood plain: FEMA Flood Insurance Map (National Flood Insurance Program)

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: Click to enter text.

Attachment: Click to enter text.

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: Click to enter text.

If **no**, provide an approximate date of application submittal to the USACE: Click to enter text.

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.

No treatment of wastewater is required prior to disposal by irrigation.

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: See Tab 13 Attachment T3

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 #5**	**Pond #6**	**Pond #7**	**Pond #**
Use Designation: (T) (D) (C) or (E)	C	C	C	
Associated Outfall Number	None	011	012	
Liner Type (C) (I) (S) or (A)	N/A	C	N/A	
Alt. Liner Attachment Reference			Attachment T4	
Leak Detection System, Y/N				
Groundwater Monitoring Wells, Y/N	N	N	N	
Groundwater Monitoring Data Attachment	N/A	N/A	N/A	

Parameter	Pond #5	Pond #6	Pond #7	Pond #
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	
Length (ft)				
Width (ft)				
Max Depth From Water Surface (ft), Not Including Freeboard	34	19.3	17	
Freeboard (ft)	3.5	2.2	4.5	
Surface Area (acres)	83.5	9	9.3	
Storage Capacity (gallons)	273,000,000	29,000,000	18,900,000	
40 CFR Part 257, Subpart D, Y/N				
Date of Construction	6/1/1976	6/1/1976	1/31/1979	

Attachment: See Tab 11 Attachment T1

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

2. Leak detection system or groundwater monitoring data

☐ Yes ☐ No ☐ Not yet designed

3. Groundwater impacts

☐ Yes ☐ No ☐ Not yet designed

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: Click to enter text.

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: Click to enter text.

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: Click to enter text.

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: Click to enter text.

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)

Outfall Location Description

Outfall No.	Location Description

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

Outfall No.	Description of sampling point

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)

Outfall Discharge – Method and Measurement

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

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)

Outfall Wastestream Contributions

Outfall No. Click to enter text.

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

Outfall No. Click to enter text.

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

Outfall No. Click to enter text.

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

Attachment: See Tab 11 Attachment T2

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: See Tab 13 Attachment T6 Chemical Additives & SDS's

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	6	1,767,841	3,600,000
Boilers	6	154,135	157,500 (based on maximum boiler blowdown from 2020-2024. Boiler blowdown is based on boiler chemistry and the steam psi vs. silica curve)

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: Harrington and Nichols Stations wastewater discharges are collected in various impoundments throughout the irrigation system. These wastewaters consist of cooling tower blowdown, boiler blowdown, metal cleaning wastes, and low volume waste including fireside cleaning wastes. These wastes are land applied. Stormwater runoff is diverted to tailwater impoundments. All impoundments are designed to hold the 25-year, 24-hour storm runoff. In the event that a storm larger than the 25-year flood occurs the stormwater mixed with the wastewater is discharged from the ponds via spillways from permitted outfalls. Harrington Stations are collected in various impoundments throughout the irrigation system. These wastewaters consist of cooling tower blowdown, boiler blowdown, metal cleaning wastes, and low volume waste including fireside cleaning wastes. These wastes are land applied. Stormwater runoff is diverted to tailwater impoundments. All impoundments are designed to hold the 25-year, 24-hour storm runoff. In the event that a storm larger than the 25-year flood occurs the stormwater mixed with the wastewater is discharged from the ponds via spillways from permitted outfalls.

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: Click to enter text.

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.
Allen's Tri-State Mechanical	20289

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: **Compliance Directive: A compliance order dated October 11, 1979, and accepted by SPS on October 25, 1979 requires SPS to: 1. Construct monitoring wells for the purpose of collecting data on groundwater and geology within 90 days; 2. Report on lithology, piezometric surface and groundwater quality within 180 days; 3. Within 30 days begin implementation of "SPS Co. Nichols/ Harrington Area Formal Proposal to implement Corrective Action not Specified in SPS Report of June 1, 1979" as modified below: a) prior approval of plans & specs for ponds required; b) Maps and engineering plans required prior to irrigation; c) Within 60 days submit acceptable plan for monitoring vertical water movement in the irrigated areas; d) N/A; e) Semiannual report of the groundwater recovery project required; 4. Within 45 days project a date for final restoration of the affected portion of the Ogallala Aquifer. SPS has and continues to comply with all conditions of the Compliance Directive.**

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: Outfall 009 had a discharge on 06/01/2023 and 08/30/2022 which required 48-HOUR ACUTE BIOMONITORING testing and 24-HOUR ACUTE BIOMONITORING testing.

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

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: Click to enter text.

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: Click to enter text.

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)

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)

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

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. Source for emergency cooling water is as follows: Nichols Station: City of Amarillo, Carson County Well field Harrington Station: CRMWA PWS# TX1970003

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: Click to enter

text.

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: Click to enter text.

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*: Click to enter text.

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: Click to enter text.

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: Click to enter text.

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

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.

Click to enter text.

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

☐ Yes ☒ No

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

Click to enter text.

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

☐ Yes ☒ No

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

Click to enter text.

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: Karalee Snyder

Title: Manager, Environmental Services

Signature: Karalee Snyder

Date: 8/21/2025

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
Steam Electric Power Generating	423

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
423			

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

c. Refineries (40 CFR Part 419)

Provide the applicable subcategory and a brief justification.

Click to enter text.

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.

To be authorized for discharge:
Cooling Tower Blowdown..... 2500 gpm
Low Volume Waste Sources..... 71 gpm
Metal Cleaning Waste..... < 5 gpm (160,000 gpy for one cleaning)
Not authorized under this permit but authorized under UIC Permit WDW342: 720 gpm

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
Cooling Tower Blowdown	423	423.12(b)	May 1960/1976
Low Volume Wastes	423	423.12(b)	May 1960/1976
Metal Cleaning Wastes	423	423.12(b)	May 1960

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): Only Outfall 009 had discharge events for this permit renewal application. All other outfalls had discharges prior to 2019. Sample 1: Sampled 10/04/2019; Sample 2: Sampled 08/30/2022; Sample 3: Sampled 06/01/2023

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:** See Table 13 Attachment T9

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:** Click to enter text.

Sample 1 collected on 10/04/2019
Sample 2 collected on 08/22/2022
Sample 3 collected on 06/01/2023

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

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	<5.00	5.2	<5.00	
CBOD (5-day)	<5.00	<5.00	<5.00	
Chemical oxygen demand	23.0	<5.00	34.0	
Total organic carbon	5.48	19.2	22.8	
Dissolved oxygen				
Ammonia nitrogen	0.363	0.529	0.195	
Total suspended solids	14	7	61	
Nitrate nitrogen	25.1	51.3	<9.03	
Total organic nitrogen	<1		1.69	
Total phosphorus	0.285	0.53	0.460	
Oil and grease	<5.00	<5.00	<5.00	

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
Total residual chlorine	<0.020			
Total dissolved solids	2010	4830	1550	
Sulfate	532	800	449	
Chloride	633	1660	486	
Fluoride		3.67	<0.50	
Total alkalinity (mg/L as CaCO3)		112	88	
Temperature (°F)	65.1			
pH (standard units)	7.63			

Table 2 for Outfall No.: Click to enter text. **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)
Aluminum, total	428	<100	997		2.5
Antimony, total	<1.25	4.82	1.30		5
Arsenic, total	4.48	6.40	2.86		0.5
Barium, total	89.5	154	79.3		3
Beryllium, total	<0.250	<0.100	0.231		0.5
Cadmium, total	<0.250	<0.100	0.115		1
Chromium, total	<1.25	<5.00	0.712		3
Chromium, hexavalent	<1.25	<5.00	<0.75		3
Chromium, trivalent	<1.25	<5.00	<0.75		N/A
Copper, total	8.05	26.4	3.47		2
Cyanide, available	<50	<50	<50		2/10
Lead, total	<2.50	<0.100	1.10		0.5
Mercury, total	<0.500	<0.200	<0.500		0.005/0.0005
Nickel, total	4.90	18.7	5.37		2
Selenium, total	<2.50	3.44	<1.00		5
Silver, total	<0.125	<0.05	<0.05		0.5
Thallium, total	<1.25	<5.00	<5.00		0.5
Zinc, total	12.5	<50.0	9.54		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.: Click to enter text. **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)***
Acrylonitrile		ND	ND		50
Anthracene		ND	ND		10
Benzene		ND	ND		10
Benzidine		ND	ND		50
Benzo(a)anthracene		ND	ND		5
Benzo(a)pyrene		ND	ND		5
Bis(2-chloroethyl)ether		ND	ND		10
Bis(2-ethylhexyl)phthalate		ND	ND		10
Bromodichloromethane [Dichlorobromomethane]		ND	ND		10
Bromoform		ND	ND		10
Carbon tetrachloride		ND	ND		2
Chlorobenzene		ND	ND		10
Chlorodibromomethane [Dibromochloromethane]		ND	ND		10
Chloroform		ND	ND		10
Chrysene		ND	ND		5
m-Cresol [3-Methylphenol]		ND	ND		10
o-Cresol [2-Methylphenol]		ND	ND		10
p-Cresol [4-Methylphenol]		ND	ND		10
1,2-Dibromoethane		ND	ND		10
m-Dichlorobenzene [1,3-Dichlorobenzene]		ND	ND		10
o-Dichlorobenzene [1,2-Dichlorobenzene]		ND	ND		10
p-Dichlorobenzene [1,4-Dichlorobenzene]		ND	ND		10
3,3'-Dichlorobenzidine		ND	ND		5
1,2-Dichloroethane		ND	ND		10

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

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)*
2,4,5-Trichlorophenol		ND	ND		50
TTHM (Total trihalomethanes)		ND	ND		10
Vinyl chloride		ND	ND		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.: 009 **Samples are (check one): ☐ Composite ☒ Grab**

Pollutant	Sample 1	Sample 2	Sample 3	Sample 4	MAL
Tributyltin (µg/L)					0.010
Enterococci (cfu or MPN/100 mL)					N/A
E. coli (cfu or MPN/100 mL)	60.2	<1	1550		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.: Click to enter text. **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		ND	ND		0.01
Carbaryl					5
Chlordane		ND	ND		0.2
Chlorpyrifos					0.05
4,4'-DDD		ND	ND		0.1
4,4'-DDE		ND	ND		0.1
4,4'-DDT		ND	ND		0.02
2,4-D					0.7
Danitol [Fenpropathrin]					—
Demeton					0.20
Diazinon					0.5/0.1
Dicofol [Kelthane]					1
Dieldrin		ND	ND		0.02
Diuron					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*)		ND	ND		0.01
Endosulfan II (*beta*)		ND	ND		0.02
Endosulfan sulfate		ND	ND		0.1
Endrin		ND	ND		0.02
Guthion [Azinphos methyl]					0.1
Heptachlor		ND	ND		0.01
Heptachlor epoxide		ND	ND		0.01
Hexachlorocyclohexane (*alpha*)					0.05
Hexachlorocyclohexane (*beta*)					0.05
Hexachlorocyclohexane (*gamma*) [Lindane]					0.05
Hexachlorophene					10
Malathion					0.1
Methoxychlor		ND	ND		2.0
Mirex					0.02
Parathion (ethyl)					0.1
Toxaphene		ND	ND		0.3
2,4,5-TP [Silvex]					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.: Click to enter text. **Samples are (check one):** ☐ **Composite** ☐ **Grab**

Pollutants	**Believed Present**	**Believed Absent**	**Sample 1 (mg/L)**	**Sample 2 (mg/L)**	**Sample 3 (mg/L)**	**Sample 4 (mg/L)**	**MAL (µg/L)***
Bromide	☐	☒					400
Color (PCU)	☐	☒					—
Nitrate-Nitrite (as N)	☒	☐					—
Sulfide (as S)	☐	☒					—
Sulfite (as SO3)	☐	☒					—
Surfactants	☐	☒					—
Boron, total	☒	☐					20
Cobalt, total	☐	☒					0.3
Iron, total	☒	☐					7
Magnesium, total	☒	☐					20
Manganese, total	☒	☐					0.5
Molybdenum, total	☐	☒					1
Tin, total	☐	☒					5
Titanium, total	☐	☒					30

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)

Sample 2 collected on 08/22/2022
Sample 3 collected on 06/01/2023

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.: 009 **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)
Acrolein		ND	ND		50
Acrylonitrile		ND	ND		50
Benzene		ND	ND		10
Bromoform		ND	ND		10
Carbon tetrachloride		ND	ND		2
Chlorobenzene		ND	ND		10
Chlorodibromomethane		ND	ND		10
Chloroethane		ND	ND		50
2-Chloroethylvinyl ether		ND	ND		10
Chloroform		ND	ND		10
Dichlorobromomethane [Bromodichloromethane]		ND	ND		10
1,1-Dichloroethane		ND	ND		10
1,2-Dichloroethane		ND	ND		10
1,1-Dichloroethylene [1,1-Dichloroethene]		ND	ND		10
1,2-Dichloropropane		ND	ND		10
1,3-Dichloropropylene [1,3-Dichloropropene]		ND	ND		10
Ethylbenzene		ND	ND		10
Methyl bromide [Bromomethane]		ND	ND		50
Methyl chloride [Chloromethane]		ND	ND		50
Methylene chloride [Dichloromethane]		ND	ND		20
1,1,2,2-Tetrachloroethane		ND	ND		10
Tetrachloroethylene [Tetrachloroethene]		ND	ND		10
Toluene		ND	ND		10
1,2-Trans-dichloroethylene [1,2-Trans-dichloroethene]					10

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)
1,1,1-Trichloroethane		ND	ND		10
1,1,2-Trichloroethane		ND	ND		10
Trichloroethylene [Trichloroethene]		ND	ND		10
Vinyl chloride		ND	ND		10

* Indicate units if different from µg/L.

Table 9 for Outfall No.: 009 **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)
2-Chlorophenol		ND	ND		10
2,4-Dichlorophenol		ND	ND		10
2,4-Dimethylphenol		ND	ND		10
4,6-Dinitro-o-cresol		ND	ND		50
2,4-Dinitrophenol		ND	ND		50
2-Nitrophenol		ND	ND		20
4-Nitrophenol		ND	ND		50
p-Chloro-m-cresol		ND	ND		10
Pentachlorophenol		ND	ND		5
Phenol		ND	ND		10
2,4,6-Trichlorophenol		ND	ND		10

* Indicate units if different from µg/L.

Table 10 for Outfall No.: 009 **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)
Acenaphthene		ND	ND		10
Acenaphthylene		ND	ND		10
Anthracene		ND	ND		10
Benzidine		ND	ND		50
Benzo(a)anthracene		ND	ND		5
Benzo(a)pyrene		ND	ND		5
3,4-Benzofluoranthene [Benzo(b)fluoranthene]		ND	ND		10
Benzo(ghi)perylene		ND	ND		20
Benzo(k)fluoranthene		ND	ND		5
Bis(2-chloroethoxy)methane		ND	ND		10

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)
Bis(2-chloroethyl)ether		ND	ND		10
Bis(2-chloroisopropyl)ether		ND	ND		10
Bis(2-ethylhexyl)phthalate		ND	ND		10
4-Bromophenyl phenyl ether		ND	ND		10
Butylbenzyl phthalate		ND	ND		10
2-Chloronaphthalene		ND	ND		10
4-Chlorophenyl phenyl ether		ND	ND		10
Chrysene		ND	ND		5
Dibenzo(a,h)anthracene		ND	ND		5
1,2-Dichlorobenzene [o-Dichlorobenzene]		ND	ND		10
1,3-Dichlorobenzene [m-Dichlorobenzene]		ND	ND		10
1,4-Dichlorobenzene [p-Dichlorobenzene]		ND	ND		10
3,3'-Dichlorobenzidine		ND	ND		5
Diethyl phthalate		ND	ND		10
Dimethyl phthalate		ND	ND		10
Di-n-butyl phthalate		ND	ND		10
2,4-Dinitrotoluene		ND	ND		10
2,6-Dinitrotoluene		ND	ND		10
Di-n-octyl phthalate		ND	ND		10
1,2-Diphenylhydrazine (as Azobenzene)		ND	ND		20
Fluoranthene		ND	ND		10
Fluorene		ND	ND		10
Hexachlorobenzene		ND	ND		5
Hexachlorobutadiene		ND	ND		10
Hexachlorocyclopentadiene		ND	ND		10
Hexachloroethane		ND	ND		20
Indeno(1,2,3-cd)pyrene		ND	ND		5
Isophorone		ND	ND		10
Naphthalene		ND	ND		10
Nitrobenzene		ND	ND		10
N-Nitrosodimethylamine		ND	ND		50

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)
N-Nitrosodi-n-propylamine		ND	ND		20
N-Nitrosodiphenylamine		ND	ND		20
Phenanthrene		ND	ND		10
Pyrene		ND	ND		10
1,2,4-Trichlorobenzene		ND	ND		10

* Indicate units if different from µg/L.

Table 11 for Outfall No.: Click to enter text. **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		ND	ND		0.01
alpha-BHC [alpha-Hexachlorocyclohexane]		ND	ND		0.05
beta-BHC [beta-Hexachlorocyclohexane]		ND	ND		0.05
gamma-BHC [gamma-Hexachlorocyclohexane]		ND	ND		0.05
delta-BHC [delta-Hexachlorocyclohexane]		ND	ND		0.05
Chlordane		ND	ND		0.2
4,4'-DDT		ND	ND		0.02
4,4'-DDE		ND	ND		0.1
4,4'-DDD		ND	ND		0.1
Dieldrin		ND	ND		0.02
Endosulfan I (alpha)		ND	ND		0.01
Endosulfan II (beta)		ND	ND		0.02
Endosulfan sulfate		ND	ND		0.1
Endrin		ND	ND		0.02
Endrin aldehyde		ND	ND		0.1
Heptachlor		ND	ND		0.01
Heptachlor epoxide		ND	ND		0.01
PCB 1242		ND	ND		0.2
PCB 1254		ND	ND		0.2
PCB 1221		ND	ND		0.2
PCB 1232		ND	ND		0.2
PCB 1248		ND	ND		0.2

Pollutant	Sample 1 (µg/L)*	Sample 2 (µg/L)*	Sample 3 (µg/L)*	Sample 4 (µg/L)*	MAL (µg/L)
PCB 1260		ND	ND		0.2
PCB 1016		ND	ND		0.2
Toxaphene		ND	ND		0.3

* Indicate units if different from µg/L.

Attachment: Click to enter text.

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: Click to enter text.

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: Click to enter text.

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

Table 12 for Outfall No.: Click to enter text. **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					10
1,2,3,7,8-PeCDD	1.0					50
2,3,7,8-HxCDDs	0.1					50
1,2,3,4,6,7,8-HpCDD	0.01					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-TCDF	0.1					10
1,2,3,7,8-PeCDF	0.03					50
2,3,4,7,8-PeCDF	0.3					50
2,3,7,8-HxCDFs	0.1					50
2,3,4,7,8-HpCDFs	0.01					50
OCDD	0.0003					100
OCDF	0.0003					100
PCB 77	0.0001					500
PCB 81	0.0003					500
PCB 126	0.1					500
PCB 169	0.03					500
Total						

TABLE 13 (HAZARDOUS SUBSTANCES)

Complete Table 13 **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.: Click to enter text. **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						

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 3.0: LAND APPLICATION OF EFFLUENT

This worksheet **is required** for all applications for a permit to disposal of wastewater by land application (i.e., TLAP)).

Item 1. Type of Disposal System (Instructions, Page 69)

Check the box next to the type of land disposal requested by this application:

- ☒ Irrigation
- ☐ Evaporation
- ☐ Evapotranspiration beds
- ☐ Drip irrigation system
- ☐ Subsurface application
- ☐ Subsurface soils absorption
- ☐ Surface application
- ☐ Other, specify: Click to enter text.

Item 2. Land Application Area (Instructions, Page 69)

Land Application Area Information

Effluent Application (gallons/day)	**Irrigation Acreage (acres)**	**Describe land use & indicate type(s) of crop(s)**	**Public Access? (Y/N)**
3,600,000 (design flow)	1239	Irrigated Pasture-Cattle Grazing	N

Item 3. Annual Cropping Plan (Instructions, Page 69)

Attach the required cropping plan that includes each of the following:

- Cool and warm season plant species
- Breakdown of acreage and percent of total acreage for each crop
- Crop growing season
- Harvesting method/number of harvests
- Minimum/maximum harvest height
- Crop yield goals
- Soils map
- Nitrogen requirements per crop
- Additional fertilizer requirements
- Supplemental watering requirements
- Crop salt tolerances
- Justification for not removing existing vegetation to be irrigated

Attachment: See Tab 6

Item 4. Well and Map Information (Instructions, Page 70)

a. Check each box to confirm the required information is shown and labeled on the attached USGS map:

☒ The exact boundaries of the land application area

☒ On-site buildings

☒ Waste-disposal or treatment facilities

☒ Effluent storage and tailwater control facilities

☒ Buffer zones

☒ All surface waters in the state onsite and within 500 feet of the property boundaries

☒ All water wells within ½-mile of the disposal site, wastewater ponds, or property boundaries

☐ All springs and seeps onsite and within 500 feet of the property boundaries

Attachment: Click to enter text.

b. List and cross reference all water wells located on or within 500 feet of the disposal site, wastewater ponds, or property boundaries in the following table. Attach additional pages as necessary to include all of the wells.

Well and Map Information Table

Well ID	Well Use	Producing? Y/N/U	Open, cased, capped, or plugged?	Proposed Best Management Practice

Attachment: See Tab 7 for Well Table and Map Information

c. Groundwater monitoring wells or lysimeters are/will be installed around the land application site or wastewater ponds.

☒ Yes ☐ No

If **yes**, provide the existing/proposed location of the monitoring wells or lysimeters on the site map attached for Item 4.a. Additionally, attach information on the depth of the wells or lysimeters, sampling schedule, and monitoring parameters for TCEQ review, possible modification, and approval.

Attachment: See Tab 12 for Monitor Well Locations

d. Attach a short groundwater technical report using *30 TAC § 309.20(a)(4)* as guidance.
Attachment:

Item 5. Soil Map and Soil Information (Instructions, Page 71)

Check each box to confirm that the following information is attached:

a. ☒ USDA NRCS Soil Survey Map depicting the area to be used for land application with the locations identified by fields and crops.

b. ☒ Breakdown of acreage and percent of total acreage for each soil type.

c. ☒ Copies of laboratory soil analyses. **Attachment:** See Tab 8

Item 6. Effluent Monitoring Data (Instructions, Page 72)

a. Completion of Table 14 **is required** for all **renewal** and **major amendment** applications. Complete the table with monitoring data for the previous two years for all parameters regulated in the current permit. An additional table has been provided with blank headers for parameters regulated in the current permit which are not listed in Table 14.

Table 14 for Outfall No.: Click to enter text. **Samples are (check one):** ☐ **Composite** ☐ **Grab**

Date (mo/yr)	Daily Avg Flow (gpd)	BOD5 (mg/L)	TSS (mg/L)	Nitrogen (mg/L)	Conductivity (mmhos/cm)	Total acres irrigated	Hydraulic Application rate (acre-feet/month)
04/2023	377,672	N/A	N/A	37.9	7.3	531	35.93
05/2023	377,672	N/A	N/A	41.3	7.0	531	35.93
06/2023	1,268,039	N/A	N/A	23.5	5.2	750	116.74
07/2023	1,290,125	N/A	N/A	21.0	5.7	750	122.74
08/2023	1,119,029	N/A	N/A	22.3	6.8	399	106.46
09/2023	1,639,309	N/A	N/A	26.7	7.3	791	150.93
10/2023	1,731,935	N/A	N/A	23.5	8.1	699	164.77
11/2023	1,093,525	N/A	N/A	19.0	7.4	699	100.68
12/2023	214,452	N/A	N/A	21.5	6.8	699	20.40
03/2024	1,170,098	N/A	N/A	28.2	6.6	802	111.32
04/2024	1,435,090	N/A	N/A	37.9	6.9	798.6	132.12
05/2024	1,977,916	N/A	N/A	41.3	7.3	890.6	188.17
06/2024	1,047,794	N/A	N/A	23.5	6.2	987.2	96.47
07/2024	668,145	N/A	N/A	21.0	7.1	399	63.56
08/2024	1,309,878	N/A	N/A	22.3	7.2	515	124.62
09/2024	2,304,444	N/A	N/A	26.7	7.5	791	212.16
10/2024	1,173,461	N/A	N/A	23.5	7.3	699	111.64
11/2024	41,280	N/A	N/A	19.0	6.4	276	3.80
12/2024	303,485	N/A	N/A	21.5	6.1	219	28.87
1/2025	38,461	N/A	N/A	21.8	5.8	219	3.66
2/2025	355,442	N/A	N/A	20.4	6.0	423	30.54

Date (mo/yr)	Daily Avg Flow (gpd)	BOD5 (mg/L)	TSS (mg/L)	Nitrogen (mg/L)	Conductivity (mmhos/cm)	Total acres irrigated	Hydraulic Application rate (acre-feet/month)
3/2025	1,025,472	N/A	N/A	19.7	6.1	802	97.56
4/2025	664,486	N/A	N/A	20.5	6.7	618	61.18
5/2025	1,137,019	N/A	N/A	23.1	5.9	731	108.17

b. Use this table to provide effluent analysis for parameters regulated in the current permit which are not listed in Table 14.

Additional Parameter Effluent Analysis

Date (mo/yr)	Total Phosphorus (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sodium Adsorption Ratio	Chromium (mg/L)	Zinc (mg/L)
04/2023	0.5	4600	1568	1247	13.6	0.0030	0.1525
05/2023	1.2	4553	1508	1161	14.9	0.0030	0.0407
06/2023	0.8	3233	1063	862	11.2	0.0026	0.0549
07/2023	1.1	3637	1217	966	12.8	0.0027	0.0378
08/2023	0.5	4203	1508	1103	15.3	0.0016	0.0208
09/2023	0.5	4480	1672	1220	16.5	0.0027	0.0363
10/2023	0.9	4935	1968	1490	17.2	0.0042	0.0919
11/2023	0.8	4570	1648	1260	16.4	0.0019	0.0199
12/2023	0.9	4388	1570	1202	15.7	0.0027	1.1594
03/2024	0.7	4147	1440	1178	12.0	0.0034	0.0993
04/2024	1.0	4518	1473	1220	13.9	0.0063	0.1475
05/2024	1.0	4565	1557	1292	13.7	0.0040	0.0575
06/2024	0.4	3748	1323	1048	14.2	0.0030	0.0563
07/2024	0.3	4480	1608	1200	17.1	0.0032	0.0341
08/2024	0.3	4472	1635	1193	17.6	0.0061	0.0475
09/2024	0.6	4795	1713	1235	18.7	0.0041	0.0636
10/2024	0.7	4655	1620	1195	16.5	0.0073	0.0280
11/2024	0.7	3930	1380	1061	15.9	0.0037	0.0281
12/2024	0.7	3615	1290	1022	14.3	0.0050	0.0767
1/2025	0.7	3652	1275	1009	13.0	0.0017	0.0550
2/2025	0.7	3580	1256	1006	13.0	0.0046	0.1367
3/2025	0.7	3933	1330	1112	13.5	0.0084	0.0796
4/2025	0.8	3984	1374	1132	13.3	0.0065	0.0254

Date (mo/yr)	Total Phosphorus (mg/L)	Total Dissolved Solids (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sodium Adsorption Ratio	Chromium (mg/L)	Zinc (mg/L)
5/2025	0.9	3770	1252	1039	13.1	0.0062	0.0354

c. Attach an explanation of all persistent excursions to permitted parameters and corrective actions taken. **Attachment:** Click to enter text.

Item 7. Pollutant Analysis (Instructions, Page 72)

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): Sample 1: 4/15/2025; Sample 2: 4/22/2025; Sample 3: 4/29/2025; Sample 4: 5/6/2025

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

See Tab 11 T3 (Tables 15 & 16)

c. Complete Tables 15 and 16.

Table 15 for Outfall No.: Click to enter text. **Samples are (check one):** ☐ **Composite** ☒ **Grab**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)				
CBOD (5-day)				
Chemical oxygen demand				
Total organic carbon				
Dissolved oxygen				
Ammonia nitrogen				
Total suspended solids				
Nitrate nitrogen				
Total organic nitrogen				
Total phosphorus				
Oil and grease				
Total residual chlorine				
Total dissolved solids				
Sulfate				
Chloride				
Fluoride				
Total alkalinity (mg/L as CaCO3)				
Temperature (˚F)				
pH (standard units)				

Table 16 for Outfall No.: Click to enter text. **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)**
Aluminum, total					2.5
Antimony, total					5
Arsenic, total					0.5
Barium, total					3
Beryllium, total					0.5
Cadmium, total					1
Chromium, total					3
Chromium, hexavalent					3
Chromium, trivalent					N/A
Copper, total					2
Cyanide, available					2/10
Lead, total					0.5
Mercury, total					0.005/0.0005
Nickel, total					2
Selenium, total					5
Silver, total					0.5
Thallium, total					0.5
Zinc, total					5.0

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 3.1: SURFACE LAND APPLICATION AND APPLICATION

This worksheet **is required** for all applications for a permit to disposal of wastewater by surface land application or evaporation.

Item 1. Edwards Aquifer (Instructions, Page 73)

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

☐ Yes ☒ No

If **no**, proceed to Item 2. If **yes**, complete Items 1.b **and** 1.c.

b. Check the box next to the subchapter applicable to the facility.

☐ 30 TAC Chapter 213, Subchapter A

☐ 30 TAC Chapter 213, Subchapter B

c. If *30 TAC Chapter 213, Subchapter A* applies, attach **either**: 1) a Geologic Assessment (if conducted in accordance with *30 TAC § 213.5*) **or** 2) a report that contains the following:

- A description of the surface geological units within the proposed land application site and wastewater pond area.
- The location and extent of any sensitive recharge features in the land application site and wastewater pond area
- A list of any proposed BMPs to protect the recharge features.

Attachment: Click to enter text.

Item 2. Surface Spray/Irrigation (Instructions, Page 73)

a. Provide the following information on the irrigation operations:

Area under irrigation (acres): 1239

Design application rate (acre-ft/acre/yr): 3.25

Design application frequency (hours/day): 24

Design application frequency (days/week): 7

Design total nitrogen loading rate (lbs nitrogen/acre/year): Click to enter text.

Average slope of the application area (percent): <1

Maximum slope of the application area (percent): 8

Irrigation efficiency (percent): 80 - 90

Effluent conductivity (mmhos/cm): 6.6294

Soil conductivity (mmhos/cm): 8.6

Curve number: 71

Describe the application method and equipment: Center Pivot irrigation

b. Attach a detailed engineering report which includes a water balance, storage volume calculations, and a nitrogen balance. **Attachment:** See Tab 9

Item 3. Evaporation Ponds (Instructions, Page 74)

a. Daily average effluent flow into ponds: Click to enter text. gallons per day

b. Attach a separate engineering report of evaporation calculations for average long-term and worst-case critical conditions. **Attachment:** Click to enter text.

Item 4. Evapotranspiration Beds (Instructions, Page 74)

a. Provide the following information on the evapotranspiration beds:

Number of beds: Click to enter text.

Area of bed(s) (acres): Click to enter text.

Depth of bed(s) (feet): Click to enter text.

Void ratio of soil in the beds: Click to enter text.

Storage volume within the beds (include units): Click to enter text.

Description of any lining to protect groundwater: Click to enter text.

b. Attach a certification by a licensed Texas professional engineer that the liner meets TCEQ requirements. **Attachment:** Click to enter text.

c. Attach a separate engineering report with water balance, storage volume calculations, and description of the liner. **Attachment:** Click to enter text.

Item 5. Overland Flow (Instructions, Page 74)

a. Provide the following information on the overland flow:

Area used for application (acres): Click to enter text.

Slopes for application area (percent): Click to enter text.

Design application rate (gpm/foot of slope width): Click to enter text.

Slope length (feet): Click to enter text.

Design BOD5 loading rate (lbs BOD5/acre/day): Click to enter text.

Design application frequency (hours/day): Click to enter text.

Design application frequency (days/week): Click to enter text.

b. Attach a separate engineering report with the method of application and design requirements according to *30 TAC § 217.212*. **Attachment:** Click to enter text.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 3.2: SUBSURFACE IRRIGATION (NON-DRIP)

This worksheet **is required** for all applications for a permit to disposal of wastewater by subsurface land application.

☐ Check the box to confirm the Class V Injection Well Inventory/Authorization Form (Worksheet 9.0) has been submitted to the TCEQ UIC Permits Team as directed.

Item 1. Edwards Aquifer (Instructions, Page 75)

a. The subsurface system is/will be located on the Edwards Aquifer Recharge Zone, as mapped by TCEQ?

☐ Yes ☐ No

b. The subsurface system is/will be located on the Edwards Aquifer Transition Zone, as mapped by TCEQ?

☐ Yes ☐ No

If **yes** to Item 1.a **or** 1.b, the subsurface system may be prohibited by *30 TAC § 213.8*. Contact the Water Quality Assessment Section at (512) 239-4671 for a preapplication meeting.

Item 2. Subsurface Application (Instructions, Page 75)

a. Check the box next to the type of subsurface land disposal system requested:

☐ Conventional drainfield, beds, or trenches

☐ Low pressure dosing

☐ Other: Click to enter text.

b. Provide the following information on the irrigation operations:

Application area (acres): Click to enter text.

Area of drainfield (square feet): Click to enter text.

Application rate (gal/square ft/day): Click to enter text.

Depth to groundwater (feet): Click to enter text.

Area of trench (square feet): Click to enter text.

Dosing duration per area (hours): Click to enter text.

Number of beds: Click to enter text.

Dosing amount per area (inches/day): Click to enter text.

Soil infiltration rate (inches/hour): Click to enter text.

Storage volume (gallons): Click to enter text.

Area of bed(s) (square feet): Click to enter text.

Soil classification: Click to enter text.

c. Attach a separate engineering report using *30 TAC § 309.20, Subchapter C, Land Disposal of Sewage Effluent* as guidance, excluding items b(3)(A) and b(3)(B). Include a description of the schedule of dosing basin rotation. **Attachment:** Click to enter text.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 3.3: SUBSURFACE AREA DRIP DISPERSAL SYSTEMS

This worksheet **is required** for all applications for a permit to dispose of wastewater using a subsurface area drip dispersal system (SADDS).

☐ Check the box to confirm the Class V Injection Well Inventory/Authorization Form (Worksheet 9.0) has been submitted to the TCEQ UIC Permits Team as directed.

Item 1. Edwards Aquifer (Instructions, Page 76)

a. The subsurface system is/will be located on the Edwards Aquifer Recharge Zone, as mapped by TCEQ?

☐ Yes ☐ No

b. The subsurface system is/will be located on the Edwards Aquifer Transition Zone, as mapped by TCEQ?

☐ Yes ☐ No

If **yes** to Item 1.a **or** 1.b, the subsurface system may be prohibited by *30 TAC § 213.8*. Contact the Water Quality Assessment Section at (512) 239-4671 for a preapplication meeting.

Item 2. Administrative Information (Instructions, Page 76)

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

b. The owner of the land where the WWTF is/will be located is the same as the owner of the WWTF.

☐ Yes ☐ No

If **no**, provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the owner of the land where the WWTF is/will be located: Click to enter text.

c. Provide the legal name of the owner of the SADDS: Click to enter text.

d. The owner of the SADDS is the same as the owner of the WWTF or the site where the WWTF is/will be located.

☐ Yes ☐ No

If **no**, identify the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in Item 1.c: Click to enter text.

e. Provide the legal name of the owner of the land where the SADDS is located: Click to enter text.

f. The owner of the land where the SADDS is/will be located is the same as owner of the WWTF, the site where the WWTF is located, or the owner of the SADDS.

☐ Yes ☐ No

If **no**, provide the legal name of all corporations or other business entities managed, owned, or otherwise closely related to the entity identified in item 1.e: Click to enter text.

Item 3. SADDS (Instructions, Page 77)

a. Check the box next to the type SADDS requested by this application:

☐ Subsurface drip/trickle irrigation

☐ Surface drip irrigation

☐ Other: Click to enter text.

b. Attach a description of the SADDS proposed/used by the facility (see instructions for guidance). **Attachment:** Click to enter text.

c. Provide the following information on the SADDS:

Application area (acres): Click to enter text.

Soil infiltration rate (inches/hour): Click to enter text.

Average slope of the application area: Click to enter text.

Maximum slope of the application area: Click to enter text.

Storage volume (gallons): Click to enter text.

Major soil series: Click to enter text.

Depth to groundwater (feet): Click to enter text.

Effluent conductivity (mmhos/cm): Click to enter text.

d. The facility is/will be located west of the boundary shown in *30 TAC § 222.83* **and** using a vegetative cover of non-native grasses over seeded with cool-season grasses.

☐ Yes ☐ No

If **yes**, the facility may propose a hydraulic application rate up to, but not to exceed, 0.1 gal/ft^2/day.

e. The facility is/will be located east of the boundary shown in *30 TAC § 222.83* **or** is the facility proposing any crop other than non-native grasses.

☐ Yes ☐ No

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

f. The facility has or plans to submit an alternative method to calculate the hydraulic application rate for approval by the ED.

☐ Yes ☐ No

If **yes**, provide the following information on the hydraulic application rates:

- Hydraulic application rate (gal/square foot/day): Click to enter text.
- Nitrogen application rate (gal/square foot/day): Click to enter text.

g. Provide the following dosing information:

Number of doses per day: Click to enter text.

Dosing duration per area (hours): Click to enter text.

Rest period between doses (hours): Click to enter text.

Dosing amount per area (inches/day): Click to enter text.

Number of zones: Click to enter text.

h. The system is/will be a surface drip irrigation system using existing native vegetation as a crop?

☐ Yes ☐ No

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

- A vegetation survey by a certified arborist describing the percent canopy cover and relative percentage of major overstory and understory plant species.

  Attachment: Click to enter text.

- Attach a separate engineering report using *30 TAC § 309.20, Subchapter C, Land Disposal of Sewage Effluent* as guidance, excluding items b(3)(A) and b(3)(B). Include a description of the schedule of dosing basin rotation.

  Attachment: Click to enter text.

Item 4. Required Plans (Instructions, Page 78)

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

Attachment: Click to enter text.

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

Attachment: Click to enter text.

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

Attachment: Click to enter text.

d. Provide soil sampling and testing with all information required in *30 TAC § 222.157*.

Attachment: Click to enter text.

Item 5. Flood and Run-On Protection (Instructions, Page 79)

a. Is the existing/proposed SADDS located within the 100-year frequency flood level?

☐ Yes ☐ No

Source: Click to enter text.

If **yes**, describe how the site will be protected from inundation: Click to enter text.

b. Is the existing/proposed SADDS within a designated floodway?

☐ Yes ☐ No

If **yes**, attach either the FEMA flood map or alternate information used to make this determination. **Attachment:** Click to enter text.

Item 6. Surface Waters in The State (Instructions, Page 79)

a. Attach a buffer map which shows the appropriate buffers on surface waters in the state, water wells, and springs/seeps. **Attachment:** Click to enter text.

b. The facility has or plans to request a buffer variance from water wells or waters in the state?

☐ Yes ☐ No

If **yes**, attach the additional information required in *30 TAC § 222.81(c)*. **Attachment:** Click to enter text.

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: Click to enter text.
2. The distance and direction from the outfall to the drinking water supply intake: Click to enter text.

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: Click to enter text. 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: Click to enter text.

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: Click to enter text.

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: Indian Creek (Outfalls 011, 012, 013)

See Tab 11 T4 Attachment for additional Receiving Waters

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

☐ Lake or Pond

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

☐ 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: Click to enter text.

d. List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point: None

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: Indian Creek and Amarillo Creek have spring fed lakes with man-made dams downstream. These streams are intermittent with persistent pools.

f. General observations of the water body during normal dry weather conditions: Stream bed is normally dry except for spring fed ponds.

Date and time of observation: 07/25/2025; approximately 10:00 am

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

☒ Yes ☒ No

If **yes**, describe how: Click to enter text.

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: Click to enter text.

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: Click to enter text.

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

N/A

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 4.1: WATERBODY PHYSICAL CHARACTERISTICS

The following information **is required** for new applications, EPA-designated Major facilities, and major amendment applications requesting to add an outfall if the receiving waters are perennial or intermittent with perennial pools (including impoundments) for a TDPES permit.

Complete the transects downstream of the existing or proposed discharges.

Item 1. Data Collection (Instructions, Page 82)

a. Date of study: Click to enter text. Time of study: Click to enter text.

Waterbody name: Click to enter text.

General location: Click to enter text.

b. Type of stream upstream of an existing discharge or downstream of a proposed discharge (check only one):

☐ perennial ☐ intermittent with perennial pools ☐ impoundment

c. No. of defined stream bends:

Well: Click to enter text. Moderately: Click to enter text. Poorly: Click to enter text.

d. No. of riffles: Click to enter text.

e. Evidence of flow fluctuations (check one):

☐ Minor ☐ Moderate ☐ Severe

f. Provide the observed stream uses and where there is evidence of channel obstructions/modifications: Click to enter text.

g. Complete the following table with information regarding the transect measurements.

Stream Transect Data

Transect Location	Habitat Type*	Water Surface Width (ft)	Stream Depths (ft)**								

* riffle, run, glide, or pool

** channel bed to water surface

Item 2. Summarize Measurements (Instructions, Page 83)

Provide the following information regarding the transect measurements:

Streambed slope of entire reach (from USGS map in ft. /ft.): Click to enter text.

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

Length of stream evaluated (ft): Click to enter text.

Number of lateral transects made: Click to enter text.

Average stream width (ft): Click to enter text.

Average stream depth (ft): Click to enter text.

Average stream velocity (ft/sec): Click to enter text.

Instantaneous stream flow (ft^3/sec): Click to enter text.

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

Flow fluctuations (i.e., minor, moderate, or severe): Click to enter text.

Size of pools (i.e., large, small, moderate, or none): Click to enter text.

Maximum pool depth (ft): Click to enter text.

Total number of stream bends: Click to enter text.

Number well defined: Click to enter text.

Number moderately defined: Click to enter text.

Number poorly defined: Click to enter text.

Total number of riffles: Click to enter text.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 5.0: SEWAGE SLUDGE MANAGEMENT AND DISPOSAL

N/A

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

Item 1. Sewage Sludge Solids Management Plan (Instructions, Page 84)

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

☐ Yes ☐ No

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

☐ Yes ☐ No

If **yes** to either Item 1.a **or** 1.b, attach a solids management plan. **Attachment:** Click to enter text.

Item 2. Sewage Sludge Management and Disposal (Instructions, Page 84)

a. Check the box next to the sludge disposal method(s) authorized under the facility's existing permit (check all that apply).

☐ Permitted landfill

☐ Marketing and distribution by the permittee, attach Form TCEQ-00551

☐ Registered land application site, attach Form TCEQ-00565

☐ Processed by the permittee, attach Form TCEQ-00744

☐ Surface disposal site (sludge monofill), attach Form TCEQ-00744

☐ Transported to another WWTP

☐ Beneficial land application, attach Form TCEQ-10451

☐ Incineration, attach Form TCEQ-00744

Based on the selection(s) made above, complete and attach the required TCEQ forms as directed. Failure to submit the required TCEQ form will result in delays in processing the application

Attachment: Click to enter text.

b. Provide the following information for each disposal site:

Disposal site name: Click to enter text.

TCEQ Permit/Registration Number: Click to enter text.

County where disposal site is located: Click to enter text.

c. Method of sewage sludge transportation:

☐ truck ☐ train ☐ pipe ☐ other: Click to enter text.

TCEQ Hauler Registration Number: Click to enter text.

d. Sludge is transported as a:

☐ liquid ☐ semi-liquid ☐ semi-solid ☐ solid

e. Purpose of land application: ☐ reclamation ☐ soil conditioning ☐ N/A

f. If sewage sludge is transported to another WWTP for treatment, attach a written statement or copy of contractual agreements confirming that the WWTP identified above will accept and be responsible for the sludge from this facility for the life of the permit (at least 5 years).

Attachment: Click to enter text.

Item 3. Authorization for Sewage Sludge Disposal (Instructions, Page 85)

If this is a new or major amendment application which requests authorization of a new sewage sludge disposal method, check the new sewage disposal method(s) requested for authorization (check all that apply):

☐ Marketing and distribution by the permittee, attach Form TCEQ-00551

☐ Processed by the permittee, attach Form TCEQ-00744

☐ Surface disposal site (sludge monofill), attach Form TCEQ-00744

☐ Beneficial land application, attach Form TCEQ-10451

☐ Incineration, attach Form TCEQ-00744

Based on the selection(s) made above, complete and attach any required TCEQ forms, as directed. Failure to submit the required TCEQ form will result in delays in processing the application.

Attachment: Click to enter text.

NOTE: New authorization for beneficial land application, incineration, processing, or disposal in the TPDES permit or TLAP **requires a major amendment to the permit**. New authorization for composting may require a major amendment to the permit. See the instructions to determine if a major amendment is required or if authorization for composting can be added through the renewal process.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 6.0: INDUSTRIAL WASTE CONTRIBUTION

N/A

The following information **is required** for all applications for publicly-owned treatment works (POTWs).

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

Item 1. All POTWs (Instructions, Page 86)

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

Industrial User Information

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

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

☐ Yes ☐ No

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

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

☐ Yes ☐ No

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

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

☐ Yes ☐ No

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

If **no**, skip Item 2 and answer all questions in Item 3 for each SIU and CIU.

Item 2. POTWs With Approved Pretreatment Programs or Those Required To Develop A Pretreatment Program (Instructions, Page 86)

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

☐ Yes ☐ No

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

Attachment: Click to enter text.

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

☐ Yes ☐ No

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

Attachment: Click to enter text.

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

Effluent Parameters Measured Above the MAL

Pollutant	Concentration	MAL	Units	Date

Attachment: Click to enter text.

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

☐ Yes ☐ No

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

Item 3. Significant Industrial User and Categorical Industrial User Information (Instructions, Pages 88-87)

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

a. Mr. or Ms.: Click to enter text. First/Last Name: Click to enter text.

Organization Name: Click to enter text. SIC Code: Click to enter text.

Phone number: Click to enter text. Email address: Click to enter text.

Physical Address: Click to enter text. City/State/ZIP Code: Click to enter text.

Attachment: Click to enter text.

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

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

d. Flow rate information

Flow Rate Information

Effluent Type	Discharge Day (gallons per day)	Discharge Frequency (Continuous, batch, or intermittent)
Process Wastewater		
Non-process Wastewater		

e. Pretreatment Standards

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

   ☐ Yes ☐ No

2. Is the SIU subject to categorical pretreatment standards?

   ☐ Yes ☐ No

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

SIUs Subject to Categorical Pretreatment Standards

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

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

   ☐ Yes ☐ No

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

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 7.0: STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES

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

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

Item 1. Applicability (Instructions, Page 89)

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

☒ Yes ☐ No

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

Item 2. Stormwater Coverage (Instructions, Page 89)

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

Authorization Coverage

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

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

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

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

Item 3. Site Map (Instructions, Page 90)

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

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

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

Attachment: See Tab 13 Attachment T2

Item 4. Facility/Site Information (Instructions, Page 90)

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

Impervious Surfaces

Outfall	Area of Impervious Surface (include units)	Total Area Drained (include units)
001	21 acres	180 acres

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

Wettest month: June

Average rainfall for wettest month (total inches): 3.07

25-year, 24-hour rainfall (inches): 4.92

Source: https://hdsc.nws.noaa.gov/pfds/pfds_map_cont.html?bkmrk=tx

c. Attach an inventory, or list, of materials currently handled at the facility that may be exposed to precipitation. **Attachment:** See Tab 13 Attachment T6

d. Attach narrative descriptions of the industrial processes and activities involving the materials in the above-listed inventory that occur outdoors or in some manner that may result in exposure of the materials to precipitation or runoff (see instructions for guidance). **Attachment:** See Tab 13 Attachment T7

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

Item 5. Pollutant Analysis (Instructions, Page 91)

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): Click to enter text.
Sample Date 05/07/2025

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

c. Complete Table 17 as directed on page 92 of the Instructions.

Table 17 for Outfall No.: Click to enter text.

Pollutant	Grab Sample* Maximum (mg/L)	Composite Sample** Maximum (mg/L)	Grab Sample* Average (mg/L)	Composite Sample** Average (mg/L)	Number of Storm Events Sampled	MAL (mg/L)
pH (standard units)	(max) 8.32	—	(min) 8.32	—		—
Total suspended solids	144					—
Chemical oxygen demand	16.0					—
Total organic carbon						—
Oil and grease	< 5.0					—
Arsenic, total	0.00291					0.0005
Barium, total	0.0388					0.003
Cadmium, total	0.000029					0.001
Chromium, total	0.0039					0.003
Chromium, trivalent	≤ 0.0039					—
Chromium, hexavalent	≤ 0.0039					0.003
Copper, total	0.0096					0.002

Pollutant	Grab Sample* Maximum (mg/L)	Composite Sample** Maximum (mg/L)	Grab Sample* Average (mg/L)	Composite Sample** Average (mg/L)	Number of Storm Events Sampled	MAL (mg/L)
Lead, total	0.000852					0.0005
Mercury, total	<0.0005					0.000005
Nickel, total	0.00326					0.002
Selenium, total	0.00232					0.005
Silver, total	< 0.00001					0.0005
Zinc, total	0.0357					0.005

* Taken during first 30 minutes of storm event

** Flow-weighted composite sample

d. Complete Table 18 as directed on pages 92-94 of the Instructions.

Table 18 for Outfall No.: Click to enter text.

Pollutant	Grab Sample* Maximum (mg/L)	Composite Sample** Maximum (mg/L)	Grab Sample* Average (mg/L)	Composite Sample** Average (mg/L)	Number of Storm Events Sampled
Iron, total	1.150				

* Taken during first 30 minutes of storm event

** Flow-weighted composite sample

Attachment: Click to enter text.

Item 6. Storm Event Data (Instructions, Page 93)

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

Date of storm event: Click to enter text.

Duration of storm event (minutes): Click to enter text.

Total rainfall during storm event (inches): Click to enter text.

Number of hours the between beginning of the storm measured and the end of the previous measurable storm event (hours): Click to enter text.

Maximum flow rate during rain event (gallons/minute): Click to enter text.

Total stormwater flow from rain event (gallons): Click to enter text.

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

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 8.0: AQUACULTURE

N/A

This worksheet **is required** for all TPDES permit applications requesting individual permit coverage for discharges of aquaculture wastewater.

Item 1. Facility/Site Information (Instructions, Page 94)

a. Complete the following table with information regarding production ponds, raceways, and fabricated tanks at the facility.

Production Pond Descriptions

Number of Ponds	Dimensions (include units)	Area of Each Pond (include units)	Number of Ponds x Area of Ponds (include Units)

Total surface area of all ponds: Click to enter text.

Raceway Descriptions

Number of Raceways	Dimensions (include units)

Fabricated Tank Descriptions

Number of Tanks	Dimensions (include units)

b. Does the facility have a TPWD-approved emergency plan?

☐ Yes ☐ No

If **yes**, attach a copy of the approved plan.

Attachment: Click to enter text.

c. Does the facility have an aquatic plant transplant authorization?

☐ Yes ☐ No

If **yes**, attach a copy of the authorization letter.

Attachment: Click to enter text.

d. Provide the number of aquaculture facilities located within 25-miles of this facility: Click to enter text.

Item 2. Species Identification (Instructions, Page 95)

Complete the following table regarding each species raised, source, origin, and disease status of the stock. Identify and attach copies of any current relevant authorizations or permits that authorize the species.

Stock Species Information

Species	Source of Stock	Origin of Stock	Disease Status	Authorizations

Attachment: Click to enter text.

Item 3. Stock Management Plan (Instructions, Page 95)

Attach a detailed stock management plan: Click to enter text.

Item 4. Water Treatment and Discharge Description (Instructions, Page 96)

Attach a detailed description of the discharge practices and water treatment process(es): Click to enter text.

Item 5. Solid Waste Management (Instructions, Page 96)

Attach a description of the solid waste-disposal practices: Click to enter text.

Item 6. Site Assessment Report (Instructions, Page 96)

All new and expanding commercial shrimp facilities located/to be located within the coastal zone must attach a detailed site assessment report which identifies sensitive aquatic habitats within the coastal zone: Click to enter text.

WORKSHEET 9.0

N/A

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

CLASS V INJECTION WELL INVENTORY/AUTHORIZATION FORM

Submit the completed form to:

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

For TCEQ Use Only
Reg. No._____
Date Received_____
Date Authorized_____

Item 1. General Information (Instructions Page 99)

1. **TCEQ Program Area**

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

   Program ID: Click to enter text.

   Contact Name: Click to enter text.

   Phone Number: Click to enter text.

2. **Agent/Consultant Contact Information**

   Contact Name: Click to enter text.

   Address: Click to enter text.

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

   Phone Number: Click to enter text.

3. **Owner/Operator Contact Information**

   ☐ Owner ☐ Operator

   Owner/Operator Name: Click to enter text.

   Contact Name: Click to enter text.

   Address: Click to enter text.

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

   Phone Number: Click to enter text.

4. **Facility Contact Information**

   Facility Name: Click to enter text.

   Address: Click to enter text.

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

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

   Facility Contact Person: Click to enter text.

   Phone Number: Click to enter text.

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

   Latitude: Click to enter text.

   Longitude: Click to enter text.

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

   Attach topographic quadrangle map as attachment A.

6. **Well Information**

   Type of Well Construction, select one:

   - ☐ Vertical Injection
   - ☐ Subsurface Fluid Distribution System
   - ☐ Infiltration Gallery
   - ☐ Temporary Injection Points
   - ☐ Other, Specify: Click to enter text.

   Number of Injection Wells: Click to enter text.

7. **Purpose**

   Detailed Description regarding purpose of Injection System:

   Click to enter text.

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

8. **Water Well Driller/Installer**

   Water Well Driller/Installer Name: Click to enter text.

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

   Phone Number: Click to enter text.

   License Number: Click to enter text.

Item 2. Proposed Down Hole Design

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

Down Hole Design Table

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

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

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

System(s) Dimensions: Click to enter text.

System(s) Construction: Click to enter text.

Item 4. Site Hydrogeological and Injection Zone Data

1. Name of Contaminated Aquifer: Click to enter text.
2. Receiving Formation Name of Injection Zone: Click to enter text.
3. Well/Trench Total Depth: Click to enter text.
4. Surface Elevation: Click to enter text.
5. Depth to Ground Water: Click to enter text.
6. Injection Zone Depth: Click to enter text.
7. Injection Zone vertically isolated geologically? ☐ Yes ☐ No

   Impervious Strata between Injection Zone and nearest Underground Source of Drinking Water:

   Name: Click to enter text.

   Thickness: Click to enter text.
8. Attach a list of contaminants and the levels (ppm) in contaminated aquifer as Attachment E.
9. Attach the Horizontal and Vertical extent of contamination and injection plume as Attachment F.
10. Attach Formation (Injection Zone) Water Chemistry (Background levels) TDS, etc., as Attachment G.
11. Injection Fluid Chemistry in PPM at point of injection. Attach as Attachment H.
12. Lowest Known Depth of Ground Water with < 10,000 PPM TDS: Click to enter text.
13. Maximum injection Rate/Volume/Pressure: Click to enter text.
14. Water wells within 1/4 mile radius (attach map as Attachment I): Click to enter text.
15. Injection wells within 1/4 mile radius (attach map as Attachment J): Click to enter text.
16. Monitor wells within 1/4 mile radius (attach drillers logs and map as Attachment K): Click to enter text.
17. Sampling frequency: Click to enter text.
18. Known hazardous components in injection fluid: Click to enter text.

Item 5. Site History

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

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

Item 6. CLASS V INJECTION WELL DESIGNATIONS

5A07 Heat Pump/AC return (IW used for groundwater to heat or cool buildings)

5A19 Industrial Cooling Water Return Flow (IW used to cool industrial process equipment)

5B22 Salt Water Intrusion Barrier (IW used to inject fluids to prevent the intrusion of salt water into an aquifer)

5D02 Stormwater Drainage (IW designed for the disposal of rain water)

5D04 Industrial Stormwater Drainage Wells (IW designed for the disposal of rain water associated with industrial facilities)

5F01 Agricultural Drainage (IW that receive agricultural runoff)

5R21 Aquifer Recharge (IW used to inject fluids to recharge an aquifer)

5S23 Subsidence Control Wells (IW used to control land subsidence caused by groundwater withdrawal)

5W09 Untreated Sewage

5W10 Large Capacity Cesspools (Cesspools that are designed for 5,000 gpd or greater)

5W11 Large Capacity Septic systems (Septic systems designed for 5,000 gpd or greater)

5W12 WTTP disposal

5W20 Industrial Process Waste-disposal Wells

5W31 Septic System (Well Disposal method)

5W32 Septic System Drainfield Disposal

5X13 Mine Backfill (IW used to control subsidence, dispose of mining byproducts, or fill sections of a mine)

5X25 Experimental Wells (Pilot Test) (IW used to test new technologies or tracer dye studies)

5X26 Aquifer Remediation (IW used to clean up, treat, or prevent contamination of a USDW)

5X27 Other Wells

5X28 Motor Vehicle Waste-disposal Wells (IW used to dispose of waste from a motor vehicle site - These are currently banned)

5X29 Abandoned Drinking Water Wells (waste disposal)

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 10.0: QUARRIES IN THE JOHN GRAVES SCENIC RIVERWAY

N/A

This worksheet **is required** for all applications for individual permits for a municipal solid waste facility or mining facility located within a Water Quality Protection Area in the John Graves Scenic Riverway. **Note: Review 30 TAC §§ 311.71-311.82 thoroughly prior to completing any portion of this worksheet.**

Item 1. Exclusions (Instructions, Page 100)

a. Is this a municipal solid waste facility?

☐ Yes ☐ No

b. Has this quarry been in operation since January 1, 1994 without cessation of operation for more than 30 consecutive days and under the same ownership?

☐ Yes ☐ No

c. Is this a coal mine?

☐ Yes ☐ No

d. Is this facility mining clay and/or shale for use in manufacturing structural clay products?

☐ Yes ☐ No

If **yes** to **any** above question, **stop here**. The facility is required to maintain documentation, as outlined in *30 TAC § 311.72(c)*, at the facility to demonstrate the exclusion(s).

Item 2. Location of the Quarry (Instructions, Page 101)

Check the box next to the distance between the quarry and the nearest navigable water body:

☐ < 200 feet ☐ 200 feet – 1,500 feet ☐ 1,500 feet – 1 mile ☐ > 1 mile

NOTE: The construction or operation of any new quarry or expansion of any existing quarry **is prohibited** within 200 feet of any water body located within a Water Quality Protection Area in the John Graves Scenic Riverway.

Item 3. Additional Requirements (Instructions, Page 101)

Use the table in the Instructions to determine if additional application requirements apply to the facility based on distance between the quarry and the nearest waterway. Attach as appropriate or enter N/A.

a. Attach a Restoration Plan: Click to enter text.

b. Amount of Financial Assurance for Restoration: $ Click to enter text.

Mechanism: Click to enter text.

c. Attach a Technical Demonstration: Click to enter text.

d. Attach a Reclamation Plan: Click to enter text.

e. Amount of Financial Assurance for Reclamation: $ Click to enter text.

Mechanism: Click to enter text.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 11.0: COOLING WATER SYSTEM INFORMATION

N/A

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

Item 1. Cooling Water System Data (Instructions, Page 104)

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

Cooling Water System Data

Parameter	Volume (include units)
Total DIF	
Total AIF	
Intake Flow Use(s) (%)	
Contact cooling	
Non-contact cooling	
Process Wastewater	
Other	

b. Attach the following information:

1. A narrative description of the design and annual operation of the facility's cooling water system and its relationship to the CWIS(s).

2. A scaled map depicting the location of each CWIS, impoundment, intake pipe, and canals, pipes, or waterways used to convey cooling water to, or within, the cooling water system. Provide the latitude and longitude for each CWIS and any intake pipe(s) on the map. Indicate the position of the intake pipe within the water column.

3. A description of water reuse activities, if applicable, reductions in total water withdrawals, if applicable, and the proportion of the source waterbody withdrawn (on a monthly basis).

4. Design and engineering calculations prepared by a qualified professional and data to support the information provided in above item a.

5. Previous year (a minimum of 12 months) of AIF data.

6. A narrative description of existing or proposed impingement and entrainment technologies or operation measures and a summary of their performance, including, but not limited to, reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage.

Attachment: Click to enter text.

Item 2. Cooling Water Intake Structure(s) Data (Instructions, Page 105)

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

Cooling Water Intake Structure(s) Data

CWIS ID				
DIF (include units)				
AIF (include units)				
Intake Flow Use(s) (%)				
Contact cooling				
Non-contact cooling				
Process Wastewater				
Other				
Latitude (decimal degrees)				
Longitude (decimal degrees)				

b. Attach the following information regarding the CWIS(s):

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

2. Engineering calculations for each CWIS.

Attachment: Click to enter text.

Item 3. Source Water Physical Data (Instructions, Page 105)

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

Source Waterbody Data

CWIS ID				
Source Waterbody				
Mean Annual Flow				
Source				

b. Attach the following information regarding the source waterbody.

1. A narrative description of the source water for each CWIS, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports this determination of the water body type where each cooling water intake structure is located.

2. A narrative description of the source waterbody's hydrological and geomorphological features.

3. Scaled drawings showing the physical configuration of all source water bodies used by the facility, including the source waterbody's hydrological and geomorphological features. **NOTE:** The source waterbody's hydrological and geomorphological features may be included on the map submitted for item 1.b.ii of this worksheet.

4. A description of the methods used to conduct any physical studies to determine the intake's area of influence within the waterbody and the results of such studies.

Attachment: Click to enter text.

Item 4. Operational Status (Instructions, Page 106)

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

☐ Yes ☐ No

If **no**, proceed to Item 4.b. If **yes**, provide the following information as an attachment:

1. Describe the operating status of each individual unit, including age, capacity utilization rate (or equivalent) for the previous five years (a minimum of 60 months), and any seasonal changes in operation.

2. Describe any extended or unusual outages or other factors which significantly affect current data for flow, impingement, entrainment.

3. Identify any operating unit with a capacity utilization rate of less than 8 percent averaged over a contiguous period of two years (a minimum of 24 months).

4. Describe any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes of fuel type.

Attachment: Click to enter text.

b. Process Units

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

☐ Yes ☐ No

If **no**, proceed to Item 4.c. If **yes**, continue.

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

☐ Yes ☐ No

If **no**, proceed to Item 4.c. If **yes**, attach descriptions of the following information:

- Individual production processes and product lines
- The operating status, including age of each line and seasonal operation
- Any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors

- Any major upgrades completed within the last 15 years and plans or schedules for decommissioning or replacement of process units or production processes and product lines.

Attachment: Click to enter text.

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

☐ Yes ☐ No

If **no**, proceed to Item 4.d. If **yes**, attach a description of completed, approved, or scheduled upgrades and the Nuclear Regulatory Commission relicensing status for each unit at the facility.

Attachment: Click to enter text.

d. Is this an application for a manufacturing facility?

☐ Yes ☐ No

If **no**, proceed to Worksheet 11.1. If **yes**, attach descriptions of current and future production schedules and any plans or schedules for any new units planned within the next five years (a minimum of 60 mos)

Attachment: Click to enter text.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 11.1: IMPINGEMENT MORTALITY

N/A

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

CWIS ID: Click to enter text.

Item 1. Impingement Compliance Technology Selection (Instructions, Page 107)

Check the box next to the method of compliance for the Impingement Mortality Standard selected by the facility.

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

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

Item 2. Impingement Compliance Technology Information (Instructions, Page 107)

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

a. CCRS [*40 CFR § 125.94(c)(1)*]

☐ Check this box to confirm the CWS meets the definition of CCRS located at *40 CFR § 125.91(c)* and provide a response to the following questions.

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

☐ Yes ☐ No

If **no**, proceed to item a.2. If **yes**, provide the following information as an attachment and continue.

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

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

Attachment: Click to enter text.

NOTE: Do not complete a separate Worksheet 11.1 for a make-up CWIS.

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

☐ Yes ☐ No

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

- Average number of cycles of concentration (COCs) prior to blowdown:

Average COCs Prior to Blowdown

Cooling Tower ID				
COCs				

- Attach COC monitoring data for each cooling tower from the previous year (a minimum of 12 months): Click to enter text.
- Maximum number of COCs each cooling tower can accomplish based on design of the system.

Calculated COCs Prior to Blowdown

Cooling Tower ID				
COCs				

- Describe conditions that may limit the number of COCs prior to blowdown, if any, including but not limited to permit conditions: Click to enter text.

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

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

Attachment: Click to enter text.

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

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

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

Attachment: Click to enter text.

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

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

1. A description of the system of technologies used or proposed for use by the facility to

achieve compliance with the impingement mortality standard.

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

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

Attachment: Click to enter text.

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

Provide the following information and proceed to Worksheet 11.2.

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

   Attachment: Click to enter text.

2. If the rate of impingement caused by the CWIS is extremely low (at an organism or age-one equivalent count), attach supplemental information to Worksheet 11.0, item 1.b.6. to support this determination.

   Attachment: Click to enter text.

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

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

Attachment: Click to enter text.

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 11.2: SOURCE WATER BIOLOGICAL DATA

N/A

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

Name of source waterbody: Click to enter text.

Item 1. Species Management (Instructions, Page 109)

a. The facility has obtained an incidental take permit for its cooling water intake structure(s) from the USFWS or the NMFS.

☐ Yes ☐ No

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

Attachment: Click to enter text.

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

☐ Yes ☐ No

If **yes**, attach a copy of the most recent managed fisheries report to TPWD, or equivalent.

Attachment: Click to enter text.

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

☐ True ☐ False

Item 2. Source Water Biological Data (Instructions, Page 109)

New Facilities (Phase I, Track I and II)

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

Existing Facilities (Phase II)

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

Attachment: Click to enter text.

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

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

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

d. Identify all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at the CWIS(s).

e. Documentation of any public participation or consultation with federal or state agencies undertaken.

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

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

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

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

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 11.3: ENTRAINMENT

N/A

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

CWIS ID: Click to enter text.

Item 1. Applicability (Instructions, Page 111)

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

☐ Yes ☐ No

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

Item 2. Existing Entrainment Performance Studies (Instructions, Page 111)

Attach any previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies.

Attachment: Click to enter text.

Item 3. Facility Entrainment Performance Studies (Instructions, Page 111)

a. Attach an entrainment characterization study, as described at *40 CFR § 122.21(r)(9)*: Click to enter text.

b. Attach a comprehensive feasibility study, as described as *40 CFR § 122.21(r)(10)*: Click to enter text.

c. Attach a benefits valuation study, as described as *40 CFR § 122.21(r)(11)*: Click to enter text.

d. Attach a non-water quality environmental and other impacts study, as described as *40 CFR § 122.21(r)(12)*: Click to enter text.

e. Attach a peer review analysis, as described as *40 CFR § 122.21(r)(13)*: Click to enter text.

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

N/A

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.

Click to enter text.

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

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

Click to enter text.

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.

Click to enter text.

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

Wastestreams Generated

Wastestream	Requesting authorization to discharge? (Yes/No)	Volume (MGD)	% of Total Flow

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

Click to enter text.

Attachment: Click to enter text.

e. Provide information on miscellaneous discharges.

Click to enter text.

Attachment: Click to enter text.

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

Attachment: Click to enter text.

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

Attachment: Click to enter text.

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): Click to enter text.

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:** Click to enter text.

d. Attach correspondence from TCEQ approving submittal of less than the required number of samples, if applicable. **Attachment:** Click to enter text.

Table 19 for Outfall No.: Click to enter text. **Samples are (check one):** ☐ **Composite** ☐ **Grab**

Pollutant	**Sample 1 (mg/L)***	**Sample 2 (mg/L)***	**Sample 3 (mg/L)***	**Sample 4 (mg/L)***
Calcium				
Potassium				
Sodium				

*Indicate units if different from mg/L.

ATTACHMENT A of WQ0001990000

OTHER REQUIRES Item 19 pages 26-27 requires certain tables to be submitted with a permit renewal application as specified below.

19. Wastewater discharged via Outfalls 003, 004, 005, 006, 007, 008, 009, 011, 012, and 013 must be sampled and analyzed as directed below for those parameters listed in Tables 1, 2, 3 , 4, 5, and 6 of Attachment A of this permit. Results of the analytical testing must be submitted within 90 days following the fourth discharge from these outfalls or with the next permit application if less than four samples are collected. Results must be submitted to the TCEQ Industrial Permits Team (MC 148) and Region 1 Office. Based on a technical review of the submitted analytical results, an amendment may be initiated by TCEQ staff to include additional effluent limitations, monitoring requirements, or both.

Table 1 and 2:	Analysis is required for all pollutants in Tables 1 and 2. Wastewater must be sampled and analyzed for those parameters listed in the tables for a minimum of four sampling events that are each at least one week apart.
Table 3:	Analysis is required for those pollutants in Table 3 that are used at the facility that could in any way contribute to contamination in the Outfall's discharge. Sampling and analysis must be conducted for a minimum of four sampling events that are each at least one week apart.
Table 4:	For all pollutants listed in Table 4, the permittee shall indicate whether each pollutant is believed to be present or absent in the discharge. Sampling and analysis must be conducted for each pollutant believed present for a minimum of one sampling event.
Table 5 and 6:	Analysis is required for those pollutants in Tables 5 and 6. Sampling and analysis must be conducted for a minimum of one sampling event.

The permittee shall report the flow at Outfalls 003, 004, 005, 006, 007, 008, 009, 011, 012, and 013 in MGD in the attachment. The permittee shall indicate on each table whether the samples are composite (C) or grab (G) by checking the appropriate box.

This requirement is effective from the date of permit issuance and expires upon the date of permit expiration. This provision does not interfere with effluent analysis requirements for application of any TPDES permit.

During the effective date of this permit discharges only occurred at Outfall 009 on 08/22/2022 and 06/01/2023. All samples were grab.

There were no outfall discharges at 003, 004, 005, 006,007, 008, 011, 012 during the effective dates of the permit.

Sample 2 date: 8/30/2022
Sample 3 date: 6/01/2023

Southwestern Public Service Company TPDES Permit No. WQ0001990000

Attachment A

See Table 1 Page 20 of Application

Table 1 – Conventionals and Non-conventionals

Outfall No.: ☐C ☒G	Effluent Concentration (mg/L)					
Pollutant	**Samp. 1**	**Samp. 2**	**Samp. 3**	**Samp. 4**	**Average**	
Flow (MGD) (Daily Average)		**0.76**	**0.59**			
BOD (5-day)		5.2	<5.00			
CBOD (5-day)		< 5.00	< 5.00			
Chemical Oxygen Demand		<5.00	34			
Total Organic Carbon		19.2	22.8			
Dissolved Oxygen						
Ammonia Nitrogen		0.529	0.195			
Total Suspended Solids		7	61			
Nitrate Nitrogen		51.3	<40.0			
Total Organic Nitrogen			1.69			
Total Phosphorus		0.53	0.46			
Oil and Grease		<5.00	<5.00			
Total Residual Chlorine		< 0.20	<0.20			
Total Dissolved Solids		4830	1550			
Sulfate		800	449			
Chloride		1660	486			
Fluoride		3.67	<0.50			
Total Alkalinity (mg/L as $CaCO_3$)		112	88			
Temperature (°F)						
pH (Standard Units; min/max)		7.2	8.2			

Table 2 – Metals

See Table 2 Page 21 of Application

Pollutant	Effluent Concentration (µg/L)[2]					MAL[3] (µg/L)
	Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	
Aluminum, Total		<100	997			2.5
Antimony, Total		4.82	1.30			5
Arsenic, Total		6.40	2.86			0.5
Barium, Total		154	79.3			3
Beryllium, Total		<0.100	0.231			0.5
Cadmium, Total		<0.100	0.115			1
Chromium, Total		<5.00	0.712			3
Chromium, Hexavalent		<5.00	<0.75			3
Chromium, Trivalent		<5.00	<0.75			N/A
Copper, Total		26.4	3.47			2
Cyanide, Free		< 50	< 50			10
Lead, Total		<0.100	1.10			0.5
Mercury, Total		<0.200	<0.500			0.005
Nickel, Total		18.7	5.37			2

[2] Indicate units if different than µg/L.
[3] Minimum Analytical Level

Pollutant	Effluent Concentration (µg/L)[2]					MAL[3] (µg/L)
	Samp. 1	Samp. 2	Samp. 3	Samp. 4	Average	
Selenium, Total		3.44	<1.00			5
Silver, Total		<0.050	<0.050			0.5
Thallium, Total		<5.00	<5.00			0.5
Zinc, Total		<50.0	0.54			5.0

Table 3 – Toxic Pollutants with Water Quality Criteria

See Tables 8, 9, & 10 of Permit Application

Outfall No.: ☐C ☒G Pollutant	Samp. 1 (µg/L)[2]	Samp. 2 (µg/L)[2]	Samp. 3 (µg/L)[2]	Samp. 4 (µg/L)[2]	Avg. (µg/L)[2]	MAL (µg/L)
Acrolein						0.7
Acrylonitrile						50
Anthracene						10
Benzene						10
Benzidine						50
Benzo(*a*)anthracene						5
Benzo(*a*)pyrene						5
Bis(2-chloroethyl)ether						10
Bis(2-ethylhexyl) phthalate						10
Bromodichloromethane						10
Bromoform						10
Carbon Tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane						10
Chloroform						10
Chrysene						5
Cresols						10
1,2-Dibromoethane						10
m-Dichlorobenzene						10
o-Dichlorobenzene						10
p-Dichlorobenzene						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethylene						10
Dichloromethane						20
1,2-Dichloropropane						10
1,3-Dichloropropylene						10
2,4-Dimethylphenol						10
Di-*n*-Butyl Phthalate						10
Epichlorohydrin						1,000
Ethylbenzene						10
Ethylene Glycol						—
Fluoride						500
Hexachlorobenzene						5

Outfall No.: ☐C ☒G Pollutant	Samp. 1 (µg/L)[2]	Samp. 2 (µg/L)[2]	Samp. 3 (µg/L)[2]	Samp. 4 (µg/L)[2]	Avg. (µg/L)[2]	MAL (µg/L)
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
4,4′-Isopropylidenediphenol [bisphenol A]						—
Methyl Ethyl Ketone						50
Methyl *tert*-butyl ether [MTBE]						—
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-*n*-Butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated Biphenyls (PCBs)[4]						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethylene						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethylene						10
2,4,5-Trichlorophenol						50
TTHM (Total Trihalomethanes)						10
Vinyl Chloride						10

Table 4

See Table 6 Page 27 of Permit Application

Outfall No. ☐C ☒G Pollutant	Believed Present	Believed Absent	Avg. Concentration (mg/L)	Max. Concentration (mg/L)	No. of Samples	MAL (mg/L)
Bromide						0.400
Color (PCU)						—
Nitrate-Nitrite (as N)						—
Sulfide (as S)						—
Sulfite (as SO_3)						—
Surfactants						—

[4] Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016. If all values are non-detects, enter the highest non-detect preceded by a "<" symbol.

Outfall No. ☐C ☐G Pollutant	Believed Present	Believed Absent	Avg. Concentration (mg/L)	Max. Concentration (mg/L)	No. of Samples	MAL (mg/L)
Boron, total						0.020
Cobalt, total						0.0003
Iron, total						0.007
Magnesium, total						0.020
Manganese, total						0.0005
Molybdenum, total						0.001
Tin, total						0.005
Titanium, total						0.030

See Table 8 Page 29 of Permit Application

Table 5 – Volatile Compounds

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

Outfall No. ☐C ☒G	Average (µg/L)[2]	Maximum (µg/L)[2]	No. of Samples	MAL (µg/L)
Pollutant				
1,1,2-Trichloroethane				10
Trichloroethylene [Trichloroethene]				10
Vinyl chloride				10

Table 6– Acid Compounds

See Table 9 Page 30 of Permit Application

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

All parameters in Tables 3 - 6 are Not Detected (ND)

Attachment T11 T1
Impoundment Information

Attachment: **See Tab 13 Attachment T3**

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 #5**	**Pond #6**	**Pond #7**	**Pond #**
Use Designation: (T) (D) (C) or (E)	C	C	C	
Associated Outfall Number	None	011	012	
Liner Type (C) (I) (S) or (A)	N/A	C	N/A	
Alt. Liner Attachment Reference			Attachment T4	
Leak Detection System, Y/N				
Groundwater Monitoring Wells, Y/N	N	N	N	
Groundwater Monitoring Data Attachment	N/A	N/A	N/A	

Parameter	Pond #	Pond #	Pond #	Pond #
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	
Length (ft)				
Width (ft)				
Max Depth From Water Surface (ft), Not Including Freeboard	34	19.3	17	
Freeboard (ft)	3.5	2.2	4.5	
Surface Area (acres)	83.5	9	9.3	
Storage Capacity (gallons)	273,000,000	29,000,000	18,900,000	
40 CFR Part 257, Subpart D, Y/N				
Date of Construction	6/1/1976	6/1/1976	1/31/1979	

Attachment: See Tab 11 Attachment T1

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

2. Leak detection system or groundwater monitoring data

☐ Yes ☐ No ☐ Not yet designed

3. Groundwater impacts

☐ Yes ☐ No ☐ Not yet designed

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: Click to enter text.

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: Click to enter text.

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: Click to enter text.

Impoundment Information

Parameter	Pond # 8	Pond # 9	Pond # 10	Pond # 11
Use Designation: (T) (D) (C) or (E)	C	C	C	C
Associated Outfall Number	005	006	None	None
Liner Type (C) (I) (S) or (A)	S	S	N/A	N/A
Alt. Liner Attachment Reference	N/A		Attachment T4	Attachment T4
Leak Detection System, Y/N	Y	Y		
Groundwater Monitoring Wells, Y/N	Y	Y	N	N
Groundwater Monitoring Data Attachment	Tab 12	Tab 12	N/A	N/A
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	Y
Length (ft)	430	420		600
Width (ft)	430	420		320
Max Depth From Water Surface (ft), not including freeboard	20	20	5.5	11
Freeboard (ft)	0.5	2	3.5	3.5
Surface Area (acres)	4.75	4	9.5	4.1
Storage Capacity (gallons)	21,700,000	20,500,000	15,000,000	6,300,000
40 CFR Part 257, Subpart D, Y/N				
Date of Construction	2/1/1981	9/1/1981	6/1/1976	6/1/1978

Impoundment Information

Parameter	Pond #12	Pond #13	Pond #14	Pond #15
Use Designation: (T) (D) (C) or (E)	C	C	C	C
Associated Outfall Number	007	None	None	None
Liner Type (C) (I) (S) or (A)	S	N/A	S	N/A
Alt. Liner Attachment Reference				Attachment T4
Leak Detection System, Y/N	Y	N	Y	N
Groundwater Monitoring Wells, Y/N				
Groundwater Monitoring Data Attachment				
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	Y
Length (ft)	650		640	
Width (ft)	120		640	
Max Depth From Water Surface (ft), Not Including Freeboard	6.5		16	
Freeboard (ft)	2		1	
Surface Area (acres)	1.8	1.2	9.4	1.2
Storage Capacity (gallons)	6,400,000	5,400,000	83,000,000	5,400,000
40 CFR Part 257, Subpart D, Y/N				
Date of Construction	4/1/1996	6/1/1982	5/15/1999	11/15/1987

Impoundment Information

Parameter	Pond #16	Pond #17	Pond #18	Pond #19
Use Designation: (T) (D) (C) or (E)	C	C	C	C
Associated Outfall Number	004	013	003	None
Liner Type (C) (I) (S) or (A)	S	S	S	N/A
Alt. Liner Attachment Reference				Attachment T4
Leak Detection System, Y/N	Y	Y	Y	
Groundwater Monitoring Wells, Y/N				
Groundwater Monitoring Data Attachment				
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	Y
Length (ft)	755	200	662	
Width (ft)	400	200	462	
Max Depth From Water Surface (ft), Not Including Freeboard	35	8.5	30	
Freeboard (ft)	4	3	2	1.6
Surface Area (acres)	6.2	2.5	2	9.4
Storage Capacity (gallons)	35,000,000	2,500,000	43,500,000	61,000,000
40 CFR Part 257, Subpart D, Y/N				
Date of Construction	8/29/2016	10/15/1999	10/15/1988	1/15/1993

Impoundment Information

Parameter	Pond #20	Pond #21	Pond 22	
Use Designation: (T) (D) (C) or (E)	C	C	C	
Associated Outfall Number	009	None	None	
Liner Type (C) (I) (S) or (A)	S	S	S	
Alt. Liner Attachment Reference				
Leak Detection System, Y/N	Y	N	Y	
Groundwater Monitoring Wells, Y/N				
Groundwater Monitoring Data Attachment				
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	
Length (ft)	400			
Width (ft)	390			
Max Depth From Water Surface (ft), Not Including Freeboard	32	22	24	
Freeboard (ft)	2	4	2	
Surface Area (acres)	3.83	10.67	14.37	
Storage Capacity (gallons)	20,000,000	90,000,000	79,923,000	
40 CFR Part 257, Subpart D, Y/N				
Date of Construction	5/15/1998	6/1/2007	6/1/2022	

Attachment Tab 11 T4

Description of Immediate Receiving Waters (Instructions, Page 80)

a. Name of the immediate receiving waters: Unnamed tributary of Indian Creek (Outfalls 003 and 004)

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

☐ Lake or Pond

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

☐ 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: Click to enter text.

d. List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point: None

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: Indian Creek and Amarillo Creek have spring fed lakes with man-made dams downstream.

f. General observations of the water body during normal dry weather conditions: Stream bed is normally dry except for spring fed ponds and heavy rains.

Date and time of observation: Outfall 003: 8/19/2025 8:35 am; Outfall 004: 8/19/2025 8:25 am

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

☐ Yes ☒ No

If **yes**, describe how: Click to enter text.

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: Click to enter text.

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: Click to enter text.

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

Description of Immediate Receiving Waters (Instructions, Page 80)

a. Name of the immediate receiving waters: Unnamed ditch (Outfall 005)

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

☐ Lake or Pond

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

☐ Man-Made Channel or Ditch

☐ Stream or Creek

☐ Freshwater Swamp or Marsh

☐ Tidal Stream, Bayou, or Marsh

☐ Open Bay

☒ Other, specify:natural channel

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: Click to enter text.

d. List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point: None

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: Natural channel empties into playa lake (Stalanaker Lake) with no outlet

f. General observations of the water body during normal dry weather conditions: Ditch is normally dry.Playa holds water only after rainfall.

Date and time of observation: The water body was influenced by stormwater runoff during observations. Outfall 005: 8/19/2025 08:10 am

☐ Yes ☒ No

If **yes**, describe how: Click to enter text.

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
☐ urban runoff
☒ agricultural runoff
☐ septic tanks
☐ upstream discharges
☐ other, specify: Click to enter text.

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

☒ livestock watering
☐ industrial water supply
☐ non-contact recreation
☐ irrigation withdrawal
☐ domestic water supply
☐ navigation
☐ contact recreation
☐ picnic/park activities
☐ fishing
☐ other, specify: Click to enter text.

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

Description of Immediate Receiving Waters (Instructions, Page 80)

a. Name of the immediate receiving waters: Bonita Creek (Outfalls 006 and 007)

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

☐ Lake or Pond

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

☐ 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: Click to enter text.

d. List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point: None

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: Small man-made dams for livestock watering.

f. General observations of the water body during normal dry weather conditions: Stream bed is normally dry. Livestock watering ponds are not spring fed and only contain rainfall runoff.

Date and time of observation: Outfall 006: 1/30/2025 11:53 am; Outfall 007 8/19/2025 7:55 am

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

☐ Yes ☒ No

If **yes**, describe how:

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
☐ urban runoff
☒ agricultural runoff
☐ septic tanks
☐ upstream discharges
☐ other, specify: Click to enter text.

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

☒ livestock watering
☐ industrial water supply
☐ non-contact recreation
☐ irrigation withdrawal
☐ domestic water supply
☐ navigation
☐ contact recreation
☐ picnic/park activities
☐ fishing
☐ other, specify: Click to enter text.

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

Description of Immediate Receiving Waters (Instructions, Page 80)

a. Name of the immediate receiving waters: Unnamed ditch (Outfalls 009)

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

☐ Lake or Pond

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

☐ Man-Made Channel or Ditch

☐ Stream or Creek

☐ Freshwater Swamp or Marsh

☐ Tidal Stream, Bayou, or Marsh

☐ Open Bay

☒ Other, specify:natural channel

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: Click to enter text.

d. List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point: None

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: Natural channel emptied into a playa lake (McGee Lake) with no outlet

f. General observations of the water body during normal dry weather conditions: Stream bed is normally dry. Playa holds water year round from Tyson Foods wastewater effluent.

Date and time of observation: 8/19/2025 7/38 am

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

☒ Yes ☒ No

If **yes**, describe how: Click to enter text.

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
☐ urban runoff
☒ agricultural runoff
☐ septic tanks
☐ upstream discharges
☐ other, specify: Click to enter text.

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

☒ livestock watering
☐ industrial water supply
☐ non-contact recreation
☐ irrigation withdrawal
☐ domestic water supply
☐ navigation
☐ contact recreation
☐ picnic/park activities
☐ fishing
☐ other, specify: Click to enter text.

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

Attachment Tab 11

Tables 15 & 16

Table 1 for Outfall No.: Pond 14 Samples are (check one): ☐ Composite ☐ XGrab

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	9.63	10.2	6.35	<5.0
CBOD (5-day)	7.5	8.25	<5.0	<5.0
Chemical oxygen demand	47	34	61	71
Total organic carbon	16.2			
Dissolved oxygen	7.99	8.06	7.58	7.62
Ammonia nitrogen	<5.0	<5.0	<5.0	<5.0
Total suspended solids	19	23	18	35
Nitrate nitrogen	12	11	11.8	11.8
Total organic nitrogen	4.2	4.3	4.4	4.4
Total phosphorus	0.46	0.37	0.43	0.56
Oil and grease	<5.00	<5.00	<5.00	<5.00
Total residual chlorine	0.030	0.020	<0.020	0.040
Total dissolved solids	3840	4050	3750	3920
Sulfate	1140	1090	1140	1090
Chloride	1400	1410	1460	1370
Fluoride	<40.0	<40.0	<40.0	<40.0
Total alkalinity (mg/L as CaCO3)	120			
Temperature (˚F)		57.4	61.0	57.2
pH (standard units)		9.91	9.12	9.09

Please note all Total alkalinity run samples were collected on 06/12/2025

Table 2 for Outfall No.: Pond 14 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)
Aluminum, total	268	315	207	321	2.5
Antimony, total	5.79	5.64	5.4	5.46	5
Arsenic, total	10.3	11.4	10.5	9.93	0.5
Barium, total	124	121	118	126	3
Beryllium, total	0.455	1.38	0.245	0.475	0.5
Cadmium, total	0.16	0.15	<0.10	<0.10	1
Chromium, total	3.51	6.14	3.33	5.23	3
Chromium, hexavalent	<3.00	<3.00	<3.00	<3.00	3
Chromium, trivalent	≤3.51	≤6.14	≤3.33	≤5.23	N/A
Copper, total	16.8	21.5	16.8	20.3	2
Cyanide, available	<0.0500	<0.0500	<0.0500	<0.0500	2/10
Lead, total	<0.100	<0.100	<0.100	0.130	0.5
Mercury, total	<0.500	<0.500	<0.500	<0.500	0.005/0.0005
Nickel, total	7.45	11.8	8.03	9.66	2
Selenium, total	3.39	6.07	3.29	4.62	5
Silver, total	<0.0500	0.0550	<0.0500	<0.0500	0.5
Thallium, total	<5.00	10.3	<5.00	<5.00	0.5
Zinc, total	34.1	16.4	9.49	61.8	5.0

Table 3 for Outfall No.: Pond 16 Samples are (check one): ☐ Composite ☐ XGrab

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	<5.00	<5.00	<5.00	<5.00
CBOD (5-day)	<5.00	<5.00	<5.00	<5.00
Chemical oxygen demand	29.0	27.0	69.0	59.0
Total organic carbon	16.4			
Dissolved oxygen	6.85	7.78	7.20	7.29
Ammonia nitrogen	<5.0	<5.0	<5.0	<5.0
Total suspended solids	6	<5	11	5
Nitrate nitrogen	18.0	20.5	19.5	19.6
Total organic nitrogen	4.0	4.1	4.0	4.5
Total phosphorus	1.10	1.22	1.30	1.26
Oil and grease	<5.00	<5.00	<5.00	<5.00
Total residual chlorine	0.030	0.040	<0.020	0.030
Total dissolved solids	3960	3920	3880	4000
Sulfate	1110	1180	1140	1140
Chloride	1320	1390	1340	1340
Fluoride	<40.0	<40.0	<40.0	<40.0
Total alkalinity (mg/L as CaCO3)	124			
Temperature (°F)		57.92	60.44	57.38
pH (standard units)		8.14	7.85	7.71

Table 4 for Outfall No.: Pond 16 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)
Aluminum, total	314	302	334	272	2.5
Antimony, total	6.25	6.77	5.19	6.16	5
Arsenic, total	10.2	7.73	8.64	10.2	0.5
Barium, total	131	143	120	140	3
Beryllium, total	0.865	0.120	0.170	0.155	0.5
Cadmium, total	<0.100	0.135	0.115	0.155	1
Chromium, total	9.43	6.21	7.43	7.58	3
Chromium, hexavalent	<3.00	<3.00	<3.00	<3.00	3
Chromium, trivalent	≤9.43	≤6.21	≤7.43	≤7.58	N/A
Copper, total	36.0	33.2	36.1	37.0	2
Cyanide, available	<0.0500	<0.0500	<0.0500	<0.0500	2/10
Lead, total	0.105	0.145	0.170	0.170	0.5
Mercury, total	<0.500	<0.500	<0.500	<0.500	0.005/0.0005
Nickel, total	11.9	9.23	10.8	13.3	2
Selenium, total	7.62	2.74	5.00	9.80	5
Silver, total	<0.0500	<0.0500	0.00500	<0.0500	0.5
Thallium, total	5.28	<5.00	<5.00	<5.00	0.5
Zinc, total	37.9	9.88	32.0	35.5	5.0

Table 5 for Outfall No.: Pond 18 Samples are (check one): ☐ Composite ☐ XGrab

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	7.06	8.66	5.84	<5.00
CBOD (5-day)	20.0	25.0	54.0	51.0
Chemical oxygen demand	<5.00	<5.00	<5.00	<5.00
Total organic carbon				
Dissolved oxygen	34	43	30	74
Ammonia nitrogen	<5.0	<5.0	<5.0	<5.0
Total suspended solids	7.61	8.24	8.1	7.51
Nitrate nitrogen	15.9	15.0	21.6	22.7
Total organic nitrogen	4.2	4.0	4.5	4.3
Total phosphorus	0.370	0.280	0.830	0.730
Oil and grease	<5.00	<5.00	<5.00	<5.00
Total residual chlorine	0.090	<0.020	0.050	<0.020
Total dissolved solids	3920	3770	4140	3590
Sulfate	1120	1140	1130	1020
Chloride	1330	1350	1310	1170
Fluoride	<40.0	<40.0	<40.0	<40.0
Total alkalinity (mg/L as CaCO3)	100			
Temperature (°F)		62.06	61.16	58.82
pH (standard units)		9.95	9.17	9.17

Table 6 for Outfall No.: Pond 18 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)
Aluminum, total	704	672	642	2450	2.5
Antimony, total	6.52	7.52	5.32	3.55	5
Arsenic, total	8.73≤	11.5	10.3	9.65	0.5
Barium, total	127	148	124	106	3
Beryllium, total	0.430	0.900	<0.100	<0.100	0.5
Cadmium, total	0.180	0.170	0.205	0.145	1
Chromium, total	4.11	8.20	6.51	6.84	3
Chromium, hexavalent	<3.00	<3.00	<3.00	<3.00	3
Chromium, trivalent	≤4.11	≤8.20	≤6.51	≤6.84	N/A
Copper, total	25.1	32.3	29.8	25.6	2
Cyanide, available	<0.0500	<0.0500	<0.0500	<0.0500	2/10
Lead, total	0.300	0.400	0.225	0.710	0.5
Mercury, total	<0.500	<0.500	<0.500	<0.500	0.005/0.0005
Nickel, total	13.1	14.3	9.51	11.0	2
Selenium, total	6.34	7.54	4.98	7.41	5
Silver, total	<0.0500	<0.0500	<0.0500	<0.0500	0.5
Thallium, total	<5.00	<5.00	<5.00	<5.00	0.5
Zinc, total	<5.00	<5.00	<5.00	<5.00	5.0

Table 7 for Outfall No.: Pond 20 Samples are (check one): ☐ Composite ☐ XGrab

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	15.0	34.6	56.5	89.0
CBOD (5-day)	15.2	27.0	51.4	28.3
Chemical oxygen demand	34.0	52.0	134	89.0
Total organic carbon	18.8			
Dissolved oxygen	3.20	0.840	1.07	1.36
Ammonia nitrogen	<5.0	<5.0	7.3	<5.0
Total suspended solids	17	15	12	14
Nitrate nitrogen	<9.03	<9.03	<9.03	<9.03
Total organic nitrogen	7.6	7.2	7.7	8.7
Total phosphorus	0.600	0.790	0.970	0.710
Oil and grease	<5.00	<5.00	<5.00	<5.00
Total residual chlorine	<0.020	0.030	0.020	0.11
Total dissolved solids	3260	3540	3500	3780
Sulfate	961	897	903	924
Chloride	1210	1160	1240	1220
Fluoride	<40.0	<40.0	<40.0	<40.0
Total alkalinity (mg/L as CaCO3)	140			
Temperature (°F)		56.66	64.22	54.32
pH (standard units)		7.58	7.64	7.77

Table 8 for Outfall No.: Pond 20 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)
Aluminum, total	589	347	252	204	2.5
Antimony, total	0.925	0.950	<0.500	0.675	5
Arsenic, total	7.46	10.4	8.40	7.36	0.5
Barium, total	95.1	90.7	104	112	3
Beryllium, total	<0.100	0.305	0.390	<0.100	0.5
Cadmium, total	<0.100	<0.100	<0.100	<0.100	1
Chromium, total	1.54	2.64	2.27	2.47	3
Chromium, hexavalent	<3.00	<3.00	<3.00	<3.00	3
Chromium, trivalent	≤1.54	≤2.64	≤2.27	≤2.47	N/A
Copper, total	1.92	1.98	<0.500	1.11	2
Cyanide, available	<0.0500	<0.0500	<0.0500	<0.0500	2/10
Lead, total	0.175	<0.100	<0.100	<0.100	0.5
Mercury, total	<0.500	<0.500	<0.500	<0.500	0.005/0.0005
Nickel, total	5.89	9.11	6.88	9.43	2
Selenium, total	4.06	2.65	1.65	1.54	5
Silver, total	<0.0500	<0.0500	<0.0500	<0.0500	0.5
Thallium, total	<5.00	<5.00	<5.00	<5.00	0.5
Zinc, total	<5.00	<5.00	<5.00	<5.00	5.0

Table 9 for Outfall No.: Pond 22 W Samples are (check one): ☐ Composite ☐ XGrab

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	<5.00	<5.00	<5.00	<5.00
CBOD (5-day)	<5.00	<5.00	<5.00	<5.00
Chemical oxygen demand	35.0	12.0	52.0	40.0
Total organic carbon	41.5			
Dissolved oxygen	8.38	7.91	7.29	7.44
Ammonia nitrogen	<5.0	<5.0	<5.0	<5.0
Total suspended solids	9	6	7	5
Nitrate nitrogen	27.0	33.0	35.1	32.9
Total organic nitrogen	7.5	7.4	7.2	5.4
Total phosphorus	1.40	1.28	1.12	1.04
Oil and grease	<5.00	<5.00	<5.00	<5.00
Total residual chlorine	0.040	0.030	0.040	0.020
Total dissolved solids	4200	4070	3800	3560
Sulfate	1250	1140	1110	1020
Chloride	1430	1280	1260	1160
Fluoride	<40.0	<40.0	<40.0	<40.0
Total alkalinity (mg/L as CaCO3)	80			
Temperature (°F)		64.04	66.92	58.1
pH (standard units)		8.14	8.01	8.26

Table 10 for Outfall No.: Pond 22 W 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)
Aluminum, total	242	225	211	224	2.5
Antimony, total	6.09	5.69	4.56	4.68	5
Arsenic, total	9.11	9.88	10.5	7.98	0.5
Barium, total	156	144	134	133	3
Beryllium, total	0.595	0.335	0.190	<0.100	0.5
Cadmium, total	0.165	0.160	<0.100	<0.100	1
Chromium, total	8.30	9.39	8.32	9.05	3
Chromium, hexavalent	<3.00	<3.00	<3.00	<3.00	3
Chromium, trivalent	≤8.30	≤9.39	≤8.32	≤9.05	N/A
Copper, total	42.4	43.2	37.4	35.4	2
Cyanide, available	<0.0500	<0.0500	<0.0500	<0.0500	2/10
Lead, total	0.170	0.210	<0.100	0.180	0.5
Mercury, total	<0.500	<0.500	<0.500	<0.500	0.005/0.0005
Nickel, total	10.5	11.2	9.43	9.91	2
Selenium, total	4.50	5.76	6.79	6.59	5
Silver, total	<0.0500	<0.0500	<0.0500	<0.0500	0.5
Thallium, total	<5.00	<5.00	<5.00	<5.00	0.5
Zinc, total	52.7	L8.6	48.4	62.0	5.0

Tab 11 T2 (Wastream Information)

4. OUTFALL/DISPOSAL METHOD INFORMATION (Instructions, Pages 43-44)

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

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

Outfall Latitude and Longitude

Outfall Number	Latitude-degrees	Latitude-minutes	Latitude-seconds	Longitude-degrees	Longitude-minutes	Longitude-seconds
001	35	18	39	101	44	28
003	35	18	45	101	44	28
004	35	19	17	101	44	29
005	35	18	32	101	43	09
006	35	19	25	101	43	24
007	35	19	25	101	42	38
008	35	17	30	101	44	31
009	35	17	42	101	40	28
011	35	18	06	101	45	17
012	35	18	30	101	45	02
013	35	17	28	101	45	12
1-26	35	18	47	101	42	23
1-27	35	18	44	101	42	52
1-28	35	18	40	101	43	48
1-29	35	18	52	101	42	49
I-S2	35	19	11	101	43	09
I-S3	35	19	12	101	42	37
I-S4	35	19	06	101	44	00
I-S5	35	18	35	101	44	09
I-S6	35	18	50	101	43	45
I-S7	35	18	04	101	40	44

Outfall Location Description

Outfall Number	Location Description
001	Southwest Corner of Section 7
003	Spillway of Pond 18
004	Spillway of Pond 16
005	Spillway of Pond 8
006	Spillway of Pond 9
007	Spillway of Pond 12
008	Spillway of Pond 3
009	Spillway of Pond 20
011	Spillway of Pond 6
012	Spillway of Pond 7
013	Spillway of Pond 17
I-26	South side of Section 6 where wastewater is land applied via irrigation system to plot 26
I-27	South side of Section 6 where wastewater is land applied via irrigation system to plot 27
I-28	South side of Section 6 where wastewater is applied via irrigation system to plot 28
I-29	South side of Section 6 where wastewater is applied via irrigation system to plot 29
I-S2	Northwest corner of Section 6 where wastewater is land applied via sprinkler to plot S2
I-S3	Northeast corner of Section 6 where wastewater is applied via sprinkler to plot S3
I-S4	Northwest corner of Section 7 where wastewater is land applied via sprinkler to plot S4
I-S5	Southwest corner of Section 7 where wastewater is land applied via sprinkler to plot S5
I-S6	Southwest corner of Section 7 where wastewater is applied via sprinkler to plot S6
I-S7	Sprinkler land applying wastewater on Section 44
I-S8	Southcentral area of Section 6 where wastewater is applied via sprinkler to plot S8

Description of Sampling Points (if different from Outfall location)

Outfall Number	Description of Sampling Point

Outfall Flow Information – Permitted and Proposed

Outfall Number	Permitted Daily Avg Flow (MGD)	Permitted Daily Max Flow (MGD)	Proposed Daily Avg Flow (MGD)	Proposed Daily Max Flow (MGD)
001	Variable	Variable	N/A	N/A
003	Variable	Variable	N/A	N/A
004	Variable	Variable	N/A	N/A
005	Variable	Variable	N/A	N/A
006	Variable	Variable	N/A	N/A
007	Variable	Variable	N/A	N/A
008	Variable	Variable	N/A	N/A
009	Variable	Variable	N/A	N/A
011	Variable	Variable	N/A	N/A
012	Variable	Variable	N/A	N/A
013	Variable	Variable	N/A	N/A
I-S2	N/A	0.29	N/A	0.29
I-S3	N/A	0.27	N/A	0.27
I-S4	N/A	0.64	N/A	0.64
I-S5	N/A	0..17	N/A	0.17
I-S6	N/A	0.30	N/A	0.30
I-S7	N/A	1.07	N/A	1.07
I-S8	N/A	0.42	N/A	0.42

Outfall Discharge – Method and Measurement

Outfall Number	Pumped Discharge? Y/N	Gravity Discharge? Y/N	Type of Flow Measurement Device Used
001	N	Y	Estimate
003	N	Y	Estimate
004	N	Y	Estimate
005	N	Y	Estimate
006	N	Y	Estimate
007	N	Y	Estimate
008	N	Y	Estimate
009	N	Y	Estimate
011	N	Y	Estimate
012	N	Y	Estimate
013	N	Y	Estimate
I-S2	Y	Y	Meter/Pump Curve
I-S3	Y	Y	Meter/Pump Curve
I-S4	Y	Y	Meter/Pump Curve
I-S5	Y	Y	Meter/Pump Curve
I-S6	Y	Y	Meter/Pump Curve
I-S7	Y	Y	Meter/Pump Curve
I-S8	Y	Y	Meter/Pump Curve

Outfall Discharge – Flow Characteristics

Outfall Number	Intermittent Discharge? Y/N	Seasonal Discharge? Y/N	Continuous Discharge? Y/N	Discharge Duration (hours/ day)	Discharge Duration (days/ month)	Discharge Duration (months/ year)
001	Y	N	N	24	2	2
003	Y	N	N	24	2	2
004	Y	N	N	24	2	2
005	Y	N	N	24	2	2
006	Y	N	N	24	2	2
007	Y	N	N	24	2	2
008	Y	N	N	24	2	2
009	Y	N	N	24	2	2
011	Y	N	N	24	2	2
012	Y	N	N	24	2	2
013	Y	N	N	24	2	2
I-S2	N	Y	N	24	30	12
I-S3	N	Y	N	24	30	12
I-S4	N	Y	N	24	30	12
I-S5	N	Y	N	24	30	12
I-S6	N	Y	N	24	30	12
I-S7	N	Y	N	24	30	12
I-S8	N	Y	N	24	30	12

Wastestream Contributions

Outfall No.: 001

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.198	100
Stormwater (Discharge will occur only as a result of heavy rainfall)		
Volume determined from average daily flow values from 2009 – 2024 outfall stormwater discharge events.		

Outfall No.: 003

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 004

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 005

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Wastestream Contributions

Outfall No.: 006

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 007

Contributing Wastestreams	Volume (MGD)	% of Total Flow
	0.315	
	0.079	
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 008

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 009

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Wastestream Contributions

Outfall No.: 011

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 012

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Stormwater	0.315	80
Wastewater	0.079	20
Discharge will occur only as a result of heavy rainfall in excess of 25-year, 24-hour storm.		
Volume determined from average daily flow values from 2009 – 2024 outfall discharge events.		

Outfall No.: 013

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Wastewater	0.187	100
Discharge will occur only as a result of unexpected shutdown of injection well.		
Volume determined from average daily flow values from 2009 – 2024 Outfall 013 discharge events.		

Outfall No.: S2

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Wastestream Contributions

Outfall No.: S3

Contributing Wastestreams	Volume (MGD)	% of Total Flow

Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Outfall No.: S4

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Outfall No.: S5

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Outfall No.: S6

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Wastestream Contributions

Outfall No.: S7

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Wastestream Contributions

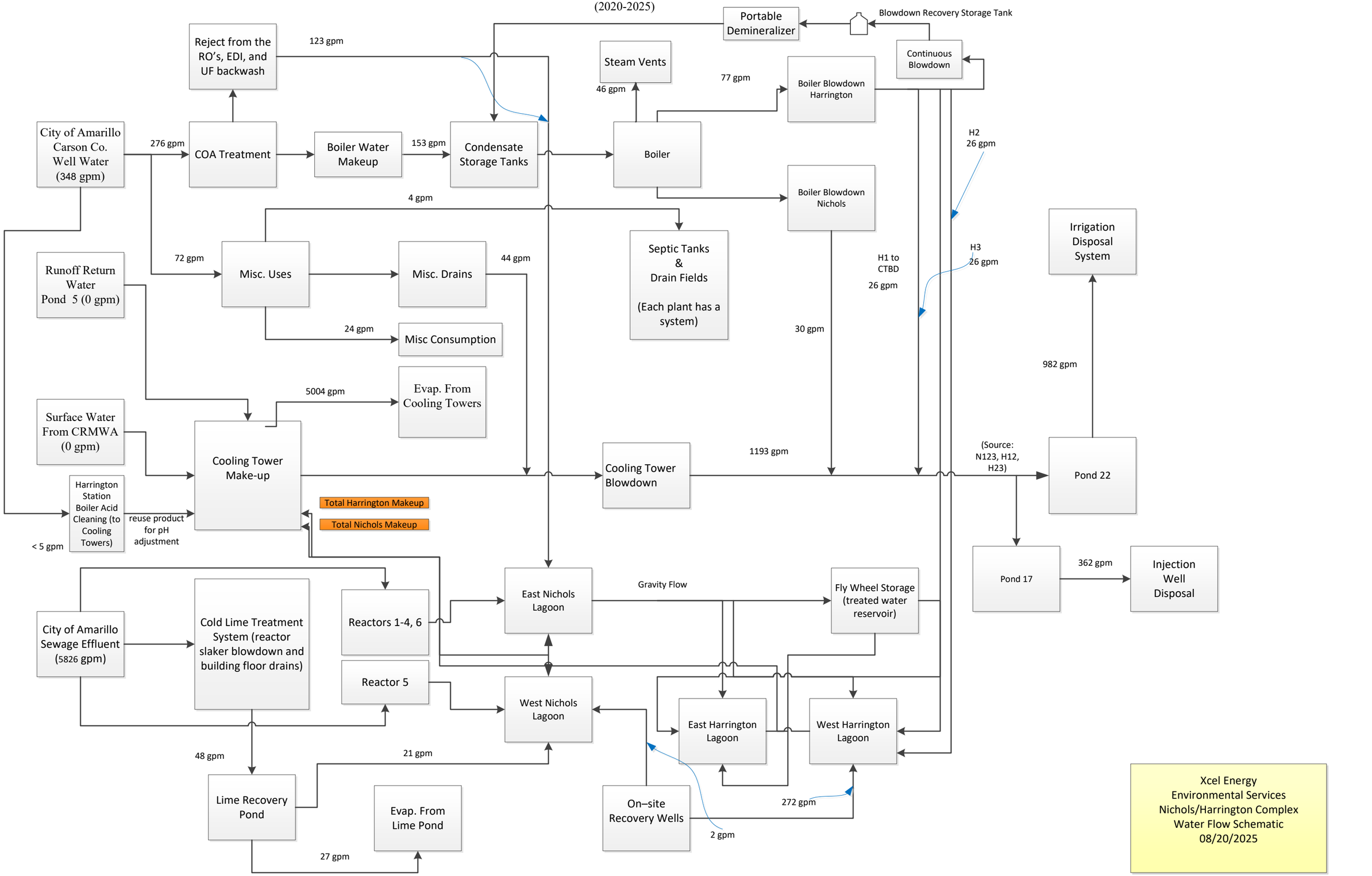
Outfall No.: S8

Contributing Wastestreams	Volume (MGD)	% of Total Flow
Cooling tower blowdown	1.7678	94.36
Low volume wastes	0.1022	.5.61
Metal cleaning wastes	0.0004	0.02
Maximum flow based on 2.5 acre-ft/acre per year of application on 1239 acres.		

Design calculations and Solids Management Plan are not applicable.

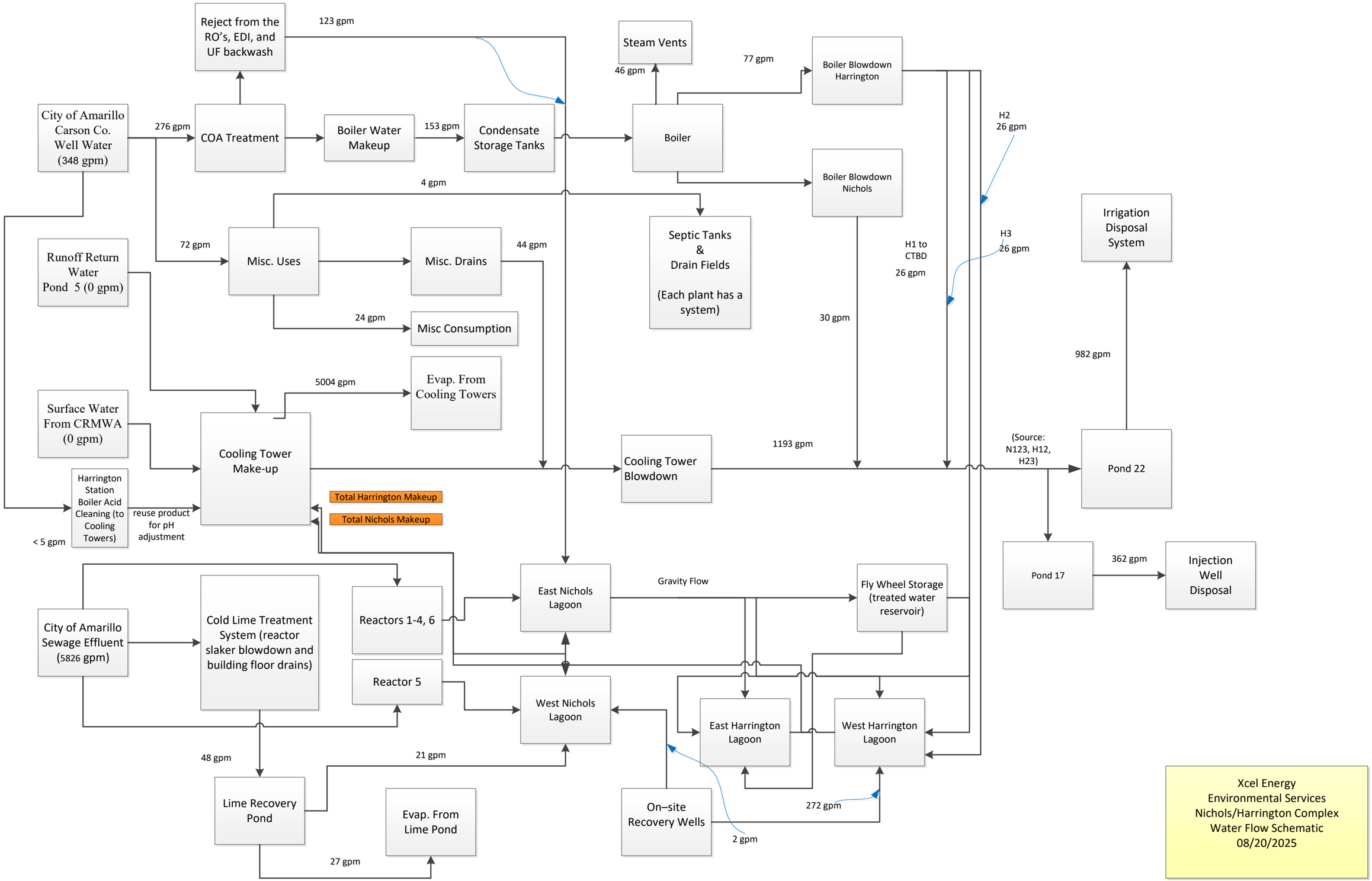
NICHOLS – HARRINGTON COMPLEX WATER AND WASTEWATER FLOW SCHEMATIC - 5 YEAR AVG.

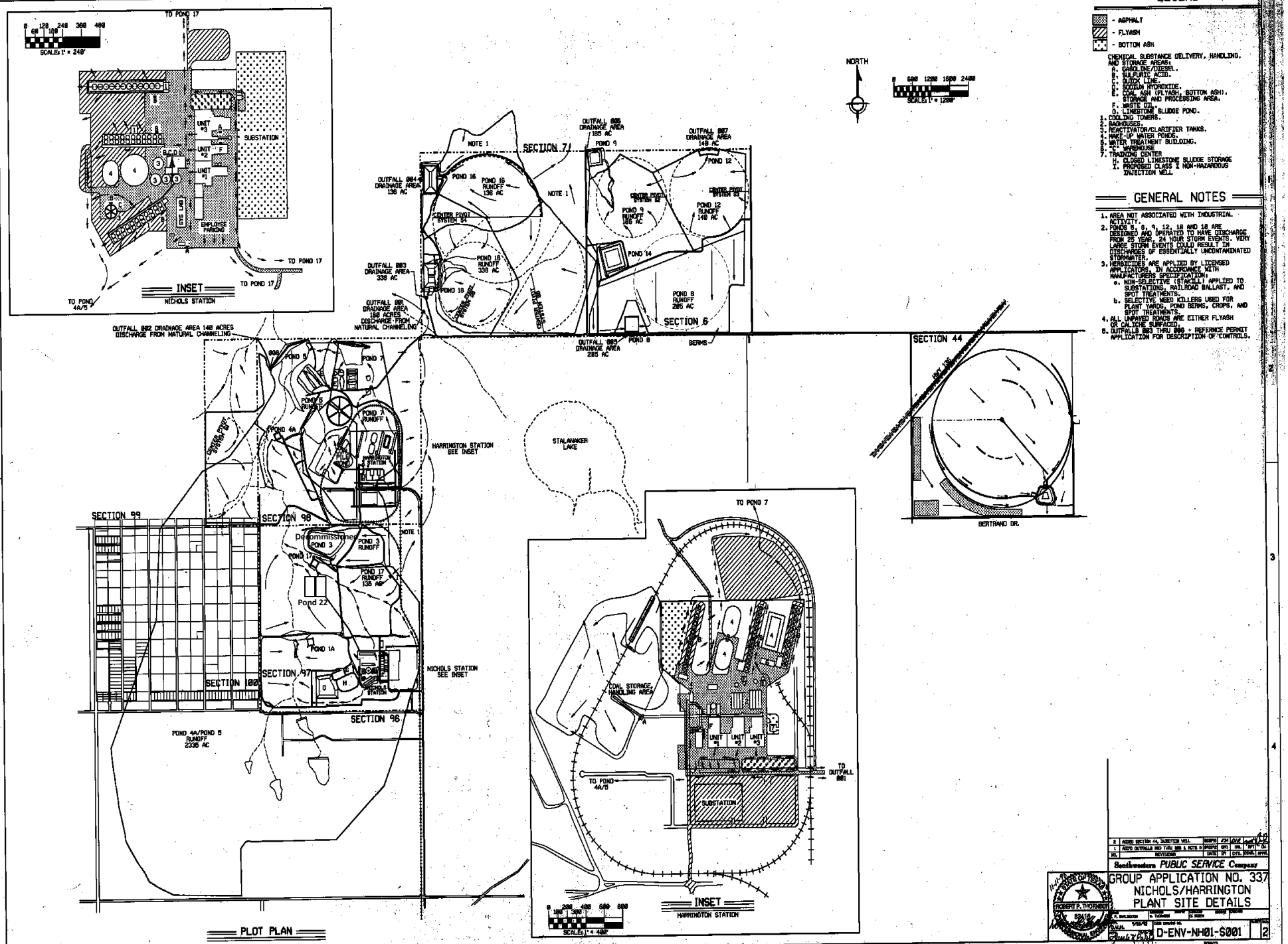
(2020-2025)



NICHOLS – HARRINGTON COMPLEX WATER AND WASTEWATER FLOW SCHEMATIC - 5 YEAR AVG.

(2020-2025)




LEGEND
- ASPHALT
- FLYASH
- BOTTOM ASH
CHEMICAL SUBSTANCE DELIVERY, HANDLING, AND STORAGE AREAS:
A. GASOLINE/DIESEL.
B. SULFURIC ACID.
C. QUICK LIME.
D. SODIUM HYDROXIDE.
E. COAL ASH (FLYASH, BOTTOM ASH).
STORAGE AND PROCESSING AREA.
F. WASTE OIL.
G. LIMESTONE SLUDGE POND.
1. COOLING TOWERS.
2. BAGHOUSES.
3. REACTIVATOR/CLARIFIER TANKS.
4. MAKE-UP WATER PONDS.
5. WATER TREATMENT BUILDING.
6. "I" WAREHOUSE
7. TRAINING CENTER
H. CLOSED LIMESTONE SLUDGE STORAGE
I. PROPOSED CLASS I NON-HAZARDOUS INJECTION WELL
GENERAL NOTES
1. AREA NOT ASSOCIATED WITH INDUSTRIAL ACTIVITY.
2. PONDS 5, 8, 9, 12, 16 AND 18 ARE DESIGNED AND OPERATED TO HAVE DISCHARGE FROM 25 YEAR, 24 HOUR STORM EVENTS. VERY LARGE STORM EVENTS COULD RESULT IN DISCHARGES OF ESSENTIALLY UNCONTAMINATED STORMWATER.
3. HERBICIDES ARE APPLIED BY LICENSED APPLICATORS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION:
a. NON-SELECTIVE (STACKLL) APPLIED TO SUBSTATIONS, RAILROAD BALLAST, AND SPOT TREATMENTS.
b. SELECTIVE WEED KILLERS USED FOR PLANT YARDS, POND BERMS, CROPS, AND SPOT TREATMENTS.
4. ALL UNPAVED ROADS ARE EITHER FLYASH OR CALICHE SURFACED.
5. OUTFALLS 003 THRU 006 - REFERNCE PERMIT APPLICATION FOR DESCRIPTION OF CONTROLS.
NORTH
SCALE: 1" = 1200'
INSET
NICHOLS STATION
TO POND 17
SUBSTATION
EMPLOYEE PARKING
UNIT #1
UNIT #2
UNIT #3
TO POND 4A/5
SECTION 71
SECTION 6
SECTION 44
SECTION 99
SECTION 98
SECTION 97
SECTION 100
SECTION 96
OUTFALL 004 DRAINAGE AREA 135 AC
OUTFALL 005 DRAINAGE AREA 185 AC
OUTFALL 007 DRAINAGE AREA 148 AC
OUTFALL 003 DRAINAGE AREA 338 AC
OUTFALL 001 DRAINAGE AREA 198 ACRES DISCHARGE FROM NATURAL CHANNELING
OUTFALL 002 DRAINAGE AREA 148 ACRES DISCHARGE FROM NATURAL CHANNELING
OUTFALL 008 DRAINAGE AREA 285 AC
POND 16 RUNOFF 136 AC
POND 9 RUNOFF 185 AC
POND 12 RUNOFF 148 AC
POND 18 RUNOFF 338 AC
POND 8 RUNOFF 285 AC
POND 7 RUNOFF
POND 17 RUNOFF 135 AC
POND 4A/POND 5 RUNOFF 2335 AC
CENTER PIVOT SYSTEM 84
CENTER PIVOT SYSTEM 82
HARRINGTON STATION SEE INSET
NICHOLS STATION SEE INSET
STALANAKER LAKE
BERMS
BERTRAND DR.
Decommissioned
Pond 22
COAL STORAGE HANDLING AREA
TO POND 7
TO POND 4A/5
TO OUTFALL 001
SUBSTATION
INSET
HARRINGTON STATION
SCALE: 1" = 400'
PLOT PLAN
Southwestern PUBLIC SERVICE Company
GROUP APPLICATION NO. 337
NICHOLS/HARRINGTON
PLANT SITE DETAILS
ROBERT P. THORNBERY
92418
D-ENV-NH01-S001
2