Edwards Aquifer Application Cover Page

RANGER
ENVIRONMENTAL SERVICES, LLC

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains “possibly sensitive” features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.

4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Gateway 29					**2. Regulated Entity No.: 111807152**			
3. Customer Name: Gateway 29 Real Estate, LLC					**4. Customer No.: 606180297**			
5. Project Type: **(Please circle/check one)**	New		Modification		Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential		**8. Site (acres):**		32.26	
9. Application Fee:	$650.00		**10. Permanent BMP(s):**		Approved WPAP			
11. SCS (Linear Ft.):	Approved SCS		**12. AST/UST (No. Tanks):**		1 – 32,000 gallon WATCO TW PERMATANK			
13. County:	Williamson		**14. Watershed:**		North Fork San Gabriel River			

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	__	__	_x_
Region (1 req.)	__	__	_x_
County(ies)	__	__	_x_
Groundwater Conservation District(s)	__Edwards Aquifer Authority __Barton Springs/ Edwards Aquifer __Hays Trinity __Plum Creek	__Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	__Austin __Buda __Dripping Springs __Kyle __Mountain City __San Marcos __Wimberley __Woodcreek	__Austin __Bee Cave __Pflugerville __Rollingwood __Round Rock __Sunset Valley __West Lake Hills	__Austin __Cedar Park __Florence __Georgetown __Jerrell _x_Leander __Liberty Hill __Pflugerville __Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	__	__	__	__	__
Region (1 req.)	__	__	__	__	__
County(ies)	__	__	__	__	__
Groundwater Conservation District(s)	__ Edwards Aquifer Authority __Trinity-Glen Rose	__Edwards Aquifer Authority	__Kinney	__EAA __Medina	__EAA __Uvalde
City(ies) Jurisdiction	__Castle Hills __Fair Oaks Ranch __Helotes __Hill Country Village __Hollywood Park __San Antonio (SAWS) __Shavano Park	__Bulverde __Fair Oaks Ranch __Garden Ridge __New Braunfels __Schertz	NA	__San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Chad M. Copeland, P.G., PWS
Print Name of Customer/Authorized Agent
Signature of Customer/Authorized Agent — Date: 09/27/2024

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

Underground Storage Tank Facility Plan Application – Checklist

TCEQ-0583

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Underground Storage Tank Facility Plan Checklist

X **Edwards Aquifer Application Cover Page (TCEQ-20705)**

X **General Information Form (TCEQ-0587)**

Attachment A - Road Map
Attachment B - USGS / Edwards Recharge Zone Map
Attachment C - Project Description

Previously approved

– **Geologic Assessment Form (TCEQ-0585)**

Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
Attachment B - Stratigraphic Column
Attachment C - Site Geology
Attachment D - Site Geologic Map(s)

X **Underground Storage Tank Facility Plan (TCEQ-0583)**

Attachment A - Detailed Narrative of UST Facility
Attachment B – Manufacturer Information for Tanks
Attachment C - Alternative Design and Protection Method for Tanks (if proposed)
Attachment D – Manufacturer Information for Piping
Attachment E - Alternative Design and Protection Method for Piping (if proposed)
Attachment F - Tertiary Containment Method
Attachment G - Exception to the Geologic Assessment (if requested)
Attachment H - Profile Drawing(s)
Attachment I - Initial and Continuing Training
Attachment J - Release Detection Maintenance
Site Plan

Previously approved

– **Temporary Stormwater Section (TCEQ-0602)**

Attachment A - Spill Response Actions
Attachment B - Potential Sources of Contamination
Attachment C - Sequence of Major Activities
Attachment D - Temporary Best Management Practices and Measures
Attachment E - Request to Temporarily Seal a Feature (if requested)
Attachment F - Structural Practices
Attachment G - Drainage Area Map
Attachment H - Temporary Sediment Pond(s) Plans and Calculations
Attachment I - Inspection and Maintenance for BMPs
Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

X **Agent Authorization Form (TCEQ-0599), if application submitted by agent**

X **Application Fee Form (TCEQ-0574)**

X **Check Payable to the "Texas Commission on Environmental Quality"**

X **Core Data Form (TCEQ-10400)**

General Information Form

TCEQ-0587

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General Information Form

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: Chad M. Copeland, P.G., PWS

Date: 09/27/2024

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Gateway 29
2. County: Williamson
3. Stream Basin: North Fork San Gabriel River
4. Groundwater Conservation District (If applicable): N/A
5. Edwards Aquifer Zone:

   ☒ Recharge Zone
   ☐ Transition Zone

6. Plan Type:

   ☐ WPAP
   ☐ SCS
   ☐ Modification
   ☐ AST
   ☒ UST
   ☐ Exception Request

7. Customer (Applicant):

Contact Person: Samir Maredia
Entity: Gateway 29 Real Estate, LLC
Mailing Address: 5522 Jenolan Ridge Lane
City, State: Sugerland, Texas Zip: 77479
Telephone: 832-713-4985 FAX: _____
Email Address: samirmaredia@gmail.com

8. Agent/Representative (If any):

Contact Person: Chad M. Copeland, P.G., PWS
Entity: Ranger Environmental Services, LLC
Mailing Address: PO Box 201179
City, State: Austin, Texas Zip: 78720
Telephone: 512-335-1785x124 FAX: 512-335-0527
Email Address: chad@rangerenv.com

9. Project Location:

☒ The project site is located inside the city limits of Leander.
☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
☐ The project site is not located within any city's limits or ETJ.

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

The property is located at the southwest corner of SH-29 and Ronald Reagan Blvd and is east of Kauffman Loop.

11. ☒ **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

☒ Project site boundaries.
☒ USGS Quadrangle Name(s).
☒ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
☒ Drainage path from the project site to the boundary of the Recharge Zone.

13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: TBD

14. ☒ **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

☒ Area of the site
☒ Offsite areas
☒ Impervious cover
☒ Permanent BMP(s)
☒ Proposed site use
☒ Site history
☒ Previous development
☒ Area(s) to be demolished

15. Existing project site conditions are noted below:

☐ Existing commercial site
☐ Existing industrial site
☐ Existing residential site
☐ Existing paved and/or unpaved roads
☐ Undeveloped (Cleared)
☒ Undeveloped (Undisturbed/Uncleared)
☐ Other: _____

Prohibited Activities

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

(2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

(3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

(4) The use of sewage holding tanks as parts of organized collection systems; and

(5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

(6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. ☒ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

(1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

- ☐ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
- ☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
- ☒ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
- ☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
- ☐ A request for an extension to a previously approved plan.

19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

- ☒ TCEQ cashier
- ☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

ATTACHMENT A

Road Map

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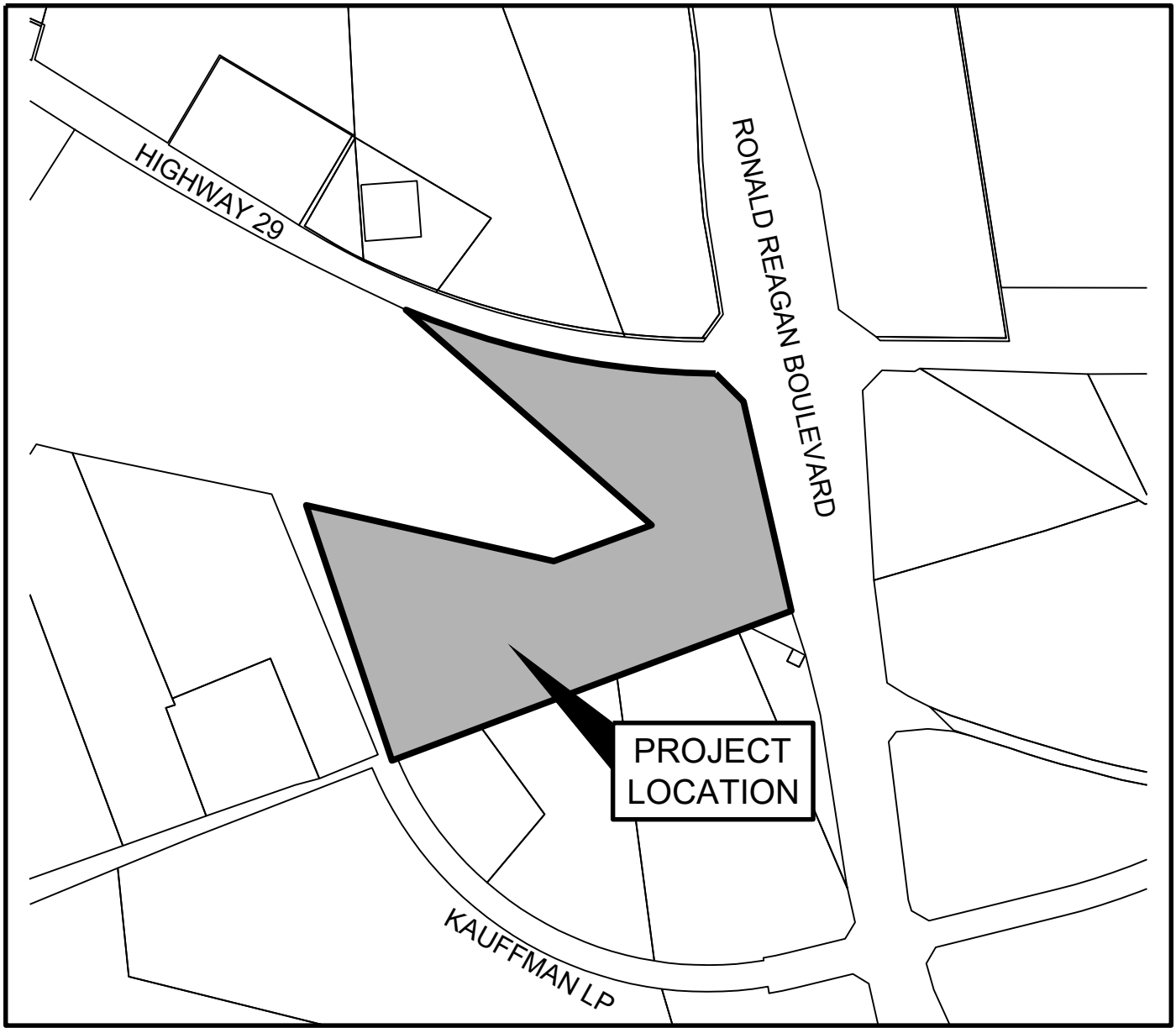
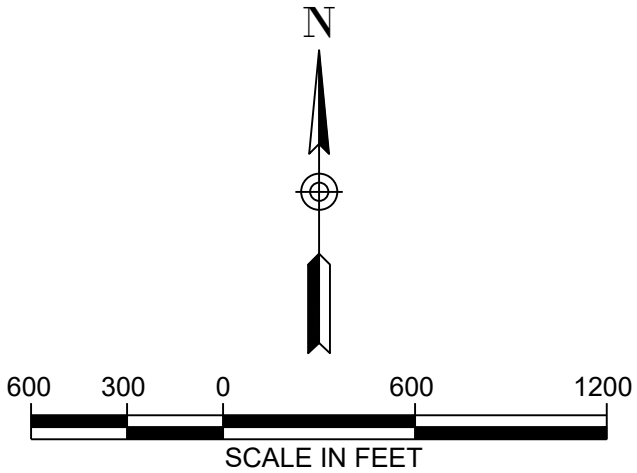
Previously submitted and approved with the WPAP





LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN - F-1386

Gateway 29 Subdivision

Location Map

1 OF 1

I:\a633-Gateway\0401\Exhibits\Location Map\A633-0401 Location Map.dwg
Plot Date/Time: Jul. 28, 23 - 13:24:18

ATTACHMENT B

USGS / Edwards Recharge Zone Map

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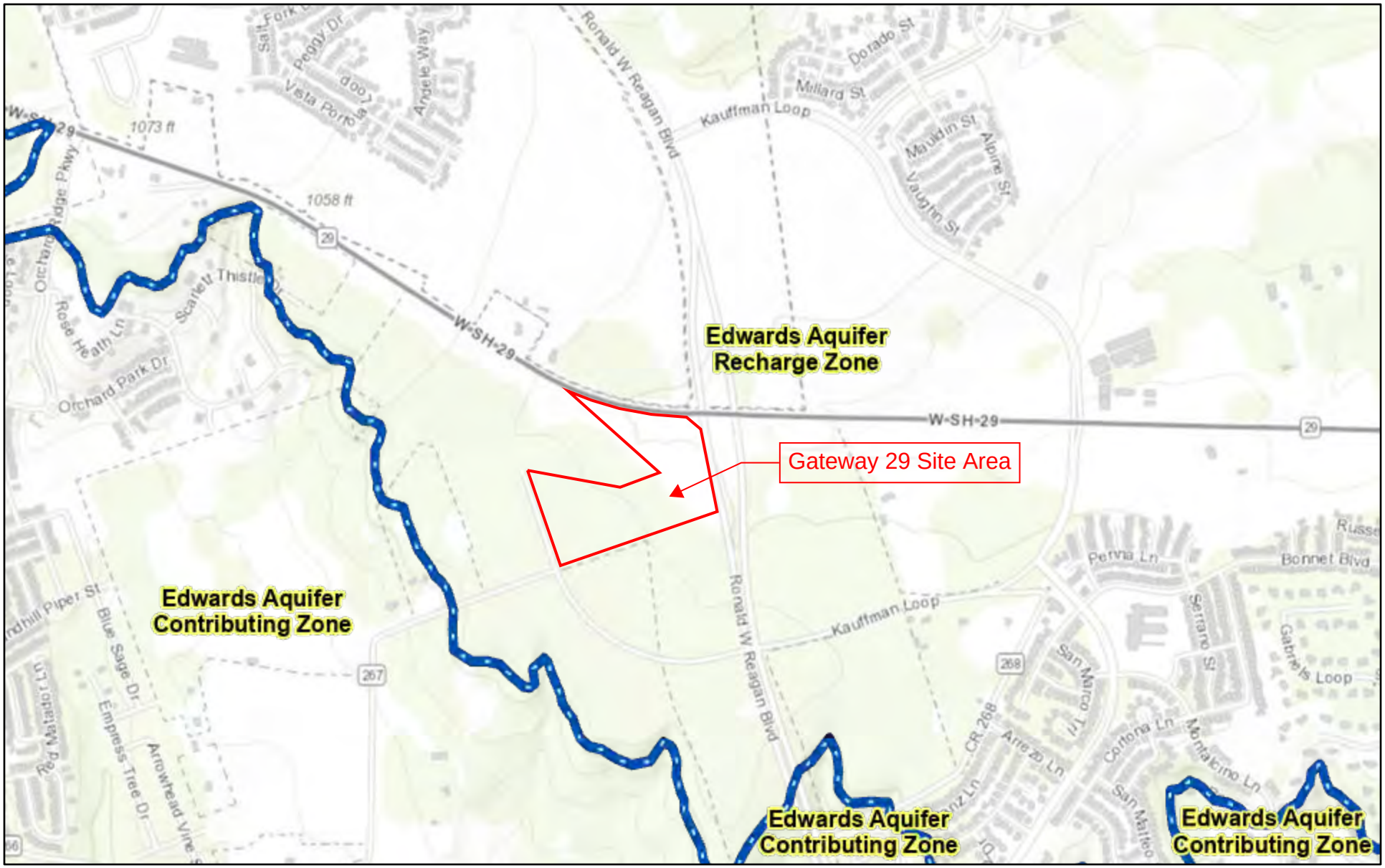
Previously submitted and approved with the WPAP

Edwards Aquifer Viewer Custom Print



7/28/2023, 12:54:57 PM

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Edwards Aquifer Label

Edwards Aquifer Boundary

Edwards Aquifer Boundary central line

TX Counties

7.5 Minute Quad Grid

TCEQ_EDWARDS_OFFICIAL_MAPS

County of Williamson, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, TCEQ

Web AppBuilder for ArcGIS

ATTACHMENT C

Project Description

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PROJECT DESCRIPTION

The subject site is located at the southwest corner of SH-29 and Ronald Reagan Blvd, Leander, Williamson County, Texas. The site is located within the Edwards Aquifer Recharge Zone. This subject site consists of mixed use development along with a proposed retail fueling facility and convenience store. The project lies with the City of Leander and the South Fork San Gabriel River watershed. The site is unimproved/undeveloped. The most recent WPAP Modification was approved in August 2024.

The proposed underground storage tank systems will include one (1) WATCO triple wall tank PERMATANK. The tank will consist of two steel jackets with a fiberglass wrap achieving tertiary containment. The tank will be a 32,000-gallon compartmentalized tank (UL 58 & UL 1746). The compartments will store 20,000 gallons of gasoline, 6,000 gallons of gasoline, and 6,000 gallons of diesel. Associated with these tanks will be eight (8) new Gilbarco 700 S dispensers along with double wall FRP piping.

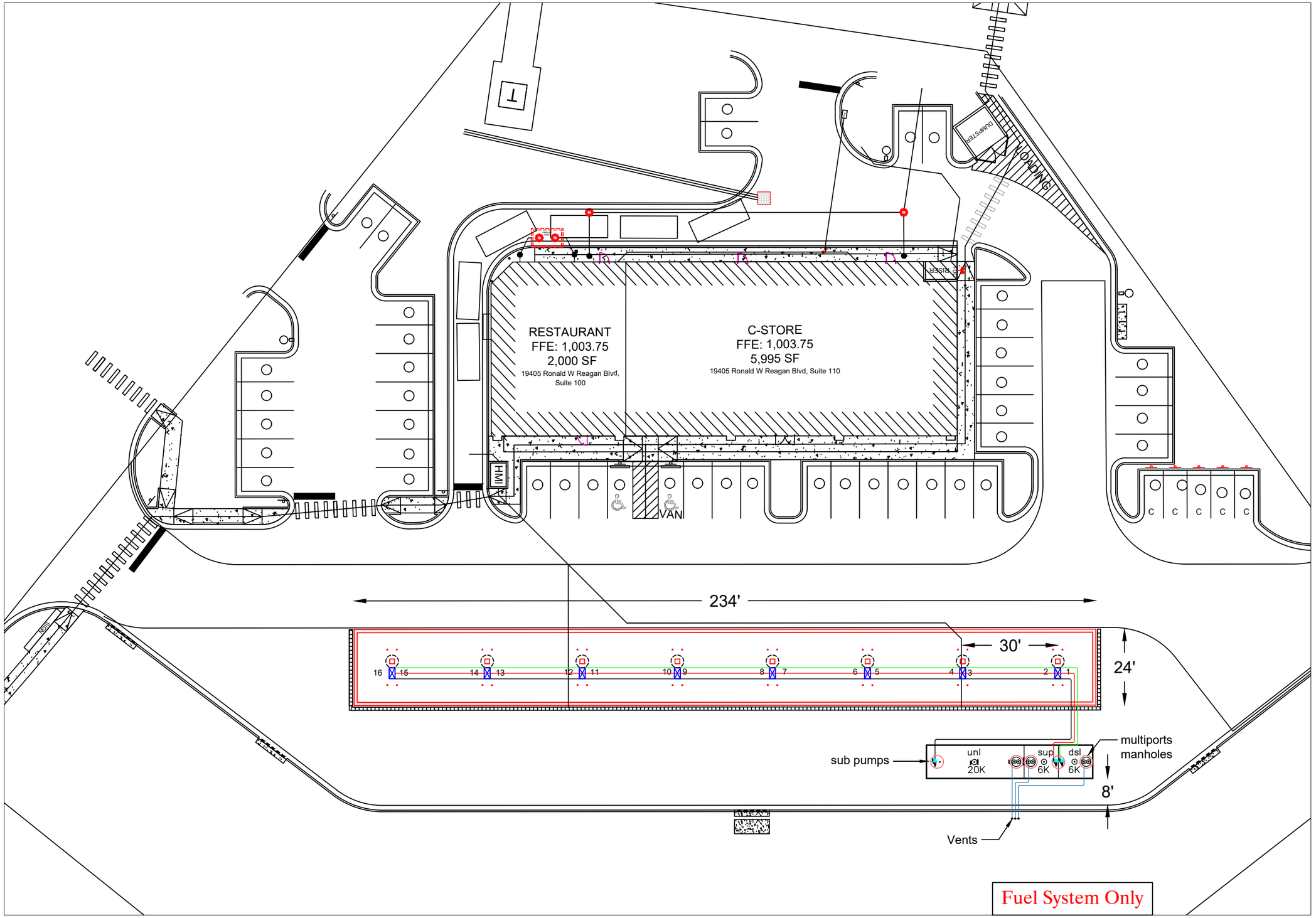
Each compartment will be equipped with 2 hp Red Jacket submersible pumps. Overfill prevention for each tank compartment will be provided by a valve assembly which will be installed in the tank below the vapor recovery fitting and will be set to shut off flow into the tank when the volume of liquid in the tank reaches no more than 95% of the tank capacity.

Product piping will be UL listed Dualoy 3000/LCX fiberglass-reinforced plastic piping. Dualoy 3000/LCX product lines are double-wall construction and will consist of a 2-inch diameter primary pipe surrounded by Dualoy 3000/L single-wall construction with a 3-inch diameter. Vent lines will be 2-inch diameter single-wall pipe. Under each dispenser for each product grade there will be a shear valve mounted to a rigid framework and installed at the dispenser island surface level to assure automatic shut-off of product flow during impact or fire emergencies. In addition, FLEX-ING flexible connectors will be installed at both ends of each product line in isolation sumps to connect to the dispenser unit and submersible pump.

Corrosion protection for the metallic components of the underground storage systems will be provided by electrical isolation. The submersible pump housings and pump-end flexible connectors will be installed within double wall sumps, which will provide isolation from the backfill material while also providing secondary containment for any leaks from these components. The dispenser-end flexible connector will be similarly isolated by enclosure within a Bravo single wall fiberglass sump under the dispenser. The vapor recovery riser and the fill tube riser will be installed within a Bravo single wall sump and thoroughly wrapped with a suitable dielectric material and are isolated from the tank by the use of isolation bushings.

The proposed tank and piping will be monitored for leaks by means of inventory control, sump and interstitial leak detection, and electronic line leak detection. The tank will be equipped with a liquid discrimination sensor which will be installed adjacent to the submersible pumps in the sumps and in all dispenser sumps. The tanks will also be equipped with an electronic automatic tank gauging inventory probe for inventory of the product volume in the tank.

The controller will use interstitial monitoring viewed by the Sensor Status Report to meet TCEQ release detection requirements. The tank interstitial is monitored with a Veeder Root interstitial sensor which will set off an alarm if liquid either enters the tank interstitial or brine is lost within the interstitial. This central monitoring unit is designed to provide visual and audible alarms when the changes within the interstitials are detected. Each product piping line will be equipped with electronic line leak detection. The probes and sensors from all tanks will be connected to a Veeder-Root 450 TLS programmable control unit to be located in the store building.



PETROLEUM GROUP

JF

Project
Gateway 29
19405 Ronald W Reagan Blvd
Leander, Texas 78641

Date:
9-24-24

Scale:
1" = 30'

Drawn by:
DD

Revision No.:

Approved by:

Drawing No.

Previously submitted and approved with the WPAP

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S76°08'41"E	945.50'
L2	N69°58'59"E	70.44'
L3	N69°58'59"E	224.99'
L4	N69°58'59"E	69.13'
L5	N40°58'11"E	29.79'
L6	N48°48'50"W	384.45'
L7	N48°48'50"W	166.63'
L8	N48°48'50"W	638.08'
L9	N48°48'50"W	37.32'
L10	S89°44'36"E	33.93'
L11	S51°01'22"E	19.18'
L12	S51°01'22"E	141.05'
L13	S12°01'04"E	230.90'
L14	S12°01'04"E	30.00'
L15	S12°01'04"E	154.75'
L16	S15°42'56"E	139.86'

LINE TABLE		
LINE	BEARING	DISTANCE
L17	S15°42'56"E	216.12'
L18	S15°42'56"E	25.01'
L19	S15°42'56"E	26.95'
L20	S72°24'20"W	113.00'
L21	S57°36'45"W	34.51'
L22	N48°08'52"W	12.51'
L23	S69°47'28"W	577.74'
L24	S69°46'58"W	455.09'
L25	S69°51'25"W	400.25'
L26	N20°04'59"W	496.42'
L27	N20°04'59"W	464.96'
L28	S72°24'20"W	156.14'
L29	S69°47'28"W	212.85'
L30	N15°44'40"W	137.94'
L31	N14°15'20"E	57.50'
L32	N74°15'20"E	326.23'

LINE TABLE		
LINE	BEARING	DISTANCE
L33	N14°15'20"E	7.66'
L34	N12°02'48"W	136.99'
L35	N12°02'48"W	127.19'
L36	N77°57'12"E	302.92'
L37	S77°57'12"W	302.94'
L38	N12°02'48"W	65.52'
L39	N50°47'12"W	70.06'
L40	N86°13'34"W	46.41'
L41	N03°46'26"E	273.50'
L42	S89°44'36"E	48.88'
L43	N86°13'34"W	150.00'
L44	N03°46'26"E	277.32'
L45	N86°13'34"W	79.29'
L46	S41°09'27"W	84.59'
L47	N03°46'26"E	268.72'
L48	N69°55'36"E	172.20'

LINE TABLE		
LINE	BEARING	DISTANCE
L49	S72°24'20"W	154.75'
L50	S69°47'28"W	352.75'
L51	N20°12'32"W	443.68'
L52	N20°12'32"W	56.00'
L53	N20°12'32"W	413.44'
L54	S69°46'58"W	276.50'
L55	N20°12'32"W	478.35'
L56	S69°47'28"W	318.33'
L57	N20°12'32"W	93.27'
L58	S69°47'28"W	169.50'
L59	S20°12'32"E	93.27'
L60	S69°47'28"W	90.40'

CURVE TABLE					
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	2914.79'	1152.40'	22°39'09"	S78°32'56"E	1144.91'
C2	1250.00'	37.49'	01°43'07"	N20°56'02"W	37.49'
C3	100.00'	52.36'	30°00'00"	N00°44'40"W	51.76'
C4	100.00'	45.91'	26°18'08"	N01°06'16"E	45.50'
C5	2926.79'	186.07'	03°38'34"	S88°03'14"E	186.04'
C6	2926.79'	150.07'	02°56'16"	S84°45'49"E	150.05'
C7	2926.79'	264.31'	05°10'27"	S80°42'28"E	264.22'
C8	2926.79'	521.28'	10°12'17"	S73°01'05"E	520.59'

PHASING NOTE:
ALL PUBLIC IMPROVEMENTS BEING INSTALLED UNDER PICP-23-0072 AND ALL OVERALL SHARED PRIVATE SUBDIVISION IMPROVEMENTS (BEING INSTALLED UNDER THIS PERMIT) ARE REQUIRED TO BE COMPLETED AND ACCEPTED AND/OR CLOSED OUT BY THE CITY OF LEANDER PRIOR TO ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY FOR WORK PROPOSED UNDER INDIVIDUAL SITE DEVELOPMENT PERMITS / PLAN SETS.

CITY OF LEANDER NOTES:
1. ALL SITE UTILITY LINES ARE PROPOSED TO BE LOCATED UNDERGROUND.
2. EXTERIOR LIGHTING SHALL BE SHIELDED SUCH THAT THE LIGHT SOURCE IS NOT DIRECTLY VISIBLE FROM THE PUBLIC ROW OR ADJACENT RESIDENTIAL DISTRICTS OR USES AT THE PROPERTY LINE. UNSHIELDED "WALL PACK" LIGHTING IS NOT PROPOSED.
3. AL CLAWSON DISPOSAL, INC. SHALL BE THE SOLE PROVIDER OF WASTE HAULING FOR THIS SITE AFTER CONSTRUCTION.
4. AIR CONDITIONING UNITS ARE NOT PROPOSED FORWARD THE FRONT WALL OF THE BUILDING.
5. GARBAGE DUMPSTERS ARE LOCATED NO CLOSER TO A ROADWAY THAN THE FRONT WALL OF THE PRINCIPAL STRUCTURE. LOCATEDCLOSEST TO THE ROADWAY. GARBAGE DUMPSTERS ARE SCREENED BY A WALL (COMPRISED OF MASONRY COMPATIBLE WITH THE STRUCTURE OR WOODCRETE) AT LEAST AS HIGH AS THE CONTAINER. THE OPEN SIDE TO THE DUMPSTER OR OTHER TRASH RECEPTACLE IS A GATE CONSTRUCTED OF SOLID WOOD OR METAL. THE DUMPSTER IS ORIENTED FOR PICKUP BY A FRONT LOAD GARBAGE TRUCK.
6. FOR 90 GALLON ROLL OUT CONTAINER STORED OUTSIDE, IT IS REQUIRED TO BE ENCLOSED BY PRIVACY FENCE.

PICP IMPROVEMENTS OWNERSHIP & MAINTENANCE SUMMARY:

1) PORTIONS OF THIS PROJECT INCLUDE SUBDIVISION IMPROVEMENTS THAT WILL BE OWNED AND MAINTAINED BY THE GATEWAY 29 POA. THESE ARE INCLUDED IN THIS PLAN SET FOR REVIEW AS THEY ARE REQUIRED TO MEET SUBDIVISION REQUIREMENTS, DESPITE BEING SHARED FACILITIES NOT INTENDED FOR CITY OF LEANDER OWNERSHIP AND MAINTENANCE. THESE IMPROVEMENTS ARE LISTED BELOW (EXCEPT WITHIN LOT 9 & 10, WHICH SHALL BE OWNED AND MAINTAINED BY LOT OWNER AND HIS/HER ASSIGNS):

- ALL PROPOSED SHARED ACCESS DRIVES & SIDEWALKS WITHIN ACCESS EASEMENTS WITHIN THE SUBDIVISION BOUNDARY.
- ALL PROPOSED STORM, WATER QUALITY, & DETENTION IMPROVEMENTS WITHIN THE SUBDIVISION BOUNDARY.
- ALL PROPOSED WASTEWATER, FORCEMAIN, & LIFT STATION IMPROVEMENTS WITHIN THE SUBDIVISION BOUNDARY.

SCALE IN FEET: 100 50 0 100 200

LEGEND

- EXISTING CONTOUR MINOR (667)
- EXISTING CONTOUR MAJOR (670)
- PROPERTY LINE
- PROPOSED PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- DRAINAGE CENTERLINE
- ZONING BOUNDARY
- STORM SEWER LINE (ST)
- WASTEWATER LINE (WW)
- WASTEWATER SERVICE
- ACCESS DRIVE/PVMT
- R.O.W. DEDICATION (EXISTING / NEW)
- 5/8" IRON ROD WITH PLASTIC CAP STAMPED "LJA SURVEY" SET
- IRON ROD FOUND (AS NOTED)
- IRON PIPE FOUND (AS NOTED)
- COTTON-GIN SPINDLE FOUND
- MAG NAIL FOUND
- "X" SCRIBED IN CONCRETE
- IRON ROD SET

BEARING BASIS:
ALL BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, GRID NORTH, CENTRAL ZONE (4203), NAD83. SURFACE ADJUSTMENT CONVERSION FACTOR IS 1.00013.

UTILITY NOTE:
THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED (UTILITIES SHOWN HEREON MAY BE EXAGGERATED FOR GRAPHIC REPRESENTATION ONLY) ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES, ONLY THE VISIBLE ABOVE GROUND UTILITY STRUCTURES.

ACCESS NOTES:
1. FOLLOW TIA RECOMMENDATIONS FOR ALL DRIVEWAYS AND TURN LANES.
2. PROPOSED DRIVEWAYS REQUIRE 200' SIGHT DISTANCE (COA TRANSPORTATION MANUAL SEC. 1.3.1 TABLE 5-2 MINIMUM FOR 2-3 LANE STREETS).

FLOODPLAIN NOTE:
NO PORTION OF THE SUBJECT TRACT IS WITHIN THE 100-YEAR FLOODPLAIN AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP FOR WILLIAMSON COUNTY, TEXAS, MAP NO. 48491C0275E, WITH AN EFFECTIVE DATE OF SEPTEMBER 26, 2008.

LEGAL DESCRIPTION:
BEING 32.257 ACRES OF LAND, MORE OR LESS, BEING OUT OF THE GREENLIEF FISK SURVEY, ABSTRACT NO. 5 AND THE WILLIAM H. MONROE SURVEY, ABSTRACT NO. 453 IN WILLIAMSON COUNTY, TEXAS AND BEING ALL OF A 10.10 ACRE TRACT OF LAND CONVEYED TO DONALD W. STARKS, RECORDED IN DOCUMENT NO. 2003040899, AND THE REMAINING PORTION OF A 30.30 ACRE TRACT OF LAND CONVEYED TO DONALD W. STARKS, RECORDED IN DOCUMENT NO. 2003040898, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS, BEING THAT SAME PROPERTY DESCRIBED IN A SPECIAL WARRANTY DEED WITH VENDOR'S LIEN RECORDED IN DOCUMENT NO. 2021019843, OFFICIAL PUBLIC RECORDS OF WILLIAMSON COUNTY, TEXAS.

OWNERSHIP INFORMATION:
(LOTS 1-8)
GATEWAY 29 REAL ESTATE, LLC
5522 JENOLAN RIDGE LANE
SUGARLAND, TEXAS 77479
CONTACT PERSON: SAMIR MAREDIA
PHONE: (832) 713-4985

(LOTS 9 & 10)
ZAMODULAR
227 W. MONROE ST. SUITE 2600
CHICAGO, ILLINOIS 60606
CONTACT PERSON: MICKEY McNAMARA
PHONE: (800) 733-5606

R.O.W. DEDICATION SUMMARY:

STREET NAME	R.O.W. AREA
STATE HWY 29	0.667 AC.
TOTAL PROP. ROW	0.667 AC.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
OVERALL SITE PLAN LAYOUT
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE

DATE: 03/13/2024
DESIGNED BY: CRH
DRAWN BY: RMB
CHECKED BY: CRH
DRAWING NAME: A653-0401-P-OP01_WPAP.dwg

03/13/2024
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: OP01

SHEET NO. 17 OF 90 SHEETS

Geologic Assessment
TCEQ-0585

RANGER
ENVIRONMENTAL SERVICES, LLC

Previously submitted and approved with the WPAP

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Roman C. Pineda, P.G.

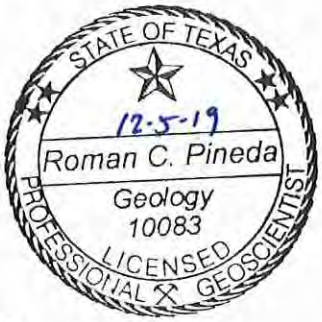
Telephone: (210) 979-8444

Fax: (210) 979-8441

Date: December 5, 2019

Representing: KFW Engineers, TBPE Firm #9513 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:



Regulated Entity Name: Ronald Reagan Hwy 29 SW 33 Acres

Project Information

1. Date(s) Geologic Assessment was performed: December 2, 2019
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

4. ☒ **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Fairlie clay, 1 to 2 percent slopes (FaB)	D	0-4
Georgetown clay loam, 0 to 2 percent slopes (GeB)	C	0-4
Georgetown stony clay loam, 1 to 3 percent slopes (GsB)	C	0-4

Soil Name	Group*	Thickness(feet)

** Soil Group Definitions (Abbreviated)*

A. *Soils having a high infiltration rate when thoroughly wetted.*
B. *Soils having a moderate infiltration rate when thoroughly wetted.*
C. *Soils having a slow infiltration rate when thoroughly wetted.*
D. *Soils having a very slow infiltration rate when thoroughly wetted.*

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 60'
   Site Geologic Map Scale: 1" = 60'
   Site Soils Map Scale (if more than 1 soil type): 1" = 500'

9. Method of collecting positional data:

☒ Global Positioning System (GPS) technology.
☐ Other method(s). Please describe method of data collection: _____

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.
11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.
12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☐ Geologic or manmade features were not discovered on the project site during the field investigation.
13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.
14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    ☐ The wells are not in use and have been properly abandoned.
    ☐ The wells are not in use and will be properly abandoned.
    ☐ The wells are in use and comply with 16 TAC Chapter 76.

    ☒ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

GEOLOGIC ASSESSMENT TABLE — PROJECT NAME: RONALD REAGAN HWY 29 SW 33 ACRES

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	30°38'14.7"	97°49'45.4"	CD	5	Ked	16	30	1.5	N45°W	0			O,F	5	10	10		X		Hillside

* DATUM: NAD 83

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

12 TOPOGRAPHY

Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Date 12-5-19

Sheet 1 of 1

Attachment A

STATE OF TEXAS
Roman C. Pineda
Geology
10083
LICENSED
PROFESSIONAL GEOSCIENTIST

TCEQ-0585-Table (Rev. 10-01-04)

RONALD REAGAN HWY 29 SW 33 ACRES

Stratigraphic Column

System		Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (ft)	Character of Rocks
Lower Cretaceous	Edwards Aquifer	Edwards Limestone (Ked)	Edwards and associated limestones	360	Massive, brittle, vulgar limestone and dolomite with nodular chert, gypsum, anhydrite, and solution-collapse features.
		Comanche Peak Limestone (Kc)		60	Fine-grained, fairly hard, nodular, fossiliferous, marly, extensively burrowed limestone.
		Walnut Formation (Kwa)		120	Hard and soft limestones, marls, clays, and shelf beds.
		Upper Member of Glen Rose Limestone (Kgru)		350	Yellowish tan, finely bedded limestone and marl

For Travis County, adjacent to county to the southwest
Modified from Brune and Duffin, 1983

ATTACHMENT B

RONALD REAGAN HWY 29 SW 33 ACRES

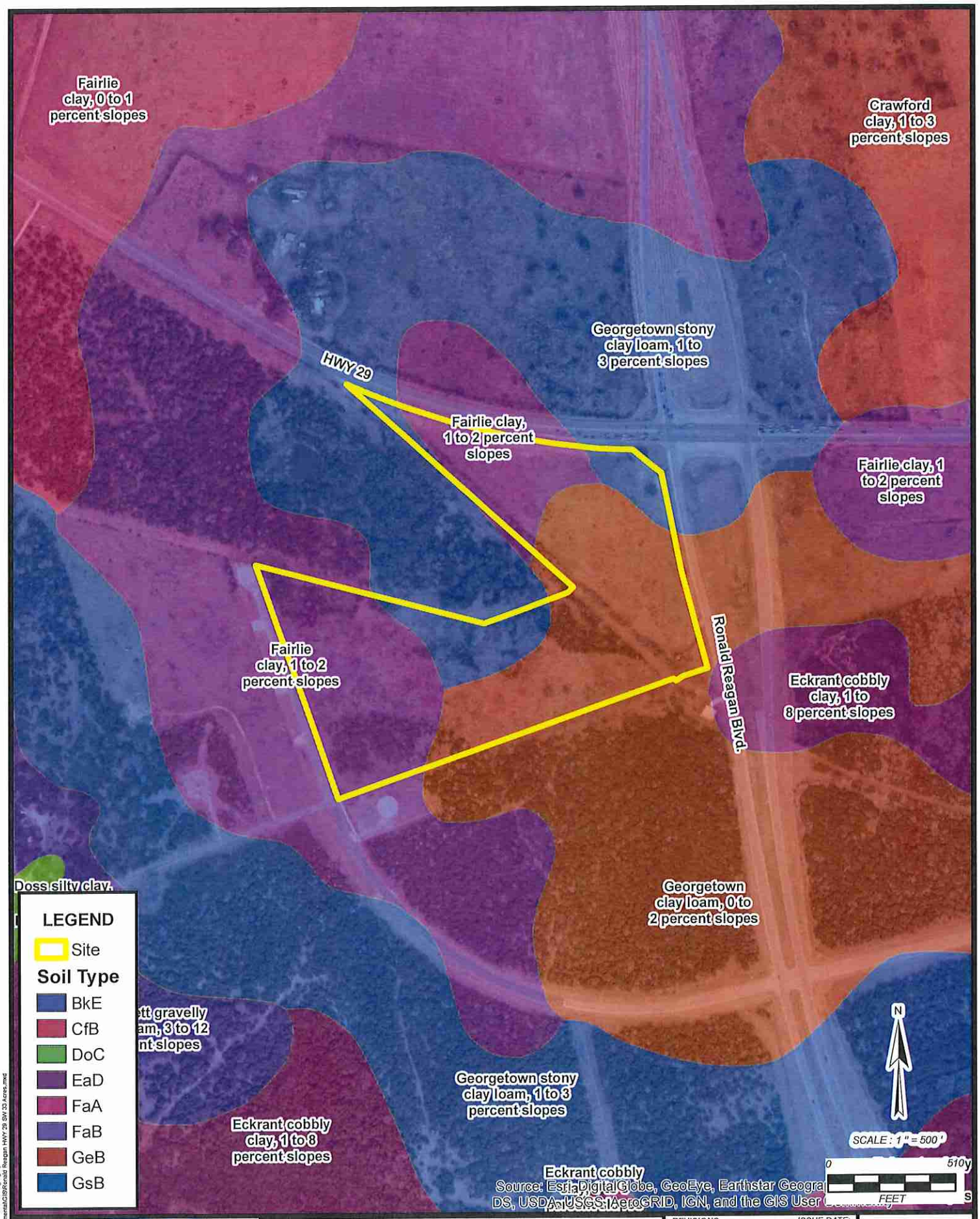
Narrative Description of Site Geology

The overall potential for fluid migration to the Edwards Aquifer on the site is intermediate. The dominant trend for the site is N57°E, based on an average of the trends of faults within the surrounding area and from published maps (V.E. Barnes, 1981). The site is located in the Edwards Limestone (Ked).

The Ked is characterized by massive, brittle, vugular limestone and dolomite with nodular chert. Karst development in the Ked is characterized by solution-collapse features. No caves or sinkholes were identified onsite.

Feature S-1

Feature is a non-karst closed depression in a drainage low created as a result of construction of Highway 29. Due to lack of evidence of karst development and standing water observed at the time of the site visit, the probability for rapid infiltration is low.



KFW ENGINEERS + SURVEYING
FIRM# 9513 FIRM# 10122300
3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444
SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

RONALD REAGAN HWY 29 SW 33-ACRES
GEOLOGICAL ASSESSMENT
WILLIAMSON COUNTY SOILS

REVISIONS:	ISSUE DATE:
JOB NO. 806-01-01	
DATE: December 2019	DESIGNER:
DRAWN: C.G.	CHECKED: R.P.

Attachment E

Date: Dec 05, 2019, 3:49:40 PM User ID: Cgregory
File: L:\806\01\01\Design\Environmental\GIS\Ronald Reagan HWY 29 SW 33 Acres.mxd

RONALD REAGAN HWY 29 SW 33 ACRES

References

Ashworth, J.B., Jan 1983, Ground-Water Availability of the Lower Cretaceous Formations in the Hill Country of South-Central Texas, Texas Department of Water Resources, rept., 273, 12pp.

Barnes, V.L., 1981, Geologic Atlas of Texas, Austin Sheet, Bureau of Economic Geology, The University of Texas at Austin, Texas.

Collins, E.W., Woodruff, C.M., Jr., and Tremblay, Thomas A., 2002, Geologic Framework of the Northern Edwards Aquifer, Central Texas: Bur. Econ. Geol., Abstract, Figure 1.

Collins, E.W., 1993, Geologic Map of the Bulverde Quadrangle, Texas: University of Texas at Austin, Bureau of Economic Geology, Open-File Map STATEMAP Study Area 5, scale 1:24,000.

Federal Emergency Management Agency (FEMA), September 25, 2008, Williamson County, Texas and Incorporated areas, Flood Insurance Rate Map (FIRM), Panel 48491C0275 E, FEMA, Washington, D.C.

Jones, Ian C., 2006, Defining Groundwater Flow Characteristics in the northern Segment of the Edwards Aquifer Based on Groundwater Chemistry: Texas Water Development Board, Technical Paper

Land, L.F. and Dorsey, M.E., 1988, Reassessment of the Georgetown Limestone as a Hydrogeologic Unit of the Edwards Aquifer, Georgetown Area, Texas: U.S. Geol. Survey, Water – Resources Investigations 88-4190, 2 pp., 3 figs.

Rose, P.R., 1972, Edwards Group, Surface and Subsurface, Central Texas: Bur. Econ. Geol., Rep of Invest. 74, 198 pp..

Texas Natural Resource Conservation Commission, 1999, Edwards Aquifer Recharge Zone Map, Leander Quadrangle, TNRCC, Leander, Texas.

United States Department of Agriculture, 1983, Soil Survey – Williamson County, Texas, USDA.

United States Geologic Survey, 2988, (USGS), Leander Quadrangle, USGS, Denver, Colorado.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 23, 2024

Mr. Samir Maredia
Gateway 29 Real Estate, LLC
5522 Jenolan Ridge Lane
Sugar Land, Texas 77479

Re: Approval of a Modification of an approved Water Pollution Abatement Plan (WPAP)
Gateway 29; Located SW of SH 29 and Ronald Reagan; Leander, Williamson County, Texas
Edwards Aquifer Protection Program ID: 11004053, Regulated Entity No. RN111807152

Dear Mr. Maredia,

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by LJA Engineering on behalf of the applicant, Gateway 29 Real Estate, LLC on June 25, 2024. Final review of the application was completed after additional material was received on August 16, 2024.

As presented to the TCEQ, the application was prepared in general compliance with the requirements of 30 Texas Administrative Codes (TAC) Chapter §213. The permanent best management practices (BMPs) and measures represented in the application were prepared by a Texas licensed professional engineer (PE). All construction plans and design information were sealed, signed, and dated by a Texas licensed PE. Therefore, the application for the construction of the proposed project and methods to protect the Edwards Aquifer are **approved,** subject to applicable state rules and the conditions in this letter.

This approval expires two years from the date of this letter, unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been officially requested. This approval or extension will expire, and no extension will be granted if more than 50 percent of the project has not been completed within ten years from the date of this letter.

The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed in accordance with 30 TAC §50.139.

BACKGROUND

The Gateway 29 WPAP, approved by letter dated December 22, 2023 (EAPP ID No. 11003712), included the construction 3.84 acres of impervious cover of two water quality basins (Pond A and Pond B) sized for future developments.

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 32.26 acres. The modification will include the development of Lots 2, 3 and 5 with commercial buildings, parking, and associated appurtenances. The plan will add 4.37 acres of new impervious cover. The total impervious cover will be increased to 8.21 acres (25.45 percent). Project wastewater will be disposed of by conveyance to the existing Liberty Hill Wastewater Treatment Plant.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two batch detention ponds (EAPP ID No. 11003712), designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be implemented to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 3,804 pounds of TSS generated from the 4.37 acres of new impervious cover. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The permanent BMPS shall be operational prior to occupancy or use of the proposed project. Inspection, maintenance, repair, and retrofit of the permanent BMPs shall be in accordance with the approved application.

GEOLOGY

An exception to the Geologic Assessment (GA) requirement was requested and approved. A site assessment was conducted on July 24, 2024, by TCEQ staff, which did not reveal any sensitive features and determined the site was generally as described in the application.

SPECIAL CONDITIONS

I. This modification is subject to all the special and standard conditions listed in the approval letter (EAPP ID No. 11003712) dated December 22, 2023.

STANDARD CONDITIONS

1. The plan holder (applicant) must comply with all provisions of 30 TAC Chapter §213 and all technical specifications in the approved plan. The plan holder should also acquire and comply with additional and separate approvals, permits, registrations or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, Dam Safety, Underground Injection Control) as required based on the specifics of the plan.

2. In addition to the rules of the Commission, the plan holder must also comply with state and local ordinances and regulations providing for the protection of water quality as applicable.

Prior to Commencement of Construction:

3. Within 60 days of receiving written approval of an Edwards Aquifer protection plan, the plan holder must submit to the EAPP proof of recordation of notice in the county deed records, with the volume and page number(s) of the county record. A description of the property boundaries shall be included in the deed recordation in the county deed records. TCEQ form, Deed Recordation Affidavit (TCEQ-0625), may be used.

4. The plan holder of any approved Edwards Aquifer protection plan must notify the EAPP and obtain approval from the executive director prior to initiating any modification to the activities described in the referenced application following the date of the approval.

5. The plan holder must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the EAPP no later than 48 hours prior to commencement of the regulated activity. Notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.

6. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

7. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring or gravel. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation.

<u>During Construction:</u>

8. This approval does not authorize the installation of temporary or permanent aboveground storage tanks on this project that will have a total storage capacity of five hundred gallons or more of static hydrocarbons or hazardous substances without prior approval of an Aboveground Storage Tank facility application.

9. If any sensitive feature is encountered during construction, replacement, or rehabilitation on this project, all regulated activities must be **immediately** suspended near it and notification must be made to TCEQ EAPP staff. Temporary BMPs must be installed and maintained to protect the feature from pollution and contamination. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality.

10. All water wells, including injection, dewatering, and monitoring wells shall be identified in the geologic assessment and must be in compliance with the requirements of the Texas Department of Licensing and Regulation 16 TAC Chapter §76 and all other locally applicable rules, as appropriate.

11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

12. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge must be filtered through appropriately selected BMPs.

13. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction

activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

14. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

15. Owners of permanent BMPs and temporary measures must ensure that the BMPs and measures are constructed and function as designed. A Texas licensed PE must certify in writing that the **permanent** BMPs or measures were constructed as designed. The certification letter must be submitted to the EAPP within 30 days of site completion.

16. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.

The holder of the approved Edwards Aquifer protection plan is responsible for compliance with Chapter §213 and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved Edwards Aquifer protection plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Jasmine Brown of the Edwards Aquifer Protection Program at 512-239-7006 or the regional office at 512-339-2929.

Sincerely,

Monica Reyes

Monica Reyes, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

MR/job

cc: Charles R. Hager, P.E., LJA Engineering, Inc.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 23, 2024

Mr. Samir Maredia
Gateway 29 Real Estate, LLC
5522 Jenolan Ridge Lane
Sugar Land, Texas 77479

Re: Approval of a Modification of an approved Water Pollution Abatement Plan (WPAP)
Gateway 29; Located SW of SH 29 and Ronald Reagan; Leander, Williamson County, Texas
Edwards Aquifer Protection Program ID: 11004053, Regulated Entity No. RN111807152

Dear Mr. Maredia,

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by LJA Engineering on behalf of the applicant, Gateway 29 Real Estate, LLC on June 25, 2024. Final review of the application was completed after additional material was received on August 16, 2024.

As presented to the TCEQ, the application was prepared in general compliance with the requirements of 30 Texas Administrative Codes (TAC) Chapter §213. The permanent best management practices (BMPs) and measures represented in the application were prepared by a Texas licensed professional engineer (PE). All construction plans and design information were sealed, signed, and dated by a Texas licensed PE. Therefore, the application for the construction of the proposed project and methods to protect the Edwards Aquifer are **approved,** subject to applicable state rules and the conditions in this letter.

This approval expires two years from the date of this letter, unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been officially requested. This approval or extension will expire, and no extension will be granted if more than 50 percent of the project has not been completed within ten years from the date of this letter.

The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed in accordance with 30 TAC §50.139.

BACKGROUND

The Gateway 29 WPAP, approved by letter dated December 22, 2023 (EAPP ID No. 11003712), included the construction 3.84 acres of impervious cover of two water quality basins (Pond A and Pond B) sized for future developments.

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 32.26 acres. The modification will include the development of Lots 2, 3 and 5 with commercial buildings, parking, and associated appurtenances. The plan will add 4.37 acres of new impervious cover. The total impervious cover will be increased to 8.21 acres (25.45 percent). Project wastewater will be disposed of by conveyance to the existing Liberty Hill Wastewater Treatment Plant.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two batch detention ponds (EAPP ID No. 11003712), designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be implemented to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 3,804 pounds of TSS generated from the 4.37 acres of new impervious cover. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The permanent BMPS shall be operational prior to occupancy or use of the proposed project. Inspection, maintenance, repair, and retrofit of the permanent BMPs shall be in accordance with the approved application.

GEOLOGY

An exception to the Geologic Assessment (GA) requirement was requested and approved. A site assessment was conducted on July 24, 2024, by TCEQ staff, which did not reveal any sensitive features and determined the site was generally as described in the application.

SPECIAL CONDITIONS

I. This modification is subject to all the special and standard conditions listed in the approval letter (EAPP ID No. 11003712) dated December 22, 2023.

STANDARD CONDITIONS

1. The plan holder (applicant) must comply with all provisions of 30 TAC Chapter §213 and all technical specifications in the approved plan. The plan holder should also acquire and comply with additional and separate approvals, permits, registrations or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, Dam Safety, Underground Injection Control) as required based on the specifics of the plan.

2. In addition to the rules of the Commission, the plan holder must also comply with state and local ordinances and regulations providing for the protection of water quality as applicable.

Prior to Commencement of Construction:

3. Within 60 days of receiving written approval of an Edwards Aquifer protection plan, the plan holder must submit to the EAPP proof of recordation of notice in the county deed records, with the volume and page number(s) of the county record. A description of the property boundaries shall be included in the deed recordation in the county deed records. TCEQ form, Deed Recordation Affidavit (TCEQ-0625), may be used.

4. The plan holder of any approved Edwards Aquifer protection plan must notify the EAPP and obtain approval from the executive director prior to initiating any modification to the activities described in the referenced application following the date of the approval.

5. The plan holder must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the EAPP no later than 48 hours prior to commencement of the regulated activity. Notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.

6. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

7. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring or gravel. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation.

<u>During Construction:</u>

8. This approval does not authorize the installation of temporary or permanent aboveground storage tanks on this project that will have a total storage capacity of five hundred gallons or more of static hydrocarbons or hazardous substances without prior approval of an Aboveground Storage Tank facility application.

9. If any sensitive feature is encountered during construction, replacement, or rehabilitation on this project, all regulated activities must be **immediately** suspended near it and notification must be made to TCEQ EAPP staff. Temporary BMPs must be installed and maintained to protect the feature from pollution and contamination. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality.

10. All water wells, including injection, dewatering, and monitoring wells shall be identified in the geologic assessment and must be in compliance with the requirements of the Texas Department of Licensing and Regulation 16 TAC Chapter §76 and all other locally applicable rules, as appropriate.

11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

12. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge must be filtered through appropriately selected BMPs.

13. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction

activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

14. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

15. Owners of permanent BMPs and temporary measures must ensure that the BMPs and measures are constructed and function as designed. A Texas licensed PE must certify in writing that the **permanent** BMPs or measures were constructed as designed. The certification letter must be submitted to the EAPP within 30 days of site completion.

16. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.

The holder of the approved Edwards Aquifer protection plan is responsible for compliance with Chapter §213 and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved Edwards Aquifer protection plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Jasmine Brown of the Edwards Aquifer Protection Program at 512-239-7006 or the regional office at 512-339-2929.

Sincerely,

Monica Reyes

Monica Reyes, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

MR/job

cc: Charles R. Hager, P.E., LJA Engineering, Inc.

Underground Storage Tank Facility Plan Application

TCEQ-0583

RANGER
ENVIRONMENTAL SERVICES, LLC

Underground Storage Tank Facility Plan Application

Texas Commission on Environmental Quality

for Storage on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.5(d), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. All components used for this facility are U.L. listed or certified by a 3rd party and are compatible and will function pursuant to 30 TAC §213.5(d) and 30 TAC Chapter 334 Subchapter C. This **Underground Storage Tank Facility Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Chad M. Copeland, P.G., PWS

Date: 09/27/2024

Signature of Customer/Agent:

Regulated Entity Name: Gateway 29

Underground Storage Tank (UST) System Information

1. ☒ **Attachment A – Detailed Narrative of UST Facility**. A detailed narrative description of the proposed UST Facility is attached. Note: Example descriptions are provided in the instructions (TCEQ-0583-Instructions)
2. Tanks and substance to be stored:

Table 1 - Tanks and Substances Stored

UST Number	*Size(Gallons)*	*Substance to be Stored*	*Double-wall Tank Material*
1	32,000 (split 20,000, 6,000, 6,000)	20,000 gal - gas 6,000 gal - gas 6,000 gal - diesel	WATCO - Triple wall Permatank (UL 58, UL 1746)
2			
3			
4			
5			

3. Tanks:

   ☒ **Attachment B – Manufacturer Information for Tanks**. New or replacement systems for the underground storage of static hydrocarbons or hazardous substances must be double-walled or provide an equivalent method of protection approved by the executive director. Tanks must comply with technical standards as required by 30 TAC 334.45(b) relating to technical standards for new tanks. Manufacturer information is attached.

   ☐ **Attachment C – Alternative Design and Protection Method for Tanks**. Information required by 30 TAC 334.43, relating to variances and alternative procedures is attached.

4. Piping:

   ☒ **Attachment D – Manufacturer Information for Piping**. Piping must comply with technical standards as required by 30 TAC 334.45(c) relating to technical standards for new piping. Manufacturer information is attached.

   ☐ **Attachment E – Alternative Design and Protection Method for Piping**. Information required by 30 TAC 334.43, relating to variances and alternative procedures is attached.

5. ☒ Any new underground storage tank system that does not incorporate a method for tertiary containment shall be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature as required by 30 TAC §213.5(d)(1)(B).

   ☒ The UST system(s) will not be installed within 150 feet of a domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

   ☐ **Attachment F - Tertiary Containment Method**. The UST system(s) will be required to have tertiary containment provided. A description of the method proposed to provide tertiary containment is attached.

6. ☒ Corrosion protection equipment to be installed or type of non-corrodible materials:

Table 2 - Corrosion Protection

Equipment	*Corrosion Protection (Method)*
Tanks	WATCO - Triple wall Permatank
Product Delivery Piping	Dualoy 3000/LCX
Vapor Recovery Piping	NA
Submersible Pumps	Isolated in sump
Flex Connector (dispenser end)	Isolated in sump
Flex Connector (pump end)	Isolated in sump
Riser	Dielectric tape wrap

7. ☒ Overfill protection equipment to be installed:

   ☐ Overfill prevention restrictor positioned at 90% capacity.
   ☒ Overfill prevention valve positioned at 95% capacity.
   ☐ Overfill audible and visual alarm positioned at 90% capacity.

8. ☒ Methods for detecting leaks in the inside wall of a double-walled system must be included in the facility's design and construction. The leak detection system must provide continuous monitoring of the system and must be capable of immediately alerting the system's owner of possible leakages. Release detection equipment to be installed: (Check all that apply)

   ☒ Central on-site monitor
   ☒ Interstitial tank probes
   ☒ Automatic tank gauge
   ☒ Pump/manway sump probes
   ☐ Observation well probes
   ☐ Mechanical line leak detectors (for pressurized lines only)
   ☒ Automatic (electronic) line leak detectors

Excavation and Backfill

9. ☒ The depth of the tank excavation will be sufficient to accommodate piping fall requirements, tank diameter, bedding, and a minimum cover of three (3) feet [30 TAC §334.46].

   The depth of the tank excavation will be 15 feet.

10. ☒ The minimum thickness of the tank bedding will conform to 30 TAC §334.46(a)(5)(C and D).

    The tank bedding thickness will be 12 inches.

11. ☒ The material to be used as backfill will conform to 30 TAC §334.46(a)(5)(A and B) and will consist of:

☐ Clean washed non-corrosive sand
☐ Pea gravel
☒ Crushed rock
☐ Other: _____

12. ☒ The slope of the product delivery line(s) will conform to 30 TAC §334.46(c)(2) and will be 1/8" (1/8" per foot minimum).

Site Plan Requirements

Items 13 - 24 must be included on the Site Plan.

13. ☒ The Site Plan must have a minimum scale of 1" = 400'.

    Site Plan Scale: 1" = 30' & 100'.

14. 100-year floodplain boundaries:

    ☒ The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA Flood Plain Map 48491C0275E (eff. date 9/26/2008)

    ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
    ☒ No part of the project site is located within the 100-year floodplain.

15. ☒ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.

    ☐ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

16. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

    ☒ There are 0(#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

    ☐ The wells are not in use and have been properly abandoned.
    ☐ The wells are not in use and will be properly abandoned.
    ☐ The wells are in use and comply with 16 TAC §76.

    ☒ There are no wells or test holes of any kind known to exist on the project site.

17. Geologic or manmade features which are on the site:

    ☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
    ☒ No sensitive geologic or manmade features were identified in the Geologic Assessment.
    ☐ **Attachment G - Exception to the Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

18. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

19. ☒ Areas of soil disturbance and areas which will not be disturbed.

20. ☒ Locations of major structural and nonstructural controls. These are the temporary best management practices.

21. ☒ Locations where soil stabilization practices are expected to occur.

22. ☐ Surface waters (including wetlands).

    ☒ N/A

23. ☐ Locations where stormwater discharges to surface water or sensitive features.

    ☒ There will be no discharges to surface water or sensitive features.

24. ☒ Legal boundaries of the site are shown.

UST System Profiles

25. ☒ **Attachment H - Profile Drawing(s)**. A profile drawing(s) of the proposed UST system with all components shown and labeled is attached.

Best Management Practices

26. ☒ **Attachment I - Initial and Continuing Training**. A description of the initial and continuing training of on-site personnel for operation of release detection equipment is attached. The description should include how personnel will respond to warning and alarm conditions of the leak detection monitoring system.

27. ☒ **Attachment J - Release Detection Maintenance**. A description of the program and schedule for maintaining release detection and cathodic protection equipment is attached. Any such equipment should be operated and maintained in accordance with the manufacturer's specifications and instructions.

Administrative Information

28. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

    ☒ The WPAP application for this project was approved by letter dated August 23, 2024. A copy of the approval letter is attached at the end of this application.

    ☐ The WPAP application for this project was submitted to the TCEQ on _____, but has not been approved.

    ☐ A WPAP application is required for an associated project, but it has not been submitted.

    ☐ There will be no building or structure associated with this project. In the event a building or structure is needed in the future, the required WPAP will be submitted to the TCEQ.

    ☐ The proposed UST is located on the **Transition Zone** and a WPAP is not required. Information requested in 30 TAC 213.5 subsection (b)(4)(B) and (C) and (5) is provided with this application. (Forms TCEQ-0600 Permanent Stormwater Section and TCEQ-0602 Temporary Stormwater Section or Stormwater Pollution Prevention Plan/SW3P).

29. ☒ UST systems must be installed by a person possessing a valid certificate of registration in accordance with the requirements of 30 TAC Chapter 334 Subchapter I.

30. ☒ This facility is subject to and must meet the requirements of 30 TAC Chapter 334, including but not limited to the 30 day construction notification and reporting and cleanup of surface spills and overfills.

31. ☒ Upon completion of the tankhold excavation, a geologist must certify that the excavation was inspected for the presence of sensitive features. The certification must be submitted to the appropriate regional office. If sensitive features are found, then excavation near the feature may not proceed until the methods to protect the Edwards Aquifer are reviewed and approved by the executive director.

32. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

33. ☒ Any modification of this UST application will require TCEQ approval, prior to construction, and may require submission of a revised application, with appropriate fees.

ATTACHMENT A

Detailed Narrative of UST Facility

RANGER
ENVIRONMENTAL SERVICES, LLC

PROJECT DESCRIPTION

The subject site is located at the southwest corner of SH-29 and Ronald Reagan Blvd, Leander, Williamson County, Texas. The site is located within the Edwards Aquifer Recharge Zone. This subject site consists of mixed use development along with a proposed retail fueling facility and convenience store. The project lies with the City of Leander and the South Fork San Gabriel River watershed. The site is unimproved/undeveloped. The most recent WPAP Modification was approved in August 2024.

The proposed underground storage tank systems will include one (1) WATCO triple wall tank PERMATANK. The tank will consist of two steel jackets with a fiberglass wrap achieving tertiary containment. The tank will be a 32,000-gallon compartmentalized tank (UL 58 & UL 1746). The compartments will store 20,000 gallons of gasoline, 6,000 gallons of gasoline, and 6,000 gallons of diesel. Associated with these tanks will be eight (8) new Gilbarco 700 S dispensers along with double wall FRP piping.

Each compartment will be equipped with 2 hp Red Jacket submersible pumps. Overfill prevention for each tank compartment will be provided by a valve assembly which will be installed in the tank below the vapor recovery fitting and will be set to shut off flow into the tank when the volume of liquid in the tank reaches no more than 95% of the tank capacity.

Product piping will be UL listed Dualoy 3000/LCX fiberglass-reinforced plastic piping. Dualoy 3000/LCX product lines are double-wall construction and will consist of a 2-inch diameter primary pipe surrounded by Dualoy 3000/L single-wall construction with a 3-inch diameter. Vent lines will be 2-inch diameter single-wall pipe. Under each dispenser for each product grade there will be a shear valve mounted to a rigid framework and installed at the dispenser island surface level to assure automatic shut-off of product flow during impact or fire emergencies. In addition, FLEX-ING flexible connectors will be installed at both ends of each product line in isolation sumps to connect to the dispenser unit and submersible pump.

Corrosion protection for the metallic components of the underground storage systems will be provided by electrical isolation. The submersible pump housings and pump-end flexible connectors will be installed within double wall sumps, which will provide isolation from the backfill material while also providing secondary containment for any leaks from these components. The dispenser-end flexible connector will be similarly isolated by enclosure within a Bravo single wall fiberglass sump under the dispenser. The vapor recovery riser and the fill tube riser will be installed within a Bravo single wall sump and thoroughly wrapped with a suitable dielectric material and are isolated from the tank by the use of isolation bushings.

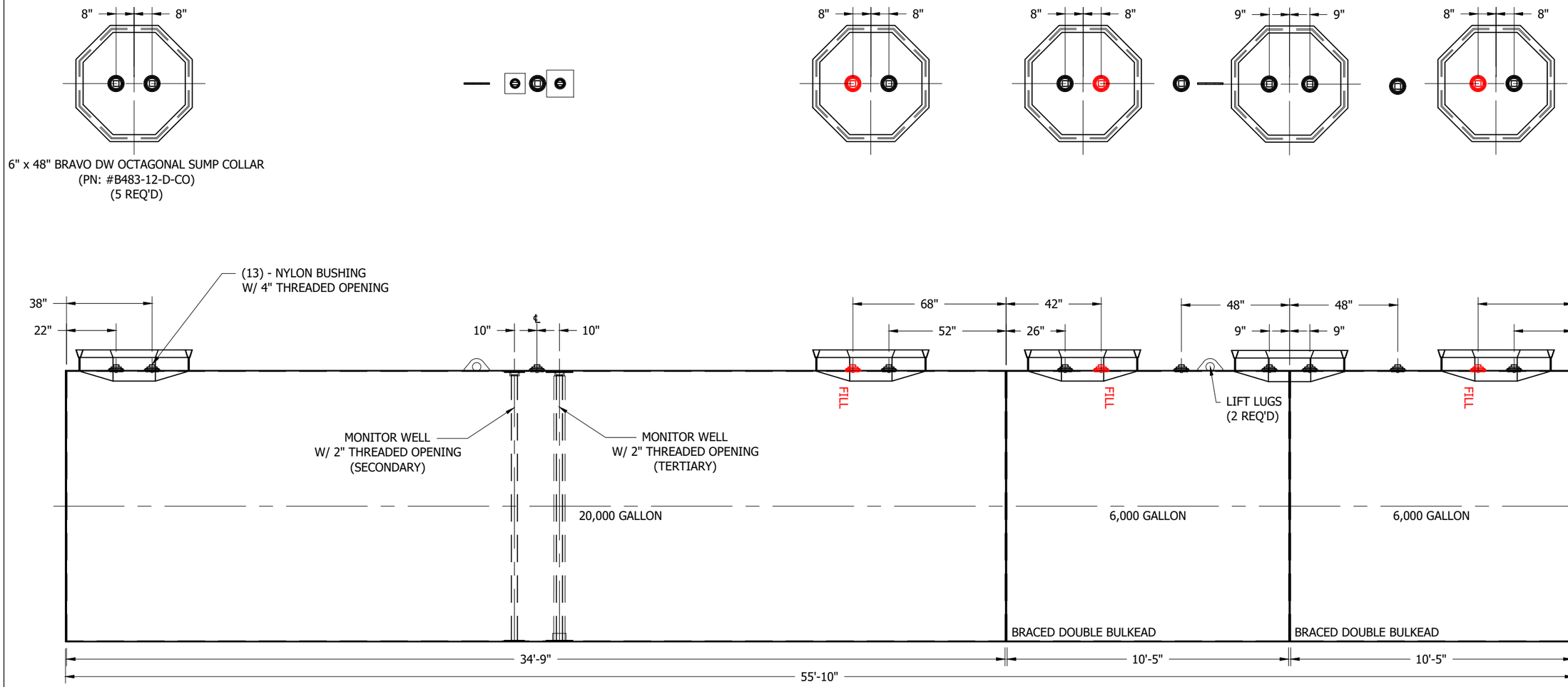
The proposed tank and piping will be monitored for leaks by means of inventory control, sump and interstitial leak detection, and electronic line leak detection. The tank will be equipped with a liquid discrimination sensor which will be installed adjacent to the submersible pumps in the sumps and in all dispenser sumps. The tanks will also be equipped with an electronic automatic tank gauging inventory probe for inventory of the product volume in the tank.

The controller will use interstitial monitoring viewed by the Sensor Status Report to meet TCEQ release detection requirements. The tank interstitial is monitored with a Veeder Root interstitial sensor which will set off an alarm if liquid either enters the tank interstitial or brine is lost within the interstitial. This central monitoring unit is designed to provide visual and audible alarms when the changes within the interstitials are detected. Each product piping line will be equipped with electronic line leak detection. The probes and sensors from all tanks will be connected to a Veeder-Root 450 TLS programmable control unit to be located in the store building.

ATTACHMENT B

Manufacturer Information for Tanks

RANGER
ENVIRONMENTAL SERVICES, LLC



TANK CONSTRUCTED PER UL-58 ACT-100 TYPE II DOUBLE WALL AND UL-1746 JACKETED PERMATANK FOR TERTIARY CONTAINMENT

32,000 GALLON

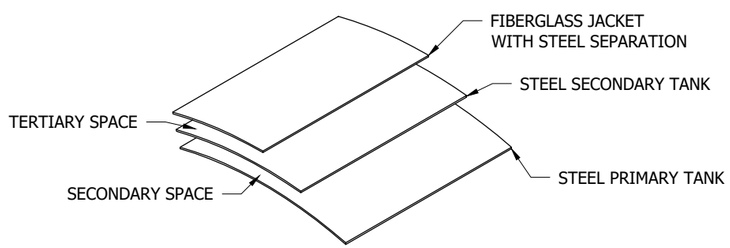
TERTIARY PERMATANK - UL 1746
120" X 55'-10"
(20,000/6,000/6,000)

CUST.: JF PETROLEUM GROUP
LOC.:
DWG NO: 41928

REV.	DATE	DWG BY	APP'D	DESCRIPTION
0	09/24/24	WH	GM	ISSUED WITH QUOTE
1	9/25/24	ZO	ZO	ADJUSTED COLLARS AND FITTINGS PER C/R
2	9/25/24	ZO	ZO	ADJUSTED FITTINGS PER C/R
3				
4				
5				
6				
7				
8				

NOTES:
EXTERNAL: 100 MILS FIBERGLASS JACKET
INTERNAL: BARE METAL
TESTING:
- PRIMARY: 5 PSIG SOAP & WATER
- SECONDARY: VACUUM
- TERTIARY: VACUUM
STRIKER PLATES UNDER "FILL" OPENINGS ONLY
ESTIMATED WEIGHT: 52,000 LBS (+/- 5%)

CONTAINMENT VIEW



TECHNICAL DATA

PERMATANK® MEETS REQUIREMENTS OF:

- U.S. ENVIRONMENTAL PROTECTION AGENCY UNDERGROUND STORAGE TANK REGULATIONS (40 CFR 280)

- STEEL TANK INSTITUTE F922, PERMATANK® FABRICATION SPECIFICATION

- UNDERWRITERS LABORATORIES UL 58 STANDARD FOR, STEEL UNDERGROUND TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS

- UNDERWRITERS LABORATORIES UL 1746 STANDARD FOR, EXTERNAL CORROSION PROTECTION SYSTEMS FOR STEEL UNDERGROUND STORAGE TANKS

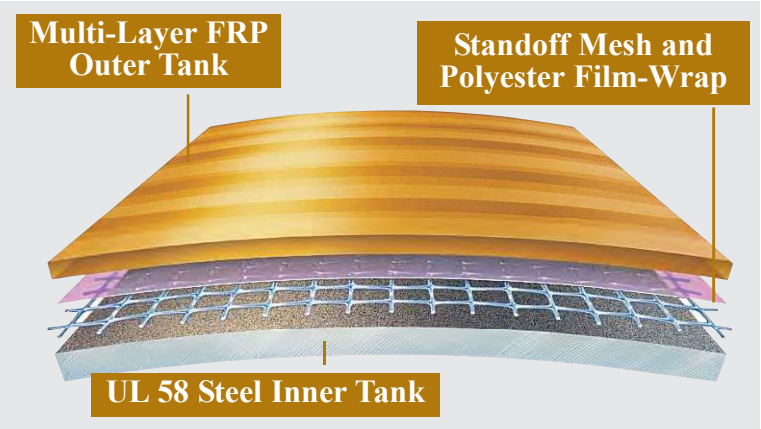
WATCO TANKS INC. Est. 1945

PERMATANK®
DOUBLE—WALL
STI Steel Tank Institute
QUALITY ASSURANCE

THE PERMATANK® DOUBLE-WALL JACKETED UNDERGROUND STORAGE TANK FEATURES AN INNER STEEL TANK COUPLED WITH AN EXTERIOR CORROSION-RESISTANT FIBERGLASS TANK. A UNIQUE STANDOFF MATERIAL SEPARATING THE INNER AND OUTER TANKS CREATES A UNIFORM INTERSTITIAL SPACE ENSURING RAPID AND ACCURATE LEAK DETECTION.

Please note, this cut sheet shows a single steel tank with a jacket. The actual tank will be double wall steel with a jacket.

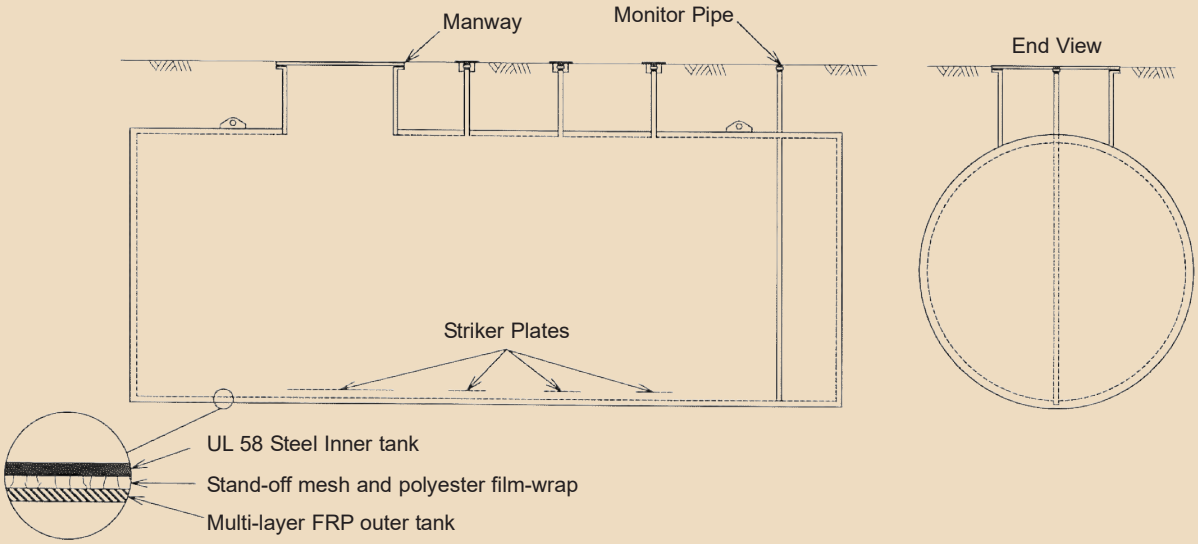
- Steel inner tank provides complete compatibility with all common fuels and clean burning (oxygenated) liquid blends without added cost of internal lining
- Meets UL 58, UL 1746 and ULC-S603.1
- Includes a Precision Test System, which meets EPA leak detection requirements for underground storage tanks, with the ability to detect liquid in the interstice at the rate of <0.1 gal/hr
- Permatank® can be used with a variety of leak detection systems
- All tanks proven tight throughout installation by interstitial vacuum test - 13 inches Hg minimum
- Impermeable to petroleum product and vapors
- Steel inner tank provides structural strength, while it's exterior wall of fiberglass reinforced plastic prevents corrosion



- Steel is the green choice - it is capable of being recycled after tank closure
- Designed shorter than an all-FRP tank of the same capacity, reducing the cost of installation and increasing site layout flexibility
- Low cost compartments and customization
- Various backfill options can allow money-saving installation
- Available from a large network of STI licensed manufacturers

The Permatank® is available from an extensive group of STI fabricators who participate in the Steel Tank Institute's Quality Assurance Program. Under the program, independent quality control inspectors make unannounced visits to STI members, ensuring fabrication to the highest possible standards.

Permatank® Double-Wall Jacketed Underground Steel Storage Tanks



- **Steel Tank Institute Permatank® and UL Labeled**
- **Compatible with alternative fuels**
- **Striker plates beneath tank openings prevent internal corrosion**
- **Flat ends reduce installation costs**
- **Provides safe and effective secondary containment**
- **Capacities range up to 50,000 gallons**

Permatank® Guideline Specification

A) General

1. Provide Permatank® double-wall jacketed steel-fiberglass underground storage tanks.

B) Labeling

1. Tanks shall bear the Steel Tank Institute Permatank® identification label.
2. Underground tanks shall bear the appropriate Underwriters Laboratories (UL) or Underwriters Laboratories of Canada (ULC) label.

C) Product Description

1. Tanks shall be manufactured in accordance with Steel Tank Institute Specification for Permatank®.
2. Tanks shall be manufactured and listed in accordance with Underwriters Laboratories UL 58, Steel Underground Storage Tanks for Flammable and Combustible Liquids and UL 1746, External Corrosion Protection Systems for Steel Underground Storage Tanks or ULC-S603.1, Standard for Corrosion Protection for Steel Underground Tanks for Flammable and Combustible Liquids.
3. Double-wall tanks shall provide testable secondary containment and access for interstitial leak detection monitoring.

D) Manufacturer

1. Manufacturer shall be a licensed member company of the Steel Tank Institute and subject to Steel Tank Institute's Quality Assurance program.

Use the STI Technology Guide online for your next Permatank® specification!

All you need in tanks !

Steel Tank Institute

A division of STI / SPFA
570 Oakwood Road Lake Zurich, IL 60047 Ph 847.438.8265 Fx 847.438.8766 Web www.steeltank.com

5/06-2.5M-Item #030-50-0002

ATTACHMENT D

Manufacturer Information for Piping

RANGER
ENVIRONMENTAL SERVICES, LLC

Dualoy® 3000/LCX Secondary Containment Fittings

Uses and Applications

- Service station product, vent and vapor recovery piping
- Bulk plant terminals and fueling terminals
- Central fuel oil systems
- Marinas and marine terminals (onshore only)
- All underground piping systems requiring UL or ULC Listing for MV, HB, CT and A&M fuels
- Containment piping for all of the above
- Designed for use with pressure, vacuum or hydrostatic monitoring systems

Description

Dualoy 3000/LCX systems employ a coaxial construction for the pipe wall and specially designed primary and containment fittings. The system provides a complete double-wall enclosure for all product, vent and vapor recovery lines. The "LCX" contained system has been designed for providing a compact profile and easy, fast and reliable installation. "LCX" can be installed in either parallel or series patterns, taking advantage, where possible, of the reduced cost and number of buried fittings afforded by the series pattern. See details below.

Features of Dualoy 3000/LCX containment systems include:

- Filament-wound, fiberglass-reinforced pipe with integral liner;
- Compact fittings dimensions to minimize trench excavation;
- Smooth exterior pipe surface that eliminates the need for special end preparation tools;
- Ready accessibility to and complete inspectability of primary fittings prior to closure of the containment;
- Complete testability during installation and at any time thereafter;
- Rapid joint makeup with pre-inserted nuts and ambient cure adhesive.

Listings

Dualoy 3000/LCX is Listed in the United States with Underwriters Laboratories for nonmetallic underground piping for motor vehicle (MV), high blend (HB), concentrated (CT) and aviation and marine (A&M) under File MH9162. Dualoy 3000/LCX pipe and fittings are also Listed with Underwriters' Laboratories of Canada (File CMH715)

Performance

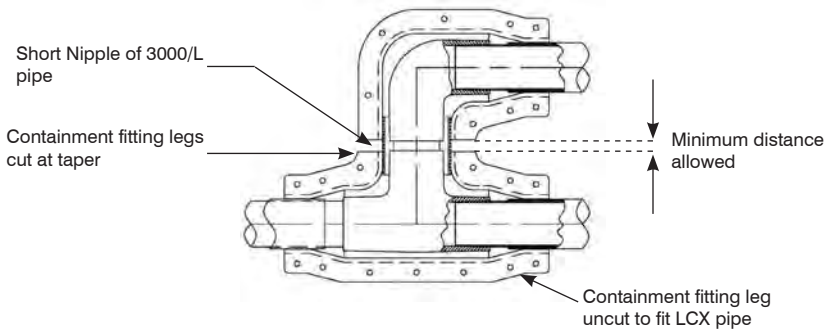
Containment pressure rated to 50 psig

Continuous operating temperatures to 150°F (66°C)

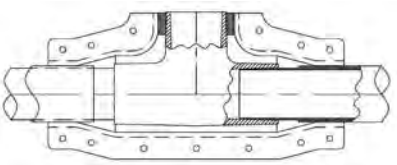
Individual system components may not have the same ratings as the pipe. Refer to the detailed product information for the specific components to determine the pressure rating for the system as a whole.

Piping System Features

Low Profile Crossovers - Dualoy 3000/LCX clamshell fittings are specifically designed to allow the minimum distance between primary fittings to be maintained when crossovers or offsets are needed. The center portion of the fitting is designed to fit the next-size-larger single wall pipe size. When distance between primary fittings is critical, simply cut off the corresponding tapered legs of the clamshell fittings and connect them with single wall pipe. (Reference dimension E on part drawings.) The distance between center lines shown in the drawing below is exactly the same as it would be for a single-wall system.

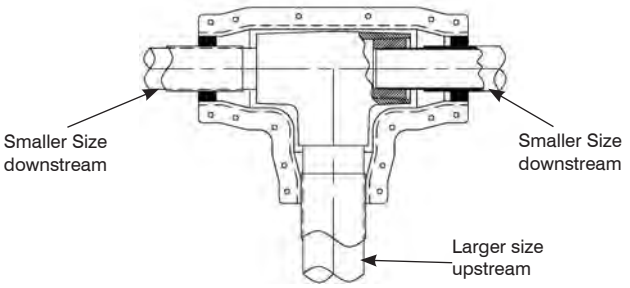


Branch Termination for Series Installation - Dualoy 3000/LCX piping can be installed in series with the pipe coming in on one side of the sump and exiting the other side. To maintain the containment continuity through the sump, the system can be configured with a termination ring on the branch of the tee or leg of an elbow. To do this, the tapered portion of the clamshell fitting leg is cut off and a termination ring is bonded between the primary fitting and the clamshell. A bushing or pipe nipple can be bonded into the primary bell as needed.



Size Reductions - For large systems where larger diameter trunk lines are used, pipe diameter reductions are easily made with the Dualoy 3000/LCX system at fittings. Single piece bushings are used in the primary fitting to reduce the primary pipe size. The containment pipe size is reduced by bonding a 2-piece reducer ring between the clamshell and the smaller pipe jacket. No cutting of clamshell fitting tapers is involved.

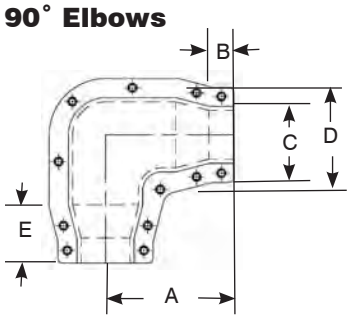
Size reduction can be done on any fitting leg or legs (as on a tee).



Continuous Monitoring - The Dualoy 3000/LCX system has exceptional performance in continuously monitored systems. Due to its small interstitial space, it is very reliable in detecting leaks in systems monitored by pressure, vacuum or hydrostatic methods. False alarms are eliminated by the lesser sensitivity to external conditions while detection capability of actual leaks is increased. Consult NOV Fiber Glass Systems Engineering for details and design of monitoring methods.

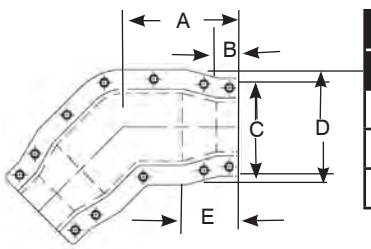
LCX Fittings Dimensions

90˚ Elbows



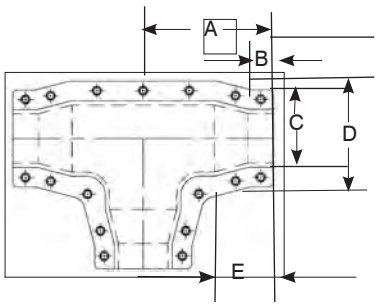
Size		A	B	C	D	E	Weight
(in)	(mm)						lbs
2	50	6.88	1.34	5.12	6.04	3.00	3.55
3	80	7.75	1.38	6.32	7.13	3.00	4.70
4	100	8.75	1.35	7.23	9.19	3.50	7.50

45˚ Elbows



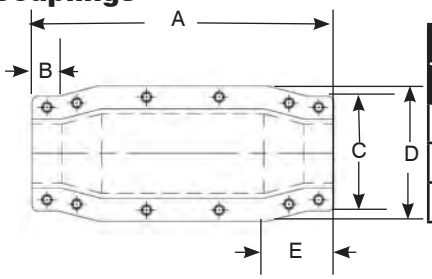
Size		A	B	C	D	E	Weight
(in)	(mm)						lbs.
2	50	6.25	1.34	5.12	6.04	3.00	3.30
3	80	6.75	1.38	6.32	7.13	3.00	4.15
4	100	7.50	1.35	7.23	9.19	3.50	6.50

Tees



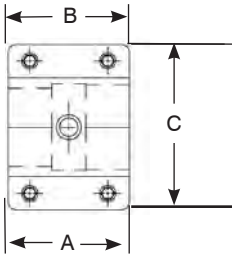
Size		A	B	C	D	E	Weight
(in)	(mm)						lbs.
2	50	6.88	1.34	5.12	6.04	3.00	4.30
3	80	7.75	1.38	6.32	7.13	3.00	6.00
4	100	8.75	1.35	7.23	9.19	3.50	9.95

Containment-Couplings



Size		A	B	C	D	E	Weight
(in)	(mm)						lbs.
2	50	13.50	1.34	5.12	6.04	3.00	3.12
3	80	12.81	1.38	6.32	7.13	3.00	2.95
4	100	12.25	1.38	7.23	9.19	3.50	3.44

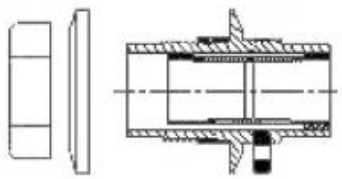
Termination



Size		A	B	C	Weight
(in)	(mm)				lbs.
2	50	3.75	1.34	5.12	1.00
3	80	3.75	1.38	6.32	1.35
4	100	3.75	1.35	7.23	1.45

Sump Penetration Fittings

Sump penetration fittings (SPF) can be used on straight sumps. Dualoy 3000/LCX pipe can pass through or be terminated at the SPF. Ends are closed by bonding half-sections of 2-inch coupling clamshells between the SPF and the pipe jacket. Shrader valves can be supplied for testing or monitoring. SPF is not open to mid-wall of double wall sump, as provided. Field drilling of SPF body near flange can be done to open interstice between SPF and pipe to sump interstice.



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Phone: 210 477 7500

South America
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Recife, Brazil 51020-390
Phone: 55 31 3326 69020

Europe
P.O. Box 6, 4190 CA
Geldermalsen, The Netherlands
Phone: 31 346 587 587

Asia Pacific
No. 7A, Tuas Avenue 3
Jurong, Singapore 639407
Phone: 65 6861 6118

Middle East
P.O. Box 17324
Dubai, UAE
Phone: 971 4881 3566

www.fgspipe.com • fgspipe@nov.com

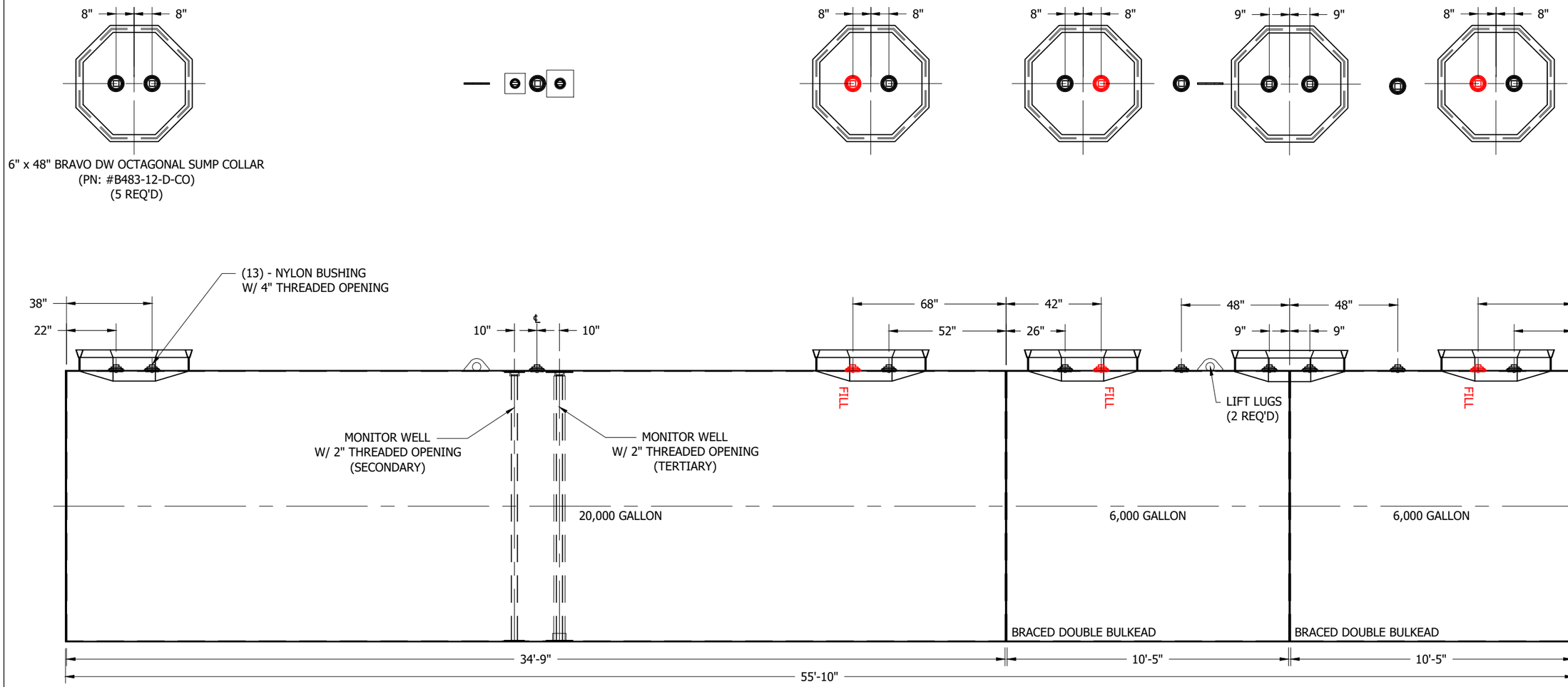
NOV Fiber Glass Systems

FH3610 - September 2012

ATTACHMENT H

Profile Drawings

RANGER
ENVIRONMENTAL SERVICES, LLC



TANK CONSTRUCTED PER UL-58 ACT-100 TYPE II DOUBLE WALL AND UL-1746 JACKETED PERMATANK FOR TERTIARY CONTAINMENT

32,000 GALLON

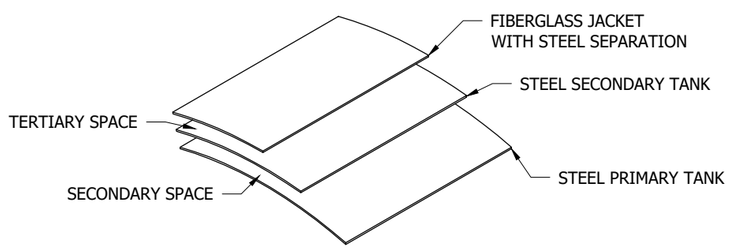
TERTIARY PERMATANK - UL 1746
120" X 55'-10"
(20,000/6,000/6,000)

CUST.: JF PETROLEUM GROUP
LOC.:
DWG NO: 41928

REV.	DATE	DWG BY	APP'D	DESCRIPTION
0	09/24/24	WH	GM	ISSUED WITH QUOTE
1	9/25/24	ZO	ZO	ADJUSTED COLLARS AND FITTINGS PER C/R
2	9/25/24	ZO	ZO	ADJUSTED FITTINGS PER C/R
3				
4				
5				
6				
7				
8				

NOTES:
EXTERNAL: 100 MILS FIBERGLASS JACKET
INTERNAL: BARE METAL
TESTING:
- PRIMARY: 5 PSIG SOAP & WATER
- SECONDARY: VACUUM
- TERTIARY: VACUUM
STRIKER PLATES UNDER "FILL" OPENINGS ONLY
ESTIMATED WEIGHT: 52,000 LBS (+/- 5%)

CONTAINMENT VIEW



TECHNICAL DATA

PERMATANK® MEETS REQUIREMENTS OF:

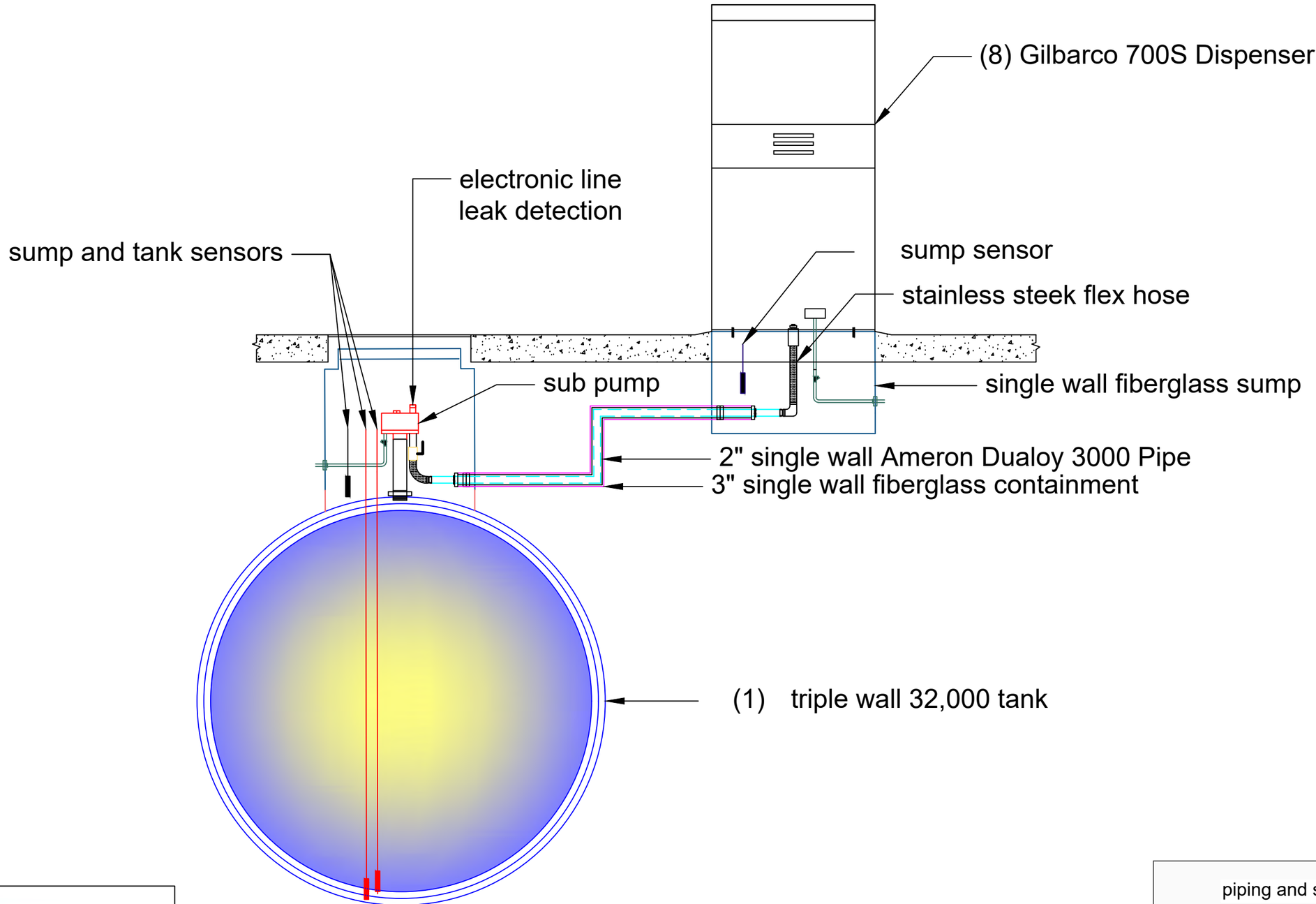
- U.S. ENVIRONMENTAL PROTECTION AGENCY UNDERGROUND STORAGE TANK REGULATIONS (40 CFR 280)

- STEEL TANK INSTITUTE F922, PERMATANK® FABRICATION SPECIFICATION

- UNDERWRITERS LABORATORIES UL 58 STANDARD FOR, STEEL UNDERGROUND TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS

- UNDERWRITERS LABORATORIES UL 1746 STANDARD FOR, EXTERNAL CORROSION PROTECTION SYSTEMS FOR STEEL UNDERGROUND STORAGE TANKS

WATCO TANKS INC. Est. 1945



JF PETROLEUM GROUP

location:
Gateway 29
1905 Ronald Reagan Blvd
Leander, Texas 78641

piping and sump detail

Date: 9-27-24	Rev. No.
Scale: NA	Drawn By: DD

Dualoy® 3000/LCX Secondary Containment Fittings

Uses and Applications

- Service station product, vent and vapor recovery piping
- Bulk plant terminals and fueling terminals
- Central fuel oil systems
- Marinas and marine terminals (onshore only)
- All underground piping systems requiring UL or ULC Listing for MV, HB, CT and A&M fuels
- Containment piping for all of the above
- Designed for use with pressure, vacuum or hydrostatic monitoring systems

Description

Dualoy 3000/LCX systems employ a coaxial construction for the pipe wall and specially designed primary and containment fittings. The system provides a complete double-wall enclosure for all product, vent and vapor recovery lines. The "LCX" contained system has been designed for providing a compact profile and easy, fast and reliable installation. "LCX" can be installed in either parallel or series patterns, taking advantage, where possible, of the reduced cost and number of buried fittings afforded by the series pattern. See details below.

Features of Dualoy 3000/LCX containment systems include:

- Filament-wound, fiberglass-reinforced pipe with integral liner;
- Compact fittings dimensions to minimize trench excavation;
- Smooth exterior pipe surface that eliminates the need for special end preparation tools;
- Ready accessibility to and complete inspectability of primary fittings prior to closure of the containment;
- Complete testability during installation and at any time thereafter;
- Rapid joint makeup with pre-inserted nuts and ambient cure adhesive.

Listings

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Performance

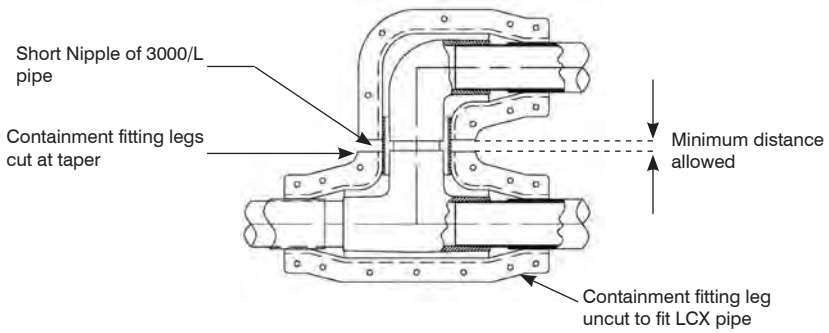
Containment pressure rated to 50 psig

Continuous operating temperatures to 150°F (66°C)

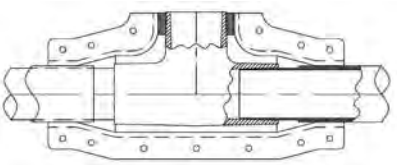
Individual system components may not have the same ratings as the pipe. Refer to the detailed product information for the specific components to determine the pressure rating for the system as a whole.

Piping System Features

Low Profile Crossovers - Dualoy 3000/LCX clamshell fittings are specifically designed to allow the minimum distance between primary fittings to be maintained when crossovers or offsets are needed. The center portion of the fitting is designed to fit the next-size-larger single wall pipe size. When distance between primary fittings is critical, simply cut off the corresponding tapered legs of the clamshell fittings and connect them with single wall pipe. (Reference dimension E on part drawings.) The distance between center lines shown in the drawing below is exactly the same as it would be for a single-wall system.



Branch Termination for Series Installation - Dualoy 3000/LCX piping can be installed in series with the pipe coming in on one side of the sump and exiting the other side. To maintain the containment continuity through the sump, the system can be configured with a termination ring on the branch of the tee or leg of an elbow. To do this, the tapered portion of the clamshell fitting leg is cut off and a termination ring is bonded between the primary fitting and the clamshell. A bushing or pipe nipple can be bonded into the primary bell as needed.



Size Reductions - For large systems where larger diameter trunk lines are used, pipe diameter reductions are easily made with the Dualoy 3000/LCX system at fittings. Single piece bushings are used in the primary fitting to reduce the primary pipe size. The containment pipe size is reduced by bonding a 2-piece reducer ring between the clamshell and the smaller pipe jacket. No cutting of clamshell fitting tapers is involved.

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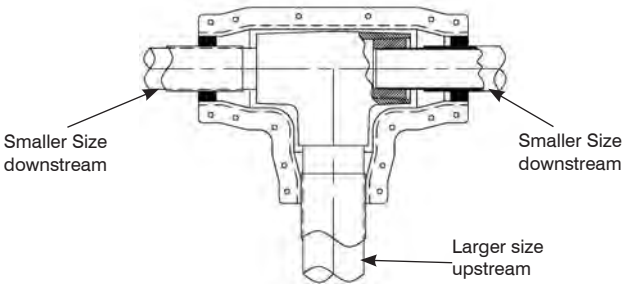
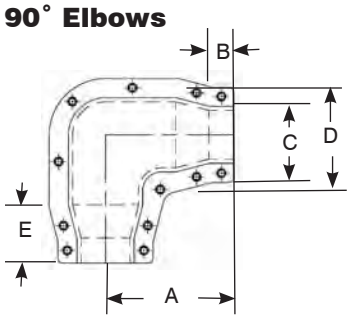


Continuous Monitoring - The Dualoy 3000/LCX system has exceptional performance in continuously monitored systems. Due to its small interstitial space, it is very reliable in detecting leaks in systems monitored by pressure, vacuum or hydrostatic methods. False alarms are eliminated by the lesser sensitivity to external conditions while detection capability of actual leaks is increased. Consult NOV Fiber Glass Systems Engineering for details and design of monitoring methods.

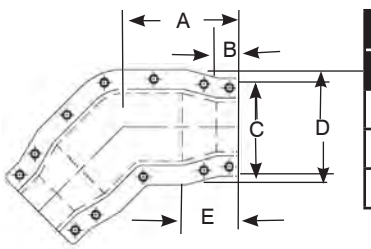
LCX Fittings Dimensions

90˚ Elbows



Size		A	B	C	D	E	Weight
(in)	(mm)						lbs
2	50	6.88	1.34	5.12	6.04	3.00	3.55
3	80	7.75	1.38	6.32	7.13	3.00	4.70
4	100	8.75	1.35	7.23	9.19	3.50	7.50

45˚ Elbows



Size		A	B	C	D	E	Weight
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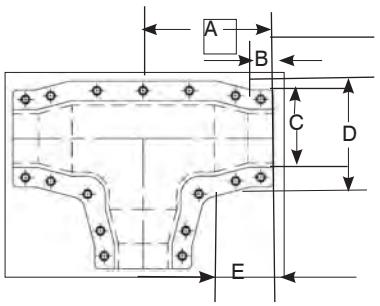
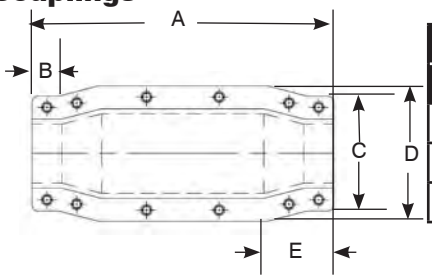
3	80	6.75	1.38	6.32	7.13	3.00	4.15
4	100	7.50	1.35	7.23	9.19	3.50	6.50

Tees



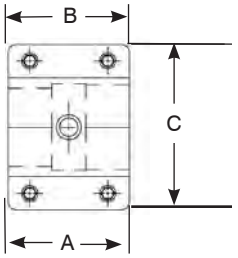
Size		A	B	C	D	E	Weight
(in)	(mm)						lbs.
2	50	6.88	1.34	5.12	6.04	3.00	4.30
3	80	7.75	1.38	6.32	7.13	3.00	6.00
4	100	8.75	1.35	7.23	9.19	3.50	9.95

Containment-Couplings



Size		A	B	C	D	E	Weight
(in)	(mm)						lbs.
2	50	13.50	1.34	5.12	6.04	3.00	3.12
3	80	12.81	1.38	6.32	7.13	3.00	2.95
4	100	12.25	1.38	7.23	9.19	3.50	3.44

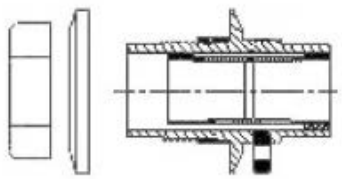
Termination



Size		A	B	C	Weight
(in)	(mm)				lbs.
2	50	3.75	1.34	5.12	1.00
3	80	3.75	1.38	6.32	1.35
4	100	3.75	1.35	7.23	1.45

Sump Penetration Fittings

Sump penetration fittings (SPF) can be used on straight sumps. Dualoy 3000/LCX pipe can pass through or be terminated at the SPF. Ends are closed by bonding half-sections of 2-inch coupling clamshells between the SPF and the pipe jacket. Shrader valves can be supplied for testing or monitoring. SPF is not open to mid-wall of double wall sump, as provided. Field drilling of SPF body near flange can be done to open interstice between SPF and pipe to sump interstice.



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P.O. Box 17324
Dubai, UAE
Phone: 971 4881 3566

www.fgspipe.com • fgspipe@nov.com

NOV Fiber Glass Systems

FH3610 - September 2012

Red Armor™ STP for Corrosive Environments

Key Features:

- Specialty coating on all cast surfaces withstands acetic acid exposure to prevent pitting and deterioration over time
- Stainless Steel construction on all exposed surfaces ensures easy maintenance for the life of the pump

The ultimate survivor in your fueling infrastructure. The Red Jacket Red Armor series submersible turbine pumps are built to last in the harshest corrosive environments created by ULSD and ethanol blends.

Specifications:

In-sump protection includes powder coated packer manifold, stainless steel riser, nuts, springs, screws, check valve seat, eye bolt, and check valve guide

In-tank protection includes powder-coated discharge head, stainless column pipe and quick-set connector.

Specialty coating selected as the toughest performer across a battery of abrasion, immersion and impact standards.

Fuel Compatibility

- 100% Gasoline
- 100% Diesel
- 0-100% Biodiesel blends
- Jet fuel
- AVGAS
- Kerosene and Fuel Oil
- Methanol concentrations up to 100%
- Ethanol concentrations up to 90%
- MTBE, ETBE, or TAME concentrations up to 20%

Fits installations from 3 ½′ to 19′ in depth

Built upon the same field proven Red Jacket STP platform with identical sizes as the long standing "Red Jacket" and the "Red Jacket AG" models.

4 Motor Sizes Available:

- ¾ HP, 60 Hz, 1 – phase
- 1 ½ HP, 60 Hz, 1 – phase
- X3 1 ½ HP, 60 Hz, 1 – phase, high pressure
- 2 HP, 60 Hz, 1 – phase

Siphon Ports:

- 2 available, ¼" NPT
- Optional stainless siphon cartridge for survivability in corrosive fuels (410151-002)

Compatible with check valve housing models:

- Standard VR ready check valve for PLLD (410153-001)

Vent Port: 1 available, ¼" NPT

Optional stainless steel trapper intake screen blocks corroded tank debris from clogging dispenser filters (144-194-5)

Quick Set Final Assemblies (Adjustable)

Horsepower	KW	Length	Floating Suction Adapter	Model Number	Part Number
0.75	0.56	72" - 102"		AGP75S1 RA1	410140-086
0.75	0.56	102" - 162"		AGP75S1 RA2	410140-087
0.75	0.56	162" - 222"		AGP75S1 RA3	410140-088
0.75	0.56	74.3" - 104.3"	•	AGP75S1 RA1 FSA	410140-089
0.75	0.56	104.3" - 164.3"	•	AGP75S1 RA2 FSA	410140-090
0.75	0.56	164.3" - 224.3"	•	AGP75S1 RJ3 FSA	410140-091
1.5	1.13	74.5" - 105"		AGP150S1 RA1	410141-088
1.5	1.13	104.5" - 165"		AGP150S1 RA2	410141-089
1.5	1.13	164.5" - 225"		AGP150S1 RA3	410141-090
1.5	1.13	76.8" - 107.3"	•	AGP150S1 RA1 FSA	410141-091
1.5	1.13	106.8" - 167.3"	•	AGP150S1 RA2 FSA	410141-092
1.5	1.13	166.8" - 227.3"	•	AGP150S1 RA3 FSA	410141-093
1.5	1.13	75.5" - 105.5"		X3AGP150S1 RA1	410143-083
1.5 HIGH PRESSURE	1.13	105.5" - 165.5"		X3AGP150S1 RA2	410143-084
1.5 HIGH PRESSURE	1.13	165.5" - 225.5"		X3AGP150S1 RA3	410143-085
1.5 HIGH PRESSURE	1.13	77.8" - 107.8"	•	X3AGP150S1 RA1 FSA	410143-086
1.5 HIGH PRESSURE	1.13	107.8" - 167.8"	•	X3AGP150S1 RA2 FSA	410143-087
1.5 HIGH PRESSURE	1.13	167.8" - 227.8"	•	X3AGP150S1 RA3 FSA	410143-088
2	1.5	78.5" - 108.5"		AGP200S1-3RA1	410142-063
2	1.5	108.5" - 168.5"		AGP200S1-3RA2	410142-064
2	1.5	168.5" - 228.5"		AGP200S1-3RA3	410142-065
2	1.5	80.8" - 110.8"	•	AGP200S1-3RA1 FSA	410142-066
2	1.5	110.8" - 170.8"	•	AGP200S1-3RA2 FSA	410142-067
2	1.5	170.8" - 230.8"	•	AGP200S1-3RA3 FSA	410142-068

Fixed-Speed, single phase STP assemblies. Length measured from the top of the eyebolt to the bottom of the motor inlet. All 208/230 Volts.

Fixed Length Final Assemblies (Non-Adjustable)

Horsepower	KW	Length	Floating Suction Adapter	Model Number	Part Number
0.75	0.56	42" - 132"		AGP75S1 RA	410166-073
0.75	0.56	133" - 168"		AGP75S1 RA	410166-074
0.75	0.56	169" - 222"		AGP75S1 RA	410166-075
0.75	0.56	44.3" - 134.3"	•	AGP75S1 RA FSA	410166-076
0.75	0.56	135.3" - 170.3"	•	AGP75S1 RA FSA	410166-077
0.75	0.56	171.3" - 224.3"	•	AGP75S1 RA FSA	410166-078
1.5	1.13	45" - 135"		AGP150S1 RA	410173-073
1.5	1.13	136" - 171"		AGP150S1 RA	410173-074
1.5	1.13	172" - 225"		AGP150S1 RA	410173-075
1.5	1.13	47.3" - 173.3"	•	AGP150S1 RA FSA	410173-076
1.5	1.13	138.3" - 173.3"	•	AGP150S1 RA FSA	410173-077
1.5	1.13	174.3" - 227.3"	•	AGP150S1 RA FSA	410173-078
1.5	1.13	46" - 135"		X3AGP150S1 RA	410175-085
1.5 HIGH PRESSURE	1.13	136" - 171"		X3AGP150S1 RA	410175-086
1.5 HIGH PRESSURE	1.13	172" - 225"		X3AGP150S1 RA	410175-087
1.5 HIGH PRESSURE	1.13	48.3" - 137.3"	•	X3AGP150S1 RA FSA	410175-088
1.5 HIGH PRESSURE	1.13	138.3" - 173.3"	•	X3AGP150S1 RA FSA	410175-089
1.5 HIGH PRESSURE	1.13	174.3" - 227.3"	•	X3AGP150S1 RA FSA	410175-090
2	1.5	49" - 138"		AGP200S1-3RA	410174-049
2	1.5	139" - 174"		AGP200S1-3RA	410174-050
2	1.5	174.9" - 227.9"		AGP200S1-3RA	410174-051
2	1.5	51.3" - 140.3"	•	AGP200S1-3RA FSA	410174-052
2	1.5	141.3" - 176.3"	•	AGP200S1-3RA FSA	410174-053
2	1.5	177.2" - 230.2"	•	AGP200S1-3RA FSA	410174-054

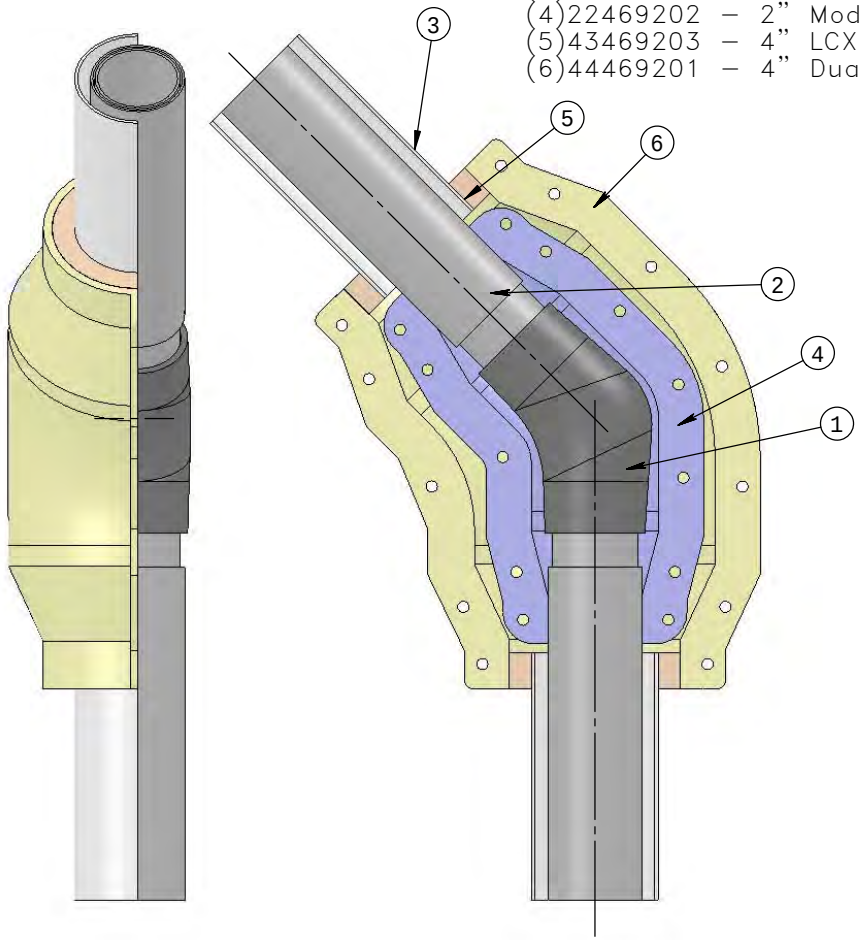
Five standard length Stainless Steel Risers are available. Fixed length pumps may not be returned to stock.

Standard vs. Upgraded Red Armor Components

To learn more, contact us at 888.561.7942
or visit www.redjacket.com

RED JACKET™ VEEDER-ROOT™

(1)22371508 – 2" Dualoy 3000/L 45° Molded Elbow
(2)22464386 – 2" Dualoy 3000/LCX Pipe
(3)33854381 – 3" Dualoy 3000/L Pipe
(4)22469202 – 2" Modified 45° Dualoy 3000/LCX Clamshell
(5)43469203 – 4" LCX Clamshell x 3" 3000/L Pipe Closure Ring
(6)44469201 – 4" Dualoy 45° 3000/LCX Clamshell



HPM	10-2-12	DESCRIPTION OF REVISION	REV.
NAME	DATE	DESCRIPTION OF REVISION	REV.

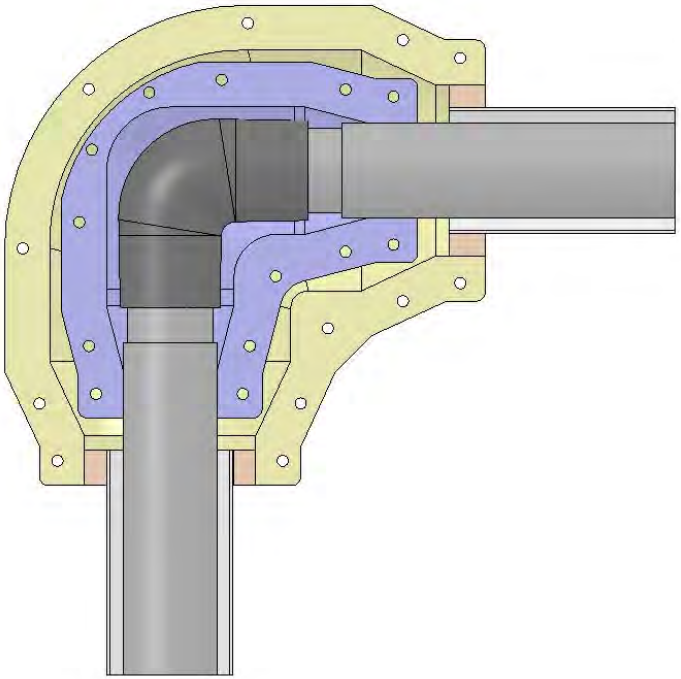
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			BREAK ALL SHARP EDGES 0.06 MAX	SCALE: NONE
FRACT. ± 1/16	.X ±0.060	.XX ±0.030	.XXX ±0.015	ANGLES ±1/2

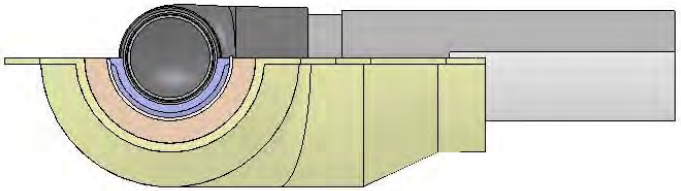
Fiber Glass Systems
A National Oilwell Varco Company
1004 Ameron Rd.
Burkburnett, Texas

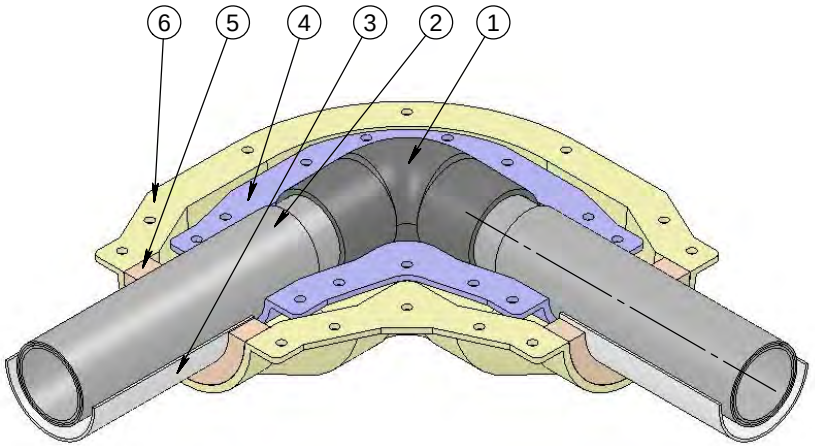
MATERIAL: SPECIFY MATERIAL

TITLE:
DUALOY 3000/LCX 45° ELBOW
TERTIARY CONTAINMENT

DRAWN BY:	HPM	DRAWING NUMBER	REV.
DATE:	10/30/12	NOV121030-45	00







(1)22372108 – 2" Dualoy 3000/L 90° Molded Elbow
(2)22464386 – 2" Dualoy 3000/LCX Pipe
(3)33854381 – 3" Dualoy 3000/L Pipe
(4)22469201 – 2" Modified Dualoy 3000/LCX Clamshell
(5)43469203 – 4" LCX Clamshell x 3" 3000/L Pipe Closure Ring
(6)44469201 – 4" Dualoy 3000/LCX Clamshell

HPM	10–30–12	DESCRIPTION OF REVISION	REV.
NAME	DATE	DESCRIPTION OF REVISION	REV.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			BREAK ALL SHARP EDGES 0.06 MAX	SCALE: NONE
FRACT. ± 1/16	.X ±0.060	.XX ±0.030	.XXX ±0.015	ANGLES ±1/2

Fiber Glass Systems
A National Oilwell Varco Company
1004 Ameron Rd.
Burkburnett, Texas

MATERIAL: SPECIFY MATERIAL

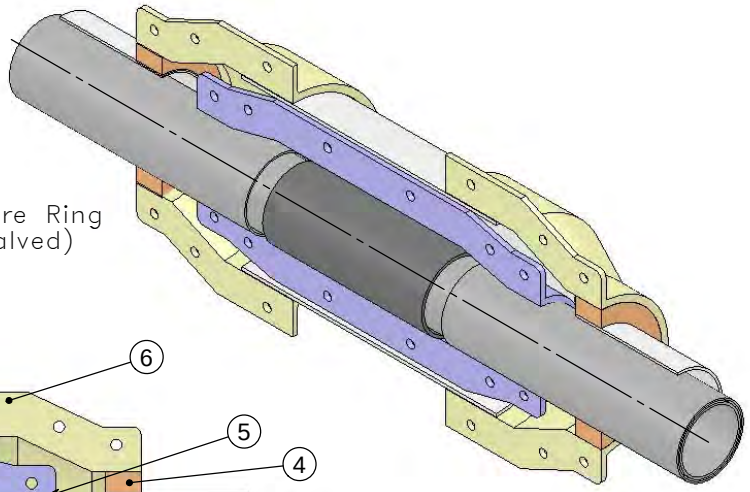
TITLE:

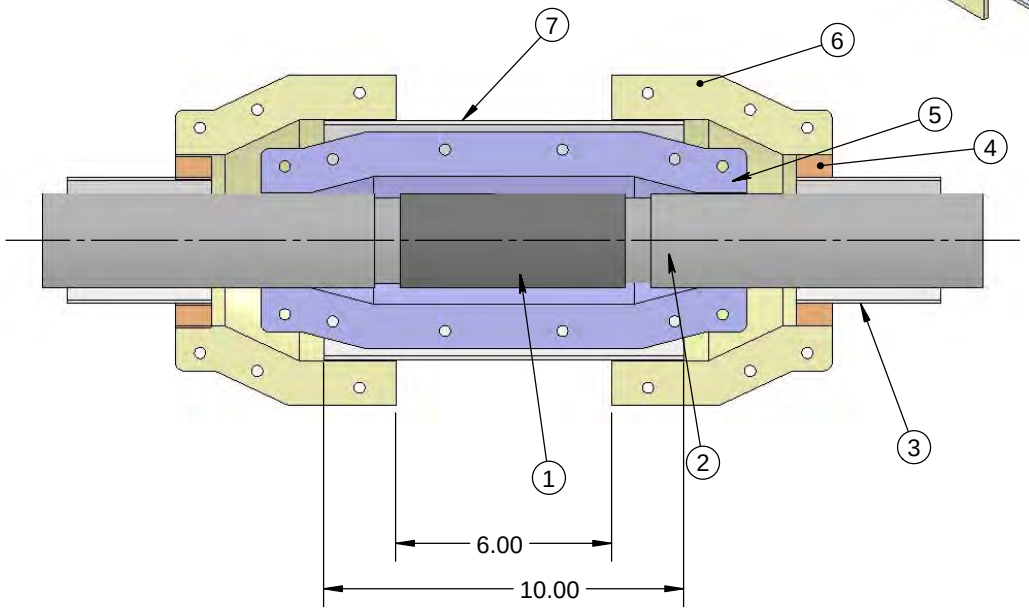
DUALOY 3000/LCX 90° ELBOW
TERTIEARY CONTAINMENT

DRAWN BY:	HPM	DRAWING NUMBER	REV.
DATE:	10/30/12	NOV121030–90	00

?

(1)22850707 – 2" Dualoy 3000/L Sleeve Coupling
(2)22464386 – 2" Dualoy 3000/LCX Pipe
(3)33854381 – 3" Dualoy 3000/L Pipe
(4)22469201 – 2" Dualoy 3000/LCX Coupling Camshell
(5)43469203 – 4" LCX Clamshell x 3" 3000/L Pipe Closure Ring
(6)44469201 – 4" Dualoy 3000/LCX Coupling Clamshell(halved)
(7)66854381 – 6" Dualoy 3000/L Pipe





HPM	10-2-12	DESCRIPTION OF REVISION	REV.
NAME	DATE	DESCRIPTION OF REVISION	REV.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			BREAK ALL SHARP EDGES 0.06 MAX	SCALE: NONE
FRACT. ± 1/16	.X ±0.060	.XX ±0.030	.XXX ±0.015	ANGLES ±1/2

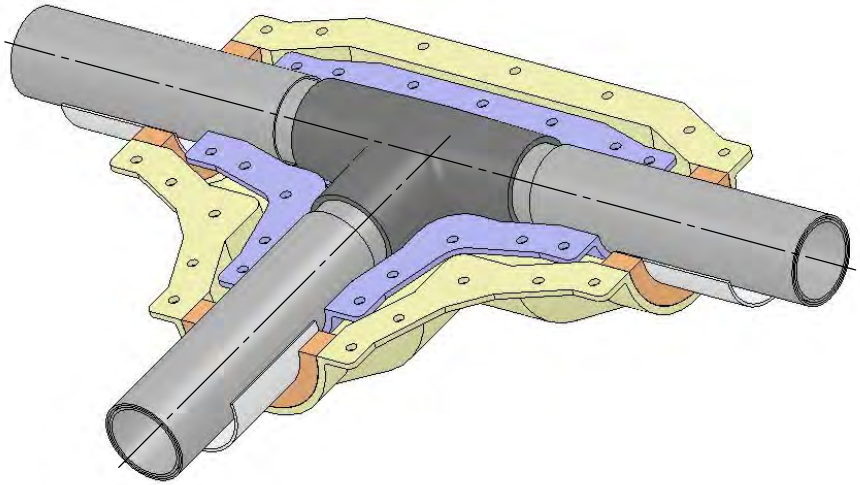
Fiber Glass Systems
A National Oilwell Varco Company
1004 Ameron Rd.
Burkburnett, Texas

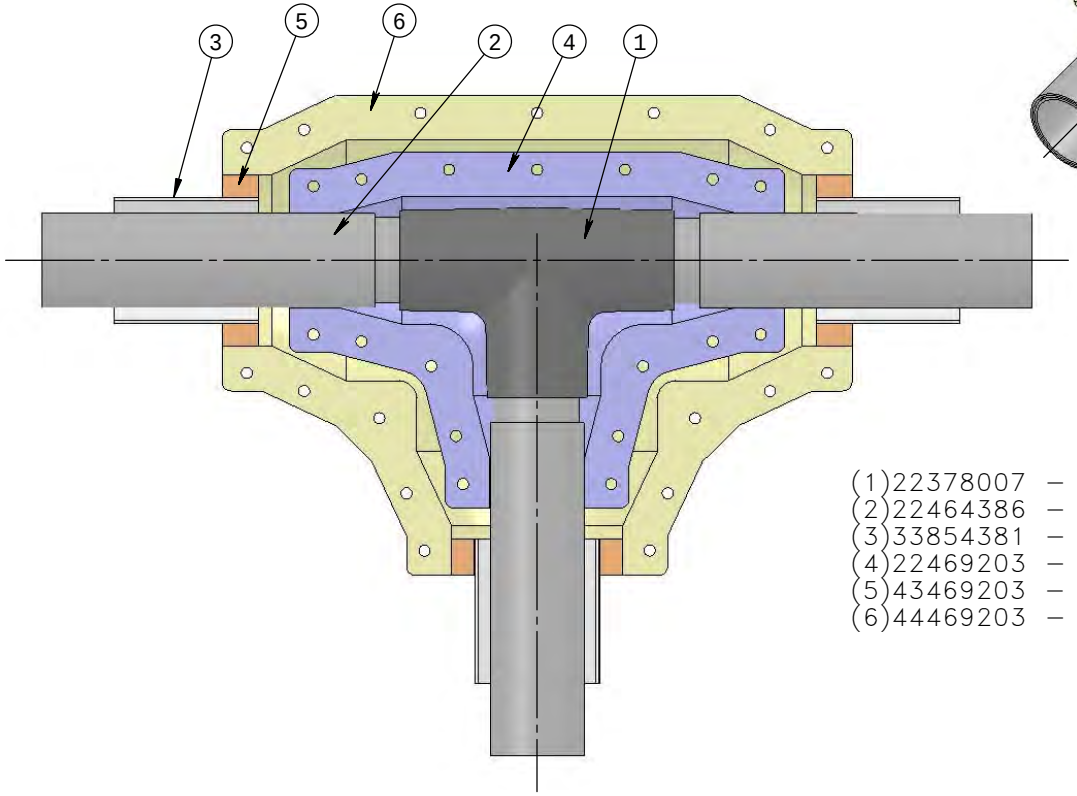
MATERIAL: SPECIFY MATERIAL

TITLE:

DUALOY 3000/LCX 2-INCH COUPLING
TERTIARY CONTAINMENT

DRAWN BY:	HPM	DRAWING NUMBER	REV.
DATE:	10/30/12	NOV121030-CPL	00





(1)22378007 – 2" Dualoy 3000/L Molded Tee
(2)22464386 – 2" Dualoy 3000/LCX Pipe
(3)33854381 – 3" Dualoy 3000/L Pipe
(4)22469203 – 2" Dualoy 3000/LCX Tee Clamshell
(5)43469203 – 4" LCX Clamshell x 3" 3000/L Pipe Closure Ring
(6)44469203 – 4" Dualoy 3000/LCX Clamshell

HPM	10-2-12	DESCRIPTION OF REVISION	REV.
NAME	DATE	DESCRIPTION OF REVISION	REV.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			BREAK ALL SHARP EDGES 0.06 MAX	SCALE: NONE
FRACT. ± 1/16	.X ±0.060	.XX ±0.030	.XXX ±0.015	ANGLES ±1/2

Fiber Glass Systems
A National Oilwell Varco Company
1004 Ameron Rd.
Burkburnett, Texas

MATERIAL: SPECIFY MATERIAL

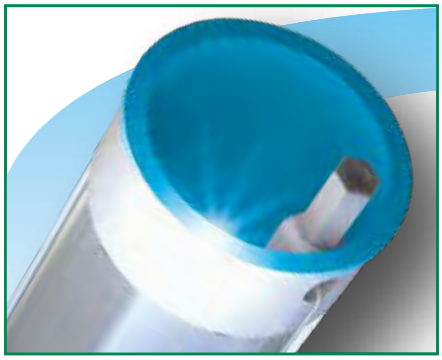
TITLE:
DUALOY 3000/LCX 2-INCH TEE
TERTIARY CONTAINMENT

DRAWN BY:	HPM	DRAWING NUMBER	REV.
DATE:	10/30/12	NOV121030-T	00

Overfill Prevention and Venting Equipment

71SO Testable Overfill Valve

The OPW new patent-pending Testable 71SO-T Overfill Prevention Valve is the easiest, quickest and most cost efficient way to ensure that your overfill valves will operate when called upon - verifiable without removing them from the tanks. The OPW 71SO-T Testable Overfill Prevention Valve is the only UST Overfill Prevention Valve that is testable from the surface without removal from the tank.



61SO & 71SO Overfill Prevention Valves

The OPW 61SO and 71SO vapor-tight Overfill Prevention Valves are two-stage shut-off valves designed to prevent the overfill of underground storage tanks by providing a positive shut-off of product delivery. Models of the 61SO and 71SO are available to meet virtually any UST application, including two-point, coaxial, poppeted coaxial and remote fill. The 71SO vapor-tight model is designed for enhanced vapor recovery (EVR) applications. Both the 61SO and 71SO are designed for use on tight-fill gravity drop applications only, and can be installed in the fill riser of both new and existing underground storage tanks.

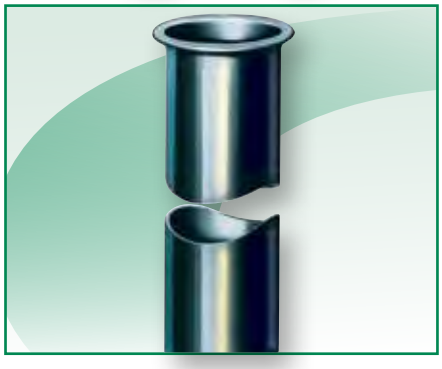
Ball Float Vent Valves and Extractor Fittings

OPW Ball Float Vent Valves protrude into underground storage tanks from the Stage I vapor return riser pipe. As the tank becomes full during a product drop, the ball seats – restricting the flow of vapors back to the transport truck or through the tank vent. As the vapors are compressed in the tank, product flow into the tank is severely restricted.

OPW ball floats are mounted in OPW extractor fittings to maintain access through grade-level manholes.

Drop Tubes and Accessories

OPW drop tubes are installed inside tank fill risers to prevent fuel from contacting riser joints. Drop tubes extend close to the bottom of the tank to minimize turbulence and vapor production. Tank bottom protectors are installed on the bottom of drop tubes to prevent tank erosion at the fill point.



Pressure Vacuum Vents and Adaptors

Pressure Vacuum Vents are installed on the top of vent pipes from underground or aboveground fuel storage tanks. The vent cap and internal wire screen are designed to protect the tank vent lines against intrusion and blockage from water, debris or insects. A normally closed poppet in the valve opens at a predetermined pressure or vacuum setting to allow the tank to vent.

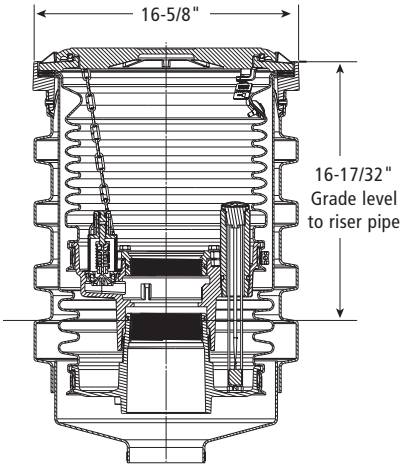
9393 Princeton-Glendale Road ◆ Hamilton, Ohio USA 45011 ◆ Phone: (800) 422-2525 ◆ Fax: (800) 421-3297

OPW EDGE™ Double-Wall Spill-Containers

Designed in collaboration with contractors and end-users, the OPW EDGE™ Double-Wall Spill-Container installs in the same space as single-wall buckets. The EDGE™ delivers best-in-class features that significantly improve reliability, installation, testing and ease of serviceability. The EDGE™ exceeds the performance levels of all other double-wall spill-containers.

- Fully Testable
- Unbeatable installation ease
- Uses existing riser pipe
- Unparalleled serviceability
- Superior quality
- Significantly reduces installation time and labor costs

Sealable Cover Option Available



Weight: 120 lbs. (54.5 kg.)

Materials

Cover: Cast iron

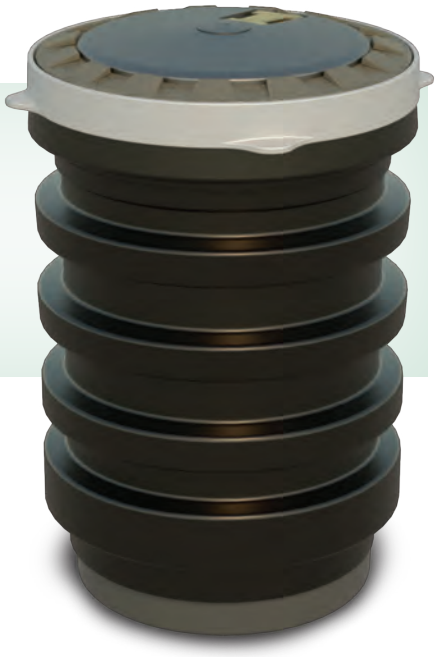
Mounting Ring: Duragard®-coated ductile iron

Bellows: Polyethylene

Base: Cast iron E-coating

Clamps: Stainless-steel

Seals: Buna-N



Features

- **Top-Mounted Vacuum Test Port**
  - For quick and easy access
- **Superior Visual Gauge**
  - No messy dipsticks to contend with
  - Significantly simplifies and reduces testing time
- **Ease of Access to the Electronic Sensor for Testing**
  - Easy access for testing
  - Located to eliminate damage potential during product drops
- **Roto-Molded Primary & Secondary Buckets**
  - Thicker walls for greater durability and reliability
- **Ribbed Polyethylene Skirt Design**
  - Roto-molded for long-life durability
  - Provides rigidity for added durability
  - Provides handles on all sides for ease of installation
- **Patent-Pending Socket Design**
  - Enables the EDGE™ to install into the space of a single-wall spill-container
  - Helps to align bucket on riser
- **Patent-Pending Ledge Design**
  - Provides machined sealing face for drop tube
  - Improves overall drop tube sealing integrity
  - Eliminates face seal adaptors or de-burring of the riser pipe to obtain a flat surface for the drop tube
- **Patent-Pending Removable Adaptor**
  - Allows for quick and easy access to drop tube
  - Eliminates the need for cumbersome chain wrenches
- **Bellow Seals**
  - Improves overall sealing integrity
  - Eliminates mess and curing time found in sealants
  - Reduces service time and costs
- **SC Test**
  - Vacuum Testing Lid for Edge, 2200, 21000 and Multiports

Listings and Certifications

APPROVED UNDER FLORIDA EQ#708 · MEETS ALL NORTH CAROLINA COMPLIANCE REQUIREMENTS · Missouri DENR Approved · CARB California Air Resources Board · ULC

HWY 70 Business West ◆ Smithfield, North Carolina USA 27577 ◆ Phone (800) 422-2525

Ordering Specifications

The Edge™ Double-Wall Models - Fill Ports with Drain-Valves

Part #	Gal.	liter	Cover	Gauge/Sensor	lbs.	kg.
1C-3112D	5	19	Cast-Iron	Float Gauge	127	58
1C-3122D	5	19	Cast-Iron	Port Only (sensor not included)	127	58
1C-3132D	5	19	Cast-Iron	Electronic Sensor; 2 Stage, Normally Closed	127	58
1C-31512D	15	57	Cast-Iron	Float Gauge	185	84
1C-31532D	15	57	Cast-Iron	Electronic Sensor; 2 Stage, Normally Closed	185	84
1SC-3112D	5	19	Sealable	Float Gauge	127	58
1SC-3122D	5	19	Sealable	Port Only (sensor not included)	127	58
1SC-3132D	5	19	Sealable	Electronic Sensor; 2 Stage, Normally Closed	127	58
1SC-31512D	15	57	Sealable	Float Gauge	185	84
1SC-31532D	15	57	Sealable	Electronic Sensor; 2 Stage, Normally Closed	185	84

Installation Tools & Testing Equipment

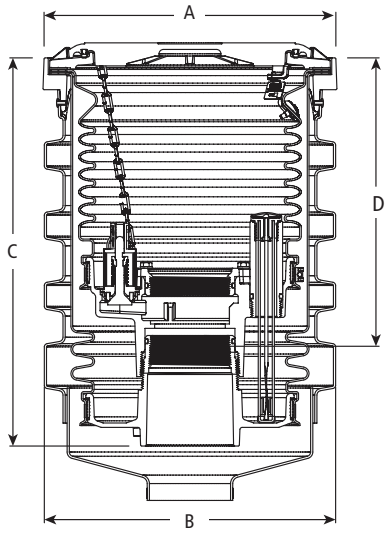
1-3100-TOOL	Installation Tool for the EDGE™ DW Spill-Container
DW-VAC-TEST	Double-Wall Vacuum Tester
SC-VAC-TEST	Vacuum Testing Lid for OPW Spil Buckets

The Edge™ Double-Wall Models - Vapor Ports with Plug

Part #	Gal.	liter	Cover	Gauge	lbs.	kg.
1C-3112P	5	19	Cast-Iron	Float Gauge	127	58
1C-3122P	5	19	Cast-Iron	Port Only (sensor not included)	127	58
1C-3132P	5	19	Cast-Iron	Electronic Sensor; 2 Stage, Normally Closed	127	58
1C-31512P	15	57	Cast-Iron	Float Gauge	185	84
1C-31532P	15	57	Cast-Iron	Electronic Sensor; 2 Stage, Normally Closed	185	84
1SC-3112P	5	19	Sealable	Float Gauge	127	58
1SC-3122P	5	19	Sealable	Port Only (sensor not included)	127	58
1SC-3132P	5	19	Sealable	Electronic Sensor; 2 Stage, Normally Closed	127	58
1SC-31512P	15	57	Sealable	Float Gauge	185	84
1SC-31532P	15	57	Sealable	Electronic Sensor; 2 Stage, Normally Closed	185	84

Add the following to part number for colored powder-coated covers and rings.
Example 1C-3XXXD-W or 1SC-3XXXD-W

White	-W	Orange	-O	Yellow	-Y
Red	-R	Blue	-B	Bronze	-BZ



EDGE™

Dimensions 5-gallon EDGE™

	in.	cm
A	16 5/8	42
B	16 19/32	42
C	22 1/8	56
D	16 7/16	42

Dimensions 15-gallon EDGE™

	in.	cm
A	24 7/8	63
B	24 1/2	62
C	24 1/2	62
D	18	46

Replacement Parts/Accessories

Part #	Description	Part #	Description	Part #	Description
1-21CC-XX (XX = Color)	5 Gallon Cast-Iron RT cover	211465	Visigauge Complete S/A	H12267	Wood Block Leveling Kit
				202136-KIT	5 Gallon Primary Bucket with Plug
1-21AC	5 Gallon Aluminum RT Cover	206017	Sensor Adaptor S/A (Primary)	205987-KIT	15 Gallon Primary Bucket with Drain-Valve
H12229M	5 Gallon Cover Seal for 1-21AC and 1-21CC	211064	Visigauge (only)	206215-KIT	15 Gallon Primary Bucket with Plug
1C-31RTR-X (x=color)	5 Gallon Snow-Plow Ring	201972	O-Ring, Visigauge Adaptor	202137-KIT	5 Gallon Secondary Replacement Kit for Float Gauge
201689	5 Gallon Seal for Snow-Plow Ring	202013	O-Ring, Visigauge	206010-KIT	5 Gallon Secondary Replacement Kit for Sensor Buckets
203340	15 Gallon Rain Tight Rings	1DK-2100-EVR	Drain-Valve Sub Assembly	206011-KIT	5 Gallon Secondary Replacment Kit for Electronic Sensor
H12229M	15 Gallon RT Cover Seal	201739	Nipple Adaptor	205988-KIT	15 Gallon Secondary Bucket Assembly
SC-XXXX (XXX = Color)	5 or 15 Gallon Sealable Covers Powder-Coated	C05446M	15 Gallon Main Cover Seal	203269	Replacement 2 Stage, Normally Closed Sensor and Sealed Base Plug; Used in 1C-xx32 series Edge
203035	5 Gallon Sealable Cover Replacement Snow-Plow Ring (White)	201686	S/A Secondary Gravel Guard		
217500	5 Gallon Sealable Cover Replacement Snow_Plow Ring (Orange)			211079	Sensor Only Standard
217501	5 Gallon Sealable Cover Replacement Snow_Plow Ring (Red)	202135-KIT	5 Gallon Primary Bucket with Drain-Valve	210488	Sensor Only
				201692	O-Ring for 201739 Nipple
217502	5 Gallon Sealable Cover Replacement Snow_Plow Ring (Yellow)				
1DP-2100	Plug Kit				
SCR Series	15 Gallon Sealable Cover Replacement Snow-Plow Ring				

Float Gauge & Sensor Adaptor not included with replacement buckets

Add the following to part number for colored powder-coated covers and rings.
Example 1C-3XXXD-W or 1SC-3XXXD-W

White	-W	Orange	-O	Yellow	-Y
Red	-R	Blue	-B	Bronze	-BZ

EDGE™ Replacement Cartridge Kit

Original Edge Model	Original Product Description	Primary-Containment Replacement Kit	Secondary-Containment Replacement Kit	Primary and Secondary Containment Replacement Kit/EDGE 1 Upgrade Kits
1C-3112D / 1SC-3112D	DW EDGE: Drain-Valve + Gauge	202135-KIT	202137-KIT	202135-KIT + 202137-KIT + 211465
1C-3112P / 1SC-3112P	DW EDGE: Plug and Gauge	202136-KIT	202137-KIT	202136-KIT + 202137-KIT + 211465
1C-3122D / 1SC-3122D	DW EDGE: Drain-Valve and Sensor Access Port	202135-KIT	206010-KIT	202135-KIT + 206010-KIT + 206017
1C-3122P / 1SC-3122P	DW EDGE: Plug and Sensor Access Port	202136-KIT	206010-KIT	202136-KIT + 206010-KIT + 206017
1C-3132D / 1SC-3132D	DW EDGE: Drain-Valve & 2 Stage Norm. Closed Sensor	202135-KIT	206011-KIT	202135-KIT + 206011-KIT + 206017
1C-3132P / 1SC-3132P	DW EDGE: Plug & 2 Stage Norm. Closed Sensor	202136-KIT	206011-KIT	202136-KIT + 206011-KIT + 206017
1C-3101D / 1SC-3101D	EDGE 1: Drain-Valve	203193-KIT		
1C-3101P / 1SC-3101P	EDGE 1: Plug	203194-KIT		
1C-31512D / 1SC-31512D	DW Edge: 15 Gallon Drain-Valve + Gauge	205987-KIT	205988-KIT	205987-KIT + 205988-KIT + 211465
1C-31512P / 1SC-31512P	DW Edge: 15 Gallon Plug + Gauge	206215-KIT	205988-KIT	206215-KIT + 205988-KIT + 211465
1C-3142D / 1SC-3142D	DW Edge: Drain and Tri-State Sensor	202135-KIT	210493-KIT	202135-KIT + 210493-KIT + 206017
1C-3142P / 1SC-3142P	DW Edge: Plug and Tri-State Sensor	202136-KIT	210493-KIT	202136-KIT + 210493-KIT + 206017

Replacement Parts/Accessories

Part #	Description
SC-Test	Testable Sealable cover for SC Edge or 1-2200 buckets

4" Threaded Nipples for Mating Spill Bucket to Adaptor

Part #	Description
TC-400	4" Torque Cap
H15144M	4" NPT Nipple, 4" Length
H12806M	4" NPT Nipple, 5" Length
VPN4X7	4" NPT Nipple, 7" Length
H15271M	4" NPT Nipple, 8" Length
H15268M	4" NPT Nipple, 10" Length

4" Riser Extenders

Part #	Description
206121	4" NPT Riser Pipe Extender, adds 2" to Height
206122	4" NPT Riser Pipe Extender, adds 3.25" to Height

SC Tester

206122 Adapter
(adds 3.25")

206121 Adapter
(adds 2")

Threaded Nipple

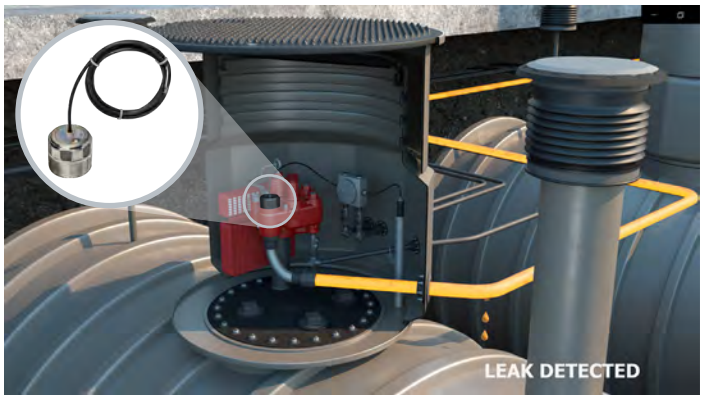
VEEDER-ROOT

CONNECTED. SECURE. COMPLIANT.

Digital Pressurized Line Leak Detection System

Why DPLLD for Detecting Line Leaks?

The Veeder-Root Digital Pressurized Line Leak Detection (DPLLD) system is designed to meet your everyday compliance needs in a variety of applications. Our patented technology performs precision line leak testing at full pump pressure for 0.1 Gallons Per Hour (GPH)/0.38 Liters Per Hour (LPH) and 0.2 GPH/0.76 LPH, and a pressure decay test to meet the U.S. Environmental Protection Agency (EPA) 3.0 GPH/11.4 LPH test requirements. DPLLD offers flexible testing and digital reporting options, helping to detect catastrophic leaks. When paired with a TLS-450PLUS Automatic Tank Gauge (ATG), customers can monitor up to 1,178 gallons/4,459 liters of fuel line volume.



If the pressure is out of normal range, the TLS-450PLUS will record a failing result and generate an audible and visual alarm for the store operator.

SYSTEM FEATURES

Equipment Design

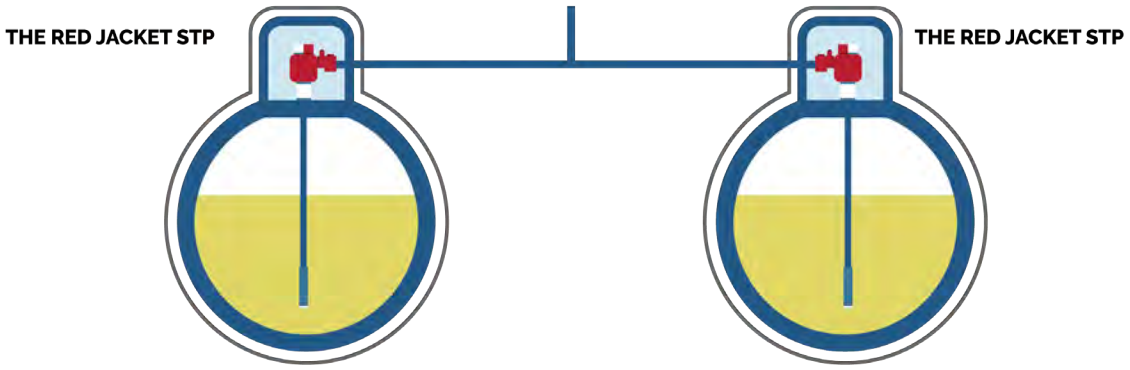
- **Pressure sensor is installed easily** without breaking piping or adding a new sump
- **Stainless steel construction** meets the challenges of a highly corrosive environment
- **Test lines at full pressure** for quick and accurate results, without restricting fuel flow rate
- **Not impacted by thermal contraction of fuel in the line** due to changes in temperature

System Functionality

- **Monitors line pressure during dispensing activity** to ensure a catastrophic leak is not occurring during a dispense
  - If a leak is detected at a pre-set pressure threshold, the system will shutoff power to the Submersible Turbine Pump (STP) to minimize environmental damage and help prevent a public safety issue
- **Conducts test once all dispensing is completed** to ensure the integrity of the line
- **Test can be manually performed** to reset alarms
- **Built-in calibration verification** to notify the site operator when the pressure transducer is not operating properly
- **Auto-Confirm function**, when enabled, runs a second line leak test, if an initial test failure occurs, to verify and reduce false alarms due to mechanical issues that may be occurring in other parts of the fueling system
- **Provides two alarm shutdown options when failure occurs**
  1. Standard Dispenser Shutdown (Alarm and Shutdown)
  2. Optional No Shutdown (Alarm Only)

SUPPORTS MANIFOLDED LINES

One transducer per manifolded line is required



STPs & Piping	
Supports a wide-range of pump and pipe types	Utilizes SwiftCheck Valve on early generation Red Jacket Standard STPs
For further details, **click here for the Line Leak Application Guide**	

Line Leak Transducer Specifications	
Operating Temperature	-25°F to 130°F/-32°C to 54°C
Compatible Fuel Types	• Unleaded Gasoline • Leaded Gasoline • 5% Methanol • Up to 100% Ethanol • 15% MTBE • Diesel • Biodiesel (Up to B100) • Kerosene • Jet Fuel • Aviation Gasoline • DEF
Line Flow Rate	120 GPM/473 LPM Maximum w/ SwiftCheck Valve
Operating Range	0 to 70 PSI/0 to 4.83 Bar
Proof Pressure	200 PSI/13.79 Bar
Maximum Vertical Pipeline Height Above Transducer	11 Feet/3.4 Meters
Minimum Pump Output Pressure	23 PSI/1.59 Bar
Maximum Volume of Fuel Monitored	TLS-450PLUS – 1,178 Gallons/4,459 Liters

TLS-450PLUS Line Leak Digital Transducer Ordering Information

Part Number	Description
0859080-001	Digital Pressurized Line Leak Detector without SwiftCheck Valve, UL
0859080-002	Digital Pressurized Line Leak Detector with SwiftCheck Valve, UL
0332812-001	Universal Sensor Module (USM) Interface for Probes, Sensors, and DPLLD
0332813-001	Universal Input/Output Interface Module (UIOM) for Relay Control and Input Signal Monitoring *
0332972-007	Ultimate Testing: Digital Line Leak Detection
0332972-008	Risk Management: Digital Line Leak Detection
0332972-009	Base Compliance: Digital Line Leak Detection

** Required to ensure STP pump control when RJ Diagnostic Alarm is generated or line shutdown to meet regulatory or business needs (Utilizes 5 Inputs and Outputs)*

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VEEDER-ROOT

Patent Pending

Testable 71SO Overfill Prevention Valve

Are you Compliant with the New EPA Overfill Valve Test Requirements?

CARB EVR CERTIFIED

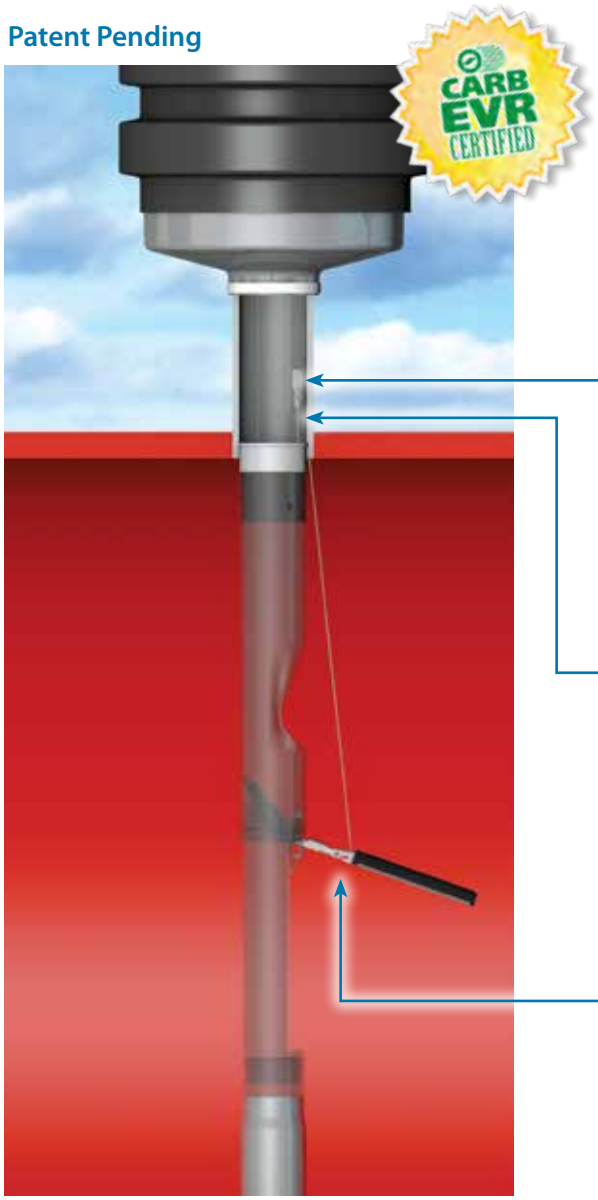
Now you can be, with the New OPW Testable 71SO Overfill Prevention Valve

The easiest, most affordable way to ensure overfill compliance

- UST systems (drop tube, overfill prevention valve, spill containers) must be tested for vapor tightness
- Overfill prevention valves shut off devices must be manually inspected
- OPW offers the only overfill prevention valve that can be tested without removal from the tank – test in 60 seconds versus 60 minutes per tank

Testable 71SO Overfill Prevention Valve

Patent Pending

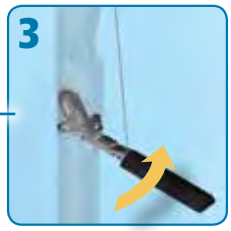


Testing & Verification

Easy as 1·2·3

Loosen test plug

Lift float with cable to simulate fill



Validate proper poppet operation

The OPW Testable 71SO helps you be in compliance with the NEW EPA Regulations

- The Only UST Overfill Prevention Valve that is testable without removal from the tank
- A testable feature is attached to a sealed plug in the inlet Adaptor
- The plug is easily accessed with a standard socket extension
- Attached to the extension, the testable feature can be raised and lowered, allowing the user to inspect the valve operation from the inside of the tube
- The plug is then easily reinstalled to the inlet Adaptor from grade
- No fill components, overfill valves, or vapor tight seals have to be removed - avoids compromising vapor tight compliance
- The Testable 71SO uses the same industry leading overfill prevention technology for strong vapor tight compliance
- B100 Compatible (ULC)

NOTE: The OPW 71SO is designed for use on tight-fill gravity drop applications only. Do not use for pressure fill applications.

Ordering Specifications

Product #	Description	A- Upper Tube Length		B- Lower Tube Length		C- Overall Length		Max. Riser Length		Max. Nominal Tank Dia.		Max. Actual Tank Dia.		Weight	
		in.	m	in.	m	in.	m	in.	m	in.	m	in.	m	lbs.	kg
71SO-400CTB*	Testable Vapor-Tight Overfill Valve, 5 Ft. Bury, 8 Foot Tank	60	1.5	83	2.1	154 3/4	3.9	53 1/2	1.4	96	2.4	107	2.7	16	7
71SO-410CTB*	Testable Vapor-Tight Overfill Valve, 10 Ft. Bury, 10 Foot Tank	120	3.1	102	2.6	234 3/4	5.9	113 1/2	2.9	120	3.1	126	3.2	25	11
71SO-420CTB*	Testable Vapor-Tight Overfill Valve, 10 Ft. Bury, 12 Foot Tank	120	3.1	126	3.2	258 3/4	6.5	113 1/2	2.9	144	3.7	150	3.8	26	12
206740-Kit	Replacement Cable Kit														

* ULC B100 Compatible

Listings and Certifications

Look for this label for authentic OPW EVR Approved products.

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OPW 71SO Overfill Prevention Valves

The CARB-certified OPW 71SO vapor-tight Overfill Prevention Valve is designed to prevent the overfill of underground storage tanks by providing a positive shut-off of product delivery. The shut-off valve is an integral part of the drop tube used for gravity filling. The OPW 71SO allows easy installation (without breaking concrete) and requires no special manholes.

The OPW 71SO is a vapor-tight two-stage shut-off valve. When the liquid level rises to about 95% of tank capacity, the valve mechanism is released, closing automatically with the flow. This reduces the flow rate to approximately 5 gpm through a bypass valve. The operator may then stop the filling process and disconnect and drain the delivery hose. As long as the liquid exceeds the 95% level, the valve will close automatically each time delivery is attempted.

If the delivery is not stopped and the liquid rises to about 98% of tank capacity, the bypass valve closes completely. No additional liquid can flow into the tank until the level drops below a reset point.

NOTE: The 71SO Overfill Prevention Valve can be adjusted to shutoff at any desired tank capacity. Please contact the Authority Having Jurisdiction (AHJ) and review local, state, and national codes to determine the regulatory requirements governing shut-off capacity in your region, as well as take into account other considerations such as extreme tank tilt. In all cases, the upper tube must protrude into the tank at least 6 1/2" to ensure that the valve can shut off flow into the tank completely before the top of the tank is wetted as per EPA requirements.

71SO Instruction Sheet Order Number: **H15524PA**

Listings and Certifications

California Air Resources Board

Materials

Valve Body: Cast aluminum
Float: Nitrile rubber, closed cell foam
Valve: Aluminum
Seals: Viton®
Upper & lower Drop Tube: Aluminum
Plastic parts: Acetal
Hardware: Stainless steel

Features

- **Simple, Easy and Quick Installation –** no excavation or special manholes required.
- **Economical –** costs a fraction of expensive, complicated and difficult-to-install valves.
- **Furnished Complete –** supplied with new upper and lower drop tubes, mounting hardware and thorough instructions for quick job site time.
- **Completely Automatic Operation –** no prechecks to perform, no resets and no overrides to be broken or abused.
- **No Pressurization of the Tank –** operates directly from liquid level.
- **Will Accept a Dipstick for Gauging**
- **Retrofits Directly –** for both new and existing tanks with 4" fill risers.
- **Quick Drain Feature –** automatically drains hose when head pressure is relieved.
- **Best Flow Rate in The Industry***

*** OPW Test Lab results**

Important

In order to prevent product spillage from the Underground Storage Tank (UST), properly maintained delivery equipment and a proper connection at the tight-fill adaptor are essential. Delivery personnel should be managed and trained to inspect delivery elbows and hoses for damaged and missing parts. They should always make certain there is a positive connection between the adaptor and elbow. If delivery equipment is not properly maintained, or the elbow is not securely coupled to the adaptor, a serious spill may result when the OPW 71SO closes, causing a hazard and environmental contamination.

NOTE: The OPW 71SO is designed for use on tight-fill gravity drop applications only. Do not use for pressure fill applications.

Advantages of Overfill Prevention Compared to Overfill Warning Systems:

- **Completely Automatic Operation –** does not rely on the alertness or speed of response of the delivery attendant for certainty of overfill prevention.
- **Keeps the Top of UST "Dry," per EPA Requirements –** eliminating possible leaks at loose bung fittings and the need for double containment on vent lines.
- **Does Not Rely on Pressure in the UST to Stop Flow –** allowing faster fill times and reducing spill risk.
- **Speeds Delivery Operations –** product flows unimpeded into the tank until the hose "kick" that accompanies the valve shut-off provides a clear signal that the liquid has reached the shut-off level.
- **Simple and Inexpensive Installation –** in both two-point and coaxial fill applications, no additional excavation, manholes or vent piping are required.

Look for this label for authentic OPW EVR Approved products.
OPW 71SOM is EVR Approved for E85

Raising The Standard In Overfill Prevention

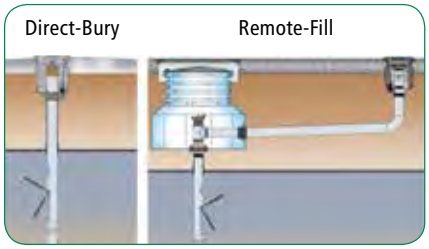
From the company that brought you the industry standard OPW 61SO, OPW raises the standard with the introduction of the **71SO Overfill Prevention Valve** – breakthrough innovation that takes overfill prevention to a whole new level of overfill perfection.

- **Eliminates curing issues due to hot or cold temperatures**
- **Easier, quicker, installation**
- **Higher quality, more reliable installation**
- **Lower costs**
- **Greater protection against fugitive emissions and pressure decay**
- **Fastest flow rate in the industry**

The new 71SO is a two-stage, positive shut-off valve, providing completely automatic operation with no pre-checks to perform, no resets, and no overrides to be broken or abused. The valve closes when the tank level rises to 95% capacity and provides a special bypass valve so the tank can be filled to a maximum capacity of 98%. The 71SO is available for direct-bury and remote applications.

All Vapor-Tight Overfill Valves are CARB EVR Certified

No Epoxy Sealants Required!



Replacement Parts

Part #	Description
61SOK-0001	Replacement Float Kit
H11931M	Drop Tube Seal
H14840M	Lower Tube Seal
C05117	Lower Tube
D02508	Vapor-Tight Inlet Tube
C03899M	Non-Vapor-Tight Inlet Tube
D02508	Vapor-Tight Inlet Tube (Blue)

71SO Ordering Specifications

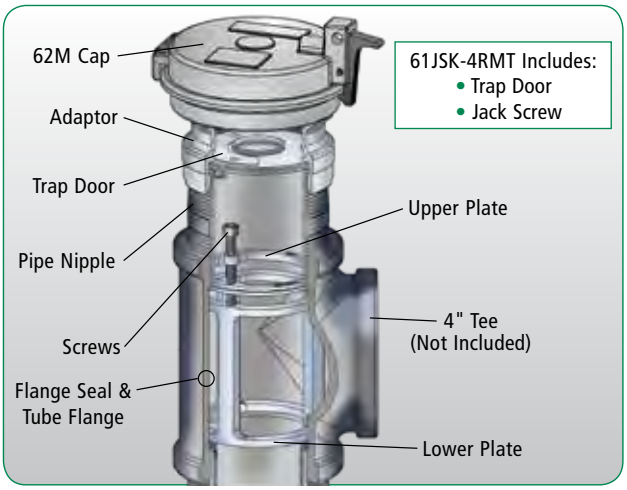
Product #	Description	Bury Depth ft.	Bury Depth m	Tank Diameter ft.	Tank Diameter m	Upper Tube Length in.	Upper Tube Length m	Lower Tube Length in.	Lower Tube Length m	Overall Length in.	Overall Length m	Max. Riser Length in.	Max. Riser Length m	Max. Nominal Tank Dia. in.	Max. Nominal Tank Dia. m	Max. Actual Tank Dia. in.	Max. Actual Tank Dia. m	Weight lbs.	Weight kg
71SO-400CB*	Vapor-Tight Overfill Valve	5	1.5	8	2.4	60	1.5	83	2.1	155 3/4	3.9	53 1/2	1.4	96	2.4	107	2.7	16	7
71SO-410CB*	Vapor-Tight Overfill Valve	10	3.0	10	3.0	120	3.1	102	2.6	234 3/4	5.9	113 1/2	2.9	120	3.1	126	3.2	25	11
71SO-420CB*	Vapor-Tight Overfill Valve	10	3.0	12	3.6	120	3.1	126	3.2	258 3/4	6.5	113 1/2	2.9	144	3.7	150	3.8	26	12
71SO-4000	Non Vapor-tight Overfill Valve	5	1.5	8	2.4	60	1.5	83	2.1	155 3/4	3.9	53 1/2	1.4	96	2.4	107	2.7	16	7
71SO-4010	Non Vapor-tight Overfill Valve	10	3.0	10	3.0	120	3.1	102	2.6	234 3/4	5.9	113 1/2	2.9	120	3.1	126	3.2	25	11
71SOM-412C	E85 Vapor-tight Overfill Valve	10	3.0	10	3.0	120	3.1	102	2.6	234 3/4	5.9	113 1/2	2.9	120	3.1	126	3.2	38	17.3
71SO-TOOLCT	71SO Installation Tool																	2.5	1
61JSK-4RMT	Jack Screw Kit For Vapor-Tight Remote Applications																	1.5	0.7
61JSK-4410	Jack Screw Kit For Composite Base Spill Bucketst																	1	0.5
61JSK-44CB	Jack Screw Kit For Cast Iron Base Spill Buckets																	1	0.5
71JSK-4RMT	E85 Jack Screw for Remote-Fill Applications																	1	0.5
71JSK-44MA	E85 Jack Screw for Direct-Fill Applications																	1.5	0.7

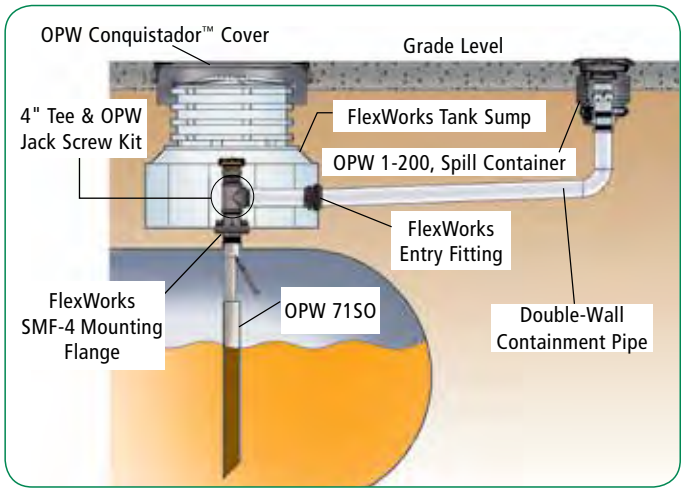
61JSK-4410 AND 61JSK-44CB Instruction Sheet Order Number: **H15289M**

*ULC B100 Compatible

71SO Vapor-Tight Remote Fill

The OPW Vapor-Tight Remote Fill is designed for two-point vapor-tight remote-fill applications, where the fill point is not directly over the UST. A CARB approved vapor-tight 71SO overfill valve is installed in the sump through a riser pipe directly over the tank.





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B9000 Single Wall UDC

LISTED
UL 2447

Product Shown
B9380-S36

SIZES:

- 28” width at base

*See page 2 for dimensions drawing and chart

MATERIALS:

- Tank-grade fiberglass material allows our product to be exposed to leaks without degradation
- Epoxy coated galvannealed steel

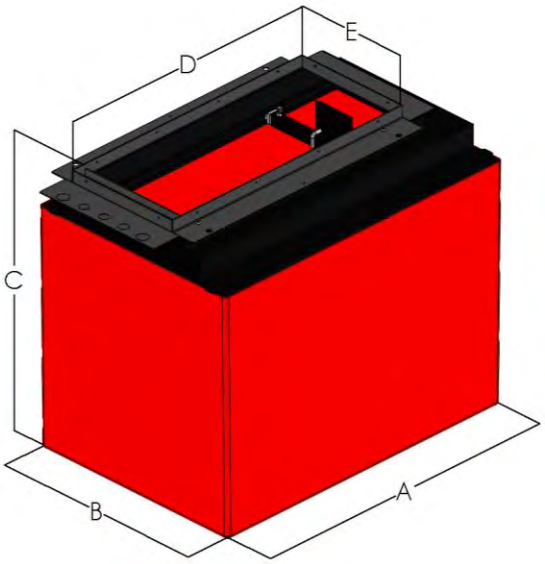
OVERVIEW:

Compatible with all current motor fuels including renewable and biofuels, the B9000 Series Single Wall UDCs can be sized and tailored to any dispenser model. All metal work is galvannealed and epoxy coated for superior corrosion resistance. Designed with a removable upper frame.

SPECIFICATIONS:

- Larger size and roomy interior are compatible with all piping layouts, including series
- Sized and tailored to most dispenser models
- Electrical offset frame eliminates the need for conduit penetrations
- 30-year corrosion warranty
- UL2447 listed

B9000 Single Wall UDC



Parts and Accessories

BK-8000	Boss-Mount Bracket for B8000 & B9000 series
BK-B2	Vapor Boss-Mount Bracket & U-Bolt Mount Bracket for B8000 & B9000 Series.
VST-UDC	VST, Vapor Stimulator Tube for UDC's, for Dri-Sump testing method, Clamp Included.

Dispenser Model	Part #	A	B	C	D	E
Gilbarco Encore 300, 500, 700	B9380-S30	41”	28”	35.5”	36”	15.25”
Wayne Ovation (3+0) (3+1) up to 3 inlets	B9250-S30	41”	28”	35.5"	40.5”	14.75”
Wayne Helix Wide Frame	B9256-S30	41”	28”	35.5”	40”	15”
Wayne Helix Narrow Frame	B9242-S30	29”	28”	35.5”	28.5”	14.75”
Wayne Ovation High-Speed Diesel/Ovation HL Series	B9254-S30	41”	28”	35.5”	40.5"	14.75”
Wayne Ovation High-Speed Diesel/ Ovation HS Series	B9257-S30	29”	28”	35.5”	28.5”	14.75”
Wayne Reliance Select	B9210-S30	29”	28”	35.5”	27.25"	15”
Gasboy Atlas K or KX	B9670-S30	25.5”	28”	35.5”	23"	11.5”
Gasboy Atlas X "New"	B9678-S36	29"	28"	36"	26.5"	14"
Gasboy Twin Cabinet AX or QX	B9635-S30	25.5”	28”	35.5”	22.75”	12.25”
Bennett 3000 Big Fueler	B9430-S30	25.5”	28”	35.5”	23”	12.25”

Collar Mount Single Wall Tank Sump

LISTED
UL 2447

Product Shown
B421-60-S-01

SIZES:

- 42” or 48” diameter
- 32” or 36” Snap-Lock Lid

*See page 2 for dimensions drawing and chart

MATERIALS:

- Tank-grade fiberglass material allows our product to be exposed to leaks without degradation
- No secondary protective gel coat needed

OVERVIEW:

The octagon-shaped Collar Mount Single Wall Tank Sump is ideally configured for piping laid out in 45- and 90-degree angles. It comes standard with a 32” snap-lock lid with imbedded O-ring seal to make it watertight. Optional 36” snap-lock and 32” twist-lock lids are available. It can be attached to any industry standard 42- or 48-inch single wall tank collar. The mid seam of this 2-piece sump uses an epoxy slurry to quickly seal the 2 halves together. Kits are available for connecting the sump base to the various industry collar configurations. If using a Bravo collar with pour channel, no field laminations are needed.

SPECIFICATIONS:

- Two-piece configuration is height-adjustable
- Easy slurry pour channel to join the sump base and top hat saves install time
- 30-year corrosion warranty
- UL2447 listed

**Available in 39” lids and 56” diameter. Please contact customer service for additional details.*

Collar Mount Single Wall Tank Sump

Recommended Parts and Accessories	
K-402	Fiberglass laminating kit for 1 interior and exterior joint, 2 gallons, 90" fiberglass mat (Catalyst: (2) Summer:(2) / (4) Winter) (Not returnable)
K-401	Fiberglass laminating kit for 1 interior and exterior joint 1 gallon, 45" fiberglass mat (Catalyst: (1) Summer / (2) Winter) (Not returnable)
K-410.5	Paste kit for interior and exterior joint, smooth transitions for laminations, ½ gallon (non-returnable)
K-410	Paste kit for interior and exterior joint, smooth transitions for laminations, 1 gallon (non-returnable)
EP-S1.0	1 gallon epoxy slurry kit. (non-returnable)
EP-S.75	¾ gallon epoxy slurry kit. (non-returnable)
T-400	FRP & Paint Rollers and mixing bucket; fiberglass lam, tool kit, includes rollers.

Additional Parts and Accessories	
SH-TS	Tank Sump Sensor Holder Kit.
VST-TS	VST, Vapor Stimulator Tube for Tank Sump, for Dri

42" Diameter, 42" Collar

Part # with 32" SL Lid	Part # with 36" SL Lid	Part # with 32" Twist-Lock Lid	Min	A	B	C	D
B421-42-S-01	B421-42-S-02	B421-42-S-50	24"	42"	26"	16"	42"
B421-48-S-01	B421-48-S-02	B421-48-S-50	32"	48"	26"	22"	42"
B421-60-S-01	B421-60-S-02	B421-60-S-50	36"	60"	38"	22"	42"
B421-72-S-01	B421-72-S-02	B421-72-S-50	36"	72"	50"	22"	42"
B421-84-S-01	B421-84-S-02	B421-84-S-50	36"	84"	62"	22"	42"

48" Diameter, 48" Collar

Part # with 32" SL Lid	Part # with 36" SL Lid	Part # with 32" Twist-Lock Lid	Min	A	B	C	D
B481-42-S-01	B481-42-S-02	B481-42-S-50	24"	42"	26"	16"	48"
B481-48-S-01	B481-48-S-02	B481-48-S-50	32"	48"	26"	22"	48"
B481-60-S-01	B481-60-S-02	B481-60-S-50	36"	60"	38"	22"	48"
B481-72-S-01	B481-72-S-02	B481-72-S-50	36"	72"	50"	22"	48"
B481-84-S-01	B481-84-S-02	B481-84-S-50	36"	84"	62"	22"	48"

48" Diameter, 42" Collar

Part # with 32" SL Lid	Part # with 36" SL Lid	Part # with 32" Twist-Lock Lid	Min	A	B	C	D
B487-42-S-01	B487-42-S-02	B487-42-S-50	24"	42"	26"	16"	42"
B487-48-S-01	B487-48-S-02	B487-48-S-50	32"	48"	26"	22"	42"
B487-60-S-01	B487-60-S-02	B487-60-S-50	36"	60"	38"	22"	42"
B487-72-S-01	B487-72-S-02	B487-72-S-50	36"	72"	50"	22"	42"
B487-84-S-01	B487-84-S-02	B487-84-S-50	36"	84"	62"	22"	42"

GILBARCO VEEDER-ROOT

www.gilbarco.com

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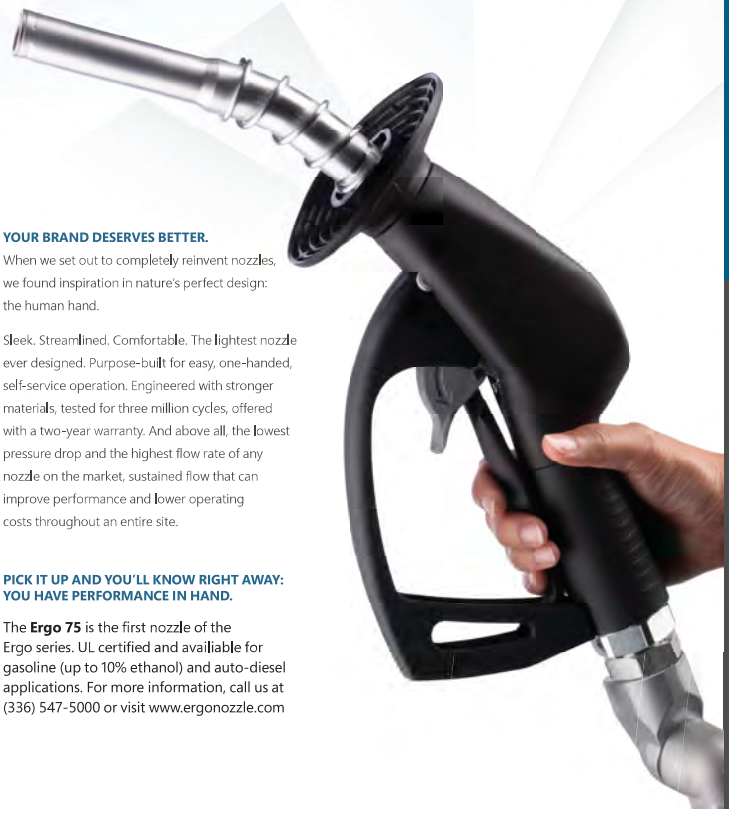
Gilbarco Veeder-Root **Ergo™ 75**

PERFORMANCE IN HAND

GILBARCO VEEDER-ROOT

The Ergo™ 75: Designed for comfort. Engineered for performance.

Nozzles are the first touchpoint to your brand and your store. Yet the basic design of nozzles has not changed in more than 90 years ... until now.



YOUR BRAND DESERVES BETTER.

When we set out to completely reinvent nozzles, we found inspiration in nature's perfect design: the human hand.

Sleek. Streamlined. Comfortable. The lightest nozzle ever designed. Purpose-built for easy, one-handed, self-service operation. Engineered with stronger materials, tested for three million cycles, offered with a two-year warranty. And above all, the lowest pressure drop and the highest flow rate of any nozzle on the market, sustained flow that can improve performance and lower operating costs throughout an entire site.

PICK IT UP AND YOU'LL KNOW RIGHT AWAY: YOU HAVE PERFORMANCE IN HAND.

The **Ergo 75** is the first nozzle of the Ergo series. UL certified and available for gasoline (up to 10% ethanol) and auto-diesel applications. For more information, call us at (336) 547-5000 or visit www.ergonozzle.com

BREAKTHROUGH ENGINEERING

The horizontal valve train offers fuel the path of least resistance for maximum flow and led to the lower weight, streamlined design and ease of use.

Inspired by, and designed for, the human hand. The fully innovative nozzle design is patent pending, with an additional patent pending for its unique hold-open clip mechanism.

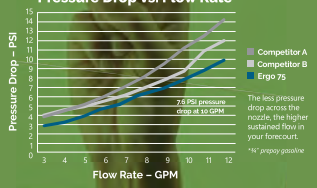
Engineered for the Human Hand

HIGHEST FLOW RATE

The lower the pressure drop, the higher the flow rate. And the higher the flow rate, the faster the fill-up — up to 10 GPM.

With its high sustained flow rate, the Ergo 75 provides a better customer experience. Offering less turbulence, less foaming and less undesired nuisance auto-shutoff. The Ergo 75 also meets the ADA activation force standard for operable parts, despite gas pump nozzle exception.

Pressure Drop vs. Flow Rate*



The less pressure drop across the nozzle, the higher sustained flow in your forecourt.

**In* prepay gasoline*

INCREASED DURABILITY

Engineered with materials that maximize the working life of the nozzle, the Ergo underwent 3 million cycles of testing — three times the test cycles conducted on competitor nozzles:

- Stronger materials to extend life of internal moving components
- Stainless steel spout tip and reinforced vac-port tip to sustain forecourt abuse
- Increased product reliability in temperatures from -40° F (-40° C) to 125° F (52° C)
- High impact-resistant resins

3 Million

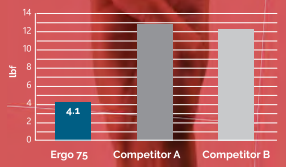
Test Cycles

EASIEST TO USE

Lightweight and balanced, the Ergo was designed for easy one-handed operation by any user.

A light pull on the lever starts fueling with 66% less effort, while a fingertip hold-open clip engages the lock, providing an effortless fueling experience.

Lowest Lever Force (lbf)



ENCORE 700 S STANDARD FEATURES

Highest quality construction, backed by a 4-year corrosion warranty

High speed thermal printer accepts 3", 4", & 6" paper rolls and produces high-resolution graphics and barcodes

Tuxedo style side sheathing with Duramax™ finish

ADA and IBC Compliant*
Standard 2-year Limited Warranty

Choice of payment terminal

Interface via two-wire to Passport or third-party POS

Customized vinyl graphics on galvanized lower doors

* when mounted on a 6 in. island
Unions, hoses, and nozzles not included

Mag Plus Probe
For Leak Detection

Third party certification exceeds EPA performance standards

Certified performance for Inventory control and In-tank leak detection in gasolines, diesel and a wide variety of other approved fluids.

- Highly accurate Magnetostrictive measurement technology.
- Fast, accurate leak tests.
- MAG Plus Probe third-party certified to exceed U.S. EPA performance standards for 0.1 GPH Volumetric. Tank Tightness Testing as well as 0.2 GPH monthly and continuous testing.
- MAG Plus Probe is compatible with all TLS consoles. (Software Version 11 or higher for TLS-350/300)
- Compatible with gasoline, diesel and other approved fluids.
- 2", 3" and 4" float kits available.
- MAG Plus Probe is available in standard and custom lengths up to 12'.

Features

- MAG Plus Probe provides highly accurate trouble free performance in gasoline, diesel and a wide variety of approved fluids.
- Magnetostrictive technology and five-point temperature sensing make it capable of extremely accurate inventory control and in-tank leak testing.

Standard Models:

Mag Plus Probe Form No.	Probe Length	Mag Plus Probe Form No.	Probe Length
846390-101	4'	846390-110	10' 6"
846390-102	5'	846390-111	11'
846390-103	5' 4"	846390-112	12'
846390-104	6'	846390-113	2.0 M
846390-105	7'	846390-114	2.5 M
846390-106	7' 6"	846390-116	2.667 M
846390-107	8'	846390-115	3.0 M
846390-108	9'		
846390-117	9' 6"		
846390-109	10'		

**Float kits for the specific fuel application must be ordered separately. Kits are available for 4", 3" and 2" floats. See the Veeder-Root price list for availability.*

Leak test performance (Third Party Certified)

4", 3", and 2" floats supported; 1" floats not supported.

Probe	Test Type	P (D)	P (FA)	Minimum Test Time
MAG Plus	0.1 GPH	99%	1%	3 Hours
MAG Plus	0.2 GPH	99%	<0.1%	2 Hours
MAG Plus with CSLD	0.2 GPH	99%	<0.1%	Continuous

Mag Plus Magnetostrictive probe console compatibility**

Probe	TLS-350R*	TLS-350Plus*	TLS-350*	TLS-350J	TLS-300i	TLS-300C
MAG Plus	•	•	•	•	•	•

• = Standard Feature

** A Four-Input Probe Interface Module is required for use of magnetostrictive probes with the TLS-350 or TLS-350R system.*

*** Software Version 11 or higher*

Probe Improved Specs

Standard	Min. Temp.	Max. Temp.	Min. Fuel*	Min. Water*
MAG	-20° C	+50° C	8"	0.750
MAG Plus	-40° C	+50° C	3.1"	0.630

** With 4" floats*

For more information call

1-888-561-7942

VEEDER-ROOT

 • 125 Powder Forest Drive • Simsbury, CT 06070 • USA
Telephone: 860-651-2700 • Fax : 860-651-2719 • www.veeder.com

VR P/N 0576047-128 Rev. B VR 7/2011 Printed in USA

VEEDER-ROOT

Single-Point Mini-Hydrostatic Sensor for Double-Wall Sumps Specifications

Sensor Description	**Single-Point Mini-Hydrostatic Sensor for Double-Wall Sumps**	The Single-Point Mini-Hydrostatic Sensor accurately detects fluid level change in the interstice reservoir of a double-wall sump. If a leak occurs in the sump interstice, the brine seeps out of the reservoir triggering a low level alarm.
Part Number	**0794380-304**	
Category	☐ Discriminating ☐ Non-Discriminating ☐ Position Sensitive ☐ Level Sensing ☐ Static Testing ☑ Hydrostatic	
Fuel Compatibility	☑ Gas ☑ Diesel ☑ Kerosene ☑ Jet Fuel ☑ Aviation Gas ☑ E-15 ☑ E-85[1] ☑ E-100 ☑ Bio-Diesel 20 ☑ Bio-Diesel 100 ☑ Green Diesel ☐ DEF ☑ Waste Oil ☑ Motor Oil	

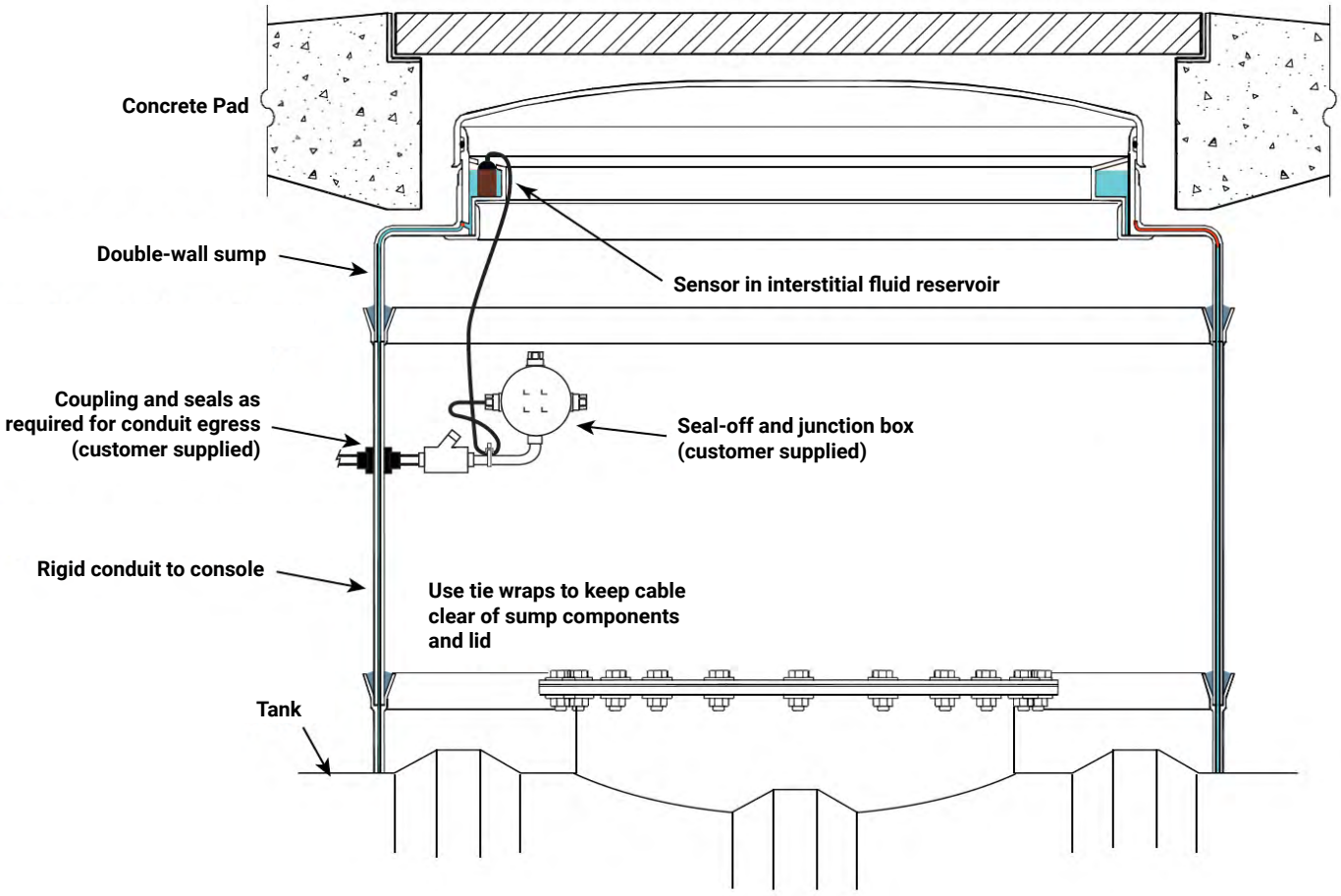
Console Compatibility	**Recommended Min. Console Software**	**Sensor Interface Modules**				
		Module Part #	**Module Description**	**# of Modules per Console**	**# of Sensor Inputs per Module**	**Availability**
TLS-450PLUS (8600 Series)	6.A or Higher	0332812-001	Universal Sensor Module (USM)	Up to 4 – TLS-4xx Up to 8 – TLS-4xx w/ opt. TLS-XB	16	Sold Separately
TLS-450	4.A or Higher					
TLS4 (8601 Series)	6.A or Higher	0330020-750	Universal Sensor Input/Output Module (USIOM-AC)	1	12	Included
TLS4i (8601 Series)						
TLS4B (8601 Series)		0330020-751			6	
TLS4c (8601 Series)						
TLS-350/R/PLUS	124/324 or Higher	0329958-001	Interstitial Sensor Interface Module	Up to 8	8	Sold Separately
TLS-350J		0329356-003	4 Probe / 4 Sensor Interface Module	1	4	Sold Separately
TLS-300i		0330230-001	4 Probe / 8 Sensor Interface Module		8	Included

Alarm Notification		
	Normal	Float is in UP position (correct amount of brine in reservoir)
	Fuel Alarm	Float is in DOWN position (low brine level in reservoir)
	Sensor Out	Sensor not communicating to ATG/Console

Specifications	
Operating Principle	Reed Switch / Float
Product Activation Height	0.79” (2cm)
Operating Temperature	-13°F to +122°F (-25°C to +50°C)
Dimensions	2.5” (6.4cm) high, 1.5” (3.8cm) diameter
Miscellaneous/Notes	Standard Cable Length: 8’ (2.43m); up to 50% ethylene glycol in water; up to 50% propylene glycol in water; salt brine solution of up to 30% CaCl.
Third Party Evaluation Links	TLS-3XX/TLS-450 Series Consoles TLS4 (8601 Series) Consoles
Product Link	Single-Point Mini-Hydrostatic Sensor
Warranty with System	1 Year Parts & Labor
Warranty (When purchased separately)	1 Year Parts Only

Where Used (Typical)	
	☐ Dispenser Pan ☐ Spill Containment ☐ STP Sump ☐ Convault Tank ☑ Annular Space ☐ Monitoring Well ☐ Oil/Water Separator Tank

Example Installation



Notice

Veeder-Root makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Veeder-Root shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this publication.

Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

Example Illustrations

Illustrations used in this guide for example sensor installations may contain components that are customer supplied and not included with the sensor. Please check with your Veeder-Root Distributor for recommended installation accessories.

Third Party Evaluations

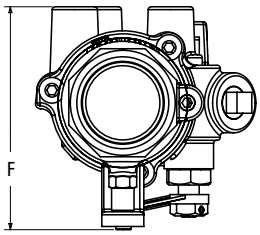
Third party evaluations of the Veeder-Root sensors contained in this application guide can be found under the Veeder-Root vendor name on the National Work Group on Leak Detection Evaluations (NWGLDE) website: http://www.nwglde.org

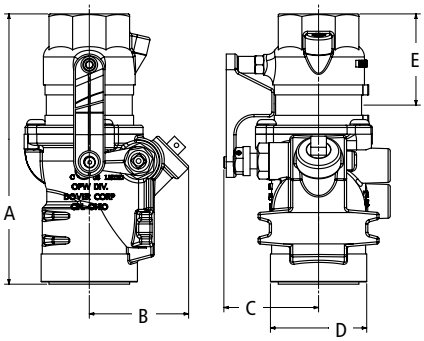
10 Plus Series Emergency Shut-Off Valves

OPW raised the protection standard in emergency valves when it introduced the first double-poppet valve back in 1989. This industry-changing OPW innovation helped to significantly reduce the risk of fire, explosion, personal injury, property damage and environmental contamination at sites around the world. Major oil companies and jobbers agreed that providing added protection for their customers, investments and the environment were the three most convincing reasons for switching to the innovative new valves.

Dimensions

	1.5 in.	2.0 in.
A	7 9/16	8 7/8
B	2 25/32	3 1/2
C	2 21/32	
D	2 11/16	3 1/2
E	2 9/16	3 3/16
F	4 21/32	5 31/32





Materials

Top: Cast iron

Body: Cast iron

UL Listed for up to 85% Ethanol

1.5" 10 Plus | 2" 10 Plus (B100) | 1.5" 10 Plus (E85) | 2" 10 Plus

Features

- The ONLY emergency shut-off valve in the world designed to protect your customers, investments, and the environment against the potential hazards of undetected shear groove leaks caused by low-impact incidents
- The patented SmartGuard™ design contains shear groove leaks, preventing fuel from leaking into sumps to help reduce the risk of fire, explosion, personal injury, property damage, environmental contamination, product loss and costly clean-up
- Superior shear groove design and engineering results in reliable valve shut-off in the event of a pull-over or dislodged dispenser. The 10 Plus utilizes the same time-tested field-proven design of the OPW 10 Series Emergency Shut-off Valve – the most specified emergency shut-off valve in the world
- Fusible link releases to automatically close the valve to reduce fire hazard
- Rigorously tested to meet OPW's rigid quality standards
- E85 model has orange arm for visual indicator

Ordering Specifications

Model #	Body Size		Body Weight		Connection Threads	Poppet Configuration	Application	Mounting System
	in.	cm	lb.	kg				
10P-0150	1 1/2	4	6.7	3.05	NPT	Single	Pressure	Combination
10P-0152	1 1/2	4	6.8	3.10	NPT	Double	Pressure	Combination
10P-0152E85 *E85	1 1/2	4	6.8	3.10	NPT	Double	Pressure	Combination
10P-0200	2	5	11.2	5.12	NPT	Single	Pressure	Combination
10P-0202	2	5	11.2	5.12	NPT	Double	Pressure	Combination
10P-0202RF *B100	2	5	11.2	5.12	NPT	Double	Pressure	Combination

Listings and Certifications

10 Plus Series Instruction Sheet Order Number: **201614**

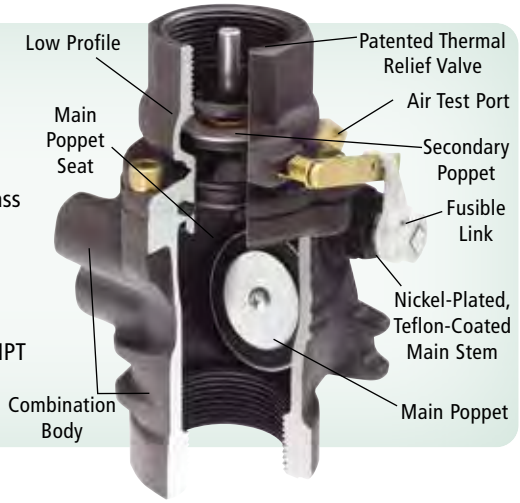
10 Plus Replacement Parts

Part #	Description
10RPLUS-0150	10 Plus Single Poppet Replacement Top
10RPLUS-0152	10 Plus Double Poppet Replacement Top
202950	1 1/2" Tetra Seal
200143	Safety Hub/Fusible Link
213273	E85 Safety Hub S/A Orange
H11361M	2" Tetra Seal

9393 Princeton-Glendale Road ◆ Hamilton, Ohio USA 45011 ◆ Phone: (800) 422-2525 ◆ Fax: (800) 421-3297

Materials

Top: Cast iron
Body: Cast iron
Disc: M-19
Carrier: Zinc-plated steel
Stem: Copper-nickel-chrome-plated brass
Poppet Spring: Stainless steel
Seal: M-19 O-Ring
Packing nut: Brass, Teflon®-coated
Inlet and outlet thread: 1-1/2" (4 cm) NPT (British threads available)
*With black Duragard® E-Coating



Features

- **High Flow Capacity –** the primary poppet is held out of the flow stream while the secondary poppet is held normally open to minimize head loss across the valve and to protect the poppet seals from damage and erosion. True 1-1/2" (4 cm) and 2" (5 cm) body sizes ensure maximum flow.
- **Fire Protection –** a fusible link trips the valve closed at 165° F to shut off fuel supply to the dispenser.
- **Main Poppet Seat Integral to the Top Assembly –** having the main poppet seat as an integral part of the valve top ensures a new, clean seating surface is installed each time the top is replaced. This design also ensures that the integrity of the seal between the valve top and bottom is verified during line testing and allows full inspection of the main poppet when the top is removed.
- **Duragard®-Coat Finish –** provides superior corrosion resistance.
- **Reliable Shut-off –** a stainless steel main spring, a teflon-coated brass packing nut and a copper/nickel/ chrome-plated brass stem are designed to prevent tar build-up and corrosion from interfering with poppet operation after long periods of normal service without activation.
- **Integral Test Port –** a 3/8" (9.5 mm) test port allows the piping system to be air-tested without breaking any piping connections.
- **Patented Thermal Relief Valve –** relieves excessive pressure over 25 psi caused by thermal expansion of fuel in the dispenser piping system in the event of fire (double-poppet models only).
- **Low-Profile Tops –** female and union-top double-poppet valves have a low-profile top to allow upgrading from OPW single-poppet valves without changing existing piping.
- **Multiple Mounting Options –** valves are boss-mounted to stabilizer bars in sumps and pans or mounted to bars embedded in the island with optional U-Bolt kits 10UBK-015 (not included). Versatile Combination Body (boss mount/ U-Bolt mount) models are available to accommodate most mounting applications with one valve style.
- **Underwriters Laboratories –** listed for use with gasoline and 85% and 100% methanol. All OPW 10 Emergency Shut-Off Valves meet requirements of UL STANDARD 842.
- **Compatible with 85% ethanol (E85)**

10 Series Emergency Shut-Off Valves

OPW 10 Series Emergency Shut-off Valves are installed on fuel supply lines beneath dispensers at grade level to minimize hazards associated with collision or fire at the dispenser. If the dispenser is pulled over or dislodged by collision, the top of the valve breaks off at the integral shear groove, activating poppets and shutting off the flow of fuel. Single-poppet models shut off supply flow, while double-poppet models shut off supply as well as prevent release of fuel from the dispenser's internal piping. The base of the emergency valve is securely anchored to the concrete dispenser island through a stabilizer bar system within the dispenser sump or pan to ensure proper shearing action. The valve base is secured to the stabilizer bar using a three-point boss mount system or a U-Bolt Kit (not included) 10UBK-015 (1-1/2") and 10URK-0200 (2 sold separately). Valve inlet (bottom) connections are female pipe threads and outlet (top) connections are available with female threads, male threads or a union fitting. Other options include suction system models with a normally closed secondary poppet which maintains prime, and models with external threads on the inlet body which connect to secondary containment systems.

PA15 Offset Adaptor

The OPW PA15 Offset Adaptor is designed for adjusting misalignment of pipe in dispenser sumps and suction stubs. The PA15 has a low profile feature, and is designed for maximum flow.

Materials

Ductile Iron
Black Duragard
E-Coating

Ordering Specifications

Part #	Thread Size		Offset		Height		Width		Body Weight	
	in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg
PA15-10	1 1/2	38.1	1	25	2 1/4	57.2	3 5/8	92.1	2	.9
PA15-15	1 1/2	38.1	1 1/2	38.1	2 1/4	57.2	4 1/8	104.8	2	.9
PA15-20	1 1/2	38.1	2	51	2 1/4	57.2	4 5/8	117.5	2	.9

OPW 10 Series Emergency Shut-Off Valves

Ordering Specifications

Female Threaded Top (Outlet) Connection Valves

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Replacement Top
	in.	cm				
10BF-5725	1 1/2	4	NPT	Single	Pressure	10RFT-5750
10BFP-5726	1 1/2	4	NPT	Double	Pressure	10FTP-5701
10RF-2001	2	5	NPT	Single	Pressure	10RFT-5742
10RFP-2002	2	5	NPT	Double	Pressure	10RFTP-5752

Male Threaded-Top (Outlet) Connection Valves

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Replacement Top
	in.	kg				
10BM-5825	1 1/2	4	NPT	Single	Pressure	10RMT-5850
10BHMP-5830	1 1/2	4	NPT	Double	Pressure	10RMTP-5851
10SBHMP-5830	1 1/2	4	NPT	Double	Suction	10SHMTP-5811
10RM-2003	2	5	NPT	Single	Pressure	10RMT-5842
10RMP-2004	2	5	NPT	Double	Pressure	10RMTP-5852

Union-Top (Outlet) Connection Valves

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Replacement Top
	in.	kg				
10BU-5925	1 1/2	4	NPT	Single	Pressure	10RUTC-5975
10BUP-5926	1 1/2	4	NPT	Double	Pressure	10UTCP-5901
10SBUP-5926	1 1/2	4	NPT	Double	Suction	10SUTCP-5911
10RU-2005	2	5	NPT	Single	Pressure	10RUTC-5962
10RUP-2006	2	5	NPT	Double	Pressure	10RUTCP-5972

NOTE: All BSPP Thread Shear Valves must be ordered through OPW's Europe or Asia office.

IMPORTANT NOTICE:

When mounting the OPW 10 Series Emergency Shut-off Valves, the anchoring system employed must withstand a force greater than 650 ft. pounds per valve.

NFPA Code 30A, Automotive and Marine Service Station Code, requires that the automatic closing feature of emergency shut-off valves be checked at least once per year by manually tripping the hold-open linkage. OPW recommends the use of Flexworks Stabilizer Bar Support System for proper mounting of 10 Series Valves.

NOTICE:

As per NFPA 30A, electrical supply to the submersible pump must always be disconnected before servicing meters, dispensers or emergency shut-off valves.

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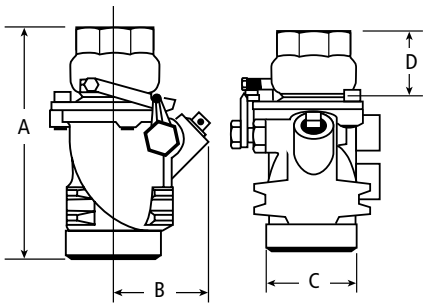
Replacement Valve Tops

Model #	Body Size		Connection Threads	Poppet Configuration	Application	Top Connection	Profile
	in.	cm					
10RFT-5750	1 1/2	4	NPT	Single	Pressure	Female	
10RFTP-5751	1 1/2	4	NPT	Double	Pressure	Female	
10FTP-5701	1 1/2	4	NPT	Double	Pressure	Female	Low Profile
10RMT-5850	1 1/2	4	NPT	Single	Pressure	Male	
10RMTP-5851	1 1/2	4	NPT	Double	Pressure	Male	
10SHMTP-5811	1 1/2	4	NPT	Double	Suction	Male	
10RUTC-5975	1 1/2	4	NPT	Single	Pressure	Complete Union	
10UTCP-5901	1 1/2	4	NPT	Double	Pressure	Complete Union	Low Profile
10RFT-5742	2	4	NPT	Single	Pressure	Female	
10RFTP-5752	2	5	NPT	Double	Pressure	Female	
10RMT-5842	2	5	NPT	Single	Pressure	Male	
10RMTP-5852	2	5	NPT	Double	Pressure	Male	
10RUTC-5962	2	5	NPT	Single	Pressure	Complete Union	
10RUTCP-5972	2	5	NPT	Double	Pressure	Complete Union	

1 1/2" Dimensions

	10BF		10BFP 10SBFP		10BM		10BHMP 10SBHMP		10BU		10BUP 10SBUP	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
A	6 21/64	161	6 21/64	161	6 13/16	173	7 11/16	195	7 1/4	184	7 1/4	184
B	2 3/4	70	2 3/4	70	2 3/4	70	2 3/4	70	2 3/4	70	2 3/4	70
C	2 11/16	69	2 11/16	69	2 11/16	69	2 11/16	69	2 11/16	69	2 11/16	69
D	1 3/4	44	1 3/4	44	2 1/4	57	3 1/8	79	2 11/16	69	2 11/16	69



2" Dimensions

	10RF 10RFS		10RM 10RMS		10RU 10RUS		10RFP 10RFSP		10RMP 10RMSP		10RUP 10RUSP	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
A	8 3/8	213	9 27/32	250	9 13/32	239	8 3/8	213	9 27/32	250	9 13/32	239
B	3 7/64	79	3 7/64	79	3 7/64	79	3 7/64	79	3 7/64	79	3 7/64	79
C	3 1/4	83	3 1/4	83	3 1/4	83	3 1/4	83	3 1/4	83	3 1/4	83
D	3 1/16	78	4 9/16	116	3 7/8	98	3 1/16	78	4 9/16	116	3 7/8	98

Other Replacement Parts

Part #	Description
202950	1 1/2" Tetra Seal
H11361M	2" Tetra Seal
H07659M	Link Spring
H07643RB	Link Retaining Screw
H04788M	Hold-Open Link (Brass)
H05361	Safety Hub S/A-Fusible Link
10UBK-015	U-Bolt Kit for 1 1/2"
10URK-020	U-Bolt Kit for 2"

TLS-450PLUS

VEEDER-ROOT

Proven Wet Stock Management

The Veeder-Root **TLS-450PLUS** automatic tank gauge provides the most comprehensive site data for advanced fuel asset management.

Combining industry leading algorithms with a proven reputation for compliance and reliabiltiy, the **TLS-450PLUS** keeps your site running profitably.

Proven Protection | **Proven Precision** | **Proven Profit** | **Proven Partner**

Proven Protection

Maintain control of your fueling operations using the automated compliance and site management solutions of the **TLS-450PLUS** to always know the status of your business.

- **Inspector ready compliance** – *easy access to all federal, state, and local agency reports*
- **Web-enabled remote connectivity** – *monitor your site performance, receive real-time alerts, and access compliance data via web-enabled devices–anytime, anywhere*
- **Data protection** – *store up to 3 years of data and protect it from power outages, battery replacements or software upgrades*
- **Security controls** – *partitioned Ethernet networks, customized user access, and Secure Socket Layer (SSL) encrypted connectivity to keep your network safe*

Remote connectivity allows users to access site data and receive alerts anytime and anywhere on any web enabled device.

VEEDER-ROOT

Proven Precision

Remote connectivity on the ***TLS-450PLUS*** allows access to accurate wet stock management and leak detection information at all times.

- **AccuChart** – *reconcile tank tilt, dents and out-of-round tank conditions using advanced tank chart calibration technology and have the most precise picture of your inventory – all day, every day*
- **Business Inventory Reconciliation (BIR)** – *improve business decisions by combining meter transaction sales with AccuChart to better understand site variance*
- **Continuous Statistical Leak Detection (CSLD)** – *avoid site shutdown for compliance with the robust 0.2 gph (0.76 lph) monthly tank leak detection*
- **Enhanced performance** – *significant improvement in system response time over the TLS-450 with 5x processing speed, 8x memory and 2x data storage*
- **Data logger** – *built in data logging enables improved data transfer for wet stock management*
- **Timed Sudden Loss Detection** – *monitor changes in inventory due to theft during quiet periods via programmable scheduling*

Proven Partner

Veeder-Root products are the highest quality wet stock management solutions available with a long history of reliability and precision. Our products help achieve results that matter and the protection your business deserves.

Proven Profit

Operate at peak efficiency with the ***TLS-450PLUS*** monitoring system, reducing inventory shortages and site downtime.

- **Remote software download** – *hassle free access to software updates*
- **Logistics visibility** – *increase inventory management awareness to avoid runouts and haulbacks*
- **Faster problem resolution** – *diagnose and troubleshoot issues remotely to understand ongoing situations better and avoid unnecessary dispatch*
- **Customized alarms** – *preprogram alarm alerts to provide scenario-specific information to predetermined individuals*
- **Graphical User Interface** – *designed with features for ease of use including workflow wizard, context sensitive help and user-defined favorites*

TLS-450PLUS (UL/cUL) Part Numbers

Application Software	
333545-001	***TLS-450PLUS*** application software
Hardware: Includes a 2-port RS-232 Module, a 3-Port Ethernet Module and a 2-Port USB Module	
860091-301	***TLS-450PLUS*** touch screen console with printer
860091-401	***TLS-450PLUS*** touch screen console without printer
860091-001	***TLS-450PLUS*** console without display, without printer
Interface Modules	
332812-001	Universal sensor/probe interface module
332813-001	Universal input/output interface module
333564-001	10-amp controller module
Communication Modules	
332818-001	Sitefax interface module
332866-001	Single RS-232 interface module
332868-001	RS-232 dual interface module
332870-001	RS-232/RS-485 dual interface module
Feature Enhancement Software	
332972-006	Continuous Statistical Leak Detection (CSLD)
332972-007	Ultimate Testing Line Leak Detection for DPLLD
332972-008	Risk Management Line Leak Detection for DPLLD
332972-009	Base Compliance Line Leak Detection for DPLLD
332972-018	Timed Sudden Loss Detection
333149-001	BIR/AccuChart ***TLS-450PLUS*** EDIM factory installed
333580-001	BIR/AccuChart ***TLS-450PLUS*** CDIM factory installed
333581-001	BIR/AccuChart ***TLS-450PLUS*** LVDIM factory installed
333582-001	BIR/AccuChart ***TLS-450PLUS*** MDIM factory installed

Call 888.561.7942 or visit **www.veeder.com**
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ATTACHMENT I

Initial and Continuing Training

RANGER
ENVIRONMENTAL SERVICES, LLC

Initial and Continuing Training

The proposed tank and piping will be monitored for leaks by means of inventory control, sump and interstitial leak detection, and electronic line leak detection. The tank will be equipped with a liquid discrimination sensor which will be installed adjacent to the submersible pumps in the sumps and in all dispenser sumps. The tanks will also be equipped with an electronic automatic tank gauging inventory probe for inventory of the product volume in the tank. The system will be installed in accordance with Veeder Root specifications and instructions. The system is UL listed and is third party certified for release detection under USEPA guidelines. The system has self- diagnostic programs to test and warn of failures of the external devices as well as internal electronics. The system has been tested by a Third Party and found to be compliant with USEPA requirements for release detection.

Annual maintenance of the system will be conducted to certify the function of all modules in the system.

On-site employees will monitor the system condition locally and remotely on a daily basis, with particular emphasis on any sensor alarms or release detection alarms as indicated on the panel of the system. In the case of any sensor or inventory alarm, employees will notify the Owner or General Manager who will make the determination of a proper course of action. Site employees are not authorized to reset of disable any alarm conditions on the system.

New facility employees will be trained in the proper operation and functional modes of the system. Ongoing reviews of the system operation will be presented to all employees to ensure operation and function status is understood.

Ongoing maintenance will be conducted by JF Petroluem personnel.

Operating And Maintaining Underground Storage Tank Systems

Practical Help And Checklists

Printed on Recycled Paper

Contents

DISCLAIMER

This document provides information on operating and maintaining underground storage tank (UST) systems. The document is not a substitute for U.S. Environmental Protection Agency regulations nor is it a regulation itself — it does not impose legally binding requirements.

For regulatory requirements regarding UST systems, refer to the federal regulations governing UST systems (40 CFR Part 280).

How To Use This Booklet

Who Should Read This Booklet?

This booklet is for owners and operators of underground storage tank systems (USTs).

You are responsible for making sure your USTs do not leak. This booklet can help you meet your UST responsibilities.

Key Terms Used In This Booklet

An **UST** is an **underground storage tank and underground piping connected to the tank** that has at least 10 percent of its combined volume underground. The federal regulations apply only to USTs storing petroleum or certain hazardous substances.

O&M stands for **operation and maintenance procedures** that must be followed to keep USTs from causing leaks and creating costly cleanups.

What Can This Booklet Help You Do?

- Identify and understand the operation and maintenance (O&M) procedures you need to follow routinely to make sure your USTs don't have leaks that damage the environment or endanger human health.
- Identify good O&M procedures you can use to avoid cleanup costs and liability concerns.
- Maintain useful records of your O&M.

Your UST System Is New Or Upgraded — Is That Enough?

Being new or upgraded is not enough. New and upgraded USTs are made of a complex collection of mechanical and electronic devices that can fail under certain conditions. These failures can be prevented or quickly detected by following routine O&M procedures. Having a new or upgraded UST system is a good start, but the system must be properly operated and continuously maintained to ensure that leaks are avoided or quickly detected.

What Should You Do With Each Section Of This Booklet?

Read through each section carefully and use the checklists to help you establish clear O&M procedures.

By identifying and understanding the O&M tasks you need to perform routinely, you will ensure timely repair or replacement of components when problems are identified.

How Can You Use The Following Checklists Effectively?

This booklet's pages are 3-hole punched and unbound so you can put all the materials in a handy 3-ring binder. You can easily remove any of the following checklists from the binder, reproduce them, and then fill them out.

You can select the specific mix of checklists that matches your UST facility. Once you have your select group of checklists together, make several copies that you can fill out periodically over time.

In this way you can keep track of your O&M activities and know that you've done what was necessary to keep your UST site safe and clean, avoiding any threats to the environment or nearby people as a result of costly and dangerous UST releases.

Use This Booklet Often — Effective O&M Requires Constant Vigilance.

Note: This booklet describes quality O&M practices put together by a work group of state and federal environmental regulators. This booklet is not a federal regulation nor legally binding, but it does provide useful information on effective O&M procedures. You should check with your state UST program for information on any additional or different O&M practices that may be required in your state.
See Section 7 for contact information.

Section 1 — Identifying The Equipment At Your UST Facility

Determine what UST equipment you have at your facility by completing the checklist below. Note that each part of the checklist below refers you to the appropriate section of this O&M booklet for relevant information. After you have identified your equipment, proceed to the following sections to identify the O&M actions necessary for your specific UST system.

General Facility Information (optional)

Facility Name	
Facility ID #	

Release Detection (See Section 2 for information on release detection)

A. Release Detection for Tanks

Check at least one for each tank:	Tank #1	Tank #2	Tank #3	Tank #4
Automatic Tank Gauging System				
Interstitial Monitoring (with secondary containment)				
Groundwater Monitoring				
Vapor Monitoring				
Inventory Control and Tank Tightness Testing (TTT)*				
Manual Tank Gauging Only **				
Manual Tank Gauging and Tank Tightness Testing (TTT)***				
Other Release Detection Method, such as SIR (please specify)				

* Allowed only for 10 years after upgrading or installing tank with corrosion protection. TTT required every 5 years.
** Allowed only for tanks of 1,000 gallon capacity or less.
*** Allowed only for tanks of 2,000 gallon capacity or less and only for 10 years after upgrading or installing tank with corrosion protection. TTT required every 5 years.

B. Release Detection for Pressurized Piping

Check at least one from A & B for each tank's piping:		Tank #1	Tank #2	Tank #3	Tank #4
A (Automatic Line Leak Detectors)	Automatic Flow Restrictor				
	Automatic Shutoff Device				
	Continuous Alarm				
B	Annual Line Tightness Test				
	Monthly Monitoring*				

* Monthly Monitoring for piping includes Interstitial Monitoring, Vapor Monitoring, Groundwater Monitoring, and other accepted methods (such as SIR and Electronic Line Leak Detectors)

C. Release Detection for Suction Piping

Check at least one for each tank's piping:	Tank #1	Tank #2	Tank #3	Tank #4
Line Tightness Testing Every Three Years				
Monthly Monitoring*				
No Release Detection Required For Safe Suction **				

* Monthly Monitoring for piping includes Interstitial Monitoring, Vapor Monitoring, Groundwater Monitoring, and SIR
** No release detection required only if it can be verified that you have a safe suction piping system with the following characteristics:

1) Only one check valve per line located directly below the dispenser;
2) Piping sloping back to the tank; and
3) System must operate under atmospheric pressure.

Spill and Overfill Protection (See Section 4 for more information)

Check for each tank:	Tank #1	Tank #2	Tank #3	Tank #4
Spill Catchment Basin/ Spill Bucket				
Check at least one overfill device for each tank:				
Automatic Shutoff Device				
Overfill Alarm				
Ball Float Valve				

Corrosion Protection (See Section 5 for more information)

A. Corrosion Protection for Tanks

Check at least one for each tank:	Tank #1	Tank #2	Tank #3	Tank #4
Coated and Cathodically Protected Steel				
Noncorrodible Material (such as Fiberglass Reinforced Plastic)				
Steel Jacketed or Clad with Noncorrodible Material				
Cathodically Protected Noncoated Steel*				
Internally Lined Tank*				
Cathodically Protected Noncoated Steel and Internally Lined Tank*				
Other Method Used to Achieve Corrosion Protection (please specify):				

* These options may be used only for tanks installed before December 22, 1988.

B. Corrosion Protection for Piping

Check at least one for each:	Tank #1	Tank #2	Tank #3	Tank #4
Coated and Cathodically Protected Steel				
Noncorrodible Material (such as Fiberglass Reinforced Plastic or Flexible Plastic)				
Cathodically Protected Noncoated Metal*				
Other Method Used to Achieve Corrosion Protection (please specify):				

* This option may be used only for piping installed before December 22, 1988.

Any Problems Filling Out This Checklist?

If you have trouble filling out this checklist or any following checklist, remember these sources of assistance you can contact:

- Your UST contractor, the vendor of your equipment, and the manufacturer of your UST equipment should be ready to help you. Look through your records for contact information. You may also want to use some of the industry contacts and other contact information provided in Section 7.

- Your state regulatory agency may be able to help you identify equipment or sources of information about your UST equipment. You should, in any event, make yourself aware of any ways in which your state may have additional or different O&M procedures than those presented in this booklet. See Section 7 for state agency contact information.

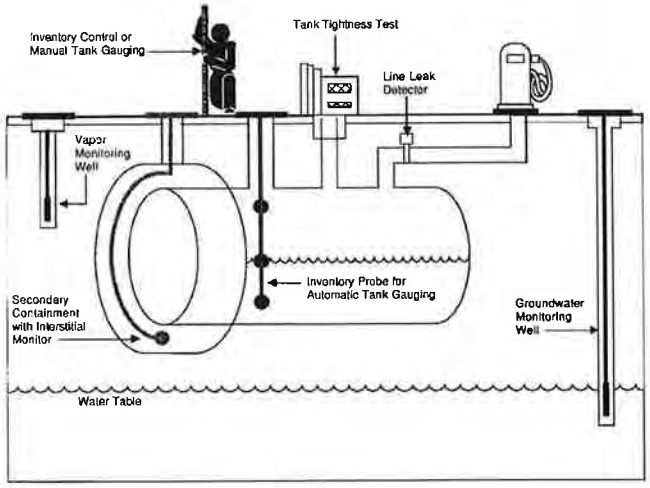
Section 2 — Release Detection

What Is Release Detection?

You must be able to determine at least every 30 days whether or not your tank and piping are leaking by using proper release detection methods.

Your release detection method must be able to detect a release from any portion of the tank and connected underground piping that routinely contains product.

Release detection must be installed, calibrated, operated, and maintained according to the manufacturer's instructions.



Do You Know If Your Release Detection Is Certified To Work At Your UST Site?

Release detection must meet specific performance requirements. You should have documentation from the manufacturer, vendor, or installer of your release detection equipment showing certification that it can meet performance requirements.

Some vendors or manufacturers supply their own certification, but more often an impartial "third party" is paid to test the release detection equipment and certify that performance requirements are met. An independent workgroup of release detection experts periodically evaluates all third-party certifications, thus providing a free and reliable list of evaluations of third-party certifications for various release detection equipment. Frequently updated, this list is available on the Internet at **http://www.nwglde.org/** (the publication's title is ***List Of Leak Detection Evaluations For Underground Storage Tank Systems***). If you can't find the certification anywhere, contact your state regulatory agency (see Section 7 for contact information).

By checking the certification, you may discover the method you use has not been approved for use with the type of tank or piping you have or the type of product being stored. For example, you may learn from the certification that your method won't work with manifolded tanks, certain products, high throughput, or with certain tank sizes.

That's why you need to make sure your release detection method has clear certification that it will work effectively at your site with its specific characteristics.

How Can You Make Sure Your Leak Detection Method Is Working At Your UST Site?

If you don't understand your O&M responsibilities and don't know what O&M tasks you must routinely perform, you may allow your UST site to become contaminated — then you will face cleanup costs and associated problems.

To avoid these problems use the checklists on the following pages that describe each type of leak detection method, discuss actions necessary for proper O&M, and note the records you should keep.

Locate the methods of release detection you are using at your facility, review these pages, and periodically complete the checklist. You might want to copy a page first and periodically fill out copies later.

If you have questions about your release detection system, review your owner's manual or call the vendor of your system. Your state or local regulatory agency may be able to provide assistance as well.

You will find leak detection recordkeeping forms in the following pages of this Section. Keeping these records increases the likelihood that you are conducting good O&M and providing effective release detection at your UST site. For example, see page 20 for a 30-Day Release Detection Monitoring Record.

If you ever suspect or confirm a leak, refer to Section 3. **Never ignore leak detection alarms or failed leak detection tests. Treat them as potential leaks**!

Automatic Tank Gauging (ATG) Systems (for tanks only)	
Description Of Release Detection	**An automatic tank gauging (ATG) system consists of a probe permanently installed in a tank and wired to a monitor to provide information on product level and temperature. ATG systems automatically calculate the changes in product volume that can indicate a leaking tank.**
Have Certification For Your Release Detection Method	❑ **Make sure your ATG system is certified for the types of tanks and stored contents on which the ATG system is used.** Most manufacturers have their leak detection devices tested and certified by a third party to verify that their equipment meets specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the manufacturer provide them to you.
Perform These O&M Actions	❑ **Use your ATG system to test for leaks at least every 30 days.** Most systems are already programmed by the installer to run a leak test periodically. If your system is not programmed to automatically conduct the leak test, refer to your ATG system manual to identify which buttons to push to conduct the leak test. Testing more often than monthly can catch leaks sooner and reduce cleanup costs and problems. ❑ **Make sure that the amount of product in your tank is sufficient to run the ATG leak test.** The tank must contain a minimum amount of product to perform a valid leak detection test. One source for determining that minimum amount is the certification for your leak detection equipment (as discussed above). ❑ **Frequently test your ATG system according to the manufacturer's instructions to make sure it is working properly.** Don't assume that your release detection system is working and never needs checking. Read your owner's manual, run the appropriate tests, and see if your ATG system is set up and working properly. Most ATG systems have a test or self-diagnosis mode that can easily and routinely run these checks. ❑ **If your ATG ever fails a test or indicates a release, see Section 3 of this booklet for information on what to do next.** ❑ **Periodically have a qualified UST contractor, such as the vendor who installed your ATG, service all the ATG system components according to the manufacturer's service instructions.** Tank probes and other components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. ❑ **Check your ATG system owner's manual often to answer questions and to make sure you know the ATG's operation and maintenance procedures.** Call the ATG manufacturer or vendor for a copy of the owner's manual if you don't have one. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your ATG system tests for at least 1 year.** Your monitoring equipment may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep all records of calibration, maintenance, and repair of your release detection equipment for at least 1 year.** ❑ **Keep all performance claims supplied by the installer, vendor, or manufacturer for at least 5 years.** These records include the certification of your leak detection equipment described above.

Secondary Containment With Interstitial Monitoring (for tanks & piping)	
Description Of Release Detection	**Secondary containment is a barrier between the portion of an UST system that contains product and the outside environment. Examples of secondary containment include an outer tank or piping wall, an excavation liner, and a bladder inside an UST. The area between the inner and outer barriers — called the interstitial space — is monitored manually or automatically for evidence of a leak.**
Have Certification For Your Release Detection Method	❑ **Make sure your interstitial monitoring equipment and any probes are certified for the types of tanks, piping, and stored contents on which the release detection system is used.** Most manufacturers have their leak detection devices tested and certified by a third party to verify that their equipment meets specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the manufacturer provide them to you.
Perform These O&M Actions	❑ **Use your release detection system to test for leaks at least every 30 days.** Testing more often than monthly can catch leaks sooner and reduce cleanup costs and problems. ❑ **Frequently test your release detection system according to the manufacturer's instructions to make sure it is working properly.** Don't assume that your release detection system is working and never needs checking. Read your owner's manual, run the appropriate tests, and see if your system is set up and working properly. Some interstitial monitoring systems have a test or self-diagnosis mode that can easily and routinely run these checks. ❑ **If your interstitial monitoring ever fails a test or indicates a release, see Section 3 of this booklet for information on what to do next.** ❑ **Periodically have a qualified UST contractor, such as the vendor who installed your release detection system, service all the system components according to the manufacturer's service instructions.** Tank probes and other components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. ❑ **Keep interstitial monitoring access ports clearly marked and secured.** ❑ **Check your interstitial monitoring system owner's manual often to answer questions and to make sure you know the system's O&M procedures.** Call the system's vendor or manufacturer for a copy of the owner's manual if you don't have one. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your release detection system tests for at least 1 year.** Your monitoring equipment may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep all records of calibration, maintenance, and repair of your release detection equipment for at least 1 year.** ❑ **Keep all performance claims supplied by the installer, vendor, or manufacturer for at least 5 years.** These records include the certification of your leak detection equipment described above.

Statistical Inventory Reconciliation (SIR) (for tanks & piping)	
Description Of Release Detection	**SIR is typically a method in which a trained professional uses sophisticated computer software to conduct a statistical analysis of inventory, delivery, and dispensing data. You must supply the professional with data every month. There are also computer programs that enable an owner/operator to perform SIR. In either case, the result of the analysis may be pass, inconclusive, or fail.**
Have Certification For Your Release Detection Method	❑ **Make sure your SIR vendor's methodology is certified for the types of tanks, piping, and product on which you use SIR.** Most vendors have their leak detection methodology tested and certified by a third party to verify that their equipment meets specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the vendor provide them to you.
Perform These O&M Actions	❑ **Supply daily inventory data to your SIR vendor (as required) at least every 30 days.** The vendor will provide you with your leak detection results after the statistical analysis is completed. Otherwise, use your computer software at least every 30 days to test your tank for leaks. ❑ **See Section 3 of this manual if your UST system fails a leak test.** ❑ **If you receive an inconclusive result, you must work with your SIR vendor to correct the problem and document the results of the investigation.** An inconclusive result means that you have not performed leak detection for that month. If you cannot resolve the problem, treat the inconclusive result as a suspected release and refer to Section 3. ❑ **If you use an ATG system to gather data for the SIR vendor or your software, periodically have a qualified UST contractor, such as the vendor who installed your ATG, service all the ATG system components according to the manufacturer's service instructions.** Tank probes and other components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. Do this according to manufacturer's instructions. See the checklist for ATG systems on page 7. ❑ **If you stick your tank to gather data for the SIR vendor or your software, make sure your stick can measure to one-eighth of an inch and can measure the level of product over the full range of the tank's height.** You should check your measuring stick periodically to make sure you can read the markings and numbers and that the bottom of the stick is not worn. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your SIR tests for at least 1 year.** Unless you are keeping records of the 30-day release detection results and maintaining those records for at least 1 year, you are not doing leak detection right. ❑ **Keep all vendor performance claims for at least 5 years.** This includes the certification of the SIR method discussed above. ❑ **If you use an ATG system, keep all records of calibration, maintenance, and repair of your release detection equipment for at least 1 year.** ❑ **Keep the records of investigations conducted as a result of any monthly monitoring conclusion of inconclusive or fail for at least 1 year.** This may include the results of a tightness test performed during the investigation or a re-evaluation based on corrected delivery or dispenser data.

Vapor Monitoring (for tanks & piping)	
Description Of Release Detection	**Vapor monitoring measures product vapors in the soil at the UST site to check for a leak. A site assessment must determine the number and placement of monitoring wells that make sure a release is detected. NOTE: vapor monitors will not work well with substances that do not easily vaporize (such as diesel fuel).**
Have Certification For Your Release Detection Method	❑ **Make sure your vapor monitoring equipment is certified for the types of stored contents on which the release detection system is used.** Most manufacturers have their leak detection devices tested and certified by a third party to verify that their equipment meets specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the manufacturer provide them to you.
Perform These O&M Actions	❑ **Use your release detection system to test for leaks at least every 30 days.** Testing more often than monthly can catch leaks sooner and reduce cleanup costs and problems. **Be sure you check all of your vapor monitoring wells.** ❑ **See Section 3 of this manual if your UST system fails a leak test.** ❑ **Frequently test your release detection system according to the manufacturer's instructions to make sure it is working properly.** Don't assume that your release detection system is working and never needs checking. Some electronic vapor monitoring systems have a test or self-diagnosis mode. If you have components (such as monitoring equipment, probes or sensors) for your vapor monitoring system, read your manual and test your equipment to see if it is working properly. ❑ **Periodically have a qualified UST contractor, such as the vendor who installed your release detection system, service all the system components according to the manufacturer's service instructions.** Probes and other components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. ❑ **Keep your vapor monitoring wells clearly marked and secured.** ❑ **Check your vapor monitoring system owner's manual often to answer questions and to make sure you know the system's operation and maintenance procedures.** Call the system's vendor or manufacturer for a copy of the owner's manual if you don't have one. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your release detection system tests for at least 1 year.** Your monitoring equipment may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep all records of calibration, maintenance, and repair of your release detection equipment for at least 1 year.** ❑ **Keep all performance claims supplied by the installer, vendor, or manufacturer for at least 5 years.** These records include the certification of your leak detection equipment described above.

Groundwater Monitoring (for tanks & piping)	
Description Of Release Detection	**Groundwater monitoring looks for the presence of liquid product floating on the groundwater at the UST site. A site assessment must determine the number and placement of monitoring wells that make sure a release is detected. NOTE: this method cannot be used at sites where groundwater is more than 20 feet below the surface.**
Have Certification For Your Release Detection Method	❑ **Make sure any automated groundwater monitoring equipment is certified for the types of stored contents on which the release detection system is used.** Most manufacturers have their leak detection devices tested and certified by a third party to verify that their equipment meets specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the manufacturer provide them to you. (Manual devices such as bailers are not generally certified.)
Perform These O&M Actions	❑ **Use your release detection system to test for leaks at least every 30 days.** Testing more often than monthly can catch leaks sooner and reduce cleanup costs and problems. **Be sure you check all of your groundwater monitoring wells.** ❑ **See Section 3 of this manual if your UST system fails a leak test.** ❑ **Frequently test your automated release detection system according to the manufacturer's instructions to make sure it is working properly.** Don't assume that your release detection system is working and never needs checking. Some electronic groundwater monitoring systems have a test or self-diagnosis mode. If you have.components (such as monitoring equipment, probes or sensors) for your groundwater monitoring system, read your manual and test your equipment to see if it is working properly. Manual devices should be periodically checked to make sure they are working properly. ❑ **Periodically have a qualified UST contractor, such as the vendor who installed your release detection system, service all the system components according to the manufacturer's service instructions.** Probes and other components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. ❑ **Keep your groundwater monitoring wells clearly marked and secured.** ❑ **Check your groundwater monitoring system owner's manual often to answer questions and to make sure you know the system's operation and maintenance procedures.** Call the system's vendor or manufacturer for a copy of the owner's manual if you don't have one. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your release detection system tests for at least 1 year.** Your monitoring equipment may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep all records of calibration, maintenance, and repair of your release detection equipment for at least 1 year.** ❑ **Keep all performance claims supplied by the installer, vendor, or manufacturer for at least 5 years.** These records include the certification of your leak detection equipment described above.

Inventory Control And Tank Tightness Testing (for tanks only)	
Description Of Release Detection	**This temporary method combines monthly inventory control with periodic tank tightness testing. Inventory control involves taking measurements of tank contents and recording the amount of product pumped each operating day, measuring and recording tank deliveries, and reconciling all this data at least once a month. This combined method also includes tightness testing, a sophisticated test performed by trained professionals.** ***NOTE: This combination method can only be used temporarily for up to 10 years after installing a new UST or for up to 10 years after your tank meets the corrosion protection requirements.***
Have Certification For Your Release Detection Method	❑ **Make sure your tank tightness testing method is certified for the types of tanks and stored contents on which the tightness test is used.** Most tightness test methods are certified by a third party to verify that they meet specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the tightness tester provide them to you.
Perform These O&M Actions	❑ **Take inventory readings and record the numbers at least each day that product is added to or taken out of the tank.** You may want to use the Daily Inventory Worksheet provided for you on the next page. ❑ **Reconcile the fuel deliveries with delivery receipts by taking inventory readings before and after each delivery.** Record these readings on a Daily Inventory Worksheet (see next page). ❑ **Reconcile all your data at least every 30 days.** Use a Monthly Inventory Record (see page 14 for an example). ❑ **Have a tank tightness test conducted at least every 5 years. This testing needs to be conducted by a professional trained in performing tank tightness testing.** ❑ **See Section 3 of this manual if your tank fails a tightness test or if fails two consecutive months of inventory control.** ❑ **Ensure that your measuring stick can measure to the nearest one-eighth inch and can measure the level of product over the full range of the tank's height.** You should check your measuring stick periodically to make sure that you can read the markings and numbers and that the bottom of the stick is not worn. ❑ **Ensure that your product dispenser is calibrated according to local standards or to an accuracy of 6 cubic inches for every 5 gallons of product withdrawn.** ❑ **Measure the water in your tank to the nearest one-eighth inch at least once a month and record the results on the reconciliation sheet.** You can use a paste that changes color when it comes into contact with water. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your release detection system tests for at least 1 year.** Your monitoring equipment may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep the results of your most recent tightness test.** ❑ **Keep all certification and performance claims for tank tightness test performed at your UST site for at least 5 years.**

Daily Inventory Worksheet

Facility Name: _____

Your Name: _____

Date: _____

Tank Identification					
Type Of Fuel					
Tank Size In Gallons					
End Stick Inches					
Amount Pumped	↓	↓	↓	↓	↓
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Today's Sum Of Totalizers					
Previous Day's Sum Of Totalizers					
Amount Pumped Today					
Delivery Record	↓	↓	↓	↓	↓
Inches of Fuel Before Delivery					
Gallons of Fuel Before Delivery (from tank chart)					
Inches of Fuel After Delivery					
Gallons of Fuel After Delivery (from tank chart)					
Gallons Delivered (Stick) [Gallons After - Gallons Before]					
Gross Gallons Delivered (Receipt)					

Monthly Inventory Record

Month/Year :_____/_____

Tank Identification & Type Of Fuel:_____

Facility Name:_____

Date Of Water Check: _____ Level Of Water (Inches):_____

Date	Start Stick Inventory (Gallons)		Gallons Delivered		Gallons Pumped		Book Inventory (Gallons)	End Stick Inventory (Inches)	End Stick Inventory (Gallons)	Daily Over (+) Or Short (-) [End - Book]	Initials
1		(+)		(-)		(=)					
2		(+)		(-)		(=)					
3		(+)		(-)		(=)					
4		(+)		(-)		(=)					
5		(+)		(-)		(=)					
6		(+)		(-)		(=)					
7		(+)		(-)		(=)					
8		(+)		(-)		(=)					
9		(+)		(-)		(=)					
7		(+)		(-)		(=)					
8		(+)		(-)		(=)					
9		(+)		(-)		(=)					
10		(+)		(-)		(=)					
11		(+)		(-)		(=)					
12		(+)		(-)		(=)					
13		(+)		(-)		(=)					
14		(+)		(-)		(=)					
15		(+)		(-)		(=)					
16		(+)		(-)		(=)					
17		(+)		(-)		(=)					
18		(+)		(-)		(=)					
19		(+)		(-)		(=)					
20		(+)		(-)		(=)					
21		(+)		(-)		(=)					
22		(+)		(-)		(=)					
23		(+)		(-)		(=)					
24		(+)		(-)		(=)					
25		(+)		(-)		(=)					
26		(+)		(-)		(=)					
27		(+)		(-)		(=)					
28		(+)		(-)		(=)					
29		(+)		(-)		(=)					
30		(+)		(-)		(=)					
31		(+)		(-)		(=)					

Total Gallons Pumped > _____ **Total Gallons Over Or Short >** _____

Leak Check:
Drop the last two digits from the **Total Gallons Pumped** number and enter here: _____ + 130 =

Compare these numbers

_____ gallons

Is the total gallons over or short **larger** than leak check result? **Yes** **No** (circle one)

If your answer is Yes for 2 months in a row, **notify the regulatory agency** as soon as possible.

Keep This Piece Of Paper On File For At Least 1 Year

Manual Tank Gauging (for tanks 1,000 gallons or less only)	
Description Of Release Detection	**<u>This method may be used only for tanks of 1,000 gallons or less capacity</u> meeting certain requirements. These requirements (tank size, tank dimension, and test time) are found in the manual tank gauging record on the next page. Manual tank gauging involves taking your tank out of service for the testing period (at least 36 hours) each week, during which time the contents of the tank are measured twice at the beginning and twice at the end of the test period. The measurements are then compared to weekly and monthly standards to determine if the tank is tight.**
Have Certification For Your Release Detection Method	**None required.**
Perform These O&M Actions	❑ **Once a week, record two inventory readings at the beginning of the test, allow the tank to sit undisturbed for the time specified in the Manual Tank Gauging Record on the next page, and record two inventory readings at the end of the test (use any form comparable to the one on the following page).** ❑ **Reconcile the numbers weekly and record them on a Manual Tank Gauging Record (see the next page).** ❑ **See Section 3 of this manual if your tank fails the weekly standard.** ❑ **At the end of 4 weeks, reconcile your records for the monthly standard and record the result on a Manual Tank Gauging Record (see the next page).** ❑ **See Section 3 of this manual if your tank fails the monthly standard.** ❑ **Ensure that your measuring stick can measure to the nearest one-eighth inch and can measure the level of product over the full range of the tank's height.** You should check your measuring stick periodically to make sure that you can read the markings and numbers and that the bottom of the stick is not worn. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep your manual tank gauging records for at least 1 year.** Unless you are recording actual release detection results weekly and at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right.

Manual Tank Gauging Record

Month _____ Year _____
Tank Identification: _____
Person Completing Form: _____
Facility Name: _____

Circle your tank size, test duration, and weekly/monthly standards in the table below:

Tank Size	Minimum Duration Of Test	Weekly Standard (1 test)	Monthly Standard (4-test average)
up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (when tank diameter is 64")	44 hours	9 gallons	4 gallons
551-1,000 gallons (when tank diameter is 48")	58 hours	12 gallons	6 gallons
551-1,000 gallons (also requires periodic tank tightness testing)	36 hours	13 gallons	7 gallons
1,001-2,000 gallons (also requires periodic tank tightness testing)	36 hours	26 gallons	13 gallons

Compare your weekly readings and the monthly average of the 4 weekly readings with the standards shown in the table on the left.

If the calculated change exceeds the weekly standard, the UST may be leaking. Also, the monthly average of the 4 weekly test results must be compared to the monthly standard in the same way.

If either the weekly or monthly standards have been exceeded, the UST may be leaking. As soon as possible, call your implementing agency to report the suspected leak and get further instructions.

Start Test (month, day, and time)	First Initial Stick Reading	Second Initial Stick Reading	Average Initial Reading	Initial Gallons (convert inches to gallons) [a]	End Test (month, day, and time)	First End Stick Reading	Second End Stick Reading	Average End Reading	End Gallons (convert inches to gallons) [b]	Change In Tank Volume In Gallons + or (—) [a—b]	Tank Passes Test (circle Yes or No)
Date: Time: AM/PM					Date: Time: AM/PM						Y N
Date: Time: AM/PM					Date: Time: AM/PM						Y N
Date: Time: AM/PM					Date: Time: AM/PM						Y N
Date: Time: AM/PM					Date: Time: AM/PM						Y N
								To see how close you are to the monthly standard, divide the sum of the 4 weekly readings by 4 and enter result here >			Y N

Keep This Piece Of Paper On File For At Least 1 Year

Manual Tank Gauging And Tank Tightness Testing (for tanks 2,000 gallons or less only)	
Description Of Release Detection	**This temporary method combines manual tank gauging with periodic tank tightness testing. <u>It may be used only for tanks of 2,000 gallons or less capacity.</u> Manual tank gauging involves taking your tank out of service for the testing period (at least 36 hours) each week, during which the contents of the tank are measured twice at the beginning and twice at the end of the test period. The measurements are then compared to weekly and monthly standards to determine if the tank is tight. This combined method also includes tightness testing, a sophisticated test performed by trained professionals.** ***NOTE: This combination method can only be used temporarily for up to ten years after installing a new UST or for up to 10 years after your tank meets the corrosion protection requirements.***
Have Certification For Your Release Detection Method	❑ **Make sure your tank tightness testing is certified for the types of tanks and stored contents on which the tightness test is used.** Most tightness test methods are certified by a third party to verify that they meet specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the tightness tester provide them to you.
Perform These O&M Actions	❑ **Once a week, record two inventory readings at the beginning of the test, allow the tank to sit undisturbed for the time specified in the Manual Tank Gauging Record on page 16, and record two inventory readings at the end of the test (use any form comparable to the one on page 16).** ❑ **Reconcile the numbers weekly and record them on a Manual Tank Gauging Record (see page 16).** ❑ **See Section 3 of this manual if your tank fails the weekly standard.** ❑ **At the end of 4 weeks, reconcile your records for the monthly standard and record the result on a Manual Tank Gauging Record (see page 16).** ❑ **See Section 3 of this manual if your tank fails the monthly standard.** ❑ **Conduct a tank tightness test at least every 5 years.** This testing needs to be conducted by a professional trained in performing tank tightness testing. ❑ **See Section 3 of this manual if your tank fails the tightness test.** ❑ **Ensure that your measuring stick can measure to the nearest one-eighth inch and can measure the level of product over the full range of the tank's height.** You should check your measuring stick periodically to make sure that you can read the markings and numbers and that the bottom of the stick is not worn. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep your manual tank gauging records for at least 1 year.** Unless you are recording actual release detection results at least weekly and every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep the results of your most recent tightness test.** ❑ **Keep all certification and performance claims for tank tightness test performed at your UST site for at least 5 years.**

Automatic Line Leak Detection (for pressurized piping only)	
Description Of Release Detection	**Automatic line leak detectors (LLDs) are designed to detect a catastrophic release from pressurized piping. Automatic LLDs must be designed to detect a leak at least as small as 3 gallons per hour at a line pressure of 10 psi within 1 hour. When a leak is detected, automatic LLDs must shut off the product flow, restrict the product flow, or trigger an audible or visual alarm. NOTE: Mechanical automatic LLDs need to be installed and operated as close as possible to the tank (LLDs are designed to detect a leak, restrict flow, etc. only between the detector and the dispenser).**
Have Certification For Your Release Detection Method	❑ **Make sure your release detection equipment is certified for the types of piping and stored contents on which the release detection system is used.** Most manufacturers have their leak detection devices tested and certified by a third party to verify that their equipment meets specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the manufacturer provide them to you.
Perform These O&M Actions	❑ **Frequently test your automatic LLDs according to the manufacturer's instructions to make sure it is working properly.** Don't assume that your release detection system is working and never needs checking. Some monitoring systems have a test or self-diagnosis mode. ❑ **Periodically have a qualified UST contractor, such as the vendor who installed your release detection system, service all the system components according to the manufacturers' service instructions.** Components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. ❑ **See Section 3 of this manual if your LLD detects a leak.** ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **For at least a year, keep the annual test that demonstrates that the LLD is functioning properly.** ❑ **If used for monthly monitoring, keep results of your release detection system tests for at least 1 year.** Your monitoring equipment system may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **Keep all records of calibration, maintenance, and repair of your release detection equipment for at least 1 year.** ❑ **Keep all performance claims supplied by the installer, vendor, or manufacturer for at least 5 years.** These records include the certification of your leak detection equipment described above.

Line Tightness Testing (for piping only)	
Description Of Release Detection	**This method uses a periodic line tightness test to determine if your piping is leaking. Tightness testing can be performed by either a trained professional or by using a permanently installed electronic system (sometimes connected to an automatic tank gauging system).**
Have Certification For Your Release Detection Method	❑ **Make sure your line tightness testing or permanently installed electronic system is certified for the types of piping and stored contents on which the release detection system is used.** Most tightness test methods and release detection equipment have been tested and certified by a third party to verify that the equipment or services meet specific performance requirements set by regulatory agencies. If you don't have certified performance claims, have the tightness tester or equipment manufacturer provide them to you.
Perform These O&M Actions	❑ **If line tightness testing is used for pressurized piping, the test must be conducted at least annually.** ❑ **If line tightness testing is used for suction piping, the test must be conducted at least every three years.** Safe suction piping as described at the bottom of page 3 may not need release detection testing. ❑ **This tightness testing must be conducted by a professional trained in performing line tightness testing or by using a permanently installed electronic system.** ❑ **See Section 3 of this manual if your piping fails the tightness test or if the electronic system indicates a leak.** ❑ **Periodically have a qualified UST contractor, such as the vendor who installed your release detection system, service all the system components according to the manufacturers' service instructions.** Components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least annually. ❑ **Make sure employees who run, monitor, or maintain the release detection system know exactly what they have to do and to whom to report problems.** Develop and maintain regular training programs for all employees.
Keep These O&M Records	❑ **Keep results of your release detection system tests for at least 1 year.** Your monitoring equipment may provide printouts that can be used as records. Unless you are recording actual release detection results at least every 30 days and maintaining records for at least 1 year, you are not doing leak detection right. ❑ **If you use a permanently installed electronic system, keep all records of calibration, maintenance, and repair of your equipment for at least 1 year.** ❑ **Keep all performance claims supplied by the installer, vendor, or manufacturer for at least 5 years.** These records include the certification of your leak detection equipment described above.

30-Day Release Detection Monitoring Record

(May be used for monitoring wells, interstitial monitoring, and automatic tank gauging)

Release Detection Method: _____

Facility Name: _____

Date	Your Name	UST System (Tank & Piping) (Enter N for No Release Detected or Y for a Suspected Or Confirmed Release)			
		UST #	UST #	UST #	UST #

Keep This Piece Of Paper And Any Associated Printouts On File For At Least 1 Year From The Date Of The Last Entry

Section 3 — Suspected Or Confirmed Releases

You need to be fully prepared to respond to releases **before** they may occur. You need to know what to do when release detection methods indicate a suspected or confirmed release. Be ready to take the following steps, as appropriate.

Stop The Release

- Take immediate action to prevent the release of more product.
- Turn off the power to the dispenser and bag the nozzle.
- Make sure you know where your emergency shutoff switch is located.
- Empty the tank, if necessary, without further contaminating the site. You may need the assistance of your supplier or distributor.

Contain The Release

Contain, absorb, and clean up any surface spills or overfills. You should keep enough absorbent material at your facility to contain a spill or overfill of petroleum products until emergency response personnel can respond to the incident. The suggested supplies include, but are not limited to, the following:

- Containment devices, such as containment booms, dikes, and pillows.
- Absorbent material, such as kitty litter, chopped corn cob, sand, and sawdust. (Be sure you properly dispose of used absorbent materials.)
- Mats or other material capable of keeping spill or overfill out of nearby storm drains.
- Spark-free flash light.
- Spark-free shovel.
- Buckets.
- Reels of caution tape, traffic cones, and warning signs.
- Personal protective gear.

Also, identify any fire, explosion, or vapor hazards and take action to neutralize these hazards.

Call For Help

Contact your local fire or emergency response authority. Make sure you have these crucial telephone numbers prominently posted where you and your employees can easily see them. See the next page for a form you can copy and post.

Report To Authorities

If you observe any of the following, contact your state's underground storage tank regulatory authority to report a suspected or confirmed release as soon as possible (within 24 hours):

- Any spill or overfill of petroleum that exceeds 25 gallons or that causes a sheen on nearby surface water. (Spills and overfills under 25 gallons that are contained and immediately cleaned up do not have to be reported. If they can't be quickly cleaned up they must be reported to your regulatory agency.)

- Any released regulated substances at the UST site or in the surrounding area — such as the presence of liquid petroleum; soil contamination; surface water or groundwater contamination; or petroleum vapors in sewer, basement, or utility lines.

- Any unusual operating conditions you observe — such as erratic behavior of the dispenser, a sudden loss of product, or an unexplained presence of water in the tank. However, you are not required to report if:

    - The system equipment is found to be defective, but not leaking, and is immediately repaired or replaced.

- Results from your release detection system indicate a suspected release. However, you are not required to report if:

    - The monitoring device is found to be defective and is immediately repaired, recalibrated, or replaced and further monitoring does not confirm the initial suspected release, or

    - In the case of inventory control, a second month of data does not confirm the initial result.

The next page contains a blank list for names and phone numbers of important contacts. Fill out this information for your facility so that you will know who to call in case of an emergency. Remove this page from the manual, copy it, fill it out, and post it in a prominent place at your facility.

Copy the next page and update it often. Make sure everyone at your UST facility is familiar with this list of contacts.

Release Response
Important Contact Information

	Contact Name	Phone #
State UST Agency:		
Local UST Agency:		
Fire Department:		
Ambulance:		
Police Department:		
Repair Contractor:		
Other Contacts:		

✔ Release Response Checklist

- ❑ **Stop the release:** Take immediate action to prevent the release of more product. Turn off the power to the dispenser and bag the nozzle. Make sure you know where your emergency shutoff switch is located. Empty the tank, if necessary, without further contaminating the site.
- ❑ **Contain the release:** Contain, absorb, and clean up any surface releases. Identify any fire, explosion, or vapor hazards and take action to neutralize these hazards.
- ❑ **Call for help and to report suspected or confirmed releases:** Contact your local fire or emergency response authority. Contact your state's underground storage tank regulatory authority within 24 hours.

Section 4 — Spill And Overfill Protection

The purpose of spill and overfill protection equipment is to eliminate the potential for a release during fuel deliveries. The equipment must be in working order and used properly to provide adequate protection from spills and overfills.

Even the best spill and overfill protection equipment can become faulty over time if not properly operated and maintained.

Only one gallon of fuel leaking each week from a poorly maintained spill bucket can result in up to 195 tons of contaminated soil in a year.

Improper maintenance of the spill bucket at the UST site pictured below contributed to significant contamination of soil and groundwater.

What's The Difference?

Spill Protection:
A spill bucket is installed at the fill pipe to contain the drips and spills of fuel that can occur when the delivery hose is uncoupled from the fill pipe after delivery.

Overfill Protection:
Equipment is installed on the UST that is designed to stop product flow, reduce product flow, or alert the delivery person during delivery **before** the tank becomes full and begins releasing petroleum into the environment.

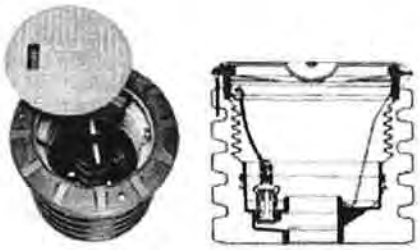
The following pages in this section focus on how you can routinely make sure your spill and overfill equipment is operating effectively.

What Are The Basics Of Spill Protection?

Your USTs must have catchment basins — also called spill buckets — installed at the fill pipe to contain spills that may occur as a result of fuel deliveries.

- The spill bucket is designed to temporarily contain product spills that might occur during fuel delivery. To contain a spill, the spill bucket must be liquid tight.
- **The spill bucket is not designed to contain fuel for long periods of time.** After each delivery, empty and dispose of contents properly.
- Spill buckets need to be large enough to contain any fuel that may spill when the delivery hose is uncoupled from the fill pipe. Spill buckets typically range in size from 5 gallons to 25 gallons.
- If you use a checklist for correct delivery practices (see page 33), spills should be eliminated or reduced to very small volumes that your spill bucket can easily handle.

If your UST ***never*** receives deliveries of more than 25 gallons at a time, the UST does not need to meet the spill protection requirements. Many used oil tanks fall into this category. Even though these USTs are not required to have spill protection, you should consider using spill protection as part of good UST system management.



Examples Of Spill Buckets

How Do You Maintain Your Spill Bucket?

The checklist below provides information on properly maintaining your spill bucket.

✔ Spill Bucket O&M Checklist

- ❑ **Keep your spill bucket empty of liquids.**
  Some spill buckets are equipped with a valve that allows you to drain accumulated fuel into your UST. Others may be equipped with a manual pump so fuel can be put into your UST by pumping it through the fill pipe. However, keep in mind that when you pump out or drain your spill bucket into your UST, any water and debris may also enter the UST. If a basin is not equipped with drain valve or pump, then any accumulated fuel or water must be removed manually and disposed of properly.
- ❑ **Periodically check your spill bucket to remove any debris.**
  Debris could include soil, stones, or trash.
- ❑ **Periodically check to see if your spill bucket is still liquid tight.**
  Have a qualified UST contractor inspect your spill bucket for signs of wear, cracks, or holes. Based on this inspection, the contractor may suggest a test to determine if the spill bucket is tight or needs repair or replacement.

What Are The Basics Of Overfill Protection?

Your USTs must have overfill protection installed to help prevent the overfilling of tanks.

Three types of overfill protection devices are commonly used:

- Automatic shutoff devices
- Overfill alarms
- Ball float valves

Each of these forms of overfill protection is discussed in detail on the following pages.

If your UST ***never*** receives deliveries of more than 25 gallons at a time, the UST does not need to meet the overfill protection requirements. Many used oil tanks fall into this category. Even though these USTs are not required to have overfill protection, you should consider using overfill protection as part of good UST system management.

How Can You Help The Delivery Person Avoid Overfills?

To protect your business, you must make every effort to help the delivery person avoid overfilling your UST.

Use A Checklist On Correct Filling Practices

If correct filling practices are used, you will not exceed the UST's capacity — see page 33 for a checklist on correct filling procedures. Overfills are caused when the delivery person makes a mistake, such as ignoring an overfill alarm.

Use Signs, Alert Your Delivery Person

The delivery person should know what type of overfill device is present on each tank at your facility and what action will occur if the overfill device is triggered — such as a visual and/or audible alarm or that the product flow into the tank will stop or slow significantly.

Educate and alert your delivery person by placing a clear sign near your fill pipes, in plain view of the delivery person. An example of such a sign follows on the next page.

Delivery Person — Avoid Overfills

- An **overfill alarm** is used for overfill protection at this facility.
- Do not tamper with this alarm in any attempt to defeat its purpose.
- When the tank is 90% full, the overfill alarm whistles and a red light flashes.
- **If you hear the alarm whistle or see the red light flashing,**

Stop The Delivery Immediately!

Make Sure You Order The Right Amount Of Product

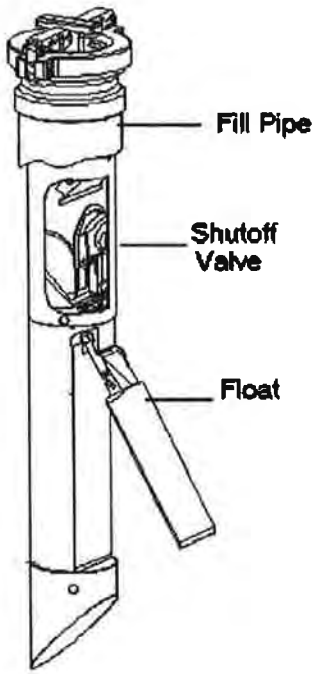
Also, you need to **make sure you've ordered the right amount of product for delivery**. Order only the quantity of fuel that will fit into 90% of the tank. For example, if you have a 10,000 gallon tank with 2,000 gallons already in the tank, you would order at the most a 7,000 gallon delivery (90% of 10,000 is 9,000 gallons; subtracting the 2,000 gallons already in the tank leaves a maximum delivery of 7,000 gallons). Use the checklist formula on page 33. Do your homework right and you reduce the chance of overfills.

What Should You Do To Operate And Maintain Your Automatic Shutoff Device?

The automatic shutoff device is a mechanical device installed in line with the drop tube within the fill pipe riser. It slows down and then stops the delivery when the product has reached a certain level in the tank. It should be positioned so that the float arm is not obstructed and can move through its full range of motion.

When installed and maintained properly, the shutoff valve will shut off the flow of fuel to the UST at 95% of the tank's capacity or before the fittings at the top of the tank are exposed to fuel.

You should not use an automatic shutoff device for overfill protection if your UST receives pressurized deliveries.



✔ Basic O&M Checklist For Automatic Shutoff Devices

- ❑ A qualified UST contractor periodically checks to make sure that the automatic shutoff device is functioning properly and that the device will shut off fuel flowing into the tank at 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel:
  - Make sure the float operates properly.
  - Make sure there are no obstructions in the fill pipe that would keep the floating mechanism from working.
- ❑ You have posted signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.

What Should You Do To Operate And Maintain Your Electronic Overfill Alarm?

This type of overfill device activates an audible and/or visual warning to delivery personnel when the tank is either 90% full or is within one minute of being overfilled. **The alarm *must* be located so it can be seen and/or heard from the UST delivery location.** Once the electronic overfill alarm sounds, the delivery person has approximately one minute to stop the flow of fuel to the tank.

Electronic overfill alarm devices have no mechanism to shut off or restrict flow. Therefore, the fuel remaining in the delivery hose after the delivery has been stopped will flow into the tank as long as the tank is not yet full.

✔ Basic O&M Checklist For Overfill Alarms

- ❑ A qualified UST contractor periodically checks your electronic overfill alarm to make sure that it is functioning properly and that the alarm activates when the fuel reaches 90% of the tank capacity or is within one minute of being overfilled:
  - Ensure that the alarm can be heard and/or seen from where the tank is fueled.
  - Make sure that the electronic device and probe are operating properly.
- ❑ You have posted signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.

What Should You Do To Operate And Maintain Your Ball Float Valve?

The ball float valve — also called a float vent valve — is installed at the vent pipe in the tank and restricts vapor flow in an UST as the tank gets close to being full. The ball float valve should be set at a depth which will restrict vapor flow out of the vent line during delivery at 90% of the UST's capacity or 30 minutes prior to overfilling.

As the tank fills, the ball in the valve rises, restricting the flow of vapors out of the UST during delivery. The flow rate of the delivery will decrease noticeably and should alert the delivery person to stop the delivery.

For ball float valves to work properly, the top of the tank must be air tight so that vapors cannot escape from the tank. Everything from fittings to drain mechanisms on spill buckets must be tight and be able to hold the pressure created when the ball float valve engages.

You should not use a ball float valve for overfill protection if any of the following apply:

- **Your UST receives pressurized deliveries.**
- **Your UST system has suction piping.**
- **Your UST system has single point (coaxial) stage 1 vapor recovery.**

✔ Basic O&M Checklist For Ball Float Valves

❑ A qualified UST contractor periodically checks to make sure that the ball float valve is functioning properly and that it will restrict fuel flowing into the tank at 90% of the tank capacity or 30 minutes prior to overfilling:

- Ensure that the air hole is not plugged.
- Make sure the ball cage is still intact.
- Ensure the ball still moves freely in the cage.
- Make sure the ball still seals tightly on the pipe.

❑ You have posted signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.

✔ Spill And Overfill O&M Checklist	
Spill Bucket	❑ **Keep your spill bucket empty of liquids.** Some spill buckets are equipped with a drainage valve which allows you to drain accumulated fuel into your UST. Others can be equipped with a manual pump so fuel can be put into your UST by pumping it through the fill pipe. However, keep in mind that when you pump out or drain your spill bucket into your UST, any water and debris may also enter the UST. If a spill bucket is not equipped with a drain valve or pump, then any accumulated fuel or water must be removed manually and disposed of properly. ❑ **Periodically check your spill bucket to remove any debris.** Debris could include soil, stones, or trash. ❑ **Periodically check to see if your spill bucket is still liquid tight.** Have a qualified UST contractor inspect your spill bucket for signs of wear, cracks, or holes. Based on this inspection, the contractor may suggest a test to determine if the spill bucket is tight or needs repair or replacement.
Automatic Shutoff Devices	❑ A qualified UST contractor periodically checks to make sure that the automatic shutoff device is functioning properly and that the device will shut off fuel flowing into the tank at 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel: • Make sure the float operates properly. • Make sure that there are no obstructions in the fill pipe that would keep the floating mechanism from working. ❑ You have posted signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.
Overfill Alarms	❑ A qualified UST contractor periodically checks your electronic overfill alarm to make sure that it is functioning properly and that the alarm activates when the fuel reaches 90% of the tank capacity or is within one minute of being overfilled: • Ensure that the alarm can be heard and/or seen from where the tank is fueled. • Make sure that the electronic device and probe are operating properly. ❑ You have posted signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.
Ball Float Valves	❑ A qualified UST contractor periodically checks to make sure that the ball float valve is functioning properly and that it will restrict fuel flowing into the tank at 90% of the tank capacity or 30 minutes prior to overfilling: • Ensure that the air hole is not plugged. • Make sure the ball cage is still intact. • Ensure the ball still moves freely in the cage. • Make sure the ball still seals tightly on the pipe. ❑ You have posted signs that the delivery person can easily see and that alert the delivery person to the overfill warning devices and alarms in use at your facility.

What Are Your Responsibilities For Correct Filling Practices?

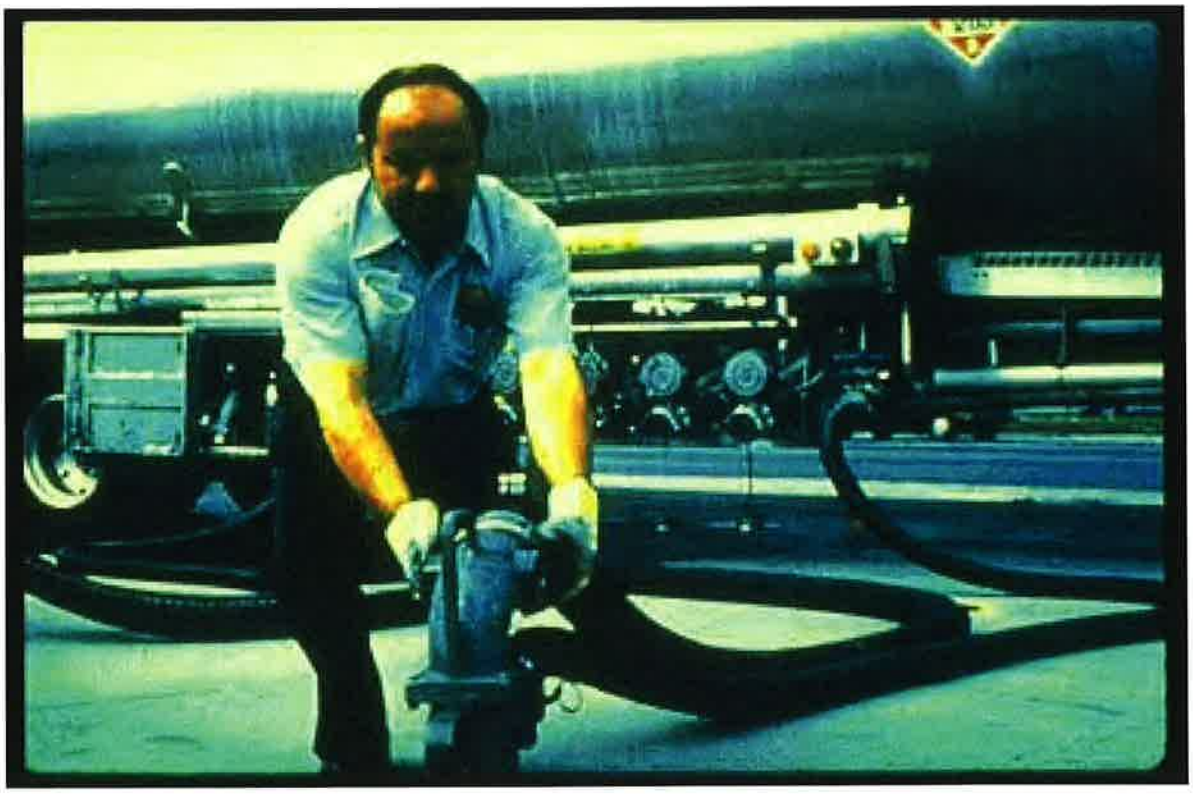
As an owner or operator you are responsible for ensuring that releases due to spilling or overfilling do not occur during fuel delivery.

As part of this responsibility, you must:

- Ensure the amount of product to be delivered will fit into the available empty space in the tank; and

- Ensure the transfer operation is monitored constantly to prevent overfilling and spilling.

One way help ensure the above requirements are met is to follow the checklist on the next page. The checklist describes activities to perform before, during, and after a fuel delivery.



✔ Correct Filling Checklist

What To Do Before Your USTs Are Filled	❑ Post clear signs that alert delivery persons to the overfill devices and alarms in use at your facility. ❑ Make and record accurate readings for product and water in the tank before fuel delivery. ❑ Order only the quantity of fuel that will fit into 90% of the tank. **Remember, the formula for determining the maximum amount of gasoline to order is:** (Tank capacity in gallons X 90%) — Product currently in tank = Maximum amount of fuel to order **Example:** (10,000 gal X 0.9) — 2,000 gal = 7,000 gal maximum amount to order ❑ Ensure fuel delivery personnel know the type of overfill device present at the tank and what actions to perform if it activates. For example, use sample sign on page 27 of this chapter. ❑ Review and understand the spill response procedures. ❑ Verify that your spill bucket is empty, clean, and will contain spills.
What To Do While Your USTs Are Being Filled	❑ Keep fill ports locked until the fuel delivery person requests access. ❑ Have an accurate tank capacity chart available for the fuel delivery person. ❑ The fuel delivery person makes all hook-ups. The person responsible for monitoring the delivery should remain attentive and observe the entire fuel delivery, be prepared to stop the flow of fuel from the truck to the UST at any time, and respond to any unusual condition, leak, or spill which may occur during delivery. ❑ Have response supplies readily available for use in case a spill or overfill occurs (see Section 3). ❑ Provide safety barriers around the fueling zone. ❑ Make sure there is adequate lighting around the fueling zone.
What To Do After Your USTs Are Filled	❑ Following complete delivery, the fuel delivery person is responsible for disconnecting all hook-ups. ❑ Return spill response kit and safety barriers to proper storage locations. ❑ Make and record accurate readings for product and water in the tank after fuel delivery. ❑ Verify the amount of fuel received. ❑ Make sure fill ports are properly secured. ❑ Ensure the spill bucket is free of product and clean up any small spills.

Section 5 — Corrosion Protection

To prevent leaks, all parts of your UST system that are underground and routinely contain product need to be protected from corrosion. The UST system includes the tank, piping, and ancillary equipment, such as flexible connectors, fittings, and pumps. Unprotected metal UST components can deteriorate and leak when underground electrical currents act upon them.

One way to protect UST components from corrosion is to **make them with nonmetallic, noncorrodible materials**, such as USTs made of (or clad or jacketed with) fiberglass reinforced plastic (FRP) or other noncorrodible materials — as illustrated by the FRP tank on the right. Noncorrodible USTs like these do not require O&M for corrosion protection.

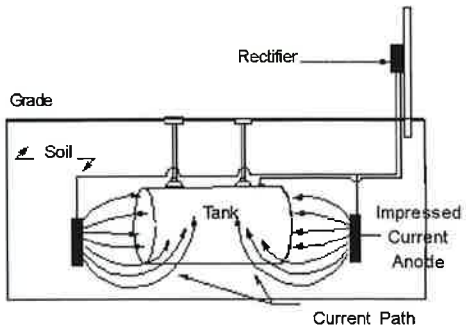
UST components made from metal, however, that routinely contain product and are in direct contact with the ground need corrosion protection provided by cathodic protection or (in some cases) lining the interior of the tank, as described below. These options require O&M.

Note: Metal tanks or piping installed after December 22, 1988 must have a dielectric coating (a coating that does not conduct electricity) in addition to the cathodic protection described below.

Cathodic Protection Using Sacrificial Anode Systems

Sacrificial anodes are buried and attached to UST components for corrosion protection — as illustrated on the right by an anode attached to a tank. Anodes are pieces of metal that are more electrically active than steel, and thus they suffer the destructive effects of corrosion rather than the steel they are attached to.

Cathodic Protection Using Impressed Current Systems



An impressed current system — as shown on the right — uses a rectifier to provide direct current through anodes to the tank or piping to achieve corrosion protection. The steel is protected because the current going to the steel overcomes the corrosion-causing current flowing away from it. **The cathodic protection rectifier must always be on and operating to protect your UST system from corrosion.**

Corrosion Protection Using Internal Lining Of The Tank

This corrosion protection option applies only to tanks installed before December 22, 1988. These older tanks can be internally lined by trained professionals to meet the corrosion protection requirements — as shown on the right, in which a professional follows industry codes to safely and effectively line a tank's interior.

It may help you to see your corrosion protection options displayed in the following table.

Corrosion Protection Choices	
Option	**Description**
Noncorrodible Material	The tank or piping is constructed of noncorrodible material.
Steel Tank Clad Or Jacketed With A Noncorrodible Material	Examples of cladding or jacket material include fiberglass and urethane. Does not apply to piping.
Coated And Cathodically Protected Steel Tanks Or Piping	Steel tank and piping is well-coated with a dielectric material and cathodically protected.
Cathodically Protected Noncoated Steel Tanks Or Piping	*This option is only for steel tanks and piping installed before December 22, 1988.* Cathodic protection is usually provided by an impressed current system.
Internal Lining Of Tanks	*This option is only for steel tanks installed before December 22, 1988.* A lining is applied to the inside of the tank. Does not apply to piping.
Combination Of Cathodically Protected Steel And Internal Lining Of Tanks	*This option is only for steel tanks installed before December 22, 1988.* Cathodic protection is usually provided by an impressed current system. Does not apply to piping.
Other Methods Used To Achieve Corrosion Protection	If you have tanks or piping that do not meet any of the descriptions above, check with your state UST agency to see if your UST system meets the requirements for corrosion protection. You also will need to ask about the operation, maintenance, and record keeping requirements applicable to this type of UST system.

Note: In addition to tanks and piping, all other metal components in direct contact with the ground that routinely hold product — such as flexible connectors, swing joints, fittings, and pumps — must also be cathodically protected.

Use the O&M checklist on the next page. Following the checklist look for record keeping forms and discussions of special corrosion protection situations.

✔ Basic O&M Checklist For Corrosion Protection

Sacrificial Anode Cathodic Protection Systems	**You need to have a periodic test conducted by a qualified corrosion tester to make sure your cathodic protection system is adequately protecting your UST system. This test needs to be conducted:** ❑ Within 6 months of installation. ❑ At least every 3 years after the previous test. ❑ Within 6 months after any repairs to your UST system. • Make sure the professional tester is qualified to perform the test and follows a standard code of practice to determine that test criteria are adequate. • If any test indicates your tanks are not adequately protected, you need to have a corrosion expert examine and fix your system. • Testing more frequently can catch problems before they become big problems. ❑ **You need to keep the results of at least the last two tests on file.** See the next page for a cathodic protection test record keeping form.
Impressed Current Cathodic Protection Systems	**You need to have a periodic test conducted by a qualified corrosion tester to make sure your cathodic protection system is adequately protecting your UST system. This test needs to be conducted:** ❑ Within 6 months of installation. ❑ At least every 3 years after the previous test. ❑ Within 6 months after any repairs to your UST system. • Make sure the professional tester is qualified to perform the test and follows a standard code of practice to determine that test criteria are adequate. • If any test indicates your tanks are not adequately protected, you need to have a corrosion expert examine and fix your system. • Testing more frequently can catch problems before they become big problems. ❑ **You need to keep the results of at least the last two tests on file.** See next page for a cathodic protection test record keeping form. ❑ **You need to inspect your rectifier at least every 60 days to make sure that it is operating within normal limits.** • This inspection involves reading and recording the voltage and amperage readouts on the rectifier. You or your employees can perform this periodic inspection. • Make sure your cathodic protection professional provides you with the rectifier's acceptable operating levels so you can compare the readings you take with an acceptable operating level. If your readings are not within acceptable levels, you must contact a cathodic protection professional to address the problem. ❑ **You need to keep records of at least the last 3 rectifier readings.** See page 39 for a 60-Day Inspection Results record keeping form. ❑ **You should have a trained professional periodically service your impressed current system.** ❑ **Never turn off your rectifier!**
Internally Lined Tanks	❑ Within 10 years after lining and at least every 5 years thereafter, the lined tank must be inspected by a trained professional and found to be structurally sound with the lining still performing according to original design specifications. Make sure the professional performing the inspection follows a standard code of practice. ❑ **Keep records of the inspection (as specified in industry standards for lining inspections).**

Record For Periodic Testing Of Cathodic Protection Systems

(for use by a qualified cathodic protection tester)

Test Date:____/____/____ Facility Name/ID:_____

Note: Provide site sketch as directed on the back of this page.

Cathodic Protection (CP) Tester Information:

Name: _____ Phone Number:_____

Address: _____

Testing must be conducted by a qualified CP tester. Indicate your qualifications as a CP tester:

Identify which of the following testing situations applies:

- ❑ Test required within 6 months of installation of CP system (installation date was __/__/__)
- ❑ Test required at least every 3 years after installation test noted above
- ❑ Test required within 6 months of any repair activity – note repair activity and date below:

Indicate which industry standard you used to determine that the cathodic protection test criteria are adequate: _____

	Cathodic Protection Test Method Used (check one)
	100 mV Cathodic Polarization Test
	-850 mV Test (Circle 1 or 2 below) 1) Polarized Potential (instant off) 2) Potential with CP Applied, IR Drop Considered **Note: All readings taken must meet the -850 mV criteria to pass**
	Other Accepted Method (please describe):

Is the cathodic protection system working properly? Yes No (circle one)

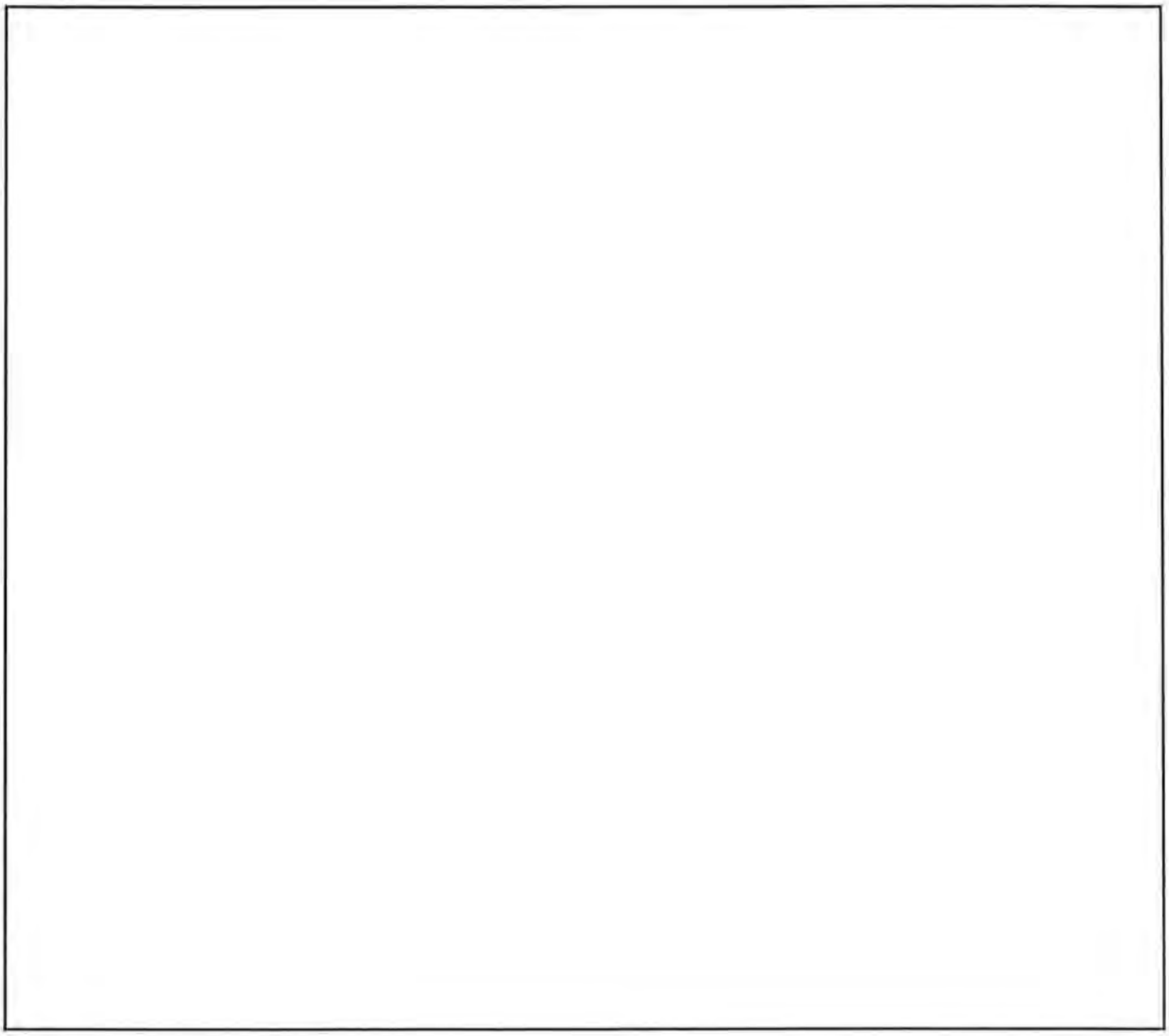
If answer is no, go to the directions at the bottom on the back of this page.

My signature below affirms that I have sufficient education and experience to be a cathodic protection tester; I am competent to perform the tests indicated above; and that the results on this form are a complete and truthful record of all testing at this location on the date shown.

CP Tester Signature: _____ Date:_____

Keep This Paper On File For At Least Six Years

Site Sketch: Provide a rough sketch of the tanks and piping, the location of each CP test, and each voltage value obtained (use space below or attach separate drawing). Voltage readings through concrete or asphalt do not provide accurate readings and are not acceptable. Perform sufficient testing to evaluate the entire UST system.



If CP system fails test, you must have a corrosion expert fix the system.

If the answer was no, indicating that your CP system is not working, you must have a ***corrosion expert*** investigate and fix the problem. A corrosion expert has additional training, skills, and certification beyond the corrosion tester who filled out the bulk of this form. A corrosion expert must be:

- Accredited/certified by NACE International (The Corrosion Society) as a corrosion specialist or cathodic protection specialist, or
- Be a registered professional engineer with certification or licensing in corrosion control.

As long as you have the UST, be sure you keep a record that clearly documents what the corrosion expert did to fix your CP system.

Keep This Paper On File For At Least Six Years

60-Day Inspection Results For Impressed Current Cathodic Protection Systems

Facility Name: _____

Amp Range Recommended: _____

Voltage Range Recommended: _____

Date	Your Name	Voltage Reading	Amp Reading	Is Your System Running Properly? (Yes/No)

- **If the rectifier voltage and/or amperage output(s) are outside the recommended operating levels, contact a cathodic protection expert to address the problem.**
- **Never turn off your rectifier.**
- **Keep this record for at least 6 months after the date of the last reading.**

Some Special Corrosion Protection Situations

What If You Have An STI-P3 Tank With A PP4 Test Station?

If you have a PP4 test station installed with an STI-P3 tank, you may perform the periodic testing of your cathodic protection system by using the meter provided to you with the PP4 test station.

- Don't forget to record the result of the reading and keep at least the last two results.
- If your test readings do not pass, you must take action to correct the problem. Call your installer and ask that the corrosion expert who designed the system examine it and correct the problem.

What If You Combine Internal Lining And Cathodic Protection?

If you chose the combination of internal lining and cathodic protection for meeting corrosion protection requirements on your UST, you may not have to meet the periodic inspection requirement for the lined tank. However, you must always meet the requirements for checking and testing your cathodic protection system as described in the basic O&M checklist for corrosion protection on page 36. The 10-year and subsequent 5-year inspections of the lined tank are not required if the integrity of the tank was ensured when cathodic protection was added. You should be able to show an inspector documentation of the passed integrity assessment.

Example 1:
If you have cathodic protection and internal lining applied to your tank at the same time, periodic inspections of the lined tank **are not** required because an integrity assessment of the tank is required prior to adding the cathodic protection and internal lining.

Example 2:
If you had cathodic protection added to a tank in 1997 that was internally lined in 1994 and the contractor did not perform an integrity assessment of the tank at the time cathodic protection was added (or you cannot show an inspector documentation of the passed integrity assessment), then periodic inspections of the lined tank **are** required because you cannot prove that the tank was structurally sound and free of corrosion holes when the cathodic protection was added. The lined tank needs to be periodically inspected because the lining may be the only barrier between your gasoline and the surrounding environment.

What If You Have A Double Walled Steel UST With Interstitial Monitoring And Cathodic Protection?

If you have a cathodically protected double walled steel tank and you use interstitial monitoring capable of detecting a breach in both the inner and outer wall or ingress of product and water as your method of leak detection, then you should monitor your cathodic protection system within six months of installation and following any activity that could affect the CP system.

If you are using impressed current cathodic protection, you still need to perform the 60-day checks of your rectifier to make sure it is operating within normal limits.

- Testing the cathodic protection system more frequently may help catch problems quicker.
- If your test readings do not pass, you must take action to correct the problem. Call your installer and ask that the corrosion expert who designed the system examine it and correct the problem.
- Don't forget to keep at least the last two results of your cathodic protection testing.

Do All UST Sites Need Corrosion Protection?

A corrosion expert may be able to determine the soil at an UST site is not conducive to corrosion and will not cause the tank or piping to have a release during its operating life. If so, you must keep a record of that corrosion expert's analysis for the life of the tank or piping to demonstrate why your UST has no corrosion protection.

Section 6 — Frequent Walk-Through Inspections

You should conduct basic walk-through inspections of your facility **at least monthly** to make sure your essential equipment is working properly and you have release response supplies on hand.

These inspections would not be as thorough as following the O&M checklists presented earlier in this booklet, but they can provide a quick overview you can do more often than the longer checklists. You might think of this level of inspection as similar to automobile dashboard indicators that provide us with status warnings like low battery.

When you perform your walk-through inspection you should quickly check at least the following:

- **Release Detection System:** Is your release detection equipment working properly? For example, did you run a quick self-test of the ATG to verify it's working properly? Or did you check your manual dip stick to make sure it's not warped or worn?
- **Spill Buckets:** Are spill buckets clean, empty, and in good condition?
- **Overfill Alarm (if you have one):** Is your overfill alarm working and easily seen or heard?
- **Impressed Current Cathodic Protection System (if you have one):** Is your cathodic protection system turned on? Are you checking your rectifier at least every 60 days?
- **Fill And Monitoring Ports:** Are covers and caps tightly sealed and locked?
- **Spill And Overfill Response Supplies:** Do you have the appropriate supplies for cleaning up a spill or overfill?

In addition, good UST site management should also include the following quick visual checks:

- **Dispenser Hoses, Nozzles, And Breakaways:** Are they in good condition and working properly?
- **Dispenser And Dispenser Sumps:** Any signs of leaking? Are the sumps clean and empty?
- **Piping Sumps:** Any signs of leaking? Are the sumps clean and empty?

If you find any problems during the inspection, you or your UST contractor need to take action quickly to resolve these problems and avoid serious releases.

A frequent walk-through checklist is provided for your use on the next page.

✔ Frequent Walk-Through Inspection Checklist						
Date Of Inspection						
Release Detection System: Inspect for proper operation.						
Spill Buckets: Ensure spill buckets are clean and empty.						
Overfill Alarm: Inspect for proper operation. Can a delivery person hear or see the alarm when it alarms?						
Impressed Current System: Inspect for proper operation.						
Fill And Monitoring Ports: Inspect all fill/monitoring ports and other access points to make sure that the covers and caps are tightly sealed and locked.						
Spill And Overfill Response Supplies: Inventory and inspect the emergency spill response supplies. If the supplies are low, restock the supplies. Inspect supplies for deterioration and improper functioning.						
Dispenser Hoses, Nozzles, And Breakaways: Inspect for loose fittings, deterioration, obvious signs of leakage, and improper functioning.						
Dispenser And Dispenser Sumps: Open each dispenser and inspect all visible piping, fittings, and couplings for any signs of leakage. If any water or product is present, remove it and dispose of it properly. Remove any debris from the sump.						
Piping Sumps: Inspect all visible piping, fittings, and couplings for any signs of leakage. If any water or product is present, remove it and dispose of it properly. Remove any debris from the sump.						

Your initials in each box below the date of the inspection indicate the device/system was inspected and OK on that date.

Section 7 — For More Information

This section identifies UST program contacts and other resources to help answer your questions and provide you with information about good UST management.

Internet Resources

Government Links

Directory of State UST Program Contacts: http://www.epa.gov/oust/states/statcon1.htm
Directory of State UST Program Internet Sites: http://www.epa.gov/oust/states/stateurl.htm
U.S. Environmental Protection Agency's Office of Underground Storage Tanks Home Page: http://www.epa.gov/oust. To go directly to the compliance assistance section of the Home page go to: http://www.epa.gov/swerust1/cmplastc/index.htm
Tanks Subcommittee of the Association of State and Territorial Solid Waste Management Officials (ASTSWMO): http://www.astswmo.org/programs_tanks.htm
New England Interstate Water Pollution Control Commission (NEIWPCC): http://www.neiwpcc.org

Professional And Trade Association Links

American Petroleum Institute (API): http://www.api.org
American Society of Testing and Materials (ASTM): http://www.astm.org
Fiberglass Tank and Pipe Institute (FTPI): http://www.fiberglasstankandpipe.com
NACE International - The Corrosion Society: http://www.nace.org
National Fire Protection Association (NFPA) : http://www.nfpa.org
Petroleum Equipment Institute (PEI): http://www.pei.org
Steel Tank Institute (STI): http://www.steeltank.com
Underwriters Laboratories (UL): http://www.ul.com

Free Informative Publications Available

The publications listed below are free and available from the U.S. Environmental Protection Agency (EPA). You can access these publications in the following ways.

Go to EPA's web site at http://www.epa.gov/oust/pubs/index.htm to order, read, or download documents online.
Write and ask for **free** publications by addressing your request to EPA's publication distributor: National Service Center for Environmental Publications (NSCEP), Box 42419, Cincinnati, OH 45242.
For **free** copies, call EPA's publication distributor's **toll-free** number at (800) 490-9198. Or go to http://www.epa.gov/nscep/ordering.htm for additional ordering methods.

Catalog Of EPA Materials On USTs
An annotated list of UST materials, including ordering information. Most of the leaflets, booklets, videos, and software items listed provide UST owners and operators with information to help them comply with federal UST requirements (32 pages).

Musts For USTs: A Summary Of Federal Regulations For Underground Storage Tank Systems
Plain language summary of federal UST requirements for installation, release detection, spill, overfill, and corrosion protection, corrective action, closure, reporting and recordkeeping. Updated & revised 1995 (36 pages).

Model Underground Storage Tank Environmental Results Program Workbook
Workbook, which states can modify to reflect their laws, helps improve owner and operator compliance with UST regulations. Contains general information about ERP; instructions on how to use the workbook; regulatory requirements, best management practices, and compliance checklists for USTs; and draft forms and worksheets in the appendices (164 pages). (Available on web only)

UST Systems: Inspecting And Maintaining Sumps And Spill Buckets – Practical Help And Checklist
Manual presents recommended inspection guidelines and best management practices for UST system sumps and spill buckets. Includes safety considerations; a general introduction to the kinds of sumps; basic maintenance procedures for sumps and spill buckets; and a sump and spill bucket inspection checklist (16 pages).

Straight Talk On Tanks: Leak Detection Methods For Petroleum Underground Storage Tanks
Explains federal regulatory requirements for leak detection and briefly describes allowable leak detection methods. Updated & revised 2005 (28 pages).

Getting The Most Out Of Your Automatic Tank Gauging System
Trifold leaflet provides UST owners and operators with a basic checklist they can use to make sure their automatic tank gauging systems work effectively and provide compliance with federal leak detection requirements.

Doing Inventory Control Right: For Underground Storage Tanks
Booklet describes how owners and operators of USTs can use inventory control and periodic tightness testing to temporarily meet federal leak detection requirements. Contains recordkeeping forms (16 pages).

Manual Tank Gauging: For Small Underground Storage Tanks
Booklet provides simple, step-by-step directions for conducting manual tank gauging for tanks 2,000 gallons or smaller. Contains recordkeeping forms (12 pages).

List Of Leak Detection Evaluations For UST Systems
A summary of specifications, based on third-party certifications, for over 275 systems that detect leaks from USTs and their piping. Each summary provides information on such items as certified detectable leak rate/threshold, test period duration, product applicability, calibration requirements, restrictions on the use of the device, and so on. (Available on web only)

List Of Integrity Assessment Evaluations For USTs
A list of integrity assessment procedures that have been successfully evaluated and certified by a qualified independent third party to meet specified performance criteria. (Available on web only)

Introduction To Statistical Inventory Reconciliation: For Underground Storage Tanks
Booklet describes how Statistical Inventory Reconciliation (SIR) can meet federal leak detection requirements (12 pages).

Closing Underground Storage Tanks: Brief Facts
Trifold leaflet presents "brief facts" on properly closing USTs in order to comply with federal closure requirements.

Underground Storage Tanks: Requirements And Options
Trifold leaflet alerts UST owners and operators who are "nonmarketers" (who do not sell stored petroleum) that they need either to find alternatives to managing their USTs or to make decisions about UST compliance.

Dollars And Sense: Financial Responsibility Requirements For Underground Storage Tanks
Booklet summarizes the "financial responsibility" required of UST owners and operators (16 pages).

List Of Known Insurance Providers For Underground Storage Tanks
Provides UST owners and operators with a list of insurance providers who may be able to help them comply with financial responsibility requirements by providing suitable insurance mechanisms (12 pages). (Available on web only)

Financing Underground Storage Tank Work: Federal And State Assistance Programs
Booklet identifies potential sources of financial assistance to cover the costs of upgrading, replacing, or closing an UST, or of cleaning up an UST release. Updated and revised March 1999 (23 pages).

State Regulatory Agency Contacts

See EPA's web site at http://www.epa.gov/oust/states/statcon1.htm for state underground storage tank program contact information.

United States
Environmental Protection
Agency

Solid Waste And
Emergency Response
5401G

EPA 510-B-05-002
September 2005
www.epa.gov

Getting The Most Out Of Your Automatic Tank Gauging System

As an owner or operator of an underground storage tank, you have invested a lot of money in your automatic tank gauging system to detect leaks—but are you getting your money's worth?

If you don't operate your automatic tank gauging system (ATGS) effectively, you may be letting stored product leak into the environment. If so, you may face costly cleanups and liability actions. Also, you can be cited and fined for not meeting the federal requirements for properly operating and maintaining an ATGS to detect leaks from underground storage tanks (USTs).

Note that a simple ATGS will detect leaks only from tanks. To detect leaks from piping, you will need an ATGS that supports connection to line leak detectors.

The checklist that follows can help you avoid some common problems and make sure your ATGS is working as required:

Know your ATGS. Insist that your ATGS installer trains you and provides clear instructions in the proper operation and maintenance of the ATGS.

Make sure your ATGS is constantly "on" and plugged into a power source. This may sound obvious, but inspectors have written many citations when they discovered that the ATGS was "off" and not monitoring for leaks.

Respond to alarms. Ignoring an alarm defeats the purpose for having the ATGS. Don't ignore the "FAIL" alarm. Large leaks have gone undetected when operators ignored an alarm or turned their ATGS off.

Run your ATGS in its "test mode" at least once a month. You must test when tank is relatively full. Since an ATGS does not detect leaks above the product level, test when the tank is as full as it typically gets (try testing soon after delivery, but after product settles). Also, you should test frequently. The more frequently you test, the greater the likelihood you will detect leaks as quickly as possible. The earlier you detect a leak, the easier and less costly the cleanup.

Have your ATGS maintained and calibrated according to manufacturers' instructions. Make sure you read the directions in the manual that came with your ATGS. Use the manufacturer or installer representative's phone number to get answers to any questions you have about using the ATGS correctly. Don't hesitate to contact the manufacturer or installer for help.

Report problems. You must report test results indicating a leak to your implementing agency (usually your state environmental agency), generally within 24 hours. You do not need to report if the ATGS is found to be defective, is repaired immediately, recalibrated or replaced, and subsequent monitoring shows tank is tight. You must immediately investigate and confirm all suspected leaks. When in doubt, report.

Keep records. Federal regulations require you to keep the following records:

Keep for at least one year:

- Monthly test results.
- Documentation of all calibration, maintenance, and repair.

Keep for at least five years:

- Any written performance claim for your ATGS. This will usually be an evaluation document signed by a third-party evaluator showing how a sample ATGS performed under test conditions.
- Manufacturer-supplied schedules for calibration and maintenance.

Keep records either at the UST site or at a readily available alternative site, and provide them for inspection upon request.

Put ATGS monitoring in the most responsible hands. Do not rely on the vigilance of part-time or under-trained employees. If necessary, have ATGS alarms go to a central, 24-hour contact or use other mechanisms that put ATGS monitoring in the most responsible hands.

Check state and local regulations. State or local regulations may differ from the federal requirements, so find out which requirements apply to your UST. Check with your implementing agency.

Please note: You may need to continue doing monthly inventory control as you use your ATGS. If your ATGS was installed after December 22, 1990 and does not meet performance standards for minimum leak detection rates, you must continue to perform proper inventory control. Check the third-party evaluation of your ATGS to see if it meets the performance standard requiring ATGS to detect a leak of 0.2 gallons per hour with 95% probability of detection and 5% probability of false alarm. ***If you are not sure, check with your implementing agency.***

Need More Information?

EPA can provide free, plain-English publications that concisely describe all aspects of federal UST requirements.

To order free publications, determine if your tanks need to meet federal UST requirements, get more information about UST requirements, or identify state regulatory authorities, please call **EPA's toll-free Hotline at 800-424-9346**. Remember, requirements and deadlines may be different in some states, so check with your state UST program office.

You can also find UST publications, links to state regulatory authorities, and other UST information at EPA's Office of Underground Storage Tanks Web site at **http://www.epa.gov/OUST/**

Remember, it's in your best interest that your ATGS works and detects leaks as soon as possible—

before leaks become big cleanup and liability problems.

Protect your ATGS investment by making sure your ATGS installer:

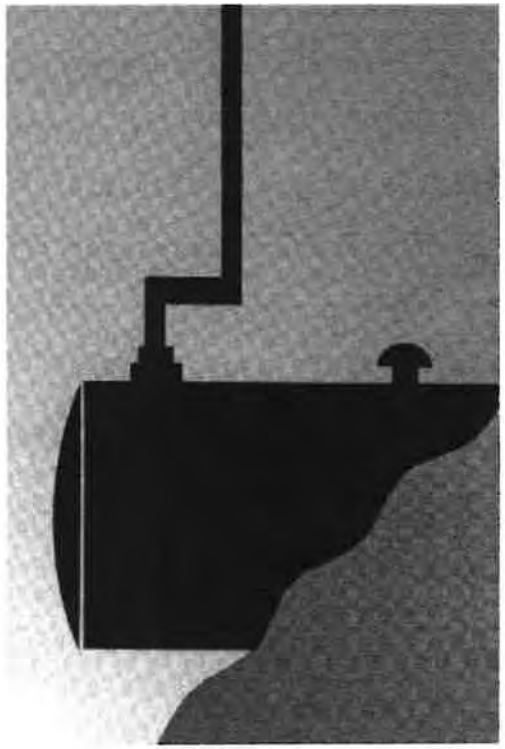
- Trains you in proper operation of the ATGS.
- Demonstrates that the ATGS has been correctly installed and programmed for the tank it monitors.
- Gives you an operation manual, schedules and documentation for calibration/maintenance, third-party evaluation, and phone numbers for technical support.
- Schedules maintenance with you as required by manufacturers' instructions.

United States Environmental Protection Agency
EPA 510-F-98-011
March 1998
www.epa.gov

Solid Waste and Emergency Response (5401G)

EPA

Getting The Most Out Of Your Automatic Tank Gauging System



Printed on Recycled Paper

UST Systems: Inspecting And Maintaining Sumps And Spill Buckets

Practical Help And Checklist

Printed on recycled paper

Contents

This document provides information on inspecting and maintaining sumps and spill buckets. The information provided in this manual is not intended to replace or contradict your specific manufacturer's instructions for maintaining your sumps. Nothing in this manual is intended to endorse or criticize any specific type of equipment or any manufacturer. Photographs of common sump problems are provided for instructional purposes only. This document does not replace existing federal or state regulations, nor is it a regulation itself - it does not impose legally binding requirements. For regulatory requirements regarding UST systems, refer to the federal regulations governing underground storage tank systems (40 CFR Part 280) or corresponding state regulations.

Additional copies of this manual are available at no cost by calling EPA's toll-free distribution center at 800-490-9198. Or you can download a color copy by going to OUST's World Wide Web Home Page at http://www.epa/gov/oust/pubs

Introduction

Who Should Read This Manual?

This manual is intended for owners and operators of underground storage tank (UST) systems; specifically, anyone who oversees the operation and maintenance of UST systems that contain and dispense petroleum products. UST owners/operators should ensure that only qualified personnel conduct inspection and maintenance activities.

After reading this manual, you should be able to identify the different types of sumps associated with your UST system and be familiar with how to identify some common sump-related problems.

How Will This Manual Help You?

This manual covers recommended inspection guidelines and best management practices for sumps associated with your UST system. This manual will:

- Help you identify and inspect the sumps associated with your UST system, including the equipment in your sumps.
- Explain some simple steps you can take to maintain your sumps and the equipment in your sumps, as well as identify potential problems.
- Provide you with tips for fixing common problems before they cause a release to the environment.

For more complete guidance on how to operate and maintain your UST system, refer to the U.S. Environmental Protection Agency (EPA) document, *Operating And Maintaining Underground Storage Tank Systems, Practical Help And Checklists (EPA 510-B-05-002, May 2005)*.

The average cleanup cost for a leaking UST is about $100,000. The cost can be more than $1,000,000 if groundwater is affected.

Why Should You Care About Sump Maintenance?

Despite advances that have greatly reduced the threat of petroleum releases from UST systems into the environment, some UST systems continue to experience releases. Inadequate operation and maintenance is one reason these systems continue to experience releases.

Sumps, including the sumps beneath dispensers, sumps around the submersible pump (turbine) head[1], transition/intermediate sumps, and spill buckets are common sources of releases. Releases of even small volumes of product can seep into the ground and contaminate soil and groundwater. Inspecting and maintaining your sumps is generally simple and can prevent or minimize such releases.

While this manual addresses a number of issues related to sump maintenance, it may not cover some details specific to your particular sumps. Keep in mind the information provided in this manual is not intended to replace or contradict your specific manufacturer's instructions for maintaining your sumps and the equipment in your sumps.

This manual presents practical help and a checklist for inspecting and maintaining sumps. State and local agencies may require these or other activities. Please check with your state or local agency to determine their specific requirements.

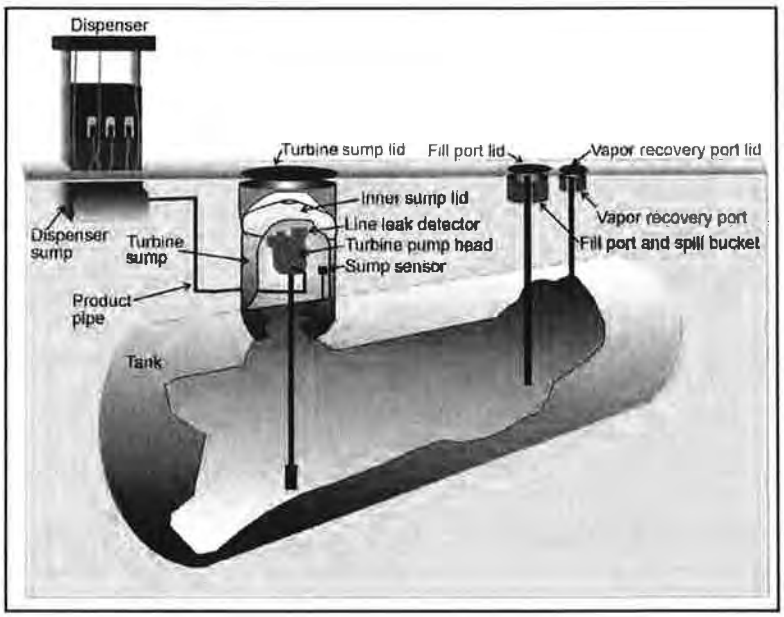


Diagram of an UST system

[1] Submersible turbine pumps are often known by their acronym STP.

Safety Considerations

If you perform sump inspection and maintenance activities, you should be experienced and aware of hazards and safety issues. Chances are you will be working in a high-traffic area, such as a gas station. You should properly mark off your work area and take appropriate steps to protect yourself. You should have the following items:

- Safety barriers, such as traffic cones or yellow plastic tape to mark off your work area
- Orange safety vest
- Hard hat (for construction sites)
- Steel-toed boots
- First-aid kit
- Chemical resistant gloves

Person wearing safety gear while inspecting a sump

You should consider these additional safety precautions:

- Sump lids may be large and very heavy and may require more than one person to lift. Use caution when lifting large steel lids.

- Be aware of the possibility of explosive or harmful vapors when inspecting and maintaining sumps. Avoid breathing in petroleum vapors.

- Please note that OSHA designates some sumps as confined spaces. See OSHA's standard on confined spaces in Title 29 of the *Code of Federal Regulations,* Part 1910.146. http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9797

Person removing a sump lid within a marked inspection area

Getting To Know Your Sumps

What Is A Sump?

A sump is a subsurface area (pit) designed to provide access to equipment located below ground and, when contained, to prevent liquids from releasing into the environment.


Uncontained turbine sump

Sumps may or may not be contained. Contained sumps have sides and a bottom, are designed to be liquid tight, and may have a special cover designed to keep out water. Uncontained sumps generally do not have a bottom and are not designed to prevent liquid from entering or exiting the sump. These sumps may use wooden or metal sheeting to restrict the slumping of soil or crushed rock onto the equipment and to prevent the surface pavement from buckling or caving.

What Kinds Of Sumps Are Associated With My UST System And Where Are They Located?

The types of sumps likely to be associated with your UST system are:

Turbine Sumps – Turbine sumps are designed to provide access to the turbine area above the tank. The turbine area may house the submersible turbine pump head, piping, line leak detectors, interstitial monitoring devices, wiring, and other equipment. You generally will find turbine sumps directly above your USTs. Turbine sump lids generally range from 3 to 4 feet in diameter and can be round, oval, square, or rectangular in shape.


Contained turbine sump

Dispenser Sumps – Dispenser sumps are designed to provide access to piping, flex connectors, shear valves, and other equipment located beneath the dispenser. Dispenser sumps are found directly under your dispensers.


Contained dispenser sump

Transition/Intermediate Sumps – Transition/intermediate sumps are less common than other sumps, but can be found along the piping runs that connect the tanks to the dispensers, and are designed to provide access to the piping. Transition sumps are used to transition from above-ground piping to below-ground piping or, in some cases, to transition between different types of piping. Intermediate sumps are located at key points in the piping system (e.g., low spots, branches, tees). Transition/intermediate sump lids generally range from 3 to 4 feet in diameter and can be round, oval, square, or rectangular in shape.

Transition/intermediate sump

Spill Buckets – Spill buckets are contained sumps installed at the fill and/or vapor recovery connection points to contain drips and spills of fuel that can occur during delivery. Spill buckets are located where the delivery driver connects the product and/or vapor recovery hoses to your tank. Spill buckets can be found directly above your UST, at a location that is away from your UST (remote), or both. They typically range in size from 5 to 25 gallons, and lids range from 1 to 2 feet in diameter. Spill buckets may also be installed within a larger sump, similar in construction to a turbine sump, for secondary containment. In this case, you will only need to open your smaller lids to access your spill buckets.

Spill bucket

Fill and vapor recovery lids installed within a larger sump lid

View of sump lids

Did You Know?
Most UST systems must have spill buckets at each fill pipe where fuel is delivered into the UST. Some facilities also may have a second spill bucket around the Stage I vapor recovery line.

How Do You Access Your Sumps And Spill Buckets?

Circular steel sump lid pulled back to show the inner lid covering the turbine sump

You may need tools such as a large screwdriver, pry bar, wrench, or hammer to open your sump lids. Composite lids may require a specialized tool that you probably have on site. Have someone help you in lifting large lids, as they may be very heavy. Use caution when opening the lids and be aware of the following:

- Square, rectangular, or oval sump lids can fall through the opening and damage the piping, submersible pump, or tank.
- Round lids, while not typically capable of falling into the sump, may swing down and damage the turbine head or line leak detector.
- If applicable, follow your equipment manufacturer's recommendations if special instructions are necessary to open the sump lids.
- You may need a key to remove the dispenser cover in order to access the dispenser sumps.

Square steel sump lid pulled up to show the inside of an uncontained turbine sump

Circular spill bucket lid pulled back to show the fill port with a spill bucket

Generally, sumps will have a traffic load rated lid, beneath which may be either direct access to the equipment or, if contained, an inner lid covering the contained area.

Dispenser cover pulled off to show the dispenser piping and equipment

Basic Maintenance Procedures For Sumps And Spill Buckets

What Can You Do To Ensure Your Sumps and Spill Buckets Are In Good Condition?

Maintaining your sumps and spill buckets will involve gaining access to them, inspecting them on a regular basis, assessing whether any problems exist, and ensuring any problems are addressed. For serious problems (e.g., obvious leaks occurring on the piping and equipment, cracked spill buckets or sidewalls, cracked or missing seal around the lid), it's best to contact your UST contractor or the manufacturer of your UST equipment to have the problem fixed. Appendix A contains a sample checklist you may want to use to guide your sump inspections.

Note: To avoid accumulation of surface water, you should check the seals of your sumps' lids more frequently if they are located at a low point on the property or in the path of surface water runoff.

If you identify or suspect a release of fuel to the environment, report this to your implementing agency. For a list of state UST websites, go to: http://www.epa.gov/oust/states/statcon1.htm

What Should You Look For When You Inspect Your Turbine, Dispenser, And Transition/Intermediate Sumps?

Are The Lids Tight And Sealed Correctly? Check to ensure the lids to the turbine, transition, and intermediate sumps create a tight seal when closed and are securely fastened. The seals of the sump lids often dry out, crack, and require replacement; so you need to ensure they are in good condition. Water in your sumps may be an indication of a bad seal.

Are The Sump Walls Intact? Check to ensure the walls of your sump are intact and are not slumping or warping. If your sump is not contained, check the sidewalls to ensure there is no caving.

Contained turbine sump full of liquid

Is The Sump Free Of Debris, Liquid, Or Ice? Debris, liquid, and ice can damage equipment, reduce capacity (if contained), and interfere with your equipment's ability to operate correctly. For example, water in your sump will reduce capacity and may cause metal equipment in your sump to corrode. Fuel in your sump will also reduce capacity and may damage some plastic sumps and other components not designed for long term contact with petroleum. Similarly, used dispenser filters may contain small amounts of petroleum, so they should not be left inside your sump. You should carefully remove and properly dispose of any debris, liquid, or ice in your sumps.

Did You Know?
Some sensors may alarm only when in contact with petroleum. If covered completely with water, they will not alarm, even in the event of a petroleum leak.

Dry, debris-free contained turbine sump

Contained sump with liquid and debris

Is The Sump Free Of Cracks Or Holes? Examine your contained sumps for signs of damage (e.g., cracks or holes). Check to ensure no cracks are present around the areas where components, such as wiring conduit and piping, enter your sumps. Cracks and holes mean your sump will no longer contain product or prevent releases to the environment.

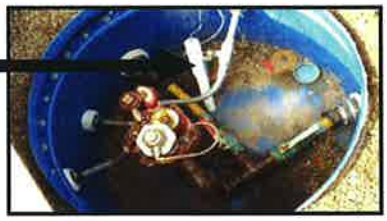
Are Sump Components Leak-Free? Check to ensure the piping, fittings, and connections in your sump are not leaking or dripping fuel.

Is The Sump Free Of Staining/New Staining? Check to ensure no new stains are present since your last inspection. New staining indicates a drip or spill has occurred.

Staining

Are The Sensors Positioned Correctly?[2] If you have sensors, check to ensure they are positioned properly in the lowest part of your sump and below the piping entry. Sensors should not be raised as the result of false alarms or for any other reason. Raised or disabled sensors will take longer or fail to detect a leak and could violate regulatory requirements.

Sump sensor



Sump sensor in contained turbine sump

Float sump sensor

Liquid sump sensor

Did You Know?
A crack or hole in your sump below the sump sensor will not allow liquid to accumulate in the sump to a level necessary to activate the sensor. As a result, liquid may be released undetected. Such cracks or holes need to be repaired immediately.

Are All Penetrations Into The Sump In Good Condition?[2]
Check to ensure all areas where electrical wires, conduits, and piping enter the sump are sealed. Cracked or loose seals around the penetrations can allow liquids to enter the sump and can allow fuel to be released into the surrounding soils if a release occurs inside the sump.

Sump penetration seals in poor condition

Sump penetration seals in good condition

Did You Know?
Some plastic flexible piping is installed within a larger pipe (or chase). There may be a seal between the primary pipe and the chase. Check with the piping maker to determine the proper position of the seal.

[2] Only for contained sumps

Are The Test Boots Positioned Correctly And In Good Condition?[3] A test boot is found on secondarily-contained piping and is a flexible sleeve usually made of rubber with a valve located either at the entry to the sump or on the piping in the sump. It is used to test the space between the inner and outer piping walls for tightness. Check to ensure the test boots are in good condition, not cracked or torn, and positioned correctly in the sump.

To ensure a leak can be detected by your leak detection equipment, test boots should be positioned so they allow product to enter your sump if a leak from the primary piping occurs. There are a variety of different configurations for test boots. If you are unsure of the appropriate configuration, check with your contractor.

Test boot located in a sump

Test boots positioned at sump wall, right test boot is torn

Is The Piping And Other Equipment In Good Condition? Sumps may contain various types of piping and equipment such as leak detection equipment, turbine motors, line leak detectors, sensors, conduits, and flex connectors.

Contained turbine sumps and equipment in good condition

Did You Know?
If your metal piping, including metal flex connectors, is in contact with the ground, it must be protected from corrosion.

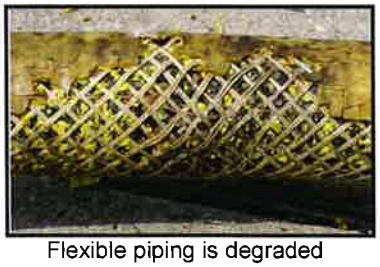
[3] Typically only for contained sumps

When inspecting the piping and equipment in your sumps, you should watch for the following conditions:

- For metal piping, check to ensure the piping is not severely corroded, in contact with the ground if it does not have corrosion protection, or otherwise degraded.
- For fiberglass piping, check to ensure the piping is not cracked, delaminated, or otherwise degraded.
- For flexible piping, check to ensure the piping does not have abnormal bends, breaks, cracks, or kinks; is not bulging, swelling, or growing; has not become soft, spongy, or discolored; and is not otherwise distorted or degraded.
- Check to ensure the fittings and flexible connectors are not twisted or misaligned and the flexible connectors are not cracked, kinked, etc.
- Check to ensure other pieces of equipment, including pump head, line leak detector, and sensors, are not visibly damaged, severely corroded, etc.

Equipment and metal piping covered with dirt in uncontained sump

Fiberglass piping is cracked



Flexible piping is degraded due to microbial growth

Flexible piping is cracked

Flexible piping is kinked

Metal flexible connector is twisted due to growth of flexible plastic piping

Flexible piping is bulging

What Should You Look For When You Inspect Your Spill Buckets?

Are The Lids To Your Spill Buckets In Good Condition? Check to ensure the lids to your spill buckets are in good condition so they will keep water out when the lid is closed. Ensure that when the lids to your spill buckets are in the closed position, they create a good seal and are secured tightly. Some spill buckets contain a rubber gasket inside the cover; check to ensure the rubber gasket is in good condition and creates a proper seal when the lid is closed.

A missing or damaged spill bucket lid may be a safety hazard. Replace it as soon as possible. Until the lid is replaced, cover and barricade the area to prevent potential accidents.

Cracked spill bucket lid

Spill bucket lid gasket

Check to ensure the lid is not touching the fill cap. This situation should be repaired because it could potentially damage the fill pipe and the tank if it is in an area where vehicles drive over the lid.

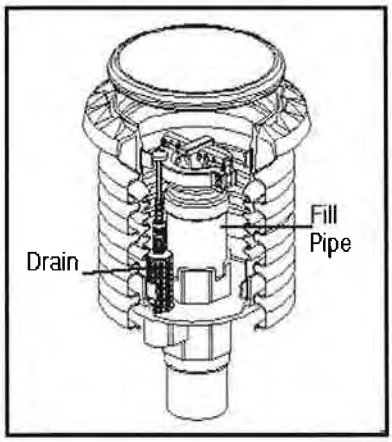
Is The Spill Bucket Free Of Debris, Liquid, Or Ice? Examine your spill buckets to determine whether they contain debris, liquid, or ice. For example, water in your spill bucket will reduce capacity and may cause metal equipment in your sump to corrode. Fuel in your spill bucket will also reduce capacity and may damage some plastic spill buckets not designed for long term contact with petroleum. You should carefully remove and properly dispose of any debris, liquid, or ice found in your spill buckets during your inspections. You should also check for and remove any liquid and debris present in your spill buckets before and after every delivery.

Spill bucket that contains liquid

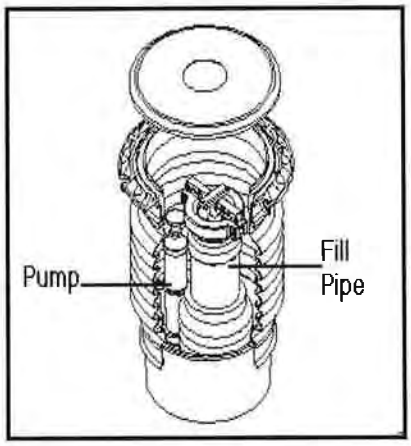
Some spill buckets are equipped with a valve that allows you to drain accumulated liquid into your UST. Others may be equipped with a manual pump so fuel can be transferred to your UST system by pumping it through the fill pipe or removing the fuel and disposing of it properly. However, keep in mind that when you pump out or drain your spill bucket into your UST, any water and debris present also will enter the UST. This could lead to internal corrosion, dispensing problems, and the need to remove contaminated water from the tank. If your spill bucket is not equipped with a drain valve or pump, you can still remove the liquid and debris and dispose of them appropriately. Liquid can be removed with a portable pump, such as the one on the right.

Portable pump

If your spill bucket is always dry, this may be an indication that it is not able to contain product. You may need to test to ensure it is liquid tight.



Spill bucket with a drain valve



Spill bucket with a manual pump

Is The Spill Bucket Free Of Cracks Or Holes? Examine the spill buckets for evidence of cracks or holes. If you have a metal bucket, check for corrosion and rust. Also check for deformations in the spill buckets or separation of the spill bucket from the fill pipe.

Spill bucket in poor condition – note the gap between the spill bucket and the fill pipe

Are The Drain Valves Operational? Some spill buckets have drain valves. Check to ensure the drain valve is free of debris and operational (e.g., it can close tightly and be opened to drain fuel in the spill bucket). If the drain valve is left open:

- It will act as a vent
  - Possibly affecting the ability of your overfill device to function properly;
  - Allowing potentially dangerous vapors to build up in the spill bucket or to be released to the soil or groundwater;
  - Possibly affecting the operation of the Stage II vapor recovery system.
- It can allow water and debris to enter your tank.

Spill bucket drain valve

***Never* pump fuel from your spill buckets into storm or sewer drains as a method of disposal. Improper disposal can contaminate surface and groundwater, result in vapor/explosion hazards, damage sewage treatment plants, and may be in violation of state or federal law.**

Where Can You Get More Information On This Topic?

Federal Agencies

U.S. EPA
Office of Underground Storage Tanks
http://www.epa.gov/oust

U.S. Department of Labor
Occupational Safety and Health Administration
http://www.osha.gov
1-800-321-OSHA (6742)

Organizations

API - American Petroleum Institute
www.api.org
(202) 682-8000

FTPI - Fiberglass Tank and Pipe Institute
www.fiberglasstankandpipe.com
(281) 568-4100

NACE International - Formerly National Association of Corrosion Engineers
www.nace.org
(281) 228-6200

NFPA - National Fire Protection Association
www.nfpa.org
(617) 770-3000

PEI - Petroleum Equipment Institute
www.pei.org
(918) 494-9696

STI - Steel Tank Institute
www.steeltank.com
(847) 438-8265

Publications

The publications listed below are free and available from the U.S. EPA. You can access these publications via EPA's website or you can call, write to, or fax EPA.

- You can download, read, or order documents from http://www.epa.gov/oust/pubs/index.htm
- To order free copies or ask questions, call EPA's publication distribution toll-free number at 800-490-9198 or fax301-604-3408. You can also write and ask for free publications by addressing your request to EPA's publication distributor: National Service Center for Environmental Publications (NSCEP), Box 42419, Cincinnati, OH 45242.

Operating and Maintaining Underground Storage Tank Systems: Practical Help and Checklists, U.S. EPA, Office of Underground Storage Tanks, Washington DC, EPA 510-B-05-002, May 2005.

Musts for USTs: A Summary of the New Regulations for Underground Storage Tank Systems, U.S. EPA, Solid Waste and Emergency Response, Washington DC, EPA-510-K-95-002, July 1995.

Model Underground Storage Tank Environmental Results Program Workbook, U.S. EPA, Solid Waste and Emergency Response, Washington DC, EPA R-04-003, June 2004.

Other Sources

For additional information on UST system operation and maintenance, go to U.S. EPA Office of Underground Storage Tanks, List of Operation and Maintenance Tools
http://www.epa.gov/oust/ustsystm/tanko&m.htm

For links to state UST websites go to
http://www.epa.gov/oust/states/statcon1.htm

Appendix A

Note: Federal UST regulations do not require you to report your maintenance activities, use this form, or keep any specific records of your sump inspection and maintenance practices.

Sample Underground Storage Tank Sump And Spill Bucket Inspection Checklist

Name: _____ Date/Time Of Inspection: _____

Comments/Follow-Up Needed: _____

Choose yes or no for each question that applies.
Choosing no on any item indicates a problem that should be corrected.
When you have corrected the problem, check the fixed box.

Turbine/Transition/Intermediate Sumps	Sump No.: ____			Sump No.: ____			Sump No.: ____			Sump No.: ____		
	Yes	No	Fixed?	Yes	No	Fixed?	Yes	No	Fixed?	Yes	No	Fixed?
Are The Lids Tight And Sealed Correctly?			☐			☐			☐			☐
Are The Sump Walls Intact?			☐			☐			☐			☐
Is The Sump Free Of Debris, Liquid, Or Ice?			☐			☐			☐			☐
Is The Sump Free Of Cracks Or Holes?*			☐			☐			☐			☐
Are Sump Components Leak-Free (No Leak Or Drips)?			☐			☐			☐			☐
Is The Sump Free Of Staining/New Staining?			☐			☐			☐			☐
Are The Sensors Positioned Correctly?*			☐			☐			☐			☐
Are All Penetrations Into The Sump In Good Condition?*			☐			☐			☐			☐
Are The Test Boots Positioned Correctly And In Good Condition?*			☐			☐			☐			☐
Is The Piping And Other Equipment In Good Condition?			☐			☐			☐			☐
Dispenser Sumps	Dispenser No.: ___			Dispenser No.: ___			Dispense No.: ___			Dispenser No.:___		
	Yes	No	Fixed?	Yes	No	Fixed?	Yes	No	Fixed?	Yes	No	Fixed?
Is The Sump Free Of Debris, Liquid, Or Ice In The Sump?			☐			☐			☐			☐
Is The Sump Free Of Cracks Or Holes?			☐			☐			☐			☐
Are Sump Components Leak-Free (No Leak Or Drips)?			☐			☐			☐			☐
Is The Sump Free Of Staining/New Staining?			☐			☐			☐			☐
Are The Sensors Positioned Correctly?			☐			☐			☐			☐
Are All Penetrations Into The Sump In Good Condition?			☐			☐			☐			☐
Are The Test Boots Positioned Correctly And In Good Condition?			☐			☐			☐			☐
Is The Piping And Other Equipment In Good Condition?			☐			☐			☐			☐
Spill Buckets	Bucket No.: ____			Bucket No.: ____			Bucket No.: ____			Bucket No.: ____		
	Yes	No	Fixed?	Yes	No	Fixed?	Yes	No	Fixed?	Yes	No	Fixed?
Are The Lids To Your Spill Buckets In Good Condition?			☐			☐			☐			☐
Is The Spill Bucket Free Of Debris, Liquid, Or Ice?			☐			☐			☐			☐
Is The Spill Bucket Free Of Cracks Or Holes?			☐			☐			☐			☐
Are The Drain Valves Operational?			☐			☐			☐			☐

*Only for contained sumps

Helpful Hints For Maintaining Spill Buckets

United States Environmental Protection Agency
Solid Waste And Emergency Response 5401G
EPA 510-R-05-001
May 2005
www.epa.gov/oust/pubs

United States
Environmental Protection
Agency

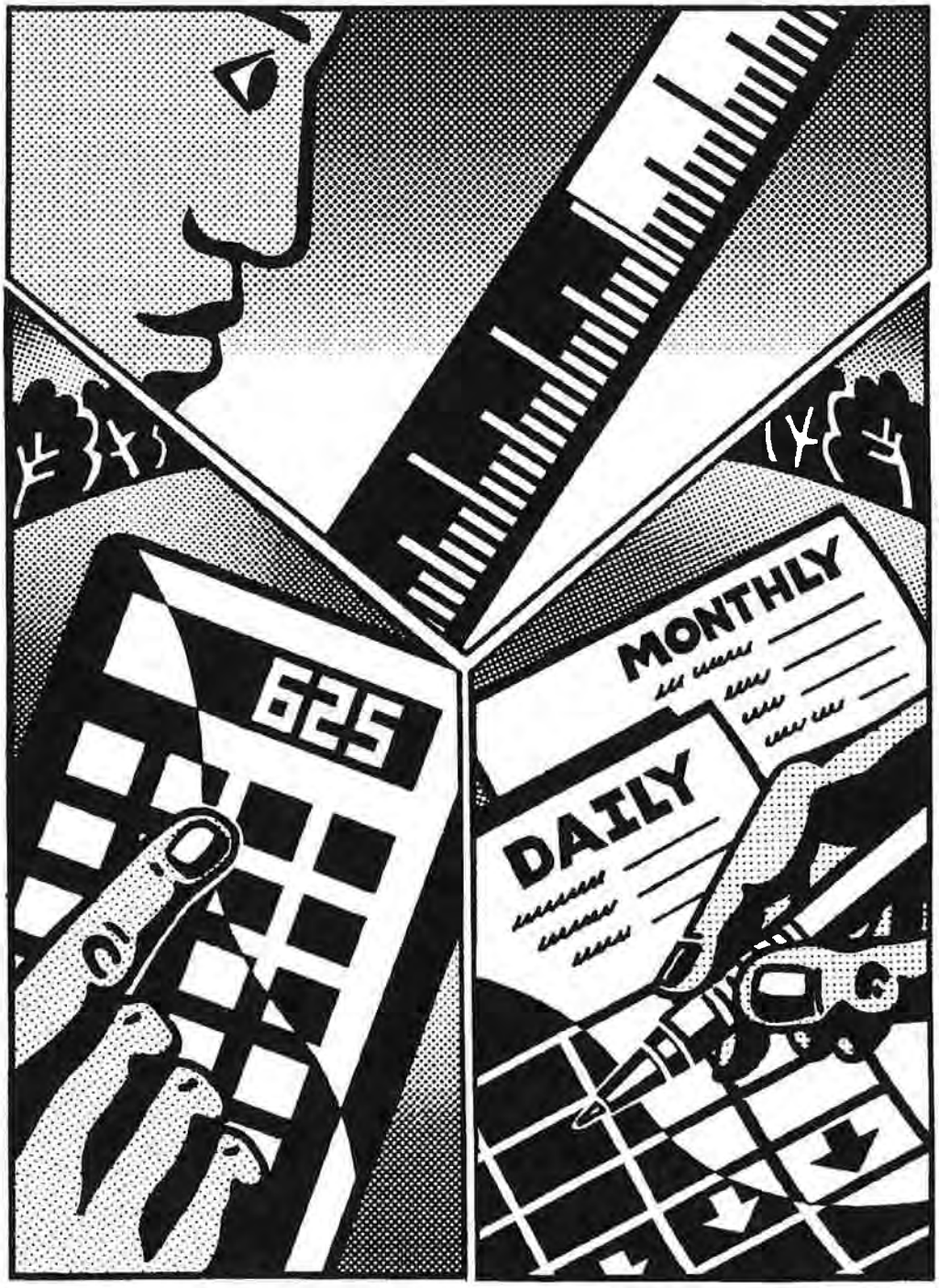
Solid Waste And
Emergency Response
5403W

EPA 510-B-93-004
November 1993

EPA

Doing Inventory Control Right

For Underground Storage Tanks



CONTENTS

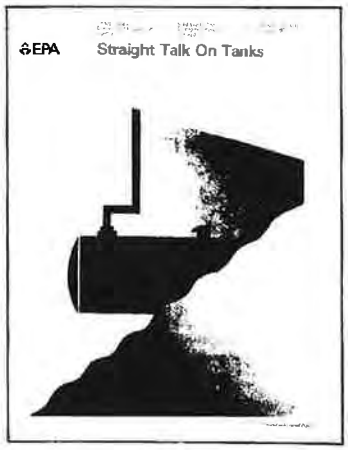
Why You Should Read This Booklet If You Use Inventory Control

Federal and state laws require underground storage tanks (USTs) to have leak detection.

If your USTs do not have leak detection, you can be cited for violations and fined. Leak detection violations can also keep you from getting legally required insurance coverage and reimbursement for cleanup costs. Without leak detection, you constantly risk discovering a leak only after it becomes a major financial burden for yourself and an environmental problem for everyone.

If inventory control is part of your leak detection, then this booklet can help you make sure you do inventory control correctly.

Inspections conducted nationwide indicate that most people who think they are doing inventory control are not doing it in a way that is likely to find leaks and meet the law's requirements for leak detection. So even if you are SURE you are doing inventory control right, read this booklet carefully—it could save you a lot of grief and money.



If you need information on federal leak detection requirements and the various methods of leak detection available to you, see "Straight Talk On Tanks." Call EPA's toll-free Hotline at 800 424-9346 and order this free publication by number: EPA 530/UST-90/012.

How Does Inventory Control Work?

This booklet helps you use inventory control to meet federal regulatory leak detection requirements by showing you how to do three important tasks:

- ! Good sticking
- ! Good math
- ! Good recordkeeping

Without these three, you may fail to meet the leak detection requirements. To do inventory control right, you have to spend time to make sure that you consistently measure the tank's contents correctly, that you don't let math errors creep into your daily and monthly calculations, and that you keep complete, easy-to-read records on file for at least a year.

Basically, inventory control requires daily measurements of tank contents and math calculations that let you compare your **"stick" inventory** (what you've measured) to your **"book" inventory** (what your recordkeeping indicates you should have). Some people call this process "inventory reconciliation." If the difference between your **"stick"** and **"book"** inventory is too large, your tank may be leaking.

Be sure you read about several important restrictions on the use of inventory control that are described on the next page.

To use INVENTORY CONTROL correctly,

follow Steps 1—5 starting on page 6.

Please note these important restrictions on the use of inventory control as leak detection:

- **Inventory control can never be used alone.** Inventory control must always be used in combination with tank tightness testing. Tanks must be tightness tested every 12 months if they do not have corrosion protection and spill/overfill devices. Tanks with corrosion protection and spill/overfill devices must be tested every 5 years.

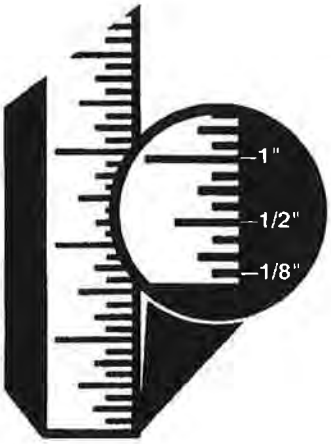
- **Inventory control is a TEMPORARY leak detection method.** You can use inventory control only for 10 years after installing a new tank that has corrosion protection and spill/overfill devices or for 10 years after upgrading an old tank with corrosion protection and spill/overfill devices. After the 10-year period, you must use a monthly monitoring method, such as groundwater monitoring or interstitial monitoring.

  Tanks without corrosion protection and spill/overfill devices can use inventory control only until December 1998, when these tanks must be upgraded or closed. (See "Straight Talk On Tanks.")

- **The combined use of inventory control and tank tightness testing does not meet your tank system's leak detection requirements for piping.** Pressurized and some suction piping must use other methods of leak detection, such as interstitial monitoring. (See "Straight Talk On Tanks.")

If you don't pay careful attention to these restrictions, you will fail to meet the leak detection requirements.

Do You Have The Right Equipment?



Gauge Stick Or Other Gauges

The gauge stick used to measure the depth of liquid in an underground tank must be marked or notched to the ⊂ inch, starting with zero at the bottom end. Check your stick to be sure the end has not been worn or cut off and that the stick is not warped. The stick should be made of non-sparking material, such as wood, and varnished to minimize the creeping of fuel above the actual fuel level in the tank. Instead of using a gauge stick, you may use a mechanical or electronic tank level monitor. Whatever measuring device you use must be capable of measuring the level of product over the full range of the tank's height to the nearest ⊂ inch.

Pastes For Finding Water Or Fuel

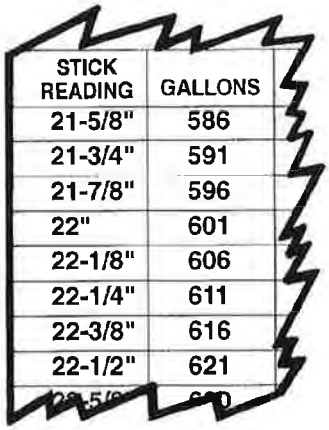
You must check for water in the bottom of the tank at least once each month by smearing a water-finding paste along the bottom of the gauge stick. The paste changes color when it comes in contact with water. Many operators improve their stick readings by smearing a fuel-finding paste on about 6 inches of the stick where they expect the fuel level to be. Fuel-finding paste changes color when it comes in contact with fuel.

Forms

The instructions in this booklet are keyed to two forms: the "DAILY INVENTORY WORKSHEET" and the "MONTHLY INVENTORY RECORD." You will find filled-in sample copies of these forms on the last two pages of this booklet. These samples are on perforated pages, so tear them out and refer to them while you read through the directions that are keyed alphabetically to the sample forms. Also, **near the back of the booklet, you will find "masters" you can copy repeatedly to provide forms for use in your recordkeeping.** If these forms are filled out according to the instructions in this booklet, you will be in compliance with federal regulations for inventory control. You should find out if state or local requirements have limitations on the use of inventory control or have requirements that are different from those presented in this booklet. You can use other standard recordkeeping forms, as long as they are clear, consistent, and contain all the information required by the federal and state leak detection regulations.

Tank Chart

A tank chart is a table that converts the number of inches of liquid in the tank into the number of gallons. You need a tank chart that exactly matches your storage tank (tank manufacturers usually provide charts for their tanks). If you have more than one tank, you will need a chart for each tank unless the tanks are identical. The tank chart must show conversion to gallons for each ⊂ inch stick reading. If your tank chart does not convert each ⊂ inch reading into gallons, contact the tank manufacturer, or, if you have a steel tank, the Steel Tank Association (708 438-8265) to get an appropriate chart.



STICK READING	GALLONS
21-5/8"	586
21-3/4"	591
21-7/8"	596
22"	601
22-1/8"	606
22-1/4"	611
22-3/8"	616
22-1/2"	621

You always need to convert inches into gallons in order to fill out the forms correctly and to do the necessary math. To convert inches into gallons, find your stick's reading to the nearest ⊂ inch on the tank chart, then simply read across to the gallons column to find the number of gallons. If you cannot get a tank chart showing conversion to gallons for each ⊂ inch reading, you must do the additional math explained on page 9.

Drop Tube

The fill pipe through which the fuel is delivered into the tank must have a drop tube extending to within 1 foot of the bottom of the tank. Stick measurements should be made through a drop tube in the fill pipe or gauging port. If your fill pipe does not have a drop tube, call your petroleum equipment supplier to have one installed.

Calibrated Dispensing Meters

Meters must be calibrated according to local standards.

Manifolded Tanks

If you have manifolded tanks or dispensers that blend fuel, consider these tanks as one tank system if they share a common inventory of stored fuel. As you follow the directions on the following pages, you will need to combine your measurements and calculations for all the tanks manifolded into one system.

Step 1—Measure The Tank's Contents

You must measure the tank every day that fuel is added or removed. You may take measurements using a gauge stick or a mechanical or electronic tank level monitor.

No fuel can be added or removed from the tank while you are performing Step 1 or Step 2.

Every day you measure the tank, you should fill out a "DAILY INVENTORY WORKSHEET." As you go through the following directions, refer to the sample DAILY INVENTORY WORKSHEET you will find on the last pages of this booklet. For easy reference, the sample is on a perforated page so you can tear it out and keep it handy as you read through the directions. Also, near the back of the booklet is a "master copy" on a perforated page you can tear out to make copies of the DAILY INVENTORY WORKSHEET for your recordkeeping.

Use the sample "DAILY INVENTORY WORKSHEET" from the last two pages of the booklet to see where you put the information from letters "A" through "M" in the following directions.

Ⓐ Fill in the identifying information at the top of the worksheet.

Ⓑ Next to the "TANK IDENTIFICATION" box are empty vertical columns. Each column represents one tank—consistently enter all information on that one tank in the same vertical column. NOTE: Once you have filled in the tank identification boxes, make copies of the worksheet so you won't have to repeatedly enter the same information.

USE GOOD STICKING PRACTICES: Slowly lower the gauge stick to the tank's bottom. Let the stick gently touch the bottom, then quickly bring it back up. Read the depth of fuel indicated by the wet mark to the closest ⅛ inch division on the stick. Use of fuel-finding paste will make your stick readings more accurate.

Ⓒ Write your measurement in the box labeled "END STICK INCHES" for the tank you measured.

NOTE: If your tank is equipped with an automatic tank gauge (ATG), you may record the inches of product and gallons of product directly from the ATG's printed tape or simply staple the tape with this information to the worksheet.

Step 2—Record The Amount Pumped

At the same time you measure the tank contents (Step 1), you must record on the DAILY INVENTORY WORKSHEET the amount of fuel pumped. **No fuel can be added or removed from the tank while you are sticking the tank and recording the amount pumped.**

D Locate the box labeled "AMOUNT PUMPED" on the left side of the worksheet. Copy the numbers from each dispenser's totalizer onto the worksheet. **Be very careful that you write all the meter readings for a tank in the same column**. You may have several dispensers and totalizers for one tank, so the worksheet provides boxes in which you can enter several readings in any order.

E Add up the totalizer meter readings in each column and write the result in the box labeled "TODAY'S SUM OF TOTALIZERS."

F Find the last DAILY INVENTORY WORKSHEET you completed. Copy "TODAY'S SUM OF TOTALIZERS" from that worksheet into the "Previous Day's Sum of Totalizers" box of the worksheet you are working on today.

G On today's worksheet, subtract "Previous Day's Sum of Totalizers" from "TODAY'S SUM OF TOTALIZERS" and write the result in the box labeled "AMOUNT PUMPED TODAY."

If you pumped fuel through a dispenser and back into a tank, for example during a test, subtract the number of gallons you pumped from "AMOUNT PUMPED TODAY."

You may have an alternative to reading totalizers. If you have a self-service fueling operation where the cashier can authorize fuel sales from inside the facility, you can probably print out a daily report that gives you the total sales for each type of fuel. **NOTE: You can use the sales volumes from this report instead of reading your totalizer meters only if no fuel sales are made between the time you print the report from the cash register and the time you measure your tanks (Step 1).**

H If you are using cash register reports to record the amount pumped, enter the amount of each type of fuel pumped in the box labeled "AMOUNT PUMPED TODAY" or staple the printout to the worksheet.

Step 3—Record Fuel Deliveries

You must check how much fuel has been delivered every time any amount of fuel is delivered to your tank. **NOTE: You should not pump any fuel during the time it takes to do items "I" and "J" below.**

Before the delivery begins, the liquid level in the tank must be measured. Always use good sticking practices: slowly lower the gauge stick, gently touch the stick to the bottom of the tank, then quickly bring the stick back up. Read the depth of fuel indicated by the wet mark to the nearest ⅛ inch division on the stick.

I Write your measurement in the box labeled "Inches of Fuel Before Delivery" for each tank you measured.

The delivery person can now deliver fuel into the tank. After the delivery, wait at least 5 minutes for the fuel level in the tank to stabilize, and then measure again as described above.

J Record fuel level in the box labeled "Inches of Fuel After Delivery."

K Using your tank chart with ⅛ inch readings, convert both delivery readings to the correct number of gallons. Record these numbers in the boxes labeled "Gallons of Fuel Before Delivery" and "Gallons of Fuel After Delivery." (If necessary, see page 9 on converting inches into gallons.)

An automatic tank gauge (ATG) can usually print a delivery report. If your tank has an ATG that prints such a report, you may simply staple the ATG's delivery report to the DAILY INVENTORY WORKSHEET.

L Subtract "Gallons of Fuel Before Delivery" from "Gallons of Fuel After Delivery." Record the result in the box labeled "GALLONS DELIVERED (STICK)."

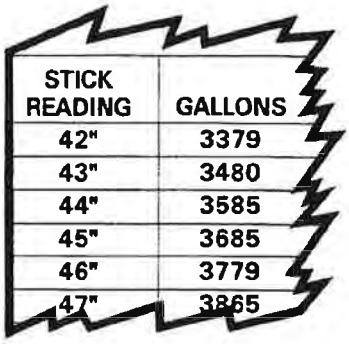
Now look at the delivery receipt and find the volume of each type of product that was delivered. If two volumes are given, one labeled "net" and the other "gross," use the gross gallons as the volume of product delivered.

M For each type of fuel delivered, copy the gross gallons delivered from the delivery receipt onto the worksheet in the box labeled "GROSS GALLONS DELIVERED (RECEIPT)." The gallons in items "L" and "M" should roughly match. If they don't, contact your supplier.

Using Tank Charts Without c Inch Conversions

If your tank chart does not list direct conversions from inches to gallons for every c inch, then you must **do the additional math described below every time you stick your tank**.

The easiest way to explain this procedure is with an example. Let's say you have a stick reading of 43d inches and you need to figure how many gallons are in your tank.



STICK READING	GALLONS
42"	3379
43"	3480
44"	3585
45"	3685
46"	3779
47"	3865

1. Look on your tank chart and find the inch measurements that are just above and below your stick reading and write down the number of gallons for these inch readings. Subtract the gallon readings to find the difference between the two readings:

   Chart reading at 44 inches: 3,585 gallons
   Chart reading at 43 inches: 3,480 gallons

   Difference: 105 gallons

2. Dividing 105 by 8 will give you the number of gallons per c inch, which in this example is 13. (More exactly it is 13.125, but do round off the number to the nearest whole number.) Because your fraction is d, multiply 13 gallons by 3, which gives you 39 gallons as the volume represented by d inch.

   CAUTION: The gallons represented by each c inch will vary from top to bottom of the tank and must be calculated for each conversion.

3. Take the number of gallons you have just calculated and add it to the inch reading just below your actual stick reading:

   Chart reading at 43 inches: 3,480 gallons
   Gallons at d inch: + 39 gallons

   Sum: 3,519 gallons

Thus, your stick reading of 43d inches converts to 3,519 gallons.

NOTE: If your tank chart is in half or quarter inches, you must still use this procedure so that your gallon readings are accurate to c inch.

After all of this math, you can see why it pays to have the correct tank chart that indicates gallons for each c inch.

Step 4—Calculate Daily Changes In Inventory

In this step, you will copy information from the DAILY INVENTORY WORKSHEET onto the **MONTHLY INVENTORY RECORD**. You will then do some math to determine your daily inventory. You need one MONTHLY INVENTORY RECORD for each tank that you have.

As you go through the following directions, refer to the sample MONTHLY INVENTORY RECORD you will find on the reverse side of the DAILY INVENTORY WORKSHEET sample you have already been using. For easy reference, the sample is on a perforated page so you can tear it out and keep it handy as you read through the directions. Also, near the back of the booklet is a "master copy" on a perforated page you can tear out to make copies of the MONTHLY INVENTORY RECORD for your recordkeeping.

Use the sample "MONTHLY INVENTORY RECORD" from the last two pages of the booklet to see where you put the information from letters "N" through "Z" in the following directions.

N Fill in the identifying information at the top of the MONTHLY INVENTORY RECORD.

If this is the very first day of your inventory recordkeeping, convert the "END STICK INCHES" from the DAILY WORKSHEET into gallons and enter on the MONTHLY RECORD under "END STICK INVENTORY (GALLONS)" for that starting date. (If necessary, see page 9 on converting inches into gallons.) This is all you can do today. Starting tomorrow, follow all of the instructions listed below.

O Find the line in the left column on the MONTHLY RECORD with today's date listed. Copy the previous day's "END STICK INVENTORY (GALLONS)" number into the box for today's "START STICK INVENTORY (GALLONS)."

P Enter the amount of fuel delivered from the DAILY INVENTORY WORKSHEET. If you were NOT pumping fuel during the time when the delivery was taking place, then use the "GALLONS DELIVERED (STICK)" number. However, if you had to pump fuel while the delivery was taking place, then use the "GROSS GALLONS DELIVERED (RECEIPT)" number as your delivery amount.

Q Copy the "AMOUNT PUMPED TODAY" number from the DAILY INVENTORY WORKSHEET into the "GALLONS PUMPED" column of the MONTHLY INVENTORY RECORD.

R Add the "START STICK INVENTORY (GALLONS)" and the "GALLONS DELIVERED" columns; then subtract the "GALLONS PUMPED" column. Enter the result in the column labeled "BOOK INVENTORY (GALLONS)."

S Copy the "END STICK INCHES" number from the DAILY WORKSHEET into the column labeled "END STICK INVENTORY (INCHES)" on the MONTHLY RECORD. Convert inches into gallons and enter the result in the column on the MONTHLY RECORD labeled "END STICK INVENTORY (GALLONS)." (If necessary, see page 9 on converting inches into gallons.)

GOOD ADVICE: If you are "over" for 5 days in a row (or "under" for 5 days in a row), you should check for problems with your math and your UST.

T Subtract the "BOOK INVENTORY (GALLONS)" from the "END STICK INVENTORY (GALLONS)." Enter the difference into today's "DAILY OVER OR SHORT" box. This number will usually be a positive or negative number (only rarely will it be zero).

U Enter your initials to show who entered today's information.

At least once each month, you must also measure for water in the tank. Smear water-finding paste on the bottom few inches of the gauge stick. Open the fill pipe and **slowly** lower the stick to the tank's bottom. Hold the stick on the bottom for 10 seconds for gasoline (30 seconds for diesel). Then remove the stick. If there is water in the bottom of the tank, the water-finding paste will change color. Read the depth of water indicated by the line where the water-finding paste has changed color to the closest ⅛ inch division on the stick. **Do not use this stick reading to measure the amount of fuel in the tank**, because the fuel will creep up the stick and will give you an inaccurate reading.

V If you checked the tank for water today, enter the number of inches of water in the tank on the line under "Facility Name" at the top of the monthly record. If there is no water present, enter a zero to indicate that you in fact checked for water but found none. If you find more than 1 inch of water, you should arrange for its immediate removal, notify the product supplier, and conduct further tests to ensure that the tank is not leaking.

Step 5—Calculate Monthly Changes In Inventory

At the end of each month, follow the directions below to see if the difference between "stick" and "book" inventory indicates a possible leak.

W Add all of the month's "GALLONS PUMPED" numbers and write this total at the bottom of the column in the box labeled "TOTAL GALLONS PUMPED."

X Add all the month's "DAILY OVER OR SHORT" numbers: pay careful attention to positive and negative numbers to get an accurate total. For example, adding +4 and +3 and -2 should equal +5. Enter the total at the bottom of the column in the box labeled "TOTAL GALLONS OVER OR SHORT."

Y Fill out the "LEAK CHECK" line at the bottom of the MONTHLY INVENTORY RECORD as follows:

- Take the "TOTAL GALLONS PUMPED" number and drop the last two digits to get 1% (for example: 6594 becomes 65).
- Add 130 (for example: 65 + 130 = 195).

Enter the result of this calculation at the end of the "LEAK CHECK" line. This number is the **maximum change in inventory allowed** by federal regulations (1% of throughput plus 130 gallons).

Z At the bottom of the MONTHLY INVENTORY RECORD, circle "YES" or "NO" to show whether your "TOTAL GALLONS OVER OR SHORT" number is **LARGER** than the "LEAK CHECK" number you identified in the previous item. Even if your "TOTAL GALLONS OVER OR SHORT" is a negative number, treat it as a positive number for the purpose of this comparison. For example, -74 would become +74.

If you circle "YES" for 2 months in a row, you must notify your regulatory agency as soon as possible (usually within 24 hours) that your tank may be leaking.

NOTE: Keep your inventory control records on file for at least 1 year. Your state, however, may have different rules about when you have to report a leak or how long you must keep the inventory records. Be sure you know the rules that apply to you.

DAILY INVENTORY WORKSHEET

FACILITY NAME: _____

YOUR NAME: _____

DATE: _____

TANK IDENTIFICATION					
Type of Fuel					
Tank Size in Gallons					
END STICK INCHES					
AMOUNT PUMPED	↓	↓	↓	↓	↓
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
TODAY'S SUM OF TOTALIZERS					
Previous Day's Sum of Totalizers					
AMOUNT PUMPED TODAY					
DELIVERY RECORD	↓	↓	↓	↓	↓
Inches of Fuel Before Delivery					
Gallons of Fuel Before Delivery (from tank chart)					
Inches of Fuel After Delivery					
Gallons of Fuel After Delivery (from tank chart)					
GALLONS DELIVERED (STICK) [Gallons "After" Gallons "Before"]					
GROSS GALLONS DELIVERED (RECEIPT)					

MONTHLY INVENTORY RECORD

TANK IDENTIFICATION & TYPE OF FUEL: _____

MONTH/YEAR: ____/____

FACILITY NAME: _____

DATE OF WATER CHECK: _____ LEVEL OF WATER (INCHES): _____

DATE	START STICK INVENTORY (GALLONS)	GALLONS DELIVERED	GALLONS PUMPED	BOOK INVENTORY (GALLONS)	END STICK INVENTORY (INCHES)	END STICK INVENTORY (GALLONS)	DAILY OVER (+) OR SHORT ( ) ["End" "Book"]	INITIALS
1	(+)	( )	(=)					
2	(+)	( )	(=)					
3	(+)	( )	(=)					
4	(+)	( )	(=)					
5	(+)	( )	(=)					
6	(+)	( )	(=)					
7	(+)	( )	(=)					
8	(+)	( )	(=)					
9	(+)	( )	(=)					
10	(+)	( )	(=)					
11	(+)	( )	(=)					
12	(+)	( )	(=)					
13	(+)	( )	(=)					
14	(+)	( )	(=)					
15	(+)	( )	(=)					
16	(+)	( )	(=)					
17	(+)	( )	(=)					
18	(+)	( )	(=)					
19	(+)	( )	(=)					
20	(+)	( )	(=)					
21	(+)	( )	(=)					
22	(+)	( )	(=)					
23	(+)	( )	(=)					
24	(+)	( )	(=)					
25	(+)	( )	(=)					
26	(+)	( )	(=)					
27	(+)	( )	(=)					
28	(+)	( )	(=)					
29	(+)	( )	(=)					
30	(+)	( )	(=)					
31	(+)	( )	(=)					

TOTAL GALLONS PUMPED > _____ **TOTAL GALLONS OVER OR SHORT >** _____

DROP THE LAST 2 DIGITS from the **PUMPED** number and enter on the **TOTAL GALLONS** line below

Compare these numbers

LEAK CHECK: _____ **+ 130 =** _____ **gallons**

Is "TOTAL GALLONS OVER OR SHORT" **LARGER** than "LEAK CHECK" result? **YES NO** (circle one)

If answer is "YES" for 2 MONTHS IN A ROW, **notify regulatory agency** as soon as possible.

KEEP THIS PIECE OF PAPER ON FILE FOR AT LEAST 1 YEAR

SAMPLE

DAILY INVENTORY WORKSHEET

A FACILITY NAME: LAST CHANCE #2

YOUR NAME: JUAN DOE

DATE: 9/22/93

	TANK IDENTIFICATION	1	2	3	4	
	Type of Fuel	REG UNL	PREM UNL	DIESEL	MID UNL	
	Tank Size in Gallons	6000	6000	6000	10,000	
C	END STICK INCHES	41 1/4	58 7/8	69	86 1/2	
D	AMOUNT PUMPED	↓	↓	↓	↓	↓
	Totalizer Reading	24383	30798	92485	44013	
	Totalizer Reading	55138	11017	70178	38974	
	Totalizer Reading					
	Totalizer Reading					
	Totalizer Reading					
	Totalizer Reading					
	Totalizer Reading					
	Totalizer Reading					
E	TODAY'S SUM OF TOTALIZERS	79521	41815	162663	82987	
F	Previous Day's Sum of Totalizers	78271	40260	161663	82584	
G H	AMOUNT PUMPED TODAY	1250	1555	1000	403	
	DELIVERY RECORD	↓	↓	↓	↓	↓
I	Inches of Fuel Before Delivery	13 7/8			49 7/8	
K	Gallons of Fuel Before Delivery (from tank chart)	537			5246	
J	Inches of Fuel After Delivery	41 1/4			86 1/2	
K	Gallons of Fuel After Delivery (from tank chart)	2672			9423	
L	GALLONS DELIVERED (STICK) (Gallons "After" – Gallons "Before")	2135			4177	
M	GROSS GALLONS DELIVERED (RECEIPT)	2100			4200	

SAMPLE

MONTHLY INVENTORY RECORD

(N) TANK IDENTIFICATION & TYPE OF FUEL: 4 MIDGRADE UNL

MONTH/YEAR: 9/93

FACILITY NAME: LAST CHANCE #2

DATE OF WATER CHECK: 9/1 LEVEL OF WATER (INCHES): 0 (V)

DATE	(O) START STICK INVENTORY (GALLONS)	(P) GALLONS DELIVERED	(Q) GALLONS PUMPED	(R) BOOK INVENTORY (GALLONS)	(S) END STICK INVENTORY (INCHES)	(S) END STICK INVENTORY (GALLONS)	(T) DAILY OVER (+) OR SHORT (−) ["End" − "Book"]	(U) INITIALS
1	4047 (+)	—	(−) 333	(=) 3714	38 1/4	3690	−24	JD
2	3690 (+)	—	(−) 44	(=) 3646	38	3658	+12	JD
3	3658 (+)	—	(−) 329	(=) 3329	35 3/8	3323	−6	JD
4	3323 (+)	—	(−) 60	(=) 3263	35	3275	+12	JD
5	3275 (+)	—	(−) 145	(=) 3130	33 3/4	3117	−13	JD
6	3117 (+)	—	(−) 238	(=) 2879	31 1/8	2790	−89	JD
7	2790 (+)	6134	(−) 117	(=) 8807	80	8844	+37	JD
8	8844 (+)	—	(−) 127	(=) 8717	78 7/8	8732	+15	JD
9	8732 (+)	—	(−) 182	(=) 8550	77 1/2	8591	+41	JD
10	8591 (+)	—	(−) 205	(=) 8386	75 1/2	8379	−7	JD
11	8379 (+)	—	(−) 204	(=) 8175	73 5/8	8173	−2	JD
12	8173 (+)	—	(−) 166	(=) 8007	72	7991	−16	JD
13	7991 (+)	—	(−) 320	(=) 7671	69 3/4	7730	+59	JD
14	7730 (+)	—	(−) 307	(=) 7423	67	7402	−21	JD
15	7402 (+)	—	(−) 76	(=) 7326	66 1/2	7342	+16	JD
16	7342 (+)	—	(−) 224	(=) 7118	64 1/8	7050	−68	JD
17	7050 (+)	—	(−) 390	(=) 6660	61	6657	−3	JD
18	6657 (+)	—	(−) 296	(=) 6361	58 5/8	6354	−7	JD
19	6354 (+)	—	(−) 78	(=) 6276	58 1/8	6290	+14	JD
20	6290 (+)	—	(−) 424	(=) 5866	54 3/8	5869	+3	JD
21	5869 (+)	—	(−) 205	(=) 5664	53 1/8	5639	−25	JD
22	5639 (+)	4177	(−) 403	(=) 9413	86 1/2	9423	+10	JD
23	9423 (+)	—	(−) 87	(=) 9336	85 1/2	9343	+7	JD
24	9343 (+)	—	(−) 311	(=) 9032	82	9036	+4	JD
25	9036 (+)	—	(−) 239	(=) 8797	79 1/8	8757	−40	JD
26	8757 (+)	—	(−) 256	(=) 8501	76 7/8	8526	+25	JD
27	8526 (+)	—	(−) 264	(=) 8262	74 1/2	8270	+8	JD
28	8270 (+)	—	(−) 263	(=) 8007	72	7991	−16	JD
29	7991 (+)	—	(−) 185	(=) 7806	69	7811	+5	JD
30	7811 (+)	—	(−) 116	(=) 7695	68	7690	−5	JD
31	(+)		(−)	(=)				

(W) TOTAL GALLONS PUMPED > 6594 TOTAL GALLONS OVER OR SHORT > −74 (X)

DROP THE LAST 2 DIGITS from the PUMPED number and enter on the TOTAL GALLONS line below

Compare these numbers

(Y) LEAK CHECK: 65 + 130 = 195 gallons

Is "TOTAL GALLONS OVER OR SHORT" LARGER than "LEAK CHECK" result? YES (NO) (circle one) (Z)

If answer is "YES" for 2 MONTHS IN A ROW, notify regulatory agency as soon as possible

KEEP THIS PIECE OF PAPER ON FILE FOR AT LEAST 1 YEAR

>>>Copy and post this reminder where employees who measure tanks can see it!<<<

GET GOOD INVENTORY CONTROL MEASUREMENTS!

- ! **Measure each tank every operating day**

- ! **Use gauge sticks that are**
  - ✓ **marked to the ⊂ inch**
  - ✓ **not cut off or worn off at the "0" end**
  - ✓ **varnished and not warped**

- ! **Measure through the same drop tube each time**

- ! **Use good sticking practices**
  - ✓ **SLOWLY lower stick**
  - ✓ **GENTLY touch stick on tank bottom**
  - ✓ **QUICKLY pull stick out**

- ! **Measure just before each delivery**

- ! **Wait at least 5 minutes after delivery, then measure again**

- ! **Read and record totalizer meters carefully**

- ! **Check for water at least once a month using water-finding paste**

Developed in cooperation with...

Fiberglass
Petroleum Tank & Pipe Institute

INTERNATIONAL ASSOCIATION OF TANK TESTING PROFESSIONALS

PEI
PETROLEUM EQUIPMENT INSTITUTE

PMAA
PETROLEUM MARKETERS ASSOCIATION OF AMERICA

SSDA
SERVICE STATION DEALERS OF AMERICA

SIGMA
SOCIETY OF INDEPENDENT GASOLINE MARKETERS OF AMERICA

STI
Steel Tank Institute

ATTACHMENT J

Release Detection Maintenance

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Release Detection

The controller will use interstitial monitoring viewed by the Sensor Status Report to meet TCEQ release detection requirements. The tank interstitial is monitored with a Veeder Root interstitial sensor which will set off an alarm if liquid either enters the tank interstitial or brine is lost within the interstitial. This central monitoring unit is designed to provide visual and audible alarms when the changes within the interstitials are detected. Each product piping line will be equipped with electronic line leak detection. The probes and sensors from all tanks will be connected to a Veeder-Root 450 TLS programmable control unit to be located in the store building. The system will be installed by a Veeder Root certified technician. The system will be installed in accordance with Veeder Root specifications and instructions. The system is UL listed and is third party certified for release detection under USEPA guidelines. The system has self- diagnostic programs to test and warn of failures of the external devices as well as internal electronics. The system has been tested by a Third Party and found to be compliant with USEPA requirements for release detection.

Ongoing maintenance will be conducted by JF Petroluem personnel.

TLS-450PLUS Automatic Tank Gauge

Console Description

The TLS-450PLUS Automatic Tank Gauge (ATG) is a powerful tool that allows fueling operations to run at peak efficiency, with an easy to understand navigation, streamlined inventory and compliance reporting, and powerful business analytics. It can monitor up to 64 tanks, or 32 tanks with BIR. Frequent releases of operating software for the TLS-450PLUS tank gauge assures that data is secure and software features are routinely updated and enhanced.

TLS-450PLUS Consoles, Standard Hardware & Software

Part # & Description	Standard Hardware & Application Software
1. 860091-301 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232, UL/cUL 2. 860091-302 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232/RS-485, UL/cUL 3. 860091-401 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232, UL/cUL 4. 860091-402 TLS-450PLUS Console with 8" WVGA Color Touch Screen Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232/RS-485, UL/cUL 5. 860091-001 TLS-450PLUS Console, No Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232, UL/cUL 6. 860091-002 TLS-450PLUS Console, No Display, No Printer, 3 Ethernet and Dual USB/Expansion, Dual RS-232/RS-485, UL/cUL	**Software** – 333545-001 Application Software (must be ordered with Console) includes Web-enabled, Custom Alarm, On-Console Help, Extended Storage, TLS-Expansion, Static Leak Dection, 3GPH DPLLD **Hardware** – 3 Port Ethernet Module (Comm Slot 4), 2-Port USB Module (Comm Slot 5), 3 module compartments

TLS-450PLUS Device & Communications Module Compatibility

Devices

Module Compatibility	Inputs per Module	POWER MODULES	iButton Req'd?	Console Slots 1	2	3	4	TLS-XB 1 Slots 1	2	3	4	TLS-XB 2 Slots 1	2	3	4	TLS-XB 3 Slots 1	2	3	4	Modules per System
TLS-450PLUS System																				
USM	16			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16
UIOM	14[1]			●	●	●	●	●	●	●	●	●	●	●	●	●	●	■	●	16
10-Amp Relay	6						●				●				●				●	4
MDIM	12			●	●	●	●	●												5
LVDIM	12			●	●	●	●	●												5

[1]=(14) total inputs include (5) AC Inputs, (5) Relay Contacts, (4) 12VDC Inputs

Communications

Module	COMMUNICATION MODULES	Console 1[4] P1	P2	2 P1	P2	3 P1	P2	4 P1	P2	5 P1	P2	Modules per System	Type
TLS-450PLUS													
RS-232			●		●		●	Ethernet Module (3 Ports) (Fixed)		USB Module (2 Ports) (Fixed)		3	Hardware
Dual RS-232		●	●	●	●							3	Hardware
RS-485			●		●		●					3	Hardware
Dual RS-485[1]		●	●	●	●							3	Hardware
RS-232/RS-485[1]		●	●	●	●							3	Hardware
Internal Modem			●		●		●					3	Hardware
CDIM		●		●								2	Hardware
EDIM[2]		●	●	●	●		●					3	Software
IFSF LON[3]			●		●		●					1	Hardware

[1]=When placed in Slot 3, only Position 2 will be functional

[2]=EDIM can be programmed in any position with an RS-232 port - up to 3 per system

[3]=Can be combined with EDIM

[4]=Console ships standard with dual RS-232 or dual RS-232/RS-485 card in Slot 1

	Part # & Description		Maximum # of Modules per Console	# of Inputs per Module	Availability
TLS-450PLUS Device Modules	Universal Sensor Module (USM) Interface for all Probes, Sensors, and DPLLD	332812-001 – Factory Installed Module 330020-619 – Spare Part Module	Up to 4 for each TLS-450PLUS and/or TLS-XB or a maximum of 16 modules per system	16	Sold Separately (either Factory Installed or as a Spare Part Module)
	Universal Input/Output Interface Module (UIOM) for Relay Control and Input Signal Monitoring	332813-001 – Factory Installed Module 330020-620 – Spare Part Module	Up to 4 for each TLS-450PLUS and/or TLS-XB or a maximum of 16 modules per system	5 dry contact output relays / 4 low voltage dry contact inputs / 5 high voltage inputs (<=240 VAC)	
	10-Amp Relay Module has 6 high power outputs / 6 low voltage inputs / must be installed in slot 4 of TLS-450 PLUS and TLS-XB	333564-001 – Factory Installed Module 330020-814 – Spare Part Module	Up to 1 for each TLS-450PLUS and/or TLS-XB or a maximum of 4 modules per system — **Only installed in slot 4*	4	
	BIR/AccuChart LVDIM for TLS-450PLUS, 12 Inputs	333581-001 – Factory Installed Module 330020-800 – Spare Part Module			
	BIR/AccuChart MDIM for TLS-450PLUS, 12 Inputs	333582-001 – Factory Installed Module 330020-799 – Spare Part Module			

	Part # & Description		Maximum # of Modules per System	Availability
TLS-450PLUS Communications Modules	SiteFax™ Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS	332818-001 – Factory Installed Module 330020-612 – Spare Part Module	Up to 3 per System	Sold Separately (either Factory Installed or as a Spare Part Module) For Spare Part "upgrade" kits, the BIR/AccuChart Feature Enhancement will be shipped on a Veeder-Root iButton adapter – P/N 330020-659
	Single RS-232 Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS	332866-001 – Factory Installed Module 330020-613 – Spare Part Module		
	RS-232 Dual Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS	332868-001 – Factory Installed Module 330020-617 – Spare Part Module		
	Single RS-232/RS-485 Dual Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS	332870-001 – Factory Installed Module 330020-618 – Spare Part Module		
	BIR/AccuChart EDIM for TLS-450PLUS	333149-001 – Factory Installed Module 330020-801 – Spare Part Module	1 per System	
	BIR/AccuChart CDIM for TLS-450PLUS, 3 Inputs	333580-001 – Factory Installed Module 330020-802 – Spare Part Module		
	IFSF LON Interface Module (Comm. Slots 1,2,3), for TLS-450PLUS	333659-001 – Factory Installed Module 330020-828 – Spare Part Module		

	Part # & Description	
TLS-450PLUS Optional Software	Continuous Statistical Leak Detection (CSLD) for TLS-450PLUS	332972-006
	Ultimate Testing: Digital Line Leak Detection for TLS-450PLUS	332972-007
	Risk Management: Digital Line Leak Detection for TLS-450PLUS	332972-008
	Base Compliance: Digital Line Leak Detection for TLS-450PLUS	332972-009
	Timed Sudden Loss Detection for TLS-450PLUS	332972-018
	Vapor Collection Monitor for TLS-450PLUS	332972-021
	DEF Recirculation Software Feature for TLS-450PLUS & DEF Temperature Sensor Installation Kit	332972-026 – Software 794380-210 – Install Kit

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TLS-450PLUS Automatic Tank Gauge

Specifications	
Operating Temperature	+32 to +104°F (0 to +40°C)
Storage Temperature	-40 to +158°F (-40 to +70°C)
Installation Location	NEMA 4 or indoors
Relative Humidity	0-90% (non-condensing)
External Dimensions	18.4" x 11" x 8.8" (46.74cm x 27.94cm x 22.35cm)
Construction	16GA (0.060 in/0.1524 cm) powder coated steel
Console Power Wiring Requirements	AC Power Wiring – Wires carrying 120 or 240 VAC from power panel to the console should be #14 AWG (or larger) wire for line, neutral & chassis ground (3) ; and 4 sq. mm, rated for at least 90C for barrier ground.
Probe & Sensor to Console Wiring Requirements	1. Wire Type – Shielded cable required regardless of conduit material or application. It must be rated less than 100 picofarad per ft manufactured with a suitable material such as Carol C2534 or Belden 88760, 8760, or 8770. 2. Wire Length – Maximum 1,000ft (304.8m) to meet intrinsic safety requirements. Improper system operation could result for runs over 1,000ft (304.8m). 3. Wire Gauges – Color coded – shielded cable used in all installations. Wires should be #14 - #18 AWG stranded copper wire and installed as Class 2 circuits. As an alternate method when approved by the local authority having jurisdiction, #22 AWG wire such as 88761 may be suitable with the following requirements: Wire run is less than 750ft (228.6m), Capacitance does not exceed 100 pF/ft; Inductance does not exceed 0.2 uH/ft.
System Power Requirements	AC Input – Universal AC power supply: 100 to 249 VAC, 50/60Hz, 2A max.
Display Specifications	8” (20.32cm) Color WVGA LCD touch screen display
Connectivity Methods	Ethernet, Web Browser, Modem, Fax, Serial
Data Storage Features	SD card
Software Security Features	Centralized Device Management to protect your network of TLS-4XX consoles
Custom User Access	Front Panel Display control through user specific log-in; User defined roles to restrict access / functionality. Screen permissions can be limited to view, edit, perform
System Security	1. Partitioned Ethernet Ports that can be used to separate user network from the internet 2. Port availability control: SSH Port (22), HTTPS Port (443), Serial Command Port (10001) 3. Reassign Port Numbers (i.e., HTTPS on 50443) 4. System Integrator CVE Scans & Fixes 5. Periodic System Updates to protect against persistent threats
Customized Alarm Features	Customizable for all alarms
Approvals	UL cUL, ATEX, IECEx, NEPSI, FCC, FMC, PESO, ANZEx, ULC, INMETRO, IQC, EAC, NWGLDE, and CEN
Third Party Evaluations	http://www.nwglde.org/evals/veeder_root_zf.html
Product Installation Guide	https://www.veeder.com/us/technical-document-library

VEEDER-ROOT

TLS-450PLUS Automatic Tank Gauge

System Compatibilities Guide

Feature/Console	TLS-450PLUS
CONSOLE DESIGN	
Modular/Expandable Features	•
LCD with Touch Screen (optional)	8" WVGA Color
Integral Roll Printer	Optional
Universal Power Supply	•
INVENTORY CONTROL	
Graphical Inventory Status	•
Complete Inventory Reports	•
Programmable Auto Report Times	•
Inventory Increase Report	•
Timed Sudden Loss Detection	Optional
BUSINESS INVENTORY RECONCILIATION	
Shift-Based Reconciliation	Optional
Reconciliation by Tank	Optional
TANK CALIBRATION	
Multi-Pass Tank Calibration	Optional
Single-Pass / Metered Drop	Optional
Limited Range Calibration	Optional
Supports Multiple Tank Charts per Tank	Optional
Supports Multiple Line Manifold Tanks	Optional
Graphical / Text Calibration Diagnostics	Optional
Automatic and Manual Meter Mapping	Optional
IN-TANK LEAK TEST	
0.1 GPH Tank Tightness Testing	•
0.2 GPH Tank Tightness Testing	•
Continuous Statistical Leak Detection	Optional
Selectable Test Rates	•
Programmable Automatic Test Schedules	•
PASS, FAIL, or INVALID Indicators	•
LINE LEAK DETECTION	
Integral Line Leak Detector	Optional
Programmable Line Test Features	Optional
INTERSTITIAL/SUMP LEAK SENSING	
Tank Annulus	•
Sump	•
Dispenser Pan	•
Mag Sump	•
Sensor Location Identifiers	•
VAPOR WELL MONITORING	
Hydrocarbon Vapor Detection	•
High Water Level Alarm	•
GROUNDWATER MONITORING	
Hydrocarbon Liquid Detection	•
Low Water Alarm	•
AIR VAPOR MONITORING	
Vapor Collection Monitor	Optional
ALARMS	
Leak	•
Overfill	•
High Level	•
Sudden Loss	•
High Water	•
Low Inventory	•
Programmable Alarm Limits	•

Feature/Console	TLS-450PLUS	TLS-450PLUS with TLS-XB**
DATA COMMUNICATIONS		
RS-232	5	5
RS-485	3	3
Fax Transmittal (SiteFax)	Optional	Optional
External USB 2.0	2	2
Ethernet Ports	3	3
International Forecourt Standards Forum (IFSF)	1	1
SYSTEM CAPABILITIES		
Manifold Tank Capability (Line & Siphon)	•	•
Height-Based Pump Priority Control for Manifolded Tanks	•	•
Pump Alternate on the Fly	•	•
Self-Diagnostics	•	•
Emergency Generator Capability	•	•
Up to 3 Years Data Storage	•	•
FAX Notification On-Time or Event	Optional	Optional
Email Notification On-Time or Event	•	•
LCD with Touch Screen	Optional	Optional
On-Board Help	•	•
Custom Help	•	•
Custom Alarms	•	•
Environmental Reports (Compliance Reports Summary)	•	•
Sensor Reports	•	•
Sensor History Report by Period, Month, Week or Custom	•	•
Web-Enabled	•	•
System Duplicate	•	•
SYSTEM CAPACITIES*		
Inputs	64	256
In-Tank Probes (Including Density)	64	64
In-Tank Probes with BIR	32	32
Digital Pressurized Line Leak Detectors (Additional Software Req'd)	15	16
2-WIRE SENSORS		
Magnetostrictive Discriminating Level Indicating Sump Sensor	64	99
Discriminating Dispenser Pan & Containment Sensors	64	99
Solid-State Non-Discr. Dispenser Pan & Containment Sensors	64	99
Sump Sensors	64	99
Position Sensitive Pan/Sump Sensor	64	99
Interstitial Sensor for Fiberglass Tanks	64	99
Solid-State Discr. Interstitial Sensors for Fiberglass Tanks	64	99
Alt. Ethanol Fluid Interstitial Sensors for Fiberglass Tanks	64	99
Interstitial Sensors for Steel Tanks	64	99
Microsensors	64	99
Position Sensitive Interstitial Sensor for Steel Tanks	64	99
Alt. Ethanol Fluid Solid-State Interstitial Sensor for Steel Tanks	64	99
Hydrostatic Sensors for Brine-Filled Double-Wall Tanks	64	99
Hydrostatic Sensor for Brine-Filled Double-Wall Sumps	64	99
Oil Water Separator Sensor	64	99
3-WIRE SENSORS		
Solid-State Discr. Dispenser Pan & Containment Sump Sensors	32	99
Groundwater Sensor	32	99
Vapor Sensor for Monitoring Wells	32	99
INPUT & OUTPUT		
Output Relays	21	32
External Inputs Low Voltage	16	64
External Inputs High Voltage	20	32
10-amp Relay	4	16

* Indicates the maximum number of devices the system can handle if all slots/ positions are filled with that type of device.

** TLS-450PLUS with (3) three TLS-XB boxes

www.veeder.com
1.888.561.7942

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Veeder-Root reserves the right to change system options or features, or the information contained in this publication.

Example Illustrations

Illustrations used in this guide for example sensor installations may contain components that are customer supplied and not included with the sensor. Please check with your Veeder-Root Distributor for recommended installation accessories.

Third Party Evaluations

Third party evaluations of the Veeder-Root sensors contained in this application guide can be found under the Veeder-Root vendor name on the National Work Group on Leak Detection Evaluations (NWGLDE) website:

http://www.nwglde.org

Temporary Stormwater Section

TCEQ-0602

RANGER
ENVIRONMENTAL SERVICES, LLC

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Charles Hager, V P.E.

Date: 03/13/2024

Signature of Customer/Agent:

Regulated Entity Name: Gateway 29

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☐ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☒ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: South Fork San Gabriel River

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☒ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☒ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☐ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☒ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

ATTACHMENT A - Spill Response Actions

The only possible source of a hydrocarbon or other hazardous substance spill would be from a construction vehicle leaking fuel, lubricants, coolants, etc. Any potential leakage is not likely to be significant and any soil that appears to be contaminated will be removed using a shovel stored onsite and disposed of in a TCEQ certified landfill. Onsite personnel will be trained in spill prevention and spill cleanup.

If it is determined that a reportable spill has occurred as defined in 30 TAC Chapter 327, the TCEQ shall be notified by phone at the regional office (512) 339-2929 or at the State Emergency Response Center (800) 832-8224 as soon as possible. Requirements under 30 TAC Chapter 327 will be followed to ensure that the spill is contained and disposed of in an expedient and thorough manner and that proper authorities are kept informed throughout the process.

ATTACHMENT B – Potential Sources of Contamination

Potential sources of sediment to stormwater runoff:

- Clearing and grubbing operations
- Grading and site excavation operations
- Vehicle tracking
- Topsoil stripping and stockpiling
- Landscaping operations

Potential sources other than sediment:

- Small fueling activities
- Minor equipment maintenance
- Sanitary facilities
- Solvents, adhesives, paints, etc.
- Paving materials, concrete, mortar

ATTACHMENT C – Sequence of Major Activities

The sequencing of construction will generally take place in the following manner:

1. The area of disturbance for the construction of the shared infrastructure of the site is approximately 15.1 acres of the 32 acres subdivision.

2. Temporary erosion and sedimentation controls are to be installed as indicated on the approved site plan or subdivision construction plan and in accordance with the Stormwater Pollution Prevention Plan (SWPPP) that is required to be posted on the site. Install tree protection and initiate tree mitigation measures. (15.1 acres)

3. The environmental project manager or site supervisor must contact the Watershed Protection department, environmental inspection, at 512-974-2278, 72 hours prior to the scheduled date of the required on-site preconstruction meeting.

4. The environmental project manager, and/or site supervisor, and/or designated responsible party, and the general contractor will follow the Storm Water Pollution Prevention Plan (SWPPP) posted on the site. Temporary erosion and sedimentation controls will be revised, if needed, to comply with city inspectors' directives, and revised construction schedule relative to the water quality plan requirements and the erosion plan.

5. Rough grade the pond(s) at 100% proposed capacity. Either the permanent outlet structure or a temporary outlet must be constructed prior to development of embankment or excavation that leads to ponding conditions. The outlet system must consist of a sump pit outlet and an emergency spillway meeting the requirements of the drainage criteria manual and/or the environmental criteria manual, as required. The outlet system shall be protected from erosion and shall be maintained throughout the course of construction until installation of the permanent water quality pond(s). (1.25 acres)

6. Temporary erosion and sedimentation controls will be inspected and maintained in accordance with the Storm Water pollution Prevention Plan (SWPPP) posted on the site. (15.1 acres)

7. Begin site clearing/construction (or demolition) activities. (15.1 acres)

8. In the Barton Springs Zone, the environmental project manager or site supervisor will schedule a mid-construction conference to coordinate changes in the construction schedule and evaluate effectiveness of the erosion control plan after possible construction alterations to the site. Participants shall include the city inspector, project engineer, general contractor and environmental project manager or site supervisor. The anticipated completion date and final construction sequence and inspection schedule will be coordinated with the appropriate city inspector.

9. Permanent water quality ponds or controls will be cleaned out and filter media will be Installed prior to/concurrently with revegetation of site.(1.25 acres)

10. Complete construction and start revegetation of the site and installation of landscaping. (15.1 acres)

11. Upon completion of the site construction and revegetation of a project site, the design engineer shall submit an engineer's letter of concurrence to the Watershed Protection and Development Review Department indicating that construction, including revegetation, is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate city inspector. (15.1 acres)

12. Upon completion of landscape installation of a project site, the landscape architect shall submit a letter of concurrence to the Watershed Protection and Development Review Department indicating that the required landscaping is complete and in substantial conformity with the approved plans. After receiving this letter, a final inspection will be scheduled by the appropriate city inspector. (15.1 acres)

13. After a final inspection has been conducted by the city inspector and with approval from the city inspector, remove the temporary erosion and sedimentation controls and complete any necessary final revegetation resulting from removal of the controls. Conduct any maintenance and rehabilitation of the water quality ponds or controls. (15.1 acres)

ATTACHMENT D – Temporary Best Management Practices and Measures

1. Silt fence is used throughout the project to prevent pollution of runoff. Silt fence is used for areas with sheet flow. Before construction begins, all silt fence and tree protection will be in place. The principal potential pollutant on site is sediment caused by disturbance during

construction. The controls installed will be monitored on a regular basis and after any significant rainfall to ensure effective operation. Throughout construction, inspection forms will be used to record the condition of the controls after rainfall events.

2. The runoff leaving the site to enter creeks will have been treated through silt fence.

ATTACHMENT E – Request to Temporarily Seal a Feature

No request is anticipated for this project.

ATTACHMENT F – Structural Practices

Contractor will construct and maintain silt fence, inlet protection, concrete washout area, rock berms, a stabilized construction entrance, and other temporary and permanent erosion and sedimentation controls, including silt fence upstream of the Sensitive Feature, as appropriate to prevent pollutants from exiting the site during construction.

ATTACHMENT G – Drainage Area Map

The drainage area maps are included in the attached plan set.

ATTACHMENT H – Temporary Sediment Pond(s) Plans and Calculations

The proposed detention/WQ ponds will be fully constructed at the beginning of the construction sequence in order to accommodate and treat drainage during construction. Once these ponds are rough graded in and a permanent or temporary outlet structure has been installed, all designed site drainage will be conveyed to either detention / WQ Pond A or detention / WQ Pond B based on site location.

Detention / WQ Pond A is designed to hold a volume of 79,270 cf at the 100-yr storm elevation of 1000.10’. During construction, the drainage area which will drain to Pond A is approximately 5.80-AC. The area Detention WQ / Pond A is designed to hold a volume of 135,500 cf at the 100-yr storm elevation of 1000.10’. During construction, the drainage area which will drain to Pond B is approximately 11.70-AC.

Please see Detention / WQ Pond A and Detention / WQ Pond B calculations below.

DETENTION POND SUMMARY - A

STORM EVENT	INFLOW (CFS)	Time to Peak (hrs)	OUTFLOW (CFS)	Time to Peak (hrs)	WS ELEV.
2YR	30.50	12.04	8.80	12.17	998.80
10YR	46.80	12.04	19.20	12.12	999.40
25YR	58.20	12.04	31.00	12.10	999.70
100YR	77.90	12.04	53.10	12.08	1,000.10

Detention Pond - Stage Storage Table

Elevation (FT)	Area (AC)	A1+A2+SQR (A1*A2) (AC)	Incremental Volume (AC-FT)	Cumulative Volume (AC-FT)
993.2	0.000	0.000	0.000	0.000
994	0.064	0.064	0.017	0.017
995	0.153	0.315	0.105	0.122
996	0.241	0.586	0.195	0.317
997	0.329	0.852	0.284	0.602
998	0.417	1.117	0.372	0.974
999	0.424	1.261	0.420	1.394
1000	0.428	1.277	0.426	1.820
1000.5	0.429	1.284	0.214	2.034

Outlet Structure - Stage Discharge Table

Stage / Elevation	1.5' DIA. CIR. OR. @ 997.0 Q (cfs)	12' Weir @ 999.0 Q (cfs)	TOTAL Q (cfs)
997.00	0.00	0.00	0.00
998.00	7.70	0.00	7.70
999.00	11.47	16.56	28.03
1000.00	14.28	70.92	85.20
1000.50	15.50	105.72	121.22

DETENTION POND SUMMARY - B

STORM EVENT	INFLOW (CFS)	Time to Peak (hrs)	OUTFLOW (CFS)	Time to Peak (hrs)	WS ELEV.
2YR	61.50	12.04	12.10	12.21	998.10
10YR	94.80	12.04	37.60	12.12	998.80
25YR	118.00	12.04	63.30	12.10	999.30
100YR	158.10	12.04	113.10	12.08	1,000.10

Detention Pond - Total Stage Storage Table

Total Storage		Dry Chamber				Under-ground
Elevation (FT)	Cumulative Volume (AC-FT)	Area (AC)	A1+A2+SQR (A1*A2) (AC)	Incremental Volume (AC-FT)	Cumulative Volume (AC-FT)	Cumulative Volume (AC-FT)
992.00	0.000	0.000	0.000	0.000	0.000	0.000
993.00	0.066	0.198	0.198	0.066	0.066	0.000
994.00	0.350	0.381	0.853	0.284	0.350	0.000
995.00	0.753	0.424	1.207	0.402	0.753	0.000
995.75	1.083	0.457	1.322	0.330	1.083	0.000
996.00	1.222	0.468	1.388	0.116	1.199	0.024
997.00	1.912	0.478	1.419	0.473	1.672	0.240
998.00	2.659	0.480	1.437	0.479	2.151	0.508
999.00	3.355	0.481	1.441	0.480	2.631	0.724
999.25	3.499	0.481	1.444	0.120	2.751	0.748
1000.00	3.861	0.483	1.446	0.361	3.113	0.000
1001.00	4.344	0.485	1.451	0.484	3.596	0.000

Outlet Structure-Stage Discharge Table

Stage / Elevation	1.5' Dia. Cir. Or. @ 995.75 Q (cfs)	11' Weir @ 998.00 Q (cfs)	TOTAL Q (cfs)
994.5	0.00	0.00	0.00
995.00	0.00	0.00	0.00
996.00	5.83	0.00	5.83
997.00	10.31	0.00	10.31
998.00	13.37	0.00	13.37
999.00	15.84	32.40	48.24
1000.00	17.98	89.94	107.92
1001.00	19.89	162.12	182.01

ATTACHMENT I – Inspection and Maintenance for BMPs.

Inspection and maintenance for Best Management Practices is taken from the TCEQ Manual, "Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices", dated July 2005.

Silt Fence:

1. Inspect all fencing weekly, and after any rainfall.

2. Remove sediment when buildup reaches 6 inches.

3. Replace any torn fabric or install a second line of fencing parallel to the torn section.

4. Replace or repair any section crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicular access points.

5. When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

Rock Berms:

1. Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.

2. Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.

3. Repair any loose wire sheathing.

4. The berm should be reshaped as needed during inspection.

5. The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.

6. The rock berm should be left in place until all upstream areas are stabilized and accumulated silt is removed.

Stabilized Construction Entrance:

1. The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.

2. All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.

3. When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.

4. When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.

5. All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

Concrete Washout Area:

1. Routine inspection in accordance with section 1.4.18 of TCEQ Manual: RG-348 of the area to insure that sufficient quantity and volume remain to contain all liquid and concrete waste generated by washout operations.

2. Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.

3. Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

4. When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of. Holes, depressions, or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Inlet Protection:

1. Inspect all inlet protection weekly, and after any rainfall.

2. Remove sediment when buildup reaches 3 inches. Deposit removed sediment in suitable area in such a manner that it will not erode.

3. Check placement of device to prevent gaps between device and curb.

4. Inspect filter fabric and patch or replace if torn or missing.

5. Structures should be removed and the area stabilized only after the remaining drainage area has been properly stabilized.

ATTACHMENT J – Schedule of Interim and Permanent Soil Stabilization Practices

The following are the proposed stabilization (temporary and permanent) practices:

Temporary Vegetative Stabilization:

1. From September 15 to March 1, seeding shall be with cool season cover crops (Wheat at 0.5 pounds per 1000 SF, Oats at 0.5 pounds per 1000 SF, Cereal Rye Grain at 0.5 pounds per 1000 SF) with a total rate of 1.5 pounds per 1000 SF. Cool season cover crops are not permanent erosion control.
2. From March 2 through September 14, seeding shall be with hulled Bermuda at a rate of 1 pound per 1000 SF.

    A. Fertilizer shall be water soluble with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of 1/2 pound per 1000 SF.

    B. Hydromulch shall comply with Table 1, below.

    C. Temporary erosion control shall be acceptable when the grass has grown at least 1-1/2 inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.

    D. When required, native grass seeding shall comply with requirements of the City of Austin Environmental Criteria Manual.

Material	Description	Longevity	Typical Applications	Application Rates
100 % or any blend of wood, cellulose, straw, and/or cotton plant material (except no mulch shall exceed 30% paper)	70% or greater Wood/Straw 30% or less Paper or Natural Fibers	0-3 months	Moderate slopes; from flat to 3:1	1500 to 2000 lbs per acre

Permanent Vegetative Stabilization:

1. From September 15 to March 1, seeding is considered to be temporary stabilization only. If cool season cover crops exist where permanent vegetative stabilization is desired, the grasses shall be mowed to a height of less than one-half (1/2) inch and the area shall be re-seeded in accordance with 2, below.

2. From March 2 to September 14, seeding shall be with hulled Bermuda at a rate of 1 pound per 1,000 square feet with a purity of 95% with 85% germination. Bermuda grass is a warm season grass and is considered permanent erosion control.

    A. Fertilizer shall be water soluble with an analysis of 15-15-15 to be applied once at planting and once during the period of establishment at a rate of 1/2 pound per 1000 SF.

    B. Hydromulch shall comply with Table 2, below.

    C. The planted area shall be irrigated or sprinkled in a manner that will not erode the topsoil, but will sufficiently soak the soil to a depth of six inches. The irrigation shall occur at daily intervals (minimum) during the first two months. Rainfall occurrences of 1/2 inch or more shall postpone the watering schedule for one week.

    D. Permanent erosion control shall be acceptable when the grass has grown at least 1-1/2 inches high with 95% coverage, provided no bare spots larger than 16 square feet exist.

    E. When required, native grass seeding shall comply with requirements of the City of Austin Environmental Criteria Manual.

Material	Description	Longevity	Typical Applications	Application Rates
Bonded Fiber Matrix (BFM)	80% Organic defibrated fibers 10% Tackifier	6 months	On slopes up to 2:1 and erosive soil conditions	2500 to 4000 lbs per acre (see manufacturers recommendations)
Fiber Reinforced Matrix (FRM)	65% Organic defibrated fibers 25% Reinforcing Fibers or less 10% Tackifier	Up to 12 months	On slopes up to 1:1 and erosive soil conditions	3000 to 4500 lbs per acre (see manufacturers recommendations)

3. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently cease is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable. Where construction activity on a portion of the site is temporarily ceased, and earth disturbing activities will be resumed within 21 days, temporary stabilization measures do not have to be initiated on that portion of the site. In areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently cease is precluded by seasonal arid conditions, stabilization measures shall be initiated as soon as practicable.

ATTACHMENT G – Drainage Area Map

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves				
	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Coefficients for Composite Analysis		
	25-YR	100-YR
DEVELOPE		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS,		
Avg, 2-7%	0.39	0.46

Q = CiA

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

T(sht flow) = Ln/(42s$^{0.5}$) T(shallow concentrated flow) = Ln/(60

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
OS-1	2.262	0.226	2.036	0.813	0.901	5	11.30	15.00	20.79	30.57
OS-2	0.725	0.072	0.652	0.813	0.901	5	11.30	15.00	6.66	9.79
OS-3	8.449	8.396	0.054	0.393	0.463	21	6.58	8.75	21.86	34.23
JUNC. 1	SEE JUNCTION 1 - SHEET DM02								433.90	589.10
LOT 2	2.257	0.207	2.051	0.817	0.905	5	11.30	15.00	20.85	30.65
A1-B	0.734	0.734	0.000	0.390	0.460	5	11.30	15.00	3.23	5.06
A2	0.135	0.013	0.123	0.816	0.904	5	11.30	15.00	1.25	1.83
A3	1.284	0.612	0.672	0.636	0.716	5	11.30	15.00	9.23	13.79
A4	0.595	0.235	0.360	0.675	0.757	5	11.30	15.00	4.54	6.76
A5	0.392	0.112	0.279	0.725	0.809	5	11.30	15.00	3.21	4.76
A (POND)	0.494	0.494	0.000	0.390	0.460	5	11.30	15.00	2.18	3.41
OS-A*	0.895	0.272	0.623	0.717	0.801	5	11.30	15.00	7.26	10.75
B1-A	0.445	0.206	0.238	0.642	0.723	5	11.30	15.00	3.23	4.82
B1-B	0.669	0.251	0.418	0.684	0.766	5	11.30	15.00	5.17	7.68
LOT 5	1.499	0.148	1.351	0.814	0.902	5	11.30	15.00	13.78	20.27
B1-C	0.716	0.716	0.000	0.390	0.460	5	11.30	15.00	3.15	4.94
B2	0.631	0.218	0.413	0.697	0.780	5	11.30	15.00	4.97	7.39
B3	0.577	0.370	0.207	0.558	0.635	5	11.30	15.00	3.64	5.50
B4-A	0.145	0.145	0.000	0.390	0.460	5	11.30	15.00	0.64	1.00
B4-B	0.379	0.379	0.000	0.390	0.460	5	11.30	15.00	1.67	2.62
LOT 3	1.548	0.125	1.423	0.822	0.910	5	11.30	15.00	14.39	21.14
B6	0.469	0.373	0.096	0.486	0.560	5	11.30	15.00	2.58	3.94
B7	1.720	1.027	0.693	0.579	0.657	5	11.30	15.00	11.26	16.96
B (POND)	0.594	0.533	0.060	0.438	0.510	5	11.30	15.00	2.94	4.54
OS-B**	1.130	0.941	0.189	0.469	0.542	5	11.30	15.00	5.99	9.19

NOTE:

1. *DRAINAGE AREA OS-A DOES NOT DRAIN TO WQ/DET. BASIN A & THEREFORE COMPENSITORY WATER QUALITY TREATMENT IS PROVIDED IN BASIN A.

2. **DRAINAGE AREA OS-B DOES NOT DRAIN TO WQ/DET. BASIN B & THEREFORE COMPENSITORY WATER QUALITY TREATMENT IS PROVIDED IN BASIN B.

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_O A_G (2\ g\ d)^{.5}$, C_O =0.67 MODELED AS A WEIR $Q=C_w P\ d^{1.5}$, Cw =3.0

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
OS-3	34.23	1728	**48"x48"**	12.00	6.00	16.00	1.13	0.80	2.50	NO
B1-A	4.82	1728	**48"x48"**	12.00	6.00	16.00	0.02	0.22	0.50	NO
B1-B	7.68	1728	**48"x48"**	12.00	6.00	16.00	0.06	0.29	0.50	NO
B1-C	4.94	1728	**48"x48"**	12.00	6.00	16.00	0.02	0.22	0.50	NO

SUMP INLET CALCULATIONS FOR 100YR STORM

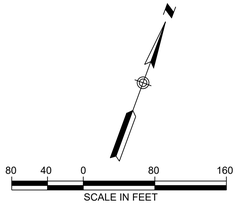
Weir Equation $Q = C_w h^{1.5} L$, C_w = 3.0

Note: Per Standard Curb Inlet Detail, Curb Inlets have 6" depression from the curb gutter with a distance of 11.75" from the lip to top of curb (h_{allow}). The inlet opening has a height of 6". The centroid of the inlet opening is 3" above the inlet lip.

If $h_{weir} > 0.5$, use orifice equation

$Q=C_O A_G (2\ g\ d)^{.5}$, C_O =0.67, A_G = Lx6"/12

INLET NO.	FLOW (CFS)	Q_{BYPASS} (CFS)	Q_{TOTAL} (CFS)	L (FT)	WEIR CALC Q/L or A (CFS/LF)	WEIR CALC h_{weir}(FT) (a+Yo)	ORIFICE CALC A_g (SF)	ORIFICE CALC $h_{orifice}$ (FT)	h_{allow} (FT)	INLET TYPE
A3	13.8	0.0	13.8	9.0	1.53	0.64	4.50	0.58	0.98	10' Curb Inlet
A4	6.8	0.0	6.8	9.0	0.75	0.40	4.50	0.33	0.98	10' Curb Inlet
A5	4.8	0.0	4.8	9.0	0.53	0.31	4.50	0.29	0.98	10' Curb Inlet
B3	5.5	0.0	5.5	9.0	0.61	0.35	4.50	0.30	0.98	10' Curb Inlet
B6	3.9	0.0	3.9	9.0	0.44	0.28	4.50	0.28	0.98	10' Curb Inlet
B7	17.0	0.0	17.0	9.0	1.88	0.73	4.50	0.74	0.98	10' Curb Inlet
OS-A*	10.8	0.0	10.8	9.0	1.19	0.54	4.50	0.45	0.98	10' Curb Inlet



LEGEND

- OS-A* / 7.082 / 2.65% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP
LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

02/27/2024

STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03

SHEET NO. 20 OF 99 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

LOT 5 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg. 2-7%	0.39	0.46

$Q = CIA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

$T(sht\ flow) = Ln/(42s^{0.5})$ $T(shallow\ concentrated\ flow) = Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.219	0.049	0.170	0.755	0.841	5	11.30	15.00	1.87	2.76
A2	0.276	0.011	0.265	0.841	0.930	5	11.30	15.00	2.62	3.85
A3	0.285	0.027	0.259	0.816	0.904	5	11.30	15.00	2.63	3.87
A4	0.254	0.009	0.245	0.844	0.933	5	11.30	15.00	2.42	3.56
B1	0.069	0.012	0.057	0.778	0.865	5	11.30	15.00	0.61	0.89
B2	0.396	0.041	0.355	0.812	0.900	5	11.30	15.00	3.63	5.34

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_G A_G (2\ g\ d)^{.5}$, $C_G = 0.67$ **MODELED AS A WEIR** $Q=C_w P\ d^{1.5}$, $Cw = 3.0$

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A1	2.76	432	**24"x24"**	3.00	1.50	16.00	0.12	0.15	0.50	NO
A2	3.85	432	**24"x24"**	3.00	1.50	16.00	0.23	0.19	0.50	NO
A3	3.87	972	**36"x36"**	6.75	3.38	16.00	0.05	0.19	0.50	NO
A4	3.56	1728	**48"x48"**	12.00	6.00	16.00	0.01	0.18	0.50	NO
B2	5.34	432	**24"x24"**	3.00	1.50	16.00	0.44	0.23	1.50	NO

SUMP INLET CALCULATIONS FOR 100YR STORM

Weir Equation $Q = C_w h^{1.5} L$

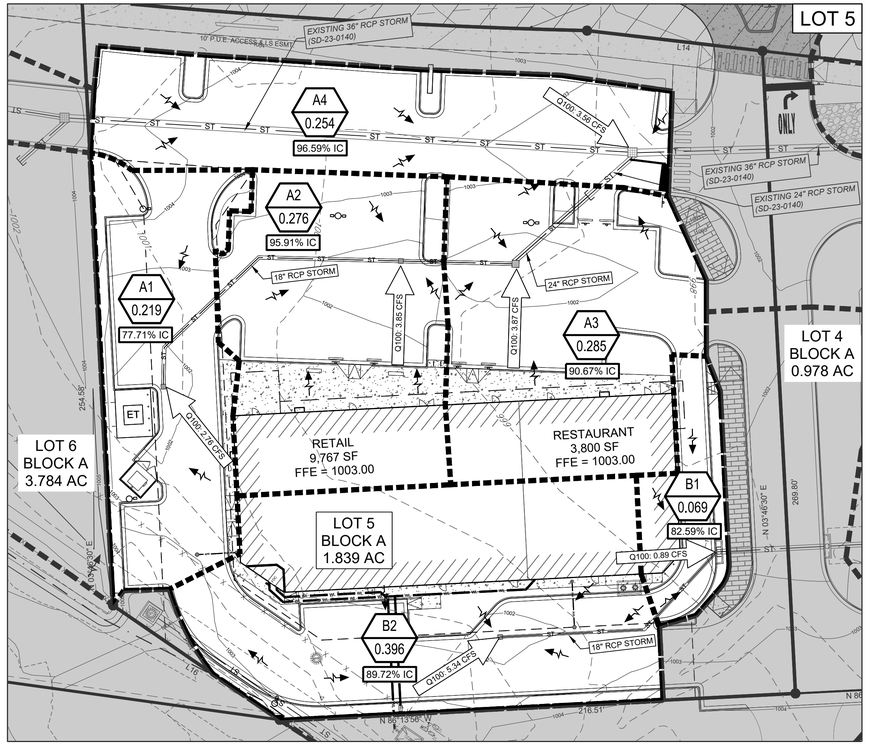
$C_w = 3.0$

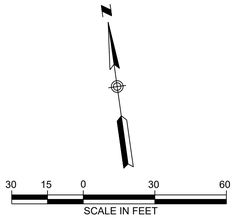
If $h_{WATER} > 0.5$, use orifice equation

$Q=C_G A_G (2\ g\ d)^{.5}$, $C_G = 0.67$, $A_G = Lx6"/12$

Note: Per Standard Curb Inlet Detail, Curb Inlets have 6" depression from the curb gutter with a distance of 11.75" from the lip to top of curb (h_{allow}). The inlet opening has a height of 6". The centroid of the inlet opening is 3" above the inlet lip.

INLET NO.	FLOW (CFS)	Q_{BYPASS} (CFS)	Q_{TOTAL} (CFS)	L (FT)	WEIR CALC Q/L or A (CFS/LF)	WEIR CALC h_{weir}(FT) (a+Yo)	ORIFICE CALC A_E (SF)	ORIFICE CALC $h_{orifice}$ (FT)	h_{allow} (FT)	INLET TYPE
B1	1.76	0.0	1.8	9.0	0.20	0.16	4.50	0.26	0.98	10' Curb Inlet





LEGEND

- DRAINAGE AREA NUMBER AND ACREAGE (e.g. A5-A, 7.082, 2.65% IC)
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
3. THIS SUBDIVISION MUST COMPLY WITH THE STANDARDS SET FORTH IN THE SH 29 & RONALD REAGAN BLVD PUD 20-Z-021, ORD. 05-018-00.
4. EXISTING OFFSITE CONTOURS TAKEN FROM CITY OF LEANDER LIDAR.
5. EXISTING ONSITE CONTOURS TAKEN FROM DIAMOND SURVEYING & LJA SURVEY FIELD TOPOGRAPHIC SURVEYS.

LOT 3 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg. 2-7%	0.39	0.46

$Q = CIA$

Where:

Q = peak runoff in cubic feet per second.
C = the coefficient of runoff
A = the area in acres contributing runoff to the point of design.
i = the average intensity of rainfall in inches per hour

$i = a/(t+b)^c$

Where,

t = Time of concentration for the entire drainage area of interest

$T(sht\ flow) = Ln/(42s^{0.5})$ $T(shallow\ concentrated\ flow) = Ln/(60s^{0.5})$

where,

L = Length of the reach in ft.
n = Manning's n
s = Slope of the ground in ft/ft

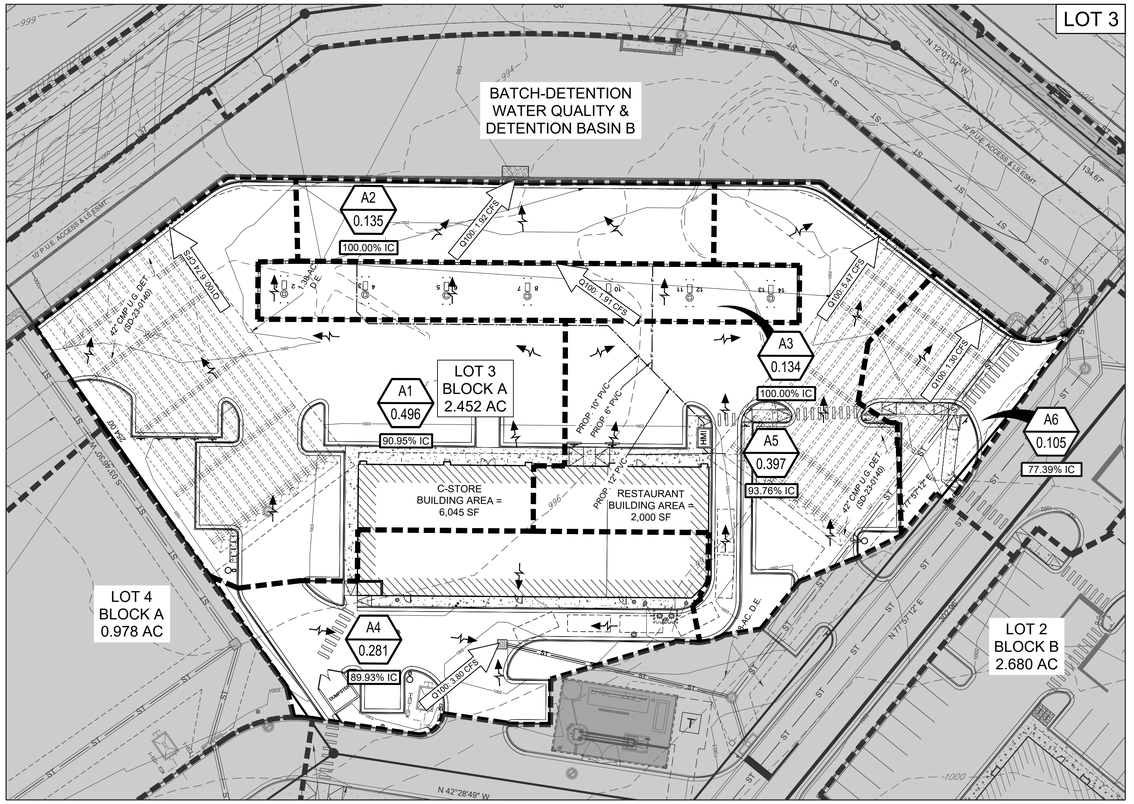
Developed Conditions Drainage Calculations (Site Calculations)

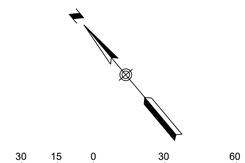
DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.496	0.045	0.451	0.817	0.906	5	11.30	15.00	4.59	6.74
A2	0.135	0.000	0.135	0.860	0.950	5	11.30	15.00	1.31	1.92
A3	0.134	0.000	0.134	0.860	0.950	5	11.30	15.00	1.30	1.91
A4	0.281	0.028	0.253	0.813	0.901	5	11.30	15.00	2.58	3.80
A5	0.397	0.025	0.372	0.831	0.919	5	11.30	15.00	3.73	5.47
A6	0.105	0.027	0.078	0.737	0.822	5	11.30	15.00	0.88	1.30

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_G A_G (2\ g\ d)^{.5}$, $C_G = 0.67$ **MODELED AS A WEIR** $Q=C_w P\ d^{1.5}$, $Cw = 3.0$

AREA #	Q100 (CFS)	Flow Area (Sq. In.)	Inlet Size	A (SF)	A x 50% (SF)	P (FT)	$d_{ORIFICE}$ (FT)	d_{WEIR} (FT)	d_{allow} (FT)	Is $d_{orifice}$ and/or $d_{weir} > d_{allow}$?
A4	3.80	1728	**48"x48"**	12.00	6.00	16.00	0.01	0.18	0.50	NO
A2	1.92	44496	**VARIABLE**	309.00	154.50	24.00	0.00	0.09	0.50	NO





CITY OF LEANDER APPROVAL

LOCATION OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR.

811 Know what's below. Call before you dig.

CITY OF LEANDER PROJECT No. SD-23-0140

GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP LOTS 3 & 5

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	REVISIONS DESCRIPTION	BY	DATE

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

02/27/2024

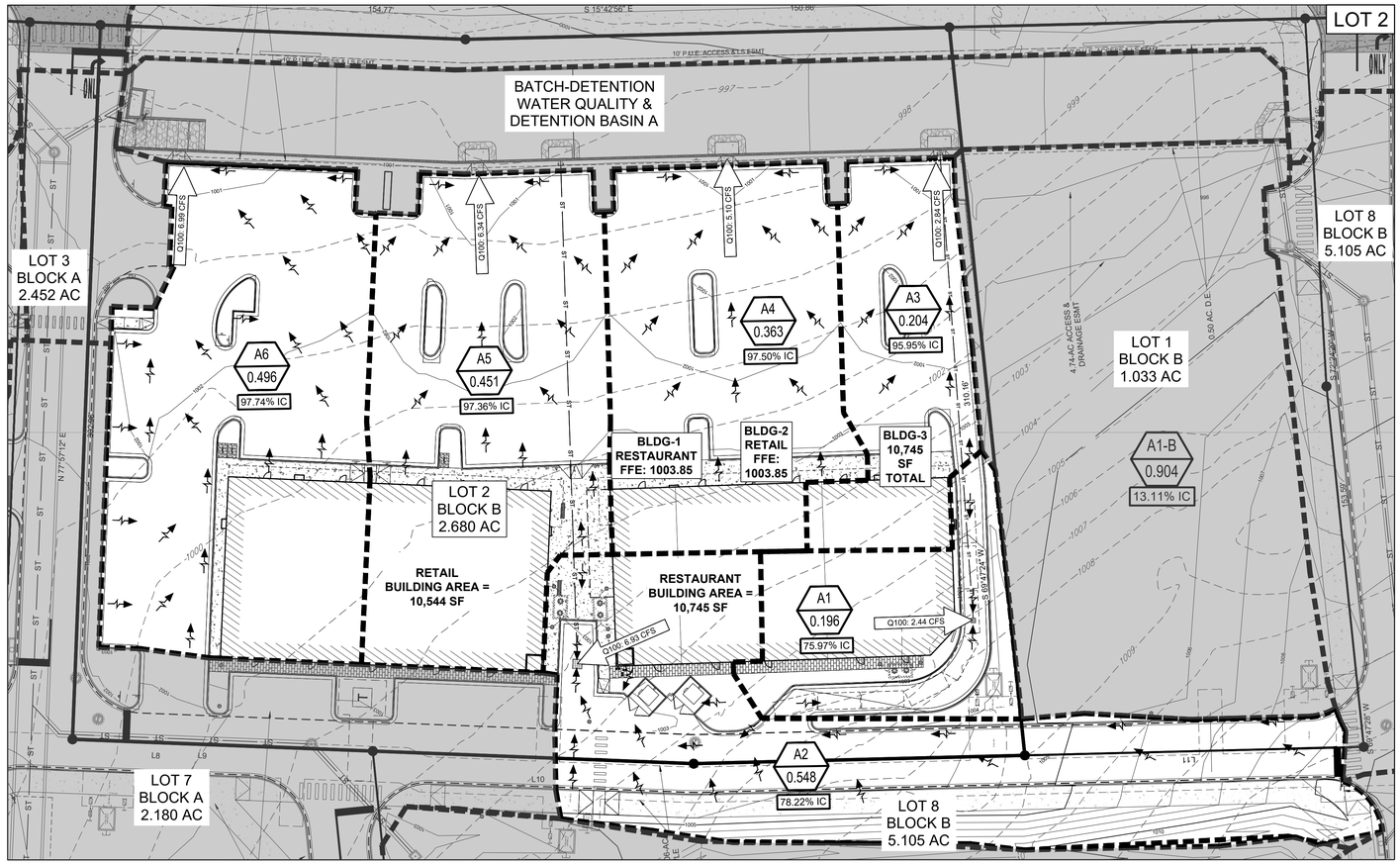
STATE OF TEXAS
CHARLES R. HAGER
127034
LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03-A

SHEET NO. 21 OF 99 SHEETS



LOT 2 ONSITE DRAINAGE AREA CALCULATIONS

RATIONAL METHOD - City of Leander Drainage Criteria and Design Standards

Drainage Area Calculations

City of Leander Park ATLAS 14 Intensity-Duration-Frequency Curves

	2 Yr	10 Yr	25 Yr	100 Yr
a	58	77	89	106.00
b	11.27	10.53	10.16	9.46
c	0.805	0.775	0.759	0.732

Rational Method Runoff Coefficients for Composite Analysis

	25-YR	100-YR
DEVELOPED		
Asphaltic	0.86	0.95
Concrete	0.88	0.97
GRASS, Good Cond.		
Avg, 2-7%	0.39	0.46

$Q = CiA$

Where:

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Developed Conditions Drainage Calculations (Site Calculations)

DRAINAGE AREA	AREA (AC)	PERV. (AC)	IMP. (AC)	C25	C100	ToC (min.)	I25	I100	Q25 (cfs)	Q100 (cfs)
A1	0.196	0.047	0.149	0.747	0.832	5	11.30	15.00	1.65	2.44
A2	0.548	0.119	0.429	0.758	0.843	5	11.30	15.00	4.69	6.93
A3	0.204	0.008	0.195	0.841	0.930	5	11.30	15.00	1.93	2.84
A4	0.363	0.009	0.354	0.848	0.938	5	11.30	15.00	3.48	5.10
A5	0.451	0.012	0.439	0.848	0.937	5	11.30	15.00	4.32	6.34
A6	0.511	0.011	0.500	0.850	0.939	5	11.30	15.00	4.91	7.21

GRATE INLET CALCULATIONS FOR 100 YR STORM (WITH 50% REDUCTION)

MODELED AS AN ORIFICE $Q=C_Q A_G (2\ g\ d)^{.5}$, C_Q=0.67 MODELED AS A WEIR $Q=C_w P\ d^{1.5}$, Cw=3.0

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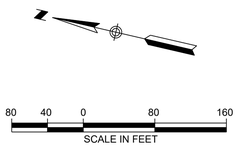
A1	2.44	432	**24"x24"**	3.00	1.50	8.00	0.09	0.22	0.50	NO
A2	6.93	1728	**48"x48"**	12.00	6.00	16.00	0.05	0.28	0.50	NO



LEGEND

- A6 / 0.496 / 97.74% IC — DRAINAGE AREA NUMBER AND ACREAGE
- DRAINAGE AREA
- PROPERTY LINE
- TC AND/OR REACH PATH
- XXX' LF SF @ X.XX% — SHEET FLOW
- XXX' LF SCF @ X.XX% — SHALLOW CONCENTRATED FLOW
- Q100: 7.05 CFS — 100 YEAR FLOW RATE
- FLOW DIRECTION ARROW

NOTES

1. PROJECT LOCATED IN THE EDWARDS AQUIFER RECHARGE ZONE PER TCEQ MAPS.
2. THERE IS NO FLOODPLAIN PRESENT ON THE SITE. THE AREA LIES IN ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), AS IDENTIFIED BY THE FEDERAL EMERGENCY AGENCY, NATIONAL FLOOD INSURANCE PROGRAM, AS SHOWN ON MAP NO., 48491C0275E, EFFECTIVE SEPTEMBER 25, 2008.
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GATEWAY 29 WPAP / SCS
OVERALL SUBDIVISION IMPROVEMENTS
ONSITE DRAINAGE AREA MAP LOT 2

LEANDER, WILLIAMSON COUNTY, TEXAS

NO.	DESCRIPTION	BY	DATE
	REVISIONS		

DATE: 02/27/2024
DESIGNED BY: CRH
DRAWN BY: LJA
CHECKED BY: CRH
DRAWING NAME: A633-0401-P-DM03_WPAP.dwg

02/27/2024

STATE OF TEXAS — CHARLES R. HAGER V — 127034 — LICENSED PROFESSIONAL ENGINEER

LJA Engineering, Inc.
7500 Rialto Boulevard
Building II, Suite 100
Austin, Texas 78735
Phone 512.439.4700
Fax 512.439.4716
FRN-F-1386

JOB NUMBER: A633-0401

DM03-B

SHEET NO. 22 OF 99 SHEETS

CITY OF LEANDER PROJECT No. SD-23-0140

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 23, 2024

Mr. Samir Maredia
Gateway 29 Real Estate, LLC
5522 Jenolan Ridge Lane
Sugar Land, Texas 77479

Re: Approval of a Modification of an approved Water Pollution Abatement Plan (WPAP)
Gateway 29; Located SW of SH 29 and Ronald Reagan; Leander, Williamson County, Texas
Edwards Aquifer Protection Program ID: 11004053, Regulated Entity No. RN111807152

Dear Mr. Maredia,

The Texas Commission on Environmental Quality (TCEQ) has completed its review on the application for the above-referenced project submitted to the Edwards Aquifer Protection Program (EAPP) by LJA Engineering on behalf of the applicant, Gateway 29 Real Estate, LLC on June 25, 2024. Final review of the application was completed after additional material was received on August 16, 2024.

As presented to the TCEQ, the application was prepared in general compliance with the requirements of 30 Texas Administrative Codes (TAC) Chapter §213. The permanent best management practices (BMPs) and measures represented in the application were prepared by a Texas licensed professional engineer (PE). All construction plans and design information were sealed, signed, and dated by a Texas licensed PE. Therefore, the application for the construction of the proposed project and methods to protect the Edwards Aquifer are **approved,** subject to applicable state rules and the conditions in this letter.

This approval expires two years from the date of this letter, unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been officially requested. This approval or extension will expire, and no extension will be granted if more than 50 percent of the project has not been completed within ten years from the date of this letter.

The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed in accordance with 30 TAC §50.139.

BACKGROUND

The Gateway 29 WPAP, approved by letter dated December 22, 2023 (EAPP ID No. 11003712), included the construction 3.84 acres of impervious cover of two water quality basins (Pond A and Pond B) sized for future developments.

PROJECT DESCRIPTION

The proposed commercial project will have an area of approximately 32.26 acres. The modification will include the development of Lots 2, 3 and 5 with commercial buildings, parking, and associated appurtenances. The plan will add 4.37 acres of new impervious cover. The total impervious cover will be increased to 8.21 acres (25.45 percent). Project wastewater will be disposed of by conveyance to the existing Liberty Hill Wastewater Treatment Plant.

PERMANENT POLLUTION ABATEMENT MEASURES

To prevent the pollution of stormwater runoff originating on-site or upgradient of the site and potentially flowing across and off the site after construction, two batch detention ponds (EAPP ID No. 11003712), designed using the TCEQ technical guidance, *RG-348, Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices,* will be implemented to treat stormwater runoff. The required total suspended solids (TSS) treatment for this project is 3,804 pounds of TSS generated from the 4.37 acres of new impervious cover. The approved permanent BMPs and measures meet the required 80 percent removal of the increased load in TSS caused by the project.

The permanent BMPS shall be operational prior to occupancy or use of the proposed project. Inspection, maintenance, repair, and retrofit of the permanent BMPs shall be in accordance with the approved application.

GEOLOGY

An exception to the Geologic Assessment (GA) requirement was requested and approved. A site assessment was conducted on July 24, 2024, by TCEQ staff, which did not reveal any sensitive features and determined the site was generally as described in the application.

SPECIAL CONDITIONS

I. This modification is subject to all the special and standard conditions listed in the approval letter (EAPP ID No. 11003712) dated December 22, 2023.

STANDARD CONDITIONS

1. The plan holder (applicant) must comply with all provisions of 30 TAC Chapter §213 and all technical specifications in the approved plan. The plan holder should also acquire and comply with additional and separate approvals, permits, registrations or authorizations from other TCEQ Programs (i.e., Stormwater, Water Rights, Dam Safety, Underground Injection Control) as required based on the specifics of the plan.

2. In addition to the rules of the Commission, the plan holder must also comply with state and local ordinances and regulations providing for the protection of water quality as applicable.

Prior to Commencement of Construction:

3. Within 60 days of receiving written approval of an Edwards Aquifer protection plan, the plan holder must submit to the EAPP proof of recordation of notice in the county deed records, with the volume and page number(s) of the county record. A description of the property boundaries shall be included in the deed recordation in the county deed records. TCEQ form, Deed Recordation Affidavit (TCEQ-0625), may be used.

4. The plan holder of any approved Edwards Aquifer protection plan must notify the EAPP and obtain approval from the executive director prior to initiating any modification to the activities described in the referenced application following the date of the approval.

5. The plan holder must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the EAPP no later than 48 hours prior to commencement of the regulated activity. Notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person.

6. Temporary erosion and sedimentation (E&S) controls as described in the referenced application, must be installed prior to construction, and maintained during construction. Temporary E&S controls may be removed when vegetation is established, and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.

7. All borings with depths greater than or equal to 20 feet must be plugged with non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring or gravel. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation.

<u>During Construction:</u>

8. This approval does not authorize the installation of temporary or permanent aboveground storage tanks on this project that will have a total storage capacity of five hundred gallons or more of static hydrocarbons or hazardous substances without prior approval of an Aboveground Storage Tank facility application.

9. If any sensitive feature is encountered during construction, replacement, or rehabilitation on this project, all regulated activities must be **immediately** suspended near it and notification must be made to TCEQ EAPP staff. Temporary BMPs must be installed and maintained to protect the feature from pollution and contamination. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality.

10. All water wells, including injection, dewatering, and monitoring wells shall be identified in the geologic assessment and must be in compliance with the requirements of the Texas Department of Licensing and Regulation 16 TAC Chapter §76 and all other locally applicable rules, as appropriate.

11. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.

12. Intentional discharges of sediment laden water are not allowed. If dewatering becomes necessary, the discharge must be filtered through appropriately selected BMPs.

13. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction

activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

14. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.

After Completion of Construction:

15. Owners of permanent BMPs and temporary measures must ensure that the BMPs and measures are constructed and function as designed. A Texas licensed PE must certify in writing that the **permanent** BMPs or measures were constructed as designed. The certification letter must be submitted to the EAPP within 30 days of site completion.

16. The applicant shall be responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property or the ownership of the property is transferred to the entity. A copy of the transfer of responsibility must be filed with the executive director through the EAPP within 30 days of the transfer. TCEQ form, Change in Responsibility for Maintenance on Permanent BMPs and Measures (TCEQ-10263), may be used.

The holder of the approved Edwards Aquifer protection plan is responsible for compliance with Chapter §213 and any condition of the approved plan through all phases of plan implementation. Failure to comply with any condition within this approval letter is a violation of Chapter §213 and is subject to administrative rule or orders and penalties as provided under §213.10 of this title (relating to Enforcement). Such violations may also be subject to civil penalties and injunction. Upon legal transfer of this property, the new owner is required to comply with all terms of the approved Edwards Aquifer protection plan.

This action is taken as delegated by the executive director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Jasmine Brown of the Edwards Aquifer Protection Program at 512-239-7006 or the regional office at 512-339-2929.

Sincerely,

Monica Reyes

Monica Reyes, Section Manager
Edwards Aquifer Protection Program
Texas Commission on Environmental Quality

MR/job

cc: Charles R. Hager, P.E., LJA Engineering, Inc.

Agent Authorization

TCEQ-0599

RANGER
ENVIRONMENTAL SERVICES, LLC

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Samir Maredia,
Print Name

Owner,
Title - Owner/President/Other

of Gateway 29 Real Estate, LLC,
Corporation/Partnership/Entity Name

have authorized Chad M. Copeland, P.G., PWS
Print Name of Agent/Engineer

of Ranger Environmental Services, LLC
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

09/26/2024

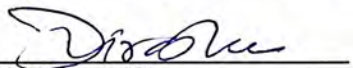
Date

THE STATE OF Texas §

County of Travis §

BEFORE ME, the undersigned authority, on this day personally appeared Samir Moradia known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 26th day of September 2024

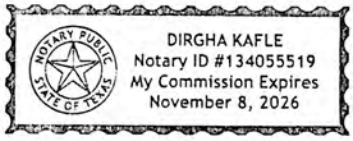


NOTARY PUBLIC

Dirgha Kafle

Typed or Printed Name of Notary

MY COMMISSION EXPIRES: Nov 8, 2026



Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Samir Maredia,
Print Name

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Title - Owner/President/Other

of Gateway 29 Real Estate, LLC,
Corporation/Partnership/Entity Name

have authorized Charles R. Hager, P.E.
Print Name of Agent/Engineer

of LJA Engineering
Print Name of Firm

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SIGNATURE PAGE:

Applicant's Signature

02/29/2024
Date

THE STATE OF TEXAS §

County of FORT BEND §

BEFORE ME, the undersigned authority, on this day personally appeared SAMIR MAREDIA known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 29th day of FEB, 2024

FARHAN WALI
Notary Public
STATE OF TEXAS
My Comm. Exp. 06-23-25
Notary ID # 13116168-7

NOTARY PUBLIC

FARHAN WALI
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 06/23/2025

Application Fee Form

TCEQ-0574

RANGER
ENVIRONMENTAL SERVICES, LLC

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Gateway 29
Regulated Entity Location: SW corner of SH-29 and Ronald Reagan Blvd, Leander, Texas
Name of Customer: Gateway 29 Real Estate, LLC
Contact Person: Samir Maredia Phone: 832-713-4985
Customer Reference Number (if issued):CN 606180297
Regulated Entity Reference Number (if issued):RN 111807152

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☐ Austin Regional Office
☒ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☒ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	1 Tanks	$ 650.00
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: 

Date: 09/27/2024

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

Core Data Form

TCEQ-10400

RANGER
ENVIRONMENTAL SERVICES, LLC

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

☒ Other **EAPP - UST Facility Plan**

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 606180297		**RN 111807152**

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)	9/24/2024

☐ 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:*
Gateway 29 Real Estate, LLC	

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
0803899486	32077415787		

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

12. Number of Employees	**13. Independently Owned and Operated?**
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher	☒ **Yes** ☐ **No**

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

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant
☐ Other:

15. Mailing Address:	5522 Jenolan Ridge Lane						
	City	Sugarland	**State**	TX	**ZIP**	77479	**ZIP + 4**

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

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(832) 713-4985		( ) -

SECTION III: Regulated Entity Information

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

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

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

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

Gateway 29

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	W. State Highway 29 and Ronald Reagan Blvd.							
	City	Leander	**State**	TX	**ZIP**	78628	**ZIP + 4**	
24. County	Williamson							

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

25. Description to Physical Location:	Site is located southwest of the intersection of W. SH-29 and Ronald Reagan Blvd. and east of Kauffman Loop, in Leander, Texas				
26. Nearest City			**State**	**Nearest ZIP Code**	
Leander			Tx	78628	

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

27. Latitude (N) In Decimal:	30.635719		**28. Longitude (W) In Decimal:**	-97.829763	
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)
1542	5541	236220	457100

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

Retail fueling/Gas Station

34. Mailing Address:	**5522 Jenolan Ridge Lane**							
	City	**Sugerland**	**State**	**TX**	**ZIP**	**77479**	**ZIP + 4**	
35. E-Mail Address:	**samirsmaredia@gmail.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(832) 713-4985		( ) -

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

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

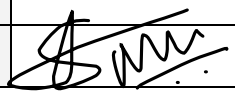
SECTION IV: Preparer Information

40. Name:	Chad M. Copeland, P.G., PWS	**41. Title:**	Senior Project Manager

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(512 **)** 335-1785	124	**(** 512 **)** 335-0527	chad@rangerenv.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:	Gateway 29 Real Estate, LLC	**Job Title:**	Owner		
Name *(In Print):*	Samir Maredia			**Phone:**	**(** 832 **)** 713- **4985**
Signature:				**Date:**	09/25/2024