Water Loss, Use, and Conservation Webinar Series

Agenda:

- 1. Introductions
 - Special Guest Director Jackson
- 2. Water Use Survey
 - Katie Jones
- 3. Boundary Viewer
 - Braniff Davis
- 4. Water Loss Audit Part 1 & 2
 - John Sutton
- 5. Water Conservation
 - -Travis Brice

- 6. Financial Assistance
 - Lee Huntoon
- 7. TCEQ Financial, Managerial, Technical Assistance (FMT)
 - Adriana Thomas

Specific questions?

Be sure to ask questions with the chat or question feature on the side panel!

For those seeking TCEQ 4 CEU Hours, they will be given upon full attendance of the entire workshop presentation.



Water Loss, Use, and Conservation Workshop

2021

Katie Jones Water Use, Projections & Planning



Texas Water Development Board

Provides leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible development of water for Texas.

- Regional Water Planning Groups
- Regional & State Water Plan
- SWIFT, DWSRF, CWSRF, (loans and grants)
- Flood, Groundwater, Surface Water, Innovative, Conservation

Water Use Survey Data in Water Planning

Projections are based on historical water use

- Municipal
- Manufacturing
- Mining
- Steam-Electric Power





www.twdb.texas.gov 📑 www.facebook.com/twdboard 🈏 @twdb

LOSS, USE & CONSERVATION (LUC) Water Data Consolidation

- Online Applications
 - Water Use Survey
 - Water Loss Audit
 - Water Conservation Plan Annual Report
- Unified Reports



What is the Water Use Survey?

- 7,500 water systems & industrial facilities
- Began in 1955
- Became mandatory in 1999
- Online application launched in 2011



Why Should We Care About Water Use Survey?

- Better estimates for future municipal water demands for the State Water Planning Process
- Supports State Water Implementation Funds for Texas (SWIFT) Prioritization
- Provides Support in other Areas:
 - Groundwater Availability Models (GAMSs)
 - Groundwater Conservation Districts (GCDs)
 - O United States Geological Survey (USGS) Texas Water Science Center

Required Survey Information

- Volumes from sources
- Water sold to wholesalers
- Water sold to industry
- Connections
- Distribution amounts by customer type





Creating a new user account in the Online Water Use Survey Application

Texas Water Development Board Applications		Application Program List	Home Login Agency Policies Contact Webmaster
Login to Texas Water Development Boar User Name: Password: Login	ard System Login Forgot Username? Forgot Password?	To use this site, your are required to sign in with a Texas Water Development Board ID. To get started , request a Texas Water Development Board ID <u>Register now</u>	
If you have registered th user name & click "	e previously hen enter you password, ar 'Sign In"	ar nd	the "Register Now" button

Accessing the Water Use Survey from Application List

Once you are logged in, scroll down until you find the Water Use Survey application

Texas Water Development Board	Application Pro	gram List	Home Logout Agency Policies Contact Webmaster
Applications Change Password Profile			
Melissa Rothrock - Welcome To The TWDB Program List	Log Out		
Instructions Some TWDB applications are public applications and do not r do not require a login. Other TWDB applications require a log	equire a login. If you are not logged in, the applications in. If you want access to the applications that require a	s listed under the "TWDB Web Applications You Have Act login, please click on the login button above and to the right	cess To" section below are applications that
My Favorite TWDB Web Applications.			
TWDB Web Applications You Have Access To Intended Use Program Public Comment for Intended Use			Add to Favorites
Water IQ "Water IQ: Know your water" is a statewide public awareness	s water conservation program to learn about about	1.1 (A.1.1.	Add to Favorites
Desalination Plant Database The desalination plant database was updated in 2010 by the	TWDB staff. The database contains information o	Access List"	Add to Favorites
TWDB Applications You may Request Access to Water Loss Audit Click the link above to access the Water Loss Audit Workshe	et for data-entry purposes.		Add to Access List
Water Use Survey Click the link above to access the Water Use Survey for data To access historical water use data, please contact survey s	eentry purposes. taff at 512-463-7952 or Waterusesurvey@twdb.texas.g	Ιον	Add to Access List
Regional Water Planning Regional Water Planning			Add to Access List

Start the Water Use Survey

When you are logged in, click "Water Use Survey" link to start

Texas Water Development Board		pplication Program List	Home Logout Agency Policies Contact Webmaste
Applications Change Password	Profile		
Melissa Rothrock - Welcome To The	TWDB Program List		
Instructions Some TWDB applications are public not require a login. Other TWDB applications are public not require a login. Other TWDB applications are publications.	applications and do not require a login. If you are not log plicationed quire a login. If you want access to the applic	gged in, the applications listed under the "TWDB W ations that require a login, please click on the login	b Applications You Have Access To" section below are applications that do button above and to the right.
My Favorite TWDB W Mater Use Survey Click the link above to access the To access historical water use data	ations Vater Use Survey for data-entry purposes. a, please contact survey staff at 512-463-7952 or Waterus	sesurvey@twdb.texas.gov	Remove From Favorites
TWDB Web Applications You	lave Access To		
Intended Use Program Public Comment for Intended Use			Add to Favorites
Water IQ "Water IQ: Know your water" is a s	tatewide public awareness water conservation program to	o learn about about water conservation in Texas	Add to Favorites
Desalination Plant Database The desalination plant database w	as updated in 2010 by the TWDB staff. The database con	ntains information on 44 public water supply desalina	ation plants currently operating in Texas.
TWDB Applications You may F	equest Access to		
Water Loss Audit Click the link above to access the	Vater Loss Audit Worksheet for data-entry purposes.		Add to Access List
Regional Water Planning Regional Water Planning			Add to Access List

Water Loss, Use and Conservation Home Page

Texas Water velopment Board	Water Loss, Use and Conservation	Home Logout Agency Policies Contact Webmast
LUC Water Use Survey Water Loss Audit W	ater Conservation	APM Home
Name: MelissaA Rothrock Search Filter Year: PWS Code PWS Name Survey Number WUS System Name Search Reset	Welcome to the Water Loss, Use and Conservation Home Page	
Water Use Survey + Water Use Survey List		
Water Loss Audit + Water Loss Audit List	We've changed of home page to cor	our online application
Water Conservation Annual Report + WC Annual Report List	required forms to entry From this	reduce duplicate data-
Water Conservation Utility Profile + WC Utility Profile List	<u>Water Use Su</u>	<u>irvey</u> tab at the top eading
Water Conservation Plan		

Requesting Access to Surveys

Accessibility Policy Link Policy Privacy Policy Home Survey List	Texas Water Development Board Water Use Survey	If a first-time user or you need to access new surveys, click link "Request Access to
Request Access to Surveys	Survev List 2012	Surveys"

your survey is already listed below, you do not need to request access to the survey again.)

If the list below the search filter section on this page is blank or you need access to additional surveys, please click on the **Request Access to Surveys** link at the **top left of this screen under the blue bar** which will direct you to another page where you can search for the survey by Survey Number or by Survey Name and request access to a particular survey. (Please note that requests are generally approved within an hour but may be as long as one business day during extremely busy periods. **Once you receive an email that indicates that you are approved access to a survey, simply <u>refresh</u> <u>this screen or log back in</u> and the the survey will appear below the search filter on this page. You can then click on the name of your system/facility under the survey name column to begin entering the survey data.)**

[SURVEYLIST]

No data found		
	Search	
by Survey Name		
© by Survey Number		
Show All		
Search Filter		

If you previously completed online survey, scroll down this page to see current accessible surveys.

Time to Enter Data!	Refresh your page or return to the Survey List tab to see the approved surveys you've been granted access.
Contact Webmaster Accessibility Policy Link Policy Privacy Policy	Texas Water Development Board Search Sitemap About TWDB Water Use Survey
	Arminone
In the list below the search litter section on this page is blan link at the top left of this screen under the blue bar wh by Survey Name and request access to a particular survey. business day during extremely busy periods. Once you re this screen or log back in and the the survey will appear under the survey name column to begin entering the surve	Survey List 2012 incompose access to automa surveys, please click on the request access to surveys ich will direct you to another page where you can search for the survey by Survey Number or (Please note that requests are generally approved within an hour but may be as long as one ceive an email that indicates that you are approved access to a survey, simply refresh below the search filter on this page. You can then click on the name of your system/facility by data.)
Search Filter Show All by Survey Number by Survey Name Search	To start the survey, click the Survey's name link
Select Survey	
Status Survey Number Survey Name Not Started CITY OF AUSTIN-GENERAL DISTRIBUTION	System/Facility Name Survey Type Primary Used County Name File DN SYSTEM (AUSTIN) GENERAL DISTRIBUTION SYSTEM (AUSTIN) Municipal Long TRAVIS
< III	

Survey: Instructions	The 1 st tab for all surveys is "Instructions". Includes general and agency contact information.
Contact Webmaster Accessibility Policy Link Policy Privacy Policy Home Survey List Instructions Addresses & Co	Texas Water Development Board Water Use Survey ontacts Survey Data Submit Survey
Previous Next CITY OF AUSTIN-GENERAL DIS	STRIBUTION SYSTEM (AUSTIN) 2012
	TEXAS WATER DEVELOPMENT BOARD
SURV	YEY OF GROUND AND SURFACE WATER USE
	GENERAL INSTRUCTIONS
Thank you for using the Texas Water built with both the customer and the as convenient as possible. All non-nu next year.	Development Board's new online Water Use Survey. Our new online system was data in mind. Our goal is to make the process of completing your Water Use Survey merical information submitted this year will be saved and displayed in the survey
If you experience difficulty or have su Please direct comments and question	uggestions for improvement, please feel free to share your comments with us. ns to the Water Use Survey Team at:
Phone: 512-463-7952	
Fax: 512-936-0889 Email: waterusesurvey@twdb.texas.g	gov

Addresses & Contacts/ Survey Contacts	The 2 nd tab is "Address & Contacts". It has 3 lower secondary tabs. Skipping the first tab, My Contact Info, the second is 'Survey Contacts'.				
Contact Webmaster Accessibility Policy Link Policy Privacy Policy	Texas Water Development Board Water Use Survey	TWDB Home Search Sitemap About TWDB			
Home Survey List Instructions Addresses & Contacts Survey Data Survey Data	Submit Survey	APM Home			
My Contact Info Survey Contacts Survey Address Previous Next View Draft Add Contacts To Survey	rey				

CITY OF AUSTIN-GENERAL DISTRIBUTION SYSTEM (AUSTIN) 2012

Below are the current contact(s) for this survey. Only a Contact can access the online survey. Additional contacts can be added to allow additional people to work on the survey by clicking **Add Contacts To Survey**. From there you will be asked to first search our database for the individual in case they are already listed as a contact. If they are not, you can add them.

if the contact(s) are correct, please click Next .									
-Current Contact	s For This S	Survey							
	Last Name	Middle Name	First Name	<u>Email</u>	Title	Phone	Phone Ext		
Remove Access	Musgrove		Judy						
Remove Access	Rothrock		Melissa						
							_		
Drovious	Novt	View Draft	Add (Contacts To Survey					

The Survey Contacts are people that can provide water use data and answer questions regarding this system's survey.

Addresses & Contacts Survey Address

The 3rd secondary tab is "Survey Address", which includes System information and mailing address

Home	Survey List	Instructions	Addresses & Contacts	Survey Data	Submit Survey	WLUC Home
My Cont	act Info Surv	ey Contacts	Survey Address Admin	istration		
Previo	ous Next S	Save View [Draft			_
	CITY OF AUS	TIN-GENER	AL DISTRIBUTION SY	STEM 2019		
Below is name wi	the current ir ill be sent to T	formation tha WDB staff to	t we have for this syste ensure consistent nam	em/facility. Ple	ase correct the agencies.	If a System name
System Na	ame:	GENE	RAL DISTRIBUTION S	SYSTEM		change is needed, click the link to
Primary Us Primary Us	sed County: sed Basin:	COLC	RADO V			request an update
TCEQ Cor	nmunity Public V	Vater System (PV	/S) Code:@			
<u>Remove</u>	22	270001 CITY O	<u>me</u> F AUSTIN WATER & WASTI	EWATER	<u>NS Code</u>	
Edit/Add Edit/Add	— Operating — Multiple S <u>Remove M</u>) Firm@ Gurvey Organizati <u>SO</u>	ion (MSO)@ CITY OF AUSTIN		lf editing a correct ad	new MSO, confirm dress on this page

Survey Data/Intakes

Survey Data tab includes all the water use survey information

Contact We Accessibili Link Policy Privacy Po	ebmaster ty Policy licy							Texas V	Vater Water	Developme Use Surve	nt Board y		If	int
Home	Survey	List Ir	nstructi	ions Ad	dresses & Cont	ats Su	rvey Data	Sul mit Su	rvey			С	arri	ed (
Intakes	Sale	es C	onnec	tion Locat	tion Water	System 1	hiormation		_			S	surv	rey,
Previo	ous	Next	1	Add Self	Supplied	Add I	Purchased	Sav	ve	View Draf	t		to e	ente
							R	W/2	to	r Sou	rco	1		
	СІТУ	OF A	UST	(N-GEN	ERAL DIST	RIBUT	ION SYST	EM (AI	JSTIN	N) 2012		Ι	f ne	eed
Below a	are the	water	sour	ces hist	orically repo	orted. To	o report th	e volum	nes pu	imped, dive	rted or purcha		wat	er s
sources No Pu	ote To	to be i Grou volum	includ ndwa nes fo	led, plea ater Us r specif	ase click Ad ers: In an e ic wells and	d Self S ffort to location	aid ground	or Add I Iwater r I better	Purch nodel inforr	ing, wells o mation for t	v. f public water he groundwat	" 2 ^P	Add urc	l Se has
an	d grou	ndwat	er us	ers can	still report c	combine	d pumping	j volum	es if t	he wells are	e within the sa	me e	ouncy	unu u q
		Display Order		Water Type	Self Supplied / Purchased	County Name	Basin Name	Aquifer Name	Well Name	Water Right	Surface Water N	ame	Reuse Type	Seller Survey No
<u>Delete</u>	•		<u>Edit</u>	Sulface Water	Self-Supplied	TRAVIS	COLORADO			05471-1-6-A	TOWN LAKE/RESERVOII	R		
Delete	▲ ▼	2		Reuse	Self-Supplied	TRAVIS	COLORADO				UNKNOWN		Direct	

ntake sources were over from a previous click the "Edit" link ter monthly gallons.

d to add a new intake source, Click either Self Supplied" or "Add sed" button to begin.

Seller Name

LOWER COLORADO RIVER

N/A

N/A

OLOBADO LAVACI

Total Volume

Gallons

33,176,053,598

1,488,000,000

Th by Contact Webm Accessibility P Link Policy Privacy Policy Home St	The new Self-Supplied Groundwater by Aquifer Source is ready for data Contact Webmaster Accessibility Policy Drivacy Policy Privacy Policy Mome Survey List Instructions Addresses & Contacts Survey Data Sales Connection Location Water System Information											sou ike ck ' ontl	urce data 'Edi hly u	is now rea a to be ent it" to ente use in gall	ady for cered. r the ons.
Intakes Previous	Sale	es C Next	onne	ction Location Add Self Si	Water Sy upplied	vstem Info Add Pu	ormation rchased	Save	Viev	v Draft					
	СІТУ	OF A	UST	IN-GENER	AL DISTR	IBUTIC	ON SYSTE	wate M (AUSTIN	V) 2		e		Sollor	1	· · · · · · · · · · · · · · · · · · ·
		Display Order		Water Type	Supplied / Purchased	County Name	Basin Nar	Aquifer Name	Well Name	Water Right	Surface Water Name	Reuse Type	Survey No	Seller Name	Total Volume Gallons
Delete		1	<u>Edit</u>	Surface Water	Self- Supplied	TRAVIS	COLORADO			05471-1-6-A	TOWN LAKE/RESERVOIR			N/A	33,176,053,598
Delete	•	2	<u>Edit</u>	Reuse	Self- Supplied	RAVIS	COLORADO				UNKNOWN	Direct		N/A	1,488,000,000
Delete	•	3	<u>Edit</u>	Surface Water	drchased	TRAVIS	COLORADO				COLORADO-LAVACA RUN OF RIVER		480	LOWER COLORADO RIVER AUTHORITY- LCRA LAKE TRAVIS - 14230	16,068,775,083 E
Delete		4	<u>Edit</u>	Groundwater	Self- Supplied	TRAVIS	COLORADO	EDWARDS- BFZ AQUIFER			UNKNOWN			N/A	Q
Previous	s	Next		Add Self Su	upplied	Add Pu	rchased	Save	Viev	v Draft					

New 'Self-Supplied Groundwater by Aquifer' source page

Contact Webmaster Accessibility Policy Link Policy Privacy Policy	Texas Water Development Board Water Use Survey	TWDB Home Search Sitemap About TWDB
Previous Next Delete	Reset Save View Draft Return To Intake List	
CITY OF AUSTIN-GENI	Water Source Edit Volume	
Self Supplied Groundwater By	Aquifer	
Please enter the monthly volumes	s of groundwater pumped by major aquifer.	E
These volumes by aquifer may be and the accuracy of groundwater reason, the TWDB encourages su	e for a single well or a summation of more than one well. Groundwater is a very important res [•] models is dependent upon the amount of data available, both volumes pumped and the locati urveyed groundwater users to submit the monthly volumes pumped by well when appropriate.	ource for the state of Texas ion of pumpage. For this
Source Base Information Sort Order: 4 Aquifer: EDWARDS-BFZ AQUIFER County: TRAVIS Basin: COLORADO Volume Information	Source Base Information shows your selection of Aquifer/County/Basin. selection is NOT editable. If incor you'll have to delete this source and a new source.	earlier ^{GWBYAQEDITVOL]} This trect, re-add
Entor Volumos By:	allone	

Entering the new Self-Supplied Groundwater by Aquifer Intake data monthly volume in gallons

Contact Webmaster Accessibility Policy Link Policy Privacy Policy		Texas Water Wate	exas Water Development Board Water Use Survey				
Previous Next Delete Re	eset Save Vie	ew Draft Re	turn To Intake List				
CITY OF AUSTIN-GENERAL	Wat	er Sour ystem (austi	ce Edit Volume				
	In Gallons In	Whole Gallons					
January:	100,000	100,000					
February:	100,000	100,000					
March:	120,000	120,000	Enter each monthly volume				
April:	120,000	120,000	Linter each monthly volume				
May:	130,000	130,000	of groundwater pumpage in				
June:	130,000	130,000	gallons				
July:	140,000	140,000	Suitons.				
August:	140,000	140,000					
September:	130,000	130,000	Click "Insert Calculated				
October:	130,000	130,000	Total" to sum up the Annual				
November:	120,000	120,000	Total				
December:	100,000	100,000	IOtal.				
Annual Total:	1,460,000.000	1,460,000					
Calculated Total: 1,460,000.000 Inse	ert Calculated Total						

<u>Questions</u> section in the new Self-Supplied Groundwater by Aquifer Intake data continued

Contact Webmaster Accessibility Policy Link Policy Privacy Policy Previous Next Delete Re	set Save Vie	Texas Wa Wa w Draft	Ater Development Board Jater Use Survey Return To Intake List				
CITY OF AUSTIN-GENERAL September:	Wate DISTRIBUTION SY 130,000	Er Sou (STEM (AUS 130,000	 Under <u>Questions</u>, Select from drop-down if groundwater wells were 				
October: November: December: Annual Total:	130,000 120,000 100,000 1,460,000.000	130,000 120,000 100,000 1,460,000	 metered or estimated, Leave the % treated as o, Select either Yes or No if 				
Calculated Total: 1,460,000.000 Inse	rt Calculated Total		 groundwater was brackish, Enter the number of wells the total 	and hat			
Was the volume metered or estimated? Metered What percent of the volume was treated prior to i Was the water brackish prior to treatment? Yes Number of active wells? 2	ntake? 0.00	1	monthly volumes for this Aquifer source.				
External Remarks		<u>م</u> ۲	 Enter External Remarks (if a Click "Save" before clicking "Return To Intake List" 	any).			

Back to the Survey Data

Intakes page

Contact W Accessibili Link Policy Privacy Po	ebmaste ty Policy licy	ar I					Te	exas Water Wate	Deve r Use	lopment Bo Survey	ard					TWDB Home Search Sitemap About TWDB
Home	Surve	y List Ir	struc	tions Addres	sses & Contac	ts Surv	ey Data Sul	bmit Survey		A REAL						APM Home
Intakes Previo	Sa DUS	ales C Next	onne	ction Location Add Self St	Water Sy upplied	/stem Info Add Pu	ormation rchased	Save	Viev	w Draft						
	СП	TY OF A	UST	IN-GENER	AL DISTR	IBUTIC)N SYSTE	Wate M (AUSTI	r S		e					
	Ì	Display Order		Water Type	Self Supplied / Purchased	County Name	Basin Name	Aquifer Name	Well Name	Water Right	Surface Water Name	Reuse Type	Seller Survey	Selle	er Name	Total Volume Gallons
Delete	•	1	<u>Edit</u>	Surface Water	Self- Supplied	TRAVIS	COLORADO			Louin	entered d	ata	abor			33,176,053,598
Delete	* *	2	<u>Edit</u>	Reuse	Self- Supplied	TRAVIS	COLORADO		Г ,	Total /	Annual Vo	ata olur	<u>ne</u> o	n n		1,488,000,000
<u>Delete</u>	. .	3	<u>Edit</u>	Surface Water	Purchased	TRAVIS	COLORADO				<u>Intakes</u> pa	age			LORADO HORITY- TRAVIS -	16,068,775,083
<u>Delete</u>	*	4	<u>Edit</u>	Groundwater	Self- Supplied	TRAVIS	COLORADO	EDWARDS- BFZ AQUIFER			UNKNOWN		1	N/A		1,460,000
Previe	ous	Next	1	Add Self Su	upplied	Add Pu	rchased	Save	Viev	v Draft	_					ļ

Add a new Self-Supplied Reuse source

Add New Self Supplied Water Source

CITY OF AUSTIN-GENERAL DISTRIBUTION SYSTEM 2019

A field with an asterisk (*) before it is a required field.

Select Water Type



Click dropdown arrow to select source Water Type: Reuse.

For a self-treated reuse water source, please select whe oncertootable or nonpotable) reuse.

- Direct Non-potable Reuse: Adding a new direct nonpotable reuse source will require the major river basin and county where the water was treated. This includes the use of reclaimed water, for non-potable purposes not requiring drinking water quality, that is piped directly from the wastewater treatment plan to the place where it is used. Examples of beneficial uses include golf courses and park irrigation, power plant cooling, and industrial manufacturing.
- Indirect Non-potable Reuse: Adding a new indirect reuse source in which a "Bed and Banks" conveyance is used will requires Water Right from the Texas Commission on Environmental Q represent the location the water is diverted from. This include discharged to a surface water (reservoir, river, lake) or ground surface water/groundwater) then are diverted from the water quality.
- Direct Potable Reuse (DPR): Adding a new direct potable r water was treated. This includes the use of reclaimed water. introduced either directly into the potable water system or into
- Indirect Potable Reuse (IPR): Adding a new indirect potable Environmental Quality. The major river basin and county asso from. This includes the use of reclaimed water, for potable pu to a surface water preservoir, river, lake) or groundwater (agu water/groundwater) then receive additional treatment at a wa system.

There are now 5 reuse sources to select from. Definitions of each type are included on this page to assist in determining your system's type of reuse.

source will is d water and inking water

here the and

nission on s diverted discharged surface ution

Self-Supplied Direct Reuse data-entry page										
Previous Next Delete Rese Sav	e View Draft Return To Intake List									
3 Water Source Edit Volume CITY OF AUSTIN-GENERAL DISTRIBUTION SYSTEM 2019										
- source Base Information										
Sort Order:2Surface Water Name:UNKNOWNBasin:COLORADOCounty:TRAVIS210 Permit Number:0	Shows your previously made selections.									
Survey Remarks	- Survey Remarks									
Volume Information Enter Volumes By: Gallons In Gallons In Wh Annual Total: 0.000	Enter the annual volume of wastewater effluent that was treated by the system with the purpose of direct reuse.									
TWDB Estimate: N										
Was the volume metered or estimated? Metered What percent of total volume used for industrial? What percent of total volume used for landscape? What percent of total volume used for agriculture? What percent of total volume used for other? 0.00	O.00 @ 2 Percentage(s) must total 100%.									

Rem	ovi	n	g Int	ake	So	urce	es		I	If Intake source is no longer				
ontact Webmaste .ccessibility Policy ink Policy rivacy Policy Home Surve	er y ey List li	nstruc	tions Addres	sses & Contac	ts Surv	Te ey Data Su	exas Water De Water U bmit Survey	evelopment Bo Ise Survey	oard	active or is incorrect, click "Delete" link to remove.				
Intakes S Previous	ales (Next	onne	ction Location Add Self Su	Water Sy upplied	stem Inf Add Pu	ormation rchased	Save \	/iew Draft	-		-	_		
1010 CI	TY OF #	UST	IN-GENER	AL DISTR	IBUTIC	21 2	Are you sure you wa	int to remove this wa	ter source?					
	Display Order		Water Type	Self Supplied /	County Name	2		ОК	Cancel	Name	Reuse Type	Seller Survey	Seller Name	Total Volume Gallons
Delete V	Display Order 1	Edit	Water Type Surface Water	Self Supplied / Purchased Self- Supplied	County Name TRAVIS	E 2	-	OK	Cancel	Name /OIR	Reuse Type	Seller Survey No	Seller Name	Total Volume Gallons 33,176,053,598
Delete	Display Order 1 2	Edit Edit	Water Type Surface Water Reuse	Self Supplied / Purchased Self- Supplied Self- Supplied	County Name TRAVIS TRAVIS	2 COLORADO	-	OK	Cancel ALAKE/RESERV UNKNOWN	Name /OIR	Reuse Type Direct	Seller Survey No	Seller Name N/A N/A	Total Volume Gallons 33,176,053,598 1,488,000,000
Delete Delete Delete	Display Order 1 2 3	Edit Edit Edit	Water Type Surface Water Reuse Surface Water	Self Supplied / Purchased Self- Supplied Self- Supplied	County Name TRAVIS TRAVIS TRAVIS	COLORADO COLORADO		OK 05471-1-0-7	Cancel LAKE/RESERV UNKNOWN COLORADO-L RUN OF RIVE	VOIR	Reuse Type Direct	Seller Survey No 480	Seller Name N/A N/A LOWER COLORADO RIVER AUTHORITY- LCRA LAKE TRAVIS - 14230	Total Volume Gallons 33,176,053,598 1,488,000,000 16,068,775,083

Survey Data Sales

If System sold water to another water system or to an industrial facility, click "Add Sale" button.

Home	Survey List Instructions		Addresses & Contacts	Survey Data	Submit Survey	WLUC Home					
Intake	ke Sales Connection Location Water System Information										
Previo	Previous Next Add Sale Save View Draft										
	CITY OF ALISTIN GENERAL DISTRIBUTION SYSTEM 2019										

Listed below are the historically-reported water sales to public water systems and industrial production syste select **Add Sale** and carefully search to make sure the facility name doesn't already exist in the database be on how to add a new sale.

If your System did not wholesale any water to another municipal water system, then skip the Sales tab. If your system has large industries, please itemize those as industrial sales. To continue, click the "Connection Location" tab.

Industrial Sales

Include water sales (also include any Reuse sales) to industrial production facilities (manufacturers). Hease manufacturers when the volumes are get than 10 million gallons. Industrial is the use of water in processes designed to convert materials of a lower order of value into forms having greater usability and commercial value.

Municipal Sales

<u>Please list ALL water sales (also include any Reuse sales) to other public water systems.</u> Please do not include sales to hospitals, schools, correctional facilities, retail stores or similar sales <u>unless</u> your system is a city water utility and the facilities are outside of the city limits.

		Display Order		<u>Sale Type</u>	Buyer Name	Total Volume Gallons	Water Type 🧿	County Name	Basin Name	Aquifer Name	Surface Water Name	Reuse Type 🍙	Raw or Treated	Buyer Survey No
<u>Delete</u>	•	1	<u>Edit</u>	Industrial	NXP USA, IncED BLUESTEIN BLVD FACILITY	0	Surface Water				UNKNOWN			580552
<u>Delete</u>	▲ ▼	2	<u>Edit</u>	Industrial	SAMSUNG AUSTIN SEMICONDUCTOR LLC	0	Surface Water				UNKNOWN			764155
<u>Delete</u>	▲ ▼	3	<u>Edit</u>	Industrial	SPANSION LLC	0	Surface Water				UNKNOWN			9826

Select the type of water that was sold (Groundwater, Surface or Combined) from dropdown menu.

Survey Data/Sales

Contact Webmaster Accessibility Policy Link Policy Privacy Policy Next Cancel	Texas Water Development Board Water Use Survey	TWDB Home Search Sitemap About TWDB
CITY OF AUSTIN-G	Add New Water Sa EENERAL DISTRIBUTION SYSTEM (AUSTIN) 2012	е
and water source of by h	numuudi water Right.	A
Please note that information t	hat you enter this year will be carried over to next years surveys to	lessen data entry next year.
A field with an asterisk (*) before it is a * Select Water Type	 a required field. Groundwater Groundwater Please select the best method of describing the Groundwater sale: By Buyer only or By Buyer and source Aquifer. If you select By BuyerName only, the water sold will be assumed to intake. 	Then select to identify your Buyer by only Name or by Name and Aquifer (if Groundwater)."
* How should we identify this source?		[OVERSALESGWADD]
non onodia ne lacitary and boardes		
Next Cancel	By Buyer By Buyer and Aquifer	

Enter Sale data

Contact Webmaster Accessibility Policy Link Policy Privacy Policy		4		Texas Water I Water	Developmer Use Survey	it Board /		TWDB Home Search Sitemap About TWDB
Home Survey	List Instru	uctions Ad	ddresses & Contacts Survey D	ata Submit Survey				APM Home
Intakes Sal Previous	es Conn Next	ection Loca Add Sal	ation Water System Informa le Save View Drat	ation ft				
CITY	/ OF AUS	TIN-GEN	NERAL DISTRIBUTION	Wate SYSTEM (AUSTIN	er Sal	es		
Delete	19 Edit	Industrial	FREESCALE SEMICONDUCTOR	, INC-	Water Surface		UNKNOWN	580552
Delete	20 Edit	Industrial	FREESCALE OAK HILL F Click	k "Edit" lin	k in n	ewly	UNKNOWN	580553
Delete	21 <u>Edit</u>	Industrial	HOSPIRA, I add	ed Sale to	enter	the	UNKNOWN	5808
Delete	22 Edit	Industrial	SAMSUNG VOLUI SEMICOND	me of gallo	ons so. r	ld to	UNKNOWN	764155
Delete	23 Edit	Industrial	SEMATECH	Duye			UNKNOWN	782800
Delete	24 <u>Edit</u>	IP dist an	SPANSION, LLC	402,846,000	Surface Water		UNKNOWN	9826
Delete	25 Edit	Municipal	CITY OF SAN MARCOS	0	Ground Water		UNKNOWN	769000
Previous	Next	Add Sal	le Save View Dra	ft				

Enter Total Water Volume Sold to Buyer



For Municipal Long surveys only: Entering total connections served within County boundaries

Contact Web Accessibility Link Policy Privacy Polic	omaster 7 Policy cy					Texas Water Wate	r Development Board er Use Survey	Click "Add County" button if a county your system serves is
Home	Survey List	Instructions	Addresse	s & Contacts	Survey Data	Submit Survey		not show below.
Intakes	Sales	Connection	Location	Water Syste	em Information			
Previou	us Ne	xt Add	County	Save	View Draft	:		
		7			Coun	tv Ret:	ail Conne	ctions

CITY OF AUSTIN-GENERAL DISTRIBUTION SYSTEM (AUSTIN) 2012

In order to estimate water use by county, surveyed water systems are asked the number of retail connections that they directly serve. All water systems with retail connections should have at least ONE county and accompanying number of connections. The percentage of the connections in each county from the total number of connections is used to create an estimate of the water use within each county.

Please Note: If the volume of water provided in a county is significantly different than the number of connections might indicate, please provide additional information in the comments field. For instance, if 10 percent of a system's connections are within a county, but those connections consume 40 percent of the system's water, please make note of this.

		Display Order		Cov av Nam		ections	
<u>Delete</u>	•	1	<u>Edit</u>	TRAVA	2	08,167	
<u>Delete</u>		2	<u>Edit</u>	WILLIAMSON		6,438	
Previous		Next	Add	County	Save	Viev	v Draf

Click "Edit" link to enter the number of connections.

[CNTYLIST]

For Municipal Long surveys only: Entering total connections

served within County boundaries

Previous	Next	Delete	Reset	Save	View Draft	Return	n To County List	K			
² Edit County Retail Connections ³											
		2016									
Retail Conne	Retail Connection By County										
Please enter	the numbe	er of DIRECT	RETAIL a	ctive and ina	active connect	ons that th	nis system serves	inside of the sp	ecified coun	ty. If the system has direct re	etail customers in
more than on	e county, t	he total activ	e and inact	tive connect	tion counts sho	ould be rep	ported for each co	unty.			
										Click "Save	" button
 Source Bas 	e Informa	ation								before cli	icking
Sort Order:	1									"Return To	County
County Name:	CROSBY									List	•
– Survev Ren	narks —										
							Enter t	he total	numl	per of active	
0		•			m		and ina	active co	onnect	tions served	
- Connection		lon				1	within	this co	unty's	boundary.	
Number of Conn	ections:										

For Municipal Long surveys only: Water System Information

Home	Survey List	Instructions	Addresses & Contacts	Survey Data	Submit Survey	WLUC Home	APM Hon
Intakes	Sales C	Connection Location	on <u>Water System Informa</u>	ation			
Previo	us Next	Save View D	Draft				

Water System Information

-GENERAL DISTRIBUTION SYSTEM 2019

This page collects information regarding the water system and how water is used within the system. Click here to watch a quick video about completing the water system information.

- Retail Population Served Directly by the System below should ONLY include those served directly and should NOT include the population of any wholesale customers. Population and connection numbers are not the same and would imply one person per connection. The population is specifically used to estimated water demand projections in the regional and state water planning process so please make sure that the information is accurate.
- · When you enter the number of connections, include both active and any inactive connections.
- When you enter **Total Retail Metered Connections & Volumes**, you must have at least one of the categories completed as well. For example, if you just have Residential Single Family connections and volumes, make sure that info goes in that category as well as in the Total Retail Metered. Note that the total volume cannot be greater than the intake total from what was reported under the "Intakes" tab. Water that went out of the system during the year cannot be greater than the water that entered the system for the year. This will result in an error when attempting to submit the survey.
- . Retail Water Un-Metered below would include known back-flushing, line-flushing, or fire department use water volumes.
- . If you have reuse water that is distributed from your system, please include your total reuse volume under the "Intakes" tab as well.

[WATERSYSINFOLF

Survey Remarks:	
System Class	5 = Municipal 🔹
Wholesale Only?	
What is the retail population served directly by this system? 🥥	0

For Municipal Long surveys only: Entering Water System Information

Previous	Next	Save	View Draft		_					
		2016		Water System Information						
System Class Wholesale Only? What is the retail Retail Water Met Please provide th information for th categories. If you field blank.	population ser ered e total active a e following rec are unable to r	rved directly by nd inactive co ommended re report for a ca	y this system? @ onnection and volume etail customer tegory, please leave th	2 = District 867,692 Connections	¥	Volume In Gallons 💌	For the Total Metered Connections and Volume, break down numbers into the separate customer categories.	0		
Residential - Residential - Institutional Commercial Industrial Agriculture	Single Family Multi Family))			314,554 192,104 5,655 39 9		40,703,408.000 17,796,456.000 8,685,755.000 480,880,500.000 11,030,546,190.000 0.000	The sum of the connections and metered breakdown volumes will auto- calculate to the			
Reuse 🍘 Total Retail Meter	ed@			512,361		0.000	Total fields.			
Retail Water Un- What is the total i	Metered number of Un-I	Metered Conn	ections and the	Un-Metered Connections		Un-Metered Volume In Gallons 1,365,208.000	SAVE your work.			

Submit Survey Warning

Almost done! Click "Submit Survey" tab once previous tabs are complete.



Submit Survey: Final

Home	Survey List	Instructions	Addresses & Contacts	Survey Data	Submit Survey	WLUC Home		APM Home				
Previo	ous Submit											
	Final											
The fina	The final remaining step is to submit the water use survey. Before you submit, please make note of the following:											
• If y Vi su	you wish to re ew Draft butte rvey.	view all of the on. This will p	Servio	ce	fore submitting the water use survey, please click on the Survey Data tab above, and then on the gray ed and/or printed. If any of the information is incorrect, you can edit the information before submitting the							
Once submitted, the application Click the 'Submit' button agai please click the 'Submit' button				ary link	ccessfully submitted the survey. submitted, "You have successfully submitted this survey" should appear below. If it does not appear,							
• OI	nce the surve	ey shows as a			itionally fax or	email the surv	rey to us.	coccfully				
su <u>W</u>	• NEW: If your system is a Public water System and you nave a rock PWS Code associated with your system/survey, after your survey shows to have been successfully submitted below, if you have not alreaded as prior to starting the survey, please additionally review and submit any changes to your service area boundary at Texas Water Service Boundary Viewer.											
				C	lick "Sub	omit"		[SUBMITINF				
Click 'Su Previ	omit' button to	complete the	e sudmission,	butt	con to co your surv	mplete vey.		_				
Example of Final Draft Copy of Survey

Date/Time Su	rvey Submitte	d: 4/26/2013	4:27:58 PM								
				TEXAS W	ATER DEVE VATER USE	LOPMENT SURVEY	BOARD	Con	pratulat	ions. vo	ou have
				WATER	USE IN CALE	NDAR YEAR:	2012		bracarac	hy cubr	ittod
SYSTEM NAME: GENERAL DISTRIBUTE			TION SYSTEM (A	AUSTIN)				Su	vour	survev!	inteu
MULTIPLE SURV	EY ORG: CIT	Y OF AUSTIN							J o our		
AILING ADDRE	SS 1: PO	BOX 1088									
MAILING ADDRE	\$\$ 2:										
CITY/STATE/ZIP: PWS NAME:	AUS	STIN Y OF AUSTIN WA	TX TER & WASTEW	ATER	67-			WEB: PWS CODE:		www.austintexa 2270001	s.gov
NTAKE:											
Water	Туре	County	в					ckish /	% Treated Prior to Intake	Total Volum	ne (gallons)
SURFACE W	ATER SELF LIED	TRAVIS	COLO	PL Save the	EASE N	NOTE:	170111	N	0.00 33,176,053		33,176,053,598
JANUARY	FEBRUARY	MARCH	A	Save the	IIIIal U		your	EMBER	OCTOBER	NOVEMBER	DECEMBER
3,360,973,847	3,008,794,086	3,342,520,905	3,69 C	ompute	r and k	ceep for	r your	7,056,47	1 3,360,722,942	1,757,203,654	2,414,129,045
Water	Тура	County	в		record	ds.		ckish / (Y or N)	% Treated Prior to Intake	Total Volun	ne (gallons)
SURFACE WATE	R PURCHASED	TRAVIS	COLO					N	0.00		16,068,775,083
				AUTHORITY							
JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
0	0	0	375,595,414	320,132,315	1,936,802,949	2,177,971,791	4,586,176, 865	2,513,640,68	2 718,951,129	2,207,969,635	1,231,534,303
	Water Type		County	Bas	in	Metered or Estimated	% Reuse for Industrial	% Reuse for Landscape	% Reuse for Agriculture	% Reuse for Other	Total Volume (gallons)
REUSE	SELF SUPPLIED	DIRECT	TRAVIS	COLOF	RADO	м	44.00	56.0	0.00	0.00	1,488,000,000

Updating your profile

Texas Water Development Board			Application Program List				
Applications Change Password	Profile						
Change User Information Sa	ve Changes						
Make any changes to your user information and click on "Save Changes" when you're finished. Duplicate user names and email addresses are not allowed in the system so you may use the "Check User Name" and "Check Email Address" buttons to make sure the new user name or email address you're changing to is not already in use by another user.							
Update Personal Information							
The UserName may be a valid email address OR it must be at least five characters long, it must contain only letters, numbers, and the special characters of dash, period, or an underscore. In any case no spaces are allowed with either format.							
* UserName:	MRothroc	Check User Name					
* First Name:	MelissaA						
* Last Name:	Rothrock						
* Contact Phone Number:	5124639225	Extension:					
* Email Address:	Melissa.Rothrock@twdb.texas.go	v (Check Email Address				
Company/Organization Name:			When logged in slight				
Street Address/PO Box:			when logged in, click				
City:	City:		the "Profile" tab. Click				
State:	Texas 💌		"Save Changes" button				
Zip Code:	Zip Plus-4:		after updating your				
	Save Changes		profile.				

Changing your Password

Texas Water Development Board Application: Change Pa	ssword Pofile	Application Program List
Change password for user i	mrethrock Change Password	
Fill out the fields as indicate NOTE: Characters in the "N Click on Change Password Change Password Old Password: New Password: Confirm New Password:	ed, below. New Password" and "Confirm New Pa d when complete. Passwords must have a minimum of 7 character at least 1 must be a numeric character. at least 1 must be a special character !@#\$%^8	sswe d' fields must match EXACTLY. When logged in, click the "Change Password" tab. Confirm changes by clicking the button "Change Password"

Online Water Use Reports

Available by Region, County, & Basin

Year	Region	Population	Municipal	Manu- facturing (Mfg)	Mining	Power	Irrigation	Livestock
2017	Α	392,421	86,301	31,786	2,543	10,151	1,779,348	55,787
2017	В	197,643	26,249	1,565	13	3,105	72,718	8,709
2017	С	7,413,309	1,226,289	40,260	7,508	36,694	29,795	17,941
2017	D	786,558	112,250	34,076	699	54,635	29,582	21,243
2017	E	866,632	135,715	6,014	4,891	6,379	314,263	2,252
2017	F	683,918	119,220	7,439	162,674	8,853	484,102	11,327
2017	G	2,214,184	362,506	10,821	13,730	153,229	315,648	44,035
2017	н	7,076,414	1,019,030	501,322	1,213	36,294	207,080	10,870
2017	I	1,094,113	171,843	216,792	4,168	28,399	42,504	14,776
2017	1	132,403	23,258	9	179	0	10,556	1,619
2017	К	1,649,246	250,836	21,608	3,740	88,792	343,006	10,747
2017	L	2,920,137	452,652	70,967	63,641	83,225	268,431	23,076
2017	М	1,722,958	266,101	3,350	8,511	8,404	1,241,370	3,794
2017	N	590,407	76,992	50,509	5,422	3,335	14,779	4,658
2017	0	513,463	85,045	5,636	8,122	11,943	2,213,321	54,093
2017	P	50,790	6,023	1,029	1,035	1,683	123,558	2,852
2017	STATE TOTAL	28,304,596	4,420,310	1,003,183	288,089	535,121	7,490,061	287,779

Questions?

Hotline 8am-5pm M-F: 512-463-7952

Email: WaterUseSurvey@twdb.texas.gov



Mapping Application

To collect and provide the most up-to-date and best data available on the water service areas for all community Public Water Systems within Texas.





Overview

- Purpose & Benefits
- Background
- Application Overview
- Response & Outreach
- Potential Future Plans





www.twdb.texas.gov 📑 www.facebook.com/twdboard 🈏 @twdb

Purpose & Benefits

- Create & maintain a clearinghouse of all drinking water service area boundaries
- Geographically display state-collected water data & system information to the public
- Better estimate population & projections for the State Water Plan



Development Board

Background

- Original map produced in 2009 through a TWDB research grant
- Grant from USGS Water Use Data & Research Program:
 - Identify, update, & maintain the retail water service area boundaries of all active community public water systems (4,500+) in Texas
 - December 2016 Contract between USGS & TWDB
 - -January 2019 Application Deployed

Texas Water Development Board

Application Overview Three Components

- <u>Public</u>: View, create a map, or download a shapefile of the water system boundaries & view linked reports
- <u>Editor</u>: Allow system representatives to update or verify boundaries
- <u>Admin</u>: Review & provide customer support





www.twdb.texas.gov 🗗 www.facebook.com/twdboard 🈏 @twdb

What is a Water Service Boundary?

- Where a utility serves customers. The boundary encompasses all the resident locations the utility serves
- Is not necessarily the same at the CCN boundary





Where to find Boundary Viewer

Home	Survey List	Instructions	Addresses & Contacts	Survey Data	Submit Survey	WLUC Home		APM Home	
Previo	ous Submit								
	Final								
		-GENER	AL DISTRIBUTION SY	STEM 2019					
The fina	l remaining st	ep is to subm	it the water use survey.	Before you s	ubmit, please ma	ake note of the	following:		
 If y Vi Su Or Cl pla Or 	 If you wish to review all of the information that you have entered before submitting the water use survey, please click on the Survey Data tab above, and then on the gray View Draft button. This will produce a pdf report to be viewed, saved and/or printed. If any of the information is incorrect, you can edit the information before submitting the survey. Once submitted, the application will indicate below that you have successfully submitted the survey. Click the 'Submit' button again to complete the submission. Once submitted, "You have successfully submitted this survey" should appear below. If it does not appear, please click the 'Submit' button again. Once the survey shows as submitted, you do NOT need to additionally fax or email the survey to us. 								
su	bmitted below	, if you have	not already done so prio	or to starting th	ie survey, please	e additionally re	eview and submit any changes to your service	e area boundary at <u>Texas</u>	
	ater Service	Boundary Vie	ewer.	Lin	k for Bou enc	ındary V 1 of the	/iewer is highlighted at Survey submittal.	the [SUBMITINFC	
CIICK SU		complete the	e sudinission.						
Previ	ous Submit			_		_			



www.twdb.texas.gov 📑 www.facebook.com/twdboard 🈏 @twdb

Where to find Boundary Viewer

Texas Water Development Board	Home Logout Agency Policies Contact Webm Water Use Survey					
Home Survey List WLUC Home	АРМН					
	Survey List 2020					
the bottom of this page, below the search filter section, are the surveys which you currently have access to. Simply click on the name of your system/facility under the survey name column to begin entering the survey data. If the list below the search filter section is blank or you need access to additional surveys, please click on the Request Access to Surveys link at the top left of this screen under the blue bar which will direct you to another page where you can search for the survey by Survey Number or Survey are and request access to a particular survey. (Please note that requests are generally approved within an hour but may be as long as one business day during extremely busy periods. Once you receive an email that indicates that you are approved access to a urvey, simply refresh this screen or log back in and the survey will appear below the search filter on this page. You can then click on the name of your system/facility under the survey name column to begin entering the survey data.) Click here to watch a quick video is now to request access to a survey that is not listed below.						
NOTES:						
 The TWDB is legislatively directed to plan for, and to assist financially, the development and management of the water resources of Texas. This water use survey data is specifically used to estimate water demand projections in the regional and state water planning process and to aid in groundwater availability modeling. Therefore, it is critical that data is accurately submitted by qualified personnel familiar with your system/facility. To streamline data entry and to improve data collection, for those community public water systems that may also be required to submit a separate Water Loss Audit, Water Conservation Plan, Utility Profile, or Annual Report, certain common fields will autopopulate into those applications when the water use survey data is submitted. If you have logged-in using another person's username and password, that email address is linked to that user's first and last name and email address. Attempting to change another user's name or email address (NOT a shared email address). If you need to change your current user profile information, please click on APM Home at the top right and then Profile. Click here to watch a quick video on how to change your user profile information. 						
If your system is an active community Public Water System and you have a PWS Code with the Texas and submit any changes to your service area boundary at <u>Texas Water Service Boundary Viewer</u> . If you need copies of your past surveys, click on <u>Historical Water Use Surveys</u> and select tod is date add the correct number of preceding zeros "000" if needed to make 7 digits. After these three The status of all surveys for the past three years can be found at <u>Prior Three-Year Survey States</u> Historical water use estimates by region, county, or basin can be found at <u>Historical Water Use</u> states For questions, please contact us at:	Commission on Environmental Quality associated with your system/survey, either before you start or after you submit your survey, please additionally review from the calendar icon and then the desired survey year from the dropdown menu. You must also enter your SurveyNo. This number must total 7 digits so fors are entered, click on 'View Report' on the top right of the screen to run the report. The survey can then be printed or exported and saved as a PDF. tes and the interactive state water plan can be found at Interactive 2017 State Water Plan Website.					
Water Use Survey: 512-463-7952 or WaterUseSurvey@twdb.texas.gov	Link for Boundary Viewer can also be found,					
Water Service Boundary Viewer: 512-463-6867 or WSBViewer@twdb.texas.gov	highlighted on the Survey List page					
Water Loss Audit: 512-463-0987 or WLA-Group@twdb.texas.gov	inginighted, on the burvey List page.					
Water Conservation Plan, Utility Profile, Annual Report: 512-475-1639 or WCPteam@twdb.texas.gov						



www.twdb.texas.gov 📑 www.facebook.com/twdboard 🈏 @twdb

Editor





www.twdb.texas.gov f www.facebook.com/twdboard 🈏 @twdb



www.twdb.texas.gov f www.facebook.com/twdboard 🈏 @twdb

52

Texas Water

Development Board

Potential Future Plans

- Phase II of the viewer is scheduled for completion in the next year
- New features will include providing links to historical and Census data, as well as making the editor more user-friendly
- We welcome any user feedback that helps us improve the viewer!



Development Board

Questions?

Braniff Davis

Water Service Boundary Viewer Administrator

Office: 512-463-6867 Email: <u>Braniff.davis@twdb.texas.gov</u>



Texas Water

Water Loss, Use, and Conservation (WLUC) Workshop

Water Loss Audit – Part 1 – Data

Municipal Water Conservation Texas Water Development Board (TWDB)

Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.



www.twdb.texas.gov

🔰 @twdb

Why Complete a WLA?

- System efficiency
- Extend supply
- Target mitigation
- Save money
- Public Health

🔰 @twdb

- Required
 - Loan/Grant
- Regional Water Planning





www.twdb.texas.gov

Who Completes the WLA?

- 3,300 or > connections?
- Active financial obligation?
- All retail public water systems by May 1, 2021
- Recommend annually

🔰 @twdb





www.twdb.texas.gov

WLA Training Requirement

31 TEXAS ADMINISTRATIVE CODE (TAC) § 358.6(b)(4)

- Effective January 1, 2019, the water loss audit must be performed by a person who has completed water loss audit training......agency website, and may also provide such training in person or by video.
- The person who completes the water loss audit is required to upload the training acknowledgement with their name on it – not someone else's acknowledgement.





www.twdb.texas.gov

🔰 @twdb

TWDB Website

www.twdb.texas.gov/conservation/muni
cipal/waterloss/index.asp

- Accessing the Water Loss Audit application
- Registered user instructions
- Email address and contact information
- Training webinar





www.twdb.texas.gov



pment Board		Water Loss, Use and Conservation	Home Logout Agency Policies Contact Webma
Water Use Survey Water Loss Ar	dit Water Conservation		APM Hon
		Welcome to the Water Loss, Use and Conservation Home Page	
ame: Daniel Rice			
Search Filter			
Year: V			
PWS Code			
PWS Name			
Survey Number			
WUS System Name			
	Search Reset		
/ater Loss Audit			
+ Water Loss Audit List			
ater Conservation Annual Report			
+ WC Annual Report List			
/ater Conservation Utility Profile			
+ WC Utility Profile List	=		
later Conservation Plan			





Texas Water Development Board

New Tab 🗙 🥝	Water Loss Audit × +		- 0
← → C ☆ @ www3.twdb.texa	s.gov/apps/wla/Audit.aspx?ay=2019&un=101002	7	Q 🕁 🙆 🏚
Apps / TWDB HOME 🕥 TWDB INTR	ANET 📀 TWDB LUC 💿 TCEQ DWW 🚹 Works	shop Participa 🧿 New Tab 🕥 WLA: Requests Pen	
Texas Water Development Board		Water Loss Audit	Home Logout Agency Policies Conta
Home Worksheet Audit Report Request Acce	ess WLUC Home		
Water Audit Report for 1010027, Year 2019	Un-Submit Worksheet Help for Form Complet	ion Assessment Scale Change Year Cancel	
Open Instructions			
* FIELDS MARKED WITH A RED STAR MUST BE FI	LLED OUT BEFORE THIS FORM CAN BE SUBMITTED.		
A. Water Utility General Information			
1. Water Utility Name:	CITY OF WEST UNIVERSITY PLACE		
1a. Regional Water Planning Area: 🥥	н		
1b. Address:	3800 UNIVERSITY BLVD		
	HOUSTON, TX 77005-2802		
 Contact Information: 2a. Name: 2b. Telephone Number: 2c. Email Address: 3. Reporting Period: 3a. Start Date: 3b. End Date: 4. Source Water Utilization:	Barron Cooper (832) 818-0757 bcooper@westutx.gov 1/1/2019 (m/d/yyyy) 12/31/2019 (m/d/yyyy) 35.00 %	Weve you completed Water Loss Auditor Training? Yes View Training Completion Document Delete	
,	(0.00) /0		
www.twdb.texas.gov			Texas Water
www.facebook.com/twdboard	@twdb		Development Board



Water Loss Audit

Home	Worksheet	Audit Report	Request Access	WLUC Home				
Water Au	idit Report for '	1010027, Year 2	2019 Save	Un-Submit Workshee	t Help for Form Completion	Assessment Scale	Change Year	Cancel
		_						

Close Instructions

-

The Save button will save any data you enter for retrieval on future visits to this site. Use the Submit Worksheet button to save your data and indicate that your form is completed and ready for TWDB review.

IMPORTANT - Read this - How to use the Save, Submit Worksheet and Un-Submit Worksheet buttons --> @

If further assistance is needed contact WLA-Group@twdb.texas.gov or 512.463.0987.

FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.

Reset Source Water Percentages to Zero	
5. Population Served: 🥥	
5a. Retail Population Served:	15,016
5b. Wholesale Population Served:	
* 6. Utility's Length of Main Lines:	53.00 miles 2 Assessment Scale: 4 v 2
* 7. Total Retail Metered Connections - Active and Inactive:	6,179 🥑
* 7b. Service Connections:	6,179 (a) Assessment Scale: 3 (a)
8. Number of Wholesale Connections Served:	0
9. Service Connection Density:	116.58 connections per mile 2
* 10. Average Yearly System Operating Pressure:	58.00 psi @ Assessment Scale: 2 v @
11. Volume Units of Measure:	gallons 🥥



www.twdb.texas.gov

f www.facebook.com/twdboard 🔰 @twdb

Texas Water Development Board		Water L	oss Audit	
Home Worksheet Audit Report Request Access	WLUC Home			
Water Audit Report for 1010027, Year 2019 Save	Un-Submit Worksheet	Help for Form Completion	Assessment Scale	Change Year Cancel
Close Instructions				
The Save button will save any data you enter for retrieva Use the Submit Worksheet button to save your data and	l on future visits to this site. d indicate that your form is com	bleted and ready for TWDB r	review.	
IMPORTANT - Read this - How to use the Save, Submi	t Worksheet and Un-Submit V	/orksheet buttons> 🥝		
If further assistance is needed contact WLA-Group@twd	<u>b.texas.gov</u> or 512.463.0987.			
* FIELDS MARKED WITH A RED STAR MUST BE FILLE	DOUT BEFORE THIS FORM	CAN BE SUBMITTED.		
Reset Source Water Percentages to Zero				
5. Population Served: 2				
5a. Retail Population Served:	15,0	16		
5b. Wholesale Population Served:		0		
* 6. Utility's Length of Main Lines:	53.0	00 miles 🥑 Assessment	: Scale: 4 🗸 🥥	
* 7. Total Retail Metered Connections - Active and Inactive:	6,12	79 🥥		
* 7b. Service Connections:	6,1	79 @ Assessment	Scale: 3 🗸 🥝	
8. Number of Wholesale Connections Served:		0 @		
9. Service Connection Density:	116.5	58 connections per mile 🥥		
* 10. Average Yearly System Operating Pressure:	58.	00 psi @ Assessment	: Scale: 2 🗸 🥑	
11. Volume Units of Measure:	gallo	ns 🥑		

www.twdb.texas.gov



Texas Water Development Board

5b. Wholesale Population Served:	0							
* 6. Utility's Length of Main Lines:	53.00 miles	Assessment Scale:	4 🗸 🥥					
* 7. Total Retail Metered Connections - Active and Inactive:	6,179 😨							
* 7b. Service Connections:	6,179 2	Assessment Scale:	3 🗸 🥝					
8. Number of Wholesale Connections Served:	0							
9. Service Connection Density:	116.58 connect	Average Yearly System	n Operating Pressure					
* 10. Average Yearly System Operating Pressure:	58.00 psi 🥑	58.00 psi 💿 The average pressure across the entire water distributio						
11. Volume Units of Measure:	gallons 🧿	average pressure can be calculated by the model; otherwise, an estimate can be used.						
B. System Input Volume								
12. Volume of Water Intake:	300.469.000 gallons	0						
Average Yearly Sy	Average Yearly System Operating Pressure							
The average pressure across the entire water distribution systems for the audit period. If a hydraulic model of the network exists, the average pressure can be calculated by the model; otherwise, an estimate can be used.								



www.twdb.texas.gov

www.facebook.com/twdboard

🔰 @twdb

System Input Volume

Total amount of water supplied to the distribution system and should be validated and should include an adjustment for master meter inaccuracy.





www.twdb.texas.gov



Image: Concept Conc	New Tab 🗙 🚱 Water Loss Audit	× +	
If Apps TWDB HONE TWDB HONE TWDB HONE TWDB HONE TWDB HONE More Logoud Agency Policies C Water Loss Audit Water Audit Report for 100027 (ver 2019) Un-Submit Worksheet Help for Form Completion Assessment Scale Change Year Cancel B system Input Volume 12 Volume of Water Intake: 300,469,000 gallons Assessment Scale 13 Produced Water: 300,469,000 gallons 4 Assessment Scale: 1 Treated Purchased Water: 42,2123,000 gallons 4 Assessment Scale: 1 Treated Purchased Water 1 Treated Purchased Water 5 Total Treated Water Meter Accuracy: 5 Sign of Partices Water Meter Accuracy: 6 Sign of Assessment Scale: 1 Treated Water Meter Accuracy: 6 Sign of Assessment Scale: 1 Treated Water Meter Accuracy: 6 Sign of Assessment Scale: 1 Treated Water Meter Accuracy: 6 Sign of Assessment Scale: 1 Treated Water Meter Accuracy: 6 Sign of Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales: 0 gallons 2 Assessment Scale: 1 Sign of Treated Water Sales 1 Sign of Treated Water Sales 1 Sign of Treated Water S	← → C 🏠 🔒 www3.twdb.texas.gov/apps/wla/Au	udit.aspx?ay=2019&un=1010027	🖈 🖪 🏚
Best Nation Water Loss Audit Mome Worksheet Audit Report Request Access WLUC Home Water Audit Report for 100027 Wu-submit Worksheet Help for Form Completion [Assessment Scale Change Year Cancel Image: Complexity of the set o	Apps // TWDB HOME 🕥 TWDB INTRANET 🥥 TWDB I	LUC 💿 TCEQ DWW 🚹 Workshop Participa 🧐 New Tab 🌍 WLA: Requests Pen	
Home Worksheet Audit Report for 1010027, Year 2019 Uh-Submit Worksheet Help for Form Completion Assessment Scale Change Year Cancel I Open Instructions * RELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED. B. System Input Volume 12. Volume of Water Intake: 300,469,000 galons 4 System Input Volume 13. Produced Water: 300,469,000 31. Produced Water: 300,469,000 31. Produced Input Volume 312,988,542 galons @ 14. Total Treated Purchased Water: 492,123.000 galons @ 44. Treated Purchased Water Accuracy: 96.0 % @ 44. Treated Purchased Water: 492,123.000 galons @ 14b. Corrected Treated Purchased Water Yolume: 512,628,125 galons @ 15 Total Treated Purchased Water Sales 15 Total Treated Wholesale Water Sales 0 galons @ 45b. Corrected Treated Wholesale Water Sales 0 galons @	Texas Water Development Board	Water Loss Audit	Home Logout Agency Policies Contac
Water Audit Report for 1010027, Year 2019 Un-Submit Worksheet Help for Form Completion Assessment Scale Change Year Cancel I Depen Instructions I ELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED. B. System Input Volume 12. Volume of Water Intake: 300.469.000 313. Produced Water: 300.469.000 31a. Produced Input Volume: 312. System Input Volume: 313. Produced Input Volume: 314. Total Treated Purchased Water: 492.123.000 14a. Treated Purchased Water Volume: 512.628.125 gallons @ 15 Total Treated Wholesale Water Sales 0 gallons @ 400.000 gallons @	Home Worksheet Audit Report Request Access WLUC H	lome	4
Piel DS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED. B. System Input Volume 12. Volume of Water Intake: 300.469,000 13. Produced Water: 300.469,000 13. Produced Water: 300.469,000 4 96.0 % 4 30.469,000 4 96.0 4 96.0 4 96.0 4 96.0 4 96.0 4 96.0	Water Audit Report for 1010027, Year 2019	mit Worksheet Help for Form Completion Assessment Scale Change Year Cancel	<u>]</u>
FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED. B. System Input Volume 12. Volume of Water Intake: 300,469,000 galons @	Open Instructions		
B. System Input Volume 12. Volume of Water Intake: 300,469,000 gallons @ * 13. Produced Water: 300,469,000 @ 13a. Production Meter Accuracy: 96.0 % @ 13b. Corrected Input Volume: 312,988,542 gallons @ 14. Total Treated Purchased Water: 492,123,000 gallons @ 14a. Treated Purchased Water 96.0 % @ 14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons @ 15c. Treated Wholesale Water Sales 0 gallons @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @	* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BE	EFORE THIS FORM CAN BE SUBMITTED.	
B. System Input Volume 12. Volume of Water Intake: 300,469,000 gallons @ 13. Produced Water 300,469,000 @ Assessment Scale: 4 < @			
12. Volume of Water Intake: 300,469,000 gallons @ 13. Produced Water: 300,469,000 @ 13a. Production Meter Accuracy: 96.0 % @ 96.0 % @ Accessment Scale: 13b. Corrected Input Volume: 312,988,542 gallons @ 14. Total Treated Purchased Water. 492,123,000 gallons @ 14a. Treated Purchased Water Meter Accuracy: 96.0 % @ 96.0 % @ Accessment Scale: 1 < @	B. System Input Volume		
* 13. Produced Water: 300,469,000 ♀ Assessment Scale: 4 ♥ ♀ 13a. Production Meter Accuracy: 96,0 % ♀ Accessment Scale: 1 ♥ ♀ 13b. Corrected Input Volume: 312,988,542 gallons ♀ 1 ♥ ♀ 14a. Treated Purchased Water: 492,123,000 gallons ♀ Accessment Scale: 1 ♥ ♀ 14a. Treated Purchased Water Meter Accuracy: 96,0 % ♀ Accessment Scale: 1 ♥ ♀ 14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons ♀ 3 ♥ ₽ 15b. Total Treated Wholesale Water Sales 0 gallons ♀ Accessment Scale: N/A ♥ ♀ 15a. Treated Wholesale Water Meter Accuracy: 0.0 % ♀ Accessment Scale: N/A ♥ ♀ 15b. Corrected Treated Wholesale Water Sales 0 gallons ♀ Accessment Scale: N/A ♥ ♀ 15b. Corrected Treated Wholesale Water Sales 0 gallons ♀ Accessment Scale: N/A ♥ ♀	12. Volume of Water Intake:	300,469,000 gallons 🥥 🚽	
13a. Production Meter Accuracy: 96.0 % @ Accessment Seals 1 • @ 13b. Corrected Input Volume: 312,988,542 gallons @ 14. Total Treated Purchased Water: 492,123,000 gallons @ Assessment Scale: 1 • @ 14a. Treated Purchased Water Meter Accuracy: 96.0 % @ Accessment Scale: 1 • @ 14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons @ 3 • @ 15b. Treated Wholesale Water Sales: 0 gallons @ Assessment Scale: N/A • @ 15a. Treated Wholesale Water Meter Accuracy: 0.0 % @ Accessment Scale: N/A • @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @ Accessment Scale: N/A • @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @ Accessment Scale: N/A • @	* 13. Produced Water:	300,469,000 @ Assessment Scale: 4 v @	
13b. Corrected Input Volume:312,988,542 gallons ②14. Total Treated Purchased Water:492,123,000 gallons ②14a. Treated Purchased Water Meter Accuracy:96.0 % ②96.0 % ②Assessment Scale:14b. Corrected Treated Purchased Water Volume:512,628,125 gallons ②15. Total Treated Wholesale Water Sales:0 gallons ②15a. Treated Wholesale Water Accuracy:0.0 % ②15b. Corrected Treated Wholesale Water Sales:0 gallons ②15b. Corrected Treated Wholesale Water Sales:0 gallons ②	13a. Production Meter Accuracy:	96.0 % @ Accessment Scale 1 V @	
14. Total Treated Purchased Water: 492,123,000 gallons @ Assessment Scale: 1 @ 14a. Treated Purchased Water Meter Accuracy: 96.0 % @ Assessment Scale: 3 @ 14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons @ 3 @ 15. Total Treated Wholesale Water Sales: 0 gallons @ Assessment Scale: N/A < @	13b. Corrected Input Volume:	312,988,542 gallons 🥥	
14a. Treated Purchased Water Meter Accuracy: 96.0 % @ Assessment Scale 3 • @ 14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons @ 3 • @ 15. Total Treated Wholesale Water Sales: 0 gallons @ Assessment Scale: N/A • @ 15a. Treated Wholesale Water Accuracy: 0.0 % @ Accessment Scale: N/A • @ 15b. Corrected Treated Wholesale Water Sales 0 gallons @ M/A • @	14. Total Treated Purchased Water.	492,123,000 gallons 🥥 Assessment Scale: 1 🗸	
14b. Corrected Treated Purchased Water Volume: 512,628,125 gallons ② 15. Total Treated Wholesale Water Sales: 0 gallons ③ Assessment Scale: N/A < ③	14a. Treated Purchased Water Meter Accuracy:	96.0 % 🕘 🔸 Accessment Scale 3 🗸 🥥	
15. Total Treated Wholesale Water Sales: 0 gallons ② Assessment Scale: N/A ▼ ③ 15a. Treated Wholesale Water Meter Accuracy: 0.0 % ③ Assessment Scale: N/A ▼ ③ 15b. Corrected Treated Wholesale Water Sales 0 gallons ③ 0 gallons ④	14b. Corrected Treated Purchased Water Volume:	512,628,125 gallons 🥑	
15a. Treated Wholesale Water Accuracy: 0.0 % ② ◆Accessment Scale: N/A ✓ ③ 15b. Corrected Treated Wholesale Water Sales 0 gallons ② Volume: 0.0 % ③ ● Accessment Scale:	15. Total Treated Wholesale Water Sales:	0 gallons 🥥 Assessment Scale: N/A 🗸 🥥	
15b. Corrected Treated Wholesale Water Sales 0 gallons 2 Volume:	15a.Treated Wholesale Water Meter Accuracy:	0.0 % @ Accessment Scale: N/A V @	
A A ALE ALE ALE ALE ALE ALE ALE ALE ALE	15b. Corrected Treated Wholesale Water Sales Volume:	0 gallons 🥑	
16. Total System Input Volume: 825,616,667 gallons @	16. Total System Input Volume:	825,616,667 gallons 🥥 🔸	
		and the second sec	

Texas Water Development Board

www.twdb.texas.gov



Authorized Consumption

Water that is used by customers that are known to the water system.

Billed Metered

- + Billed Unmetered
- + Unbilled Metered
- + Unbilled Unmetered
- = Authorized Consumption





www.twdb.texas.gov



New Tab 🗙 🔇 Water	.oss Audit × +	7 1
← → C 🏠 🔒 www3.twdb.texas.gov/a	pps/wla/Audit.aspx?ay=2019&un=1010027	🖈 🔒 🖈
H Apps TWDB HOME S TWDB INTRANET	🕤 TWDB LUC 💿 TCEQ DWW 🚹 Workshop Participa 🕥 New Tab 🕥 WLA: Reqr	uests Pen
Texas Water Development Board	Water Loss Audit	Home Logout Agency Policies Contac
Home Worksheet Audit Report Request Access	WLUC Home	A
Water Audit Report for 1010027, Year 2019	Un-Submit Worksheet Help for Form Completion Assessment Scale Ch	hange Year Cancel
Open Instructions		
FIELDS MARKED WITH A RED STAR MUST BE FILI	ED OUT BEFORE THIS FORM CAN BE SUBMITTED.	
16. Total System Input Volume:	825,616,667 gallons 🥥	
C. Authorized Consumption		
* 17. Billed Metered:	792,592,000 gallons a Assessment scale: 4.5 V	
18. Billed Unmetered:	0 gallons @ Assessment Scale: 5 V @	
19. Unbilled Metered:	0 gallons ⊚ As sessment Scale. 5 ✓ ⊗	
20. Unbilled Unmetered:	10,320,208 gallons @ Assessment Scale: 3 v @	
Use 1.25% of System Input Volume		
21. Total Authorized Consumption:	802,912,208 gallons 🥥	
D. Water Losses		
22. Water Losses:	22,704,458 gallons 🥪	
E. Apparent Losses		
* 23. Average Customer Meter Accuracy:	98.0 % 🥥 Assessment Scale: 4.5 🗸 🎯	
24. Customer Meter Accuracy Loss:	16,175,347 gallons 🞯	
www.twdb.texas.gov		Texas Water 🦳
👎 www.facebook.com/twdboard 🛛 🎔 @twc	b	Development Board

Water Losses

Water losses in the distribution system are categorized as either apparent or real loss.

System Input Volume

- Authorized Consumption
- = Water Loss

🔰 @twdb





www.twdb.texas.gov

Apparent Loss

Financial Losses - water that is lost that could have been sold. Non-Revenue Water, Water Theft, Slow Meters and Billing Issues

Unauthorized Consumption

- + Customer Meter Inaccuracies
- + Systematic Data handling Errors
- = Apparent Loss

🔰 @twdb





www.twdb.texas.gov

Real Loss

Physical Losses – water that enters the distribution system but never reaches a user. Leakage on transmission and distribution mains, storage tank overflows, and service line leak to customer meter.

• Non revenue water

Water Loss

- Apparent Loss
- = Real Loss





www.twdb.texas.gov

www.facebook.com/twdboard

🔰 @twdb

New Tab 🗙 🔇 Wate	r Loss Audit 🗙	+			7
← → C ☆ @ www3.twdb.texas.gov/	apps/wla/Audit.aspx?ay=20198	kun=1010027			☆ 🙆 🌟
Apps // TWDB HOME 🕥 TWDB INTRANET	S TWDB LUC 💿 TCEQ DWV	V 🚹 Workshop Participa 🕥 N	lew Tab 🕥 Wi	LA: Requests Pen	
Texas Water Loss Audit Vevelopment Board					Home Logout Agency Policies Contac
Home Worksheet Audit Report Request Acce	ss WLUC Home				A
Water Audit Report for 1010027, Year 2019	Un-Submit Worksheet	Help for Form Completion Asses	sment Scale	Change Year Cancel	
Open Instructions					
* FIELDS MARKED WITH A RED STAR MUST BE FI	LLED OUT BEFORE THIS FORM	CAN BE SUBMITTED.			
E. Apparent Losses					
* 23. Average Customer Meter Accuracy:	9	8.0 % 🥥 🚽 Assessment Scale:	4.5 🗸 🎯		
24. Customer Meter Accuracy Loss:	16,175,3	47 gallons 🥥			
25. Systematic Data Handling Discrepancy:	[0 gallons 🥥 Assessment Scale:	4 🗸 🥥		
26. Unauthorized Consumption:	2,064,0	42 gallons 🥥 Assessment Scale:	2 🗸 🥥		
✓ Use 0.25% of System Input Volume					
27. Total Apparent Losses:	18,239,3	189 gallons 🥥 🖌			
F. Real Losses					
28. Reported Breaks and Leaks:	1,000,0	00 gallons 🥥 Assessment Scale:	3.5 🗸 🥥		
29. Unreported Loss:	3,465,0	70 gallons 🥥 Assessment Scale:	1 • 0		
30. Total Real Losses:	4,465,0	170 gallons 🧿 🔸			
31. Total Water Losses:	22,704,4	58 gallons 🍥			
32. Non-Revenue Water:	33,024,6	67 gallons 🥥			

Texas Water Development Board

www.twdb.texas.gov



Indicators

- Technical & Financial Performance Indicators
 - Quantitative measures of key aspects within your water system.
 - Use these indicators to develop history and track your performance from year to year.





www.twdb.texas.gov

🔰 @twdb
Texas Water Development Board		Home Logout Agency Policies Contac			
Home Worksheet Audit Report Request Access WL	UC Home		A		
Water Audit Report for 1010027, Year 2019	-Submit Worksheet Help for Form Completion Assessment Scale	Change Year Cancel			
Open Instructions					
FIELDS MARKED WITH A RED STAR MUST BE FILLED O	JT BEFORE THIS FORM CAN BE SUBMITTED.				
G. Technical Performance Indicator for Apparent L	055				
33. Apparent Losses Normalized:	8.09 gallons lost per connection per day 🐣				
H. Technical Performance Indicators for Real Loss					
34. Real Loss Volume:	4,465,070 gallons				
35. Unavoidable Annual Real Losses Volume:	25,691,489 gallons 🥥				
36. Infrastructure Leakage Index:	0.17 I.LI. 🖉				
37. Real Losses Normalized - Service Connections:	1.98 gallons lost per connection per day				
38. Real Losses Normalized - Main Lines:	0.00 gallons lost per mile per day 🎯				
I. Financial Performance Indicators					
39. Total Apparent Losses:	18,239,389 gallons 🥥				
* 40. Retail Price of Water:	0.00232) 🗊 \$ per gallon 🎯 Assessment Scale: 3 🗸 🎯				
41. Cost of Apparent Losses:	\$42,315 🔘				



www.facebook.com/twdboard

Texas Water Development Board		Water Loss Au		Home Logout Agency Policies Conta		
Home Worksheet Audit Report Request Access	WLUC Home				F	
Water Audit Report for 1010027, Year 2019	Un-Submit Worksheet	Help for Form Completion Assessm	ent Scale	Change Year Cancel		
Open Instructions						
* FIELDS MARKED WITH A RED STAR MUST BE FILL	ED OUT BEFORE THIS FORM	I CAN BE SUBMITTED.				
I. Financial Performance Indicators						
39. Total Apparent Losses:	18,239,	389 gallons 🎯 🗲				
* 40. Retail Price of Water:	0.00232	\$ per gallon @ Assessment Scale:	3 🗸 🥥			
41. Cost of Apparent Losses:	\$42,	315 🍥				
42 Total Real Losses:	4,465,	070 gallons 🥥				
* 43. Variable Production Cost of Water:	0.000240	\$ per gallon 👩 Assessment Scale:	3.5 🗸 🎯			
44. Cost of Real Losses:	\$1,	072 👰 <				
45. Total Cost Impact of Apparent and Real Losses	\$43,	387 🎯 <				
46. Total Assessment Score:		67 🥥				

J. System Losses and Gallons Per Capita per Day (GPCD)



www.twdb.texas.gov

😝 www.facebook.com/twdboard





Water Loss Indicators

- Line 36 Infrastructure Leakage Index: performance indicator used by large system > 3,000 connections.
- Lines 41 and Line 44 Costs of Apparent (revenue) and Real Losses - \$\$ + \$\$
- Line 45 Cost of Total Water Loss \$\$\$\$
- Line 48 & 49 GPCD (gallons per capita per day) becomes important if you are completing a Water Conservation Plan



www.twdb.texas.gov

If further assistance is needed contact <u>WLA-Group@twdb.texas.gov</u> or 512.463.0987.

* FIELDS MARKED WITH A RED STAR MUST BE FILLED OUT BEFORE THIS FORM CAN BE SUBMITTED.

J. System Losses and Gallons Per Capita per	Day (GPCD)
47. Total Water Loss per Connection per Day:	10.07 gallons 🔇
48. GPCD Input:	151 🥝
49. GPCD Loss:	4 🜏
K. Wholesale Factor Adjustments 🥥 🔸	
50. Percent of Treated Wholesale Water Traveling through General Distribution System:	0.00 % 🥑
51. Volume of Treated Wholesale Water Traveling through General Distribution System:	0 🥝
52. Wholesale Factor:	0.00 💿
53. Adjusted Real Loss Volume:	4,465,070 😨
54. Adjusted Cost of Real Losses:	\$1,072 🕝
55. Adjusted Total Water Loss Volume:	22,704,458 😨



www.twdb.texas.gov

👎 www.facebook.com/twdboard

Performance Tracking - Total Water Loss Percentage

City of Water vs. City of Ice

Field on Audit	City of Water	City of Ice
Total System Input Volume	2,000,000,000 gallons	1,000,000,000 gallons
Total Authorized Consumption	1,650,000,000 gallons	825,000,000 gallons
Total Water Loss	350,000,000 gallons	175,000,000 gallons
Percent of Water Loss	17.5%	17.5%
Real Loss per Connection per Day	56.7 gallons per connection per day	79.4 gallons per connection per day
Apparent Loss per Connection per Day	9.8 gallons per connection per day	13.7 gallons per connection per day
Connections	14,000	5,000
	215	100

80

Texas Water

Development Board

Performance Tracking - Total Water Loss Percentage <u>City of Water</u>

Field on Audit	2019	2020
Total System Input Volume	2,000,000,000 gallons	2,100,000,000 gallons
Total Authorized Consumption	1,650,000,000 gallons	1,750,000,000 gallons
Total Water Loss	350,000,000 gallons	350,000,000 gallons
Percent of Water Loss	17.5%	16.7%
Real Loss per Connection per Day	56.7 gallons per connection per day	56.7 gallons per connections per day
Apparent Loss per	9.8 gallons per	9.8 gallons per

www.twdb.texas.gov

Development Board

Texas Water Development Board		Water Loss Audit	Home Logout Agency Policies Contac		
Home Worksheet Audit Report Request Access	WLUC Home			A	
Water Audit Report for 1010027, Year 2019	Un-Submit Worksheet	Help for Form Completion Assessment Scale	Change Year Cancel		
Open Instructions	Aut 1 100 100 100	Augusta and an			
FIELDS MARKED WITH A RED STAR MUST BE FILLED	OUT BEFORE THIS FORM	CAN BE SUBMITTED.			
55. Adjusted Total Water Loss Volume:	22,704,4	58 @			
56. Adjusted Total Cost Impact of Apparent and Real Losses:	\$43,36	87 💿			
57. Adjusted Real Loss Per Connection:	1.5	98 🎯			
58. Adjusted Real Loss Per Mile:	0.0	00 @			
59. Adjusted Infrastructure Leakage Index:	0.1	17 🔘			
60. Adjusted Total Water Loss - Percentage:	2.7	75 % 🛞			
61. Adjusted GPCD Loss:		4 @			

Comments





www.twdb.texas.gov

www.facebook.com/twdboard



Water Loss Audit - Common Data Issues

Negative or Zero Values

- Total Water Loss
 - Sold more or same as put into the system
- Apparent Loss
 - Meters under-registering
- Real Loss
 - Apparent too high or,
 - Total water loss too low
- Unreported Loss

🔰 @twdb

Reported breaks and leaks too high



Water Loss Audit – Data Review

Infrastructure Leakage Index

- I.L.I. below 1
- Not possible obvious data issue

Very High Water Loss

🔰 @twdb

• Indicates a possible data issue

Water Use Survey Errors

- Input=Billed
- Wrong Units
- Connections
- Affects water loss volume and performance indicators

System Information Errors

- Main Lines or Pressure
- Creates error in performance indicators



Water Loss Resources

- Troubleshooting, guidance, assessment scales, leak detection loan form, WUS and WLA checklist, monthly water loss report, and more:
- <u>http://www.twdb.texas.gov/conservatio</u> <u>n/resources/waterloss-resources.asp</u>





www.twdb.texas.gov

Contacts

Water Loss Audit

- Mark Mathis
- 512-463-0987

mark.mathis@twdb.texas.gov

John Sutton - 512-463-7988 john.sutton@twdb.texas.gov







Water Loss, Use, and Conservation (WLUC) Workshop

Water Loss Audit – Part 2 - Assessments

Municipal Water Conservation Texas Water Development Board (TWDB)

Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.

Texas Water Development Board

www.twdb.texas.gov

Assessment Scale Benefits

- Self-reported Assessments complete the WLA to determine how accurate your data is
- Consider your options and take action
- Also known as Water Loss Audit validation
- Bridge from WLA to Action to Conservation Plans



www.twdb.texas.gov

Assessment Scales Tips

- Self-reported validation of the reported data
- Recommend completing after the water loss audit is done but before the final submittal
- No right or wrong answers

🔰 @twdb

- Cover conditions during the reporting period
- Lower scores = less confidence in your water loss audit data
- Higher scores = greater confidence in your water loss data
- There are 20 assessment scales overall



Texas Water Development Board		Water Loss Audit
Home Worksheet Audit Report Request Access V	VLUC Home	
Water Audit Report for 1010027, Year 2019	n-Submit Worksheet Help for Form	m Completion Assessment Scale Change Year Cancel
Close Instructions		
The Save button will save any data you enter for retrieval of Use the Submit Worksheet button to save your data and in	n future visits to this site. ndicate that your form is completed and rea	ady for TWDB review.
IMPORTANT - Read this - How to use the Save, Submit W	orksheet and Un-Submit Worksheet bu	uttons> 🥑
If further assistance is needed contact WLA-Group@twdb.te	xas.gov or 512.463.0987.	
* FIELDS MARKED WITH A RED STAR MUST BE FILLED OU	JT BEFORE THIS FORM CAN BE SUBMI	ITTED.
5. Population Served: 🥝		
5a. Retail Population Served:	15,016	
5b. Wholesale Population Served:	0	
* 6. Utility's Length of Main Lines:	53.00 miles 🥑	Assessment Scale: 4 🔽
* 7. Total Retail Metered Connections - Active and Inactive:	6,179 🥑	
* 7b. Service Connections:	6,179	Assessment Scale: 3 V
8. Number of Wholesale Connections Served:	0	
9. Service Connection Density:	116.58 connection	ns per mile 🎯
* 10. Average Yearly System Operating Pressure:	58.00 psi 🥑	Assessment Scale: 2 🗸
11. Volume Units of Measure:	gallons 🧿	
B. System Input Volume		
12. Volume of Water Intake:	300,469,000 gallons 🥝	
www.twdb.texas.gov		Texas Water
🕜 www.facebook.com/twdboard 🛛 🐸 @twdb		Novalanment Roard
		neveluhilielir Dogi a

Component				Adapted fro	Length of M om American Wate	ain Lines Assessment Sc er Works Association Fre	ale Table e Water Audit Sol	ftware©	ware®			
SYSTEM DATA	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A	
Line 6 Length of main lines, miles	Current condition: Poorly assembled and maintained paper as- built record of existing water main instantations makes accurate determination of system pipe length impossible. Length of mains is estimated.	Current condition: Paper records in poor or uncertain condition (no annual tracking of installations & abandonments). Poor procedures to ensure that new water mains installed by developers are accurately documented.	Conditions between 1 and 2	Current condition: Sound written policy and procedures exist for documenting new water main installations, but gaps in management result in a uncertain degree of error in tabulation of mains length.	Conditions between 2 and 3	Current condition: Sound written policy and procedures exist for permitting and commissioning new water mains. Highly accurate paper records with regular field validation; or electronic records and asset management system in good condition. Includes system backup.	Conditions between 3 and 4	Current condition: Sound written policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping such as a Geographical Information System (GIS) and asset management system are used to store and manage data.	Conditions between 4 and 5	Current condition: Sound written policy exists for managing water mains extensions and replacements. Geographic Information System (GIS) data and asset management database agree and random field validation proves truth of databases. Records of annual field validation should be available for review.	Not a choice	
Improvements in quantifying the length of mains	To improve to 1: Assign personnel to inventory current as- built records and compare with customer billing system records and highway plans in order to verify poorly documented pipelines. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedures that result in poor	To improv Complete inventory o water main installation prior to audit year. F procedures for com documenting new installat	e to 2: If paper records of ns for several years Review policy and nmissioning and w water main tion.	To improve to 3: Finalize updates/improvements to written policy and procedures for permitting/commissioning new main installations. Confirm inventory of records for five years prior to audit year; correct any errors or omissions.		To improve Launch random field number of locatio electronic database su Information System (G justified. Develop w procedu	e to 4: checks of limited ns. Convert to ch as a Geographic IS) with backup as ritten policy and res.	To improv Link Geographic Inform and asset managen conduct field verificati field verification info annual	e to 5: nation System (GIS) nent databases, on of data. Record ormation at least ily.	To maintain a 5: Continue with standardization and random field validation to improve the completeness and accuracy of the system.	Not a choice	



www.facebook.com/twdboard

Component	Number of Retail Connections Assessment Scale Table Adapted from American Water Works Association Free Water Audit Software®										
SYSTEM DATA	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 7 Number of retail connections, active and inactive Value for Line 7 is populated from the Water Use Survey	Current condition: Vague permitting (of ew service onnections) policy and poor paper recordkeeping of customer connections/billings result in suspect determination of the number of service connections, which may be 10-15% in error from actual count.	Current condition: General permitting policy exists but paper records, procedural gaps, and weak oversight result in guestionable total for number of connections, which may vary 5-10% of actual count.	Conditions between 1 and 2	Current condition: Written account activation policy and procedures exist, but with some gaps in performance and oversight. Computerized information management system is being brought online to replace dated paper recordkeeping system. Reasonably accurate tracking of service connection installations & abandonments; but count can be up to 5% in error from actual total.	Conditions between 2 and 3	Current condition: Written new account activation and overall billing policies and procedures are adequate and reviewed periodically. Computerized information management system is in use with annual installations & abandonments totaled. Very limited field verifications and audits. Error in count of number of service connections is believed to be no more than 3%.	Conditions between 3 and 4	Current condition: Policies and procedures for new account activation and overall billing operations are written, well- structured and reviewed at least biannually. Well- managed computerized information management system exists and routine, periodic field checks and internal system audits are conducted. Counts of connections are no more than 2% in error.	Conditions between 4 and 5	Current condition: Sound written policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system, Customer Billing System, and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections recorded as being in error is less than 1% of the entire population.	Not a choice
Improvements in quantifying the number of retail connections, active and inactive	To improve to 1: Draft new policy and procedures for new account activation and overall billing operations. Research and collect paper records of installations & abandonments for several years prior to audit year.	To improv Refine policy and pro account activation a operations. Researc recordkeeping syst Information System System) to improve format for service	e to 2: ocedures for new nd overall billing ch computerized tem (Customer r Customer Billing documentation e connections.	To improve Refine procedures to e with new account acti billing policy to estat connections or decor connections. Improve all totals for at least f audit ye	To improve to 3: ne procedures to ensure consistency new account activation and overall ling policy to establish new service inections or decommission existing tections. Improve process to include totals for at least five years prior to audit year.		e to 4: ew of new account billing operations is. Launch random ted number of ports and auditing computerized gement system.	To improv Close any procedural lo installations to go und computerized informa system with Geogra System (GIS) and t inspection and info auditing processes. I new or decommis connections encounte checks and t	e to 5: hopholes that allow locumented. Link tion management phic Information formalize field rmation system Documentation of sioned service rs several levels of palances.	To maintain a 5: Continue with standardization and random field validation to improve knowledge of system.	Not a choice



www.facebook.com/twdboard

Component		Average Yearly System Operating Pressure Assessment Scale Table Adapted from American Water Works Association Free Water Audit Software©										
SYSTEM DATA	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A	
Line 10 Average yearly system operating pressure	Current condition: Available records are poorly assembled and maintained paper records of supply pump characteristics and water distribution system operating conditions. Average pressure is estimated based upon this information and ground elevations from crude topographical maps. Widely varying distribution system pressures due to undulating terrain, high system head loss and weak/erratic pressure controls further compromise the validity of the average pressure calculation.	Current condition: Limited telemetry monitoring of scattered pumping station and water storage tank sites provides some static pressure data, which is recorded in handwritten logbooks. Pressure data is gathered at individual sites only when low pressure complaints arise. Average pressure is determined by averaging relatively crude data, and is affected by significant variation in ground elevations, system head loss and gaps in pressure controls in the distribution system.	Conditions between 1 and 2	Current condition: Effective pressure controls separate different pressure zones; moderate pressure variation across the system, occasional open boundary valves are discovered that breech pressure zones. Basic telemetry monitoring of the distribution system logs pressure data electronically. Pressure data gathered by gauges or dataloggers at fire hydrants or buildings when low pressure complaints arise, and during fire flow tests and system flushing. Reliable topographical data exists. Average pressure is calculated using this mix of data.	Conditions between 2 and 3	Current condition: Reliable pressure controls separate distinct pressure zones; only very occasional open boundary valves are encountered that breech pressure zones. Well-covered telemetry monitoring of the distribution system (not just pumping at source treatment plants or wells) logs extensive pressure data electronically. Pressure gathered by gauges/dataloggers at fire hydrants and buildings when low pressure complaints arise, and during fire flow tests and system flushing. Average pressure is determined by using this mix of reliable data.	Conditions between 3 and 4	Current condition: Well-managed, discrete pressure zones exist with generally predictable pressure fluctuations. A current full-scale SCADA System or similar realtime monitoring system exists to monitor the water distribution system and collect data, including real time pressure readings at representative sites across the system. The average system pressure is determined from reliable monitoring system data.	Conditions between 4 and 5	Current condition: Well-managed pressure districts/zones, SCADA System and hydraulic model exist to give very precise pressure data across the water distribution system. Average system pressure is reliably calculated from extensive, reliable, and cross-checked data. Calculations are reported on an annual basis as a minimum.	Not a choice	
Improvements in quantifying the average	To improve to 1: Employ pressure gauging and/or datalogging equipment to obtain pressure measurements from fire hydrants. Locate accurate topographical mans of service area in	To improve Formalize a procedur gauging/datalogging er pressure data during events such as low pre or operational testir pressure and flow dat regimes. Identify fault (pressure reducing valv nartially open bounda	e to 2: re to use pressure quipment to gather g various system essure complaints, ng. Gather pump a at different flow y pressure controls ves, altitude valves, or valves) and plan	To improve Expand the use gauging/datalogging ec scattered pressu representative set of s pressure zones or are pressure and flow da supply head entering e or district. Correct an controls (pressure r	e to 3: of pressure quipment to gather ure data at a sites, based upon eas. Utilize pump ata to determine each pressure zone ny faulty pressure educing valves	To improve Install a Supervisory Acquisition (SCADA) S saltime monitoring s system parameter operations. Set reg schedule for instrume data accuracy. OU topographical data an data acturacy from	e to 4: Control and Data System, or similar stem, to monitor rs and control ular calibration ular calibration entation to insure otain accurate id utilize pressure field surveys to	To improve Annually, obtain a sys pressure value from th of the distribution sys calibrated via field me water distribution syst in comparisons with So	e to 5: tem-wide average he hydraulic model tem that has been asurements in the tem and confirmed CADA System data.	To maintain a 5: Continue to refine the hydraulic model of the distribution system and consider linking it with SCADA System for real-time pressure data calibration, and averaging.	Not a choice	

www.twdb.texas.gov

www.facebook.com/twdboard

l 🔰 @twdb

		Home Logout Agency Policies Conta		
WLUC Home				
Un-Submit Worksheet Help for	Form Completion Assessm	ent Scale	Change Year Cancel	
D OUT BEFORE THIS FORM CAN BE S	UBMITTED.			
300,469,000 gallons	9			
300,469,000 🥥	Assessment Scale:	4 🗸 💽 🗲		
96.0 % 🥥	Assessment Scale:	1 🗸 🛛		
312,988,542 gallons	0			
492,123,000 gallons	Assessment Scale:	1 🗸 🔍		
96.0 % 🥥	Assessment Scale:	3 🗸 💽		
e: 512,628,125 gallons	0			
0 gallons	Assessment Scale:	N/A ✔ 🞯◀		
0.0 % 🥑	Assessment Scale:	N/A 🗸 🎯 🗲		
0 gallons	ě.			
825,616,667 gallons	0			
	WLUC Home Un-Submit Worksheet Help for I D OUT BEFORE THIS FORM CAN BE SI 300,469,000 gallons 300,469,000 9 96.0 % 9 312,988,542 gallons 492,123,000 gallons 96.0 % 9 0 gallons 0 0 96.0 % 9	Water Loss Au WLUC Home Itelp for Form Completion Assessment DOUT BEFORE THIS FORM CAN BE SUBMITTED. Itel for Form Completion Assessment 300,469,000 gallons @ Assessment Scale: 300,469,000 @ Assessment Scale: 96,0 % @ Assessment Scale: 312,988,542 gallons @ Assessment Scale: 96,0 % @ Assessment Scale: 96,0 % @ Assessment Scale: 96,0 % @ Assessment Scale: 0 gallons @ Assessment Scale:	Water Loss Audit WLUC Home Itelp for Form Completion Assessment Scale DOUT BEFORE THIS FORM CAN BE SUBMITTED. DOUT BEFORE THIS FORM CAN BE SUBMITTED. 300,469,000 gallons @ Assessment Scale: 300,469,000 @ Assessment Scale: 96.0 % @ Assessment Scale: 1 @<	Water Loss Audit WLUC Home Image: Color of the second of the sec

C. Authorized Consumption

Texas Water Development Board

www.twdb.texas.gov

www.facebook.com/twdboard

Component				Adapted fr	Produced Water Assessment Scale Table Adapted from American Water Works Association Free Water Audit Software®						
WATER SUPPLIED	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	
Line 13 Produced water (volume of treated water entering distribution system from own sources)	Current condition: Loss than 25% of water production sources are metered, remaining sources are estimated. No regular meter accuracy testing or electronic calibration conducted.	Current condition: 25% - 50% of treated water production sources are metered; other sources estimated. No regular meter accuracy testing or electronic calibration conducted.	Conditions between 1 and 2	Current condition: 50% - 75% of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing or electronic calibration conducted.	Conditions between 2 and 3	Current condition: At least 75% of treated water production sources are metered, or at least 90% of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 3 and 4	Current condition: 100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy.	Conditions between 4 and 5	Current condition: 100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi- annually, with less than 10% found outside of +/- 3% accuracy. Procedures are reviewed by a third party knowledgeable in the M36 methodology.	Sele p imp wat (sc
Improvements in quantifying produced water volume	To improve to 1: Organize and launch efforts to collect data for determining volume from own sources	To improve Locate all water prode maps and in the fiel accuracy testing for exi to install meters on u production sources obsolete/defect	e to 2: uction sources on d, launch meter sting meters, begin inmetered water and replace any tive meters.	To improve Formalize annual mete for all source mete frequency of testii installation of meter water production sour replacement of all ob meter	e to 3: er accuracy testing ers; specify the ng. Complete es on unmetered rces and complete isolete/defective 's.	To improve Conduct annual meter and calibration of relate on all meter installati basis. Complete projec replace defective existi entire production me metered. Repair or outside of +/- 69	e to 4: r accuracy testing ed instrumentation ions on a regular tt to install new, or ing, meters so that ter population is replace meters % accuracy.	To improve Maintain annual mete and calibration of relat for all meter installa replace meters ou accuracy. Investig technology; pilot replacements with inr attempt to further accura	e to 5: er accuracy testing ed instrumentation tions. Repair or tside of +/- 3% ate new meter one or more novative meters in improve meter cy.	To maintain a 5: Standardize meter accuracy test frequency to semi- annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.	



www.facebook.com/twdboard

rd 🔰 @twdb

component			-	Adapted fr	om American Wate	r Works Association Fre	e Water Audit Soft	ware©			
WATER SUPPLIED	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 13a Production meter accuracy	Current condition: nventory information on meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined	Current condition: No automatic datalogging of production volumes; daily readings are scribed on paper records without any accountability controls. Flows are not balanced across the water distribution system: tank/storage elevation changes are not employed in calculating the "Volume from own sources" component and archived flow data is adjusted only when grossly evident data error occurs.	Conditions between 1 and 2	Current condition: Production meter data is logged automatically in electronic format and reviewed at least on a monthly basis with necessary corrections implemented. "Volume from own sources" tabulations include estimate of daily changes in tanks/storage facilities. Meter data is adjusted when gross data errors occur, or occasional meter testing deems this necessary.	Conditions between 2 and 3	Current condition: Hourly production meter data logged automatically & reviewed on at least a weekly basis. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and/or error is confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component, and data gaps in the archived data are corrected on at least a weekly basis.	Conditions between 3 and 4	Current condition: Continuous production meter data is logged automatically & reviewed each business day. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations and data gaps in the archived data are corrected on a daily basis.	Conditions between 4 and 5	Current condition: Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results are reviewed each business day. Tight accountability controls ensure that all data gaps that occur in the archived flow data are quickly detected and corrected. Regular calibrations between SCADA and sources meters ensures minimal data transfer error.	Select n/a only if the water utility fails to have meters on its sources of supply AND did not provide a volume for Line 13.
Improvements to production meter accuracy	To improve to 1: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters Gy To improve to 2: Install automatic datalogging equipment on production meters. Complete installation of level instrumentation at all tanks/storage facilities and include tank level data in automatic calculation routine in a computerized system. Construct a computerized listing or spreadsheet to archive input volumes, tank/storage volume changes and import/export flows in order to determine the composite "Water Supplied" volume for the distribution system. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps.		To improve Refine computerized of archive to include houri doe that is reviewed a basis to detect specific gaps. Use baily net s balance flows in cal Supplied" volume. Net to data errors are im weekly b	e to 3: lata collection and y production meter t least on a weekly data anomalies and torage change to culating "Water cessary corrections iplemented on a asis.	To improve Ensure that all flow da archived on at least ar data is reviewed and corrected each b Tank/storage levels employed in calculatin, Supplied" component. meter data for gross er confirmed by	e to 4: ta is collected and hourly basis. All detected errors usiness day. variations are g balanced "Water Adjust production ror and inaccuracy t esting.	To improve Link all production a facility elevation ch Supervisory Control 8 (SCADA) System, or sin monitoring/control sys automatic flow balance regularly calibrate bet source meters. Data corrected each b	e to 5: nd tank/storage lange data to a to Data Acquisition nilar computerized tem, and establish ting algorithm and tween SCADA and tis reviewed and susiness day.	To maintain a 5: Monitor meter innovations for development of more accurate and less expensive flowmeters. Continue to replace or repair meters as they perform outside of desired accuracy limits. Stay abreast of new and more accurate water level instruments to better record tank/storage levels and archive the variations in storage		



www.facebook.com/twdboard

rd 🔰 @twdb

New lab X S Wate	r Loss Audit X +			
← → C △ ■ www3.twdb,texas.gov/	apps/wla/Audit.aspx?ay=2019&un=1010027			🛠 🗟 🏠
Apps // TWDB HOME TWDB INTRANET	🕤 TWDB LUC 🔹 TCEQ DWW 📘 Worksh	nop Participa 🕥 New Tab 🧯	WLA: Requests Pen	
Texas Water Development Board		Water Loss Audit		Home Logout Agency Policies Contac
Home Worksheet Audit Report Request Acce	ss WLUC Home			A
Nater Audit Report for 1010027, Year 2019	Un-Submit Worksheet Help for For	m Completion Assessment Scale	e Change Year Cancel	
Open Instructions				
FIELDS MARKED WITH A RED STAR MUST BE FI	LLED OUT BEFORE THIS FORM CAN BE SUBI	MITTED.		
16. Total System Input Volume:	825,616,667 gallons 🥑			
C. Authorized Consumption				
* 17. Billed Metered:	792.592.000 gallons 🥥	Assessment Scale: 4.5 V	a	
18. Billed Unmetered:	0) gallons @	Assessment Scale: 5 V		
19. Unbilled Metered:	0) gallons @	Assessment Scale: 5 V		
20. Unbilled Unmetered:	10,320,208 gallons @	Assessment Scale: 3 V		
✓ Use 1.25% of System Input Volume				
21. Total Authorized Consumption:	802,912,208 gallons 🥥			
D. Water Losses				
22. Water Losses:	22,704,458 gallons 🥹			
E. Apparent Losses				
* 23. Average Customer Meter Accuracy:	98.0 % 🥥	Assessment Scale: 4.5 🗸	0	
24. Customer Meter Accuracy Loss:	16,175,347 gallons 🥥			
www.twdb.texas.gov				Texas Water
😚 www.facebook.com/twdboard 🛛 🔰 @tw	/db			Development Board

Component		_		Adapted	Bille I from American		1				
AUTHORIZED CONSUMPTION	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 17 Billed metered Volume for Line 17 is populated from the Water Use Survey	Current condition: Less than 50% of customers with volume-based billings from meter readings; flat or fixed rate billing exist for the majority of the customer population.	Current condition: At least 50% of customers with volume-based billing from meter reads; flat rate billing for others. Manual meter reading is conducted, with less than 50% meter read success rate, remaining accounts' consumption is estimated. Limited meter records, no regular meter testing or replacement. Billing data maintained on paper records, with no auditing.	Conditions between 1 and 2	Current condition: At least 75% of customers with volume- based, billing from meter reads; flat or fixed rate billing for remaining accounts. Manual meter reading is conducted with at least 50% meter read success rate; consumption for accounts with failed reads is estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters are replaced only upon computer failure. Computer	Conditions between 2 and 3	Current condition: At least 90% of customers with volume- based billing from meter reads; consumption for remaining accounts is estimated. Manual customer meter reading gives at least 80% customer meter reading success rate; consumption for accounts with failed reads is estimated. Good customer meter records exist, but only limited meter accuracy testing is conducted. Regular replacement is conducted for the oldest meters. Computerized billing records exist with annual auditing of summary statistics conducting by utility personnel.	Conditions between 3 and 4	Current condition: At least 97% of customers exist with volume-based billing from meter reads. At least 90% customer meter reading success rate; or at least 80% read success rate with planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Metering infrastructure (AMI) in one or more pilot areas. Good customer meter records. Regular meter accuracy testing guides replacement of statistically significant number of meters each year. Routine auditing of computerized billing records for global and detailed statistics occurs annually by utility personnel, and is verified by third party at least once every five years.	Conditions between 4 and 5	Current condition: At least 99% of customers exist with volume-based billing from meter reads. At least 95% customer meter reading success rate; or minimum 80% meter reading success rate, with Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) trials underway. Statistically significant customer meter testing and replacement program in place on a continuous basis. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts undertaken annually by utility personnel. Audit is conducted by third party auditors at least once every three years.	Not a choice
improvements in quantifying yolume of billed	To improve to 1: Conduct investigations or trials of customer meters to select appropriate meter models. Budget funding for meter installations. Investigate volume based water rate structures.	To improve Purchase and inst unmetered account policies to improve success. Catalog me during meter read v age/model of existing minimal number of accuracy. Install com system	e to 2: all meters on ts. implement meter reading ter information isits to identify g meters. Test a of meters for puterized billing n.	To improve to Purchase and instal unmetered accounts. E billing and establish apy rate structure based u consumption. Contin verifiable success in re- meter reading barriers accuracy testing. Laund replacement progra- program of annual aud billing statistics by util	to 3: I meters on liminate flat fee oropriate water pon measured ue to achieve moving manual Expand meter hregular meter m. Launch a diting of global lity personnel.	To improve to Purchase and instal unmetered accounts. If reading success rate is assess cost-effectivene Meter Reading (AMR Metering Infrastructure portion or entire syster achieve ongoing imp manual meter reading 97% or higher. Refine testing program. Set me goals based upon accur	to 4: Il meters on customer meter less than 97%, iss of Automatic) or Advanced (AMI) system for m; or otherwise rovements in success rate to meter accuracy eter replacement racy test results.	To improve to Purchase and install meter accounts. Launch Auto Reading (AMR) or Advan Infrastructure (AMI) systen meter reading success rate is not achieved within a fiv Continue meter accuracy t Conduct planning and bud scale meter replacement ba life cycle analysis using cu target. Continue annual data auditing by utility p	5. s on unmetered imatic Meter liced Metering n trials if manual e of at least 99% e-year program. ligeting for large ased upon meter umulative flow detailed billing versonnel and	To maintain a 5: Continue annual internal billing data auditing, and third party auditing at least every three years. Continue customer meter accuracy testing to ensure that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in	Not a choice



Component				Adapted fr	Unbilled Uni om American Wate	metered Assessment Sca r Works Association Fre	ile Table e Water Audit Soft	ware®			
AUTHORIZED CONSUMPTION	0.5	1	1.5	2	2.5	3	3.5	4	4,5	5	N/A
Line 20 Unbilled unmetered	Current condition: Extent of unbilled, unmetered consumption is unknown due to unclear policies and poor recordkeeping. Total consumption is quantified based upon a purely subjective estimate.	Current condition: Clear extent of unbilled, unmetered consumption is unknown, but a number of events are randomly documented each year, confirming existence of such consumption, but without sufficient documentation to quantify an accurate estimate of the annual volume consumed.	Conditions between 1 and 2	Current condition: Extent of unbilled, unmetered consumption is partially known, and procedures exist to document certain events such as miscellaneous fire hydrant uses. Formulae are used to quantify the consumption from such events (time running multiplied by typical flowrate, multiplied by number of events).	Default value of 1.25% of system input volume is employed.	Current condition: Coherent policies exist for some forms of unbilled, unmetered consumption but others await closer evaluation. Reasonable recordkeeping for the managed uses exists and allows for annual volumes to be quantified by inference, but unsupervised uses are estimated.	Conditions between 3 and 4	Current condition: Clear policies and good recordkeeping exist for some uses (ex: water used in periodic testing of unmetered fire connections), but other uses (ex: miscellaneous uses of fire hydrants) have limited oversight. Total consumption is a mix of well quantified use such as from formulae (time running multiplied by typical flow, multiplied by number of events) or temporary meters, and relatively subjective estimates of less regulated use.	Conditions between 4 and 5	Current condition: Clear policies exist to identify permitted use of water in unbilled, unmetered fashion, with the intention of minimizing this type of consumption. Good records document each occurrence and consumption is quantified via formulae (time running multiplied by typical flow, multiplied by number of events) or use of temporary meters.	Not a choice
mprovements in quantifying olume of unbilled unmetered consumption	To improve to 2.5: Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. To improve to 1: Establish a policy regarding what water uses should be allowed to remain as unbilled and unmetered.	To improve Utilize the accepted def of the volume of wat expedient means to g quantification <i>To improve</i> Evaluate the document have been observed. groups (ex: for fire departments, contrad their need and/or volu for water from fi	to 2.5: fault value of 1.25% er supplied as an gain a reasonable of this use. e to 2: ation of events that . Meet with user hydrants - fire ctors to ascertain ume requirements re hydrants).	To improve to 2.5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities that are in the early stages of the water auditing process, and should focus on other	To impove to 3: Finalize policy and begin to conduct field checks to better establish and quantify such usage. Proceed if top-down audit exists and/or a great volume of such use is suspected.	To improve Assess water utility poli for various unmeter example, ensure that is permits are issued for u by persons outside of written procedure documentation of fire utility personnel. Use s other types of unbilled, usage	e to 4: icy and procedures red usages. For a policy exists and use of fire hydrants the utility. Create es for use and hydrants by water same approach for , unmetered water e.	To improve Refine written procedu all uses of unbilled, um overseen by a struct process managed I personnel. Reassess po some of these uses ha converted to billed and	e to 5: ures to ensure that metered water are ured permitting by water utility licy to determine if ve value in being /or metered status.	To maintain a 5: Continue to refine policy and procedures with intention of reducing the number of allowable uses of water in unbilled and unmetered fashion. Any uses that can feasibly become billed and metered should be converted eventually.	Not a choice



New Tab 🗙 🔇 Wate	er Loss Audit × +	7.1
← → C 🏠 🔒 www3.twdb.texas.gov/	/apps/wla/Audit.aspx?ay=2019&un=1010027	☆ 🙆 🛊
Apps // TWDB HOME 🕥 TWDB INTRANET	🥱 TWDB LUC 🔹 TCEQ DWW 🚹 Workshop Participa 🛞 New Tab 🔇 WLA: Requests Pen	
Texas Water Development Board	Water Loss Audit	Home Logout Agency Policies Contac
Home Worksheet Audit Report Request Acce	ess WLUC Home	A
Water Audit Report for 1010027, Year 2019	Un-Submit Worksheet Help for Form Completion Assessment Scale Change Year Cancel	
Open Instructions		
* FIELDS MARKED WITH A RED STAR MUST BE FI	LLED OUT BEFORE THIS FORM CAN BE SUBMITTED.	
E. Apparent Losses		
* 23. Average Customer Meter Accuracy:	98.0 % 98.0 % Assessment Scale: 4.5 4.5 	
24. Customer Meter Accuracy Loss:	16,175,347 gallons 🥥	
25. Systematic Data Handling Discrepancy:	0 gallons @ Assessment Scale: 4 🗸 @	
26. Unauthorized Consumption:	2,064,042 gallons <a> Assessment Scale:	
Use 0.25% of System Input Volume		
27. Total Apparent Losses:	18,239,389 gallons 🐵	
F. Real Losses		
28. Reported Breaks and Leaks:	1,000,000 gallons 🥹 Assessment Scale: 3.5 🗸 🎯	
29. Unreported Loss:	3,465,070 gallons 🍙 Assessment Scale: 🛛 🗸 🎯	
30. Total Real Losses:	4,465,070 gallons 🥑	
31. Total Water Losses:	22,704,458 gallons 🥥	
32. Non-Revenue Water:	33,024,667 gallons 🥥	
31. Total Water Losses: 32. Non-Revenue Water:	22,704,458 gallons 🥥 33,024,667 gallons 🥥	



component				Adapted fr	om American Wate	r Works Association Fre	e Water Audit Soft	ware©			
APPARENT LOSSES	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 23 Average customer meter accuracy	Current condition: Customer meters exist, but with unorganized paper records on meters; no meter accuracy testing or meter replacement program for any size of retail meter. Metering workflow is driven chaotically with no proactive management. Loss volume due to aggregate meter inaccuracy is estimated.	Current condition: Poor recordkeeping and meter oversight is recognized by water utility management who has allotted staff and funding resources to organize improved recordkeeping and start meter accuracy testing. Existing paper records gathered and organized to provide cursory disposition of meter population. Customer meters are tested for accuracy only upon customer request.	Conditions between 1 and 2	Current condition: Reliable recordkeeping exists; meter information is improving as meters are replaced. Meter accuracy testing is conducted annually for a small number of meters (more than just customer requests, but less than 1% of inventory). A limited number of the oldest meters are replaced each year. Inaccuracy volume is largely an estimate, but refined based upon limited testing data.	Conditions between 2 and 3	Current condition: A reliable electronic recordkeeping system for meters exists. The meter population includes a mix of new high performing meters and dated meters with suspect accuracy. Routine, but limited, meter accuracy testing and meter replacement occur. Inaccuracy volume is quantified using a mix of reliable and less certain data.	Conditions between 3 and 4	Current condition: Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for various types of meters.	Current condition: Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Statistically significant number of meters are tested in audit year. This testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for these meters.	Current condition: Good records of all active customer meters exist and include as a minimum: meter number, account number/location, type, size and manufacturer. Ongoing meter replacement occurs according to a targeted and justified basis. Regular meter accuracy testing gives a reliable measure of composite inaccuracy volume for the customer meter population. New metering technology is embraced to keep overall accuracy improving. Procedures are reviewed by a third party knowledgeable in the M36 methodology.	Not a choice
Improvements to average customer meter accuracy	To improve to 1: Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of the metering group and budget for necessary resources to better organize meter	To improv Implement a reliable system for customer preferably using ele typically linked to, or pa Billing System or Cust System. Expand meter a larger group	e to 2: e record keeping meter histories, ctronic methods art of, the Customer omer Information accuracy testing to of meters.	To improve Standardize the proc recordkeeping with information system. accuracy testing and m guided by testi	e to 3: edures for meter in an electronic Accelerate meter reter replacements ing results.	To improve Expand annual meter a evaluate a statistically of meter makes/mode replacement prog statistically significan performing mete	e to 4: accuracy testing to significant number els. Expand meter ram to replace t number of poor rs each year.	To improve to 4.5: Continue efforts to manage meter population with reliable recordkeeping. Test a statistically significant number of meters each year and analyze test results in an ongoing manner to serve as a basis for a target meter	To improving 5: Continue efforts to manage meter population with reliable recordkeeping, meter testing and replacement. Evaluate new meter types and install one or more types in 5-10	To maintain a 5: Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new metering technology and Advanced Metering Infrastructure (AMI) to grasp opportunities for	Not a choice



Component	Systematic Data Handling Discrepancy Assessment Scale Table Adapted from American Water Works Association Free Water Hild it Software®											
APPARENT LOSSES	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A	
Line 25 Systematic data handling discrepancy	Current condition: Policies and procedures for activation of new customer water billing accounts are vague and lack accountability. Billing data is maintained on paper records which are not well organized. No auditing is conducted to confirm billing data handling efficiency. An unknown number of customers escape routine billing process oversight.	Current condition: Policy and procedures for activation of new customer accounts and oversight of billing records exist but need refinement. Billing data is maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work is conducted to confirm billing data handling efficiency. The volume of unbilled water due to billing lapses is a guess.	Conditions between 1 and 2	Current condition: Policy and procedures for new account activation and oversight of billing operations exist but needs refinement. Computerized billing system exists, but is dated or lacks needed functionality. Periodic, limited internal audits conducted and confirm with approximate accuracy the consumption volumes lost to billing lapses.	Default value of 0.25% of volume of billed and metered water is employed.	Current condition: Policy and procedures for new account activation and oversight of billing operations is adequate and reviewed periodically. Computerized billing system is in use with basic reporting available. Any effect of billing adjustments on measured consumption volumes is well understood. Internal checks of billing data error conducted annually. Reasonably accurate quantification of consumption volume lost to billing lapses is obtained.	Conditions between 3 and 4	Current condition: New account activation and billing operations policy and procedures are reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts. Annual internal checks conducted with third party audit conducted at least once every five years. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year.	Conditions between 4 and 5	Current condition: Sound written policy and procedures exist for new account activation and oversight of customer billing operations. Robust computerized billing system gives high functionality and reporting capabilities which are utilized, analyzed and the results reported each billing cycle. Assessment of policy and data handling errors are conducted internally and audited by third party at least once every three years, ensuring consumption lost to billing lapses is minimized and detected as it occurs.	Not a choice	
Improvements in quantifying loss fue to systematic	To improve to 1: Draft written policy and procedures for activating new water billing accounts and oversight of billing operations. Investigate and budget for computerized customer billing system. Conduct initial	To improve Finalize written policy a activation of new bill overall billing operation Implement a comput billing system. Condu- billing records as par	e to 2: and procedures for ing accounts and ons management. serized customer uct initial audit of t of this process.	To improve Refine new account ac operations procedu consistency with the regarding billing, opportunity for misseo or replace customer needed functionality - adjustments don't con consumption volum procedural internal an	e to 3: tivation and billing ires and ensure he utility policy and minimize billings. Upgrade billing system for ensure that billing rrupt the value of hes. Implement hual audit process	To improve Formalize regular revie activation process ar practices. Enhance rep computerized billing s regular auditing proces data handling error. Pla party audit to occur a five yea	e to 4: ew of new account nd general billing oorting capability of system. Formalize s to reveal scope of an for periodic third t least once every ars.	To improve Close policy/procedu allow some custome unbilled, or data hand Ensure that billing sy utilized, analyzed an billing cycle. Ensure that party audits are condu every three	e to 5: re loopholes that er accounts to go ling errors to exist. stem reports are d reported every at internal and third ucted at least once e years.	To maintain a 5: Stay abreast of customer information management developments and innovations. Monitor developments of Advanced Metering Infrastructure (AMI) and integrate technology to ensure	Not a choice	



Component				Adapted fr	om American Wate	onsumption Assessment r Works Accociation Fre	e Water Audit Soft	ware©			
APPARENT LOSSES	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 26 Unauthorized consumption	Current condition: Extent of unauthorized consumption is unknown due to unclear policies and poor recordkeeping. Total unauthorized consumption is estimated.	Current condition: Unauthorized consumption is a known occurrence, but its extent is a mystery. There are no requirements to document observed events, but periodic field reports capture some of these occurrences. Total unauthorized consumption is approximated from this limited data.	Conditions between 1 and 2	Current condition: Procedures exist to document some unauthorized consumption such as observed unauthorized fire hydrant openings. Use formulae to quantify this consumption (time running multiplied typical flowrate, multiplied by number of events).	Default value of 0.25% of volume of water supplied is employed	Current condition: Coherent policies exist for some forms of unauthorized consumption (more than simply fire hydrant misuse) but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records.	Conditions between 3 and 4	Current condition: Clear policies and good auditable recordkeeping exist for certain events (ex: tampering with water meters, illegal bypasses of customer meters); but other occurrences have limited oversight. Total consumption is a combination of volumes from formulae (time x typical flow) and subjective estimates of unconfirmed consumption.	Conditions between 4 and 5	Current condition: Clear policies exist to identify all known unauthorized uses of water. Staff and procedures exist to provide enforcement of policies and detect violations. Each occurrence is recorded and quantified via formulae (estimated time running multiplied by typical flow) or similar methods. All records and calculations should exist in a form that can be audited by a third party.	Not a choice
Improvements in quantifying volume of unauthorized consumption	To improve to 2.5: Use accepted default of 0.25% of volume of water supplied. To improve to 1: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)	To improve Use accepted default of of water su <i>To improve</i> Review utility policy reg uses are considered u consider tracking a sm such occurrence (ex: hydrant op	to 2.5: of 0.25% of volume ipplied. e to 2: garding what water inauthorized, and nall sample of one unauthorized fire enings)	To improve to 2.5: Utilize accepted default value of 0.25% of volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process.	To improve to 3: Finalize policy updates to clearly identify the types of water consumption that are authorized from those usages that fall outside of this policy and are, therefore, unauthorized. Begin to conduct regular field checks. Proceed if the top-down audit already exists and/or a great volume of	To improve Assess water utility pol all known occurrence consumption are our appropriate penaltie Create written proced and documentation of v of unauthorized consu- uncover	e to 4: icies to ensure that s of unauthorized tlawed, and that s are prescribed. ures for detection various occurrences mption as they are red.	To improve Refine written procedu to seek out likely o unauthorized consump locking devices, mor technologies designe thwart unauthorize	e to 5: res and assign staff cocurrences of tion. Explore new hitors and other ed to detect and d consumption.	To maintain a 5: Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in detection, documentation and enforcement efforts.	Not a choice





www.facebook.com/twdboard

Component	Reported Breaks and Leaks Assessment Scale Table Adapted from American Water Works Association Free Water Audit Software ©										
REAL LOSSES	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 28 Reported breaks and leaks	Current condition: Arbitrary estimates of reported breaks and leaks repaired. Repairs of reported breaks and leaks not documented.	Current condition: Reported breaks and leaks estimated by repair crew is suspect. No written procedures exist for estimating or documenting breaks and leaks.	Conditions between 1 and 2	Current condition: Reported breaks and leaks are estimated by repair crew. Written procedures exist for estimating or documenting breaks and leaks.	Conditions between 2 and 3	Current condition: Breaks and leaks reported by customers and city staff fixed <75% of time. Call-to- repair times known, but are greater than one week average. Good records of breaks and leaks exist.	Conditions between 3 and 4	Current condition: Breaks and leaks reported by customers and city staff fixed >75% of time. Call-to- repair times average less than one week. Computerized maintenance management system is used to document leak repair trends.	Conditions between 4 and 5	Current condition: Breaks and leaks reported by customers and city staff fixed >90% of time. Call-to- repair times average less than three days. Outstanding computer maintenance records track system deficiencies and repair crew performance.	Not a choice.
Improvements in quantifying reported breaks and leaks	To improve to 1: Document reported breaks and leaks. Use leak rates calculation to estimate volume lost from reported breaks and leaks.	To improv Develop standards to document leaks and b use of leak rates calcu volume lost from rep leaks	e to 2: o find, repair, and reaks. Continue to alation to estimate orted breaks and 5.	To improve to 3: Standardize recordkeeping of leak incidents, location, response time, and other repair data.		To improv Continue to standard process. Begin plannir maintenance managem average leak run time week	e to 4: ize recordkeeping ng a computerized ent system. Reduce e to less than one c.	To improv Implement computer management system to Reduce average leak ru two days. Begin planni detection p	e to 5: ized maintenance o document repairs. In time to less than ng a proactive leak rogram.	To maintain a 5: Use capabilities of computerized maintenance management system to track failure trends in distribution system and repair crew activity costs. Conduct a proactive leak detection program.	Not a choice



www.facebook.com/twdboard



https://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp



www.twdb.texas.gov

www.facebook.com/twdboard

Texas Water Loss Audit Development Board Williams											
Home Worksheet Audit Report Request Access	WLUC Home										
Water Audit Report for 1010027, Year 2019 Save	Un-Submit Worksheet	Help for Form Completion	Assessment Scale	Change Year	Cancel						
Close Instructions											
The Save button will save any data you enter for retrieval of Use the Submit Worksheet button to save your data and it	on future visits to this site. indicate that your form is comp	pleted and ready for TWDB	review.								
IMPORTANT - Read this - How to use the Save, Submit V	Norksheet and Un-Submit V	Vorksheet buttons> 🥝									
If further assistance is needed contact WLA-Group@twdb.te	exas.gov or 512.463.0987.										
* FIELDS MARKED WITH A RED STAR MUST BE FILLED O	UT BEFORE THIS FORM CA	N BE SUBMITTED.									
38. Real Losses Normalized - Main Lines:	0.0	00 gallons lost per mile per o	day 🎯								
I. Financial Performance Indicators											
39. Total Apparent Losses:	18,239,38	39 gallons 🥑									
* 40. Retail Price of Water:	0.00232	\$ per gallon 🍙 Assessmen	t Scale: 3 🗸 🕤								
41. Cost of Apparent Losses:	\$42,31	15 💿									
42 Total Real Losses:	4,465,07	70 gallons 🥑									
* 43. Variable Production Cost of Water:	0.000240 🍯	\$ per gallon 🍙 Assessmen	t Scale: 3.5 🗸 뒿								
44. Cost of Real Losses:	\$1,07	72 🕝									
45. Total Cost Impact of Apparent and Real Losses	\$43,38	37 🎯									
46. Total Assessment Score:	6	57 🥝									



www.facebook.com/twdboard

Component	Customer Retail Price of Water Assessment Scale Table Adapted from American Water Works Association Free Water Audit Software ©										
COST DATA	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 40 Customer retail price of water (applied to apparent losses)	Current condition: Antiquated, cumbersome water rate structure is used, with periodic historic amendments that were poorly documented and implemented; resulting in classes of customers being billed inconsistent charges. The actual composite billing rate likely differs significantly from the published water rate structure, but a lack of auditing leaves the degree of error indeterminate.	Current condition: Dated, cumbersome water rate structure, not always employed consistently in actual billing operations. The actual composite billing rate is known to differ from the published water rate structure, and a reasonably accurate estimate of the degree of error is determined, allowing a composite billing rate to be quantified.	Conditions between 1 and 2	Current condition: Straight-forward water rate structure in use, but not updated in several years. Billing operations reliably employ the rate structure. The composite billing rate is derived from a single customer class such as residential customer accounts, neglecting the effect of different rates from varying customer classes.	Conditions between 2 and 3	Current condition: Clearly written, up-to- date water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average residential rate using volumes of water in each rate block.	Conditions between 3 and 4	Current condition: Effective water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average composite consumption rate, which includes residential, commercial, industrial, institutional (CII), and any other distinct customer classes within the water rate structure.	Conditions between 4 and 5	Current condition: Current, effective water rate structure is in force and applied reliably in billing operations. The rate structure and calculations of composite rate - which includes residential, commercial, industrial, institutional (CII), and other distinct customer classes - are reviewed by a third party knowledgeable in the M36 methodology at least once every five years.	Not a choice
mprovements in quantifying the retail price of water	To improve to 1: Formalize the process to implement water rates, including a secure documentation procedure. Create a current, formal water rate document and gain approval from all stakeholders.	To improv Review the water ra update/formalize as ne operations to ensure operations incorporat water rate st	e to 2: te structure and eded. Assess billing that actual billing te the established tructure.	To improve Evaluate volume of w usage block by residen volumes by full ra	e to 3: iater used in each tial users. Multiply ate structure.	To improv Evaluate volume of w usage block by all class Multiply volumes by f	e to 4: iater used in each iffications of users. full rate structure.	To improv Conduct a periodic th water used in each u classifications of users by full rate s	e to 5: iird-party audit of isage block by all . Multiply volumes tructure.	To maintain a 5: Keep water rate structure current in addressing the water utility's revenue needs. Update the calculation of the customer unit rate as new rate components, customer classes, or other components are modified.	Not a choice

www.facebook.com/twdboard

Component				Adapted fr	Variable Produ om American Wate	uction Cost Assessment S er Works Association Fre	icale Table e Water Audit Soft	ware©			
COST DATA	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	N/A
Line 43 Variable production cost (applied to real losses)	Current condition: Incomplete paper records and lack of documentation on primary operating functions (electric power and treatment costs most importantly) makes calculation of variable production costs a pure estimated.	Current condition: Reasonably maintained, but incomplete, paper or electronic accounting provides data to roughly estimate the basic operations costs (pumping power costs and treatment costs) and calculate a unit variable production cost.	Conditions between 1 and 2	Current condition: Electronic, industry- standard cost accounting system in place. Electric power and treatment costs are reliably tracked and allow accurate weighted calculation of unit variable production costs based on these two inputs and water imported purchase costs (if applicable). All costs are audited internally on a periodic basis.	Conditions between 2 and 3	Current condition: Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Pertinent additional costs beyond power, treatment and water imported purchase costs (if applicable) such as liability, residuals management, wear and tear on equipment, impending expansion of supply, are included in the unit variable production cost, as applicable. The data is audited at least annually by utility personnel.	Conditions between 3 and 4	Current condition: Reliable electronic, industry-standard cost accounting system in place, with all pertinent primary and secondary variable production and water imported purchase (if applicable) costs tracked. The data is audited at least annually by utility personnel, and at least once every three years by a third-party knowledgeable in the M36 methodology.	Conditions between 4 and 5	Current condition: Either of two conditions can be met to obtain a grading of 10: 1) Third party CPA audit of all pertinent primary and secondary variable production and water imported purchase (if applicable) costs on an annual basis. or: 2) Water supply is entirely purchased as bulk water imported, and the unit purchase cost - including all applicable marginal supply costs - serves as the variable production cost. If all applicable marginal supply costs are not included in this figure, a grade of 10 should not be selected.	Not a choice
Improvements in quantifying the variable production cost	To improve to 1: Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions.	To improv. Implement an electror system, structure accounting standards	e to 2: iic cost accounting d according to for water utilities.	To improve Formalize process for audits of productio whether additional residuals management and impending infrast should be included to representative variabl	e to 3: r regular internal n costs. Assess l costs (liability, t, equipment wear, ructure expansion) o calculate a more e production cost.	To improve Formalize the accou include direct cost con treatment) as well components (liabi management, etc.) An audits by a knowledge least once every	e to 4: monents (power, as indirect cost dity, residuals rrange to conduct able third-party at three years.	To improve Standardize the process party financial audit by basis	e to 5: to conduct a third- a CPA on an annual	To maintain a 5: Maintain program, stay abreast of expenses subject to erratic cost changes and budget/track costs proactively.	Not a choice





Total Assessment Score

- As you enter your confidence values, the program will give you a Total Assessment Score out of 100. (Line 46)
- Measures the policies and processes used currently when you gather data for the audit.
- The assessment is a number that should be increasing every year.
- Improve the accuracy of the data in order to identify opportunities for water loss reduction.

www.twdb.texas.gov





Water Loss Control Planning Guide					
Functional Focus Area	Level I (0-25)	Level II (26-50)	Level III (51-70)	Level IV (71-90)	Level IV (91-100)
Audit Data Collection	Launch auditing and loss control team; address production meter deficiencies.	Analyze business process for customer metering/billing functions and water supply operation.	Establish/revise policies and procedures for data collection.	Refine data collection practices and establish as routine business process.	Annual water audit is reliable gauge of year-to-year water efficiency standing.
Short-term loss control	Research information on leak detection programs. Begin flowcharting analysis of customer billing system.	Conduct loss assessment investigations on a sample portion of system: customer meter testing, leak survey, theft.	Establish ongoing mechanisms for customer meter accuracy testing, active leakage control, and infrastructure monitoring.	Refine, enhance, or expand ongoing programs based on economic justification.	Stay abreast of improvements in metering, meter reading, billing, leakage management, and infrastructure rehabilitation.
Long-term loss control	N/A	Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement, new customer billing system, or Automatic Meter Reading.	Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process.	Conduct detailed planning, budgeting, and launch of comprehensive improvements for metering, billing, or infrastructure management.	Continue incremental improvements in short-term and long-term loss control interventions.
Target-setting	N/A	N/A	Establish long-term apparent and real loss reduction goals (+10 year horizon).	Establish mid-range (5 year horizon) apparent and real loss reduction goals.	Evaluate and refine loss control goals on a yearly basis.
Benchmarking	N/A	N/A	Preliminary Comparisons – can begin to rely upon Infrastructure Leakage Index (ILI) for performance comparison for real losses.	Performance Benchmarking – ILI is meaningful in comparing real loss standing.	Identify Best Practices – the ILI is very reliable as a real loss performance indicator for best in class service.
* Adapted from Ame	rican Water Works Association©				


From Audit to Action

- Don't compare it to last years unless you are creating a trend analysis.
- Understand water losses through improved data collection.
- Determine effective approach and initial implementation of improved data gathering
- System-wide water loss reduction and performance standard refinement



www.twdb.texas.gov

Median 2019 Apparent and Real Loss per Connection per Day (gallons)



Development Board

www.twdb.texas.gov

🔰 @twdb www.facebook.com/twdboard

Taking Actions

- Refine data gathering and information
- Metering assessment, testing, or replacement program
- Leak detection

🔰 @twdb

- Pipe repair or replacement
- Operation and maintenance programs and changes
- Administrative processes or policy changes



Questions for Review

- Were your goals met? If not, why not?
- Where do you need more information?
- How often should you repeat the water loss audit steps?
- Is there another performance indicator that should be considered?
- Look at trends by reviewing historic data has water loss improved?

115

- How can the system improve water loss performance?
- Is more training required?

🔰 @twdb





Water Loss Resources

- Troubleshooting, guidance, assessment scales, leak detection loan form, WUS and WLA checklist, monthly water loss report, and more.
- <u>http://www.twdb.texas.gov/conservation/resour</u> <u>ces/waterloss-resources.asp</u>
- <u>http://www.twdb.texas.gov/conservation/munic</u> <u>ipal/waterloss/historical-annual-report.asp</u>





www.twdb.texas.gov

Contact

Water Loss Audit

- Mark Mathis
- 512-463-0987

mark.mathis@twdb.texas.gov

John Sutton - 512-463-7988 john.sutton@twdb.texas.gov

🔰 @twdb





Water Loss, Use, and Conservation Workshop <u>Water Conservation</u>

Municipal Water Conservation Water Science & Conservation Texas Water Development Board (TWDB)

Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.



www.twdb.texas.gov

www.facebook.com/twdboard



Content and Topics

- Water Conservation
- Statutes and Requirements
- Reports, Forms, and Plans
 - -Annual report
 - Utility Profile
 - Water Conservation Plan
- Municipal Water Conservation Planning Tool
- Flow of data

🔰 @twdb

- Resources and Information Available
- Questions or Concerns...



Statutes and Requirements

Report Name	Who is Required to Report	When is Report Due	Legislative Code
Water Conservation Plan	Entities with loans greater than \$500,000 (TWDB), 3,300 connections or greater (TWDB), a non- irrigation surface water right greater than 1,000 ac-ft/yr. (TCEQ), or an irrigation surface water right greater than 10,000 ac-ft/yr. (TCEQ).	Plans are revised every 5 years. The next revision for many entities is due to TWDB, May 1, 2019. TWDB shall be provided a copy of Plans submitted to TCEQ.	<u>31 TAC Chapter 363,</u> <u>Subchapter A, Rule</u> <u>363.15</u> / <u>TWC 15.106(b)</u>
<u>Water Conservation Plan</u> <u>Annual Report</u>	All entities with a Water Conservation Plan.	Reports are due to TWDB every year by May 1st.	<u>31 TAC Chapter 363,</u> <u>Subchapter A, Rule</u> <u>363.15(g)</u>
<u>Water Loss Audit</u>	Retail public water suppliers with either an active financial obligation with the TWDB or having more than 3,300 connections should submit an annual water loss audit. All retail public water suppliers must submit a water loss audit once every five years.	Annual water loss audits are due by May 1 of each year for the previous year. The next audit for the five-year cycle is due by May 1, 2021 for the year 2020.	<u>31 TAC Chapter 358,</u> <u>Subchapter B, Rule</u> <u>358.6</u> / <u>TWC 16.0121</u>
Water Use Survey	Entities that have received a letter, generally municipalities with a population of 25 or greater, or high-volume industrial water use.	Surveys are due every year, 60 days after receiving a letter.	<u>31 TAC Chapter 358,</u> <u>Subchapter B, Rule</u> <u>358.5</u> / <u>TWC 16.012(m)</u>



🔰 @twdb

Texas Water

Development Board

Statutes and Requirements

 Entities with loans greater than \$500,000 (TWDB)

• 3,300 connections or greater (TWDB),

• A non-irrigation surface water right greater than 1,000 ac-ft/yr. (TCEQ), or an irrigation surface water right greater than 10,000 ac-ft/yr. (TCEQ).

However...

The purpose of a <u>Water Conservation</u> is to ensure water use efficiency within your operation and/or system.

The Water Conservation Plan is a strategy or combination of strategies for...

- 1. <u>reducing</u> the consumption of water,
- 2. reducing the loss or waste of water,
- 3. <u>efficiency</u> in the use of water,

🔰 @twdb

4. or <u>increasing</u> recycling and reuse of water.

Texas Water Development Board

However...

Even if you are not required, having a water conservation plan can only serve to benefit your system...

Conservation strategies
Best Management strategies
Cost saving measures
Accountability

🔰 @twdb



The why...

FLOW OF DATA

<u>Water Use Survey</u>: current ground and surface water use.

Water Loss Audit: where and how much water is lost.

<u>Annual Report</u>: evaluate the progress and effectiveness of program implementation

<u>Utility Profile</u>: data and water usage history of the system (a "snapshot")

Water Conservation Plan: ties it all together...







Quiz

Which of these is not a report?

- 1. Water Use Survey
- 2. Water Loss Audit
- 3. Annual Report
- 4. Utility Profile
- 5. Water Conservation Plan







Quiz

Does that make it better though?

- 1. Water Use Survey
- 2. Water Loss Audit
- 3. Annual Report
- 4. Utility Profile

5. Water Conservation Plan







Welcome to the Water Loss, Use and Conservation Home Page

Texas Water	1 C. 1	Water Loss, Use and Conservation	Home Logout Agency Policies Contact Webmaster
WLUC Water Use Survey Water Loss At	udit Water Conservation		APM Home
		Welcome to the Water Loss, Use and Conservation Home Page	
Name: Daniel Rice			
Search Filter Year: • PWS Code			
Survey Number WUS System Name			
	Search Reset		
Water Use Survey			
+ Water Use Survey List			
Water Loss Audit			
+ Water Loss Audit List			
Water Conservation Annual Report			
+ WC Annual Report List			
Water Concession Litility Brafile			
Water Conservation Utility Profile WC Utility Profile List			
Water Conservation Plan			
+ WC Plan List			

www.twdb.texas.gov



Texas Water

Development Board

WLUC

Texas Water		Water Loss, Use and Conservation	Home Logout Agency Policies Contact Webmaster
WLUC Water Use Survey Water Loss A	Audit Water Conservation		APM Home
		Welcome to the Water Loss, Use and Conservation Home Page	
Name: Daniel Rice			
Search Filter			
Year:			
PWS tobe PWS Name			
Survey Number			
WUS System Name			
	Search Reset		
Water Use Survey			
+ Water Use Survey List			
Water Loss Audit			
+ Water Loss Audit List			
Water Conservation Appual Depart			
WC Annual Deport List			
+ WC Annual Report List			
Water Conservation Utility Profile			
+ WC Utility Profile List			
Water Conservation Plan			
+ WC Plan List			







Name: Travis Brice

Currently your profile information is not associated with any water system/facility. To request access to the Water Conservation Annual Report, Utility Profile, or Water Conservation Plan, please click on the Request Access tab.

"Currently ... not associated with any water system/facility."

REQUEST ACCESS TO YOUR SYSTEM!

Select the box in the Utility List for each Utility that you want to access -then click the Submit button.





🔰 @twdb

129



Water Conservation Home Page

elopment Board	Water Conservation
Home Request Access WLUC Home	
Name: Travis Brice	Welcome to the Water Conservation Home Pag
Search Filter	
O PWS Code	
O PWS Name/Utility Name	
Search Reset	
Search Reset	
Search Reset Annual Report Annual Report List	
Search Reset Annual Report + Annual Report List Utility Profile	
Search Reset Annual Report Annual Report List Utility Profile Utility Profile List	
Search Reset Annual Report Annual Report List Utility Profile Utility Profile List Conservation Plan	

www.twdb.texas.gov



Texas Water

Development Board







Texas Water Development Board

Annual Reporting

Utility Name: City of Austin PWS Code: 2270001	Water & Wastewater			
- Annual Report List	t			
Edit	View	Status	Reporting Year	
Fill Out	<u>View</u>	Not on File	2010	
Fill Out	View	Review Completed	2011	
Fill Out	<u>View</u>	Review Completed	2012	
Fill Out	View	Review Completed	2013	
Fill Out	View	Review Completed	2014	
Fill Out	View	Review Completed	2015	
Fill Out	View	Review Completed	2016	
Fill Out	View	Review Completed	2017	
Fill Out	<u>View</u>	Review Completed	2018	

"Rolling" history of submitted annual reports creating a water usage and conservation history for your system.





Annual Reporting

PWS Code: N/A					
- Annual Report List					
Edit	View	Status	Reporting Year		
	View	Not on File	2010		
	View	Not on File	2011		
	<u>View</u>	Review Completed	2012		
	<u>View</u>	Review Completed	2013		
	<u>View</u>	Review Completed	2014		
	<u>View</u>	Review Completed	2015		
	<u>View</u>	Review Completed	2016		
	<u>View</u>	Review Completed	2017		
	View	Saved	2018		
	View	Not Started	2019		
<u>Fill Out</u>	View	Review Completed	2020		

🔰 @twdb

- "Rolling" history of submitted annual reports.
- If some previous reporting years have been missed or left unsubmitted, that's ok.
- Reach out to us and TWDB staff can back fill those reports.



Annual Report (Page 3)

	Total Gallons During the Reporting Period
 Corrected Input Volume: The volume of treated water input to the distribution system from own production facilities. Same as line 13b of the Water Loss Audit for reporting periods >= 2015. Same as line 14 of the Water Loss Audit for reporting periods <= 2014. 	47,999,230,963
2. Corrected Treated Purchased Water Volume: The amount of treated purchased wholesale water transferred into the utility's distribution system from other water suppliers system. Same as line 14b of the Water Loss Audit for reporting periods >= 2015. Same as line 15 of the Water Loss Audit for reporting periods <= 2014.	940,000
3. Corrected Treated Wholesale Water Sales Volume: The amount of treated wholesale water transferred out of the utility's distribution system, although it may be in the system for a brief time for conveyance reasons. Same as line 15b of the Water Loss Audit for reporting periods >= 2015. Same as line 16 of the Water Loss Audit for reporting periods <= 2014.	2,385,015,400
4. Total System Input Volume: This is the sum of the corrected input volume plus corrected treated purchased water volume minus corrected treated wholesale water sales volume. Same as line 16 of the Water Loss Audit for reporting periods >= 2015. Same as line 17 of the Water Loss Audit for reporting periods <= 2014. Produced + Imported - Exported = Total System Input Volume	45,615,155,563
5. Billed Metered: All retail water sold and metered. Same as line 17 of the Water Loss Audit for reporting periods >= 2015. Same as line 18 of the Water Loss Audit for reporting periods <= 2014.	38,442,953,800
6. Other Authorized Consumption: Water that is authorized for other uses such as back flushing, line flushing, storage tank cleaning, fire department use, municipal government offices or municipal golf courses/parks. This water may be metered or unmetered. Same as lines 18, 19, and 20 of the Water Loss Audit for reporting periods >= 2015. Same as lines 19, 20, and 21 of the Water Loss Audit for reporting periods <= 2014.	107,439,938
7. Total Authorized Consumption: All water that has been authorized for use. Same as Line 21 of the Water Loss Audit for reporting periods >= 2015. Same as line 22 of the Water Loss Audit for reporting periods <= 2014. Total Billed and Metered Retail Water + Other Authorized Consumption = Total Authorized Consumption	38,550,393,738
8. Total Apparent Losses: Water that has been consumed but not properly measured or billed (losses due to customer meter inaccuracy, systematic data handling discrepancy and/or unauthorized consumption such as theft). Same as line 27 of the Water Loss Audit for reporting periods >= 2015. Same as line 28 of the Water Loss Audit for reporting periods <= 2014.	938,656,919
9. Total Real Loss: Physical losses from the distribution system prior to reaching the customer destination (losses due to reported breaks and leaks, physical losses from the system or mains and/or storage overflow). Same as line 30 of the Water Loss Audit for reporting periods >= 2015. Same as line 31 of the Water Loss Audit for reporting periods <= 2014.	6,126,104,906
10. Total Water Loss: Apparent + Real = Total Water Loss	7,064,761,825

Texas Water Development Board

www.twdb.texas.gov

Annual Report - Retail Conservation Programs and Activities (Page 4)

What year did your entity adopt or revise their most recent Water Conservation Plan?			2014
2. Does The Plan incorporate Best Management Practices?	● Yes ○ No		
 3. Using the table below select the types of Best Management Practices or water conservation and reuse strategies actively administered during this reporting period and estimate the savings incurred in implementing water conservation and reuse activities and programs. Leave fields blank if unknown. Please separate reuse volumes from gallons saved. Methods and techniques for determining gallons saved are unique to each utility as they conduct internal cost analyses and long-term financial planning. Texas Best Management Practices can be found at TWDB's Water Conservation Best Management Practices <u>webpage</u>. The Alliance for Water Efficiency's Water Conservation <u>Tracking Tool</u> may offer guidance on determining and calculating savings for individual BMPs. 			
Best Management Practice	Check if implemented	Estimated Gallons Saved	Estimated Gallons Reused
Conservation Analysis and Planning			
Conservation Coordinator		0	
Cost Effective Analysis	\checkmark	0	
Water Survey for Single Family and Multi-family Customers			
Financial			
Wholesale Agency Assistance Programs		0	
Water Conservation Pricing	\checkmark	0	
System Operations			
Metering New Connections and Retrofitting Existing Connections		0	
System Water Audit and Loss Control	\checkmark	0	

135

www.twdb.texas.gov



Annual Report - Retail Conservation Programs and Activities (Page 4)

5		
Residential Clothes Washer Incentive Program		
Water Wise Landscape Design and Conversion Programs	172,572	
Showerhead, Aerator, and Toilet Flapper Retrofit	11,194,638	
Residential Toilet Replacement Programs		
ICI Incentive Programs	8,444,835	
Conservation Technology & Resuse		
New Construction Graywater		
Rainwater Harvesting and Condensate Reuse	4,120,452	
Reuse for On-site Irrigation		0
Reuse for Plant Washdown		0
Reuse for Chlorination/Dechlorination		0
Reuse for Industry		753,826,217
Reuse for Agriculture		
Regulatory and Enforcement		
Prohibition on Wasting Water	5,347,478,100	
Retail		
Other	188,340	1,873,907,300
Totals	5,379,519,437	3,303,906,11

Included in "Other:

Estimated Gallons Saved: Pressure Regulating Valve Rebate

Estimated Gallons Reused: Toilet flushing, Plant Washdown, Chlorination/Dechlorination, and Onsite Irrigation.

www.twdb.texas.gov



De

Texas Wate

Development Board

Annual Report - Retail Conservation Programs and Activities

For this reporting period, estimate the savings from water conservation activities and programs. Total Volume Dollar Value Gallons Gallons Saved/Conserved Recycled/Reused of Water Saved¹ of Water Saved² 8.683.425.554 5,379,519,437 3,303,906,117 3,351,80 ¹Estimated Gallons Saved + Estimated Gallons Recycled/Reused = Total Volume Saved ²Estimated this value by taking into account water savings, the cost of treatment or purchase of water, and deferred capital cost due to conservation. Comments or Explanations Regarding Data Entered in Sections Above. Files to support or explain this may be attached below.

Saving water can and will save you money, ...but it can be hard to quantify.





www.twdb.texas.gov

f www.facebook.com/twdboard

NEVER FEAR!

The Municipal Water Conservation Planning Tool is here!

 A new method for calculating water savings via annual reporting was created. It provides an accounting framework for projecting future conservation program costs and water savings as well as estimating the water savings from previous implementation of conservation measures.





www.twdb.texas.gov

Municipal Water Conservation Planning Tool

Water Conservation Plans

Water Conservation Plan (New Users)

Water Conservation Plan (Registered Users)

🔰 @twdb

The purpose of a Water Conservation Plan is to ensure water use efficiency within your operation. The Water Conservation Plan is a strategy or combination of strategies for reducing the consumption of water, reducing the loss or waste of water, improving or maintaining the efficiency in the use of water, or increasing recycling and reuse of water. It contains best management practice measures to try to meet the targets and goals identified within the plan. The effectiveness of your water conservation plan is in the implementation of your water conservation program. Reviewing your program annually will help to evaluate program successes and needs to water conservation plan, [2] including targets and goals, must be revised program.

Municipal Water Conservation Planning Tool - The MWCPT contains pre-loaded data to assist in the development of conservation plans. A guide to using the tool is available. In addition, a training workshop for the tool is also available.

Water for Texas Conference 2019

Best Management Practices
Agriculture
Literature
Resources
Education
Outreach
Munici
Water Conservation Plans

Water Conservation Plan ~ Utility Profile

You can access the tool on the TWDB's website and the associated guide to have a VERY DETAILED explanation on its use.





Municipal Water Conservation Planning Tool

Completely downloadable and editable.



Please save a copy to your desktop and <u>manipulate the scenarios</u> as you see fit!



www.twdb.texas.gov



Municipal Water Conservation Planning Tool

We will be accessing the tool directly with further description and directions.

It should be noted that the data in the tool is becoming dated. The principles of the tool are still relevant.









Annual Report - Retail Conservation Programs and Activities (Page 4)

	5			
	Residential Clothes Washer Incentive Program			
	Water Wise Landscape Design and Conversion Programs	\checkmark	172,572	
	Showerhead, Aerator, and Toilet Flapper Retrofit		11,194,638	
	Residential Toilet Replacement Programs			
	ICI Incentive Programs		8,444,835	
	Conservation Technology & Resuse			
	New Construction Graywater			
	Rainwater Harvesting and Condensate Reuse	\checkmark	4,120,452	
	Reuse for On-site Irrigation	\checkmark		0
	Reuse for Plant Washdown	\checkmark		0
	Reuse for Chlorination/Dechlorination			0
	Reuse for Industry	\checkmark		753,826,217
	Reuse for Agriculture			
	Regulatory and Enforcement			
	Prohibition on Wasting Water	\checkmark	5,347,478,100	
	Retail			
	Other		188,340	1,873,907,300
	Totals		5,379,519,437	3,303,906,117
Describe	Other Bast Management Practices from Section Above			
Included Estir Estir	in "Other: nated Gallons Saved: Pressure Regulating Valve Rebate nated Gallons Reused: Toilet flushing, Plant Washdown, Chlorination/Decl	hlorination, and O	Insite Irrigation.	

www.twdb.texas.gov

🔰 @twdb

142

Texas Water

Development Board

		SF Irrigation Audits - High Users
1	Landscape Irrigation Conservation and Incentives	SF High-Efficiency Sprinkler Nozzle Rebate
1.	Athlatic Fields Concernation	MF Irrigation Audits - High Users
۷.	Athletic Fields Conservation	MF High-Efficiency Sprinkler Nozzle Rebate
3.	Golf Course Conservation	MF Smart Irrigation Controller Rebate
4.	Park Conservation	
5.	Residential Landscape Irrigation Evaluation	SF Home Water Reports
		SF Clothes Washer Rebate
6.	Public Information	MF Clothes Washer Rebate
7.	Small Utility Outreach and Education	
Q	Partnerships with Nonprofit Organizations	SF WaterWise Landscape Rebate
0.	Partnerships with Nonpront Organizations	MF WaterWise Landscape Rebate
Q	Residential Clothes Washer Incentive Program	SF Showerhead and Aerator Kit
Э.	Residential clothes washer incentive rogiani	MF Showerhead and Aerator Kit
4.0		
10.	Water Wise Landscape Design and Conversion	SF HE Toilet Rebate
	Programs	SF Bathroom Retrofit
		MF HE Toilet Rebate
11.	Showerhead, Aerator, and Toilet Flapper Retrofit	MF Bathroom Retrofit
		SF Rainwater Harvesting Rebate
12.	Residential Toilet Replacement Programs	SF Rain Barrel
		MF Rainwater Harvesting Rebate
13.	Rainwater Harvesting and Condensate Reuse	ICI HE Toilet Rebate
		ICI Urinal Rebate
		ICI Clothes Washer Rebate
14.	Conservation Programs for ICI Accounts	ICI Commercial General Rebate
15.	ICI Incentive Programs	ICI Kitchen Pre-Rinse Spray Valve Installation
		ICI Irrigation Audits - High Users
16.	Other (can be used to set the system's own	ICI High-Efficiency Sprinkler Nozzle Rebate
	measures)	ICI Smart Irrigation Controller Rebate
		ICI WaterWise Landscape Rebate
		ICI Rainwater Harvesting Rebate

Texas Water **Development Board**

ICI Commercial Food Steamer Rebate

www.twdb.texas.gov

Annual Report - Retail Conservation Programs and Activities

4. For this reporting period, estimate the savings from water conservation activities and programs.

Gallons Saved/Conserved	Gallons Recycled/Reused	Total Volume of Water Saved ¹	Dollar Value of Water Saved ²					
5,379,519,437	3,303,906,117	8,683,425,554	3,351,802					
¹ Estimated Gallons Saved + Estimated Gallons Recycled/Reused = Total Volume Saved ² Estimated this value by taking into account water savings, the cost of treatment or purchase of water, and deferred capital cost due to conservation.								

5. Comments or Explanations Regarding Data Entered in Sections Above.

Files to support or explain this may be attached below.

Now with these new estimates from the tool we can better report our water and MONEY savings.







Utility Profile

PWS Code		2270001							
O PWS Name/L	Jtility Name								
		Search Reset							
Annual Report									
- Annual Re	port List								
PWS Code	Utility Type	System Name	Year Due	Status	Submitted Date				
2270001	Retail Water Supplier	City of Austin Water & Wastewater	2019	Review Completed	04/29/19				
Utility Profile									
- Utility Prof	Ile List	System Name	Year Due	Status	Submitted Date				
2270001	Retail Water Supplier	City of Austin Water & Wastewater	2024	N/A					
Conservation Plan List									
PWS Code	Utility Type	System Name	Year Due	Status	Submitted Date				
2270001	Retail Water Supplier	City of Austin Water & Wastewater	2024	N/A					

www.twdb.texas.gov



🔰 @twdb

Texas Water Development Board

Utility Profile

The Utility Profile serves as the first component in developing a Water Conservation Plan.

The purpose of the Utility Profile is to assist you with water conservation plan development and to ensure that important information and data about your utility system be considered when preparing your water conservation plan and the associated target and goals.







Utility Profile

By using the 5-year rolling history of your system, you can set appropriate goals.

Provide system input data for the previous five years. Total System Input = Self supplied + Imported - Exported

🔰 @twdb

Year	Water Produced in Gallons	Purchased/Imported Water in Gallons	Exported Water in Gallons	Total System Input	Total GPCD
2018	47,999,230,963	940,000	2,385,015,400	45,615,155,563	124
2017	48,366,392,060	689,000	2,783,459,800	45,583,621,260	128
2016	45,653,599,594	1,494,000	2,527,643,397	43,127,450,197	123
2015	44,743,637,572	8,800,000	2,538,933,179	42,213,504,393	124
2014	29,148,336,469	15,443,172,848	2,579,530,487	42,011,978,830	128
Historic Average	43,182,239,332	3,091,019,170	2,562,916,453	43,710,342,049	125


Utility Profile

Also, the data flows through the reports and self calculates within, so CONSISTENCY and ACCURACY are important.

Water Use Category	Total Residential GPCD
2018	65
2017	66
2016	66
2015	66
2014	70
Historic Average	67



www.twdb.texas.gov

Water Conservation Plan

Annual Report					
- Annual Re	port List				
PWS Code	Utility Type	System Name	Year Due	Status	Submitted Date
2270001	Retail Water Supplier	City of Austin Water & Wastewater	2019	Review Completed	04/29/19
Utility Profile List					
PWS Code	Utility Type	System Name	Year Due	Status	Submitted Date
2270001	Retail Water Supplier	City of Austin Water & Wastewater	2024	N/A	
Conservation Plan					
PWS Code	Utility Type	System Name	Year Due	Status	Submitted Date
2270001	Retail Water Supplier	City of Austin Water & Wastewater	2024	N/A	





d 🔰 @twdb



Water Conservation Plan

• By using the information and data discussed in the previous section from the utility profile, a system can better adjust and create more realistic goals.

2014	201110,000,100	10,110,1172,010	2,0,0,000,107	42,011,010,000	120
Historic Average	43,182,239,332	3,091,019,170	2,562,916,453	43,710,342,049	125

 5-year historic average is 125 GPCD... "I'll set my 5-year goal as 123, and 10year goal as 120..."

• Is this goal appropriate?

🔰 @twdb



	Water Conservation	Plan Checklist
Entity:		
Plan Date:	Review Date:	Reviewed By:
A complete Utility Pr	ofile	
Baseline GPCD		
5- and 10- year goals	2	
Total GPCD		
Residential G	PCD	
Water Loss G	PCD	
Water Loss P	ercentage	
Schedule for implem	entation of Plan to achieve goa	ls listed
Method for tracking	the effectiveness of Plan	
Master meter		
Universal metering p	rogram	
Measures to determ	ine water loss	
Leak detection progr	am	
Education/information	on program	
Non-promotional wa	ter rate structure	
Means of implement	ation and enforcement of Plan	
Documentation of no	otification to Regional Water Pla	anning group
Official adoption of F	lan	
Drought Contingency	/ Plan	
Wholesaler Requiring	WCP from Customers	

Texas Water Development Board

Water Conservation Plan

If you have identified that <u>you must submit</u> a Water Conservation Plan (WCP) then please use all available resources and references to create the best plan possible.

This plan is for the <u>benefit</u> of your system. It is a "living" document, NOT a report.









Water Conservation

Even without a plan, the city or system can incorporate and use conservation measures and strategies to their benefit.

Every measure used is another potential gallon saved.



www.facebook.com/twdboard



Best Management Practices Page





www.twdb.texas.gov

Water Conservation Plan

Helpful tips and information...

Water Conservation Plan Checklist
 WCP Goals Table Form
 Water Conservation Plan FAQs
 Refer to your previous plan
 Call the TWDB for help



www.twdb.texas.gov

Goals Table Form

Water Conservation Plan Goals Table TWDB Form No.1964 Revised 12/14/2012 1:53 PM

5- AND 10-YR GOALS FOR WATER SAVINGS

Facility Name:

Water Conservation Plan Year:

	Historic 5yr Average	Baseline	5-yr Goal for year	10-yr Goal for year
Total GPCD ¹				
Residential GPCD ²				
Water Loss (GPCD) ³				
Water Loss (Percentage) ⁴	%	%	%	%

1. Total GPCD = (Total Gallons in System + Permanent Population) + 365

2. Residential GPCD = (Gallons Used for Residential Use + Residential Population) + 365

3. Water Loss GPCD = (Total Water Loss ÷ Permanent Population) ÷ 365

4. Water Loss Percentage = (Total Water Loss + Total Gallons in System) x 100; or (Water Loss GPCD + Total GPCD) x 100

www.twdb.texas.gov



Texas Wate

Development Board

Water Conservation Plan

Most common errors...

Goals are NOT represented in Gallons per Capita per Day or GPCD.
 <u>(TOTAL, RESIDENTIAL, and WATER LOSS)</u>

- 2. Adoption by resolution is NOT included or is unsigned.
- 3. Using a template WCP that does NOT address the specific(s) needs/problems of the system.
- 4. Referencing the *Water Conservation Implementation Task Force Report to the 79th Legislature...*
- 5. Please proof-read your submissions; check for ordinance numbers, signatures, items that are listed in appendices are listed, etc.

www.twdb.texas.gov





Water Conservation Historical Resources







Water Conservation Historical Resources

Water Conservation GPCD 5-Year and 10-Year Targets and Goals



www.twdb.texas.gov

www.facebook.com/twdboard

🔰 @twdb

159

Texas Water

Development Board

Water Conservation Plan

Municipal Water Conservation Planning Tool

The tool can not necessarily be used to write your plan; *HOWEVER*, it can be used to assess and evaluate the effectiveness of the best management practices incorporated within.





www.twdb.texas.gov

www.facebook.com/twdboard

Thank you for your time!

Questions? or Concerns?

Travis S. Brice Water Conservation Specialist Texas Water Development Board

Office Phone: 512-475-1639 Travis.brice@twdb.texas.gov







TWDB Financial Assistance Programs



Drinking Water State Revolving Fund (DWSRF)



Clean Water State Revolving Fund (CWSRF)



Texas Water Development Fund (Dfund)



State Water Implementation Fund for Texas (SWIFT)







Drinking Water State Revolving Fund (DWSRF)

Offers below-market fixed interest rates

Principal forgiveness subsidies for qualifying projects:

- Disadvantaged
- Small/Rural Disadvantaged
- Green
- Very Small Systems
- Urgent Need

Up to 30-year repayment period

🔰 @twdb

Initial maximum funding is \$24 million per project





Clean Water State Revolving Fund (CWSRF)

A wastewater financial assistance program funding water meter replacements?

YES!!! It is eligible as a conservation measure.

Green Project Reserve Funding http://www.twdb.texas.gov/financial/programs/green/index.asp

At least 30% of a project needs to be "green" and of that 30% up to 15% of the costs are eligible for principal forgiveness

Water meters are 100% green!

SFY 2021 \$4.6m set aside with a maximum of \$1m per project/entity







Clean Water State Revolving Fund (CWSRF)

Offers below-market fixed interest rates

Principal forgiveness subsidies for qualifying projects:

- Disadvantaged
- Small/Rural Disadvantaged
- Emergency Relief

🔰 @twdb

- Green

Up to 30-year repayment period

Initial maximum funding is \$44 million per project





Texas Water Development Fund (Dfund)



TWDB's original financial assistance program

Flexible, available year-round

Low rates based on TWDB's cost of funds

AAA Bond Rating

Can fund both water/wastewater projects in a single commitment

Repayment terms up to 40 years







State Water Implementation Fund for Texas (SWIFT)*



Offers low-interest loans reflecting TWDB's low cost of funds -Rural/Agricultural additional interest rate subsidy

Up to 30-year repayment

Flexible financing structures -Low-interest loans -Deferred Loans -Board Participation

No maximum funding limit

* The SWIFT program includes two funds, the State Water Implementation Fund for Texas (SWIFT) and the State Water Implementation Revenue Fund for Texas (SWIRFT). Bonds for the program are issued through SWIRFT.







Eligible Applicants

	DWSRF	CWSRF	DFund	SWIFT
Political Subdivisions (Cities, Counties, etc.)	٢	٢	٢	٥
Non-profit WSC's	٢	۵	٢	۵
Investor-owned Utilities	٥	٢		
Private Entities		۵		
		Nonpoint Source Pollution Control Projects Only		

www.twdb.texas.gov





Texas Water

Development Board

Eligible Projects

	DWSRF	CWSRF	DFund	SWIFT
Water Supply: Current Need	٥		٥	6
Water Supply: Future Need	٢		6	٢
Water Treatment	٥		٥	٥
Water Transmission & Distribution	٩		٩	٢
Potable Reuse		٢	6	٥
Wastewater Collection		٢	٢	
Wastewater Treatment		6	6	
Conservation (Meters)	٨	٢	٨	٢



www.twdb.texas.gov

😯 www.facebook.com/twdboard

Program Requirements*	DWSRF	CWSRF	Dfund	SWIFT		
Davis Bacon wage requirements	٥	٥				
Disadvantaged Business Enterprise (DBE) (only for Equivalency projects)	٥	٥				
American Iron & Steel	٥	٥				
US Iron & Steel			٢	6		
Loan Origination Fee	٥	٥				
Consistent with State Water Plan (SWP)	6	6	٢	6		
Recommended Water Management Strategy with capitalized costs in SWP				٢		
Water Conservation and Drought Contingency Plan for projects > \$500k	٥	٥	۵	٥		
Review of water loss threshold limits	٨	6	٢			
Project in current DWSRF/CWSRF IUP	٥	6				
*Note: there may be more program requirements than listed; please refer to website for further details.						

www.twdb.texas.gov



🔰 @twdb

Texas Water Development Board

Contact Us!

State Outreach Team Lee Huntoon 512-964-8045

Enriqueta "Keta" Caballero 512-435-9071

CWSRF Coordinator Issa McDaniel 512-463-1706

DWSRF Coordinator Caaren Skrobarczyk 512-475-1128

State Programs Coordinator Alyssa Azari 512-463-5801



financial_assistance@twdb.texas.gov

Texas Water

Development Board

www.twdb.texas.gov



Thank You!

Financial Assistance Resources

- Financial Assistance webpage http://www.twdb.texas.gov/financial/index.asp
- State Revolving Funds Webinar <u>http://www.twdb.texas.gov/financial/programs/DWSRF/index.asp#SRF-2021-02-05</u>
- SRF Programs Overview pdf <u>http://www.twdb.texas.gov/financial/programs/doc/SRF_OVERVIEW_2022.pdf?d=2</u> <u>3186.10000006263</u>
- SWIFT webinar <u>http://www.twdb.texas.gov/financial/programs/SWIFT/index.asp#swift-webinar</u>



www.twdb.texas.gov



FINANCIAL, MANAGERIAL, AND TECHNICAL (FMT) ASSISTANCE PROGRAM

APRIL 2021

TWDB



WATER LOSS, USE, AND CONSERVATION WEBINAR



MISSION STATEMENT

THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY STRIVES TO PROTECT OUR STATE'S PUBLIC HEALTH AND NATURAL RESOURCES CONSISTENT WITH SUSTAINABLE ECONOMIC DEVELOPMENT. OUR GOAL IS CLEAN AIR, CLEAN WATER, AND THE SAFE MANAGEMENT OF WASTE.



FMT ASSISTANCE PROGRAM BACKGROUND

- INITIATED UNDER THE SAFE DRINKING WATER ACT – 1996 AMENDMENT, SECTION 1420
- SUPPORTS PUBLIC HEALTH
 OBJECTIVES OF THE TEXAS
 CAPACITY DEVELOPMENT PROGRAM
- FREE ON-SITE ASSISTANCE FOR ANY
 WATER OR WASTEWATER SYSTEM



FMT ASSISTANCE

- PROVIDES FREE ON-SITE SUPPORT AND EDUCATION TO PUBLIC WATER AND WASTEWATER SYSTEMS
- WE CAN HELP YOU GET BACK INTO COMPLIANCE.
- USEFUL TO SYSTEMS ATTEMPTING
 - TO SOLVE OPERATIONAL ISSUES,
 - FIND FINANCING,
 - ADDRESS COMPLIANCE CONCERNS, AND
 - UNDERSTANDING DOCUMENTATION AND HOW TO FILL OUT THE FORMS.

OUR CONTRACTORS

TEXAS RURAL WATER AUTHORITY

- OPERATORS
- SUBJECT MATTER EXPERTS
- TECHNICAL SPECIALISTS
- FAMILIAR WITH TCEQ:
 - RULES,
 - **REGULATIONS, AND**
 - REQUIREMENTS.

Look for the Helpers. You will always find people who are helping. - Fred Rogers

橋

OUR PROCESS

- WHEN ASSISTANCE IS REQUESTED, A REFERRAL IS SENT TO TRWA.
- TRWA SCHEDULES A VISIT WITH YOU; THEN
- TRWA DELIVERS THE ASSISTANCE (USUALLY THIS IS ON-SITE, BUT WE CAN ALSO OFFER SOME THINGS VIRTUALLY).
- IF YOU NEED MORE HELP, WE WILL SEND MORE HELP.



- CAPACITY ASSESSMENTS
- CONSOLIDATION ASSESSMENTS
- ON-SITE FMT ASSISTANCE
- FMT DRINKING WATER OPERATOR TRAINING
- SPECIAL ASSIGNMENTS



- CONDUCTED FOR DRINKING WATER STATE REVOLVING FUND (DWSRF) APPLICATIONS AND OTHER ENTITIES AS ASSIGNED
- OUTLINES SYSTEMS' STRENGTHS AND IDENTIFIES ANY AREAS IN NEED OF IMPROVEMENT

CONSOLIDATION ASSESSMENT

- DETERMINES CONSOLIDATION OPPORTUNITIES AND ASSESSES THE FEASIBILITY OF TWO OR MORE SYSTEMS WORKING TOGETHER TO IMPROVE SERVICE TO CUSTOMERS
- CAN EVALUATE NEIGHBORING PWSS AND LARGER UTILITIES



MAY INVOLVE THE PUC

ON-SITE FMT ASSISTANCE

- PROVIDES FREE ON-SITE SUPPORT AND EDUCATION TO PUBLIC WATER AND WASTEWATER SYSTEMS
- USEFUL TO SYSTEMS ATTEMPTING TO SOLVE OPERATIONAL ISSUES
- 41 TASKS/TOPICS AVAILABLE
- THESE TASKS CAN BE COMBINED AND BE MADE AS SIMPLE OR COMPLEX AS IS NEEDED TO ADDRESS YOUR CONCERNS.



FMT DRINKING WATER OPERATOR TRAINING (DWOT)

- TRAINS PWS OPERATORS ON TECHNICAL SUBJECTS RELATED TO PWS OPERATION TO INCREASE TECHNICAL CAPACITY
- TRAINING PROVIDED BY FMT USING DIRECTED ASSISTANCE MODULES (DAMS) WRITTEN BY THE TCEQ TEXAS OPTIMIZATION PROGRAM (TOP)
- 14 DAMS AVAILABLE
- DAMS ARE ESSENTIALLY WORKSHOPS THAT ARE CLASSROOM / BENCHTOP ORIENTED


FMT DWOT AVAILABLE DAMS INCLUDE:

DAM 1: DEVELOPING PERFORMANCE GOALS & A MONITORING STRATEGY AT A SWTP

DAM 2A: ESTABLISHING APPROPRIATE CHEMICAL FEED SWTP RATES AT A SWTP

DAM 2B: JAR TESTING FOR A SWTP

DAM 3A: COMPLETING THE SWMOR FOR A CONVENTIONAL SWTP

DAM 3B: COMPLETING THE SWMOR-ALT FOR SWTPS WITH ALTERNATIVE TREATMENT

DAM 4: DBP CONTROL FOR SWTPS

DAM 5: PROCESS CONTROL FOR PWSS USING CHLORAMINES **DAM 6:** FILTER ASSESSMENT FOR A CONVENTIONAL SWTP

DAM 7: METHOD 334 – APPROVAL OF NON-DPD ONLINE CHLORINE ANALYZERS FOR REGULATORY USE

DAM 8: NAP FOR PWSS USING CHLORAMINES

DAM 9: SPECIAL STUDIES IN THE WTP

DAM 10: FILTER DATA INTEGRITY FOR A SWTP

DAM 11: HOW TO PERFORM A RTCR LEVEL 1 ASSESSMENT

DAM 12: HOW TO DEVELOP & MANAGE AN EFFECTIVE CROSS-CONNECTION CONTROL PROGRAM



- INCLUDES ACTIVITIES NOT DEFINED BY THE OTHER ASSIGNMENT TYPES BUT WORK IN SUPPORT OF THE TCEQ CAPACITY DEVELOPMENT STRATEGY
- PAST SPECIAL ASSIGNMENTS HAVE INCLUDED FACILITATING A COMMUNITY MEETING, COORDINATING A WORKSHOP, AND PROVIDING ASSISTANCE OVER THE PHONE

HOW TO REQUEST ASSISTANCE

EMAIL: FMT@TCEQ.TEXAS.GOV

PHONE: (512) 239-4691

RCDT STAFF: ADRIANA THOMAS, SAMIRA ARMIJOS,

TRAVIS BARTOS, KATHERINE MCGLAUGHLIN,

AND JAKE REITMEYER





QUESTION AND ANSWER