



2019 Annual Report

High Plains Underground Water Conservation District No. 1
2930 Avenue Q
Lubbock, Texas 79411-2499

www.hpwd.org

COVER PHOTO: Katherine Drury

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A LOOK BACK AT 2019 (*Photos*)

High Plains Underground Water Conservation District No. 1

Created by local residents and the state legislature in September 1951, the High Plains Underground Water Conservation District No. 1 (HPWD) marked its **68th year** of operation during Fiscal Year (FY) 2019.

HPWD strives to conserve, preserve, and protect the groundwater resources of the Ogallala, Dockum, and Edwards-Trinity (High Plains) Aquifers within its 16-county service area.

HPWD consists of all of Bailey, Cochran, Hale, Lamb, Lubbock, Lynn, Parmer, and Swisher Counties, and parts of Armstrong, Castro, Crosby, Deaf Smith, Floyd, Hockley, Potter, and Randall Counties. The district's service area is approximately 11,850 square miles.

The purpose of HPWD, as required by Chapter 36 of the Texas Water Code, is to provide for conserving, preserving, protecting, recharging, and preventing the waste of underground water.

Since 1951, HPWD has developed its management philosophy and resulting management strategies.

During FY 2019, staff continued work on the programs outlined in the HPWD 10-year management plan, originally adopted by the Board of Directors on August 11, 1998.

The HPWD Board of Directors adopted amended management plans on these dates:

- January 29, 2004
- February 10, 2010
- July 19, 2011
- August 12, 2014
- September 10, 2019

This document contains management goals, performance standards, and responses to the performance standards for FY 2019.

HPWD expresses its appreciation to its management and staff for their careful documentation of program data and assistance in compiling this annual report.

The High Plains Underground Water Conservation District No. 1 Board of Directors reviewed and approved this annual report at their January 14, 2020 regular meeting in Lubbock, TX.



BOARD OF DIRECTORS

Dan Seale	Member	Precinct One District Director	Lubbock, TX
Brad Heffington	Vice President	Precinct Two District Director	Littlefield, TX
Mike Beauchamp	Secretary-Treasurer	Precinct Three District Director	Friona, TX
Lynn Tate	President	Precinct Four District Director	Amarillo, TX
Ronnie Hopper	Member	Precinct Five District Director	Petersburg, TX

DISTRICT STAFF

Jason Coleman, P.E.	General Manager
Carmon McCain	Information/Education Group Supervisor
Juan Peña	Permit Supervisor
Gray Sanders	Information Technology Administrator
Keith Whitworth	Field Technician Supervisor
Tammy Anderson	Accountant
Billy Barron	Field Technician
Liz Casias	Receptionist/Administrative Assistant
Katherine Drury	Education and Outreach Coordinator
Ray Eads	Field Technician (<i>Canyon</i>)
Lance Epperson	Field Technician
Mark Hamilton	Field Technician
Jed Leibbrandt	GIS Specialist
Vance Porter	Field Technician
Andres Villarreal	Field Technician
Victoria Whitehead	General Counsel

COUNTY ADVISORY COMMITTEES

(October 1, 2018 to September 30, 2019)

COUNTY	MEMBERS
ARMSTRONG	Jim Bob Burnett, Wayside, TX
BAILEY	Brett Bamert, Muleshoe, TX John Bruce Barrett, Springlake, TX Tim Black, Muleshoe, TX Jim Pat Claunch, Muleshoe, TX Kelly Kettner, Muleshoe, TX Eric McElroy, Muleshoe, TX
CASTRO	Darrell Buckley, Dimmitt, TX Donny Carpenter, Dimmitt, TX Kirk Farris, Nazareth, TX Coy Myrick, Nazareth, TX Max Swinburn, Dimmitt, TX Dale Wilhelm, Nazareth, TX
COCHRAN	Tommy Carter, Morton, TX Curtis Griffith, Lubbock, TX Glen Lyon, Morton, TX Scott Simpson, Morton, TX Richard Williams, Morton, TX
CROSBY	David Appling, Crosbyton, TX Dusty Cornelius, Crosbyton, TX Wayne Laminack, Ralls, TX John Schoepf, Lorenzo, TX Brad Thornhill, Crosbyton, TX Reagan Ware, Ralls, TX
DEAF SMITH	Frankie Bezner, Hereford, TX Kevin Buse, Hereford, TX Michael Carlson, Hereford, TX Andrew Gee, Hereford, TX Chris Grotegut, Dawn, TX Andy Schaap, Hereford, TX Harold Sides, Wildorado, TX

COUNTY	MEMBERS
FLOYD	<p>Ray Brady, Floydada, TX Hulon Carthel, Floydada, TX Warren Mitchell, Lockney, TX Kerry Pratt, Floydada, TX</p>
HALE	<p>Rob Bass, Plainview, TX Gaylord Groce, Petersburg, TX Jeff Harrell, Plainview, TX Brad Martin, Edmonson, TX John Ross, Plainview TX Jimmy Sageser, Kress, TX</p>
HOCKLEY	<p>David Carter, Levelland, TX George Childress Jr., Levelland, TX Raymond Marek, Pep, TX Donald Rhoads, Ropesville, TX Preston Turner, Levelland, TX</p>
LAMB	<p>Jeff Edwards, Amherst, TX Kerry Faver, Littlefield, TX Bryan Patterson, Amherst, TX Kevin Riley, Springlake, TX Tullie Struve, Olton, TX</p>
LUBBOCK	<p>Steve Barrett, Lubbock, TX J.O. Dawdy, Floydada, TX Gary Evitt, Idalou, TX Lynn Harrist, Shallowater, TX Linda Taylor, Ropesville, TX Rodney Terry, Wolfforth, TX Heath Verett, Ralls, TX</p>
LYNN	<p>Ty Askew, Tahoka, TX Kevin Buxkemper, Slaton, TX Craig Heinrich, Lubbock, TX Ralph Huffaker, Tahoka, TX Stacy Smith, Wilson, TX Michael White, Tahoka, TX</p>

COUNTY	MEMBERS
PARMER	<p>Tony Beauchamp, Bovina, TX Jerry Don Glover, Muleshoe, TX Cris Ingram, Friona, TX Terry Jesko, Muleshoe, TX Steve Kaltwasser, Farwell, TX Josh McDonald, Muleshoe, TX Ryan Williams, Farwell, TX</p>
POTTER	<p>Bruce Blake, Amarillo, TX Michael Menke, Amarillo, TX</p>
RANDALL	<p>Charles Allison, Amarillo, TX Randy Darnell, Amarillo, TX Greg Glover, Amarillo, TX Dillon Pool, Amarillo, TX Pat Scarth, Amarillo, TX Ryan Wieck, Umbarger, TX David Winters, Canyon, TX</p>
SWISHER	<p>Brian Borchardt, Tulia, TX Trent Finck, Tulia, TX Max Moore, Kress, TX Jeremy Reed, Kress, TX</p>

KEY EVENTS OF HPWD FISCAL YEAR 2019

(October 1, 2018 to September 30, 2019)

October 2018	Paul Bjerck and incumbent Dan Seale are candidates for the Precinct One District Director position. Early voting begins Oct. 22. The Precinct Two and Precinct Five elections were canceled due to uncontested races.
November 2018	Domestic water well workshops held in Lubbock (Nov. 1) and Bushland (Nov. 8). Voters re-elect Dan Seale Precinct One District Director on Nov. 6. Ogallala Commons holds Playa Basin Field Days.
December 2018	The 30-inch “Living Waters Artesian Spring Catfish Farm” well outside San Antonio was plugged – years after it served as the center of attention for Texas groundwater issues.
January 2019	Annual water level measurements begin January 2. Directors Dan Seale, Brad Heffington, and Ronnie Hopper receive Oaths of Office. 86 th Texas Legislative session convenes January 8. TAWC Water College held January 17. Water for Texas Conference held Jan. 23-25 in Austin. Victoria Whitehead named HPWD General Counsel.
February 2019	TWDB Board Member Brooke Paup visited HPWD office on February 1. No-Till Texas Soil Health Symposium at Amarillo. HPWD recognizes best water projects at South Plains Regional Science Fair. Former HPWD Agricultural Engineer Dr. Donald L. Reddell dies. Annual County Advisory Committee meetings (Feb. 27, Feb. 28 & March 1) USDA-NRCS accepting applications for EQIP program.
March 2019	HPWD enrolls producers in annual Irrigation Assessment Program. March 10-16 is National Groundwater Week.
April 2019	Annual rainwater harvesting workshops held April 11, April 25, & May 2. Amarillo bank & Lubbock manufacturer receive state conservation honors. Lawn irrigation with domestic wells workshop held April 13 at Bushland. Water level measurements indicate average decline of -1.05 feet during 2018-2019. April is National Garden Month.
May 2019	86 th Texas Legislative session adjourns “sine die” on May 27.
June 2019	HPWD Board approves more than \$157,000 in research & demonstration funding. <i>The Cross Section</i> newsletter celebrates 65 th year of publication. Former Texas A&M AgriLife researcher Dr. Charles Wendt dies.
July 2019	July is Smart Irrigation Month. Youth Agriculture Lifetime Leadership (YALL) visit on July 15. Texas 4-H2O Youth Leadership Academy visit on July 18. No-Till on the Plains Bus Tour, July 29- August 1.
August 2019	August 6 Groundwater Management Area # 1 meeting at Amarillo. August is National Water Quality month.
September 2019	Board adopts 2019 tax rate and revised 2019-2024 management plan. September 24 Groundwater Management Area # 2 meeting at Seminole. September 25 deadline for AIM Program applications.

MANAGER'S MESSAGE – Jason Coleman

During the past five years, High Plains Underground Water Conservation District (HPWD) has dedicated much time and effort to improving the effectiveness of our mission. A brief summary of these efforts is included here for your information.



TRANSPARENCY

The HPWD Board of Directors wants the public to know what is happening, and how its financial resources are being used for various programs. As a result, the following items are available on the HPWD web site:

- Board meeting agendas
- Minutes of board meetings, including a brief recap which is normally posted online the day following a meeting.
- Financial reports
- Monthly bills paid
- Annual financial audits
- Annual report on attainment of goals

CUSTOMER SERVICE

HPWD values those we serve. The staff members are proud of the following ways that we help residents:

- Water levels are checked at individual wells upon request
- Flow tests are performed at individual wells upon request
- Water well permits completed with same, or next day, service
- Rainwater harvesting workshops offer complimentary rain barrels or rain chains
- Staff assistance with interpreting aquifer conditions when requested by prospective land buyers
- Irrigation Assistance Program (IAP) offers on-farm analysis throughout the year
- Assistance in Irrigation Management (AIM) funding from the Texas Water Development Board provides up to fifty percent cost share with irrigation monitoring/control equipment

EDUCATION/OUTREACH

Communication is a very important function of keeping residents aware of news stories and other items of interest. Our communication and outreach staff offer the following:

- Bi-weekly electronic version of *The Cross Section* newsletter
- Monthly print version of *The Cross Section* newsletter
- Educational programs are delivered to many civic and school groups upon request
- Infographic summaries of annual water level measurements, IAP results, and aquifer conditions
- Development of the annual *Conservation Connect* magazine.
- Educational workshops focused on conservation education, district programs, and availability of online resources

- Daily social media updates via Facebook, Twitter, and Instagram
- Legislative updates

AQUIFER DATA COLLECTION AND RESEARCH

One of the greatest achievements in the past five years is the development and release of the district's web map.

This resource provides constant access to:

- Annual water level measurements
- Daily water level measurements
- Records of driller logs and pump installer logs
- Geophysical logs
- Precipitation data from selected rain gauges and radar estimates
- Well spacing tools for evaluating potential new well locations
- The aquifer information tool provides site specific data at any location, and includes saturated thickness, depth of formations, and land surface elevation
- Measurement tools, which include both distance and area

The Board's creation of a research/demonstration committee has also improved the evaluation and funding of projects that are beneficial to district residents.

Some of the projects funded recently include:

- Plant Based Polymers to Remove Total Dissolved Solids (TDS) and Arsenic in Groundwater.
 - Rainwater Harvesting Demonstration Project.
 - Evaluation of TDR Soil Moisture Sensor.
 - Drought Tolerant Corn Hybrids.
 - Improving Groundwater Recharge.
 - Mapping Playa Wetness & Estimating Playa Recharge.
 - 3D Aquifer Visualization Model.
 - Water Conservation Demonstration Garden.
 - Effects of Shade on Water Use in Turfgrass.
 - Playa Basin Field Days & Festivals.
 - Texas 4-H Water Ambassadors.

All of this information is included on the district website at www.hpwd.org. Please follow our progress in water conservation and education by signing up for our electronic newsletter and social media.

ANNUAL REPORT OF ATTAINMENT OF GOALS 2019

GOAL 1: PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER

Management Objective 1.1 – Monitor Water Levels

Water level measurements are vital to the study of the aquifers within the High Plains Water District (HPWD). Field staff make these measurements each winter when most of irrigation is at a minimum.

Performance Standards

1.1a Number of wells measured in 2019.

There were 1,391 wells measured. Of these, 1,307 are Ogallala Aquifer wells, 52 are Edwards-Trinity (High Plains) Aquifer wells, and 32 are Dockum Aquifer wells.

1.1b Number of wells unmeasured wells in 2019.

Approximately five wells were unmeasurable in 2019. Of these, two were Dockum Aquifer wells and three were Ogallala Aquifer wells.

1.1c Number of new wells added to the observation well network in 2019.

HPWD Field Staff added 60 new Ogallala Aquifer wells to the observation well network in 2019. There were no new Dockum Aquifer wells added. There were 64 Ogallala Aquifer wells dropped from the observation well network in 2019.

1.1d Construct maps illustrating the yearly changes in water levels.

District staff updated the annual changes in depth-to-water and saturated thickness in wells within the district's observation well network. These data are available for online viewing at map.hpwd.org.

1.1e Maintain continuous water level monitoring transducers in at least 10 water wells.

There are 58 continuous water level monitoring transducers installed/maintained in wells within the district. Of these, five wells are visited to download data and 53 wells update data on a daily basis. Data from these wells is available at map.hpwd.org → **Daily Observation Wells**.

Management Objective 1.2 – Monitor Saturated Thickness

Saturated thickness represents the aquifer section where groundwater pumping occurs. Water users should be aware of changes in saturated thickness.

Performance Standards

1.2a Calculate the saturated thickness for water level observation wells that have a log of well construction.

County	Number of Observation Sites With Log of Construction	Average Saturated Thickness from Observation Wells
Armstrong	4	39
Bailey	68	66
Castro	76	58
Cochran	44	39
Crosby	8	82
Deaf Smith	82	64
Floyd	82	68
Hale	47	61
Hockley	67	43
Lamb	88	50
Lubbock	71	55
Lynn	34	55
Parmer	89	52
Potter	6	54
Randall	34	52
Swisher	45	48

1.2b Provide saturated thickness data via the district website.

These data are available to the public as part of the HPWD interactive observation well feature at map.hpwd.org. Clicking on an observation well location on the map brings up a table with the observation well number, county, permit number, depth to base of the aquifer, and depth to water/saturated thickness information for a 10-year period.

Management Objective 1.3 – Technical Field Services

The public often consults with HPWD staff for information to determine water well capacities. Ultrasonic flow meters and e-lines are among the tools used by staff for this purpose.

Performance Standards

- 1.3a Document the number of flow tests performed by district staff in 2019.** Approximately 743 tests were conducted in 2019. This includes 653 water wells and 90 irrigation systems.
- 1.3b Number of flow tests performed by the public using the metering equipment loaned to water users by the district.** HPWD loaned out flow meters five times during the year. Multiple wells may have been monitored with these flow meters.
- 1.3c Number of water level measurements performed for individual well owners.** There were 749 water level measurements made for individual well owners in Fiscal Year 2019. Of these, 601 were for the Irrigation Assessment Program. The remaining 148 measurements were for individual landowners/operators.

Management Objective 1.4 – Irrigation Assessment Program

Agricultural irrigation comprises the majority of groundwater use within the district's 16-county service area. For this reason, it is important for the district to understand the patterns of groundwater use on different crops. The district monitors application amounts and crop types through voluntary cooperation of a network of agricultural producers. The following data reflects the 2019 crop year.

Performance Standards

- 1.4a Number of sites enrolled in the district's irrigation assessment program.** There are 132 sites covering 19,096 acres of land.
- 1.4b Document the types of irrigated crops.** Corn, cotton, grain sorghum, peanuts, silage, and wheat are the primary crops in 2019. In addition, there is alfalfa, grass, and sunflowers.
- 1.4c Document the irrigation methods being utilized.** The irrigation methods are primarily center pivot irrigation and subsurface drip irrigation.

Management Objective 1.5 – Data Availability

It is our goal to provide the best available hydrologic information to water users within the district. This information is available on a variety of platforms, including electronic and print media. Timely delivery of this information and ease of access by the public are critically important.

Performance Standards:

1.5a Summary and description of new/improved data tools.

The format for the daily water level measurement charts has been revised to automatically show the base of the aquifer as visitors move their cursor over the chart. These data can be reviewed for one month, three-month, six-month, year to date, or longer periods.

Rain gauge data has also been added to the interactive map. For example, bar charts depict 2019 rainfall by month. Clicking on each bar chart brings up an expanded view of rainfall by day for that respective month.

1.5b Summary and description of existing data tools.

The online map allows the public to view well locations and download associated documents, which include permits, well logs and geophysical logs. The locations of Observation Network wells are available to view Annual and Daily water levels through an interactive graph. Employing the Well Spacing Guide will allow users to estimate a desired drilling location based upon the District’s minimum distance rules. A new “Aquifer Info” tab allows persons to access a “virtual bore” for any location within the HPWD service area. This tool provides representative data for elevation of the water table, saturated thickness of the aquifer, depth to the formation, and thickness of the formation.

1.5c Inventory of all data tools available to the public.

- Aquifer Info tab with “virtual bore” for any location in the HPWD service area.
- Interactive web map feature with base to aquifer, depth-to-water, and saturated thickness.
- Groundwater Management Area (GMA) Map.
- Regional Water Planning Group (RWPG) Map.
- Rain Gauge Network Map.
- Drought Map.
- Center Pivot and Subsurface Drip Irrigation (SDI) Location Map.

Management Objective 1.6 – Irrigation System Inventory

As groundwater availability changes, it is expected that the amount of irrigated acreage will change as well. Remote imagery and other tools allow HPWD staff to document changes in the type and number of irrigation systems within the district.

Performance Standards

1.6a Number of irrigation systems documented.

There are approximately 14,021 center pivot systems and 5,726 subsurface drip irrigation systems in operation within the district. (2019 inventory)

1.6b Calculate acreage covered by the irrigation systems.

There are approximately 2,244,250 irrigated acres within the district. This includes 1,797,766 acres irrigated with center pivots and 446,484 acres irrigated with subsurface drip irrigation. (2019 inventory)

GOAL 2: CONTROLLING AND PREVENTING WASTE OF GROUNDWATER

Management Objective 2.1 – Well permitting and well completion

HPWD issues permits for water wells expected to produce 17.5 gallons per minute or more from the Ogallala Aquifer, the Edwards-Trinity (High Plains) Aquifer, and the Dockum Aquifer.

Performance Standards

2.1a Number of water well permits issued per aquifer.

AQUIFER	2019	2018
Dockum Aquifer	51	26
Edwards-Trinity (High Plains) Aquifer	1	1
Ogallala Aquifer	620	495
TOTAL	672	522

2.1b Number of well completions per aquifer.

AQUIFER	2019	2018
Dockum Aquifer	8	16
Edwards-Trinity (High Plains) Aquifer	0	4
Ogallala Aquifer	471	617
TOTAL	479	637

2.1c Production categories of well permits issued in Fiscal Year 2019.

DOCKUM AQUIFER		
	2019	2018
70 gallons per minute	1	2
165 gallons per minute	1	1
265 gallons per minute	5	0
500 gallons per minute	36	18
> 500 gallons per minute	8	5
TOTAL	51	26

EDWARDS-TRINITY (High Plains) AQUIFER		
	2019	2018
70 gallons per minute	1	0
165 gallons per minute	0	1
265 gallons per minute	0	0
390 gallons per minute	0	0
500 gallons per minute	0	0
> 500 gallons per minute	0	0
TOTAL	1	1

OGALLALA AQUIFER		
	2019	2018
Under 17.5 gallons per minute	1	0
70 gallons per minute	185	98
165 gallons per minute	226	214
265 gallons per minute	93	82
390 gallons per minute	67	43
560 gallons per minute	43	54
1,000 gallons per minute	4	2
> 1,000 gallons per minute	1	2
TOTAL	620	495

Management Objective 2.2 – Open, Deteriorated, or Uncovered Wells

Open, deteriorated, or uncovered wells pose a threat to groundwater quality as well as human/animal safety. Staff members may discover such wells during routine work in the field or the public may notify the District about open wells.

Performance Standards

2.2a Number of open, deteriorated, or uncovered wells reported. (19)

2.2b Number of well caps provided to cover open wells. (6)

2.2c Number of open, deteriorated, or uncovered wells that were capped, closed, or repaired during FY 2019, in accordance with district rules. (12) *There are 11 case reports of open, deteriorated, or uncovered wells still in progress at year's end.*

Management Objective 2.3 – Waste of Groundwater

Waste of groundwater is usually reported to the HPWD office by the public. It may also be discovered by a staff member in performance of their duties. Since groundwater waste is prohibited by State Law, all reports of groundwater waste are investigated by staff. The corresponding well owner is notified of the wasteful practice and encouraged to take corrective measures.

Performance Standards

2.3a Number of water waste reports investigated by district staff. There were two reports of irrigation tailwater waste and two reports of urban water waste in 2019. Each was investigated and resolved by HPWD staff.

2.3b Number of newsletter articles addressing waste prevention. (4)

MONTH	ARTICLE HEADLINE
January 2019	“Watching Water: Improving Irrigation Efficiency with Telemetry”
April 2019	“Irrigation System Inspection Can Help Save Water”
May 2019	“Irrigation Runoff Mitigation System Patented”
July 2019	“July Is Smart Irrigation Month”

GOAL 3: CONTROLLING AND PREVENTING SUBSIDENCE

This goal is determined to be non-applicable to the High Plains Water District.

GOAL 4: CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES

Management Objective 4.1 – Coordination with Surface Water Management Agencies.

There are limited surface water resources within the High Plains Water District service area. Participation in the Llano Estacado Regional Water Management Planning Group (Region O) will ensure that the district is current on issues facing surface water agencies within the region.

Performance Standards

4.1a Number of LERWG (Region O) meetings attended by HPWD staff in FY2019.

HPWD Staff attended the following Region O meetings:

- February 20, 2019 South Plains Association of Governments, Lubbock.
- April 24, 2019 South Plains Association of Governments, Lubbock.
- May 20, 2019 South Plains Association of Governments, Lubbock.
- June 27, 2019 South Plains Association of Governments, Lubbock.
- August 28, 2019 South Plains Association of Governments, Lubbock.
- September 17, 2019 South Plains Association of Governments, Lubbock.

GOAL 5: NATURAL RESOURCE ISSUES

This goal is determined to be non-applicable to the High Plains Water District.

GOAL 6: DROUGHT CONDITIONS

Management Objective 6.1 – Provide Ongoing, Relevant Drought Information

Drought awareness helps water users understand the level of conservation required to meet a particular need.

Performance Standards

6.1a Provide drought-related articles to the public. This can also include the district website.

According to unofficial National Weather Service data, Amarillo received 25.88 inches of precipitation and Lubbock received 24.37 inches of precipitation in 2019. The normal values are 20.36 inches for Amarillo and 19.12 inches for Lubbock. The departure from normal for Amarillo was +5.52 inches while the departure from normal for Lubbock was +5.25 inches.

MONTH	ARTICLE HEADLINE
October 2018 – Sept. 2019	Monthly Drought Monitor Maps in print & e-newsletter.
Nov. 2018 - Sept. 2019	18 Social Media posts with drought-related articles.

In addition, HPWD Manager Jason Coleman conducted an on-camera interview about drought conditions for KLBK-TV.

6.1b Provide rainfall data to the public.

West Texas Mesonet Rainfall Totals as well as historic rainfall data for both Amarillo and Lubbock are available on the “Maps → Other” section of the HPWD website (www.hpwd.org/other).

GOAL 7: CONSERVATION, RECHARGE ENHANCEMENT, RAINWATER HARVESTING, PRECIPITATION ENHANCEMENT, OR BRUSH CONTROL, WHERE APPROPRIATE AND COST-EFFECTIVE.

Management Objective 7.1 – District Newsletter

HPWD will produce a newsletter (“*The Cross Section*”) and distribute it to area residents and other interested parties. Articles discussing methods to conserve and preserve groundwater quality and quantity will be included.

Performance Standards

7.1a Number of newsletter subscribers in 2019.

There are 2,698 electronic version subscribers and 664 print version subscribers at the end of Calendar Year 2019.

7.1b Number of electronic/print newsletters produced/distributed in 2019.

There were 24 electronic issues and 12 print issues produced/distributed during Calendar Year 2019.

7.1c Number of articles addressing conservation practices during FY2019.

There were 11 articles addressing conservation practices in Fiscal Year 2019.

MONTH	NEWSLETTER ARTICLE HEADLINE
December 2018	“Do You Want Water Savings With Your Order?” (Part 1 of 2)
January 2019	“Partnerships Help Restaurants Conserve Water” (Part 2 of 2)
February 2019	“New Center Pivot Technologies Investigated”
March 2019	“Domestic Wells Can Pose Challenges to Turf Irrigation” “Rainwater Harvesting Workshops Scheduled”
April 2019	“Water Level Measurements Indicate Average Decline of -1.05 Feet”
May 2019	“Irrigation Runoff Mitigation System Patented”
June 2019	“Producers, Researchers Exploring Ways To Conserve Water” (Part 1 of 2)
July 2019	“July Is Smart Irrigation Month” “Producers, Researchers Exploring Ways To Conserve Water” (Part 2 of 2)
August 2019	“Water Efficiency of Zoysia Grass Tested in Texas Panhandle”

Management Objective 7.2 – News Releases

HPWD will produce news releases about water conservation practices and other relevant subjects for distribution to print media, electronic media, and other interested parties.

Performance Standards

7.2a Number of news releases published.

There were 22 news releases produced and distributed to the media in FY 2019.

7.2b Number of news releases addressing conservation practices.

There were eight news releases addressing conservation practices.

MONTH	NEWS RELEASE
October 2018	“HPWD Schedules Two Domestic Water Well Workshops”
March 2019	“HPWD Announces 2019 Rainwater Harvesting Workshops”
April 2019	“National Garden Month: Irrigation System Inspection Important” “Water Level Measurements Indicate Average Decline of -1.05 feet” “National Garden Month: Incorporate Native Plants Into Landscapes” “National Garden Month: Mulch Reduces Evaporation & Saves Water”
June 2019	“HPWD Board Approves Research and Demonstration Funding”
August 2019	“National Water Quality Month: Regularly Inspect Domestic Wells”

Management Objective 7.3 – Radio Announcements

HPWD will distribute pre-recorded 60-second radio announcements about water conservation practices and other subjects to stations within the district.

Performance Standards

7.3a Number of radio announcements produced. (4)

Each quarter, one radio announcement was produced and distributed to eight radio stations within the HPWD service area. The FY 2019 topics included: 1) Annual water level measurements begins in January; 2) water level measurement results; 3) AIM Program announcement; and 4) general HPWD services.

Management Objective 7.4 – Public Presentations

HPWD representatives will present information about water conservation practices, district programs and activities, and other subjects to civic clubs, professional organizations, and other interested parties.

Performance Standards

7.4a Number of presentations given.

HPWD personnel gave 65 presentations about water conservation during Fiscal Year 2019.

Staff Member	Number of Presentations In Fiscal Year 2019
Jason Coleman	5
Katherine Drury	39
Carmon McCain	7
Keith Whitworth	5
Victoria Whitehead	7
TOTAL	63

7.4b Document estimated attendance at each venue.

HPWD personnel estimated the attendance at each venue, which ranged from as few as six persons to as many as 1,300 students (*“Ag in the Bag”* program). More than 3,800 people learned more about water conservation as a result of HPWD presentations in 2019. (See Table 7.7a)

Management Objective 7.5 – Rainwater Harvesting

HPWD will promote awareness of rainwater harvesting as a conservation practice to district residents.

Performance Standards

7.5a Number of public presentations dedicated to rainwater harvesting.

The district hosted annual rainwater harvesting workshops at Levelland (April 11), Canyon (April 25), and Lubbock (May 2). Approximately 116 persons attended the workshops. In addition, Education and Outreach Coordinator Katherine Drury gave 12 rainwater harvesting presentations to various groups.

7.5b Number of rainwater harvesting barrels and rain chains distributed to the public.

HPWD staff distributed approximately 79 rainwater harvesting barrels to the public at workshops and other events held in Calendar Year 2019.

Management Objective 7.6 – Conservation Research

HPWD will seek opportunities to participate with other groups conducting water conservation research and development.

While not included in the HPWD management plan, the District served as lead partner for the USDA-NRCS Resource Conservation Partnership Program (RCPP) from 2015 to 2018. Chemigation check valves, flow meters, and soil moisture monitoring equipment are among the initial high priority items designated for RCPP funding. The program later expanded to include medium priority items, such as irrigation pipelines, center pivots, and subsurface drip irrigation. Program publicity included articles in *The Cross Section*, news releases, and social media posts.

Performance Standards

7.6a Number of water conservation research projects in which HPWD participates.

The HPWD Board of Directors approved more than \$157,000 in funding requests for 11 water-related research and demonstration projects in FY 2019.

They include:

- Plant Based Polymers to Remove Total Dissolved Solids (TDS) and Arsenic in Groundwater.
- Rainwater Harvesting Demonstration Project.
- Evaluation of TDR Soil Moisture Sensor.
- Drought Tolerant Corn Hybrids.
- Improving Groundwater Recharge.
- Mapping Playa Wetness & Estimating Playa Recharge.
- 3D Aquifer Visualization Model.
- Water Conservation Demonstration Garden.
- Effects of Shade on Water Use in Turfgrass.
- Playa Basin Field Days & Festivals.
- Texas 4-H Water Ambassadors.

7.6b Number of newsletter articles describing the research projects.

There was one newsletter article describing/discussing the research projects.

MONTH	ARTICLE HEADLINE
June 2019	HPWD Board approves research & demonstration funding

Management Objective 7.7 – Public Information

District staff will provide general water conservation information at suitable venues within the district each year. This may include exhibits at farm shows and information tables with publications at other meetings.

Performance Standards

7.7a Document the venues at which water conservation information is provided.

HPWD staff provided water conservation information at the venues listed in the table on Pages 25-26.

Table 7.7a

DATE	VENUE	ATTENDANCE	PRESENTER(S)
10/1/2018	Presentation at Nazareth	60	Katherine Drury
10/2/2018	Whiteface ISD Playa Field Day	80	K. Drury
10/2/2018	Muleshoe Playa Field Day	80	K. Drury
10/5/2018	TX Brigades W.I.L.D. Students	25	K. Drury
10/16/2018	Ag in the Bag	400	K. Drury
10/17/2018	Ag in the Bag	400	K. Drury
10/18/2018	Ag in the Bag	400	K. Drury
10/24/2018	TALL Cohort at Muleshoe	25	Jason Coleman
10/24/2018	Lubbock Green Team	35	K. Drury
10/25/2018	TTU Landscape Architecture Students	25	K. Drury
11/1/2018	Domestic Well Workshop- Lubbock	24	Coleman, Drury, & Whitworth
11/8/2019	Domestic Well Workshop – Bushland	6	Coleman, Drury, & Whitworth
11/16/2018	Playa Festival at All Saints – Lubbock	40	K. Drury
11/27/2018	* Amarillo Farm & Ranch Show	50	K. Drury & Carmon McCain
11/28/2018	* Amarillo Farm & Ranch Show	50	K. Drury & C. McCain
11/29/2018	* Amarillo Farm & Ranch Show	50	K. Drury & C. McCain
12/13/2018	Slaton ISD Quest	13	K. Drury
1/17/2019	Groundwater Law – TAWC Water College	35	Keith Whitworth
2/7/2019	Jr. League of Lubbock Leadership Team	30	Victoria Whitehead
2/9/2019	South Plains Food Bank – GRUB	20	K. Drury
2/11/2019	Rainwater Harvesting – Canyon	22	K. Drury
2/12/2019	TTU Architecture Class – RWH	18	K. Drury
2/21/2019	TX Bar CLE Water Case Law Update	150	V. Whitehead
3/2/2019	North Plains GCD Rainwater Workshop	10	K. Drury
3/2/2019	Littlefield Early Risers Lions Club	16	C. McCain
3/2/2019	Nature's CORE Exhibition in Lubbock	300	K. Drury
3/2/2019	WTAMU Horticulture Class	60	K. Drury
4/11/2019	Rainwater Harvesting Workshop - Levelland	14	K. Drury
4/12/2019	Kids, Kows, & More - Crosbyton	300	K. Drury
4/25/2019	Rainwater Harvesting Workshop - Canyon	39	K. Drury
5/2/2019	RWH Workshop – Lubbock	63	K. Drury
5/2/2019	High Ground of Texas – Amarillo	50	K. Whitworth
5/4/2019	Lubbock Habitat for Humanity Course	12	K. Drury
5/11/2019	Roundtable of Lubbock	10	C. McCain
5/14/2019	Study Club – Floydada	25	K. Drury
5/15/2019	Floydada Rotary Club	15	K. Drury

5/16/2019	Lamb County Ag Day	250	K. Drury
5/16/2019	Floydada Lions Club	15	C. McCain
5/24/2019	Water Law Update Texas Ag Law CLE	100	V. Whitehead
6/1/2019	City of Lubbock RWH Garden Class	14	K. Drury
6/4/2019	Lorenzo ACE	15	K. Drury
6/10-14/2019	Ranching Heritage Center Ranch Camp	25	K. Drury
6/13/2019	Landowner Conservation Workshop	60	K. Drury
7/8/2019	Tolk Station Employee Meeting	50	K. Drury
7/11/2019	Lubbock Chamber Ag Committee	20	V. Whitehead
7/15/2019	YALL Tour Group	35	K. Whitworth
7/18/2019	4-H Water Ambassadors	30	Drury, McCain, & Whitehead
8/19/2019	SWRT Solutions – Lubbock	15	J. Coleman
8/27/2019	Slaton ISD Quest	9	K. Drury
8/29/2019	Cotton Commodity Retreat- Halfway, TX	45	J. Coleman
9/5/2019	Lubbock Kiwanis Club	40	K. Drury
9/12/2019	TAWC Field Day	40	V. Whitehead
9/19/2019	Ag Group Presentation	20	V. Whitehead
9/21/2019	TTU Greenhouse Field Day	30	K. Drury
9/26/2019	WTAMU Presentation	60	K. Drury
TOTAL		3,830	

* Estimated visitors to HPWD info booth – Actual show attendance is much greater.

7.7b Estimate the attendance at each venue. (See Table 7.7a above).

Management Objective 7.8 – Classroom Education

HPWD will promote water conservation education in schools within its service area by sharing such information with students. This includes sponsorship of the WaterWise™ conservation education program at schools in the district.

Performance Standards

7.8a Document the number of classroom presentations and number of students reached.

HPWD Education and Outreach staff gave 15 presentations that reached an estimated 2,232 students in FY 2019. These included the annual Ag in the Bag, Ag Awareness Days, Playa Basin Festivals, and various classroom presentations.

WATERWISE™ PROGRAM:

HPWD also provides the Waterwise™ Conservation Education program to students each academic year. Although not part of the current management plan, approximately 2,216 students and 63 teachers participated in the Waterwise™ program during academic year 2018-2019. A program description is available at www.hpwd.org/education

Management Objective 7.9 – HPWD Website

HPWD will provide information about groundwater availability, water conservation, and other subjects on its website.

Performance Standards

7.9a Document annual website traffic using an analytical program—such as Google Analytics or other.

According to Google Analytics, the HPWD website received 43,400 views during Fiscal Year 2019. On average, we have 3,616 page views each month.

The top five pages that users visit are as follows: Home Page, Interactive Maps, Aquifers, Reports, and Contact Us.

The Interactive Map at www.map.hpwd.org received 5,866 views during Fiscal Year 2019.

HPWD also provides information about groundwater availability, domestic water wells, aquifer information, water conservation, and other topics through use of social media. Although not part of the current management plan, Facebook, Pinterest, Twitter, and YouTube are also accessible via the HPWD website.

GOAL 8: RECHARGE ENHANCEMENT

This goal is not applicable. A review of past work conducted by HPWD staff and researchers indicates that this goal is not appropriate at this time.

GOAL 9: PRECIPITATION ENHANCEMENT

This goal is not applicable. On October 1, 2002, the HPWD Board of Directors voted to terminate the District's Precipitation Enhancement Program that had been in operation since 1997. An October 12, 2002 editorial in the *Lubbock Avalanche-Journal* stated, "The Weather Modification Program, however well-intentioned, had become a controversy. The amount of concern and opposition voiced by people in the District was reason enough to call a halt to it."

GOAL 10: BRUSH CONTROL

This goal is not applicable. Existing programs administered by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) are addressing this issue.

This activity is not cost-effective nor applicable for the District at this time.

GOAL 11: DESIRED FUTURE CONDITIONS OF THE AQUIFERS

Management Objective 11.1 – Water Use Reporting

The HPWD Board of Directors adopted a desired future conditions (DFC) goal that requires water users adhere to a yearly allowable production rate (APR). To facilitate compliance, HPWD will provide a variety of reporting options to well owners and operators.

Performance Standards

11.1a Number of water users reporting usage in FY 2019.

There were 2,397 reports submitted to HPWD. Of these, 2,278 were simple reports and 119 were detailed reports.

11.1b Type of reporting methods used (*How was water use reported?*)

Concentrated Animal Feeding Operations (CAFOs)	15
Flow Meters	81
Nozzle Package	12
One Crop Option	2,271
Utility Bills	18
TOTAL	2,397

11.1c Reporting by count of water user group (i.e. number of agriculture, industrial, municipal, etc.)

Reported Acres By Industry:

Agriculture	2,299 reporting for total of 984,772 acres.
Industrial	14 reporting for total of 56,048 acres.
Municipal	84 reporting for total of 292,671 acres.

Management Objective 11.2 – Estimating Annual Usage

Calculating annual groundwater use is necessary for monitoring progress toward achieving the desired future conditions. Although a regional groundwater model provides estimate of usage to meet that goal, a more specific local estimate may increase our understanding of the usage and corresponding changes in volume.

Performance Standards

11.2a Estimate total usage within the district using reported data.

Concentrated Animal Feeding Operations (CAFOs)	159 acre-inches.
Flow Meters	641 acre-inches.
Nozzle Package	129 acre-inches.
One Crop Option	40,878 acre-inches.
Utility Bills	134 acre-inches.

TOTAL 41,941 acre-inches.

11.2b Compare estimated annual usage to data from the Ogallala Aquifer Groundwater Availability Model. (GAM).

GAM Runs 16-028 and 16-029 contain the modeled available groundwater estimates for HPWD, based on the 2016 adopted desired future conditions (DFC). Annual groundwater usage estimates for HPWD are compiled from several resources, including the Irrigation Assessment program.

Tables in the GAM reports include availability numbers for the Ogallala, Edwards-Trinity (High Plains) and Dockum aquifers, by decadal period. For instance, in the decade beginning 2020, total estimated groundwater availability in the Ogallala and ETHP aquifers is about 2.2 million acre-feet. Our most recent annual usage estimates within HPWD show annual usage for 2016 to be about 2.05 million acre-feet.

A LOOK BACK AT FISCAL YEAR 2019



Directors Receive Oaths of Office



TWDB Board Member Brooke Paup Visit



Advisory Committee Meeting- Hereford



Advisory Committee Meeting - Lubbock



Research Committee Meeting



Advisory Committee Meeting- Plainview



TX 4-H Water Ambassadors Visit



YALL Tour Group Visit



Rainwater Harvesting Workshop - Lubbock



GMA # 2 Meeting at Seminole



Hub City BBQ



TAGD Groundwater Summit

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