

**Annual Report
to the
Board of Directors
on
Attainment of Management Plan Goals
and
Selected Activities
of the

South Plains Underground
Water Conservation District**



Fiscal Year 2018

September 1, 2017 through August 31, 2018

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South Plains Underground Water Conservation District

Board of Directors

<u>Name</u>	<u>Representing</u>	<u>Term Ends</u>
Matt Hogue, President	Precinct 2	May 2022
Larry Yowell, Secretary	Director-at-Large	May 2020
Tye Day, Member	Precinct 3	May 2020
David Swaringen, Member	Precinct 1	May 2020
Barrett Brown, Member	Precinct 4	May 2022

Report Prepared By

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Manager

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District Mission Statement

The South Plains Underground Water Conservation District will develop, promote, and implement management strategies to provide for the conservation, preservation, recharging, and prevention of waste of the groundwater resources, over which it has jurisdictional authority, for the benefit of the people that the District serves.

Introduction and Overview

SB 1, 75th Texas Legislature (1997), requires groundwater conservation districts governed by Chapter 36, Texas Water Code, to submit management plans for certification by the Texas Water Development Board. The management plans must specifically address the following management goals as applicable:

1. providing for the most efficient use of groundwater
2. control and prevention of the waste of groundwater
3. control and prevention of subsidence
4. conjunctive surface water management issues
5. natural resource issues
6. drought conditions
7. conservation
8. recharge enhancement
9. rainwater harvesting
10. precipitation enhancement
11. brush control
12. desired future condition of the aquifers

The management plans must also identify the performance standards and management objectives under which each district will operate to achieve their management goals.

The current District Management Plan is effective until January 2019. After notice and hearing, the Board of Directors officially adopted the plan on December 3, 2013. The plan was certified by the Texas Water Development Board on January 13, 2014.

This annual report is a review of the District's activities for fiscal year 2018 and an evaluation of the District's performance in meeting its goals and objectives.

Report on Attainment of Goals

Goal 1.0 Providing the most efficient use of groundwater

Management Objective 1.01—Water Level Monitoring

During the winter of 2018, a total of 145 wells were measured (138 Ogallala and 7 Edwards-Trinity (High Plains)).

Performance Standards

1.01a—145 wells were measured in 2018

1.01b—0 wells were not measured and removed from observation network

1.01c—145 water level measurements entered into database

1.01d—145 wells in network

1.01e—0 replacement Ogallala wells added

Management Objective 1.02—Technical Field Services

38 requests for Technical Field Services were fulfilled in 2018. This is 13 more than the 25 requests in 2017.

Some tests were made for prospective land buyers.

Performance Standards

1.02a—38 field service requests were fulfilled

1.02b—38 tests were entered in database.

Management Objective 1.03—Laboratory Services

The total number of lab tests performed for producers in 2018 was 19. This is fewer than the 41 tests run in 2017. These requests concern the suitability of irrigation water for certain crops.

Also, 11 bacteria tests were run in 2018, compared to 13 in 2017. Three of the tests were positive for either coliform or e-coli bacteria.

Performance Standards

1.03a—30 lab service requests were fulfilled

1.03b—30 records entered in database. Some of the results were from previous years, or from an outside lab.

1.03c—30 results were reported to constituents.

Management Objective 1.04—Irrigation Monitoring

2018 marks the seventeenth year for the District's Flow Meter Program. With the help of approximately 35 cooperators, the District reads flow meters during the growing season to determine water usage on various crops. Water usage for 2018 will be calculated at the end of the growing season. The following table contains a summary of irrigation water applied during previous years. The data received from the flow meter readings also helps the District calculate water efficiency in crop production.

	Cotton	Peanuts	Grain	Wheat
2002	8.44 in	19.35 in	6.00 in	7.00 in
2003	10.79 in	19.85 in	5.30 in	5.87 in
2004	7.99 in	14.46 in	0.49 in	6.25 in
2005	9.86 in	16.59 in	0.50 in	3.42 in
2006	14.09 in	20.51 in	7.03 in	5.71 in
2007	6.52 in	13.36 in	9.16 in	3.34 in
2008	10.70 in	13.78 in	5.78 in	9.61 in
2009	13.46 in	20.81 in	8.35 in	8.07 in
2010	10.15 in	14.69 in	4.43 in	4.42 in
2011	17.92 in	24.58 in	N/A	7.54 in
2012	12.59 in	25.19 in	5.32 in	6.24 in
2013	14.71 in	23.02 in	15.98 in	8.95 in
2014	11.29 in	14.23 in	7.14 in.	5.94 in
2015	5.52 in.	8.90 in.	5.09 in.	5.94 in.
2016	8.34 in.	10.90 in.	2.00 in.	3.33 in.
2017	9.91 in.	13.64 ins	1.81 in.	1.45 in.
Average	10.77 in.	17.12 in.	5.27 in.	5.61 in.

Table 1: Average Irrigation Application for Selected Crops (source: SPUWCD meters)

Performance Standards

1.04a—In 2018 there were 61 irrigation systems in the cooperative program

1.04b—Each year, the crops which are monitored vary according to what producers plant. In 2018, 7 different crops were monitored. These crops included cotton, peanuts, wheat, watermelons, pumpkins, peas, and grapes.

1.04c—The table above shows the irrigation application for the major crops monitored.

Management Objective 1.05—Center Pivot Inventory

The District conducted a Center Pivot Inventory in 2018

Performance Standards

1.05a—1,403 center pivot systems, 129 drip systems were inventoried

1.05b—716 pivots had LEPA spaced nozzles (51%)

1.05c—1,403 pivots and, 129 sub-surface/above-ground drip type irrigation systems are active and entered in District’s database

Goal 2.0

Controlling and Preventing Waste of Groundwater

Management Objective 2.01—Well Permitting and Completion

Since March 1993, the District has issued 3,298 permits. The number of permits issued during 2018 was 202. This is higher than the 163 issued in 2017. March and April had the highest number of permits issued (36). Of the permits issued, 28 were either not used or a well was not completed. Also, 229 wells, which include irrigation and domestic, were inspected during 2018 to insure proper completion and spacing. At the time of inspection, the GPS location of each well is obtained. This information is added to the data base. The coordinates are also added to the District’s ArcMap program so that all wells can be mapped. Currently 6,242 (79%) of the 7,869 wells within the District have GPS coordinates associated with them.

Performance Standards

2.01a—202 permits issued

2.01b—229 well sites inspected

2.01c—0 well sites failed to meet completion standards. The District’s well capping program has alleviated much of the trouble with completion standards.

Management Objective 2.02—Open, Deteriorated or Uncovered Wells

Open or uncovered wells are discovered in one of two ways:

1. a person reports it to the District office, or
2. District staff discovers the well during a field visit

No deteriorated or uncovered well was reported to or discovered by District staff during 2018.

Performance Standards

2.02a—0 open, deteriorated or uncovered well reported to the District

2.02b—N/A initial inspection

2.02c—N/A day to contact landowner

2.02d—N/A days to correct well

2.02e—N/A

Management Objective 2.03—Maximum Allowable Production

No instances of a maximum production violation were discovered this year

Performance Standards

2.03a—N/A

2.03b—N/A

2.03c—N/A

Management Objective 2.04—Water Quality Monitoring

Water quality samples were taken from 61 irrigation wells during the summer of 2018. The samples were tested for conductivity, total dissolved solids, chlorides and nitrates. This is lower than the usual number of wells sampled because many fields had been plowed up or the crops were no longer being irrigated due to the poor weather at the beginning of this crop season.

Performance Standards

2.04a—61 samples collected and analyzed.

2.04b—61 of 83 irrigation wells (73%) sampled in 2016 were sampled in 2018

2.04c—61 test results were entered in database.

Goal 3.0 **Controlling and preventing subsidence**
(not applicable)

Goal 4.0 **Conjunctive surface water management issues**
(not applicable)

Goal 5.0 **Natural resource issues**
(not applicable)

Goal 6.0 **Drought Conditions**

Management Objective 6.01—Rain Gauges

The District maintains a network of 36 electronic rain gauges. These gauges allow staff to gather rainfall information at any time, not necessarily at the end of each month. The exact time and amount of rain collected is downloaded from the gage to a computer. This information is published on the District’s web site. Rainfall for the years 2011-2018 are available on the web site.

Performance Standards

6.01a—36 rain gauges in District network

Goal 7.0 **Conservation**

Management Objective 7.01—Classroom Education

During 2018, water conservation curriculum was made available on the education web site. Also, at the beginning of the school year, 4th and 5th grade science teachers received a gift basket which included information about curriculum and the District’s availability to give presentations to the students.

Performance Standards

7.01a—The Education Coordinator made water conservation curriculum available to all 4th and 5th grade science teachers in the District with ideas and links to lesson plans in their gift baskets and also via the Education website: savingh2o.org

Management Objective 7.02—Newsletter

Two editions of the District’s newsletter, *South Plains Groundwater News*, were published during 2018. The March edition of the newsletter contained a history of water level measurements from the District’s network of water level measurement wells. Also included was a map of the District showing locations of the measurement wells.

Performance Standards

7.02a—Two newsletter editions were published

7.02b—1,185 newsletters were distributed

7.02c—Four articles addressed methods of enhancing and protecting the quantity of useable quality groundwater

Management Objective 7.03—News Releases

Seven news articles were published in the *Brownfield News* during 2018. The news articles included items concerning conservation, groundwater awareness, educational activities, the District’s 25th Anniversary and rainwater harvesting. Once again, the District was a sponsor of the Ag Section in the Sunday edition of the local newspaper.

Performance Standard

7.03a—Seven news releases were published in the local newspaper

Management Objective 7.04—Public Speaking Engagements

The District fulfilled 6 public speaking engagements during 2018. These included:

- Presentations were made to approximately 200 4th and 5th graders at Kids, Kows & More in October.
- In November, a presentation on Rainwater Harvesting was made to the Retired Teacher Association.
- In January, a presentation was given to the 2017 South Plains Ag Conference.
- Town Talk Radio invited the District to be a guest in May and discuss the past legislative session and how it could affect water districts. The District was a guest on Town Talk Radio in June to talk about the District's 25th celebration of service to the community.
- Presentations were given at all three schools in May, to the 4th and 5th graders, regarding the Conservation Calendar Art Contest. Awards were given to the winners at the schools' awards assemblies.
- In May a presentation was made at the Rain Water Harvesting Workshop.

Performance Standard

7.04a—Six programs were presented to protect and enhance our groundwater

Management Objective 7.05—Printed Material Resource Center and Technical File

Thirty-six (36) different publications are displayed in the reception area of the office. These publications are obtained from various sources, including the TWDB, the USGS and AgriLife Extension Service. District staff developed twelve of the brochures.

182 items were distributed from the resources center.

Performance Standards

7.05a—There were 89 items on conservation, 34 on rules/management plan, 36 on water quality, and 22 on general information procured by the public from the resource center. Also, rule books were given to permit applicants as a part of the permitting process.

7.05b—No items were requested from the District's technical file

Management Objective 7.06—Saturated Thickness Maps

A new saturated thickness map was created in 2016.

Performance Standards

7.06a—1 saturated thickness map is available in the District office. The map is also available on the District's web site. Real estate agents and prospective land buyers frequently request this document. Eight maps were obtained from the resource center.

Management Objective 7.07—Conservation Literature

Nine publications displayed in the reception area of the office are devoted to water conservation for the home and the farm.

Performance Standards

7.07a—9 publications are dedicated to water conservation

7.07b—89 items were obtained by the public

Goal 8.0 **Recharge Enhancement**
(not applicable)

Goal 9.0 **Rainwater Harvesting**

Management Objective 9.01—Public Awareness Program

In 2018, the District continued emphasizing rainwater harvesting.

- In 2017, Terry County Judge Wagner proclaimed the first week of May to be Rainwater Harvesting Awareness week. The staff set up at various locations around town throughout that week with our rainwater harvesting display and education trailer. People who stopped by entered to win a rain barrel and rain chain which were given away each of the 3 days.
- The District hosted its seventh annual Rainwater Harvesting Workshop. Participants signed up for the workshop which was advertised on the District’s web site, on Town Talk radio and in the *Brownfield News*. At the workshop, a presentation was given on rainwater harvesting. The workshop participants learned about the District’s rainwater harvesting system and the xeriscape demonstration garden. Rain barrels and rain chains were given to the first 20 participants who signed up for the workshop. Approximately 30 people attended the workshop.



Performance Standards

9.01a—Rainwater harvesting information presented to 30 attendees of the Rainwater Harvesting Workshop in May and numerous people who visited our site during Rainwater Harvesting Awareness week.

Goal 10.0 **Precipitation Enhancement**
(not applicable)

Goal 11.0 **Brush Control**
(not applicable)

Goal 12.0 **Desired Future Condition of the Aquifers**

The members of GMA 2 met on October 23, 2017 at the Permian Basin UWCD office in Stanton. Each GMA 2 district was represented at the meeting. TWDB liaison, Robert Bradley, was also in attendance. Each district participated in a discussion about their rules and aquifer monitoring.

Management Objective 12.01—Calculate Annual Drawdown

Performance Standards

12.01a—The average drawdown results were presented to the District Board at their December Board meeting

12.01b—The average drawdown results were published in the March edition of the *South Plains Groundwater News*.

Management Objective 12.02—Calculate Cumulative Annual Drawdown

Performance Standards

12.02a—The cumulative average annual drawdown results were presented the District Board at their December Board meeting.

12.01b—The cumulative annual drawdown was published in the March edition of the *South Plains Groundwater News*.

OTHER ACTIVITIES

IRS COST-IN-WATER DEPLETION PROGRAM

2018 was the 19th year the South Plains Underground Water Conservation District participated in the IRS cost-in-water depletion program. This program benefits irrigated landowners who have experienced a cash loss due to declining water levels. 30 landowner requests were processed. There was 1 new parcel added to the program.

SPUWCD.ORG

The District has developed and maintains a web site. The site provides education and information for District constituents, as well as people state-wide. The web site can be accessed from the Texas Alliance of Groundwater District's web site and is linked from various water district web sites. General information, hydrologic maps, a 2018 Terry County vineyard map, rainfall information, newsletters, rules, management plan and water level data are available on the site. In 2015, a weather station was installed at the District office. The real-time information is accessible on the Home Page. Interactive maps were also added to enhance water levels and water quality information. In 2018, there were a total of 2,817 visits to www.spuwcd.org.

HIGH SCHOOL ESSAY SCHOLARSHIP PROGRAM

2018 was the fourth year that scholarships were made available to all 3 high schools in the District. This year's essays topic was the "**Texas Constitutional Amendment of 1917**". Multiple entries from each school were submitted. The essays were judged by a panel of retired teachers. 1st and 2nd place scholarships were awarded in each high school for a total of \$4,000. To date, the District has awarded \$14,000 in scholarships.

SOUTHERN OGALLALA CONSERVATION AND OUTREACH PROGRAM

In 2007, the District joined Llano Estacado UWCD and Sandy Land UWCD to form The Southern Ogallala Conservation and Outreach Program (SOCOP) which serves the education needs of the three districts. Through the Education Coordinator hired by SOCOP, more emphasis has been placed on education to students in the three school districts in the SPUWCD.

This year, the 13th annual "Water Conservation Art Contest" for 4th and 5th graders was conducted. Students submitted water conservation art work after hearing a presentation concerning water usage and conservation. The winning art works will be featured in a 2019 calendar to be published and distributed by the District. Approximately one hundred 2018 Water Conservation calendars were distributed throughout the District.

The education website, www.savingH2O.org continues to be a part of the District's public education outreach. This outlet contains water conservation tips and information regarding the District's education program along with curriculum ideas for teachers.

SOCOP participated in and held numerous education programs for the three school districts. Education programs were also presented for adults within the District.

- Welcome luncheon to new teachers
- Brownfield Noon Lions Club

- Brownfield & Meadow 4-H Clubs
- “Western Day” at Colonial Height Elementary school
- Presentations at Kendrick Memorial Library
- Numerous invitations by Town Talk Radio to talk about the programs

COALITION OF AG PROFESSIONALS

The goal of this group is to encourage Terry County youth to pursue careers in agriculture. The group works with the area's high school administrators and counselors. The group hosted an Agricultural Career Expo (ACE) in May at various ag related venues throughout the county. The Expo informed high school sophomores about the different education and job opportunities available in the agricultural field. The District participated in the ACE day at three different venues in the District.

WATER LEVEL RECORDERS

The District continues to monitor the 14 well sites which are equipped with continuous monitoring water level recorders. These devices obtain daily water level measurements. Readings are downloaded periodically and converted to chart form. The data is also mailed to the well owners/operators, and posted on the District web site. The District continues to monitor these sites and plans to add more wells to the system. The TWDB also has a continuous water level measurement well. The continuous readings from this well are also available on the Districts web site.

USGS HYDROLOGY STUDY

In 2014, the Board of Directors voted to contract with the USGS to conduct a comprehensive study of the Ogallala and Edwards Trinity aquifers in the District. The objective of the project is to develop an updated regional conceptual model of the hydrogeologic framework, geochemistry and groundwater-flow system of the Ogallala and Edwards-Trinity (High Plains) aquifers within the District. Updates are presented to the Board by USGS staff. In 2015, the Board voted to continue with Phase 2 of the USGS study. The USGS attended the Board meeting on October 10, 2017 and gave an update on their continuing work. On August 7, 2018, the three District managers and staff met with the USGS in Seminole. The project is in the final stages and the Scientific Report is being reviewed. The web app will be released for public availability in the near future.

RAINWATER HARVESTING PROJECT

The District assisted Brownfield ISD in a rainwater harvesting project. The BISD Ag Barns, which house the animals for stock show projects, began having problems with the well located at that site. It is important to have grass grow in the animal area to keep grass burrs from overtaking the area and to keep the dust level down. The well was not able to keep up with water for the animals and water for grass. The two barns, located on the site, already have metal roofs, but do not currently have rain gutters. Mr. Franks, the Ag teacher, approached the District for information on harvesting rainwater to supplement the well. District staff took pictures and measurements of the barns so that a proposed system could be drawn up. The District and Brownfield ISD representatives attended the NRCS Board meeting in August to update them on the project. Funds are available through the NRCS for rainwater harvesting projects related to livestock use. A proposal was drafted for submission for NRCS grant funding.

EDUCATION TRAILER

In 2018, SOCOP completed the installation of the models on the Education Trailer. The outside of the trailer is wrapped to emphasize water conservation using the SOCOP's own Aqua Cop character. The models in the trailer teach about the aquifer, water use in the home and rainwater harvesting. Each District contributed funds for the trailer's completion as did the county Farm Bureau office of each District. Already, the trailer has made stops in each District and has had a very positive response. Both children and adults can learn from the inside and outside displays.

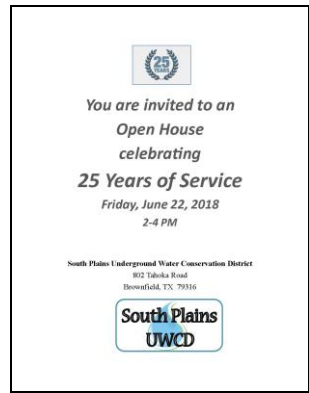


WOMEN IN AG

2018 was the second year that the District was a sponsor for the second annual "Women in Ag" conference. The Terry County Soil & Water Conservation District envisioned that women could come together with their stories about their efforts in agriculture. The day-long event features local and regional women. A wide range of topics including ag loans, estate planning, family ag enterprises, self-defense and even a fashion show are the highlights of the event.

25 YEARS OF SERVICE

The District celebrated its 25th Anniversary by hosting an Open House for the community. The SPUWCD began operations in 1993. During the 25 years, the Board and staff have strived to bring service to all constituents. The services provided by the District were highlighted through a brochure, radio interview and a newspaper article. The District hopes to continue providing services to the community for many more years.



SUMMARY

The original legislative intent of groundwater district performance evaluations through management plan certification and auditing was to answer two main questions:

1. Is the district operational, and
2. Is the district actively engaged in achieving stated goals, objectives, and performance standards?

Without a doubt, the South Plains Underground Water Conservation District is operational and is achieving its stated goals, objectives, and standards. That is not to say, however, that there is no room for improvement.

The following are recommendations where the District could improve its service:

Management Objective	Recommendation
1.01—Water Level Monitoring	Consider more continuous-monitoring well sites
1.02—Technical Field Services	N/A
1.03—Laboratory Services	N/A
1.04—Irrigation Monitoring	Continue to repair flow meters already used for monitoring. Urge more producers to take advantage of cost-share to install flow meters.
1.05—Center Pivot Inventories	N/A
2.01—Well Permitting and Completion	N/A
2.02—Open or Uncovered Wells	N/A
2.03—Maximum Allowable Production	N/A
2.04—Water Quality Monitoring	Address concerns related to increased oil field activity.
6.01—Rain gauges	N/A
7.01—Classroom Education	N/A
7.02—Newsletter	N/A
7.03—News Releases	Prepare more articles for the local newspaper
7.04—Public Speaking Engagements	Continue to be available to speak at events in the District
7.05—Resource Center/Technical File	N/A

7.06—Saturated thickness Maps

N/A

7.07—Conservation Literature

N/A

9.01—Rainwater Harvesting

Continue to seek opportunities to use cost-share funds to install rain water harvesting systems.