

**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 2015

September 1, 2014 through August 31, 2015

**PO Box 986
Brownfield, TX 79316
806-637-7467**

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 2018
Larry Yowell, Secretary	Director-at-Large	May 2016
Dan A. Day, Jr., Member	Precinct 3	May 2016
David Swaringen, Member	Precinct 1	May 2016
Barrett Brown, Member	Precinct 4	May 2018

**Report Prepared
By**

Lindy Harris

Manager

Table of Contents

District Mission Statement.....	1
Introduction and Overview	2
Report on Attainment of Goals	
Goal 1.0 Providing the Most Efficient Use of Groundwater	
Management Objectives	
1.01 Water Level Monitoring	3
1.02 Technical Field Services	3
1.03 Laboratory Services	3
1.04 Irrigation Monitoring	3
1.05 Center Pivot Inventory	4
Goal 2.0 Controlling and Preventing Waste of Groundwater	
Management Objectives	
2.01 Well Permitting and Well Completion	4
2.02 Open, Deteriorated or Uncovered Wells.....	5
2.03 Maximum Allowable Production.....	5
2.04 Water Quality Monitoring.....	5
Goal 3.0 Controlling and preventing subsidence.....	5
Goal 4.0 Conjunctive surface water management issues.....	5
Goal 5.0 Natural resource issues	5
Goal 6.0 Drought Conditions	
Management Objectives	
6.01 Rain gages.....	6
Goal 7.0 Conservation	
Management Objectives	
7.01 Classroom Education	6
7.02 Newsletter	6
7.03 News Releases	6
7.04 Public Speaking Engagements.....	6
7.05 Printed Material Resource Center and Technical File	7
7.06 Saturated Thickness Maps	7
7.07 Conservation Literature	7
Goal 8.0 Recharge Enhancement.....	7
Goal 9.0 Rainwater Harvesting	
Management Objectives	
9.01 Public Awareness Program.....	8
Goal 10.0 Precipitation Enhancement	9
Goal 11.0 Brush Control.....	9

Goal 12.0 Desired Future Condition of the Aquifers

Management Objectives

12.01 Calculate Annual Drawdown9
12.02 Calculate Cumulative Annual Drawdown9

Other Activities10

Summary13

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 2015 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 2015, a total of 145 wells were measured (139 Ogallala and 6 Edwards-Trinity (High Plains)).

Performance Standards

1.01a—145 wells were measured in 2015

1.01b—1 well was not measured and removed from observation network

1.01c—145 water level measurements entered into database

1.01d—145 wells in network

1.01e—3 replacement Ogallala wells added

Management Objective 1.02—Technical Field Services

7 requests for Technical Field Services were fulfilled in 2015. This is 15 less than the 22 requests in 2014.

Some tests were made for prospective land buyers.

Performance Standards

1.02a—7 field service requests were fulfilled

1.02b—12 tests were entered in database. Some of the results were from previous years.

Management Objective 1.03—Laboratory Services

The total number of lab tests performed for producers in 2015 was 17. This is lower than the 40 tests run in 2014. These requests concern the suitability of irrigation water for certain crops.

Also, 4 bacteria tests were run in 2015, compared to 2 in 2014. One of the tests was positive for either coliform or e-coli bacteria.

Performance Standards

1.03a—21 lab service requests were fulfilled

1.03b—24 records entered in database. Some of the results were from previous years, or from an outside lab.

1.03c—21 results were reported to constituents.

Management Objective 1.04—Irrigation Monitoring

2015 marks the fourteenth year for the District's Flow meter Program. With the help of approximately 40 cooperators, the District reads flow meters each month during the growing season to determine water usage on various crops. Each month a report is mailed to the producer showing water usage for that month and the total for the year. Water usage for 2015 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
Average	11.42 in	18.49 in	5.81 in	6.34 in

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

Performance Standards

1.04a—In 2015 there were 67 irrigation systems in the cooperative program

1.04b—Each year, the crops which are monitored vary according to what producers plant. In 2015, 12 different crops were monitored. These crops included cotton, peanuts, grain sorghum, wheat, pasture grass, watermelons, pumpkins, rye, hay grazer, peas, and grapes.

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

Management Objective 1.05—Center Pivot Inventory

No center pivot inventory was required in 2015 by the District’s Management Plan.

Performance Standards

1.05a—N/A

1.05b—N/A

1.05c—1,409 pivots and, 80 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 over 2,847 permits. The number of permits issued during 2015 was 71. This is lower than the 123 issued in 2014. December had the highest number of permits issued (19). Of the permits issued, 4 were either not used or a well was not completed. Also, 83 wells were inspected during 2015 to insure proper completion and spacing.

Performance Standards

2.01a—71 permits issued

2.01b—83 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

Two deteriorated or uncovered well was reported to or discovered by District staff during 2015.

Performance Standards

2.02a—2 open, deteriorated or uncovered well reported to the District

2.02b—1 initial inspection

2.02c—1 day to contact landowner

2.02d—22 days to correct well

2.02e—All wells have been corrected

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 30 domestic wells during the summer of 2015. These samples were sent to the LCRA Environmental Laboratory Services in Austin for extensive analysis. The analysis included the following parameters: conductivity, nitrate/nitrite, chloride, fluoride, sulfate, arsenic and total organic carbon. Lab reports were mailed to participants. An interactive map with the results was posted on the website.

Performance Standards

2.04a—30 samples collected and analyzed.

2.04b—28 of 31 domestic wells (90%) sampled in 2013 were tested in 2015.

2.04c—30 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 Gages

The District maintains a network of 36 electronic rain gages. These gages 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 2011-2015 are available on the web site.

Performance Standards

6.01a—36 rain gages in District network

Goal 7.0

Conservation

Management Objective 7.01—Classroom Education

During 2015, 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 box which included information about the available 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 bags 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 2015. The May 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—1,711 newsletters were distributed

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

Management Objective 7.03—News Releases

Four news articles were published in the *Brownfield News* during 2015. The news articles included items concerning conservation, groundwater awareness 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—Four news releases were published in the local newspaper

Management Objective 7.04—Public Speaking Engagements

The District fulfilled 11 public speaking engagements during 2015. These included:

- Presentations were made to approximately 200 4th and 5th graders at Kids, Kows & More in October.
- Presentations were given at the Jamboree at the Denver City school
- Update on water levels and the irrigation monitoring program at the 2015 South Plains Ag Conference

- 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 October, Town Talk Radio invited the District staff to talk about various District activities and information on rain fall.
- In April, Town Talk Radio invited the District to talk about the upcoming Rain Water Harvesting workshop
- In May a presentation was made at the Rain Water Harvesting Workshop
- In July, a presentation was given to the kids at the Boys and Girls Club
- In August the District was invited to speak to the Jump Start program at Colonial Heights Elementary.

Performance Standard

7.04a—Eleven 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 the Texas Ag Extension Service. District staff developed twelve of the brochures.

180 items were distributed from the resources center.

Performance Standards

7.05a—There were 17 items on conservation, 34 on rules/management plan, 17 on water quality, and 45 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

The most recent saturated thickness map was created in 2010.

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. Nine 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—17 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 May, the District hosted a 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, the Education Coordinator gave a presentation on rainwater harvesting. There were also presentations given regarding lawn care during the drought and xeriscape landscapes. Rain barrels and rain chains were given to the first 20 participants who signed up for the workshop. Approximately 25 people attended the workshop.

The workshop participants were able to see and learn about the District’s rainwater harvesting system which had been installed on the storage barn during the spring.



Performance Standards

9.01a—Rainwater harvesting information presented to 25 attendees of the Rain Barrel Workshop in May. Rainwater harvesting information was included in a newsletter article.

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

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

Goal 12.0 **Desired Future Condition of the Aquifers**
In 2010 the District adopted a DFC. GMAs are required to meet annually. The members of GMA #2 met in Lamesa in January and met again in Post in April to begin discussion on the next round of setting DFCs.

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 May 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 May edition of the *South Plains Groundwater News*.

OTHER ACTIVITIES

IRS COST-IN-WATER DEPLETION PROGRAM

2015 was the 16th 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. The program was considered a success, as 58 landowner requests were processed.

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, 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. The District produced Terry County Vineyard maps in 2014 and again in 2015. The 2015 map is available on the web site. In 2015, there were a total of 49,942 visits to the web site.

HIGH SCHOOL ESSAY SCHOLARSHIP PROGRAM

At their December 2014 Board meeting, the Directors voted to make scholarships available to all 3 high schools in the District. Seniors will be given a topic and submit an essay. Scholarships will be awarded at each school in the amounts of \$1,000 for 1st place and \$500 for 2nd place. In the spring of 2015, there was 1 entry received from Wellman-Union (\$1,000 winner) and 2 received from Meadow (\$1,000 and \$500).

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 10th 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 2016 calendar to be published and distributed by the District. Approximately one hundred 2015 Water Conservation calendars were distributed throughout the District.

The education website, [www.savingH₂O.org](http://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.

The District participated in the Kids, Kows & More Program in October. Over two hundred fourth graders attended Kids, Kows & More.

In 2015, SOCOP purchased a 24' trailer to be used as a mobile classroom within the 3 district area. The trailer will be used at various venues including schools and Kids, Kows & More. The trailer will open up many new opportunities for water conservation education. The District had an opportunity to debut the education trailer at the 2015 Vineyard Festival in Brownfield in August.



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) at Brownfield High School in December. The Expo informed juniors and seniors about the different education and job opportunities available in the agricultural field. The District participated in the ACE day at Brownfield High School.

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.

USGS HYDROLOGY STUDY

At 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.

Because declines in the saturated thickness of the aquifers raise concerns of possible groundwater quality degradation, groundwater quality sampling is planned to define groundwater sources, recharge,

discharge and mixing zones. A better understanding of the hydrogeology, geochemistry, and groundwater flow will help guide water management decisions.

RAINWATER HARVESTING SYSTEM AND XERISCAPE

The District is committed to educating the public about the importance of water conservation. This year the District installed a rainwater harvesting system on their storage barn which is located next to the office. The system features a 550 gallon storage tank. Also, a local landscape company installed xeriscape to the area in front of the barn. The xeriscape is watered using stored rain water. The rainwater harvesting system and xeriscape provide valuable education opportunities for the District constituents.

In August, the High Plains UWCD conducted a rainwater harvesting tour. The tour made a stop in Brownfield to view the District's system and xeriscape.



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	Because many meters currently enrolled in the program are aging, look into grants to help upgrade meters and expand program to include flow testing wells and water quality sampling on pivots.
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 gages	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

Investigate the feasibility of installing/cost sharing a rainwater harvesting system for a cooperator in the District.