THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 8—No. 8 "THERE IS NO SUBSTITUTE FOR WATER" *January 1962*

SUIT SEEKS COST-DEPLETION TAX DEDUCTION

By ALLAN H. WHITE, JR.

The presentation of evidence has been completed in the ground-water depletion trial held recently in Lubbock. The suit, brought by Marvin and Mildred Shurbet of Floyd County, is in behalf of the High Plains Underground Water Conservation District. In the case, the Shurbets seek a judgement for about $300 from the U. S. Internal Revenue Service as an income-tax deduction for the depletion of ground water used in farming during 1959. Judge Joseph B. Dooley, in whose court the case was tried, has the case under consideration but has not yet rendered a decision in the important test case.

The suit attempts to show that ground water beneath a farm in this area has a great influence on the market value of that farm. Plaintiffs further allege that ground water in storage beneath their farm is being depleted by extraction by pumps and used in the production of agricultural crops.

Contention of the Shurbets is that if ground water beneath their farm was in reality a large factor in determining the farm's initial cost, and if they are using that deposit of ground water in the production of income, and if the ground water extracted from storage will not be replenished naturally in the economic future then that part of the farm's initial cost apportioned to the ground water should be deductible on federal income-tax returns as the water is depleted.

To arrive at the amount of the income-tax deduction asked for in the suit was relatively simple. Half the total purchase price of the Shurbet's farm was claimed to be cost of the ground water in storage beneath the farm. It was determined that a given number of feet of formation beneath the farm was saturated with ground water at the time of purchase. This determination was made after having studied the depth of wells on the farm and after analyzing measurements made of the static water level in the wells by the State Board of Water Engineers and the U. S. Geological Survey. These measurements established the thickness of the deposit of ground water; and consequently, the basis for depletion allowance.

The amount of decline of ground water in storage beneath the Shurbet farm for the tax year used in the suit was calculated by using measurements made of the fluctuation of the static water level in wells on the farm at the beginning and at the end of the year 1959.

The calculated amount of decline for 1959 represents a percent of the total number of feet of ground water in deposit when the farm was purchased. This percent was applied to half the cost of the farm, or the cost of the ground water at the time of purchase. The result is the cost depletion deduction, or that part of the total ground-water cost used in the one year 1959.

During proceedings of the trial, witnesses for the plaintiff attempted to prove that there is no question but that ground water in storage beneath a farm in this area, in quantities adequate for irrigation, adds appreciably to the market value of the farm. Land appraisers, realtors, bankers and farm loan and mortgage experts were questioned at great length concerning differences in values of irrigated farms and dryland farms.

Houston Nelson, Lubbock real estate man; Leroy Elmore, Lubbock real estate man; J. B. Watson, manager of the Federal Land Bank in Floydada; C. A. Whitfield, Lubbock farm and ranch appraiser; and Claude Hurlbut, Lubbock real estate man, all testified that the presence of ground water beneath a farm in this southern High Plains area enhances the market value of the farm.

Mildred and Marvin Shurbet, a Floyd County farm couple, are shown above as they leave Judge Joseph B. Dooley's U. S. District Court in Lubbock following the lengthy ground-water depletion trial heard this month. The suit filed by the Shurbets is a test case in behalf of the High Plains Underground Water Conservation District. Its purpose is to obtain an income-tax deduction for southern High Plains of Texas irrigators who are depleting their ground-water supplies in the production of agricultural crops.

Charles Maedgen, Jr., Lubbock banker, testified that agricultural crop production loans are made by his bank but only to irrigation farmers. Loans are not made to farmers who have no irrigation.

David W. Sherrill, Irrigation Specialist with the Texas Agricultural Extension Service; Russell Bean, Lubbock farmer; A. L. Cone, Lubbock County farmer; Glen Blackmon, Lamb County farmer; Pete Peeples, Idalou well driller and farmer; J. D. Fox, Petersburg well driller; and Robert Bean, Judge of the 140th District Court in Lubbock and farm land owner, each told the Court that the water-level in the Ogallala formation is lowering and has done so since the advent of large-scale well development. Personal experiences of lowering pumps in wells were among evidence presented.

The plaintiff, Marvin Shurbet, also testified at length concerning lowering pumps on his farm in order to maintain the production capacity desired. He stated that the lowering of his pumps was prompted by a continuing decline of the water level in his wells.

He was asked questions concerning the cost of his farm and about market prices of comparable farm land in the same general area. Shurbet testified that he could have bought comparable land, equal in everything except the availability of ground water for irrigation, at about sixty percent the price that he paid for his farm. He stated to the Court that he was willing to pay the additional price for the farm he bought because he believed that ground water beneath the land was worth the added amount.

W. L. (Bill) Broadhurst, Chief Hydrologist for the High Plains Underground Water Conservation District told the Court that in his opinion water pumped from the Ogallala formation beneath the southern High Plains comes primarily from storage and that natural replenishment to the reservoir is very meager. He testified that natural recharge to the reservoir comes only from precipitation that falls on the local surface, and that the Ogallala formation in the southern High Plains area has been

(Continued on Page 4)

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas

Telephone PO2-8088

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK AND LYNN COUNTIES)
Elmer Blankenship ..... Route 2
Wilson, Texas

Precinct 2
(COCHRAN, HOCKLEY AND LAMB COUNTIES)
Roy Hickman ..... Morton, Texas

Precinct 3
(BAILEY, CASTRO AND PARMER COUNTIES)
John Gammon, Pres. ..... Route 1
Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER AND RANDALL COUNTIES)
T. L. Sparkman, Jr., Vice Pres. ..... Route 1
Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ..... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan White ..... Publicity-Public Relations
Donald L. Reddell ..... Junior Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Junior Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County

Robert Adams, 1962 ..... Wayside, Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1962 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe

Robert Blackwood, 1962 ..... Rt. 1, Muleshoe, Texas
Doyle Davis, 1962 ..... Maple, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas

Committee meets last Friday of each month at 2:30 p.m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co. Dimmitt

Fred Annen, 1962 ..... Dimmitt, Texas
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 ..... Box 732, Dimmitt, Texas
E. E. Foster, 1963 ..... Box 193. Hart, Texas
E. H. Youts, 1962 ..... Dimmitt, Texas

Committee meets on the last Saturday of each month at 10:00 a.m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton

H. B. Barker, 1964 ..... Morton, Texas
Lloyd Miller, 1962 ..... Box 246, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 ..... Star Rt. 2, Morton, Texas
L. L. Taylor, 1962 ..... Rt. 1, Morton, Texas

Committee meets on the second Wednesday of each month at 8:00 p.m., Western Abstract Company, Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford

L. E. Ballard, 1963 120 Beach St., Hereford, Texas
Jack Higgins, 1962 ..... Rt. 1, Wildorado, Texas
Clinton Jackson, 1962 ..... Rt. 5, Hereford, Texas
J. E. McCathern, Jr., 1964 ..... Rt. 5, Hereford, Texas
Charles Packard, 1964 ..... Rt. 3, Hereford, Texas

Committee meets the first Monday of each month at 7:30 p.m., High Plains Water District office, Hereford, Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada

G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
Don Probasco, 1962 ..... Silverton Rt., Floydada, Texas
Ernest L. Thomas ..... Rt. 1, Floydada, Texas

Committee meets on the first Tuesday of each month at 10:00 a.m., Farm Bureau office, Floydada, Texas.

Hockley County
Z. O. Lincoln
913 Houston St., Levelland

Joe W. Cook, Jr., 1962 ..... Rt. 1, Ropesville, Texas
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Leon Lawson, 1964 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1962 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas

Committee meets first and third Fridays of each month at 1:30 p.m., 913 Houston St., Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield

J. B. Davis, 1962 ..... Rt. 1, Amherst, Texas
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Price Hamilton, 1962 ..... Rt. 4, Muleshoe, Texas
Albert Lockwood, 1963 St. Rt. 2, Littlefield, Texas

Committee meets on the first Monday of each month at 7:30 p.m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Jean Lancaster
1628 15th St., Lubbock

W. W. Allen, 1962 ..... Rt. 4, Lubbock, Texas
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 ..... 1902 Ave. C, Lubbock, Texas
Virgil Isom, 1964 ..... Idalou, Texas
Jack Noblett, 1962 ..... Rt. 1, Shallowater, Texas

Committee meets on the first and third Mondays of each month at 2:30 p.m., 1628 15th Street, Lubbock, Texas.

Lynn County
Jean Lancaster
1628 15th St., Lubbock

Weldon Bailey, 1962 ..... Rt. 1, Wilson, Texas
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1962 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 ..... Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas

Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th St., Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina

Joe B. Jennings, 1964 ..... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 ..... R.F.D., Farwell, Texas
Dick Rockey, 1962 ..... R.F.D., Friona, Texas
Carl Schlenker, 1962 ..... Rt. 2, Friona, Texas

Committee meets on the first Thursday of each month at 8:00 p.m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County

T. G. Baldwin, 1964 ..... Bushland, Texas
James Line, 1962 ..... Bushland, Texas
E. L. Milhoan, 1962 ..... Bushland, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon

A. C. Evers, 1962 ..... Rt. 2, Canyon, Texas
Jackie Meeks, 1962 ..... Rt. 2, Happy, Texas
J. R. Parker, 1963 ..... Canyon, Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas

Committee meets on the first Monday of each month at 8:00 p.m., 1710 5th Ave., Canyon, Texas.

TWO DIRECTORS AND TWENTY-SIX COMMITTEEMEN ELECTED JAN. 9th

In elections held throughout the High Plains Water District January 9, Roy Hickman of Morton, encumbent member of the Board of Directors of the Water District, was defeated by Henry "Chick" Schmidly of Levelland in the race for Director of Precinct 2. Schmidly will represent Cochran, Hockley and Lamb Counties on the Board. He is a former member of the Hockley County Committee of the High Plains Water District. Henry Gilbert, Sudan farmer, was the third candidate in the race.

J. R. Belt, Jr., Lockney farmer, was successful in his bid for re-election to the Board of Directors representing Directors Precinct 5, which consists of only Floyd County. His only opponent was the retiring chairman of the Floyd County Committee of the Water District, Ernest L. Thomas, a Floydada farmer.

Schmidly and Belt were elected to serve two-year terms on the five-man Board of Directors.

Twenty-six County Committeemen were also elected on the 9th—two in each of the thirteen High Plains Water District counties. Each will serve a three-year term of office.

Those elected as Committeemen are listed below by county. Each Committee consists of five men.

Armstrong County
Commissioner's Precinct 3
Robert Adams, Wayside
John Patterson, Route 1, Happy

Bailey County
Commissioner's Precinct 1
Leon Lewis, Route 1, Box 98, Muleshoe
Commissioner's Precinct 3
Doyle Davis, Star Route, Goodland

Castro County
Commissioner's Precinct 3
Lester Gladden, Star Route, Hereford
Commissioner's Precinct 4
H. E. Henley, Route 5, Dimmitt

Cochran County
Committeeman-At-Large
Ira Brown, Box 774, Morton
Commissioner's Precinct 2
L. L. Taylor, Route 1, Morton

Deaf Smith County
Commissioner's Precinct 3
Clinton Jackson, 807 North Main, Hereford
Commissioner's Precinct 4
Billy B. Moore, Wildorado

Floyd County
Commissioner's Precinct 1
L. D. 'Buster" Simpson, 832 W Tennessee, Floydada
Commissioner's Precinct 3
Grisgby "Doodle" Milton, Silverton Star Route, Floydada

Hockley County
Commissioner's Precinct 1
Preston L. Darby, Route 1, Ropesville
Commissioner's Precinct 2
Earl Miller, Route 5, Levelland

Lamb County
Committeemen-at-Large
Troy Moss, Route 1, Littlefield
Commissioner's Precinct 2
Roger Haberer, Earth

Lubbock County
Commissioner's Precinct 1
M. N. Thompson, Route 4, Lubbock
Commissioner's Precinct 4
Bill Hardy, Route 1, Shallowater

Lynn County
Commissioner's Precinct 1
T. J. Swann, Route 1, Wilson
Commissioner's Precinct 4
Robbie Gill, Route 1, Wilson

Parmer County
Commissioner's Precinct 1
Ralph Shelton, Friona
Commissioner's Precinct 2
Carl Rea, RFD, Bovina

Potter County
Commissioner's Precinct 4
L. C. Moore, Bushland
Temple Rogers, Route 1, Amarillo

Randall County
Commissioner's Precinct 3
Harold Bryan, Route 1, Happy
Commissioner's Precinct 4
A. C. Evers, Route 2, Canyon

BOARD OF WATER ENGINEERS PUBLISHES BULLETIN ON NORTHERN HIGH PLAINS

Joe D. Carter, Chairman of the Board of Water Engineers, announced this week that Bulletin 6109, reporting progress of a geologic and ground-water resource investigation in the Northern High Plains of Texas, prepared in cooperation with the U. S. Geological Survey and the North Plains Ground Water Conservation District No. 2, has been published. Copies of the report are available without charge from the Board, Box 2311, Capitol Station, Austin.

Area covered by the investigation is about 9,300 square miles, comprising all of the Texas panhandle north of the Canadian River.

The report details the development of intensive irrigation farming, beginning with the onset of severe drought conditions in the early 1950's. In December of 1952, about 37,000 acres were irrigated from 150 wells, but in 1959 water from 1,206 wells supplied 324,000 acres. The investigation was begun in 1956.

The study shows the Ogallala formation, principal aquifer of the area, has large amounts of ground water available for development. However, the report recommends continued study of all major conditions affecting availability of ground water and its quality.

Investigators warned that because of the low rate of recharge and slow movement of water under natural conditions, ground-water supplies should be protected from pollution by industrial waste water. The area contains oil fields and extensive petro-chemical industries.

THE CROSS SECTION
1628 15th Street
Lubbock, Texas
Dear Sir:

I do not now receive THE CROSS SECTION but would like to have it sent to me each month, free of charge, at the address given below.

Name _____
Street Address _____
City and State _____

(Please cut out and mail to our address)

JUDGE SWEARS IN DIRECTORS — SPARKMAN ELECTED BOARD CHAIRMAN

Two area men were recently sworn-in as members of the Board of Directors of the High Plains Underground Water Conservation District.

During luncheon ceremonies, which highlighted the first annual meeting of the Water District's Board, Howard C. Davison, Judge of the 99th District Court in Lubbock, administered the oath-of-office to newly-elected members, J. R. Belt, Jr. of Lockney and Henry J. Schmidly of Levelland. Each will serve a two-year term of office.

During the business meeting following the luncheon ceremonies, T. L. Sparkman, Jr. of Hereford was elected to serve as Board Chairman for 1962. Elmer Blankenship of Wilson was elected Vice-Chairman and Belt was selected to serve as Secretary-Treasurer.

Returns of the recently-held Water District elections were canvassed by the Board during the business meeting.

John Gammon of Lazbuddy, outgoing Chairman of the Board, presided over the luncheon ceremonies and business meeting.

Howard C. Davison, Judge of the 99th District Court in Lubbock, is shown above as he swears in two recently-elected area men to the Board of Directors of the High Plains Water District. J. R. Belt, Jr. of Lockney is shown at left, and Henry J. Schmidly of Levelland at right. Each man was elected to serve a two-year term of office on the five-man Board.

The Board of Directors of the High Plains Underground Water Conservation District for 1962 is shown above. Seated, left to right, is Elmer Blankenship, Wilson, Vice-Chairman and T. L. Sparkman, Jr., Hereford, Chairman. Standing, left to right, is John Gammon, Lazbuddie, Henry J. Schmidly, Levelland, and J. R. Belt, Jr., Lockney, Secretary-Treasurer.

John Gammon, out-going Chairman of the Board of Directors of the High Plains Water District, is pictured as he presided over the first annual business meeting of the District Board. Among other business transacted, recent election returns were canvassed.

Tom McFarland, General Manager of the High Plains Water District, is shown as he re-caps the past year's activities of the District and explains plans for the future.

DRILLING STATISTICS FOR DECEMBER

During the month of December, 40 new wells were drilled within the bounds of the High Plains Water District; 9 replacement wells were drilled; and 5 wells were drilled that were either dry or nonproductive for other reasons. The County Committees issued 78 new drilling permits.

Permits issued and wells completed for December are listed below by counties.

County	Permits Issued	New Wells Drilled	Replacement Wells	Dry Holes Drilled
Armstrong	2	2	0	0
Bailey	0	1	0	0
Castro	1	1	1	0
Cochran	6	0	0	2
Deaf Smith	3	1	1	0
Floyd	2	1	0	0
Hockley	11	6	0	0
Lamb	7	5	1	2
Lubbock	21	13	2	0
Lynn	17	6	1	0
Parmer	2	4	3	1
Potter	0	0	0	0
Randall	6	0	0	0
Totals	78	40	9	5

Please Close Those Abandoned Wells!!!

WHEN YOU MOVE . . .

Please notify High Plains Water District, 1628 - 15th Street, Lubbock, Texas, on Post Office Form 22S obtainable from your local postmaster, giving old as well as new address, to insure no interruption in the delivery of "The Cross Section."

Tax Suit—

(Continued from Page 1)

isolated by the natural process of erosion.

He testified that before large-scale well development, natural recharge to the Ogallala formation was about equal to natural discharge at the eastern escarpment, and that the reservoir was at approximate equilibrium. Since large-scale pumping has developed, natural recharge and natural discharge has remained about the same as in the past. Consequently, the decline in water levels throughout the region has been due to extraction by pumps.

Broadhurst also said that in his rate it is presently being pumped—which would not be possible—the supply would become exhausted in 60 years.

Peter Flawn, Director of the Bureau of Economic Geology, University of Texas, Austin, testified that in his opinion water is a mineral, and that a natural deposit does not have to be immobile to qualify as a natural deposit. He mentioned instances where deposits of oil and gas are in transit. Other instances where volatile constituents of a deposit have moved completely away from remaining residual constituents.

Frank Hughes, Agricultural Economist with the U. S. Department of Agriculture, stationed at Texas A & M College, took the witness stand and told of changes that have evolved through the years in irrigation practices in the High Plains' area. According to Hughes many changes have taken place primarily because irrigators have recognized that ground-water levels are declining. He said that irrigation pumps have been lowered generally throughout the area as a result of declining water levels and that operating costs of irrigating agricultural crops have increased in recent years. He also told of attempts that are being made to conserve water by individual farmers.

The federal government, defendant in the case, called a total of three witnesses in defense of their viewpoint.

Some of the technical experts, who either did work for the High Plains Water District prior to the Shurbet tax trial or who appeared as witnesses for the plaintiff during the trial, are shown above. They are, left to right, Ralph A. Scalapino, Austin hydrologist; Dr. Peter Flawn, Director of the Bureau of Economic Geology, Austin; Ed Reed, Midland hydrologist; W. L. Broadhurst, Chief Hydrologist for the High Plains Underground Water Conservation District, Lubbock; W. F. Guyton, Austin hydrologist; and C. E. Jacob, Los Angeles, California.

opinion water is a mineral and that ground water contained in the Ogallala formation is a natural deposit.

W. F. Guyton of Austin and Ed Reed of Midland, both hydrologists, testified to facts pertaining to geology and hydrology in general and specifically concerning the southern High Plains area.

C. E. Jacob of Los Angeles, California, a hydrologist, took the stand and testified concerning hydrological problems that he had solved using mathematics and a high-speed digital computer. The problems were of a hypothetical nature, but involved the use of known factual information related to the Ogallala reservoir.

He stated that if irrigation farmers could continue pumping water at the

Attorneys who prepared and presented the important ground-water depletion income-tax suit for the plaintiff, are, left to right, John J. Sexton, Washington, D. C.; J. Chrys Dougherty, Austin; Edwin L. Kahn, Washington, D. C.; and George W. McCleskey, Lubbock.

Paul Rettman, an engineering technician with the U. S. Geological Survey, stationed in Plainview, was the government's first witness. He testified that he had obtained 18 samples of water from wells located in the southern High Plains' area. The water samples were analyzed by Maynard J. Pro of Washington, D. C., a chemist employed by the U. S. Treasury Department, and whose job it is to determine the age of distilled spirits for the government.

Pro testified that the water samples he checked contained water of no greater age than 75 years. His tests of the samples involved the use of an ultra-sensitive Geiger counter with which he calculated the amount of tritium present in the water. Tritium is a radio-active element found in all surface waters of the earth. The element has a rather short half-life—about 12 years. Pro stated that before nuclear-weapons testing by countries throughout the world was commenced tritium counts in surface water around the world were consistent. Since nuclear testing, the presence of tritium has increased in the stratosphere and has come to the earth's surface with precipitation. Tritium content in surface waters is now much greater than it was in pre-testing years.

During cross-examination by plaintiff's attorneys, Pro stated that if a sample of ancient water had added to it a very minute amount of water that had recently been exposed to present surface conditions, then the apparent average age of the entire sample using the element tritium as a criteria, could be considerably less than the actual average age of the water in the sample.

Herbert Feeley, Senior Research Scientist for Isotopes, Inc., of New Jersey, was called by the plaintiff's attorneys to testify concerning tritium and the accuracy of the equipment used by Pro to determine the age of the water samples.

Marvin Shurbet was recalled briefly to the witness stand by Government counsel and questioned about the facilities on his farm at the time of purchase.

At the conclusion of the testimony, Judge Dooley ordered the evidence to be transcribed and further directed counsel for plaintiffs and defendant to file written briefs within sixty days after the evidence is transcribed. He granted an additional twenty days to the attorneys for their response to opponent's brief.

Because this case is being treated as a test case by the government, the outcome of the trial is most important to those in the southern High Plains who can show an actual cost in the water beneath their land.

A cost-depletion deduction was sought in this test case, as opposed to some other method of calculating allowance for income-tax deduction, because it was determined after much study that the best legal case could be built around the cost method. Percentage-depletion method, as is used in oil and gas tax programs, was not considered because Congress has passed legislation that states this *percentage-depletion method* cannot be applied to water.

Attorneys for the plaintiff are George W. McCleskey, Lubbock; Edwin L. Kahn, Washington, D. C.; J. Chrys Dougherty, Austin; and John J. Sexton, Washington, D. C.

Government interests in this case were represented by attorneys John F. Murray and Harold A. Chamberlain. Both are with the tax division of the Department of Justice.

High Plains Underground Water Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 8—No. 9 "THERE IS NO SUBSTITUTE FOR WATER" *February 1962*

Tax Attorney Discusses Questions Relating To Deduction For Cost-Depletion

*By Clarence P. Brazill **

Several aspects of the Marvin Shurbet case have generated a great deal of interest among landowners and farmers in the southern High Plains of Texas.

One area of interest concerns the question of who owns the ground-water rights if the court determines that water is a "mineral," and the land is burdened with a mineral lease. In Texas, there is no doubt that the landowner, and not the lessee, has the right to the water. In the recent cases of *Fleming Foundation vs. Texaco* and the *Estate of Genevra O'Brien vs. United States,* both the Texas and Federal Courts held that in Texas even though water is technically a mineral, a mineral lease does not include water. This is because under the ordinary oil, gas and mineral lease the parties do not intend for water rights to be transferred.

Some may also wonder about the wisdom of undertaking a test case in an attempt to obtain a federal income-tax deduction for persons who own and use ground water commercially. Present members of the Board of Directors of the High Plains Water District have been in complete agreement with thinking of former board members regarding the benefits to be realized by a successful conclusion of this project.

If the tax deduction for ground-water depletion eventually becomes a reality, it will be most important in the overall economic picture of the southern High Plains. The deduction would in effect become the tool through which a considerable amount of money that presently leaves as federal taxes would remain in this area. The money remaining at home would, directly or indirectly, benefit all residents of the southern High Plains.

However, there is still another reason, and perhaps the most important one, why Directors of the Water District have felt that a depletion program effecting ground water would be of great value to our people in general. If a depletion program is eventually obtained, some formula will be devised that will involve the measuring of static water levels to determine the amount of water used during the preceeding year.

Under such a program, each individual will determine annually the amount of depletion he has actually experienced. With this information, he has first-hand knowledge of the fact that his water supply is actually being depleted and the rapidity with which depletion is occurring. When a person comes face to face with these facts, he then definitely realizes that he is not pumping water from an inexhaustible reservoir; consequently, he has a genuine reason to conserve his ground-water supply. He had much rather have the water than the tax deduction, so he becomes more interested in conserving his resource.

A depletion program would be a great boon to water-conservation efforts by the Water District and by individuals, because it would serve to bring basic facts home to the water-user. The knowledge of these facts should make people much more conscience of a need for water conservation.

The more water-conservation minded we become, the longer an adequate irrigated agricultural economy can be maintained. We, in the southern High Plains, are all, directly or indirectly, dependent upon irrigated agriculture; consequently, a program that prolongs benefits from agriculture will in reality benefit everyone.

Another area of interest expressed by farmers and landowners in the southern High Plains concerns the possibility of control or regulations by the Federal Government or by the Texas Railroad Commission. There is absolutely no basis for such control by either the Federal Government or the Railroad Commission.

The high degree of regulation to which the oil and gas industry in Texas is subjected is a matter of common knowledge. However, the control is exercised not by the Federal Government but rather by the Texas Railroad Commission which alone has the power to control the rate of production, or stop production completely to prevent waste. It should also be noted that regulation of the oil and gas industry in Texas did not arise because the Federal government allowed a tax deduction for depletion but rather because the State Legislature invested the Railroad Commission with authority to regulate oil and gas production by law.

Similarly, there is no Federal body or agency which has jurisdiction over the production of ground water in the southern High Plains of Texas. Nor does any highly-centralized state-wide agency, such as the Railroad Commission, have jurisdiction to promulgate rules and regulations within, or for, the High Plains Water District, which is a local and not a state-wide organization.

It should also be noted that the State Legislature forsaw that there might be need for regulation of ground water, and in order to avoid control by an impersonal state-wide agency, chose to adopt a system whereby the administration of ground water affairs would be placed at the local level and with the people who are to be regulated. Thus, the administration of ground water affairs in the southern High Plains of Texas is by local men elected from among themselves.

***Mr. Brazill formerly was a member of the legal staff of the U. S. Internal Revenue Service. He presently is associated as a tax attorney with the law firm, Nelson, McCleskey and Harriger of Lubbock, Texas.**

High Plains Water District To Cooperate In Topographic-Mapping Project

The Board of Directors of the High Plains Underground Water Conservation District, during a recent business session at the District office, entered into a cooperative program of topographic mapping with the Texas Water Commission(formerly the State Board of Water Engineers) and the U. S. Geological Survey.

John J. Vandertulip, Chief Engineer for the Texas Water Commission, met with the District Board and explained at length the topographic mapping work which is being commenced in the High Plains by the Water Commission and the USGS.

He explained that the new mapping program will initially include work in nine counties within the High Plains Water District area; however, it will be extended to include the entire High Plains as the work progresses.

The initial counties within the High Plains Water District that are involved in the program are Lubbock, Floyd, Hockley, Lamb, Bailey, Parmer, Castro, Cochran, and Lynn counties.

The portion of Deaf Smith, Randall, Potter and Armstrong counties within the High Plains Water District will be mapped as soon as possible.

John J. Vandertulip, Chief Engineer for the Texas Water Commission, is shown as he discusses with the Board of Directors of the High Plains Water District the topographic-mapping project planned for the High Plains area. The Texas Water Commission, the U. S. Geological Survey and the Water District have entered into a financial cooperative agreement to commence the project.

Vandertulip said, "The State's funds for topographic mapping are to be used in conjunction with water-resources investigations. Ground-water studies as well as surface-reservoir studies require good topographic maps. These maps also serve many other purposes and are a distinct asset to the area."

There will be a total of 2,540,000 acres of land involved in the initial mapping program. The Texas Water Commission will spend $200,000 in the next two years as the State's part in the cooperative project in the High Plains.

Topographic maps include, among other things, the elevations to exist-

(Continued on Page 3)

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK AND LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN, HOCKLEY AND LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO AND PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER AND RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ..... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan White ..... Publicity-Public Relations
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside, Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 ..... Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 ..... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 ..... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 ..... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 ..... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 ..... Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland

Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas

Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 St. Rt. 2, Littlefield, Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas

Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas

Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 . Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas

Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 ..... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 ..... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas

Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas

Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

HENRY J. SCHMIDLY

Henry J. Schmidly, Route 2, Levelland, was installed in January of this year as a member of the Board of Directors of the High Plains Underground Water Conservation District. He was elected to serve on the five-man board by voters within Directors' Precinct No. 2, which consists of Cochran, Hockley and Lamb Counties. On January 24, he was sworn in as a board member and will serve a two-year term of office.

Schmidly was born at Austin, in Travis County, on September 14, 1911. He is the youngest of two sons born to Mr. and Mrs. John Schmidly. The elder Schmidly's were in the farming business at the time. They later ran a dairy and operated a monument works in Austin.

In 1925, John Schmidly, his wife and boys moved to Hockley County. They bought a farm located 9 miles northwest of Levelland, and built their home on it.

"Chick," the nickname by which Henry's friends know him, attended grade school and junior high in Austin. He attended high school at Levelland.

Schmidly's father contracted a rather rare bone disease, osteomyelitis, and had to curb his more strenous activities. "Chick" consequently had to assume major responsibilities at a rather early age.

From 1938 to 1942, the Schmidly's farmed five labors of land. Two labors they owned and three they rented. All farming was under dryland conditions. Young Schmidly also held a full-time job at the Cooperative Oil Refinery in Levelland. The refinery has since been sold and moved.

Then came World War II.

In 1942, Schmidly married a Littlefield girl, Norvell Akin. A short time later, in August 1943, he joined the Army. He left New York City November 20, 1943, for Europe. He was not to set foot again on American soil for exactly two years when he landed in Boston on November 20, 1945. Neither was he to see his son, David, born December 20, 1943, until the boy was about two years old.

Ironical as it might seem, Schmidly was in the water business overseas. He was in the Corps of Engineers and his job was supplying drinking water to the allied forces. He was awarded the Bronze Star medal for meritorious service in expediting and processing potable water to men over a 900 square-mile area of Europe.

When the war ended in Europe, Schmidly was transferred to Cherbourg, a peninsula on the northern coast of France that juts out into the English Channel. While stationed at Cherbourg, he obtained leave to travel to Switzerland where he visited his father's birth place and several never-before-seen relatives. He has three aunts who live in Schoffhausen and an uncle in Zurich. His uncle is the retired superintendent of the water works for the city of Zurich—another interesting sidelight. Zurich is a city that has a population of over 300,000 people and obtains its water supply from a nearby lake. The water is pumped to a hill some 700 to 800 feet higher than the lake where it is purified as it flows by gravity downward through a series of sand filters. Mr. Schmidly inspected these facilities during his stay in Zurich.

The languages spoken in Switzerland presented no major problems to him because he speaks German fluently. One of his aunts also speaks English.

When Schmidly was discharged from the service with the rank of Staff-Sergeant, he returned to his

UNCOVERED OR OPEN WELLS SUBJECT OF NEW WATER DISTRICT RULE

The Board of Directors of the High Plains Underground Water Conservation District have recently added a new rule to the regulations of the District. The rule deals with the closing or covering of abandoned or unused wells.

The definition of an "open or uncovered well" was also added to the District's rules.

The definition reads as follows:

"Open or uncovered well" shall mean any artificial excavation drilled or dug for the purpose of producing water from the underground reservoir, not capped or covered as required by these rules, which is as much as ten (10) feet deep and not less than ten (10) inches nor more than six (6) feet in diameter.

The new rule is designated Rule 16 and reads:

Every owner or operator of any land within the District upon which is located any open or uncovered well is, and shall be, required to close or cap the same permanently with a covering capable of sustaining weight of not less than four hundred (400) pounds, except when said well is in actual use by the owner or operator thereof; and no such owner or operator shall permit or allow any open or uncovered well to exist in violation of this requirement. Officers, agents and employees of the District are authorized to serve or cause to be served written notice upon any owner or operator of a well in violation of this rule, thereby requesting such owner and/or operator to close or cap such well permanently with a covering in compliance herewith. In the event any owner or operator fails to comply with such request within ten (10) days after such written notice, any officer, agent, or employee of the District may go upon said land and close or cap said well in a manner complying with this rule and all expenditures thereby incurred shall constitute a lien upon the land where such well is located, provided, however, no such lien shall exceed the sum of One Hundred Dollars ($100) for any single closing. Any officer, agent or employee of the District, is authorized to perfect said lien by the filing of the affidavit authorized by Article 7880-3c B(11) as amended by acts of the 57th Legislature 1961, Chapter 493, pages 1095 and 1096, House Bill No. 692. All of the powers and authority granted in such 1961 amendment are hereby adopted by the District, and its officers, agents, and employees are hereby bestowed with all such powers and authority.

Many abandoned wells have been left open or covered improperly throughout the Water District area. Owners of land on which these open wells exist have been extremely fortunate that some child has not fallen into one.

The District is unable to overemphasize the importance of closing open wells so that curious children cannot get into them. It is difficult to imagine any sound-thinking person leaving a well open, but there are those individuals who apparently have little regard for the safety and well-being of those around them.

Now, would be the best time for a person to close any open well he has on his land—regardless of how isolated from roads or houses it might be.

The State Legislature passed a bill during the last regular session that established the framework necessary to enable ground-water conservation district's the power to pass rules similar to the one above.

LEGISLATURE RE-ORGANIZES BOARD OF WATER ENGINEERS

During the Third Called Session of the 57th Texas Legislature, 1962, H. B. 12 was passed and signed into law by Governor Price Daniel.

The new law changed the name of State Board of Water Engineers to the Texas Water Commission. It places additional authority with the Chairman of the Commission, and it provides for separation of quasi-judicial and policy-making functions of the Commission from the engineering functions.

Joe D. Carter is chairman of the Commission. Otha F. Dent and H. A. Beckworth are other members of the three-man Water Commission. John J. Vandertulip is Chief Engineer of the Commission and heads the technical staff.

Mapping—

(Continued from Page 1)

ing wells, elevation contour lines, lowest elevation in playa lakes, roads, railroads, houses and permanent structures. Maps are most useful in planning by cities, towns, utilities, and those involved in water and soil conservation work and planning, as well as individuals making plans for irrigation systems.

The Water District will financially cooperate in the program within the bounds of the District.

Hockley County home and took up where he had left off—working at the refinery and dryland farming.

In 1948, he drilled his first irrigation well. It was drilled on the family's home place. When Schmidly's father passed away, he built a house on the home farm. They lived there until 1958 when they constructed a new home on the outskirts of Levelland where they presently reside.

Steve, the Schmidly's youngest son, was born July 29, 1949. He is now in the 7th grade. David is presently a senior in high school. Both boys participate and excel in school sports.

Schmidly is a member of the Catholic Church in Levelland, while Mrs. Schmidly and the boys attend the Methodist Church. He is on the board of directors of the Levelland Farmer's Co-Op Gin and a former member of the Lamb County REA and Hockley County Committee of the High Plains Water District.

Schmidly is an avid sports fan—he managed the Levelland American Legion baseball team last summer. Entering into youth baseball programs and participating in other competitive sports as a spectator could be considered his hobby.

Residents of Directors' Precinct No. 2 can be proud that they are represented on the Board of Directors of the High Plains Underground Water Conservation District by a man such as Henry "Chick" Schmidly.

Yoakum County Residents Organize Water Conservation Association

A group consisting of about 50 farmers, business and professional men and women met recently in the District Courtroom at Plains, in Yoakum County for the purpose of organizing a county water conservation association.

Pollution of fresh ground-water supplies in the county by oilfield brines is the major reason for the local interest in water conservation. Several irrigation and domestic water wells have become polluted with salt water allegedly from the operation of surface brine disposal pits.

Ed Reed, a Midland hydrologist, met with the group and offered a general outline of hydrologic data that would need to be gathered and compiled in order to appraise the pollution problem intelligently. The data would also be needed to supply information to the Railroad Commission or to the new State Pollution Control Board for whatever remedial measures might be available.

The group elected a seven-man board of directors to head the association's water conservation efforts and to formulate plans for financing the program.

The board consists of a member representing each of the four Commissioner's Precincts, each of the two towns in the County, and a member at-large.

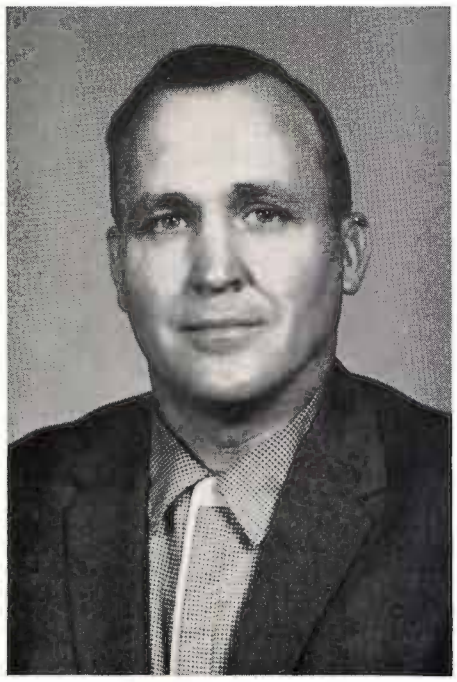
Gene Bennett, a farmer-rancher was elected to represent Commissioner's Precinct No. 1. G. W. Cleveland, rancher, will represent Precinct No. 2. Rod Duff, implement dealer and farmer from Plains, will serve Precinct No. 3 on the board. Bob Loe, a farmer, was elected to represent Precinct No. 4. Henry May, a farmer, was elected as the At-Large member. R. S. Falkenberry, a farmer, will represent Plains, and J. E. Herring will represent Denver City.

The newly-organized association will also explore the possibilities of creating a tax-supported water conservation district similar to the High Plains Underground Water Conservation District.

The District Courtroom at Plains, Texas, was the setting for a recent meeting of interested residents to discuss the threat of oil-field brine pollution of fresh ground-water supplies in Yoakum County. Ed Reed, Midland hydrologist, is shown as he talks with the group about salt-water pollution.

Four of the men who were instrumental in organizing the Yoakum County Water Conservation Association and who were elected to its seven-man Board of Directors, are shown with Ed Reed, Midland hydrologist, who stands at right. The are, left to right, G. W. Cleveland, Rod Huff, R. S. Falkenberry and Bob Loe. All have farming or ranching interests in Yoakum County.

Hockley County Office Location Changed



MURRY STEWART

Z. O. Lincoln, Levelland, has resigned as Secretary of the Hockley County Committee of the High Plains Water District. He is retiring from active business in Levelland.

Murry Stewart, widely-known Hockley County resident, was appointed to replace Mr. Lincoln as Committee Secretary. The change was effective February 1.

Stewart is in the insurance business in Levelland. His office is located at 505½ Avenue F. He will accept applications for water-well drilling permits and will attend to other office business for the Hockley County Committee.

Stewart is a former Hockley County Tax Assessor-Collector. He served in that capacity for nine years from 1951 until 1961.

When a small boy, Stewart moved to Hockley County with his family in 1926. He attended public schools at Levelland, Smyer and Whitharral. He also attended Draughon's Business College in Lubbock.

Stewart served in the Air Force during World War II and during the Korean conflict.

He and his wife, the former Corene Daniel, have two children, Charles, 11 and Dana Kay, 9.

Stewart teaches 11-year old boys in the Sunday School of the First Baptist Church of Levelland where he is a member. He also holds membership in the Masonic Lodge and the American Legion.

Boswell To Head Development Board

Howard Boswell, Executive Director of the Association of Texas Soil Conservation Districts, has been named Executive Secretary of the Texas Water Development Board.

The Development Board is a state agency authorized to loan funds for the purpose of constructing water projects sponsored by local groups. One such project to receive funds from the Board is the White River dam project sponsored by the towns of Post, Spur, Crosbyton and Ralls. The reservoir will furnish water to the member communities.

Boswell will replace Joe D. Carter, who resigned to accept appointment by Governor Price Daniel as chairman of the Texas Water Commission.

Boswell is a native of De Leon and a graduate of Texas A & M College. He served on the Texas Water Resources Committee, a committee organized to make recommendations to the Texas Legislature concerning water legislation. He has been active in matters of water conservation for many years. Among others, he has served on the Governor's Water Committee, Texas Agricultural Water Committee and on the Texas Coordinating Water Committee.

Boswell and his family will move to Austin from their home in Temple. His duties with the Development Board will commence March 1.

PLEASE CLOSE THOSE ABANDONED WELLS ! ! !

THE CROSS SECTION
1628 15th Street
Lubbock, Texas
Dear Sir:

I do not now receive THE CROSS SECTION but would like to have it sent to me each month, free of charge, at the address given below.

Name _____

Street Address _____

City and State _____

(Please cut out and mail to our address)

Above are shown two High Plains Water District staff members, Wayne Wyatt, at left, and Don Reddell, as they make measurements of the static water level in two of the hundreds of observation wells measured each year in the Water District. The annual measurements have been completed for 1962 and "The Cross Section" will publish them in the immediate future.

Israelite Visits High Plains Water District

Balfour Caspi, Head of the Water Reclamation Section of Water Planning for Israel, was in the southern High Plains of Texas for about a week during the early part of December, 1961. He was here to study artificial recharge methods and programs conducted by the High Plains Water District and others.

Mr. Caspi's visit to this country was arranged through the International Cooperation Administration's program of training grants. The International Education and Exchange Branch of the Department of Health, Education, and Welfare programmed his itinerary while in the United States.

Mr. Caspi stated that "The Cross Section" is read by himself and other members of his staff each month. His home is in Tel Aviv.

Balfour Caspi, Head of the Water Reclamation Section of Water Planning for Israel, is shown above with Tom McFarland, left, and Bill Broadhurst, center. They discussed the problems of water development and conservation in the High Plains of Texas during Mr. Caspi's recent visit to this area.

High Plains Underground Water Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 8—No. 10 "THERE IS NO SUBSTITUTE FOR WATER" *March 1962*

Major Playa Lake Study Will Be Conducted By Water District And Other Groups

A meeting of about twenty men was held recently in the Lubbock office of the High Plains Underground Water Conservation District.

The men, representing local, State and federal agencies, make up a committee created for the purpose of studying the hydrologic, economic and biologic aspects of playa lakes in the High Plains area.

The committee is called the Advisory Committee for Water Supply and Pollution Control Project. Co-Directors of the project are W. L. Broadhurst, Chief Hydrologist of the High Plains Water District and David Cowgill, Director of the Lubbock City-County Health Unit. →

The project is being financed by a grant from the National Institutes of Health, a section of the U. S. Department of Health, Education and Welfare. Money has been appropriated to finance the project for a three-year period.

The purpose of the project is to conduct detailed studies and research on nine playa lakes in the vicinity of Lubbock. The lakes are typical of those found throughout the area.

A history of the playa lakes included in the study is presently being gathered. Rain gages have been installed in the nine lakes, staff gages in six of the lakes, and one of five automatic water-level recorders has been installed. Eight of the lakes have been surveyed and field data compiled. Drafting has been completed for four of the eight lakes, and topographic maps, elevation-volume and elevation-surface area curves have been prepared.

A limited number of soil-auger samples have been taken and soil maps have been obtained.

Procedures for the determination of mosquito production including larval and egg survey have been outlined, and field work will commence as soon as the lakes begin to fill with rainfall runoff.

Detailed procedures have been established for biological studies, lake floral study, water chemistry and meterological data collection.

Preliminary plans for the economic evaluation of the lakes and modifications in the configuration of the lake beds have been formed.

Results of the project should show people in this area how to obtain greater economic returns from playa lakes on their land. Other than for drainage, most lakes are presently not developed for beneficial purposes. Even though water that collects in some lakes is used for irrigation, the water in most lakes evaporates into the atmosphere and produces no income.

Those cooperating in the project in addition to the High Plains Water District and the Lubbock City-County Health Unit, will be Texas Technological College, U. S. Fish and Wildlife Service, Agricultural Research Service of the U.S.D.A., U.S. Public Health Service, Texas Water Commission, Texas Agricultural Extension Service, the Texas State Health Department, and the Soil Conservation Service.

Darrell Morris, Lubbock, has been employed full-time by the Committee to head up the project field work. Morris is an expert in the field of wildlife management.

Don Reddell, Agricultural Engineer with the High Plains Water District, is shown as he points out how a recording device installed in a Playa Lake will operate. The lake is one of nine in the Southern High Plains that will be studied in an attempt to determine how they may be utilized to return greater economic benefits. The study lakes are typical of the thousands which dot the Plains.

Pipelines From Surface Lakes To High Points Eligible For Federal Cost-Sharing

According to Foss Collier, Office Manager for the Deaf Smith County Agricultural Stabilization and Conservation Office in Hereford, the State Committee of the A. S. C. has advised that federal cost-sharing may now be obtained by individuals who are planning to lay a permanent pipeline from a wet-weather lake on their farm to higher cropland for irrigation.

Collier reports that the Deaf Smith County Committee has already received one application for such financial assistance.

The new policy reads as follows:

"The State Committee has been advised that there is no objection to allowing cost-sharing under Practice C-12 for installing a pipeline from a natural lake to the high point of an existing eligible irrigation system on the farm. This applies only to cases where the water from the lake will be introduced directly into the irrigation system. Cost-sharing for the pipeline would not be proper if the pipeline serves only as a means of recharging underground water supplies."

WHEN YOU MOVE . . .

Please notify High Plains Water District, 1628 - 15th Street, Lubbock, Texas, on Post Office Form 22S obtainable from your local postmaster, giving old as well as new address, to insure no interruption in the delivery of "The Cross Section."

Please Close Those Abandoned Wells!!!

Irrigators Attend Workshop In Morton

Tom McFarland, left, and Don Reddell, Manager and Agricultural Engineer respectively, for the High Plains Water District, are shown as they spoke to Cochran and Bailey County farmers during a recent irrigation workshop in Morton. The workshop was sponsored by the Bailey County Electric Cooperative Association.

WATER-LEVEL MEASUREMENTS IN SOUTH

EDITOR'S NOTE

Official water-level measurements for a majority of the observation wells in the Southern High Plains of Texas are shown below. The measurements were made by the Texas Water Commission in cooperation with the High Plains Underground Water Conservation District.

The map attached shows the approximate location of the observation wells together with identifying well numbers.

You will note that in most instances measurements made in 1938, 1950, 1961 and 1962 are shown. However, in some counties, measurements were not made during those years: consequently, measurements for other years are shown. A primary purpose of reporting these particular four years is to show the water level before wide-spread pumping was commenced (1938), during an intermediate period of well development (1950), and the present water level (1961 and 1962). By indicating the last two years' measurements, one year fluctuations in the water level may be studied.

Water-level measurements are made in January each year prior to the beginning of extensive pumping for pre-planting irrigation.

The figures shown are in feet below land surface.

Complete water-level measurement records are on file and available from the Austin office of the Texas Water Commission.

ARMSTRONG COUNTY

Well No.	1960	1961	1962
210-M9	110.85	110.56	111.65
212-M9	106.40	106.64	106.50
21-M10	106.71	105.37	107.90
23-M10	117.63	116.87	123.80
35-M10	95.04	94.91	94.48
46-M10	108.04	108.20	107.00
64-M10	116.20	.....	121.68
601	.....	100.08	100.80
802	.....	121.84	124.90

BAILEY COUNTY

Well No.	1938	1950	1961	1962
1-B	.....	96.12	120.80	120.40
2-A	.....	98.32	112.60	.....
3-B	.....	48.75	76.66	70.89
5-B	63.32	67.42	99.55	100.36
9	39.29	48.88	80.65	82.29
11-A	24.90	28.52	59.00	60.30
21-B	22.28	33.42	70.40	.....
25	20.32	30.60	63.00	65.47
33	26.53	41.55	77.67	78.10
34-C	63.30	64.36	93.11	93.63
36	16.80	27.51	56.10	56.75
49	23.58	29.73	56.60	58.70
53	25.46	31.39	63.10	63.85
57-A	.....	50.90	.....	88.00
62	23.61	38.43	74.60	68.12
66-A	20.90	37.13	71.70	68.97
67	19.88	37.45	67.86	67.80
69	16.97	23.93	60.69	59.59
95-B	.....	26.75	62.92	63.66
116-A	26.79	37.80	65.02	65.47
117-B	34.47	42.42	74.60	.....
130-A	20.59	26.60	60.17	60.31
131	20.86	26.66	.....	63.56
132	21.26	26.96	65.96	63.79
135	16.61	20.38	55.28	58.73
137	14.07	20.46	48.67	48.46
141	18.67	16.01	45.20	45.38
205-A	54.05	53.10	74.13	82.00
207	92.87	86.87	90.21	91.90
324-A	99.01	92.36	92.10	92.85
450	.....	31.00	40.90	41.26
451-A	.....	.....	225.60	224.05
572	.....	.....	108.05	108.90
573	.....	.....	27.80	25.11
573-A	.....	.....	25.59	25.35
574	.....	.....	201.06	209.60
575	.....	.....	220.60	222.78
809	.....	.....	92.80	.....
811	.....	.....	102.30	103.59
1-61	.....	.....	109.01	110.45
2-61	.....	.....	33.19	37.09
3-61	.....	.....	28.09	29.66
4-61	.....	.....	34.45	35.83
5-61	.....	.....	59.44	60.30
6-61	.....	.....	51.70	53.27
7-61	.....	.....	69.06	69.34
8-61	.....	.....	52.51	52.37
9-61	.....	.....	38.72	40.30
10-61	.....	.....	59.84	61.45
11-61	.....	.....	129.89	.....
49101	.....	.....	59.81	61.45
49301	.....	.....	.....	25.90
01401	.....	.....	162.37	169.19
09201	.....	.....	140.00	142.72

BAILEY COUNTY

Well No.	1950	1960	1961	1962
18	.....	104.92	104.85	106.20
19	.....	113.02	128.20	130.13
107	86.93	.....	92.00	95.42
119	83.99	123.40	123.36	129.09
122	77.80	111.88	113.83	114.34
134	.....	110.52	111.94	113.63
148	72.66	104.09	106.80	109.82
159	90.78	131.90	129.55	132.30
168	93.30	129.60	128.63	115.30
170	95.95	126.01	128.53	131.67
217	115.04	144.52	146.96	147.73
227	78.00	87.60	86.18	90.52
234	104.03	133.72	136.90	137.51
253	.....	109.36	110.56	115.60
254	.....	88.28	89.05	91.09
255	.....	121.00	121.98	123.61
256	.....	102.08	103.58	103.51
257	.....	186.04	187.40	188.72
258	.....	99.55	100.10	101.43

CASTRO COUNTY

Well No.	1938	1950	1961	1962
20	68.18	75.30	122.43	122.60
32	62.97	70.61	104.10	106.57
36	82.74	94.09	134.76	137.20
48	60.80	65.50	89.50	87.60
52	71.14	83.26	105.15	104.63
53	57.04	68.68	108.67	110.43
57-A	77.24	84.23	123.97	123.69
58-A	153.03	151.34	182.00	185.25
201-A	153.46	155.04	193.32	198.38
202-A	.....	148.20	177.65	180.03
278-A	.....	164.22	197.63	202.59
321-A	.....	.....	174.96	176.50
394	91.18	96.29	.....	130.61
410-B	.....	74.53	111.50	112.77
465-A	.....	98.32	124.80	126.26
465-B	.....	.....	123.70	125.56
465-C	.....	.....	122.60	124.44
508	79.53	83.15	112.05	.....
524-A	.....	82.04	110.42	111.43
528-A	.....	93.12	123.15	125.10
529	94.16	94.28	120.70	123.24
544-A	91.26	94.95	135.21	136.66
587	17.85	.....	47.32	52.64
601	.....	.....	139.23	140.91
602	.....	.....	133.02	134.44
604	.....	.....	197.54	200.89
605	.....	.....	174.92	176.84
606	.....	.....	191.60	.....
608	.....	.....	134.33	138.31
609	.....	.....	167.70	170.20
610	.....	.....	161.48	163.65
611	.....	.....	110.38	.....
612	.....	.....	111.12	113.03
613	.....	.....	153.25	155.45
614	.....	.....	194.57	195.75
700	.....	.....	148.50	148.50
702	.....	.....	156.00	158.86
FC-1	.....	.....	.....	125.64
FC-2	.....	.....	.....	139.18
FC-3	.....	.....	.....	111.83
FC-4	.....	.....	.....	108.19
FC-5	.....	.....	.....	224.41
FC-6	.....	.....	.....	128.85
FC-7	.....	.....	.....	172.18
FC-8	.....	.....	.....	185.52
FC-9	.....	.....	.....	166.10
FC-10	.....	.....	.....	146.92
FC-11	.....	.....	.....	121.76
FC-12	.....	.....	.....	129.54
FC-13	.....	.....	.....	153.30

COCHRAN COUNTY

Well No.	1957	1959	1961	1962
1	149.80	149.19	149.40	.....
F-1	122.36	127.55	129.75	129.72
F-2	131.08	135.46	136.55	134.12
F-3	144.94	149.86	.....	150.37
F-4	.....	141.17	143.82	144.57
12	144.72	148.30	151.78	152.18
13	122.80	123.75	122.05	122.22
14	.....	139.95	142.85	143.30
15	101.73	.....	102.40	103.43
16	103.91	106.22	107.34	106.30
17	.....	92.68	92.60	91.72
18	.....	.....	125.84	125.82
19	128.66	131.85	135.16	136.43
20	119.70	.....	.....	123.98
21	156.15	157.40	158.50	159.78
22	149.38	153.06	156.21	157.34
23	124.77	126.49	126.65	127.16
24	150.97	153.67	156.38	156.47
25	132.48	136.44	139.34	140.57
26	124.80	129.74	131.00	133.03
27	142.66	144.20	147.33	144.07
28	139.74	141.55	143.35	143.28
29	85.84	87.84	89.00	88.90
30	141.77	143.43	146.75	144.35

COCHRAN COUNTY

Well No.	1957	1959	1961	1962
31	126.45	126.20	125.29	124.93
32	96.38	96.63	97.63	98.24
33	106.62	110.70	114.39	115.09
34	169.70	169.28	173.55	173.95
35	.....	99.05	101.58	99.31
35-A	.....	103.55	105.94	103.68
36	90.54	92.89	95.21	93.53
37	131.12	135.00	137.34	138.06
38	177.12	180.20	182.83	.....
39	160.35	162.35	163.10	161.67
40	119.10	118.60	115.29	115.37
41	109.91	115.25	118.89	120.04
42	127.75	131.98	135.60	134.61
43	.....	114.73	119.40	120.11
44	103.97	112.82	119.63	117.23
45	137.90	140.85	143.15	142.73
46	145.13	147.58	151.17	148.16
47	120.63	120.89	121.61	120.76
48	123.53	125.85	129.40	127.52
49	168.40	169.10	169.95	168.70
50	175.73	176.05	177.40	176.66
51	.....	94.10	93.67	92.96
52	.....	87.54	87.72	86.49
53	.....	57.94	55.97	55.40
54	.....	181.63	181.06	181.04
55	.....	135.91	136.95	136.84
56	.....	144.02	144.50	143.25
57	.....	130.40	130.79	130.82
61-10	.....	.....	159.57	159.37
61-11	.....	.....	179.90	179.57
61-12	.....	.....	158.37	157.79
61-13	.....	.....	164.10	163.70
61-14	.....	.....	169.64	170.15
61-15	.....	.....	173.18	173.03
61-16	.....	.....	169.98	167.38

CROSBY COUNTY

Well No.	1938	1950	1961	1962
1	113.54	117.95	158.65	159.00
7-B	.....	131.05	191.36	185.85
10-B	.....	92.58	159.53	156.55
11-B	.....	90.46	152.55	153.06
11-C	.....	104.34	163.70	163.42
12-B	.....	103.09	177.47	171.73
13-A	.....	92.86	146.88	147.29
14	75.60	91.62	150.10	150.03
17-A	93.00	110.30	155.57	156.47
21-A	.....	106.53	156.00	156.80
23-B	.....	123.93	164.74	167.01
340-A	.....	115.85	169.42	165.40
401-B	.....	80.99	132.55	130.60
412-A	.....	104.22	146.71	145.52
415-A	.....	79.22	102.76	100.58
416	.....	.....	252.17	254.16
417	.....	.....	254.60	.....
G6	.....	.....	197.20	.....
G7	.....	.....	195.64	.....
G8	.....	.....	185.60	.....
G9	.....	.....	213.55	.....

DEAF SMITH COUNTY

Well No.	1938	1950	1961	1962
44	180.90	180.70	191.50	.....
72A	.....	.....	247.58	249.31
113-A	98.02	105.14	132.64	.....
121-A	.....	.....	.....	149.15
130-A	130.00	130.63	158.23	161.87
140-A	.....	167.32	184.54	.....
161	.....	.....	.....	129.80
168	.....	.....	125.30	126.22
193	.....	117.09	135.53	139.06
201	102.90	105.49	132.27	135.27
205	74.48	91.69	130.21	131.73
212	71.32	84.61	.....	120.35
216	66.18	70.92	94.09	96.70
217	90.24	90.10	115.92	122.07
219	73.62	80.92	108.43	110.02
224	55.39	59.46	90.18	98.46
226	49.25	60.09	.....	104.05
235	50.62	53.81	67.62	69.25
241	47.15	55.24	69.59	70.93
245	43.80	55.01	65.47	66.14
247	21.53	28.36	45.89	52.25
258	52.77	67.01	101.21	.....
261a	51.26	64.23	94.99	.....
272	66.99	81.29	114.29	118.43
281A	.....	.....	129.02	132.68
283	63.00	68.23	92.62	94.53
288A	60.79	76.15	113.38	115.03
302	49.20	54.53	67.84	.....
305	79.42	91.60	133.02	134.72
311	50.72	53.96	.....	93.67
315	54.78	60.38	91.38	93.69
322	70.98	84.35	.....	122.07
326	87.62	105.93	145.67	.....
331	75.22	88.60	123.28	125.06
336	85.91	98.57	134.82	.....
342	74.01	89.05	123.43	126.62
394	.....	81.93	101.52	101.86
431B	.....	59.71	103.35	105.84
459A	106.20	109.92	138.72	136.70
486	74.12	90.27	125.75	129.21
502	94.59	111.66	148.82	153.53
506A	74.27	86.85	109.25	112.37

DEAF SMITH COUNTY

Well No.	1938	1950	1961	1962
513A	74.66	84.85	110.07	112.21
514	103.62	114.57	146.20	148.25
546	.....	125.76	148.03	151.10
558	.....	66.36	70.55	67.66
566	.....	190.20	213.60	219.44
919	81.80	91.37	120.34	122.26
934	.....	100.00	136.80	139.05
D-30	.....	.....	185.08	185.90
D-111	.....	.....	60.90	64.98
D-203	.....	.....	170.21	171.99
D-303	.....	.....	295.52	.....
D-306	.....	.....	.....	246.70
FD-1	.....	.....	.....	109.98
FD-2	.....	.....	.....	179.07
FD-3	.....	.....	.....	149.15
FD-4	.....	.....	.....	134.40
FD-5	.....	.....	.....	126.96
FD-6	.....	.....	.....	117.87
FD-7	.....	.....	.....	161.03
FD-8	.....	.....	.....	188.15
FD-9	.....	.....	.....	226.40
FD-10	.....	.....	.....	204.53
FD-11	.....	.....	.....	120.23
FD-12	.....	.....	.....	212.00
FD-13	.....	.....	.....	275.05
FD-14	.....	.....	.....	286.40
FD-15	.....	.....	.....	210.72

FLOYD COUNTY

Well No.	1938	1950	1961	1962
5	50.61	59.84	100.04	.....
5A	.....	57.91	95.90	.....
20	.....	91.17	132.74	140.27
21A	.....	91.68	123.60	129.68
32	89.20	99.43	143.51	143.26
42	.....	81.90	119.10	126.98
55	.....	70.74	123.28	127.07
56	59.00	67.38	.....	115.80
57	61.01	77.18	130.30	127.75
106	56.58	77.52	.....	136.84
108	57.33	78.65	135.80	138.93
112	51.41	74.17	128.70	131.34
120	58.93	92.85	141.80	143.79
138	.....	111.05	144.45	146.10
139	57.90	105.36	142.74	144.38
140	52.54	96.27	.....	134.38
143	60.35	95.00	144.80	143.38
157	53.10	80.81	143.60	142.30
161	58.50	94.52	144.15	148.40
185	.....	81.43	.....	142.30
263	.....	83.78	136.70	135.33
264	.....	64.31	105.36	109.13
265	.....	86.80	127.40	126.38
315A	.....	235.96	236.31	237.66
326	.....	148.50	154.00	155.41
410A	48.59	83.45	133.00	132.95
414	60.66	100.48	144.69	145.20
416	60.24	103.67	145.10	146.40
420	.....	111.17	.....	154.24
421	57.85	102.56	147.14	147.91
423	.....	93.63	142.00	143.08
428A	48.75	84.90	137.60	.....
435	57.56	102.20	156.80	159.73
448	48.57	89.49	148.70	150.42
463	47.83	83.21	.....	136.41
467	36.32	65.60	120.70	122.13
472	47.06	80.34	134.64	135.91
478	.....	93.29	144.00	145.89
486	33.40	37.92	41.70	.....
493	.....	110.24	150.43	151.84
502	.....	70.17	133.78	134.70
510	39.94	59.30	119.31	121.36
511	46.06	77.85	135.48	138.14
519A	49.46	60.21	139.00	140.83
523	57.74	77.90	151.08	153.40
529	110.09	110.10	116.58	117.98
542	.....	80.81	148.94	148.89
546	.....	.....	100.04	102.28
554	.....	91.80	139.55	.....
562A	132.55	141.50	181.74	179.82
610A	.....	209.78	234.55	234.48
610B	.....	214.16	238.50	231.16
612	.....	.....	181.80	183.42
627	.....	83.13	127.08	130.69
630	.....	112.89	157.42	159.74
652	.....	86.46	141.66	143.73
701	.....	87.42	143.44	146.36
704	.....	101.67	150.65	153.44
720	.....	80.15	141.07	138.78
726	.....	82.69	.....	126.24
727	.....	76.88	135.86	135.90
728	.....	90.75	142.16	143.79
729	.....	87.55	141.60	141.68
730	.....	134.73	173.00	161.47
731	.....	.....	256.17	258.21
732	.....	.....	259.43	261.04
733	.....	.....	252.07	254.32
734	.....	.....	148.00	148.24
54301	.....	193.40	.....	209.24
05801	.....	180.78	.....	183.10

IERN HIGH PLAINS' OBSERVATION WELLS

HALE COUNTY

Well No.	1938	1950	1961	1962
31A	.....	71.52	.....	119.55
36	76.88	87.59	139.09	141.74
40A	.....	91.56	.....	130.01
81	.....	68.11	109.68	109.56
93	.....	93.27	145.35	142.72
103	44.89	55.31	.....	93.95
105	48.87	63.05	.....	107.51
138	.....	56.92	87.90	90.54
154	.....	77.23	119.20	121.65
159	.....	73.99	117.70	118.22
163	.....	65.24	111.80	112.57
202	63.66	80.18	129.90	127.40
206	66.96	83.24	126.50	127.91
210	62.97	78.32	122.17	122.95
212	61.52	74.25	109.83	110.63
220	52.35	71.02	.....	114.97
225	.....	74.29	116.00	116.07
238	45.36	65.30	122.00	.....
241	47.86	82.75	115.70	.....
285	.....	72.91	.....	117.40
305	66.10	84.40	122.45	130.05
316	47.40	65.67	.....	105.54
317A	49.56	65.46	98.61	100.95
323	.....	76.10	116.12	118.17
330A	44.89	62.82	110.55	105.79
334	.....	68.55	111.04	112.68
338	45.25	59.20	96.50	97.14
367	.....	68.38	118.65	116.90
370	42.25	59.19	107.70	104.91
389	.....	63.37	118.22	121.80
435	47.92	67.03	122.88	125.29
436	50.30	73.84	125.50	125.71
454	.....	79.80	133.53	134.29
467	32.65	44.60	76.87	78.09
508B	45.70	60.94	121.53	122.75
511	16.88	40.07	.....	83.58
539A	55.07	72.68	131.13	130.96
546	.....	62.96	119.95	120.89
547A	50.16	68.37	122.72	123.69
553	52.76	62.45	.....	123.60
562	.....	67.96	114.80	.....
564	55.73	66.89	124.96	125.58
596	52.56	61.86	92.77	.....
661	.....	76.84	125.20	126.51
704A	.....	78.99	122.80	117.05
714	.....	85.71	129.90	129.98
719C	76.73	80.04	116.67	118.39
724	93.04	96.37	140.19	143.45
798	.....	86.00	133.24	131.53
824A	63.90	67.38	105.50	.....
825A	64.98	85.80	112.35	112.95
829	.....	81.25	118.00	116.60
852A	117.90	120.86	163.31	162.85
859	76.23	87.22	135.58	132.19
906	38.84	44.58	76.64	77.52
923	49.99	54.21	98.92	99.28
929A	41.13	47.94	86.43	.....
942	51.87	67.78	99.20	.....
964	.....	82.78	128.04	129.56
978	80.00	89.96	142.50	140.18
1231	.....	68.77	113.20	110.72
1336	.....	61.42	105.95	107.53
1358	.....	73.15	116.70	.....
1403	.....	61.08	102.10	103.70
1417	.....	67.62	118.00	118.92
1430	.....	51.95	107.40	108.58
1436	.....	70.70	122.90	125.52
1529	.....	52.61	131.10	127.75
1604	.....	71.32	.....	118.70
1811	.....	107.10	141.25	140.92
1921	.....	85.03	118.41	117.89
1957	.....	75.44	.....	128.60
H-93	.....	.....	125.93	130.30
K-50	.....	.....	108.85	109.40
N-27	.....	.....	115.88	117.54
N-65	.....	.....	93.50	95.95
P-71	.....	.....	113.80	116.52
R-36	.....	.....	135.45	.....
V-25	.....	.....	102.68	103.41
V-58	.....	.....	120.68	119.10
Y-36	.....	.....	77.20	79.04
Y-38	.....	.....	70.83	69.70
CC-31	.....	.....	143.32	143.00
DD-101	.....	.....	133.32	133.91
GG-76	.....	.....	110.90	110.61
HH-9	.....	.....	139.40	145.94
HH-107	.....	.....	123.23	135.25
HH-118	.....	.....	96.16	94.91
JJ-50	.....	.....	140.58	140.55
LL-80	.....	.....	.....	151.60
MM-104	.....	.....	143.80	.....

HOCKLEY COUNTY

Well No.	1938	1950	1961	1962
F-2	.....	108.61	138.38	137.18
F-7	.....	78.17	98.87	99.50
22-B	.....	.....	90.48	90.70
24	26.49	25.33	29.15	34.64
25-A	.....	27.07	39.05	41.20
28	32.18	35.96	61.53	61.90
29	28.06	39.91	60.75	63.90
207-A	.....	.....	77.75	77.45
247-A	.....	105.57	133.71	133.24

HOCKLEY COUNTY

Well No.	1938	1950	1961	1962
263-A	.....	108.37	141.72	141.77
263-B	.....	112.08	147.77	150.52
281-A	.....	.....	83.41	81.87
403-A	.....	.....	68.93	67.60
429-B	.....	93.64	137.43	.....
434	133.20	131.48	184.77	178.60
434A	.....	123.94	178.53	173.30
434B	.....	89.90	128.00	129.00
443A	.....	76.27	82.70	85.60
444	.....	71.62	82.48	85.47
447A	.....	51.78	80.72	84.22
452	.....	67.70	98.92	98.32
453A	.....	60.09	89.49	90.02
453B	.....	69.42	101.60	103.03
458	82.66	85.63	120.35	124.29
458A	.....	63.72	101.05	93.55
528A	.....	134.40	173.02	169.44
576	.....	89.92	119.04	117.17
662A	.....	98.75	121.12	119.80
717	103.92	97.04	114.52	113.81
735A	.....	.....	151.13	151.00
900	.....	.....	47.23	50.27
901	.....	.....	132.97	131.52
902	.....	.....	124.73	124.75
903	.....	.....	122.76	129.37
904	.....	.....	115.94	115.21
905	.....	.....	148.15	153.33
906	.....	.....	122.53	120.72
907	.....	.....	141.73	142.00
908	.....	.....	109.99	111.08
40403	.....	.....	137.89	.....

LAMB COUNTY

Well No.	1938	1950	1961	1962
1	70.00	70.62	103.05	103.42
6	20.80	27.36	64.02	63.62
7	14.63	22.32	61.05	57.64
8	14.97	20.12	56.74	55.66
13	18.21	27.69	63.92	64.68
16	35.67	41.40	76.67	.....
30	23.09	29.15	63.00	64.00
30A	.....	49.33	81.90	.....
38	42.16	41.65	69.28	.....
46B	.....	39.84	61.80	63.51
54	89.94	95.77	128.18	131.55
57	.....	89.35	129.50	.....
57D	.....	97.00	128.80	128.26
60	69.79	74.57	107.07	112.52
62F	.....	101.80	144.12	.....
62H	.....	92.32	127.37	130.65
63B	.....	99.19	144.65	.....
70A	64.15	61.82	82.02	83.20
71	62.18	67.22	93.56	97.35
88	39.03	36.29	46.15	.....
231	96.52	92.61	110.18	110.52
236	78.12	83.99	96.02	.....
243	77.65	75.40	81.66	.....
307	31.70	41.54	66.52	67.92
322	40.75	47.69	82.20	79.77
A-54	.....	49.33	81.90	86.20
B-33	.....	96.48	133.05	135.79
B-138	.....	47.48	73.56	72.36
B-160	.....	49.20	70.10	67.99
B-166	.....	.....	.....	42.02
C-32	.....	87.28	116.84	119.08
C-51	.....	98.35	139.48	147.05
D-14	77.43	80.12	123.22	125.90
D-60	.....	87.73	126.41	.....
D-93	.....	98.10	145.32	147.10
F-41	.....	38.60	65.40	67.00
G-163	84.89	89.71	122.05	120.11
L-333	99.14	105.73	133.40	131.51
M-34	74.95	85.46	115.80	113.61
M-82	104.95	109.00	137.85	130.56
M-180	.....	85.20	111.03	115.40
461	.....	.....	102.89	109.83
661	.....	.....	122.89	122.57
44902	.....	.....	80.70	.....
46802	.....	.....	131.98	134.45
46805	.....	.....	134.38	136.38
52302	.....	.....	60.10	45.67
52601	.....	.....	27.45	28.13
52901	.....	.....	57.07	59.02
52902	.....	.....	.....	45.54
53304	.....	.....	89.42	90.87
54203	.....	.....	118.37	111.27
55303	.....	.....	144.27	147.62
55801	.....	.....	110.43	110.66
55902	.....	.....	113.01	115.10
56403	.....	.....	134.85	137.49
2407701	.....	.....	122.45	123.05

LUBBOCK COUNTY

Well No.	1938	1950	1961	1962
17	.....	107.30	147.07	149.45
29A	.....	93.09	152.47	156.93
35A	.....	97.72	149.95	149.53
37	73.15	79.35	126.96	127.09
50A	.....	80.95	138.22	138.53
64A	86.02	91.33	129.97	128.97
74B	35.06	.....	54.23	55.21
75B	.....	72.57	113.27	112.27
77A	69.87	79.98	112.27	113.12
81	42.22	46.00	68.58	.....

LUBBOCK COUNTY

Well No.	1938	1950	1961	1962
95A	.....	97.42	128.29	132.77
99	34.35	35.98	60.28	61.36
101	62.31	71.56	116.67	116.32
106A	.....	41.46	71.24	71.04
111A	.....	87.32	130.50	130.28
114	.....	64.96	96.83	96.10
114B	.....	60.85	87.94	86.86
118A	80.67	90.93	134.87	134.52
119A	.....	85.68	132.14	131.77
121	73.92	82.64	131.74	131.00
138	39.59	46.12	73.19	75.13
139	25.69	30.41	54.66	54.34
151A	26.68	36.57	76.32	73.47
154	30.18	48.71	72.71	73.31
156	39.98	59.24	76.17	.....
188	78.12	77.64	91.82	90.68
216	52.28	51.90	81.31	84.31
219	43.00	46.12	77.90	78.51
222	53.12	54.34	114.30	108.29
234A	.....	62.35	73.20	74.66
238A	.....	52.32	59.76	59.62
319A	.....	79.00	107.85	103.77
338	.....	70.00	111.77	110.42
339	61.73	67.75	105.31	.....
355	83.64	86.16	115.47	114.01
361A	.....	85.70	100.80	100.13
366A	.....	91.39	101.65	101.40
371A	.....	90.68	123.53	125.00
372	88.05	95.25	130.85	128.92
375A	.....	82.98	117.61	117.62
376A	.....	82.47	116.35	114.86
376B	83.06	.....	121.21	121.93
377A	.....	76.13	114.31	112.92
377B	.....	80.35	116.31	116.67
378D	.....	.....	113.25	113.84
379C	.....	68.23	104.12	104.86
392	92.41	94.40	114.19	114.20
395	43.89	54.73	73.24	72.30
398	14.23	18.93	52.83	52.53
401A	70.95	76.77	116.99	118.57
403A	38.56	44.50	77.02	76.68
421	.....	42.80	71.07	70.14
423B	.....	.....	.....	129.49
425A	.....	84.70	107.92	108.19
431A	.....	97.16	128.46	128.50
441A	.....	128.84	165.26	169.54
444A	.....	113.85	158.77	158.80
448A	.....	110.82	145.75	144.55
473A	.....	96.76	146.38	145.88
490	.....	88.84	144.00	141.92
492	.....	80.84	127.19	128.61
497	.....	92.57	149.71	149.11
498	.....	93.90	148.53	146.82
509	.....	86.33	138.49	139.18
517	.....	98.64	158.60	158.32
523	.....	83.06	128.48	.....
528A	.....	68.88	98.31	.....
533	.....	65.98	129.20	125.12
560	.....	56.88	109.68	109.49
571	.....	43.26	74.42	73.80
574	.....	52.86	83.76	83.01
579	.....	46.46	76.08	75.44
583A	.....	48.01	68.07	66.78
595	.....	61.47	88.94	89.26
601	.....	66.59	89.37	89.48
630	.....	72.27	127.58	127.28
630A	.....	71.91	126.67	126.80
650	.....	73.60	114.70	113.13
666	52.00	59.24	80.48	.....
690	.....	49.70	79.28	.....
702	.....	83.24	111.27	112.13
734	.....	52.76	78.10	.....
736A	.....	46.95	83.94	83.22
766A	.....	88.45	128.44	128.52
775A	.....	82.64	118.15	120.61
776	.....	84.58	.....	121.21
786	.....	104.74	136.40	140.07
787	.....	86.52	110.76	116.62
810A	.....	98.37	124.25	125.11
821	.....	94.22	128.77	129.80
821A	.....	93.40	126.33	126.72
823	.....	94.49	127.80	.....
839	.....	88.84	111.27	106.83
843A	.....	76.71	104.90	112.42
853A	.....	48.97	49.26	49.73
868A	.....	75.27	110.00	115.32
878B	.....	53.46	79.38	81.85
887B	.....	71.74	85.25	87.10
1001	.....	.....	66.59	66.03
1002	.....	.....	94.55	94.17
1003	.....	.....	105.19	.....
1004	.....	.....	116.00	122.16
1005A	.....	.....	.....	132.21
1006	.....	.....	160.19	162.33
1007	.....	.....	142.44	142.82
1008	.....	.....	147.37	146.93
1009	.....	.....	142.45	142.94
1010	.....	.....	150.06	150.33
1011	.....	.....	137.16	137.70
1012	.....	.....	122.36	123.09
1013	.....	.....	120.69	118.81
1014	.....	.....	191.98	194.70
1015	.....	.....	145.40	145.56

LUBBOCK COUNTY

Well No.	1938	1950	1961	1962
1016	.....	.....	143.20	144.46
1017	.....	.....	147.28	145.42

LYNN COUNTY

Well No.	1957	1959	1961	1962
701	63.86	66.80	66.85	65.47
703	61.33	61.17	61.22	60.65
706	13.32	10.94	1.10	.....
711	17.53	16.24	9.03	11.49
806	.....	37.80	33.42	32.49
1-58	.....	.....	40.33	37.58
2-58	.....	69.19	70.38	69.95
3-58	.....	93.27	92.11	91.70
4-58	.....	93.05	91.53	.....
5-58	.....	120.17	122.85	122.97
6-58	.....	58.77	62.63	56.19
7-58	.....	46.50	42.31	44.11
8-58	.....	64.02	65.25	64.74
A-67	90.72	92.56	92.37	93.83
A-68	108.16	108.67	102.57	99.06
A-69	82.41	83.36	86.97	83.68
A-70	81.30	71.80	68.93	68.57
A-71	83.25	86.64	86.96	83.72
B-28	137.25	132.54	135.02	133.73
B-52	117.34	119.50	120.55	120.43
B-56	.....	104.12	103.09	102.68
B-75	104.15	106.94	109.72	108.63
B-83	90.15	92.80	90.20	90.79
B-90	77.62	77.40	78.64	79.18
B-100	66.77	77.04	68.07	64.79
B-109	117.66	118.07	122.06	119.61
C-14	.....	.....	82.03	81.34
C-26A	.....	63.15	61.09	58.14
C-81	77.22	80.24	79.98	75.68
C-108	84.26	86.09	86.66	86.64
C-109	74.53	74.38	75.02	74.20
C-34N	.....	.....	22.54	25.89
42201	.....	.....	127.46	127.70

PARMER COUNTY

Well No.	1950	1956	1961	1962
4	116.28	121.36	136.81	137.28
10-A	167.13	179.08	203.58	202.86
11-A	118.82	131.85	145.77	151.34
12	161.93	173.31	181.08	181.40
15-A	140.88	156.88	185.50	179.95
20	113.56	127.98	148.10	144.60
111-A	165.46	185.45	206.02	208.00
323	102.16	106.05	122.00	123.35
366	.....	173.21	190.97	201.09
367	.....	225.18	248.52	252.15
368	.....	123.17	137.63	138.20
369	.....	153.70	165.68	165.80
370	.....	266.84	288.46	289.22
371	.....	188.90	210.60	212.68
372	.....	225.13	240.69	238.25
373	.....	146.30	164.19	165.98
374	.....	110.70	123.55	124.23
375	.....	94.80	110.56	.....
376	.....	157.70	173.30	175.45
377	.....	150.63	164.18	.....
378	.....	221.50	227.94	232.00
380	.....	184.60	203.16	204.15
381	.....	163.10	182.24	182.78
382	.....	188.56	206.58	203.35
383	.....	205.14	226.50	230.00
384	.....	198.14	201.46	207.68
385	.....	229.09	242.70	241.84
386	.....	286.30	303.30	.....
387	.....	243.53	266.36	272.40
388	.....	201.68	224.34	.....
389	.....	217.13	241.09	245.37
390	.....	162.01	183.39	186.80
391	.....	212.27	232.72	234.85
392	.....	279.68	.....	306.14
393	.....	173.64	193.72	194.50
394	.....	157.52	168.44	169.60
395	.....	.....	168.15	163.85
397	.....	.....	194.70	.....
398	.....	179.84	193.80	196.41
399	.....	139.12	155.00	156.82
400	.....	214.76	235.35	237.35
401	.....	175.09	197.60	203.85
402	.....	209.26	222.96	226.64
403	.....	184.28	197.87	198.53
405	.....	194.76	204.36	206.38
406	.....	170.70	188.85	191.54
407	.....	.....	197.53	201.04
408	.....	.....	272.45	274.05
409	.....	.....	236.90	239.59
410	.....	.....	159.40	159.70

RANDALL COUNTY

Well No.	1938	1950	1961	1962
A-2a	.....	113.79	139.54	.....
103-A	9.35	9.11	3.79	3.94
121-A	.....	129.13	153.04	152.36
127-A	.....	135.61	148.87	149.04
137-B	.....	.....	131.10	132.64
157-A	.....	112.99	127.36	123.30
167-A	105.36	.....	134.54	131.10
185-A	.....	.....	173.93	173.41
191-B	.....	154.57	187.78	187.11
211	.....	142.12	172.89	169.48

(Continued on Page 4)

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK AND LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2
Wilson, Texas

Precinct 2
(COCHRAN, HOCKLEY AND LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO AND PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER AND RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1
Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ..... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan White ..... Publicity-Public Relations

Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

DRILLING STATISTICS FOR JAN. & FEB.

During the month of January, 65 new wells were drilled within the bounds of the High Plains Water District; 11 replacement wells were drilled; and 7 wells were drilled that were either dry or non-productive for other reasons. The County Committees issued 207 new drilling permits.

In February, 60 new wells were drilled; 2 replacement wells were drilled; and 12 wells were drilled that were dry. The committees issued 273 new drilling permits.

Permits issued and wells completed for January and February are listed below by counties:

	Permits Issued		New Wells Drilled		Replacement Wells		Dry Holes Drilled	
County	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.
Armstrong	0	0	0	0	0	0	0	0
Bailey	8	0	3	0	0	0	0	0
Castro	16	1	3	3	0	0	0	0
Cochran	7	13	3	0	0	0	0	0
Deaf Smith	10	11	3	5	4	0	0	0
Floyd	17	35	3	0	0	1	2	0
Hockley	44	75	10	17	1	1	0	1
Lamb	5	21	7	1	3	0	1	0
Lubbock	61	65	20	19	0	0	2	5
Lynn	24	33	9	14	0	0	0	6
Parmer	10	15	3	1	3	0	1	0
Potter	0	0	0	0	0	0	0	0
Randall	5	4	1	0	0	0	1	0
TOTALS	207	273	65	60	11	2	7	12

FROM THE EDITOR'S INK WELL

We have read with interest that a Deaf Smith County 4-H club boy, Bill Cole, has won top honors in the 1961 Texas Hybrid Grain Sorghum Program. He produced a phenomenal 9,384 pounds of grain per acre on irrigated land.

The program is sponsored by the Texas Certified Seed Producers, Inc., and the Texas Agricultural Extension Service. Its purpose is to show through demonstrations the value of Texas developed hybrid grain sorghum for grain production and other good production practices.

Cole's seed was planted on June 19 following a preplant irrigation. Fertilizer was applied as a side dressing. The crop was irrigated four times during the growing season.

It goes without saying that boys need to be taught how to produce agricultural crops and how to produce them in abundance. The only possible suggestion that we could offer for the improvement of such a program would be to include one more phase or facet to the overall picture.

It is our strong belief that for irrigated agriculture to continue to prosper in the southern High Plains of Texas in the future, it will be necessary to produce maximum crop yields with limited amounts of water. The problem of a declining water-table is of major concern to our farmers today —tomorrow the problem will be the concern of our youth and it will be more acute.

For this reason, would it not be reasonable to include in the program an award to the top producer of grain *per inch of water applied.* This would instill in the mind of the boy not only the desire to produce large yields, but also would teach him to do so with resources available and in such a manner as to realize a profit from his crop.

Well Measurements—

(Continued from Page 3)

RANDALL COUNTY

Well No.	1938	1950	1961	1962
212	.....	.....	168.34	174.19
214	.....	160.63	196.47	187.97
215	.....	130.05	164.38	165.89
216	.....	.....	162.90	166.44
217	.....	.....	173.76	.....
58201	.....	.....	241.92	197.29
59101	.....	.....	.....	197.58

SWISHER COUNTY

Well No.	1938	1950	1961	1962
1	89.50	89.38	107.79	111.30
2	77.78	77.68	80.76	78.35
36	55.80	58.40	90.00	93.28
37	63.18	68.83	105.85	108.68
63A	.....	.....	163.05	161.61
80	.....	71.28	104.20	99.75
95	.....	71.32	106.10	110.49
101	.....	72.31	.....	103.87
108	71.52	77.26	109.85	110.66
113	58.46	63.98	88.03	.....
115	57.38	62.98	87.40	88.95
119	.....	56.36	83.22	85.41
124	46.91	63.90	81.35	82.61
127	.....	58.04	98.15	.....
139	.....	52.84	76.77	65.95
165	.....	80.87	118.50	118.02
167	52.45	57.50	83.50	82.36
181	.....	65.54	91.62	92.29
231	50.83	68.85	103.20	101.87
247	57.34	69.43	107.07	108.02
255	41.43	53.53	84.98	86.08
278	.....	80.12	118.90	119.57
291	.....	63.10	93.21	97.98
297	.....	45.59	72.68	73.33
299	41.70	50.49	66.76	66.09
302A	64.14	67.18	109.00	113.40
310	.....	75.72	110.32	.....
332	59.49	75.74	104.50	105.34
333	.....	86.57	110.59	111.22
359	74.71	89.75	134.32	137.62
368	74.07	90.79	142.42	.....
383	72.16	88.58	121.82	122.49
404	103.51	107.81	135.22	138.25
408	86.90	96.28	134.14	135.24
410	92.70	101.36	122.76	123.80
421	62.91	69.70	103.86	105.92
438	.....	.....	165.90	168.10
448	.....	90.25	138.95	140.63
498	.....	97.19	129.84	131.95
507	.....	82.97	119.76	128.38
702	.....	46.15	50.10	46.86
705	.....	55.55	78.15	75.42
709	.....	93.86	108.85	110.20
743	.....	60.57	86.40	86.84
806	.....	63.90	98.40	98.65
858	.....	67.50	107.53	.....
860A	.....	72.19	123.46	115.27
896	.....	60.65	88.48	91.27
914	.....	155.99	153.12	155.74
932	.....	105.97	144.63	146.27
935	.....	92.75	127.50	128.94
951	.....	71.82	94.18	92.29

THE CROSS SECTION
1628 15th Street
Lubbock, Texas
Dear Sir:

I do not now receive THE CROSS SECTION but would like to have it sent to me each month, free of charge, at the address given below.

Name _____

Street Address _____

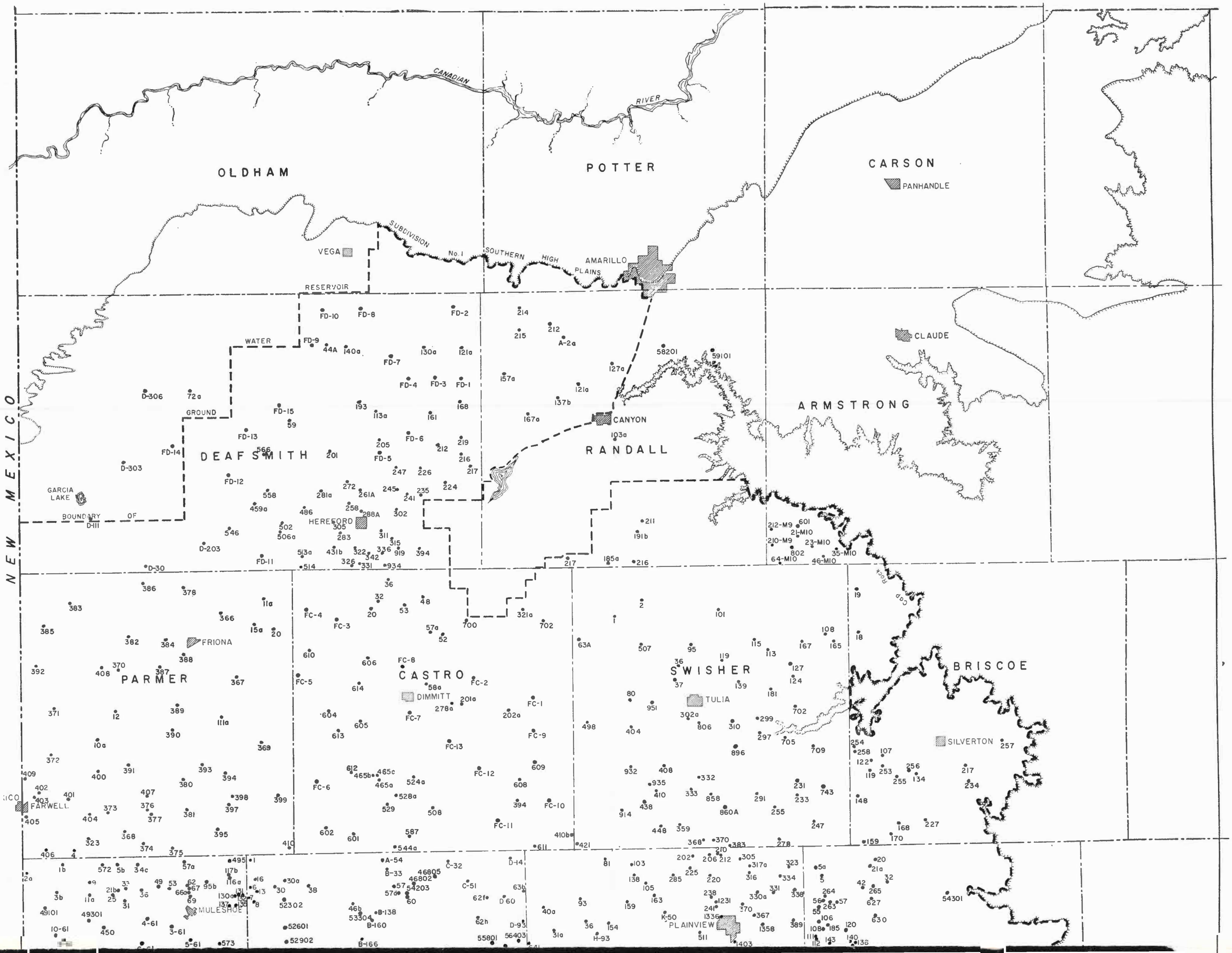
City and State _____

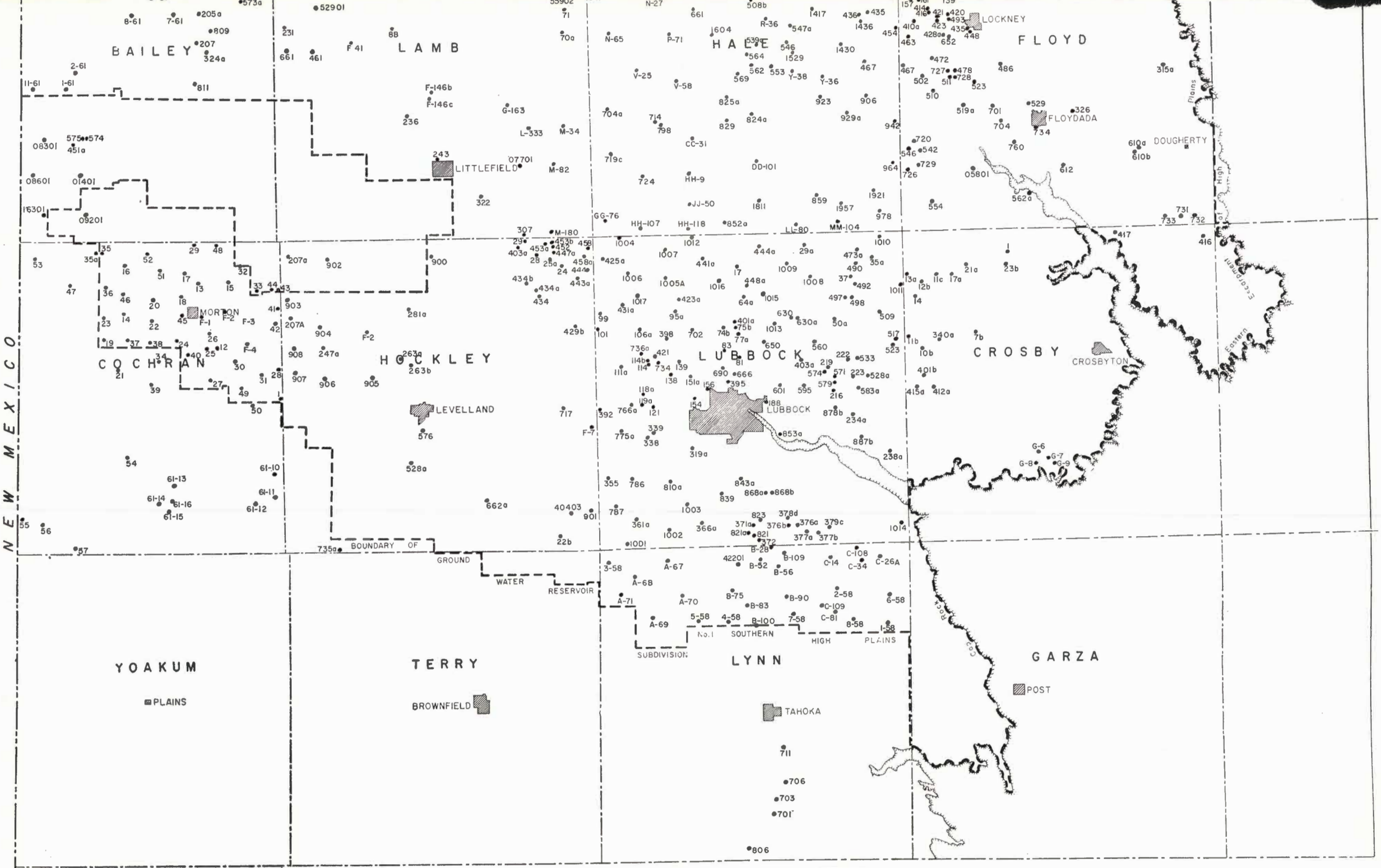
(Please cut out and mail to our address)

A LITTLE LIFE IS WORTH MORE THAN A LITTLE TIME, CLOSE THOSE ABANDONED WELLS!

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit


OLDHAM
POTTER
CARSON
PANHANDLE
CANADIAN RIVER
VEGA
AMARILLO
SUBDIVISION No. 1 SOUTHERN HIGH PLAINS
RESERVOIR
WATER
GROUND
BOUNDARY OF
DEAF SMITH
GARCIA LAKE
HEREFORD
CLAUDE
ARMSTRONG
CANYON
RANDALL
NEW MEXICO
PARMER
FRIONA
CASTRO
DIMMITT
SWISHER
TULIA
BRISCOE
SILVERTON
Cap Rock
FARWELL
MULESHOE
PLAINVIEW



EXPLANATION:
APPROXIMATE LOCATION OF
OBSERVATION WELLS
TEXAS WATER COMMISSION

PUBLISHED BY
HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT
MARCH 1962

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 8—No. 11 **"THERE IS NO SUBSTITUTE FOR WATER"** *April 1962*

Well Drilling Activity Declines During 1961

During 1961, the number of wells drilled within the High Plains Underground Water Conservation District declined from the number drilled in 1960.

In 1961, the total number of wells drilled in the thirteen-county area was 909, which represents only about 80 per cent of the wells drilled during 1960. →

Naturally, many factors are involved in the overall well-drilling picture, but perhaps for last year, chief among the reasons for the decrease in wells drilled is our old friend, "weather," and a decrease in acres irrigated. If you will recall, comparatively speaking, the fall and winter of 1960-61 was rather wet. Many irrigators did not have a pressing need to irrigate their land prior to planting, while others had sufficient well capacity already developed on their farms to do what irrigating was required.

With additional wells being drilled each year, and at the same time a decrease in number of acres being irrigated, it becomes increasingly apparent that individual well capacities must be decreasing. For an example two, three or more wells are required today to furnish water to irrigate all of a particular tract of land, where one well formerly was sufficient. Additional water is not necessarily needed by the crops grown, but rather, well capacities are decreasing because water levels have generally declined.

"Water-Agriculture" Tour Ends At Museum

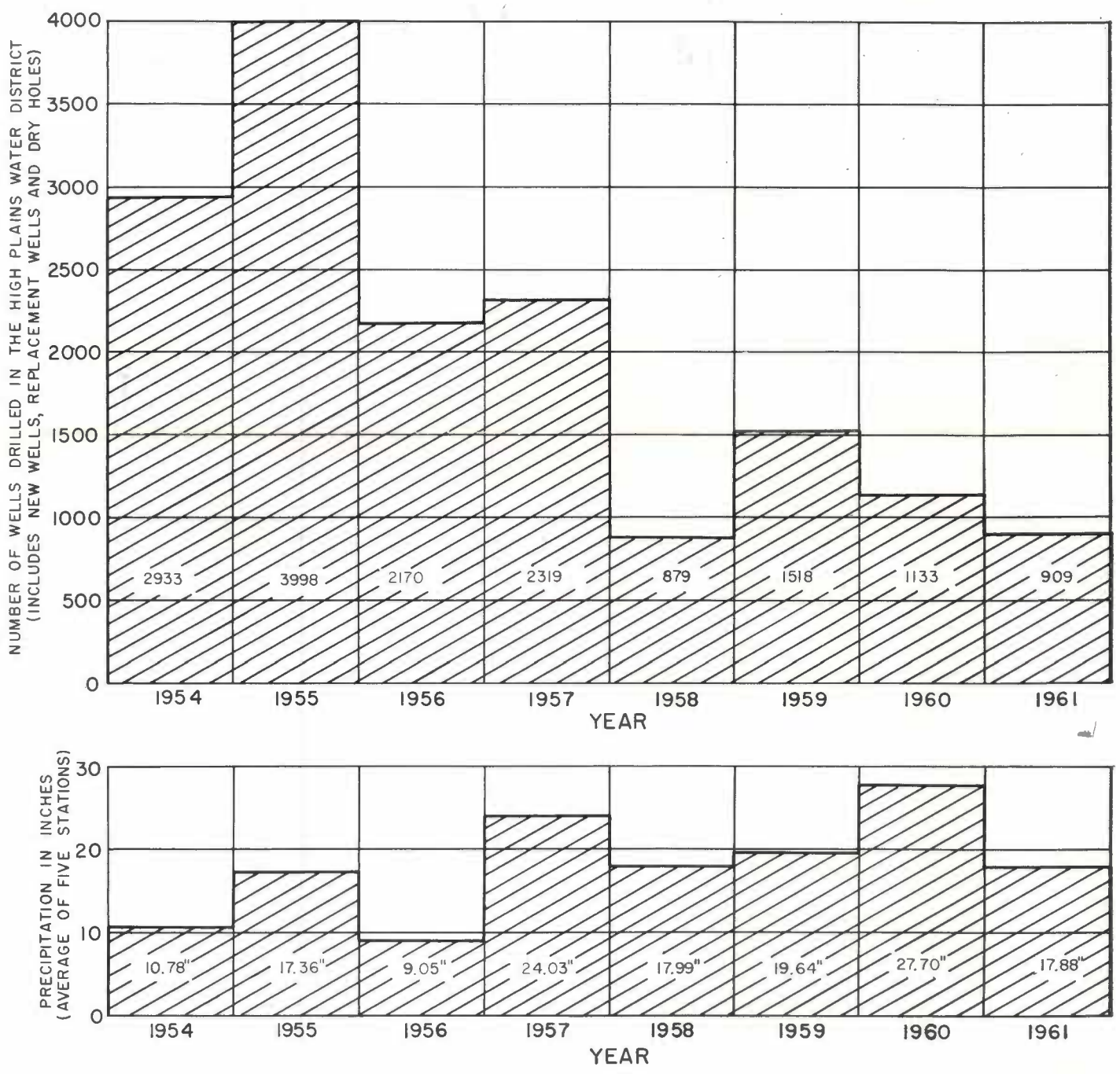
The "Water and Agriculture" tours presented each Spring by the West Texas Museum on the Texas Tech College campus in Lubbock have just been concluded. The tour was organized especially for seventh-grade classes in the Lubbock public school system. It was primarily designed to instruct and inform the students as to facts concerning the supply of ground water in storage beneath the southern High Plains' area and agriculture in general. There were 57 Lubbock Junior High School classes that availed themselves of the tour.

Fifteen guides conducted the tours. Most of this number are members of the Lubbock Junior League. Mrs. David Weaver is chairman of the Museum Tours for the Junior League during 1962.

Mrs. Margaret Sandy, Museum Curator of Education, stated that the "Water and Agriculture" tour was very successful.

(Continued on Page 2)

WELLS DRILLED AND PRECIPITATION, 1954-61
HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT



County	Permits Issued 1960	Permits Issued 1961	New Wells Drilled 1960	New Wells Drilled 1961	Replacement Wells Drilled 1960	Replacement Wells Drilled 1961	Dry Holes Drilled 1960	Dry Holes Drilled 1961	Total Wells Drilled 1960	Total Wells Drilled 1961
Armstrong	5	7	3	9	0	0	0	0	3	9
Bailey	75	62	48	31	15	13	5	4	68	48
Castro	88	117	44	70	23	29	5	1	72	100
Cochran	30	49	35	28	1	0	2	5	38	33
Deaf Smith	84	90	61	48	36	23	0	1	97	72
Floyd	81	66	81	44	12	7	1	3	94	54
Hockley	184	160	154	115	8	4	20	12	182	131
Lamb	110	116	97	74	18	22	8	6	123	102
Lubbock	255	192	197	156	25	9	27	13	249	178
Lynn	92	93	73	73	2	2	12	7	87	82
Parmer	92	77	53	48	31	33	4	2	88	83
Potter	1	0	0	1	0	1	0	0	0	2
Randall	21	20	26	12	3	1	3	2	32	15
Totals	1118	1049	872	709	174	144	87	56	1133	909

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer .... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan White ..... Publicity-Public Relations
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside. Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 .. Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 .... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 .... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 ..... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5, Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 ..... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 ..... Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 ..... Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 St. Rt. 2, Littlefield, Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 ..... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 ... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

DEAF SMITH COUNTY IRRIGATI

By ALLAN H. WHITE, Jr.

Dick Godwin, Deaf Smith County farmer whose land is located about 10 miles northwest of Hereford, has recently constructed an irrigation "tailwater" re-circulating system on his land.

The new system is designed to handle "tailwater" that comes from nearby land as well as from Godwin's farm.

A large earthen pit was dug at the lowest corner of the Godwin land. It measures about 40 feet in width, 330 feet in length and 10 feet in depth. A 6-inch centrifugal pump and engine is installed at the pit. One-half mile of 12-inch rubber-gasket concrete pipe and one mile of 15-inch rubber-gasket concrete pipe extends from the pit to the upper part of the farm. A length of 12-inch concrete pipe is installed at either end of the pit. Each extends a few feet from the pit to the county road bar-ditches, one on the south and one on the east of the farm.

Irrigation "tailwater" from the Godwin cropland will drain into the pit by gravity at the low side of the farm. "Tailwater" from nearby land that enters the road bar-ditches will also be diverted into the pit through the two concrete pipe intakes.

As "tailwater" accumulates in tahe pit, the pump will be started. Water will be pumped through the underground pipeline to any desired point on the farm.

Godwin states that he "feels a genu-

REMEMBER THIS IRRIGATION WELL?

No, well you might not readily recognize this well since most pumps appear quite similar, and because when we ran a picture of this well about a year ago it was at that time not equipped with the guard you see covering the drive-shaft between the engine and the pump gearhead in the picture. Last year, a small girl was robbed of most of her scalp by this drive-shaft. It accidentally caught her hair. She spent several weeks in a hospital and will spend a lifetime carrying the results of the mishap. Today this installation is safe enough for the Editor's son, Steve, shown above, and others, to play or work near the well without danger of being injured. Don't install a guard on your pump drive-shaft after an accident occurs—Install one today!

Museum—

(Continued from Page 1)

She said that even though the tour was officially concluded, if any class from throughout the area would desire the tour it would be made available to them.

"The Cross Section" heartily recommends the "Water and Agriculture" tour for any teacher who is searching for information on ground water and agriculture. The visual aids used in the tour make it especially interesting to classes of all ages.

Drilling Statistics for March

During the month of March, 174 new wells were drilled within the High Plains Water District; 12 replacement wells were drilled; and 15 wells were drilled that were either dry or non-productive for other reasons. The County Committees issued 341 new drilling permits.

Permits issued and wells completed for March are listed below by counties:

County	Permits Issued	New Wells Drilled	Repiacement Wells	Dry Holes Drilled
Armstrong	1	0	0	0
Bailey	11	1	0	0
Castro	35	13	4	1
Cochran	13	3	0	0
Deaf Smith	23	4	0	2
Floyd	39	11	1	0
Hockley	79	43	2	4
Lamb	24	16	0	0
Lubbock	55	52	1	5
Lynn	19	22	0	2
Parmer	33	6	4	1
Potter	0	0	0	0
Randall	9	3	0	0
Totals	341	174	12	15

ON FARMER INSTALLS SYSTEM FOR RE-CIRCULATING "TAILWATER"

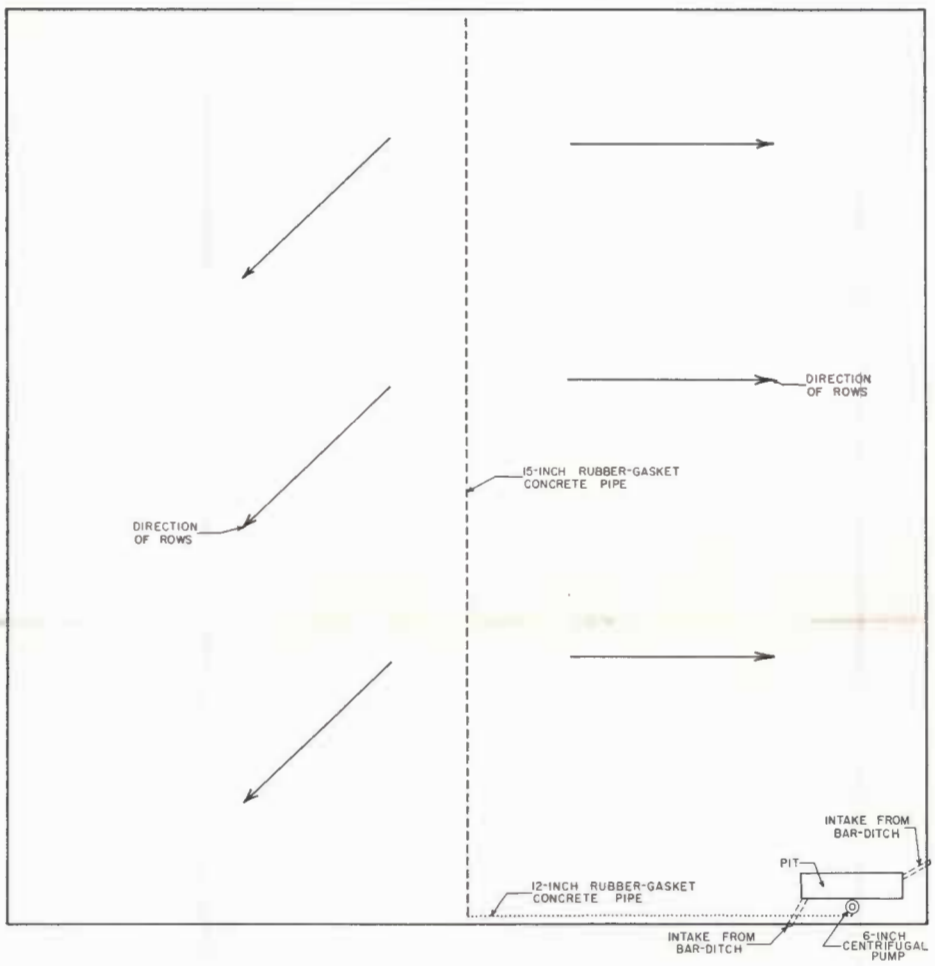
ine concern for conserving ground water. A tremendous capital investment was made to enable me to utilize my irrigation 'tailwater'. However, with a minimum amount of assistance from the County road maintenance crews we now can take care of our own 'tailwater' and re-claim 'tailwater' from the farms of several neighbors. We think the system will pay for itself in a short period of time."

According to Godwin, it cost about $15,000 to install the entire system -- pit, pump, engine and pipelines. He is quick to point out however, that this amount includes the total pipeline cost and that at least a portion of this expenditure should have been made to improve the existing irrigation system regardless of whether or not the re-circulation system was installed.

The greater portion of the total cost of the system can be attributed to the 1½ miles of underground pipeline.

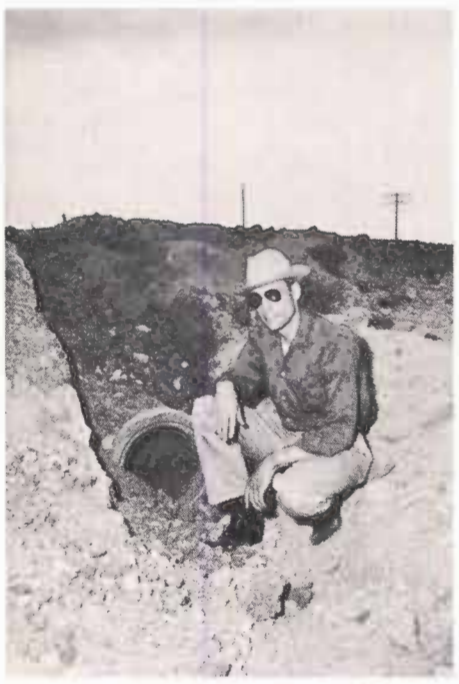
The accompanying plat of the 640-acre tract on which the pit is located shows the design of the re-circulating system.

IRRIGATION "TAILWATER" RE-CIRCULATION SYSTEM INSTALLATION
SECTION 65, BLOCK K-8, DEAF SMITH COUNTY, TEXAS
OWNED BY MR. DICK GODWIN, HEREFORD, TEXAS



Godwin's re-circulating pit is 40 feet wide, 330 feet long and 10 feet deep. It is located in the southeast corner of the farm (the lowest point on the farm) so irrigation "tailwater" can gravity flow into the pit from the cropland.

Harley Bryant and Douglas Ross, employees on the Godwin farm, are shown as they install a wire trash guard around the suction intake of the re-circulation pump. The wire guard will keep any large debris from entering and perhaps damaging the pump.



Irrigation "tailwater" from neighboring land will be diverted from the road bar-ditches to the re-circulating pit through two concrete pipes. Godwin is shown as he kneels near the inlet of one of the intake pipes.

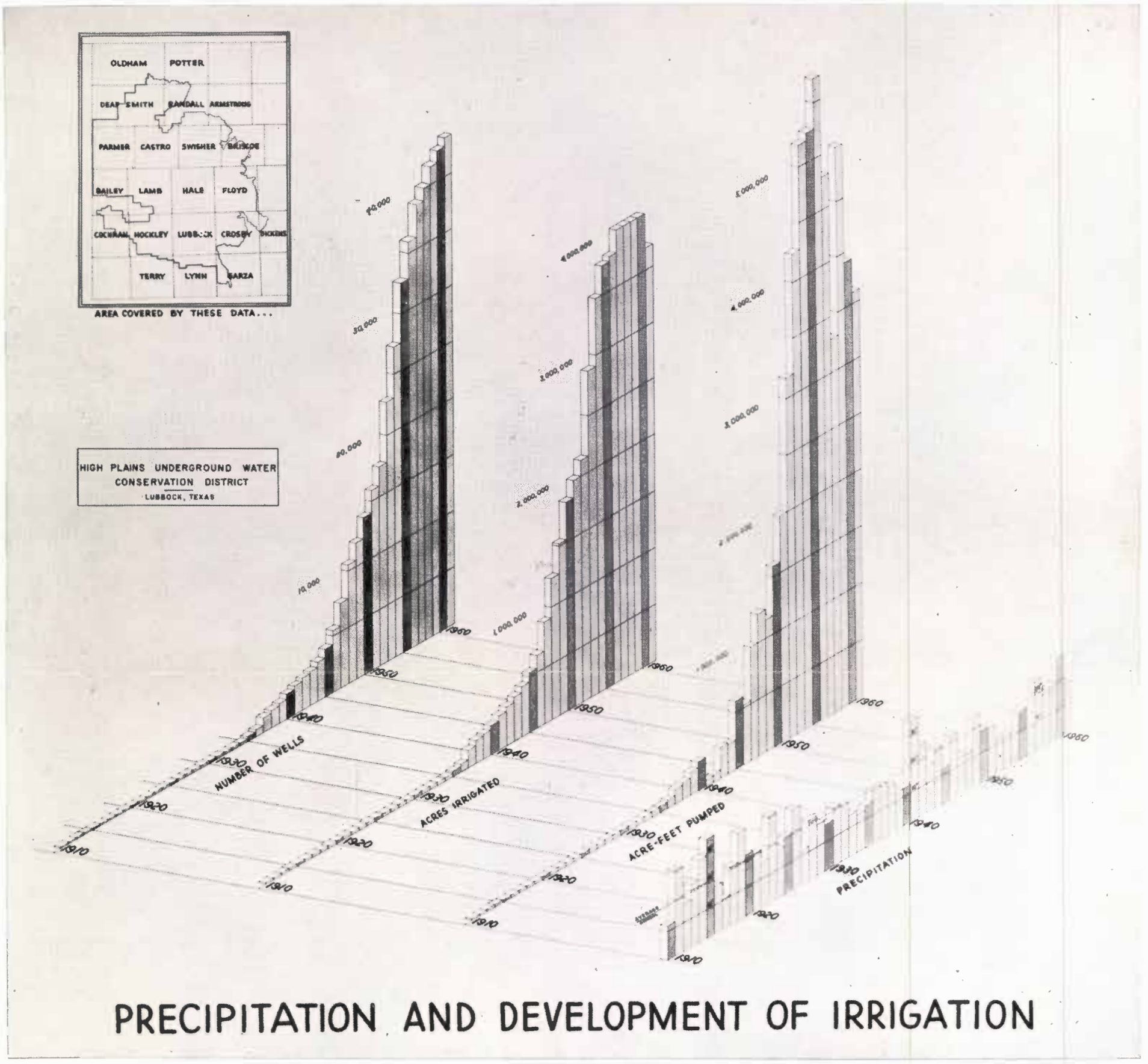
The High Plains Underground Water Conservation District has installed a flow-meter in the discharge pipe of the pit pump. It was installed for the purpose of calculating the quantity of "tailwater" that can be salvaged through such a system. The quantity of water that is re-claimed will constitute a major factor in the determination of the period of time necessary for the system to pay for itself.

Statistical data on the operation of the system will be recorded by Godwin and published by the Water District in "The Cross Section" at a later date.

PLEASE CLOSE THOSE ABANDONED WELLS ! ! !

THE CROSS SECTION
1628 15th Street
Lubbock, Texas
Dear Sir:
I do not now receive THE CROSS SECTION but would like to have it sent to me each month, free of charge, at the address given below.
Name_____
Street Address_____
City and State_____
(Please cut out and mail to our address)

A flow-meter was temporarily installed in the discharge line of the re-circulation pump by the High Plains Underground Water Conservation District. It will be used to calculate the amount of irrigation "tailwater" salvaged and pumped back to the cropland through the system. Godwin records the reading on the meter prior to turning "tailwater" into the pit.



PRECIPITATION AND DEVELOPMENT OF IRRIGATION

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 8—No. 12 "THERE IS NO SUBSTITUTE FOR WATER" *May 1962*

Irrigation "Tailwater" Pump Pays Off In Dividends For Floyd County Farmer

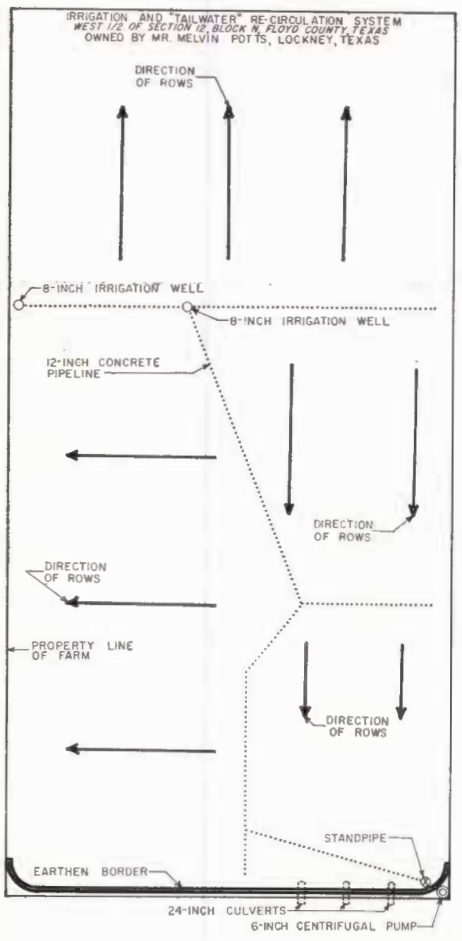
BY ALLAN H. WHITE JR.

Since 1953, Melvin Potts, a Floyd County farmer, has used an irrigation "tailwater" re-circulating pump on his farm. Potts' farm is located about 4½ miles southwest of Lockney, Texas.

He states that the system installation is one of the best investments he ever made. Potts says, "I feel that the system paid for itself during the first year of operation; however, I did not keep accurate records so I can't say for sure. Perhaps it took two years to pay out, but at any rate it was about the wisest move I ever made."

In the southeast portion of Potts' 320-acre farm there are 41 acres of land which slopes excessively. Under natural conditions, irrigation water would run off the land too rapidly to sufficiently wet the soil.

In the past, during times when the land was being irrigated, "tailwater" ran from the tract into the road bar-ditch on the south and ultimately crossed the road to the neighboring land. This situation was not only straining relations between Potts and his neighbor, but it also was very unprofitable. In order to keep excessive amounts of "tailwater" off the neighbor's land, Potts under-irrigated his land; consequently, crop yields from the 41-acre tract were not what they should have been.



Now, however, all this has been changed. Potts reports that the sloping land on his farm presently produces as abundantly as does his so-called "better" land. Why?

Because, by utilizing the re-circulating system which lets him run water over the land for a longer period of time, he can put enough water in the soil so that it is capable of supporting large yields. And, Potts accomplishes this without running one drop of water off of his farm.

Potts' system is simple, yet practical. He first bought an old tractor for $35. He salvaged the engine and mounted it and a slightly-used 6-inch centrifugal pump on a small four-wheeled trailer. He cannot remember exactly what the pump cost (perhaps on the order of $200). This was his pumping plant. He then installed 1250 feet of 12-inch standard mortar-joint concrete underground pipe from the low southeast corner of his farm to a point where he intersected the permanent underground irrigation pipeline already installed. The pipeline installed for the re-circulation system cost about $1250.

Potts had a road-maintainer drag a higher-than-average border up across the south end of his field in order to retain irrigation water as it came from the end of the crop rows. He installed three lengths of culvert-type pipe (24-inches in diameter) through the border into the road bar-ditch. The lengths of pipe were placed in the border for the purpose of allowing heavy rainfall runoff to drain from the field without washing the border away. The culverts are open except during times when the land is being irrigated.

When the retaining border was completed, the trailer-mounted pump was situated in the southeast corner of the field just outside the border. A suction pipe was placed over the border into a very shallow sump. The pump discharge pipe was attached to the underground pipeline through a riser.

Potts uses the following procedure to irrigate the sloping 41-acre tract:

Water from one of the farm's two good 8-inch irrigation wells is used. Six irrigation sets are needed to water the land. Three of the sets consist of 55-rows each and the other 3 sets consist of 70-rows each. When water from each set gets to the end of the rows (in about 12 to 14 hours) and to the small sump in the southeast corner of the field, the re-circulating pump is then started and the irrigation well cut off. The trailer-mounted pump circulates the irrigation water for about 6 hours until it all percolates into the soil where it can be used by the growing crop. Each set thus requires about 18 hours to complete. During about one-third of this time the irrigation well is not pumped at all.

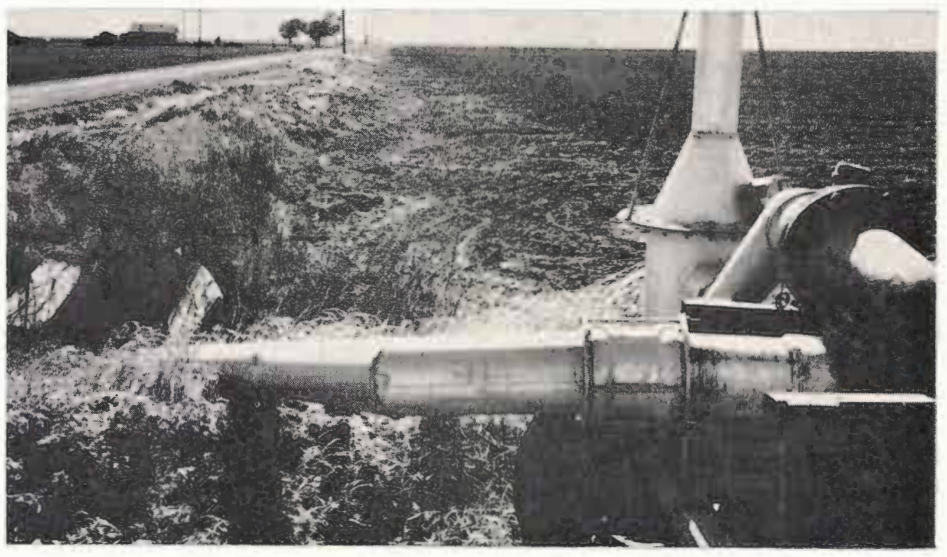
The important thing to remember about the operation of this system—if Potts is pumping an estimated 1000 gallons of water per miunte (he estimates more than this quantity) through the re-circulating system for 6 hours during each of 6 sets, and if a monetary value of $50 per acre-foot is assumed to be reasonable for irrigation water, then a savings of about $350 would be realized each time the 41-acre tract is irrigated. About 10 gallons of gasoline is used by the re-circulating engine during each 6-hours of operation.

If it is further assumed that Potts invested a total of about $2000 in his complete system, then after irrigating the land only 6 times the investment would be repaid.

Genuine "water conservation' is realized when the use of water re-

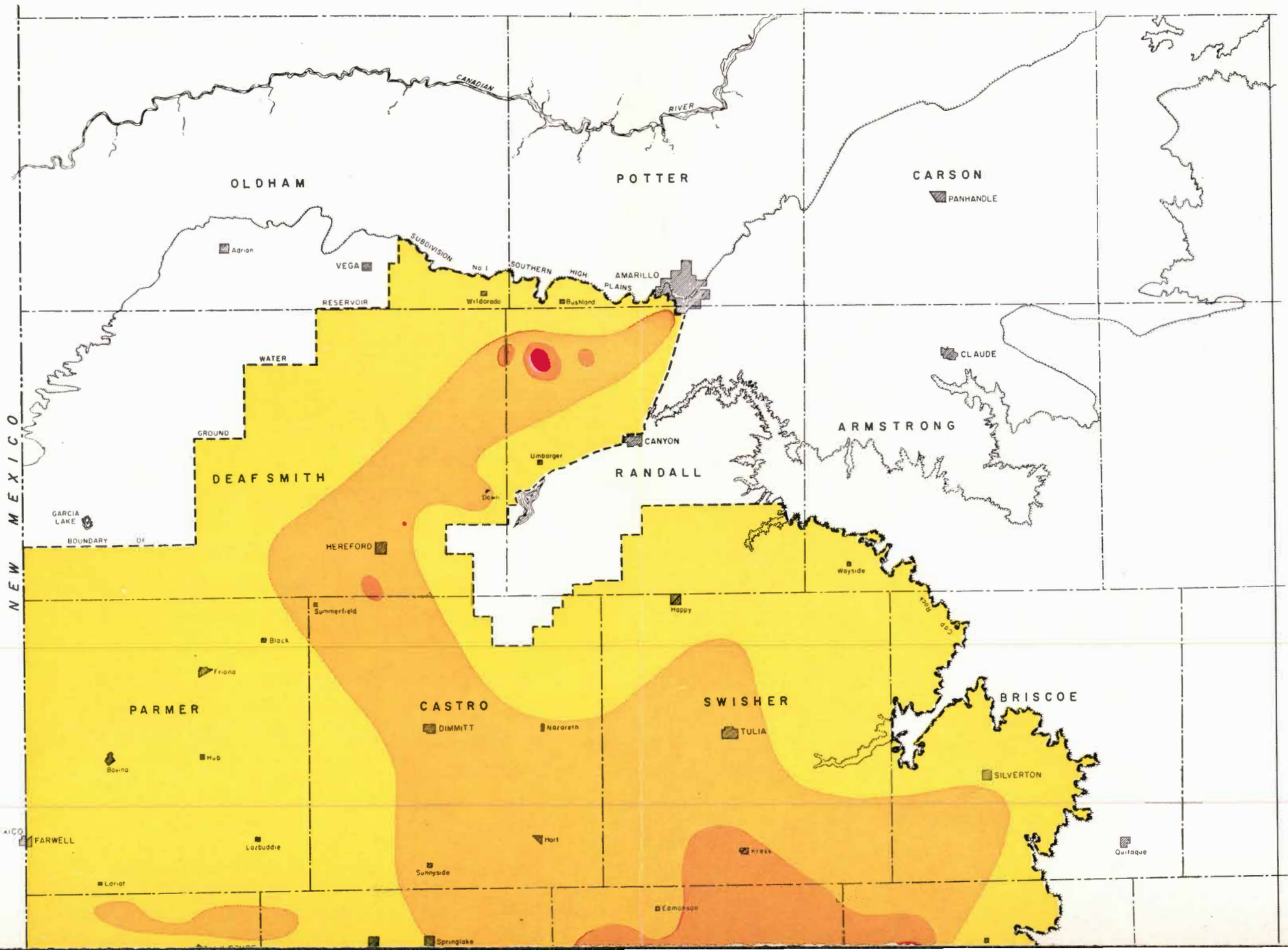
(Continued on Page 4)

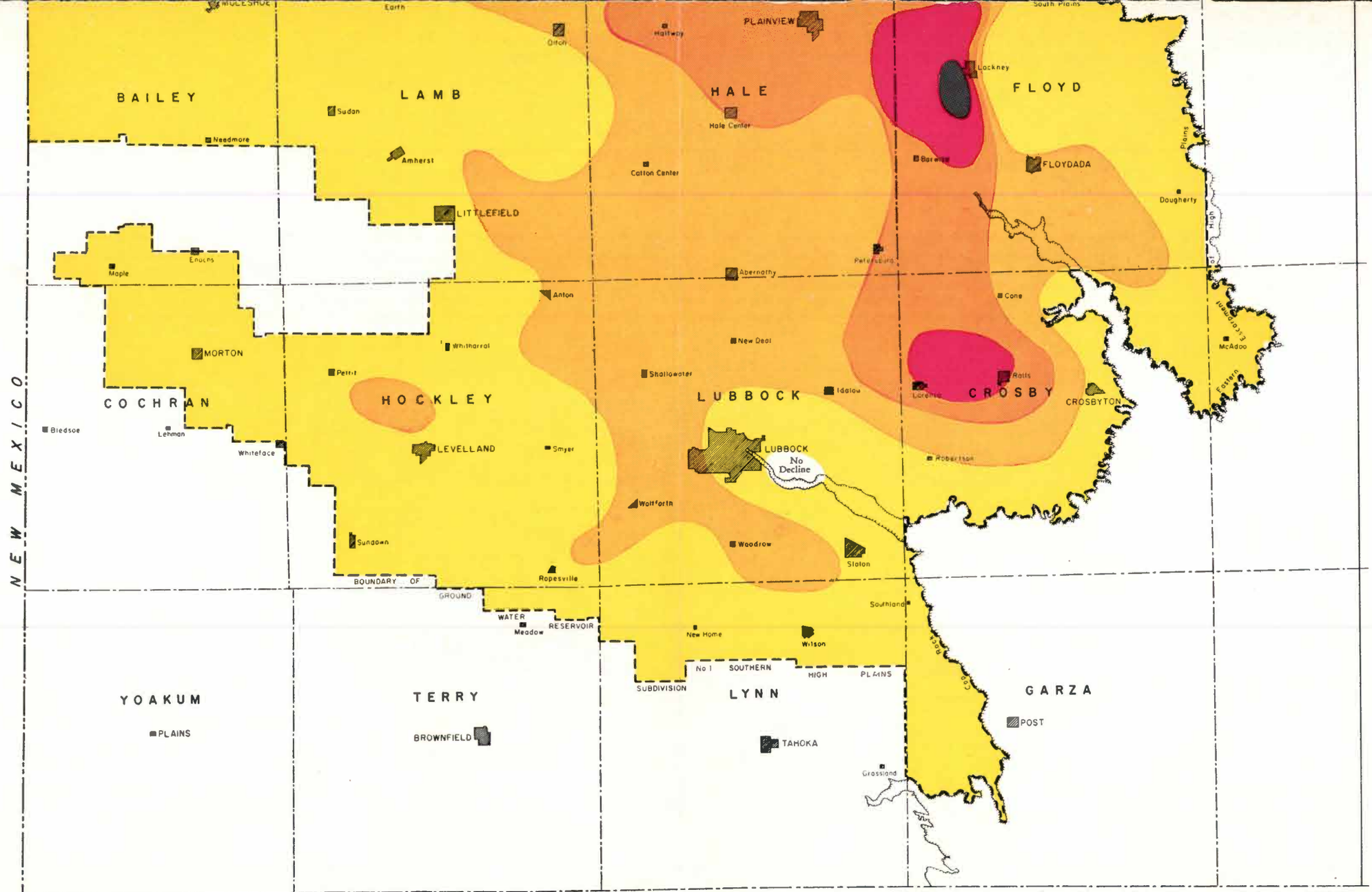
Melvin Potts, Floyd County farmer, utilized the engine from an old tractor to power the 6-inch centrifugal pump with which he re-circulates irrigation "tailwater" to his cropland. The "tailwater" formerly was wasted as it ran from his farm into the road bar-ditch.



The above picture was made looking west from Potts' re-circulating pump. An earthen border along the lower end (south) of his crop rows retains irrigation "tailwater" and directs it to the southeast corner of the farm and a shallow sump. From there it is pumped through an underground pipe to higher land and used.

DECLINE OF THE WATER TABLE
1938 - 1962





EXPLANATION

- FROM 10 TO 40 FEET
- FROM 40 TO 60 FEET
- FROM 60 TO 80 FEET
- FROM 80 TO 100 FEET
- MORE THAN 100 FEET

SCALE

0 5 10 15 20 Miles

PUBLISHED BY

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT

MAY 1962

THIS MAP SHOWS THE APPROXIMATE DECLINE OF THE WATER TABLE IN THE OGALLALA FORMATION DURING THE 24-YEAR PERIOD DESIGNATED. OECLINES WERE COMPUTED BY W.L. BROADHURST FROM RECORDS OF THE TEXAS WATER COMMISSION, THE UNITED STATES GEOLOGICAL SURVEY, AND THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT.

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN, HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ..... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan White ..... Publicity-Public Relations

Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

Well Drilling Statistics For April 1962

During the month of April, 175 new wells were drilled within the High Plains Water District; 15 replacement wells were drilled; and 7 wells were drilled that were either dry or non-productive for other reasons. The County Committees issued 262 new drilling permits.

Permits issued and wells completed for April are listed below by counties:

County	Permits Issued	New Wells Drilled	Replacement Wells	Dry Holes Drilled
Armstrong	0	0	0	0
Bailey	20	10	0	1
Castro	37	9	1	0
Cochran	7	5	0	1
Deaf Smith	21	5	2	1
Floyd	40	18	1	0
Hockley	47	49	4	2
Lamb	19	11	3	1
Lubbock	40	41	3	0
Lynn	8	18	0	1
Parmer	17	5	1	0
Potter	1	0	0	0
Randall	5	4	0	0
Totals	262	175	15	7

GROUND-WATER DEPLETION REVEALED BY WATER-LEVEL DECLINE MAP

By W. L. Broadhurst

Soon after the Water District started operating in April 1952, the directors called a meeting of about 50 business men and land owners to outline a work program to be carried out by the District staff. One of the principal topics of discussion was a detailed inventory of the supply of ground water available for withdrawal and use within the District.

With the accumulation of data, including water-level measurements and drillers' logs of several thousand water wells throughout the District, a series of county maps was prepared and published in the 1955-56 issues of "The Cross Section."

The county maps and the later combined maps of the District showed (1) the thickness of the Ogallala formation, from the land surface to the bottom of the sands; (2) the thickness of the saturated portion of the Ogallala, from the water table to the bottom of the sands as of 1938 before the start of large-scale withdrawals; and (3) maps showing the decline of the water table resulting from the withdrawals.

One of the maps showing decline of the water table from 1938 to 1956 was published in January 1957. Another showing the decline from 1938 to 1958 was published in May 1958.

The colored map in the May 1962 issue of "The Cross Section" shows the decline of the water table from 1938 to January 1962.

The different colors on the map relate to different amounts of decline. Around the edges of the District where the water sands are thin, wells are few or non-existent, withdrawals have been minor, and the decline of the water table has been slight. In west-central Floyd County, an area of early development where large capacity wells are concentrated and where withdrawals have been heavy, the water table has declined more than 100 feet. Throughout the remainder of the ground-water reservoir subdivision the amount of the decline has been almost directly proportional to the development of wells and net withdrawals of water.

In order to interpret the significance of the water-table decline map, computations have been made of the original volume of saturated Ogallala formation and the volume of Ogallala material that has been unwatered within the boundaries of the High Plains Underground Water Conservation District. Total pumpage of water is not the same as total depletion of the reservoir because some of the water pumped returns to the aquifer, especially in the heavily irrigated areas where the soils and subsoils are highly permeable.

The following table gives the calculated percentage of the saturated Ogallala formation that had been unwatered as of January 1962.

County	*Percentage Depleted (January 1962)*
Armstrong	32
Bailey	13
Castro	19
Cochran	20
Deaf Smith	18
Floyd	22
Hockley	30
Lamb	15
Lubbock	44
Lynn	38
Parmer	12
Potter	33
Randall	20
AVERAGE	20

Irrigation development started in 1910, but it did not reach major proportions until the late thirties. However, it is highly significant to note that of the total withdrawals, about 87 percent was pumped during the last 12-year period -- 1950-61 inclusive.

There seems to be no valid reason to stop pumping water for irrigation on the High Plains; but if a favorable agricultural economy is to be sustained, sound efforts must be made to stop waste and make more efficient use of both precipitation and ground water.

"Tailwater"—

(Continued from Page 1)

sults in an optimum monetary return to the owner of the water -- and not from merely saving the water for future use.

Each irrigator can and should use the ground-water resources available to him as wisely as he possibly can.

Melvin Potts solved a major irrigation problem on his farm and made money by doing it. You probably can do the same.

A LITTLE LIFE IS WORTH MORE THAN A LITTLE TIME, CLOSE THOSE ABANDONED WELLS!

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No. 1 "THERE IS NO SUBSTITUTE FOR WATER" *June 1962*

Deep-Well Irrigation Stamp Sought By South Plains Stamp Club

By ALLAN H. WHITE, Jr.

The South Plains Stamp Club in Lubbock is spearheading a drive to have the U. S. Post Office Department authorize a special postage stamp issue commemorating deep well irrigation in the Southwest.

Individuals, mostly students at Texas Technological College in Lubbock submitted to the Stamp Club more than 60 designs for the stamp. Five have been selected and will be sent to the Post Office Department in Washington, D. C. A single design will then be selected by the Post Office Committee on Selection.

Mrs. Ann Adams of Lubbock has been largely responsible for originating the idea to have such a stamp authorized.

Mrs. Adams, a life-long resident of Texas, was reared in Houston. She married a young medical doctor, Rufe E. Adams, during the late 1920's. They moved to Hereford in Deaf Smith County in 1928 and bought an interest in a hospital.

Being accustomed to the relatively damp climate of the Texas coast and the rough terrain and profuse vegetative growth found there, Mrs. Adams disliked the hot, dry and flat plains country. In fact, the High Plains country was so disagreeable to her that it prompted a letter to her mother stating that only those who like sand-storms, tumbleweeds, rattlesnakes, Gila Monsters, and centipedes could possibly like the Plains.

The depression years brought financial disaster to Dr. and Mrs. Adams. As a result, they lost the hospital and their practice in Hereford. They then moved from Hereford and the High Plains of Texas.

After several years of traveling throughout the world serving in the army as a medical officer on the Surgeon General's staff, Dr. Adams, who had obtained the rank of major, met with an early death due to a disease contracted in China.

Mrs. Adams spent the next several years in south Texas and Washington D. C. Through the intervening years, she was in the employment of both the federal and the Texas state governments.

When suffering a rather severe heart attack while residing in Washington, D. C., Mrs. Adams decided to come back to the High Plains of Texas. She moved to Lubbock in 1960.

She had not been in the Texas High Plains for thirty years prior to her move, so she was totally unprepared for the lush irrigated crops that now flourished in the area. She could remember only the sand-storms and tumbleweeds.

Mrs. Ann Adams and F. A. Kleinschmidt, Lubbock members of the South Plains Stamp Club, hold artist's designs which have been submitted to the Postmaster General in Washington in an effort to have a special postage stamp issue printed to commemorate deep-well irrigation in the Southwest. Mrs. Adams originated the idea for the stamp after having been greatly impressed with the results produced by irrigation in the southern High Plains of Texas. Kleinschmidt is a professor on the Texas Technological College faculty and teaches architectural design — he generated interest in students and others to submit designs for the commemorative stamp.

Mrs. Adams, a long-time avid stamp collector, was so impressed with her newly-found High Plains' country that she convinced her fellow members of the South Plains Stamp Club that the results of irrigation was too overwhelming to keep to themselves, they should tell all the nation about this wonderful thing that had come to pass — deep well irrigation.

The idea grew until today, after much work and effort on the part of many individuals, the commemorative stamp is close to becoming a reality.

The Stamp Club is asking that all persons, organizations, public officials and stamp collectors make known their wish that the stamp be issued by writing to their Congressional Representative and Senators Ralph Yarborough and John Tower.

High Plains' Minister Discusses The Stewardship Of Water

By R.D. Longshore Pastor
First Baptist Church, Littlefield, Texas

The Bible has much to say about water. Jesus spoke of giving a cup of cold water in his name. Upon one occasion he asked a scarlet woman for a drink of water. He spoke of living water, spiritual water, the water of life. The rich man in hell begged for a drop of water to cool his tongue. Water was used by the Lord to destroy the world in the days of Noah.

In First Kings 17 we find the prophet of God, Elijah, in a state of emergency because of a water shortage. The brook from which he drank dried up and thus Elijah had a critical problem on his hands.

It is not beyond the realm of possibility for the entire High Plains' area to experience just such an emergency. Suppose our water sources, wells, should dry up and there be no rain for a few years. Why, our entire area would be converted into a dust bowl over night. One does not have to reflect upon this possibility very long until he realizes that our total economy depends upon water. Perhaps this is not entirely true for any economy depends upon a combination of factors. However, without water all else could not make up the difference. Some things we can do without—water in abundance we must have in order to survive.

Now from the ministers' standpoint it is highly important that we recognize the source of water. God, who made heaven and earth, made the sea. He is the author of natural laws — laws controlling the seasons and the rain or the lack of it. In Jeremiah 5:24 the prophet recognized God as the giver of rain when he admonished the people, "Let us now fear the Lord our God that giveth rain". The writer of the Gospel of Matthew said, "He maketh it rain upon the just and the unjust". We often sing the old song, "There Shall Be Showers Of Blessing, This is the promise of love. There shall be seasons refreshing, sent from the Saviour above". In public prayers we often hear an expression of gratitude to God for the rain he has sent. The songs we sing, the prayers we pray, and the Bible we read all speak of God as the source of water. Since we are so totally dependent upon the Lord for survival, we ought to honor God with our lives in service and with our substance as faithful stewards.

It is entirely within the scope of God's will for man to develop every means possible to conserve the water God gives. Every year there is enough

(*CONTINUED ON PAGE 4*)

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN, HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer .... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan White ..... Publicity-Public Relations
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside, Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 .. Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 .... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 .... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 .... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 .. Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 . Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 .... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 St. Rt. 2, Littlefield, Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 .... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 .... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 .. Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

Efforts Intensified By District To Have Abandoned Wells Closed Properly

The High Plains Underground Water Conservation District is making a concerted effort to have abandoned and uncovered wells in the District properly closed or covered.

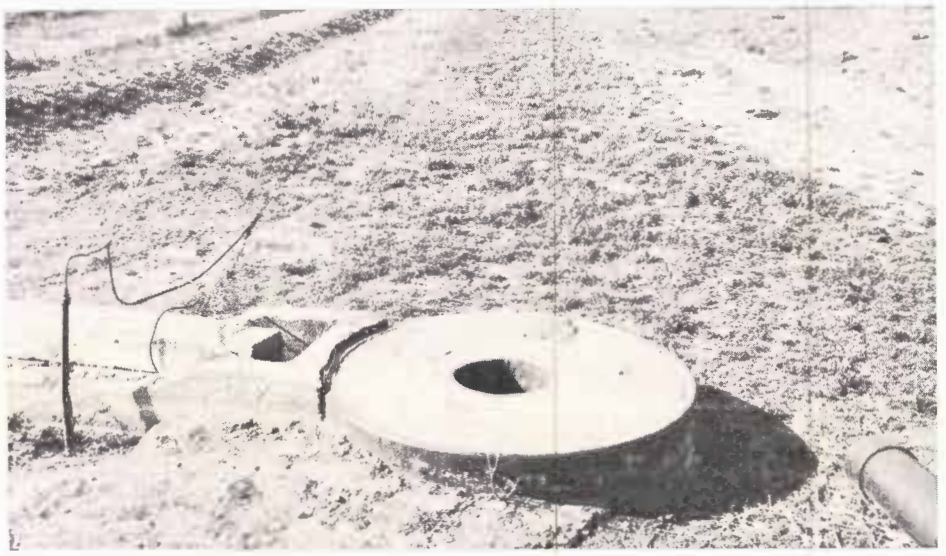
When a well is discovered to be open or improperly closed, the well owner is served an official notice from the District. The notice simply states that a problem exists and offers the landowner a 10-day period of time in which to close the well. If the work has not been done at the expiration of the allotted time period, the District may then go onto the land and close the well. Expenses incurred by the District in closing an open well is charged to the landowner and secured by a lien on the land. The lien may not exceed $100 for each well.

The procedure outlined above is being followed by the District in hopes that the chance of some youngster falling into an open well is minimized.

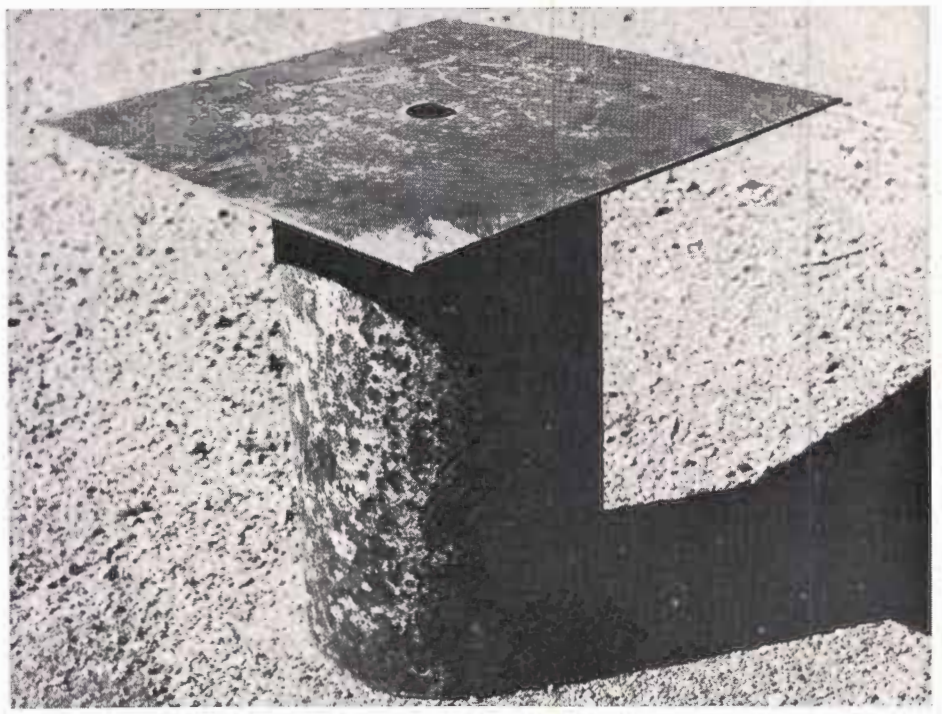
Procedure to be used in properly covering or closing wells is set forth in the rules of the High Plains Water District. A copy of the rule is enclosed with each notice.

Won't you close the open well on your land without having the Water District spend time, money and effort insisting that the job be done? Anyway, you've been intending to do it for a long time now.

The most important thing, is to cover the well so that inquisitive youngsters will be unable to uncover it. Also, it's important to remember that today is the time for the work to be done. Tomorrow might be too late for some small boy or girl.



Above is one of hundreds of abandoned irrigation wells that can be found throughout the southern High Plains' area. These wells are primarily a threat to the continued safety of residents of the area, and especially to its children.



The High Plains Underground Water Conservation District is insisting that abandoned wells be closed in a manner prescribed by state law and by the District's rules and regulations. A semi-permanent plug is one satisfactory method of closing a well that is cased. The plug above is made by welding a heavy metal plate over one end of a length of 14-inch steel pipe. The pipe end of the plug is easily slipped inside standard 16-inch well casing. The plug weighs almost 100 pounds and could not be removed by a child. The small hole in the top is provided for easy measurement of water levels in the well. By decreasing the size of the pipe and increasing its length, such a plug can be made to fit smaller wells.

"WATER CONSERVATION" DEMONSTRATION PREPARED BY 4-H CLUB BOYS

Two Lockney High School students have placed seventh among twenty three teams contesting for top honors in the Water and Soil Conservation demonstrations at the State 4-H Club Roundup. The Roundup was held this month at Texas A & M College at College Station, Texas, to choose a team from among the large number of excellent demonstrators to represent Texas in a national meeting.

Steve Belt and Larry Golden, who live in the Aiken Community of Floyd County, built for their project a model of an irrigated field. They installed a system for recirculating "tailwater" by using an air-conditioner pump and lengths of small plastic pipe. They obtained statistical data through their Demonstration Coach, Darrell Smith, Assistant Agricultural Agent for Floyd County, concerning the decline of the ground-water table and other information related to why water conservation is needed on Floyd County farms. With their demonstration they took top honors in the District contest at Texas Tech College in Lubbock and then on to place seventh in the State, competing against other District winners.

Steve is the son of Mr. & Mrs. J. R. Belt, Jr., and Larry is the son of Mr. & Mrs. Oscar Golden. Mr. Belt is a member of the Board of Directors of the High Plains Underground Water Conservation District.

Below is reproduced the demonstration script, as prepared and delivered by Steve and Larry.

Steve: "I am Steve Belt and my partner is Larry Golden. We live in the Aiken Community and are members of the Lockney 4-H Club in Floyd County.

Larry: "Floyd County, according to the High-Plains Underground Water Conservation District, has already used 30 percent of the underground water available for use. This is a large amount and requires positive action for water conservation. In 1938, Floyd County had 14-million acre-feet of water available. Latest test figures show approximately 30 percent of this water has been used. About 50 percent of this use has occurred in the last seven years, or since 1955.

Steve: "These figures bring out one of the biggest problems facing farmers in Floyd County. What can our farmers do to conserve water? 1. Use all crop residues such as grain sorghum stubble and cotton burs to hold rainfall. This practice also can bring about increased yealds. 2. The proper management of fertilizer and water for optimum yield. Fertilizer can increase yields per acre-inch of water applied. The excessive use, or waste of water and fertilizer can bring about decreased yields. 3. The use of underground irrigation pipe. Underground irrigation pipe will increase our water available for crop irrigation by as much as 15 to 30 percent. 4. Contour farming. 5. Field-leveling and bench-leveling to provide for more equal distribution of water. 6. The use of recirculation systems.

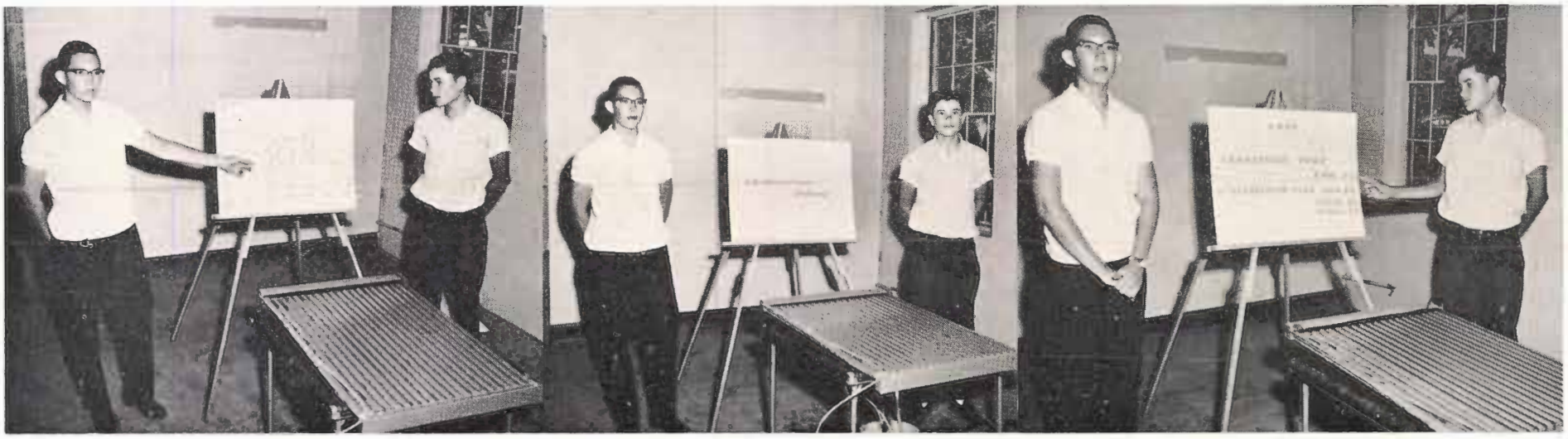
Larry: "The use of recirculation systems can be one way to conserve water. These systems can be used effectively on land where steeper slopes are farmed and where the expenses of leveling are prohibitive or where the farmer does not have finances to carry out such a program. We would like to demonstrate to you a system of recirculation. (Larry points to chart) 1. Field. 2. Well. 3. Border across the end of the field. 4. Centrifugal pump.

Steve: "The water is pumped onto the field from underground water. The excess tail water is retained by the border and drains to the pit to be picked up and carried back to our irrigation system. The cost of carrying out such a system is as follows: Centrifugal pump-$450.00, 6" Aluminum pipe 1600' - $1600.00, total-$2050.00.

Larry:: "On the Madison and M. B. Newton farm in Hockley County, this farmer saved a total of 4.6 acre-feet of water which is equal to about 30 percent of the ground water pumped. This amount of run-off water is probably high because the field was in onions and more irrigation water is used.

Steve: "A study made on the returns from irrigation on cotton and grain sorghum show that the value of an acre-foot of water applied to cotton would be $62.88 over dryland, and $10.13 per acre-foot over dryland grain sorghum. Using the figures that were collected at Mr. Newton's farm, the tail water saved would be worth: Cotton-$289.25, Grain Sorghum-$46.60. At this rate it would not take long to pay for this investment in handling tail water.

Larry: "Water is one of our most important resources. We have already used 30 percent of the available water and each farmer should use his water wisely. Are there any questions?"



Steve Belt, left, and Larry Golden, 4-H Club members from Lockney in Floyd County, are shown in the three pictures above as they demonstrate their "water conservation" project prepared for 4-H Club District and State contests. The boys wrote the script for the demonstration, built the model shown in the foreground, which simulates farm land that has been plowed into furrows and beds, and personally presented the demonstration at both Texas Technological College in Lubbock and Texas A & M College at College Station. Utilizing irrigation "tail water" is the theme of the demonstration — a very timely project for Steve and Larry.

WAIT! DON'T BURN THAT WHEAT STRAW

Bob Mooney, left, watches as E. H. Youts strikes a match to set fire to a field of wheat straw. Actually the picture is one that was posed for purposes of illustrating that some farmers do burn the straw after cutting their wheat. This is a bad practice. The straw should be plowed into the land as a mulch to improve the soil's water-intake rate and to provide necessary organic matter. Youts, a former Castro County Committeeman of the High Plains Water District, and Mooney, his son-in-law, farm near Dimmitt. They plan to properly utilize their wheat straw.

Wasting Water - Good Management Don't Mix

Waste of irrigation water is a luxury that most southern High Plains' farmers can not afford.

Our supply of ground water is replenished naturally in quantities which equal only a fraction of the quantities being removed from the reservoir by pumps.

Only last month, the High Plains Water District published a map that shows the decline of the ground-water table since 1938. In one area of the District, the water level has declined more than 100 feet during the past 24 years. Practically all of the decline has occurred since the end of World War II when large-scale well development commenced.

Ground water has no economic value until pumped to the surface and put to some beneficial use; however, ground water that is pumped and not used is waste.

To approach the goal of "maximum efficiency" from water will for most be realized only through better management.

Good management involves the prevention of irrigation "tailwater" escaping the land being watered. It also involves much more — the timeliness of water application, quantity of water required, maintaining proper soil fertility levels in order to obtain proper water utilization, and other considerations. All these phases of management will be considered by a good manager.

Maximum return in crop yields per inch of water used should become the criteria by which an irrigator may judge his own operation.

If all irrigators would use only the water necessary for optimum crop production, and minimize waste, our area could enjoy a high standard of living for a much longer period of time than will be possible without proper management.

PASTURELAND WATERED WITH IRRIGATION "TAILWATER"

By ALLAN H. WHITE, Jr.

Utilizing irrigation "tailwater" makes money for many farmers in the southern High Plains' area, and Carl Schlenker who lives about 12 miles west of Friona in the Rhea Community is in this catagory.

Schlenker, who is a former Committeeman in Parmer County for the High Plains Underground Water Conservation District, has two phases to his operation — agriculture and livestock. Of his 960 acres of land, about 302 acres is still in native-grass pasture. He maintains the native-grass pastureland to graze his herd of registered polled Herefords.

So far this year, Schlenker has received less than one inch of rainfall; consequently, most of his pastures are badly in need of rain. However, there is a ray of light in this dark picture.

Across the low side of one quarter-section of cultivated and irrigated land, Schlenker has a small 17-acre tract of native grass. He did not cultivate this land thinking that it might be used in a plan to retain "tailwater" on his land as he irrigated the cropland.

It has worked out that the 17-acre tract of native grass is one of the best money-makers Schlenker has developed. The grass flourished as irrigation "tailwater" meandered across it from the cropland. At the time of writing this story, Carl has 55 mother cows and calves (110 head) on the 17-acre pasture and they have been there for two weeks. Schlenker thinks he can get another two weeks of good grazing before he will need to move the livestock.

In fact, to point out the value of the "tailwater" running onto the grass, Schlenker states, "I believe that I now have more grazing from the 17 acres than I had previously from the entire 160 acres. Especially in a year such as this, when rainfall is less than average.

If I had not had the 17-acre pasture this year, it would have meant selling off most of my herd of registered mother cows."

According to Schlenker, there are dangers that must be recognized in using irrigation "tailwater" to water grass pastures. An adequate distribution system should be developed so that the "tailwater" will not stand for too long in any one area and result in damage to the grass. Schlenker has one small area where water stands; consequently, the soil has become water-logged, killing the grass and allowing obnoxious weeds to take its place. Also, when grass is watered, it looks extremely lush — sometimes more so than it is. Close observation should be maintained to prevent the likelihood of overgrazing.

Schlenker says that when he originally cultivated the cropland, he primarily left the native-grass pasture merely to provide a place to run "tailwater" and "still keep it on my place." Now, however, he has found that the pasture was also a wise economic move on his part.

Carl thinks for those who have an irrigation "tailwater" problem on their land who are interested in livestock, that it would be good business for them to at least look into the possibility of putting in a permanent grass pasture at the low side of their farms.

It has paid off for Carl Schlenker, and with proper planning and management it could pay off for you.

Carl Schlenker, Parmer County farmer-rancher, inspects native grass growing at the low side of irrigated cropland on his place. The grass is watered by irrigation "tailwater" meandering over it after the water leaves the crop rows. According to Schlenker, a 17-acre tract of native grass watered with "tailwater" produces more grazing than does 160-acres of pasture that is not irrigated.

MINISTER–

(*CONTINUED FROM PAGE* 1)

rainfall in our country to meet the needs of agriculture, industry, and domestic purposes, but the problem is storing up that water and channeling it to areas where it is needed. Thus we must dam up the rivers and streams, build giant reservoirs, devise methods of filtering run-off water and storing it underground.

Using water wisely is a part of a water conservation program. Waste is sinful. Allowing water to run out of fields unto road ditches is poor stewardship. Those of us who allow water to run in the gutters after saturating our lawn with sprinklers are not without guilt.

Going back to our story of Elijah once more we note that God sent the drought because of sin and He sent the rain when the people repented.

I believe that there is a definite relationship between the spirituality of the people and the abundance of water to meet our needs.

PLEASE CLOSE THOSE ABANDONED WELLS ! ! !

Water-Well Drillers Win Against Texas

The Texas Water Well Drilling Contractors have won a first-round decision with the State of Texas in their bid for reduced vehicle registration fees on their trucks and trailers.

In a Travis County District Court opinion handed down June 5th, the judge authorized the issuance of $5 license plates for all vehicles used solely for the purpose of drilling water wells.

According to J. D. Kirkland, President of the driller's association, the State's Attorney Generals office plans to appeal the District Court decision.

Kirkland said, "the litigation has been expensive and will continue to be expensive for the next few months if the appeal is not abandoned by the State; however, the favorable decision means for most members of our association a savings of several hundred dollars per year in registration costs. We were naturally pleased with the Courts' decision."

T. W. C. A Head Honored

Judge J. E. Sturrock, General Manager of the Texas Water Conservation Association in Austin, received special recognition from the National Rivers and Harbors Congress during its recent annual meeting in Washington, D. C.

The Congress presented Judge Sturrock with the Willard J. Breidenthal Medal of Service to the Cause of Water Conservation.

The citation read:

"To John Ellington Sturrock of Austin, Texas, law giver and jurist. For unselfish devotion and high accomplishment in public service with respect to water. Director of the National Rivers and Harbors Congress and a leader in the field of water conservation."

Judge Sturrock has been Secretary-Treasurer and General Manager of the Texas Water Conservation Association since its inception in 1944. He is a native Texan. He graduated from Tyler Commercial College and was admitted to the Bar of Texas in 1931.

High Plains Underground Water Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No. 2 "THERE IS NO SUBSTITUTE FOR WATER" *July 1962*

August 6th, Brief Dead-Line In Underground Water Depletion Case

Transcript of the proceedings of the underground water depletion case, tried during January of this year in the U. S. District Court at Lubbock, has been received.

The suit, sponsored by the High Plains Underground Water Conservation District, is against the U. S. Government and is an attempt to have underground water in the southern High Plains of Texas placed in a catagory with other natural resources which are allowed deductions on federal income tax returns.

At the close of the lengthy court trial, Joseph B. Dooley, Judge of the U. S. District Court for the Northern District of Texas, instructed attorneys for both Defendent and Plaintiff to file written briefs of the trial with the Court sixty days after receipt of the transcript. The sixty-day period will expire August 6th.

According to word received from attorneys for the Water District, the Plaintiff's brief is being completed and will be submitted to the Court on the prescribed date.

Additional instructions from the Court give each side twenty days following the main-brief due date for preparation of a reply to the other's main brief.

Annual Water-Level Measuring Program To Be Expanded By Adding New Observation Wells

The Texas Water Commission and the High Plains Underground Water Conservation District have entered into a co-operative agreement to expand the annual water-level measuring program within the boundries of the Water District.

In 1934, the United States Geological Survey and the Texas Water Commission (formerly the Texas State Board of Water Engineers) started measuring depths to water in wells in the High Plains of Texas. As early as 1913, some measurements by the University of Texas were recorded, and as early as 1912, other measurements were made by the Texas Land and Development Co. (TL&D). Since 1936, studies of the source and supply of water in the Ogallala formation have increased with the development of irrigation, and it has been evident that the annual program of measuring depths to water from land surface in observation wells is one of the more important phases of these studies.

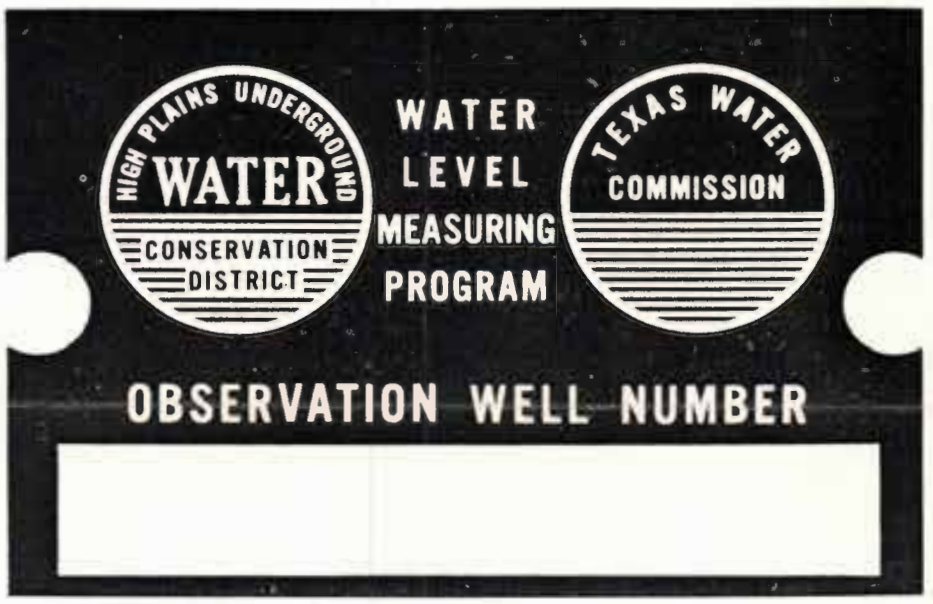
Depth-to-water measurements along with drillers' logs show the thickness of the water-bearing formation. Combining this information with permeability tests and yield of formation tests permits calculation, with a reasonable degree of accuracy, of the amount of recoverable water in storage in the water-bearing formation.

Year-to-year measurements in the observation wells are extremely important. These measurements make it possible to keep a continuous inventory of the water available for pumpage, as well as establishing a trend in the rise or decline of the water table. Many of the present observation wells have records dating back 25 years or longer. Not only have these records proven beneficial to well owners, but also to farm loan agencies, banks, real estate firms, industries, municipalities and others.

Studies have shown that the month of January is usually the best time to make measurements in observation wells. At this time of the year most of the wells have had several weeks, or months, of rest from the previous summer's pumping, and pre-planting irrigation has yet to begin; consequently, the water levels are nearer the static level at this period than at any other of the year.

The procedure for measuring the water level in an observation well is normally to lower a steel tape dressed with carpenter's chalk into the well through the air-line hole or other opening between the pump column pipe and the casing. The tape is withdrawn from the well and the water line on the tape is observed. The amount of wet tape is subtracted from the amount of tape lowered into

(Continued On Page 4)



Shown is a metal plate that will be used to identify wells in the soon-to-be-expanded observation-well measuring program. The plates are 2-inches X 3-inches in size, and one will be attached to the concrete pump base of each well.

Extension Service Publishes 1962 High Plains Irrigation Survey

The Texas Agricultural Extension Service has released their 1962 edition of the "High Plains Irrigation Survey."

David W. Sherrill, Area Irrigation Specialist for the Extension Service stationed at Texas Technological College in Lubbock, compiled the statistical data revealed in the survey from estimates supplied by County Agricultural Agents.

The survey is for an area comprising 42-counties roughly from the Oklahoma panhandle to the Midland-Odessa area and from the New Mexico boundary line to the caprock.

According to the survey, as of June 1962, there were 49,966 irrigation wells in the area. There were 4,974,036 acres of land irrigated, and 9,229 miles of underground pipe installed for the purpose of transporting water from wells to crops.

The figure representing the number of wells reflects an increase of about 5.2 per cent over the number estimated in June 1961, or 2,464 wells.

The number of miles of underground irrigation pipe installed in the 42-county area during the past year is 997 miles. if all the underground pipe in the High Plains were strung out, end to end, there would be enough to reach completely through the Earth and have about 2000 miles of pipe remaining.

Shown below is a table of figures taken from the compiled estimates for the thirteen counties within the High Plains Water District.

County	Irr. Wells	Total Acres Irr.	Miles of Underground Pipe	Acres irrigated				
				Cotton	Grain Sorghum	Wheat	Vege-tables	Others
Armstrong	166	20,312	35	512	12,300	6,000		1,500
Bailey	1,710	165,000	300	70,000	70,000	9,000	1,870	11,410
Castro	2,800	408,000	530	59,283	150,000	60,000	7,050	38.100
Cochran	1,200	105,000	280	65,000	28,942	3,000	58	8,000
Deaf Smith	2,300	365,000	450	11,187	96,041	76,638	17,500	139,089
Floyd	2,819	305,500	466	87,184	76,613	42,000	825	17,535
Hockley	5,000	250,000	575	174,783	53,778	400	325	7,365
Lamb	5,390	360,000	1,140	155,000	108,000	4,000	375	25.300
Lubbock	5,570	330,000	1,445	200,000	106,000	1,500	1,100	21,350
Lynn	2,065	85,000	150	85,000	3,000		15	1,985
Parmer	2,475	417,500	780	51,686	170,000	92,500	1,890	35,000
Potter	34	13,250	15	40	6,500	5,500		580
Randall	780	85,000	95	1,600	51,000	25,000		6,500
Totals	32,309	2,909,562*	6,261	961,275	932,174	325,538	31,008	313,714

*Difference in acres irrigated and total acres of various crops irrigated accounted for by soil bank acreage and diverted acres.

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer .... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan H. White, Jr. ..... Director Of Education
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Wanda Martin ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 .. Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 .... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 .... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 .... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 .... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 .... Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 .... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 ..... Littlefield. Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 .... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 .... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

SOIL MOISTURE AND FE

By James S. Newman
Assistant Agronomist, Substation No. 8
Texas Agricultural Experiment Station, Lubbock, Texas

In tests conducted during 1960 and 1961, a proper balance between soil moisture and fertility was found to be necessary for maximum moisture efficiency. The fertility level necessary for maximum moisture efficiency was found to increase as the moisture level increased. The highest average yield and the greatest net profit during both years was produced by cotton fertilized with 120 pounds of nitrogen and 60 pounds of phosphorus and irrigated twice during the summer.


JAMES S. NEWMAN

Both tests were planted the first week of May at the rate of 25 pounds of acid-delinted seed per acre. The tests were conducted on level Amarillo loam soil that had been planted to grain sorghum prior to the 1960 test and cotton prior to the 1961 test. The four levels of fertilizer used (0-0-0, 40-60-0, 80-60-0 and 120-60-0) were applied as a preplant application both years with chisels set on 20 inch centers. Anhydrous ammonia and phosphoric acid were used as sources of nitrogen and phosphorus, respectively.

The moisture levels used in the 1960 and 1961 tests were, (M1) Dryland (1961 only); (M2) Preplant irrigation only; (M3) One summer irrigation at peak bloom (approximately 25-30 days after 1st bloom); (M4) One summer irrigation at first bloom and a second irrigation at peak bloom; (M5) One summer irrigation at first bloom, peak bloom and August 25 (cut-off date),and (M6) One summer irrigation every 7-10 days, starting at first bloom and ending August 20-25. Each moisture level in the 1960 test was irrigated before planting with 6 inches of water. In the 1961 test, only one moisture level (M2) was irrigated before planting.

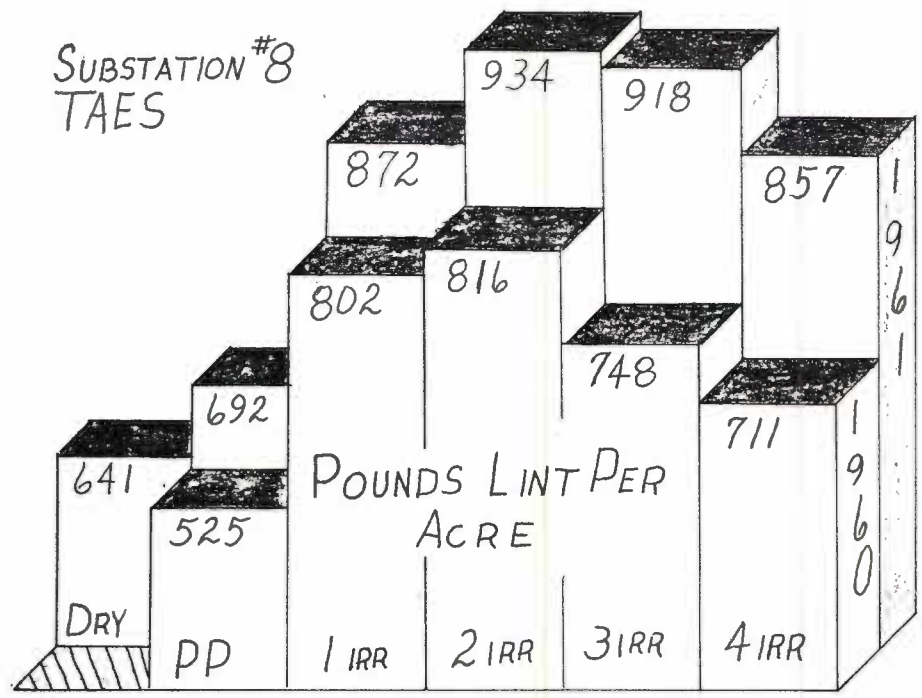
Four varieties of different maturities were planted within each different moisture and fertility level. In order of their maturity, early to late, these varieties were: Gregg, Lankart 57, Austin and Blightmaster.

Total rainfall received during the period contributing to the tests (November thru October) was 16.42 inches in 1960 and 18.12 inches in

Table I. Pounds of Lint Produced Per Inch of Total Water (Rainfall and Irrigation for Six Moisture Levels in the 1960 and 1961 Moisture-Fertility Test

	Moisture Levels					
	M1	M2	M3	M4	M5	M6
	Dryland	Pre-plant Only	1 Irr.	2 Irr.	3 Irr.	4 Irr.
1960	—	27.8	35.0	30.3.	24.2	20.4
1961	53	45.0	54.0	49.0	46.0	39.0

Chart 1. Average Yield in Pounds of Lint Per Acre For Each Moisture Level in The 1960 and 1961 Moisture-Fertility Test on Cotton



TILITY STUDIES ON COTTON -- SUBSTATION NO. 8

1961. Both years had unusually favorable rainfall during June and July.

Moisture Levels

The average yield in pounds of lint per acre for each moisture level in the 1960 and 1961 tests is given in Chart 1. The highest average yield during both years was produced by cotton irrigated twice during the summer. This treatment was apparently the optimum moisture level since cotton irrigated with *more or less* water produced smaller yields.

Although cotton irrigated twice during the summer produced the highest average yield, it did not produce as efficiently as did cotton irrigated only once during the summer (at the peak-bloom stage of growth). Moisture efficiency in pounds of lint produced per inch of total water (rainfall plus irrigation) for each moisture level is given in Table I.

Varieties

In both 1960 and 1961, all four varieties responded the same to different fertility levels; however, some varieties did better than others within different moisture levels. The test conducted in 1961 showed the only apparent difference in variety performance to different moisture levels. The 1961 variety yields within each moisture level are given in Table II. There was very little difference in yield between the four varieties when grown under dryland, preplant irrigation only and 4 irrigations. The late maturing varieties produced better than the medium and early varieties when irrigated one, two and three times. Yields from the early and medium varieties produced highest yields when irrigated twice during the summer and late maturing varieties produced highest yields when irrigated three times during the summer.

Fertility-Moisture Balance

Each moisture level in the 1960 and 1961 tests contained cotton fertilized with each of the following levels: 0-0-0, 40-60-0, 80-60-0 and 120-60-0. The four levels used measured nitrogen variables primarily, since 60 pounds of phosphorus was common to all except the "no fertility" level of fertilizer.

In general, for efficient cotton production increased amounts of irrigation water required increased amounts of fertilizer. "Dryland" and "preplant only" moisture levels produced most efficiently when fertilized with 40-60-0. In neither the 1960 nor 1961 tests, did additional fertilizer significantly increase cotton yields in these plots. In 1960, one irrigation was balanced with 80-60-0 and in 1961, 120-60-0. In both the 1960 and 1961 tests, two, three and four irrigations produced more efficiently when fertilized with 120-60-0.

Yields in pounds of lint per acre for the 1960 and 1961 Moisture-Fertility Tests are given in Table III.

Net Operating Returns

In the 1961 test, the net operating returns were figured for each of the six moisture levels. It was calculated by subtracting fertilizer, pumping, harvesting and production costs from the gross returns per acre.

The net operating return for the six moisture levels in the 1961 test is given in Chart 2.

Table II. Pounds of Lint Per Acre for Four Varieties of Cotton Grown Under Six Moisture Levels in 1961.

Varieties	Moisture Levels M1 Dryland	M2 P.P. Only	M3 1 Irr.	M4 2 Irr.	M5 3 Irr.	M6 4 Irr.	Variety Avg.
Gregg	625	671	812	905	828	894	789
Lankart 57	619	662	815	914	888	829	788
Blightmaster	698	690	892	922	956	818	829
Austin	624	744	969	995	996	887	869
Average	641	692	872	934	918	857	

Table III. Yield in Pounds of Lint Per Acre for 1960 and 1961 Moisture-Fertility Test on Cotton.

Fertility Levels	Moisture Levels M1 Dryland 60	61	M2 Pre. 60	Pl. 61	M3 1 Irr. 60	61	M4 2 Irr. 60	61	M5 3 Irr. 60	61	M6 4 Irr. 60	61
0-0-0	—	626	500	670	706	802	812	803	746	851	767	839
40-60-0	—	677	566	726	792	916	802	937	731	949	639	813
80-60-0	—	660	508	622	859	850	729	937	690	867	651	835
120-60-0	—	602	525	748	852	920	921	1032	825	1004	788	942
Average	—	641	525	692	802	872	816	934	748	918	711	857

Table IV. Average Micronaire Values for Six Moisture Levels in the 1960 and 1961 Moisture-Fertility Tests.

	M1 Dryland	M2 Pre-Pl. Only	M3 1 Irr.	M4 2 Irr.	M5 3 Irr.	M6 4 Irr.
1960	—	3.9	4.3	3.9	3.6	3.4
1961	3.7	3.6	3.2	3.1	3.2	2.9

Table V. Average Lint Percent for Six Moisture Levels in the 1960 and 1961 Moisture-Fertility Tests.

	M1 Dryland	M2 Pre-Pl. Only	M3 1 Irr.	M4 2 Irr.	M5 3 Irr.	M6 4 Irr.
1960	—	24.8	23.2	23.9	22.5	22.1
1961	23.8	23.4	21.2	21.4	20.4	20.0

Micronaire

In both the 1960 and 1961 tests, the amount of moisture was the only variable that affected micronaire. Values were found to decrease as the amount of water increased. The average micronaire value for the different moisture levels in the two tests are given in Table IV.

Lint Percent

The amount of moisture was the only variable that affected lint percent (gin turn-out). The lint percent was found to decrease as the amount of water increased. The average lint percent for the different moisture levels in the two tests are given in Table V.

Staple

Fiber length of cotton irrigated during the summer was significantly longer than cotton fiber grown under dryland or preplant irrigation only. Fiber length was not affected by fertility levels.

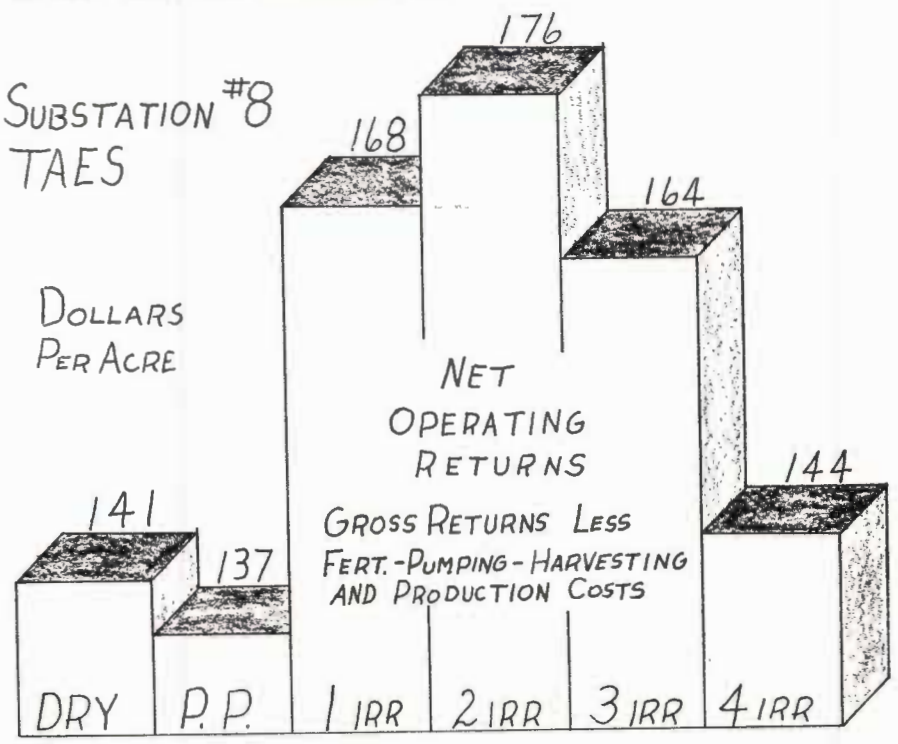
Grade

In the 1960 and 1961 tests, grade was not significantly affected by different fertility or moisture levels.

Discussion

Results obtained from the 1960 and 1961 test should be considered tentative until other tests are conducted.

Chart 2. Net Operating Return in Dollars Per Acre for Six Moisture Levels in the 1961 Cotton Moisture-Fertility Test.



Well Drilling Statistics For May & June

During the month of May, 120 new wells were drilled within the High Plains Water District; 16 replacement wells were drilled; and 12 wells were drilled that were either dry or non-productive for other reasons. The County Committees issued 139 new drilling permits.

In June, 195 new wells were drilled in the District; 20 replacement wells were drilled; and 9 dry holes drilled. The Committees issued 120 new permits.

Permits issued and wells completed for May and June are listed below by counties:

County	Permits Issued May	June	New Wells Drilled May	June	Replacement Wells Drilled May	June	Dry Holes Drilled May	June
Armstrong	0	0	0	0	0	0	0	0
Bailey	13	2	0	15	3	2	1	0
Castro	3	16	12	16	1	2	0	0
Cochran	15	10	5	8	1	0	0	0
Deaf Smith	19	12	10	10	6	1	0	1
Floyd	5	14	18	1	2	0	0	0
Hockley	20	14	37	21	0	0	4	2
Lamb	15	12	1	26	0	7	0	5
Lubbock	20	16	26	28	1	1	5	1
Lynn	4	0	6	14	0	0	1	0
Parmer	15	16	0	42	1	7	0	0
Potter	0	0	0	0	1	0	0	0
Randall	10	8	5	14	0	0	1	0
Totals	139	120	120	195	16	20	12	9

"Tailwater" Re-Circulation System Paying Dividends For Dick Godwin

In April 1962, Dick Godwin, Deaf Smith County irrigation farmer, installed a "tailwater" re-circulating system.

The High Plains Underground Water Conservation District installed a flow-meter in the discharge line of the re-circulation pump to calculate the amount of irrigation "tailwater" salvaged and pumped back to the cropland through the system.

The story of Godwin's installation appeared in the April 1962 edition of "The Cross Section."

On July 23rd, Godwin brought his records up to date in order that we might obtain a report on the operation of the system.

Since April, he has pumped 175 acre-feet of "tailwater" through the system. The pump has been operating only a part of the time until just recently when the stage of crop growth put all the irrigation wells into full use. Now, the re-circulation system will probably be used continuousiy until the end of the season.

Godwin reports that his "tailwater" pump handles about 1200 gallons of water per minute and has been worth about the value of two additional irrigation wells.

Butane fuel is used to power the re-circulation pump engine. Godwin reports that the engine used 2400 gallons of fuel while pumping the 175 acre-feet of water. Cost of the fuel, $168.

Assuming water for irrigation to be valued at $20 per acre-foot, the water so far salvaged through the Godwin system would have a total value of $3000. After subtracting the $168 for fuel, the net saving, or profit, would amount to $2832.

Total capital outlay for the system was about $15,000. However, this figure is inflated because it includes 1 1/2 miles of underground pipe of which 1 mile was needed on the farm regardless of whether or not the re-circulation system was installed.

Dick Godwin, Deaf Smith County irrigator, is shown as he records the number of gallons of "tailwater" pumped back to cropland through his re-circulation system. The High Plains Water District is furnishing, on a temporary basis, the flow-meter being used by Godwin to calculate the quantity of water.

Observation Wells—

(Continued From Page 1)

the well, and the remainder is the depth to water.

Several factors will be considered in the selection of additional observation wells. Of prime importance is co-operation from land-owners and tenants. In order that a general pattern of fluctuations of the water table throughout the entire District may be determined, attempts are being made to checkerboard the District with an observation well about every three miles. (Officially, one well to each 2 1/2 minute quadrangle.)

Playa Lake — Nuisance Or Economical Asset?

Many West Texans consider the numerous playa lakes that dot the High Plains merely areas of waste land that occasionally contain unwanted flood water and are ideal breeding grounds for mosquitoes. A few other individuals have been able to foresee the economic potential to be derived from such playa lakes by reclaiming the land and using the water.

Donald Reddell, left, and W. L. Broadhurst, High Plains Water District staff members, are shown as they start the engine of a pump to empty a playa lake of water. The lake is one of several being studied by the Water District and the Lubbock City-County Health Unit. It will be modified, by removing dirt from the bottom, to concentrate the water in a smaller area.

In order to further explore the validity of the thinking of this latter group, the Lubbock City-County Health Unit, in co-operation with the High Plains Underground Water Conservation District has started a program of lake modification. The jointly-sponsored project is directed by Dr. David Cowgill, Director of the Health Unit, and W. L. Broadhurst, Chief Hydrologist for the Water District.

To begin with, surveys were made, rain gages were installed, and either staff gages or automatic water-stage recorders were placed in numerous lakes in Lubbock County. The rain gages are used to determine the amount of rainfall. The staff gages and recorders are used to determine the quantity of water that collects in the playa lakes. At the same time, information is being gathered regarding the biological environment of the playa lakes to determine the "if's," "and's," and "but's" that are involved, with special reference to the reproduction of the Culex Tarsalis mosquito, which is responsible for causing encephalitis or more commonly referred to as sleeping sickness.

Records have been collected for almost a year from lakes in their natural condition.

Beginning this fall, if weather permits, a few of the playa lakes will be modified. By modification, we mean that dirt will be moved from the lake bottom and spread over outlying portions of the playa. Thus, it is anticipated that whereas a playa lake may contain 20 acre-feet of water which inundates 20 acres of land, it may be modified to such an extent that the 20 acre-feet of water can be confined into an area of 2 acres with a depth of 10 feet. Evaporation of water will be reduced, and 18 acres of land may be reclaimed.

Some of the answers that should be obtained will have reference to: (1) can such a practice economically salvage water for benificial use which heretofore has been lost to evaporation, (2) can land be economically reclaimed for benificial use which heretofore has been lost to evaporas waste land, and (3) in the process of salvaging the water and reclaiming the land, can we solve a mosquito-breeding problem which has in the past, and unquestionably will in the future, contribute to a health problem that has not been satisfactorily controlled by repeated spraying of the playa lakes.

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No. 3 | "THERE IS NO SUBSTITUTE FOR WATER" | *August 1962*

Reply Brief Filed August 27th In Ground Water Depletion Case

As reported in last month's edition of "The Cross Section," the main brief in the ground-water depletion case, styled *Marvin Shurbet, et ux, v. The United States of America,* was to be filed with the U. S. District Court in Amarillo, Texas on August 6th.

The brief was filed with the Court as scheduled.

The suit, sponsored by the High Plains Underground Water Conservation District, seeks to establish ground water in the Southern High Plains of Texas as a depletable natural resource within the definition of the term as used in the Federal Internal Revenue Service's tax code. The case was tried last January in the U. S. District Court at Lubbock.

Should the Court rule in favor of Shurbet, and such ruling is upheld on appeal, then he and other ground water owners throughout the area will qualify for an income-tax deduction during those years when a decline in ground water levels is experienced. Only those who can show a cost in the water and who are using the water to produce income would be eligible.

Attorneys for the High Plains Water District have now filed with the Court what they term a "reply brief." This brief was submitted to the Court on August 27th and is a reply to the main brief filed by the Government.

"The Cross Section" will carry additional information concerning the progress of the case as developments become known.

STATE COMMISSION PRINTS BULLETIN ON WATER LEVELS

The Texas Water Commission has just issued a Bulletin which adds to the available knowledge of the Southern High Plains water resources.

Bulletin 6207, "Water-Level Measurements Through 1962 in Selected Observation Wells, Southern High Plains, Texas," reports ground-water-level measurements in observation wells in 25 Southern High Plains counties which include the most extensive irrigated farming development in the State. The bulletin may be obtained without cost from the Texas Water Commission, P. O. Box 2311, Capitol Station, Austin.

Yearly water-level measurements on 1,150 observation wells for the entire period of record, and maps showing their location in the 25 counties are contained in the publication. Some of the annual measurements date back as far as the 1930's. These well measurements thoroughly document the major declines of water levels in the areas of heavy irrigation pumpage, such as in parts of Lubbock, Bailey and Floyd Counties.

Declines extended into the 1961-62 period for most of the wells, though in most cases these were small. The average drop in level this year for all wells measured was 0.62 feet.

Personnel from the Texas Water Commission were assisted by the High Plains Underground Water Conservation District No. 1, the U. S. Geological Survey, and the Ground Water Conservation District No. 3 South of the Canadian River in making the 1962 field measurements of observation wells.

Systematic measurement of water levels in observation wells is useful as an index in maintaining a current inventory of available water supplies and in making quantitative predictions of the future availability of those supplies.

High Plains Water District Tries Centrifuge In Artificial Recharge Studies

BY W. L. BROADHURST

Many people throughout the High Plains are still interested in artificially recharging the ground-water reservoir by draining surplus rain water from the numerous playa lakes.

The High Plains Underground Water Conservation District has not given up on the idea of artificial recharge; although tests have shown that in order to successfully recharge, especially for an extended period of time into a sand formation, the water must be clean.

Several attempts to "clean up" the lake water have been made. The methods include different types of filters and also chemical treatment to induce flocculation. None of the methods has worked satisfactorily.

Another method of getting mud, silt, sand, weedseed, and all suspended matter out of the lake water was through a "Spinnerator" (see photograph). This is a gadget that works on the order of a "cream separator" or a centrifuge. Water enters under pressure through an orifice or small opening (a) into the cone-shaped part of the Spinnerator (b) and because of the increased velocity and swirling action all material that is heavier than water will be thrown out through the large lobe at the bottom (c) and then drain away through the lower outlet (d). The clean water emerges through the opening at the top (e).

A small pump that would deliver about 40 to 45 gallons a miunte through the Spinnerator was used during the first trial. The heavy particles of sand, silt, and seed were readily separated; however the "colloidal particles" that remain suspended indefinitely in the lake water and that have about the same specific gravity as water did not separate but remained in the water.

The theory was advanced that a larger pump was needed to develop more pressure and greater volume of water. Consequently a 4-inch centrifugal pump driven by a 4-cylinder air-cooled engine was used on a type A, No. 4 Spinnerator. The pump would deliver about 250 gallons a minute and develop a pressure of about 50 pounds per square inch. A valve and "T" arrangement in the discharge line, shown in the photograph, permitted diverting part or all the water from the pump through the Spinnerator. Under a pressure of 50 pounds per square inch the Spinnerator would transmit only about 50 gallons of water a minute; however, a partial vacuum was created, air was drawn in at the lower opening (d), and none of the solids were separated from the water.

By some standards, such a test would be classified a failure. We look upon it as a successful experiment in that here is another method that did

(Continued on Page 4)

W. L. Broadhurst, Chief Hydrologist for the High Plains Water District, is shown above as he inspects an instrument designed to remove suspended particles from playa lake water prior to using it for recharging the ground-water reservoir. Various parts of the instrument, designated by letters, are referred to in the story at right.

SUB-STATION NO. 8 FIELD DAY - SEPT. 18

The Annual Field Day at the Texas Agricultural Experiment Station at Lubbock will be held on Tuesday, September 18, 1962 from 9:00 a. m. until 5:00 p. m. The new Lubbock Station is located approximately 7 1/2 miles north of Lubbock on highway U. S. 87. The public is cordially invited to view and hear discussions of the latest research developments in mechanization, irrigation and water conservation, fertilization, weed, insect and disease control, breeding and crop improvement and cultural practices in the production of cotton, grain sorghum, soybeans, vegetables, castorbeans, sesame and new crops.

Arrangements for the Field Day activities will be in charge of the Texas Agricultural Extension Service who will be assisted by the High Plains Water District, Lubbock Chamber of Commerce, Soil Conservation Service, Vocational Agricultural Teachers and Lubbock Agricultural Club in cooperation with the State and Federal Staff of the Station.

Mark your calendar now to attend the Field Day in Lubbock — you'll be glad you did.

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ..... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan H. White, Jr. ..... Director Of Education
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Mrs. Wanda Dunn ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside. Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 .. Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 .... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 .... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 ..... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 .... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 .... Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 ..... Littlefield. Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 .... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 .... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

STUDIES ON IRRIGATED WHEAT

*By ALEX POPE AND KENNETH B. PORTER**

During the past six years, fertilizer trials using different rates and ratios of N, P and K (nitrogen, phosphorus and potassium) have been conducted at the Southwestern Great Plains Field Station at Bushland, Texas and at off-station locations in 12 High Plains Counties. In addition, studies involving the relationship of soil fertility and soil moisture levels in the production of irrigated wheat were conducted on the station for a 4- year period.

Results of these studies show that on hardlands wheat responds primarily to nitrogen fertilizer. However, when land has been under irrigation and cropped heavily for a period of years, some phosphate response has been obtained.

On sandier soils, wheat requires a combination of nitrogen and phosphorus fertilizer for optimum yields. From 80 to 120 pounds of nitrogen plus 40 pounds of phosphorus (P_2O_5) per acre has given excellent results.

Yields on hardland at the Bushland Station were increased 20 to 30 bushels per acre by applying 50 to 100 pounds of nitrogen per acre. This is shown in figure 1.

Degree of fertilizer response is dependent on such factors as native fertility which can be determined by a soil test, past cropping and fertilizer history and irrigation management. Soil fertility and soil moisture are closely interrelated in their effect on wheat yields. Work done by irrigation engineers at the Station shows that with a low moisture level no response was obtained from nitrogen fertilizer applications, but grain yields were increased 20 bushels per acre with a higher moisture level. By the same token, maximum response to increasing moisture levels was obtained with the higher rates of nitrogen as indicated in figure 2.

Soil fertility plays an important role in protein content of irrigated wheat. Protein content of the grain is increased with increasing rates of nitrogen as shown in figure 3. As a result of nitrogen fertilizer applications, wheat forage also increased in protein content. In 1959, at the Bushland Station, wheat forage produced on unfertilized plots contained only 12 percent protein while that produced on plots receiving 120 pounds of nitrogen per acre contained 22 percent protein. Not only does fertilizer affect forage quality but it also greatly increases the total amount of forage produced. At least part of the nitrogen fertilizer should be applied prior to seeding in order to stimulate early vegetative growth and insure adequate forage for grazing.

Best results from fertilizer use on irrigated wheat can be obtained only when fertilizer practices are in balance with irrigation practices. This approach will result in increased grain yields, higher protein content of both

DR. KENNETH B. PORTER

**Dr. Alex Pope Agronomist, Substation No. 8, Lubbock, Texas and Dr. Kenneth B. Porter, Agronomist, Southwestern Great Plains Field Station, Bushland, Texas.*

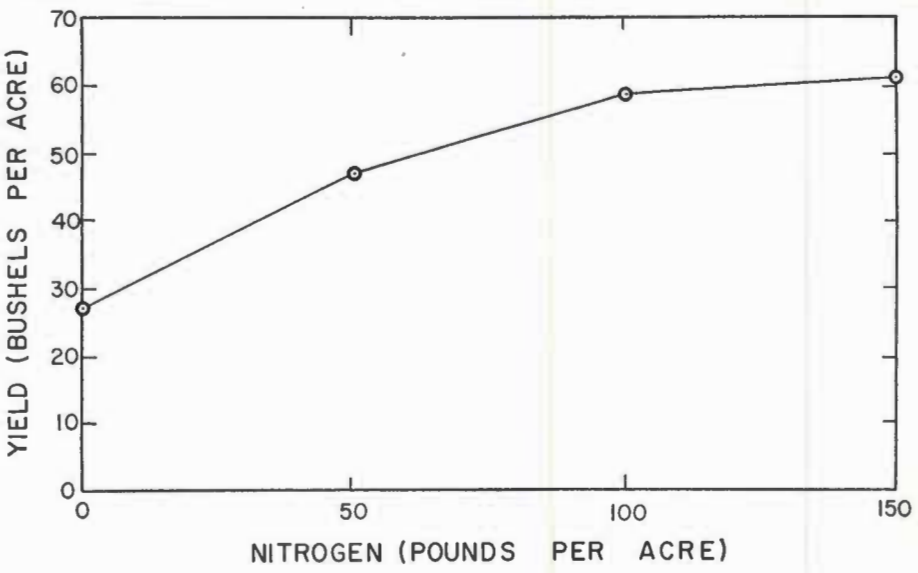


FIGURE 1.- EFFECT OF NITROGEN FERTILIZER ON IRRIGATED WHEAT YIELDS AT THE SOUTHWESTERN GREAT PLAINS FIELD STATION. THE RESULTS ARE AN AVERAGE OF THE YEARS 1958-61.

REVEAL DATA CONCERNING MOISTURE, FERTILITY AND VARIETIES

DR. ALEX POPE

grain and forage, and also in additional forage for grazing.

One of the problems confronting High Plains wheat growers results from the fact that many of the varieties of wheat now grown under irrigation were bred and selected for dryland production. Lodging (falling) frequently occurs when these varieties are produced under optimum soil moisture and fertility conditions. Wheat breeders at the Experiment Station are now working on new varieties that are shorter and stiffer-strawed; and consequently, do not lodge as readily.

In addition to shorter and stronger straw, varieties intended for irrigated production should also have quality characteristics that will produce desirable bread-making grain when grown under high production levels.

To obtain shorter straw, dwarf wheats from Japan have been crossed with our commercial varieties to provide hybrid material from which true breeding semi-dwarf wheats have been selected. Gaines, a semi-dwarf white grain wheat, has recently been distributed to farmers in the Pacific Northwest. Gaines, however, is not adapted to our area and white wheat is not suited for bread making. No hard red winter semi-dwarf wheat is available for commercial production, but selections under test indicate that such varieties will be available to Texas farmers in the not too distant future.

Tests of semi-dwarf selections at the Southwestern Great Plains Field Station, and at other locations in Texas, indicate that some of these new short wheats are well adapted to high moisture and high fertility levels but they may not be adapted to dryland production in West Texas. For example, in a test in 1960 a semi-dwarf did not lodge and produced 87 bushels per acre on irrigated land fertilized with 145 pounds of nitrogen per acre; whereas, Concho was severely lodged and produced 67 bushels per acre after all the grain had been picked up. At lower fertilizer levels there was less difference between the two varieties. A two-year average irrigated yield of a group of these semi-dwarf varieties was 61.7 bushels per acre as compared to 53.6 for well known commercial varieties. However, the same group of semi-dwarfs produced only 18.3 bushels per acre on dryland as compared to 23.6 bushels for the taller commercial varieties. These wheats appear to be specially suited for irrigated production.

The two most important quality characteristics of bread wheat are protein content and protein quality. Most of our varieties under dryland conditions produce grain with sufficient protein and most, under these conditions, have protein of adequate quality. When we speak of high quality protein, we generally are referring to gluten strength. Varieties such as Tascosa, Bison and Kaw are strong gluten wheats and at a given protein level will give a dough that has more mixing tolerance than some other varieties. Under irrigation where protein content may be lower than on dryland, either because of inadequate fertilizer or where yields are high in relation to the amount of nitrogen applied, the stronger gluten varieties will produce grain in most cases more suitable for bread-making purposes than varieties having weaker gluten. Although many factors other than the variety influence quality, special attention is being given quality characteristics of semi-dwarf wheats now being tested. The development of good quality semi-dwarf varieties resistant to lodging will contribute to more efficient use of water and fertilizer.

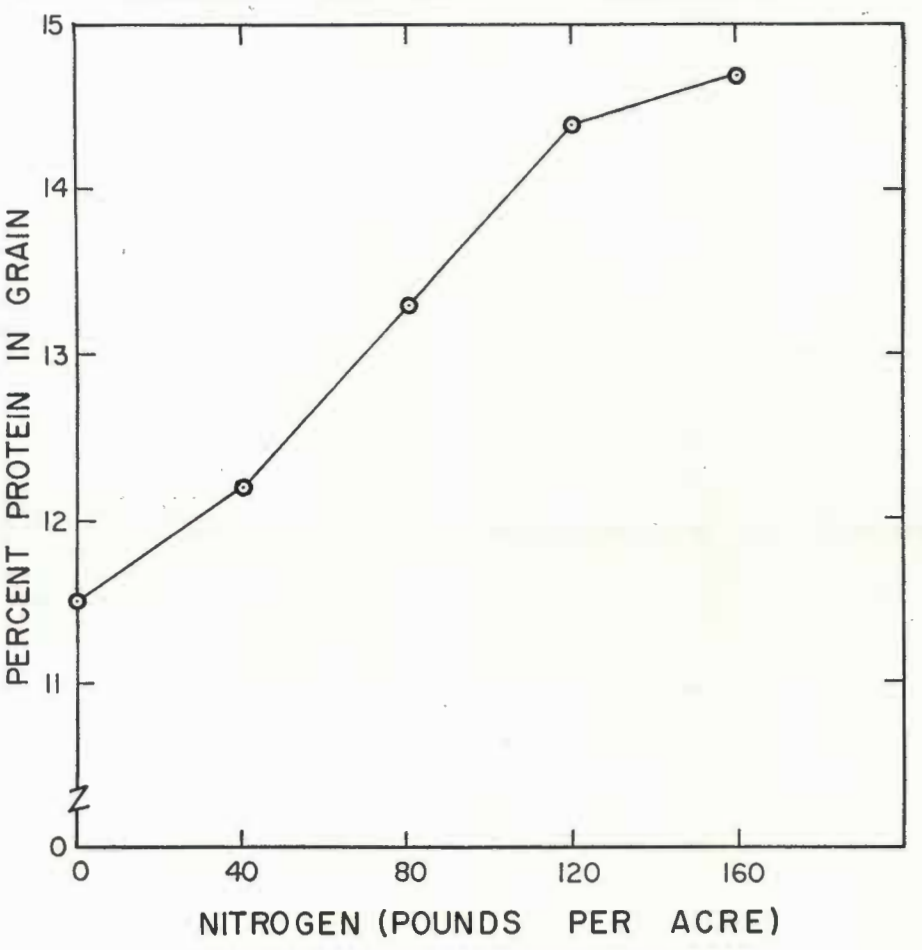


FIGURE 3.- EFFECT OF NITROGEN FERTILIZER ON PROTEIN CONTENT OF IRRIGATED WHEAT. THE RESULTS ARE THE AVERAGE OF 20 SITES IN THE HIGH PLAINS OF TEXAS.

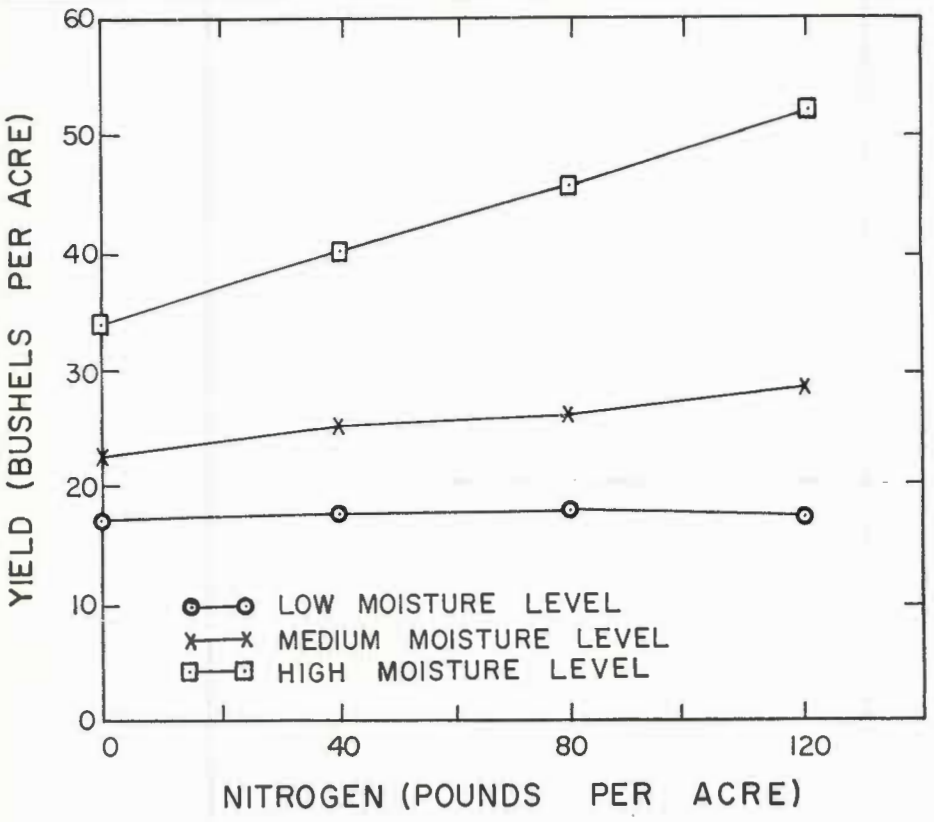


FIGURE 2.- EFFECT OF SOIL MOISTURE AND NITROGEN ON THE YIELD OF IRRIGATED WHEAT AT THE SOUTHWESTERN GREAT PLAINS FIELD STATION, 1956.

WELL DRILLING STATISTICS FOR JULY

During the month of July, 96 new wells were drilled within the High Plains Water District; 11 replacement wells were drilled; and 10 wells were drilled that were either dry or non-productive for other reasons. The County Committees issued 75 new drilling permits.

Permits issued and wells completed for July are listed below by counties:

County	Permits Issued	New Wells Drilled	Replacement Wells Drilled	Dry Holes Drilled
Armstrong	0	0	0	0
Bailey	1	7	1	3
Castro	7	6	1	2
Cochran	5	8	1	1
Deaf Smith	11	11	2	2
Floyd	6	11	0	1
Hockley	9	13	1	1
Lamb	0	5	2	0
Lubbock	13	29	0	0
Lynn	2	4	0	0
Parmer	16	2	3	0
Potter	0	0	0	0
Randall	5	0	0	0
Totals	75	96	11	10

It has been said that farmers in the Southern High Plains of Texas are the most progressive of farmers to be found anywhere. We know that this is true, and to indicate the manner in which they adopt progressive suggestions, we submit the following:

Five years ago, it was virtually impossible to find a guard on a irrigation well pump drive-shaft. You could locate one now and then, if you searched diligently enough, but most farmers didn't even know what a guard looked like.

However, the situation has changed during the past five years. One day this month, Tom McFarland, Manager of the Water District, came in and said that while in Parmer County, near Friona, he started counting wells with guards and comparing the number against those without guards.

Tom said that after following this procedure for several miles he found that about 70 per cent of the wells that he counted were equipped with guards.

The folk around Friona are to be congratulated for their consideration for the safety of not only themselves but of others.

We've been told that civic and farm organizations throughout the Southern High Plains have been selling guards in order to make money for their clubs. It's reported to be a profitable venture as well as a helpful one to the community.

If your club is thinking of a worthwhile project to undertake — what about selling drive-shaft guards? Such a project could be instrumental in preventing serious injury to your citizenry, or even preventing a tragic death.

* * * * *

According to "Water Newsletter" dated May 7, 1962, Dr. Morris M. Cohn, in a keynote address before the Pollution Symposium of the American Institute of Chemical Engineers, stated that every city and industrial plant now dumping wastes into streams be required to take water from an intake located below the point of waste outflow.

Sounds like a pretty reasonable suggestion—it would clean the waste up pretty quick, don't you think.

* * * * *

An interesting pamphlet came across our desk the other day. Published by the Union Pacific Railroad, it listed the 16 mm. color sound movies available from their livestock and agriculture department. One film especially caught our eye. Its title is, "It's Time To Irrigate." A 10-minute motion picture that, ". . . presents modern methods used in determining when a crop needs water, how much to apply to a given crop, and new methods of application . . .."

This film might be one which could be profitably shown during farm organization meetings, or to any interested group of citizens.

Each person residing in the southern High Plains of Texas, directly or indirectly, depends to a large extent on ground water. We can't know too much about the wise use of water. Perhaps this film could help some understand more about water and its uses.

Direct requests for the use of the film to:

Joe W. Jarvis
Supervisor of Livestock and Agriculture
Union Pacific Railroad
Omaha, Nebraska

* * * * *

The University of Arizona has established a training program in the field of scientific hydrology. The comprehensive course of study leads to degrees of Bachelor of Science, Master of Science, and Doctor of Philosophy in the field of water resources.

It has long been the dream of many here in the High Plains that such a curriculum might some day be made available to students at Texas Technological College.

Arizona, very conscious of the value of water and the necessity of an adequate supply of water, is looking forward to the future. We, in the High Plains of Texas, should be just as aware as is Arizona of the need for adequate knowledge in this realm of our economic and social life.

Well-versed and trained leadership in the field of water resources is needed today, but how much more important it will become tomorrow when available water is in shorter supply.

* * * * *

In its July 29th edition, the "Austin Report" states that James Turman, Speaker of the Texas House of Representatives, has selected Representatives Rufus Kilpatrick of Beaumont, Ben Barns of DeLeon, Homer Koliba of Columbus, James Nugent of Kerrville and J. E. Ward of Glen Rose to serve with two citizens to be appointed by Governor Price Daniel on an interim committee to study salt-water pollution to the soil and surface waters of the State.

The committee is to determine if existing laws are adequate to control man-made pollution; if corrective legislation is necessary and how enforcement should be financed, and what research can provide to prevent salt pollution.

Steve Clements' Lake Pump Salvages Rainfall Runoff and Irrigation "Tailwater"

Steve Clements has a farm northwest of Hereford in Deaf Smith County. A rather large playa lake is situated in the southeast corner of the farm. A relatively-inexpensive pump and engine is installed at the lake to salvage both rainfall runoff and irrigation "tailwater" that collects there. The salvaged water is pumped to cropland on the Clements' farm and used in irrigation. Formerly, most of the water was lost to evaporation and transpiration.

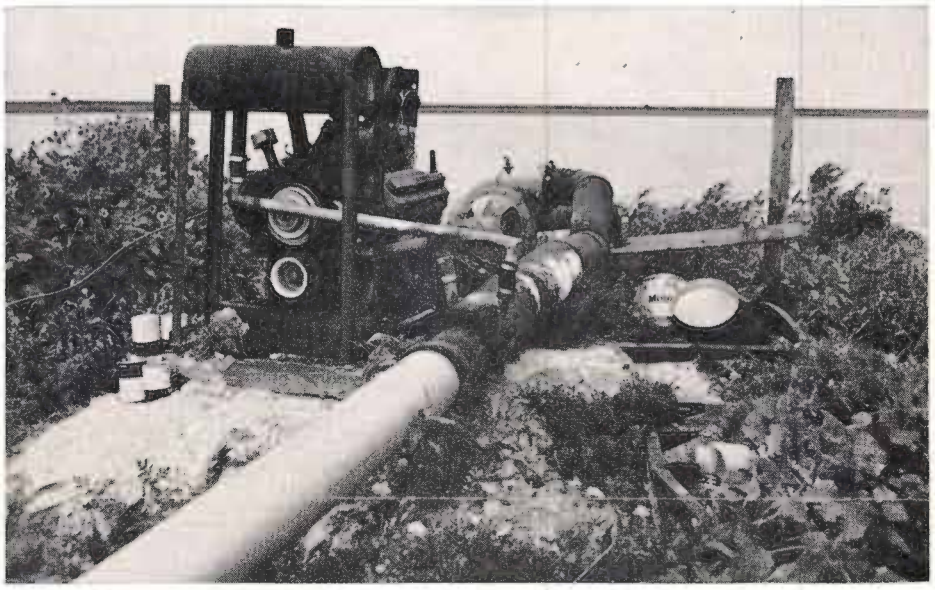
On March 27, 1962, the High Plains Underground Water Conservation District installed a flow-meter on the discharge pipe of the lake pump in order that an accurate calculation could be made of the quantity of water salvaged. Clements pumps about 1200-1500 gallons per minute when he is using water from the lake.

On August 21st, the meter was checked, and it was determined that Clements had salvaged 408 acre-feet of water since March 27th.

If it is assumed that $20. per acre-foot is a fair average value for irrigation water, then 408 acre-feet of water would have a monetary value of $8160.

Clements says that the pump uses about 4 gallons of fuel per hour. Fuel costs 7c per gallon, or in this instance, about 30c per hour.

To make use of runoff water that is available is not only good from a "water conservation" standpoint, but it also is wise from an economic point of view.



Steve Clements of Deaf Smith County installed the 6-inch centrifugal pump and engine shown above near the edge of a rather large lake on his farm located northwest of Hereford. The High Plains Water District attached a flow-meter to the pump's discharge line in order to calculate the amount of water salvaged from the lake. Since March of this year, Clements has reclaimed water from the lake for irrigation valued at more than $8000.

Recharge Studies—

(Continued from Page 1)

not work. We believe that a combination of several methods of cleaning the lake water will be found. When such a method is developed and lake water can be delivered free af colloidal material and also of the numerous species of minute animal life, artificial recharge can and will be practiced.

High Plains Underground Water Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No. 4 "THERE IS NO SUBSTITUTE FOR WATER" *September 1962*

Organic Contamination Of High Plains Wells Becoming More Severe

BY PAUL HEISER,
Field Representative,
Cotey Chemical Company,
Lubbock, Texas

There is no way of knowing how much the presence of nuisance organisms is costing well owners on the High Plains in loss of well production and damage to pumping equipment. The presence of slimy substances has been reported in water wells on the Plains for years; however, in 1957, it became apparent that these growths were damaging the capacity of some irrigation pumps. Since then, the problem has spread over this entire major irrigation area.

These growths have been analyzed by such authorities as Dr. J. K. G. Silvey, North Texas State University, and the U. S. Health Department's Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio. The growths will vary a little from well to well; however, the following have been found: aerobic and anaerobic bacteria, sulfate and iron-reducing bacteria, fungi, actinomyces, brown mold, crenothrix, and blue-green algae.

Many domestic wells on the South Plains have also been found contaminated with coliform bacteria to the extent they were unsafe for human consumption. Hepatitus and typhoid contamination was isolated in an irrigation well west of Seminole in 1960.

The presence of nuisance organisms in irragation wells is generally indicated by a foul odor, particles of black to green slime when the well is started, foul taste, and often considerable reduction in pump capacity. These growths are green, brown, black, tan rusty, pink, and clear in appearance; depending on the types present, food source, and living conditions. The growth pattern may be as stringy masses, thin to excessive gelatinous masses, as semi-hard scale, oily like sludge, to a fleshy appearance.

Contamination of a well, domestic or irrigation, may be caused by several means. Spores may be air-borne, from contaminated used casing, moving a pump from a contaminated well to a new well, clean-out operations by contaminated service equipment, and from surface waters flowing into the well. Once the well becomes contaminated, any food source will cause growth of the organisms. This food source may be minerals in the water such as iron, sulfur, nitrogen, phosphate, or drip oil from a turbine pump. Excessive growths have become very common in irrigation wells, in some cases the growth is so thick

PAUL HEISER

that the pumps have been completely plugged or locked down.

The answer to the control of these organic growths should start when the well is new. Any new well should be sterilized by some approved method. When the well is shut down or worked over it can be economically sterilized. Chlorine is highly effective; however, it is corrosive and dissipates with time. More recently developed chemicals are available which are non-corrosive and stay active as long as the chemical remains in the well and pump. Quaternary ammonium compounds have proven highly effective for the control of a great many organisms. Quaternary ammonium compounds are widely used for sterilizing in the food processing, dairy, and similar industries. They are also used for the control of bacterial contamination in oil field water flood projects and to control algae in swimming pools and cooling towers.

The cost of preventing heavy growths is very small compared to a major cleanout operation, and then a periodic preventive treatment to stop the re-occurrence of the growths. Any domestic well should be checked at regular intervals for organisms as a safety measure against disease. It should be well to remember that many of these organisms are microscopic and that clear and cool "good old well water" may not be safe to drink. Your city-county health unit or a commercial laboratory can check your domestic water sample for coliform organisms.

Progress Report Meeting Held By Committee Studying Playa Lakes

A meeting of the Advisory Committee for Water Supply and Pollution Control Project was held September 27 in the Lubbock office of the High Plains Underground Water Conservation District.

This committee consists of representatives from local, state and federal agencies and was created for the purpose of studying the hydrologic, economic and biologic aspects of playa lakes in the High Plains area.

Results of the first year of observation and studies were presented to the committee in a report along with proposed procedures for the coming year.

As a means of obtaining information concerning the economic importance to agriculture of playa sinks, or lakes, in Lubbock County, a survey was conducted to interview a sample of owners and operators. This sample was obtained by dividing the county into quarters and selecting 15 lakes at random from each quarter giving a total of sixty lakes. At present, information has been collected on 45 of these lakes by personally interviewing the owners and operators.

Hydrologic data were collected on nine lakes in Lubbock County. These data consist of contour maps for the lakes, elevation-volume curves, elevation-area curves, rainfall at each lake, irrigation "tailwater" runoff, rainfall runoff and evaporation. Preliminary plans for modifying two lakes have been made. The actual modification work will begin this fall on several of the lakes.

Playa lakes have long functioned as primary environments in mosquito breeding. An intensive study of mosquito production in several of the lakes is being made. Other lakes are under intensive study for all phases of the biological environment. With fundamental data on mosquito production at each lake, plans for eliminating mosquito breeding can be incorporated into the modification design for each lake.

Chief Running Water's Booth - Hockley Co. Fair

Shown are several boys from the Levelland Junior High School as they look over the exhibit prepared by the High Plains Water District for the Hockley County fair. The fair was held September 13 - 15 in Levelland. Chief Running Water, the little Indian sitting atop the display in the background, took the opportunity to explain through the use of color slides the story of ground water in the Southern High Plains area.

Please Close Those Abandoned Wells!

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN WHITE
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan H. White, Jr. ..... Director Of Education
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Mrs. Wanda Dunn ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside. Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 ... Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 ... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 ... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 ... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 ... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 ... Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 ... Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 ..... Littlefield. Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 ... 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 ... Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 ... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 ... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

Parmer County Irrigation

BY ALLAN H. WHITE, JR.

A great many farmers in the Southern High Plains of Texas have installed, or are in the process of installing, on their farms systems with which irrigation "tailwater" can be returned and used to grow crops.

"Tailwater," is e x c e s s irrigation water that does not soak into the soil as it runs over the cropland.

There is no question but that the installation of a re-circulation system is a good practice from an "irrigation water conservation" standpoint; however, some are thinking even beyond this worthy point. They are considering not only the "irrigation water conservation" aspects but also those involving "soil and rainfall conservation."

One man who has lead in the development of a "total water and soil conservation" program is W a l t e r (Bob) Riethmayer of Parmer County.

Riethmayer is a tenant farmer and operates 960 acres of land which is located 6 miles southeast of Friona. The land is owned by Ed Boggess of Friona.

In some respects, his cropping practices are not similar to the average in this area — he plants 348 acres of wheat, 302 acres of row crops (cotton and grain sorghum) and fallows the remaining land.

A few years ago, Riethmayer and Boggess agreed that it was not wise to continue either plowing land for row crops straight down the grade on sloping tracts or allowing irrigation "tailwater" to spill into the road barditches and escape unused.

Boggess agreed to support Riethmayer financially on any feasible plan that he could develop which would take care of these two problems.

In 1960, Riethmayer constructed an earthen pit on the north side of his land for the purpose of collecting irrigation "tailwater". He bought a 4-inch self-priming centrifugal pump, mounted it and a used engine on a trailer chassis, and installed underground, 1500 feet of 6-inch plastic pipe between the pit and previously-installed 12-inch standard m o r t a r-joint concrete pipe. Through t h i s system, he was able to salvage "tailwater" from the north 320 acres of land.

During the fall of 1960, Riethmayer then constructed the second of his three re-circulating pits. This one is at

Walter (Bob) Riethmayer, Friona irrigation farmer, is shown as he primes the 4-inch x 5-inch centrifugal pump used on his 960-acre farm. This pump presently is used to re-circulate irrigation "tailwater" that runs from cropland situated at the center of his farm. It can be used, however, at any one of three collection pits. "Tailwater" that collects in the pits is pumped through pipelines back up the slope to a point where it can be beneficially used.

Riethmayer inspects the 4-inch self-priming centrifugal pump used in his "tailwater" re-circulation systems. Like the other, this pump can be used at any of the three collection pits. Only two of the three pits are ever used simultaneously because only two-thirds of the total acreage is cropped simultaneously. The remaining land is fallowed.

Farmer Conserves Water And Makes Money Doing It

the south side of the center 320-acre tract. Again, he installed underground 2100 feet of 6-inch plastic pipe between the pit and the farm's concrete irrigation pipeline. A new 4-inch centrifugal pump and a used automobile engine were installed on a trailer chassis. This pumping plant was used to re-claim irrigation "tailwater" from the new pit and re-circulate it to the crops through the irrigation system.

Then, during the spring of 1961, Riethmayer constructed the last of the three earthen pits that he uses today. He installed 500 feet of 6-inch plastic pipe from the pit to the underground concrete irrigation pipeline. Because he fallows approximately one-third of his land each year, he needs only two pumps for the three pits.

With completion of the three re-circulation pits, the problem of losing irrigation "tailwater" from any of the land was a thing of the past. Riethmayer's major conservation problem then became how to obtain better use of rainfall by decreasing runoff and how to decrease irrigation water velocity in the field to improve efficiency.

He decided to try changing the direction of his crop rows so that they would not run directly down the slope of the land. This change would decrease the rate of movement of water down the crop furrow, decrease soil erosion and decrease the quantity of resulting "tailwater".

Riethmayer contoured the rows on some of the more steep land, changed the direction of other rows and on the remaining land he cut the length of irrigation runs in half (note the accompanying farm plat).

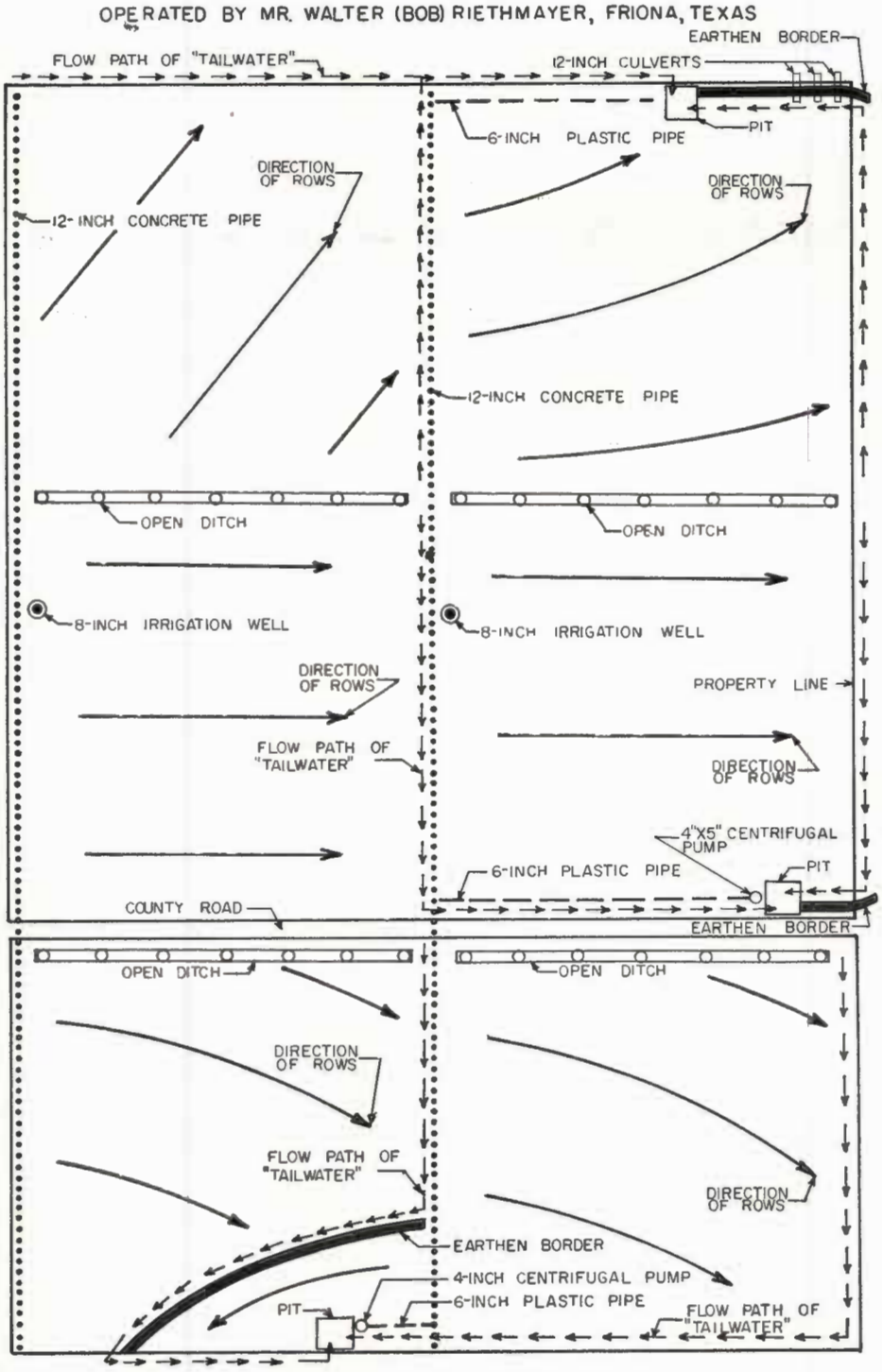
The re-circulation systems and the land management program is working as well as Riethmayer hoped and perhaps better than he anticipated.

Along with installation of the "tailwater" re-circulation systems, Riethmayer has contoured his land or changed the direction of his crop rows to reduce the grade of his water furrows. This practice has lessened the amount of irrigation "tailwater" that must be handled at the row ends and has reduced soil erosion.

IRRIGATION "TAILWATER" RE-CIRCULATION SYSTEMS

SECTION 27 AND N 1/2 OF SECTION 34, TOWNSHIP 4S, RANGE 4E, PARMER COUNTY, TEXAS

OPERATED BY MR. WALTER (BOB) RIETHMAYER, FRIONA, TEXAS



He admits that there are still some problems that he hopes to eliminate in time. To minimize erosion, the steeper waterways that carry "tailwater" to the pits for re-circulation will be grassed as soon as possible. Also, he plans to acquire a large weed-burner for controlling weeds around the pits and borders to eliminate hand hoeing. He has encountered some trouble with the pits catching excessive quantities of silt. He has learned that the silt problem is not nearly so bad if he re-circulates the "tailwater" as it enters the pits. If he pumps the water immediately, less time is available in which the silt can settle from the water to the bottom of the pit.

On the other side of the ledger, Riethmayer states that he could not presently irrigate two-thirds of his 960-acres with only the two good 8-inch irrigation wells drilled on the farm. He would need to drill an additional well, or assume the risk of being unable to irrigate his crops as rapidly as needed during the summer.

With the addition of the re-claimed "tailwater" and improved use of rainfall he has sufficient water to efficiently use additional fertilizer on his crops. This results in increased yields. Last year, Riethmayer's grain sorghum crop yielded 7000 pounds per acre as opposed to 5700 pounds per acre the previous year.

Capital investment in the re-circulation systems has not been excessive even though Riethmayer's installation is no doubt more involved than would be the average irrigator's.

The 6-inch plastic pipelines were the most expensive items in the systems. The total of 4100 feet of pipe installed cost $3280, or 80 cents per foot. The two pumps, used engines and trailers cost $1700, and the dirt-moving operations in excavating the pits and building two short retaining borders, amounted to $700. The total cost was $5680.

Bob Riethmayer does not claim to have all of his irrigation problems solved, but the point is, he's working year by year toward a better and more efficient program.

As we've said many times before, and it still holds true, if all would simply attempt to use water as wisely as possible, we wouldn't have to worry about "water conservation," we would be practicing it.

Riethmayer is shown as he irrigates small wheat. By reducing the length of irrigation runs, he can now water his crops more efficiently. Notice how saturated the crop beds appear in this picture. Riethmayer states that to "black-out" these beds before he reduced the grade of the rows was virtually impossible without running irrigation water for many hours longer than presently needed.

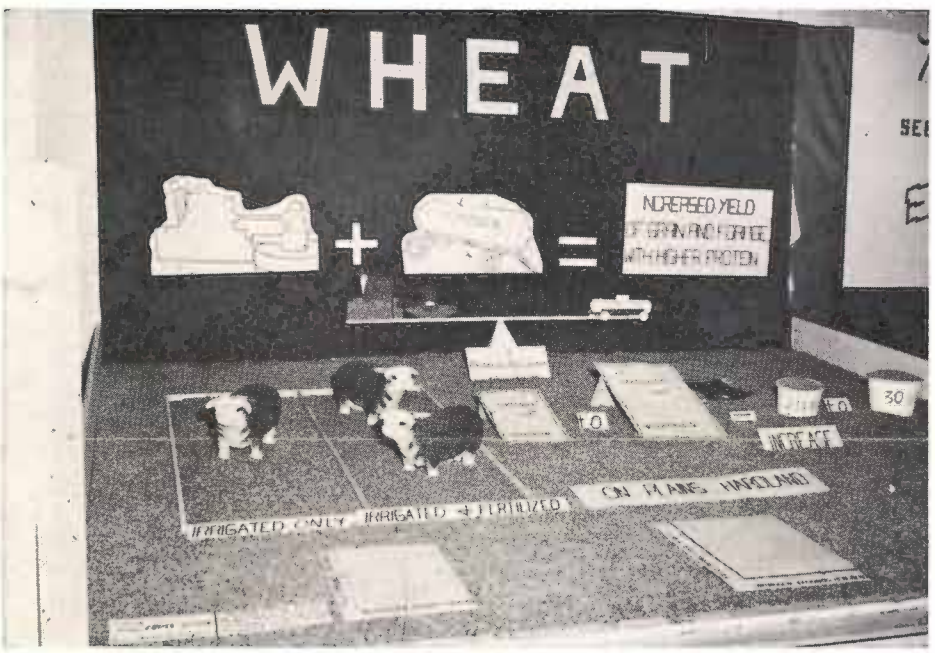
ATTENTION!
IRRIGATION FARMERS

Through proper land and water management, irrigation "tailwater" can be put to beneficial use

COMMENCE TODAY

MAKING PLANS ON YOUR FARM FOR RETAINING IRRIGATION "TAILWATER" NEXT YEAR

Exhibit Shows Water & Fertilizer Relationship



The exhibit shown above took second prize in the F. F. A. Educational Exhibits showing during the Tri-States Fair held in Amarillo the week of September 17th. Under the direction of Roland Baumhardt, the Future Farmers of America Chapter at the Palo Duro High School in Amarillo prepared the entry. Information used in preparing the exhibit was taken from "The Cross Section."

THE CROSS SECTION
1628 - 15th Street
Lubbock, Texas
Dear Sirs:

I do not now receive THE CROSS SECTION but would like to have it sent to me each month, free of charge, at the address given below.

Name _____

Street Address _____

City and State _____

(Please cut out and mail to our address)

San Antonio Site Of Driller's Convention

The Texas Water Well Drilling Contractors held their annual convention September 19, 20 and 21 in San Antonio. A total of 228 persons registered and attended the state meeting.

Tom McFarland, Manager of the High Plains Underground Water Conservation District, was speaker at the annual convention banquet held Friday evening, September 21.

Also, included in the three-day convention program was a technical session on ground water lead by W. L. Broadhurst, Chief Hydrologist for the High Plains Water District.

Officers elected for the coming year by the convention are: President, R. G. Dixon, Odessa; President-Elect, Wesley Young, Sonora; Vice President, O. F. Jensen, Sr., Houston; Secretary-Treasurer, L. W. Puckett, San Angelo.

Association directors were elected as follows: B. F. Block, Sunray; Gene Bellew, Perryton; W. D. Jones, Dumas; C. W. Stoner, Cleburne; A. Fawcett, Houston; Carl Vickers, Corpus Christi; Kenneth Wheeler, El Paso; and J. D. Kirkland, Hereford. Directors elected to represent Manufacturers and Suppliers were Paul Hieser, Lubbock; Ron Terry, Ft. Worth; and Albert Ruth, Houston.

Corpus Christi was selected as site for the 1963 convention. In 1965, the Texas state convention and the national driller's convention will be held simultaneously in a yet-to-be-decided Texas city.

T. W. C. A. Will Hold Annual Meeting

The eighteenth annual meeting of the Texas Water Conservation Association will be held this year in San Angelo on October 7 and 8. Headquarters in San Angelo will be the Cactus Hotel.

The program October 7th will be confined to registration of delegates, committee meetings, visitation and fellowship sessions.

Caucuses of the Ground Water, Irrigation, Municipal, Industrial, Navigation and River Authorities Panels will be held October 8th from 8:30 a. m. to 10:00 a. m.

Speakers on the program beginning at 10:00 will include Brig. General Carroll H. Dunn, Division Engineer, Southwestern Division, Corps of Engineers, Dallas; H. N. Smith, State Conservationist, U. S. Soil Conservation Service, Temple; Joe D. Carter, Chairman of the Texas Water Commission and also Chairman of the Texas Water Pollution Control Board.

La Selle E. Coles, Prineville, Oregon, President of the National Reclamation Association, will be the speaker at the Annual Conservation Luncheon at noon on the 8th.

Tom McFarland, Manager of the High Plains Water District, is First Vice President of the T. W. C. A. and a member of the Ground Water Panel. Arthur P. Duggan, Jr. of Littlefield, is a member of the Irrigation Panel.

WELL DRILLING STATISTICS FOR AUGUST

During the month of August, 94 new wells were drilled within the High Plains Water District; 15 replacement wells were drilled; and 1 well was drilled that was either dry or non-productive for some other reason. The County Committees issued 54 new drilling permits.

Permits issued and wells completed for August are listed below by counties:

County	Permits Issued	New Wells Drilled	Replacement Wells Drilled	Dry Holes Drilled
Armstrong	0	0	0	0
Bailey	7	5	1	0
Castro	5	15	1	0
Cochran	1	6	0	0
Deaf Smith	9	6	2	0
Floyd	4	21	1	1
Hockley	4	11	1	0
Lamb	9	4	1	0
Lubbock	5	10	1	0
Lynn	0	2	0	0
Parmer	10	7	6	0
Potter	0	0	0	0
Randall	0	7	1	0
Totals	54	94	15	1

High Plains Underground Water Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No 5 "THERE IS NO SUBSTITUTE FOR WATER" *October 1962*

Governor's Statewide Water Committee Urges Approval Of Amendment No. 4

It is generally recognized and agreed that an ample supply of available water is the major key to industrial, municipal and agricultural growth and development in Texas. For this reason. it is the policy of the State of Texas to encourage the "optimum development" of its limited number of feasible surface - water reservoir sites. It's reported that, too often, local communities lack the necessary financial capabilities to pay the high costs involved in constructing dams large enough to obtain optimum storage in the reservoirs.

The Governor's Statewide Water Committee points out, that a good example illustrative of the entire problem is the Cooper Project on the Sulphur River near Cooper in northeast Texas. The Committee states, "the Sulphur River Municipal Water Authority, comprised of the cities of Cooper, Commerce and Sulphur Springs, desires to acquire conservation storage in the project from the Federal Government.

"The Government proposes a flood control structure at the site and will add conservation storage to the extent that the local District will contract and pay for it. Unfortunately, the District is financially unable to obligate itself for more than 40-thousand acre feet of storage. Records of the Texas Water Commission indicate that the reservoir is capable of 115-thousand acre feet of conservation storage. In this instance, a valuable dam site will be used up without fully developing the reservoir to optimum size if the local District must proceed alone and without the benefit of State participation."

According to the Committee, there are other examples throughout the State similar to the above. The Committee says, "With State funds provided, many local groups, planning projects of their own without Federal participation, would also be able to build reservoirs to the optimum capacities needed to meet their long-range future water requirements."

When voters in Texas go to the polls on November 6th to cast ballots for their favorite candidates, they will also have the opportunity to vote for, or against, a Constitutional Amendment, designated on the ballot as Proposal No. 4. This amendment is one of several Constitutional Amendment proposals which will appear on the ballot. It's reported that number 4 will have a great bearing on the future of surface-water development in Texas. If the amendment is passed, it will add a new section to the Constitution which will authorize the Texas Water Development Board to acquire and develop storage facilities in reservoirs being constructed or enlarged in the State, and to dispose of such storage facilities and water through terms and conditions stipulated by the Legislature.

The Water Development Board's loan program at the present time is limited to the issuance of not to exceed $200,000,000 in bonds. The proposed Amendment would not change this feature; the total amount of money that could be made available for both the lending program and the acquisition of storage facilities would remain limited to $200,000,000.

The proposed amendment evisions that the State Water Development Board may dispose of storage acquired at a price not less than the original cost. In order to recoup the investment, proceeds from sales will be used to repay the principal and interest on State bonds issued or obligations incurred. Further, the Water Development Board would be authorized to sell water or stand-by service to meet its indebtedness. Profits over and above that needed to meet obli-

(Continued On Page 4)

Pictured above is J. W. Buchanan of Dumas, left, and John W. Simmons of Orange. They were recently selected by members of the Texas Water Conservation Association to serve, respectively, as First Vice President and President of the T. W. C. A. during 1963. Buchanan is General Manager of the North Plains Ground Water Conservation District and a member of the Texas House of Representatives. Simmons is General Manager of the Sabine River Authority.

Texas Water Conservation Association Holds Annual Meeting in San Angelo

The 19th annual meeting of the Texas Water Conservation Association was held in San Angelo October 7 and 8.

The association elected as its president for 1963 John W. Simmons of Orange, General Manager of the Sabine River Authority. J. W. Buchanan of Dumas, Manager of the North Plains Ground Water Conservation District, was elected to serve as First Vice President during the coming year. They replace Max Starcke of Austin and Tom McFarland of Lubbock, respectively.

The group adopted several resolutions of importance to Texas and the development of its water resources. T. L. Sparkman, Jr., of Hereford, President of the High Plains Underground Water Conservation District, served as a member of the Resolutions Committee. Resolutions included those which commended the Texas Water Commission, the State Pollution Control Board, U. S. Study Commission — Texas, the several Federal, State and local agencies, the 57th Texas Legislature, Governor Price Daniel, the several river authorities and water districts, and others for their contribution in attempting to solve the water problems in Texas.

The T. W. C. A. again took a firm stand for the protection and maintenance of basic fundamental rights of States to determine and control the development of waters within the States.

The water conservation association went on record as being in favor of the passage of the Conservation Storage Constitutional Amendment - Proposal No. 4, which will be voted on by the people of Texas November 6.

The group also very vehemently opposed the passage of another Constitutional Amendment - Proposal No. 14. This is the so-called "Trial De Novo Amendment."

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN H. WHITE, JR.
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2 Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer ..... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan H. White, Jr. ..... Director Of Education
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Mrs. Wanda Dunn ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside. Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 ... Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 ... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 ... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 ... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 ... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 ... Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 ..... Littlefield, Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 ... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 ... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

Commission's Chief Engineer Explains Texas' Future Water Requirements

The State-Wide Water Committee in Austin on September 10 heard the Chief Engineer of the Texas Water Commission speak on work being done and progress made in water development planning throughout Texas.

John J. Vandertulip told the 150-man committee that, "People are often complacent about meeting their future water needs during periods of wet weather. Then during droughts, civic officials and leaders in the water-resources fields are criticized for not having forcefully pointed out beforehand how proper preparations could have avoided grave water problems. During the past 70 years, Texas has experienced eight significant droughts of varying severity. If Texans cannot change the weather, they can, at least, through sound, far-sighted planning, conserve and develop water resources to supply their future needs.

"Planning work carried on by the (Texas Water) Commission in cooperation with river authorities culminated in 1961 with the publication of a report which was presented to the Governor and the Legislature. That report is titled 'A plan for Meeting the 1980 Water Requirements of Texas.' The plan presented in the report provides for all present uses of water, and contains a guide for orderly and economic development of water resources of the State to meet the needs that can be estimated at this time with reasonable accuracy.

"There are about one thousand communities, towns, and cities in Texas with public water supplies. The 1960 census shows that of these, there are only 34 cities having populations in excess of 30,000. These communities and cities are scattered all over the State. These points of use being widely distributed over the State, and the sources of water supply also scattered, it is readily apparent that there is no magic formula for the development of a State-wide water plan. A State-wide water plan must integrate and coordinate projects to provide for all these future needs at scattered places while maintaining the individuality of each project.

"The present municipal and industrial water use in Texas averages about 1.8 billion gallons per day. The projected 1980 water needs of cities and industries averages about 6 billion gallons per day. The individual uses and projected requirements in cities and regional areas are given in detail in our 1961 planning report, together with information showing how these needs may be met. To meet the projected 1980 municipal and industrial water requirements, the State plan contemplates the use of an additional 400,000 acre-feet per year of underground water; and proposes the utilization of 73 existing reservoirs, 14 reservoirs then under construction, and 45 new reservoirs, plus the enlargment of two existing reservoirs. These 132 reservoirs will have a total conservation capacity of 36,300,000 acre-feet and in addition will provide 17,600,000 acre-feet of flood-control storage, or a combined total of 53,900,000 acre-feet of storage. Although considerable emphasis is given to municipal and industrial supplies in our planning report, I should also like to point out that 12 of the 45 proposed new reservoirs contain storage for irrigation purposes and 20 of the 45 proposed new reservoirs include flood-control storage.

"Presently, 79 percent of the communities and municipalities in Texas obtain their water supplies from underground sources. The water used by these communities and municipalities amounts to about 50 percent of the total State municipal water use. In many areas additional groundwater is available for development and may be developed in preference to new surface-water reservoirs. As the choice of development of surface or ground waters in these cases rests with the uses, it is quite possible that a few reservoirs included in the plan may be deferred in favor of groundwater use. Unfortunately, it is likely that some of the ground-water use contemplated in the plan may not be possible as a result of underground pollution.

"Two additional reservoirs are being considered now which were not contemplated in the 1961 report, both being for cities which have been using ground water. Our present planning, therefore, contemplates 47 additional major resorvoirs will be needed by 1980.

"The United States Study Commission-Texas published their report in April 1962. That report contains a proposed plan to meet established water requirements for the year 2010. It is not by coincidence that the reservoir projects in our 1980 plan are also projects contained in the U. S. Study Commission plan. There are just a limited number of dam and reservoir sites in Texas. Most of these sites have been known for some time. The fact that studies by river authorities, the State, and the U. S. Study Commission have not brought to light any new dam and reservoir sites demonstrates that there is a definite need for proper development of each site we have. 'Proper development' usually means reservoirs having capacities which are greater than could be constructed by utilizing the financial capabilities of local interests. This situation was recognized by Governor Daniel, the State agencies, and by the Legislature. This recognition culminated with the passage by the Legislature of House Joint Resolution 46.

"One of the principal factors in proper water development is the inclusion of sufficient conservation storage in reservoirs when they are constructed. Reservoirs must be constructed prior to the time when the water they are to provide is actually needed. How shall problems of this type be met? We recognize that larger reservoirs will be needed. To accomplish this goal, I believe that it is essential that the State be in a position to assist in proper development of reservoir sites. This position can be attained if H. J. R. 46 (Constitutional Amendment Proposal No. 4) is approved by the voters in November of this year.

"Since January of 1957, more reservoir conservation storage and flood control storage has been completed or placed under construction in Texas than during the entire preceding 50-year period. This period of less than six years coincides with the terms of office of Governor Daniel. The people in Texas should be made throughly aware of the tremendous role that he has personally played in expediting necessary water development to meet the needs of the State. This does not mean that the job is done. The meeting today points up the fact

As the official publication of the High Plains Underground Water Conservation District, this paper has an unwritten rule which dictates that we not take a stand on issues unless they directly effect the development and use of ground water in Texas; however, as with all rules, there must be an occasional exception. We think that one such occasion has arisen.

On November 6th, the ballot on which you vote your preferences during the Texas General Election will offer a choice "for or against" Constitutional Amendment-Proposal No. 14. This amendment is commonly referred to as the "trial de novo" amendment.

For the average layman, this proposed change in our Texas Constitution is rather difficult to understand. For this reason, allow us to present comments by two men who have had much experience in matters pertaining to our laws and who are respected as sound-thinking individuals.

In a recent letter to Judge J. E. Sturrock, General Manager of the Texas Water Conservation Association,Victor W. Bouldin, member of the Houston law firm, *Vinson, Elkins, Weems and Searls* said in part, "Under this broad language (referring to the first clause of the proposed amendment), the Legislature would have unlimited power to expand or contract the powers, functions and duties of the executive and judicial branches at will. It could make courts of administrators or administrators of courts. It could reduce to meaningless gestures all actions of any officer or agency in the executive department of the State or lower levels of government, by enacting legislation providing for judicial review of all such actions whereby a court could substitute its judgement for that of the administrator in purely administrative matters. Conversely, the Legislature could hamstring the courts and deny the right of trial by jury by enacting legislation which would make fact-findings by administrative agencies binding upon the courts. (I believe this side of the sword was overlooked by the sponsors.) The Legislature would be supreme. It could apply one rule to one agency and a different rule to another. Whether exercised wisely or unwisely or not at all, the very existence of the potential power in the Legislature to enlarge or diminish the authority and functions of either the executive or judicial departments at the expense of the other would destroy the system of checks and balances which constitute the cornerstone of our republican form of government."

In a speech before the Texas City Attorney's Convention held in San Antonio in early July, the Honorable Meade F. Griffin, Associate Justice, Supreme Court of Texas, had the following to say concerning the proposed "trial de novo amendment."

"Article II, Section 1, as it now reads is as follows:

'The powers of the government of the State of Texas shall be divided into three distinct departments, each of which shall be confined to a separate body of magistracy, to-wit: those which are legislative to one; those which are executive to another; and those which are judicial to another; and no person, or collection of persons, being of one of these departments, shall exercise any power properly attached to either of the others, except in the instances herein expressly permitted.'

"The framers of our Constitution thought that this provision for separation of powers of government was of such importance that they gave a separate article to such provision.

". . . . .The concept of government set forth in the above proposal (proposed Constitutional Amendment No. 14) is contrary to every principle of democratic government heretofore known to the American people. No such provision giving legislative enactment superiority over the other two co-equal branches of government can be found in any State of the American Union, nor in fact in any Anglo-Saxon Jurisdiction. It is a step toward the tyranny and oppression under which our people lived prior to 1776 and 1836. . . . ."

Obtain a copy of the proposed Constitutional Amendment — Trial de Novo, study it and we think you will agree that its passage would be a very bad thing for the people of Texas.

* * * * *

We have heard a few people say, "This irrigation water is mine and I ought to be able to waste it if I want to. It doesn't hurt anybody but me."

We know that this statement in some respects is both true and false. For an example, we know that the ground water in Texas is private property, and we think that this is the way it should be. However, we wonder about the wisdom of the statement, "It (waste) doesn't hurt anybody but me." Is this true?

Have you ever considered the political and legal aspects of wasting irrigation water? If not, consider for a moment what is occurring to us as a people.

Each year more of our individual rights slip from our grasp and are replaced by govermental decrees. These decrees do not ask, they tell us in rather plain terms what we may do and what we may not do.

You ask, "why, is this happening"? Perhaps one of the contributing reasons for this loss of rights is due to a lack of action by the individual and by groups of individuals. If we attended to the job as we should at home, we would perhaps not experience this encroachment by government.

We believe that this line of reasoning can be applied to our waste of irrigation water. We believe that our people here in the Southern High Plains of Texas—right here at home—*you*, are presently at a crossroads. A decision must be made. What choice do we have? Simply this, either we take care of our waste-water problems as individuals, or else the problem will undoubtedly be taken over by some state or federal agency, and this perhaps within the not-to-distant future. Should the latter alternative occur, rest assured the problem will be taken care of, whether or not we approve of the methods used.

We're not trying to shake up anyone merely for the sake of creating a difficult situation. But the handwriting is on the wall. All we need do is read the facts.

In a recent speech, Congressman Walter Rogers of Pampa stated to a group of lawyers that because of decisions rendered by the U. S. Supreme Court since 1940, the federal government has been steadily chipping away at state control of surface water resources. Federal encroachment into this realm is coming at a more rapid pace than we like to admit even to ourselves.

Since World War II, there have been *organized* and *concerted* efforts put forth here in Texas to have laws passed which would give control over development and use of ground water to some State Agency. If these efforts had been successful, irrigation farmers in Texas would have been further regimented.

Bills continue to be prepared by various groups each session of the State Legislature that if passed would make ground water public property.

When the local-controlled High Plains Water District was organized in 1951, it was organized to assist individuals in developing and using their privately-owned ground water. Since that time, the District has continually warned the people concerning the dangers involved in wasting irrigation water.

We believe that the average citizen of this area would not relish seeing public ownership of ground water replace private ownership; however, we also believe that to deter such an occurrence, each man that uses irrigation water must put a stop to waste on his farm. The greatest threat to our private-ownership doctrine, is our own complacency.

Now, is the time to make plans for taking care of irrigation "tailwater" next year. Don't put it off. Continued waste of irrigation water can lead only to one place — loss of private ownership and additional governmental control.

---

that, although we have made giant strides, much, much additional work remains to be done. H. J. R. 46 will be an effective means of accomplishing a part of this program."

THINK,

IRRIGATION FARMER!

WATER is a commodity so precious that no tyrant has ever dared deny it to his people.

The earliest records of our civilization are linked to the spring and the waterhole, the river and the well.

The Children of Israel faltered in the wasteland and were ready to revolt until Moses struck the rock and brought forth a spring

Wars have been fought over water rights and mighty nations have vanished because their water resources failed.

In view of these facts, can you afford the luxury of irrigation

" TAILWATER ? ? "

Educational Display Catches Eye Of Panhandle - South Plains Fair Visitor

The Loop, Texas, High School Vocational Agricultural students designed and built the above display on water and soil conservation for the Panhandle-South Plains Fair. The fair was held recently in Lubbock. The display pictured above is typical of the many fine educational booths enjoyed by thousands of fair visitors.

Amendment No. 4 —

(Continued From Page 1)

gations would go into a revolving fund for the continuance of the program.

The Legislature will be authorized to establish the necessary statutory machinery to put the Amendment into effect.

The proposed Amendment was suggested by Governor Daniel in his first message to the Legislature in January 1957, but it was not approved by the Legislature until 1961. The Governor's Statewide Water Committee points to the vote in both the House and the Senate as indicating the importance of the measure to the future growth of Texas. The final Conference Committee report passed the Senate by a vote of 31 - 0 and in the House by 134 - 0. During its legislative history in 1961, only 4 votes were ever cast against it in the House and only 1 in the Senate.

WHEN YOU MOVE—

Please notify the High Plains Underground Water Conservation District, Lubbock, Texas on Post Office Form 22S obtainable from your local postmaster, giving old as well as new address, to insure no interruption in the delivery of "The Cross Section."

THE CROSS SECTION
1628 - 15th Street
Lubbock, Texas
Dear Sirs:

I do not now receive THE CROSS SECTION but would like to have it sent to me each month, free of charge, at the address given below.

Name _____

Street Address _____

City and State _____

(Please cut out and mail to our address)

CONSERVATION CONVERSATION

If you're thinking of drilling an irrigation well this winter, perhaps, you will be interested in knowing what information is needed by your County Committee before they can issue you a drilling permit.

First, the owner's name and address and legal description of the land upon which the well is to be drilled is necessary.

Second, the measured distance from the proposed well site to the three (3) nearest wells that are within 440 yards is required.

Third, the measured distance from the proposed well site to the two (2) nearest perpendicular property lines is needed.

The minimum distance that a proposed well must be spaced from any existing well is determined by the size of the well to be drilled. For an example, if the land owner, or his agent, desires to drill a well and install a 6-inch column sized pump, he must move from the nearest well a distance of not less than 300 yards.

The rules and regulations of the High Plains Water District specify the minimum distance required in spacing various sized wells from existing wells. The rules provide that a:

4-inch well or smaller must be a minimum of 200 yards from the nearest well.

5-inch well must be a minimum of 250 yards from the nearest well.

6-inch well must be a minimum of 300 yards from the nearest well.

8-inch well must be a minimum of 400 yards from the nearest well.

10-inch well or larger must be a minimum of 440 yards from the nearest well.

Each of the thirteen counties in the High Plains Water District has a five-man County Committee. Applications for drilling permits are submitted by the landowner, or his agent, to the Committee in his respective County for approval.

Upon approval, the drilling permit is then valid for a period of four (4) months.

When the well is drilled and ready for production, a completed log of the formation penetrated by the well and a schedule of the production equipment installed must be submitted to the County Committee.

We trust that the information presented here will be helpful to you. If you have further questions concerning drilling permits, please come by, or drop a line to, the High Plains Water District office in Lubbock, or visit the office of your local County Committee.

DRILLING STATISTICS FOR SEPTEMBER

During the month of September, 61 new wells were drilled within the High Plains Water District; 13 replacement wells were drilled; and 9 wells were drilled that were either dry or non-productive for some other reason. The County Committees issued 102 new drilling permits.

Permits issued and wells completed for August are listed below by counties:

County	Permits Issued	New Wells Drilled	Replacement Wells Drilled	Dry Holes Drilled
Armstrong	0	0	0	0
Bailey	10	3	1	0
Castro	12	13	1	0
Cochran	6	4	0	1
Deaf Smith	7	2	3	2
Floyd	16	6	1	0
Hockley	8	7	0	1
Lamb	7	7	1	1
Lubbock	13	4	0	0
Lynn	1	1	0	0
Parmer	13	8	6	0
Potter	0	0	0	0
Randall	9	6	0	4
Totals	102	61	13	9

A LITTLE LIFE IS WORTH MORE THAN A LITTLE TIME, CLOSE THOSE ABANDONED WELLS!

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No. 6 **"THERE IS NO SUBSTITUTE FOR WATER"** *November 1962*

Lubbock Community Ambassador Tells About His Goodwill Trip to Argentina

BY ALAN HENRY

Editor's Note —Each year, the Civic and Women's Clubs and the Chamber of Commerce of Lubbock select a worthy young student as Community Ambassador to represent Lubbock in a foreign country during the summer months. Purpose—to spread goodwill between our's and the other nation.

In 1962, the Community Ambassador was Alan Henry, a Texas Technological College junior student majoring in Personnel Management. He was selected over 22 other entrants. He visited in Argentina for the summer with brief stops in Chili and Peru.

Alan has worked part-time for "The Cross Section" since he was in Junior High School. He works in the circulation department.

Alan is a member of Phi Kappa Psi, National Social Fraternity, Phi Eta Sigma, Freshman Honorary Fraternity and the First Baptist Church of Lubbock.

He is the son of Mr. and Mrs. Pat Henry, 1916-28th Street, Lubbock.

ALAN HENRY

Argentina, the second-largest country in South America, is a nation which combines a vast Latin American land still waiting to be fully utilized with the drive and determination of a modern,impatient population. It is a country of towering mountains and level plains, of tropical jungles and barren wastelands, of developing industry and abundantly productive agriculture. The Argentines have probably the highest standard of living of any South American people. Although hampered by unstable government and rising inflation, Argentina has the potential of becoming a leader, not only of South America, but of the world.

During the past summer, I had the pleasure of living in Argentina for almost two months. I was a member of a group of 11 persons from different parts of the United States. We were part of a world-wide exchange program called the "Experiment in International Living."

While in Argentina, our group spent three weeks in the capital city of Buenos Aires. Buenos Aires is one of the world's largest cities, very European in appearance, reflecting the large percentage of the population which is made up of descendants of European emigrants. Each member of our group stayed with a separate family. During this three-week "home stay" we were treated as members of their families, participating in their everyday activities, as well as in special programs for the "yankees" (a term applied to all citizens of the United States). Our hosts introduced us to such customs as the asado (the Argentine equivalent to our barbecue) and the drinking of mate (a native drink which foreigners describe as tasting somewhat like a mixture of alfalfa and cigarette smoke). It was by learning such customs and sharing the day-by-day activities of our families that we came to know more about the people of Argentina.

Although the cities of Argentina retain the majority of the population, it is the agricultural, rural regions which form the basis of the country's economy. We visited some of these regions to learn more about the country as a whole.

Argentina is a country about one-third the size of the continental United States. Like the United States, Argentina can be divided into geographical regions. The most famous region of the country is the Pampa, a fan-shaped area stretching inland from Buenos Aires. As we travelled across the Pampa, the land appeared at times to be perfectly flat, at times to roll gently. Since Argentina is on the opposite side of the equator from the United States, its seasons are the reverse of ours. For this reason, our "summer" trip took place during the "winter"! Since June and July are Argentina's coldest months, we did not see the wheat, corn, flax, and other crops

(Continued on Page 4)

In the accompanying story, prepared especially for "The Cross Section," Harry Tower, shown above at his desk in the City of Lubbock office building, discusses the possible results of nuclear explosion and fallout to water supplies in the Southern High Plains area.

Water Contamination From Nuclear Explosion

BY HARRY N. TOWER
Civil Defense Director, City of Lubbock, Lubbock, Texas

It is necessary to consider the nature of a nuclear explosion and what effects result in order to discuss contamination.

When a nuclear bomb explodes, it pulverizes thousands of tons of earth, rock and debris and draws them into the air between 10 and 20 miles high. In the process of nuclear detonation, each of the tiny particles — from the size of face powder to pea gravel—is contaminated by the radioactive residue of the explosion. A little later, this material — depending on the size of the particles — condenses in the cold upper air and starts falling back to earth, wherever the winds blow it, sometimes hundreds of miles downwind from the explosion.

About five miles from the explosion, the heavier particles would reach the ground in about 30 minutes. Twenty miles away, they would reach the ground in about one hour. One hundred miles away, the fallout might not start hitting earth for four or six hours. Virtually all of this early fallout descends in less than 24 hours. The lighter particles — delayed fallout — might stay aloft for months.

The heavier particles of the fallout could probably be seen but some of the smallest couldn't. The radiation coming from the particles gives no evidence of its presence and could not be detected without the use of radiological monitoring instruments.

Fallout radiation cannot make anything radioactive. After a nuclear attack, the air would be contaminated only to the extent that it contained fallout particles. The mere passage of fallout particles through the air does not contaminate it.

Food and water that have been exposed to fallout are contaminated only to the extent that they contain fallout particles. Food that has particles on it can be made safe by washing, brushing or peeling. Fallout particles can be removed from water by sedimentation or filtering.

If you draw a circle on a map with a 100 mile radius with Lubbock at its center you will quickly see that there is no target worth while for the enemy to expend a nuclear weapon. Military installations which could retaliate and rain similar destructions on the enemy must be his first targets. Consequently, our problem here would be primarily protection from fallout. All of our water is underground and is not exposed at its source. Radioactive particles or fallout could not get into it and contaminate it at its source.

Water which is brought to the surface by pumps and other methods from underground sources and distributed through pipes to consumers would not be contaminated unless exposed in open reservoirs. Even then the water itself is not contaminated and can be utilized if radioactive particles are eliminated by filtration or by allowing particles to settle by sedimentation.

Should a nuclear weapon explode in the area, the underground source would not be contaminated and the only problem would be the disruption of the delivery system. If this were not disrupted, the water could still be used.

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN H. WHITE, JR.
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. .... Route 2 Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1 Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer .... Lockney, Texas

District Office, Lubbock
Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan H. White, Jr. ..... Director Of Education
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Mrs. Wanda Dunn ..... Secretary

Field Office, Hereford
Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside. Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98 Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 .. Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 .... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 .... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main, Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 .. Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 Silverton Star Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 .. 832 W. Tenn. Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 .... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 ..... Littlefield. Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 .... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 .... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

H. M. Lillard Of Parmer County Insta

BY ALLAN H. WHITE, JR.

H. M. Lillard operates 640 acres of land located six miles north of Friona in Parmer County. The land is owned by L. F. Lillard, also of Friona and father of H. M.

Lillard grows some cotton, but mostly wheat and grain sorghum. His soil is of a heavy texture. The slope of the farm's surface is rather uniform and not severe.

During the past few years, Lillard has experienced decreased yields from his irrigation wells. He has four wells—two 8-inch wells, one 6-inch well and one well that pumps about one-half of what an 8-inch well should normally produce.

In 1960, it became increasingly evident to Lillard that if he was to continue in the irrigated farming business for any appreciable length of time that he must commence making better use of precipitation that his farm received, and that more efficient use of irrigation water produced from the deep wells would have to be made.

In order to accomplish the job of increasing irrigation efficiency, Lillard set out on a three-fold program, (1) to shorten the length of irrigation runs so more uniform penetration of irrigation water could be obtained, (2) to change direction of rows so that water would not run directly down the slope (this allows more time for both rainwater and irrigation water to percolate into the soil), and (3) to install re-circulation systems to catch irrigation "tailwater" at the low sides of the farm and pump it back to higher land where it could be used.

This constituted a need for major revisions in thinking and some changes in farming methods, and also some outlay of capital. All could not be accomplished over night. In fact, the ultimate is still not accomplished—it will probably never be. No doubt, there will be need for change as long as the farm exists—this is progress.

Lillard cut down the length of many of his rows, changed direction of others and installed two re-circulating pumps and systems. He even contoured a small bothersome tract on the west side of the farm.

The cost of the re-circulating system installed at the southeast corner of the farm was as follows:

1800 feet 4-inch aluminum pipe @ 33c per ft.	$594.00
4-inch centrifugal pump and fittings	$550.00
Engine, complete (used)	$225.00
Dirt work	$155.00
Total	$1524.00

Cost of the re-circulating system installed at the northeast corner of the farm was:

1800 feet 4-inch aluminum pipe, 5" x 6" centrifugal pump, engine fittings. etc. (used)	$1600.00
Dirt work	$160.00
Total	$1760.00

The small tracts of land (about 25 acres in each) watered with irrigation "tailwater" from the re-circulating systems, last year produced greater yields than did the other crop land. For an example, the southeast tract was planted to grain sorghum and produced 4800 pounds of grain per acre as compared with a 4000 pound per acre yield from the remaining sorghum acreage. The grain sorghum crop on the farm last year was badly damaged by a late hail storm. On the northeast tract that is watered with "tailwater", wheat was grown last season. It produced about one-third more than did the remaining wheat acreage.

H. M. Lillard is shown above with one of his irrigation wells. During the past few years, the wells on his farm have decreased in yield, indicating that greater efficiency from ground water and rainfall would have to be obtained if adequate irrigated crops were to be produced for an extended period of time.

"Water grass" has been bothersome on the Lillard farm during the past few years. It has been a source of some concern around the recirculating pits where cultivation is difficult. Lillard handles all of his "tailwater" in ditches cut on his own land rather than using the road bar-ditches. He believes that using the bar-ditches would compound his weed problems.

No special labor problems have arisen due to the operation of the "tailwater" re-circulating systems. When the pits fill with water, the pumps are started and pumped at full capacity, 1 1/2-inch syphon tubes are set when the open ditches fill with re-

lls "Tailwater" Re-Circulation System To Improve His Irrigation Efficiency

Lillard installed two portable centrifugal pumps on his farm for pumping irrigation "tailwater" from the low sides back up the slopes where it could be beneficially used. The recirculation systems were relatively inexpensive. According to Lillard, they will pay for themselves in 5 years or less time.

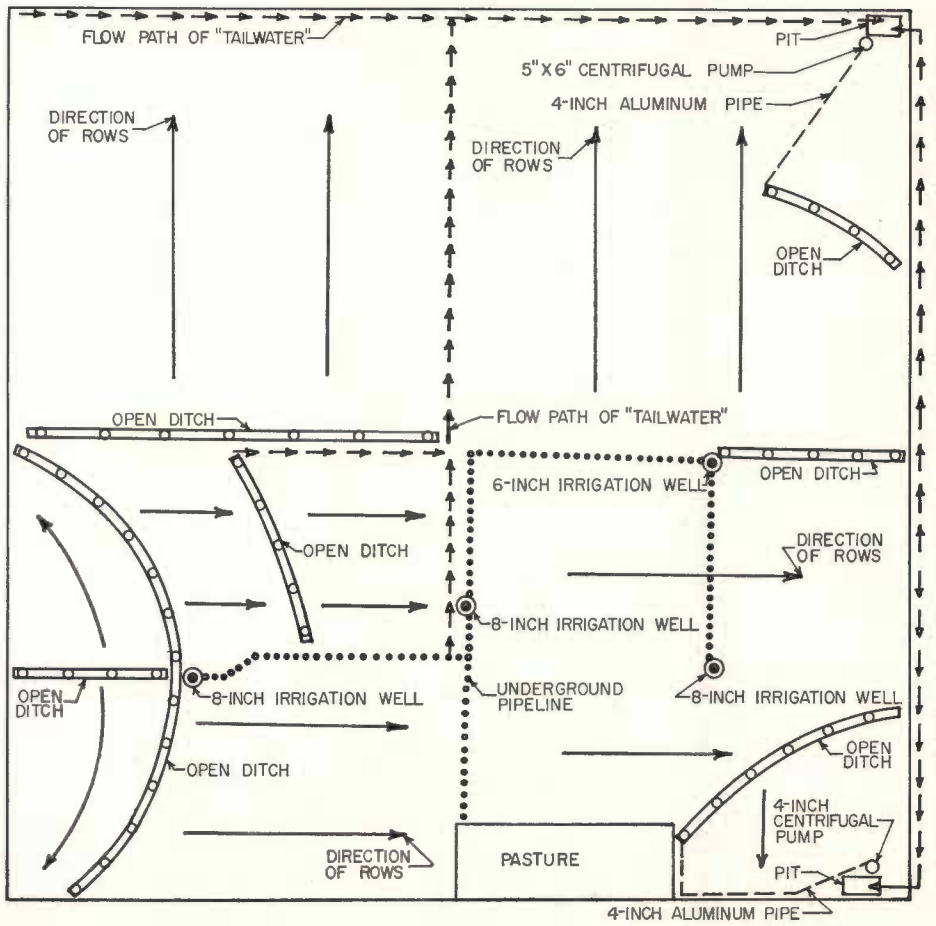
circulated "tailwater", and that's it. Unless something unforeseen occurs, no other attention is necessary.

The system engines use about 2.5 gallons of fuel per hour.

Lillard figures a conservative "pay-out" period for the systems would be 5 years. He says "20 per cent return on my investment is not making money at a fantastic rate, but when you think about it, there aren't many investments, of a sound nature, that will pay off that well. I like the systems, and I believe my irrigation efficiency has greatly improved. With some refinements in my overall program each year, efficiency should continue to improve."

Lillard has contoured some of his rows in order to slow the rate of movement of irrigation water through the field. This will give the water more time to soak into the soil and result in less "tailwater" running out the row ends.

Section 35, Township 2 N, Range 3 E, Parmer County, Texas
L. F. Lillard, Owner; H. M. Lillard, Operator



". . . Unto the place from whence the rivers come, thither they return again."

Ecclesiastes 1:7

Soil Test For Greater Fertilizer Efficiency

JAMES H. VALENTINE,
Extension Area Soil Chemist

Editor's Note — Mr. Valentine graduated from Texas A&M College with B. S. and M. S. degrees in Agronomy. In 1943, he served as Soil Surveyor with the Soil Conservation Service in the High Plains of Texas Area. He was in charge of soil testing work at the Soil Conservation Service Laboratory in Fort Worth, 1946-1950. He served as Director of the Soil Testing Laboratory at Stephen F. Austin State College, 1951-1960.

In August 1960, Mr. Valentine assumed his present duties with the Texas Agricultural Extension Service as Soil Chemist for the High Plains Area. His office and laboratory facilities are located at the new Agricultural Experiment Station, Sub-station No. 8, near Lubbock.

A soil test is simply a chemical evaluation of the soil's plant nutrient element status and also measures other factors influencing the assimilation of these elements. On routine samples the following determinations are made; soil reaction (pH), organic matter, phosphorus, potassium, calcium, soluble salts, and sodium. Of course a more complete analysis could be made; however, it is felt that these values are generally of greatest importance and are sufficient for planning a profitable fertilizer-use in this area.

It has long been realized that an adequate supply of plant nutrients present in proper balance is essential for most efficient utilization of water, whether it be from rainfall or irrigation. When one or more element is inadequate, additional water cannot raise the yield above the limitation set by the deficiency. If moisture is inadequate for high production, the use of small amounts of fertilizer early in the season can encourage a deeper and more vigorous root system capable of taking advantage of water stored deeper in the soil profile.

It should be pointed out that soils of the South Plains now vary widely in their plant food reserves. At the time the hard lands and better mixed land soils were first put under cultivation, they contained up to 2 per cent organic matter. Now, the majority of these soils show an organic matter content in the 1.0 to 1.5 per cent range. This decrease, brought about largely by cultivation and crop removal, has led to very profitable returns to the farmer thru use of nitrogeneous fertilizers. Generally speaking, nitrogen has been and still remains the nutritive element in shortest native supply. Organic matter is a measure of the soil's nitrogen reserve, but it is not in itself an adequate guide for determining the nitrogen needs of next year's crop. Other factors including the last crop, the amount, nature, and stage of decomposition of residue, and previous response to fertilizer must also be considered.

Due to the mobility of, and quick plant response to nitrogen, annual, or perhaps more frequent applications of nitrogen are desirable, with the aim being that of keeping the plant growing at a normal rate without nitrogen deficiencies or excesses.

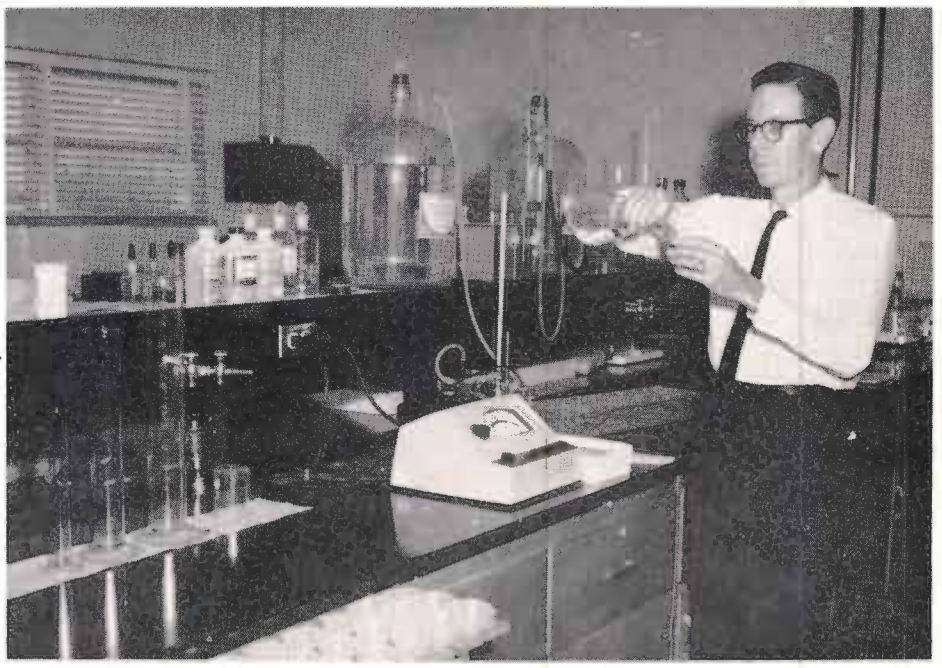
Phosphorus, after nitrogen, is the next element most likely to be in short supply. South Plains' soils had an adequate though modest, supply when first cultivated. Intensive land use under irrigation with high rates of nitrogen has, in many instances, greatly depleted the phosphorus to the point where its application as a fertilizer is necessary for profitable production. A proper balance between nitrogen and phosphorus is essential for best returns from the investment made in fertilizers.

Phosphorus levels, as determined by soil tests in the Extension Service's Soil Testing Lab, are correlated with actual field response obtained by Experiment Station staff members concerned with fertility research. This is a continuing process whereby soil samples are collected each year from experimental plots both on and off station. Samples are analyzed and compared with yields obtained from various fertilizer treatments in the experiment. The soil test readily identifies the phosphorus level in the soil and offers the best guide available to farmers as to whether or not the element will be needed for a particular crop. It is definitely known that many soils of the area still contain sufficient phosphorus for top production.

Most of the South Plains soils are adequately supplied with the other primary plant nutrients, however, potassium deficiencies may occur in the sandy areas. High soil reaction values influence the low availability of iron, zinc, and perhaps manganese in high lime soils.

For a soil test to be meaningful it is necessary that the sample be collected in such a manner that it really represents the area from which it is drawn. Also, it is essential that the technician interpreting the laboratory findings be informed as to cropping history, fertilizer use, water supply, crop to be grown and anticipated yields.

The local County Agent can supply information on sample collection and mailing. The $2.00 fee per sample can well be one of the best investments in a program of fertility management.



James Valentine, is shown above as he prepares to analyze a sample of soil. Valentine's accompanying story explains how a proper balance of plant nutrients in the soil aid in efficient use of irrigation water.

ARGENTINA—from page 1

which occupy much of the Pampa during the growing season. However, we were able to visit some of the estancias—the vast Argentine ranches, some of which cover more than 500,000 acres. It is on the estancias that the country's livestock is raised. The raising and processing of beef cattle is Argentina's chief industry. One of the first questions we were asked when we met an Argentine was, "What do you think of Argentine beef?" Fortunately, we were able to answer truthfully that it was the best beef we had ever tasted.

The Pampa has been compared to the Great Plains of the United States. The soil is deep and rich. Although the yearly rainfall is not particularly great over much of the Pampa, most of the moisture is retained near the surface due to poor drainage of the flat land. For this reason, irrigation, especially from wells, is almost nonexistent on the Pampa.

The Pampa covers only about one-quarter of Argentina. To the north of the Pampa is the Chaco, a humid region of tropical and sub-tropical forests. Such crops as cotton, tobacco and citrus fruits are grown in this area. The southern part of Argentina is called Patagonia. Patagonia is generally windswept and arid, and is used mostly as range land for sheep.

The diversity of crops grown in Argentina was impressed upon us when our train passed through the vicinity of the city of Tucuman. Tucuman is the center of the sugar industry of the nation. The farmers rely heavily on the water of nearby rivers to irrigate their crops of sugar cane.

Directly across from Buenos Aires, on the western border of Argentina lies the province of Mendoza. Here, in the foothills of the Andes mountains, grow the grapes for Argentina's wine industry. As in Tucuman, the farmers near Mendoza utilize river water to irrigate their crops.

Two months is a very short period in which to try to learn about a country. It was interesting to me to draw certain comparisons between Argentina and the region of Texas in which I have lived all my life. While it is true that we do not have cities the size of Buenos Aires or mountains such as the Andes, the cotton, grain, and cattle grown in the United States are not unlike those found in Argentina. Somehow, this agricultural "common denominator" makes the great distance between the two countries seem less imposing.

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit

THE Cross SECTION

A Monthly Publication of the High Plains Underground Water Conservation District No. 1

Volume 9—No. 7 **"THERE IS NO SUBSTITUTE FOR WATER"** *December 1962*

Season's Greetings

FROM THE DIRECTORS AND STAFF OF THE
HIGH PLAINS UNDERGROUND WATER
CONSERVATION DISTRICT

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT

DIRECTORS: ELMER BLANKENSHIP, HENRY "CHICK" SCHMIDLY, JOHN GAMMON, T. L. SPARKMAN, JR., J. R. BELT, JR.

STAFF: WAYNE WYATT, WANDA DUNN, TOM McFARLAND, JEAN LANCASTER, DON REDDELL, MATTIE K. ROBINSON, ALLAN WHITE, MAYME McVAY, BILL BROADHURST, BRUCE FINK

THE Cross SECTION

A MONTHLY PUBLICATION OF THE HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Published monthly by the High Plains Underground Water Conservation District No. 1
1628 15th Street, Lubbock, Texas.

Telephone PO2-8088

Second-class Postage Paid at Lubbock, Texas.

ALLAN H. WHITE, JR.
Editor

BOARD OF DIRECTORS

Precinct 1
(LUBBOCK and LYNN COUNTIES)
Elmer Blankenship, Vice Pres. ..... Route 2
Wilson, Texas

Precinct 2
(COCHRAN. HOCKLEY and LAMB COUNTIES)
Henry J. Schmidly ..... Rt. 2, Levelland, Texas

Precinct 3
(BAILEY, CASTRO and PARMER COUNTIES)
John Gammon ..... Rt. 1, Friona, Texas

Precinct 4
(ARMSTRONG, DEAF SMITH, POTTER and RANDALL COUNTIES)
T. L. Sparkman, Jr., President ..... Route 1
Hereford, Texas

Precinct 5
(FLOYD COUNTY)
J. R. Belt, Jr., Sec.-Treasurer .... Lockney, Texas

District Office, Lubbock

Tom McFarland ..... General Manager
W. L. Broadhurst ..... Chief Hydrologist
Allan H. White, Jr. ..... Director Of Education
Donald L. Reddell ..... Agricultural Engineer
Wayne Wyatt ..... Field Representative
Mrs. M. McVay ..... Secretary-Bookkeeper
Mrs. Jean Lancaster ..... Secretary
Mrs. Wanda Dunn ..... Secretary

Field Office, Hereford

Bruce E. Fink ..... Ground-Water Geologist
Mrs. Mattie K. Robinson ..... Secretary

COUNTY COMMITTEEMEN

Armstrong County
Robert Adams, 1965 ..... Wayside. Texas
James Bible, 1964 ..... Wayside, Texas
Dewitt McGehee, 1963 ..... Wayside, Texas
John Patterson, 1965 ..... Rt. 1, Happy, Texas
Carroll D. Rogers, 1964 ..... Wayside, Texas

Bailey County
Mrs. Billie Downing
Bailey County Farm Bureau Office, Muleshoe
Doyle Davis, 1965 ..... Goodland, Texas
Ross Goodwin, 1963 ..... Rt. 2, Muleshoe, Texas
Lester Howard, 1964 ..... Rt. 5, Muleshoe, Texas
Leon Lewis, 1965 ..... Route 1 Box 98
Muleshoe, Texas
Leldon Phillips, 1964 ..... Rt. 2, Muleshoe, Texas
Committee meets last Friday of each month at 2:30 p. m., Farm Bureau Office, Muleshoe, Texas.

Castro County
Mrs. Connie Ivey
Ivey Insurance Co., Dimmitt
C. W. Anthony, 1964 ..... Rt. 4, Dimmitt, Texas
George Bradford, 1964 .. Box 732, Dimmitt, Texas
E. E. Foster, 1963. ..... Box 193, Hart, Texas
Lester Gladden, 1965 .... Star Rt., Hereford Texas
H. E. Henley 1965 ..... Rt. 5, Dimmitt, Texas
Committee meets on the last Saturday of each month at 10:00 a. m., Farm Bureau Office, Dimmitt, Texas.

Cochran County
W. M. Butler, Jr.
Western Abstract Co., Morton
H. B. Barker, 1964 ..... Morton, Texas
Ira Brown. 1965 ..... Box 774, Morton, Texas
Weldon Newsom, 1964 ..... Rt. 2, Morton, Texas
D. A. Ramsey, 1963 .... Star Rt. 2, Morton, Texas
L. L. Taylor, 1965 ..... Rt. 1, Morton, Texas
Committee meets on the second Wednesday of each month at 8:00 p. m., Western Abstract Co., Morton, Texas.

Deaf Smith County
Mrs. Mattie K. Robinson
High Plains Water District,
317 N. Sampson, Hereford
L. E. Ballard, 1963 .... 120 Beach, Hereford, Texas
Clinton Jackson, 1965 ..... 807 N. Main,
Hereford, Texas
J. E. McCathern, Jr., 1964 Rt. 5. Hereford, Texas
Billy B. Moore, 1965 ..... Wildorado, Texas
Charles Packard, 1964 .... Rt. 3, Hereford, Texas
Committee meets the first Monday of each month at 7:30 p. m., High Plains Water District office, Hereford. Texas.

Floyd County
Mrs. Katherine King
325 E. Houston St., Floydada
G. L. Fawver, 1964 ..... Rt. 5, Floydada, Texas
V. H. Kellison, 1964 ..... Box 846, Lockney, Texas
Grigsby "Doodle" Milton. 1965 .. Silverton Star
Route, Floydada, Texas
Chester W. Mitchell, 1963 ..... Lockney, Texas
L. D. "Buster" Simpson, 1965 ..... 832 W. Tenn.
Street, Floydada, Texas
Committee meets on the first Tuesday of each month at 10:00 a. m., Farm Bureau office, Floydada, Texas.

Hockley County
Murry Stewart
505½ Avenue F, Levelland
Bryan Daniel, 1964 ..... Rt. 2, Levelland, Texas
Preston L. Darby. 1965 .. Rt. 1, Ropesville, Texas
Leon Lawson, 1946 ..... Rt. 3, Levelland, Texas
Earl G. Miller, 1965 ..... Rt. 5, Levelland, Texas
Madison Newton, 1963 ..... Anton, Texas
Committee meets first and third Fridays of each month at 1:30 p. m., 505½ Avenue F, Levelland, Texas.

Lamb County
Calvin Price
620 Hall Ave., Littlefield
Henry Gilbert, 1964 ..... Sudan, Texas
Willie G. Green, 1964 ..... Olton, Texas
Roger Haberer, 1965 ..... Earth, Texas
Albert Lockwood, 1963 ..... Littlefield. Texas
Troy Moss, 1965 ..... Rt. 1, Littlefield, Texas
Committee meets on the first Monday of each month at 7:30 p. m., Montgomery's Cafe, Littlefield, Texas.

Lubbock County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Bill Alspaugh, 1963 ..... Box 555, Slaton, Texas
W. J. Bryant, 1964 1902 Ave. C, Lubbock, Texas
Bill Hardy, 1965 ..... Rt. 1, Shallowater, Texas
Virgil Isom, 1964 ..... Idalou, Texas
M. N. Thompson, 1965 ..... Rt. 4, Lubbock, Texas
Committee meets on the first and third Mondays of each month at 2:30 p. m., 1628 15th Street, Lubbock, Texas.

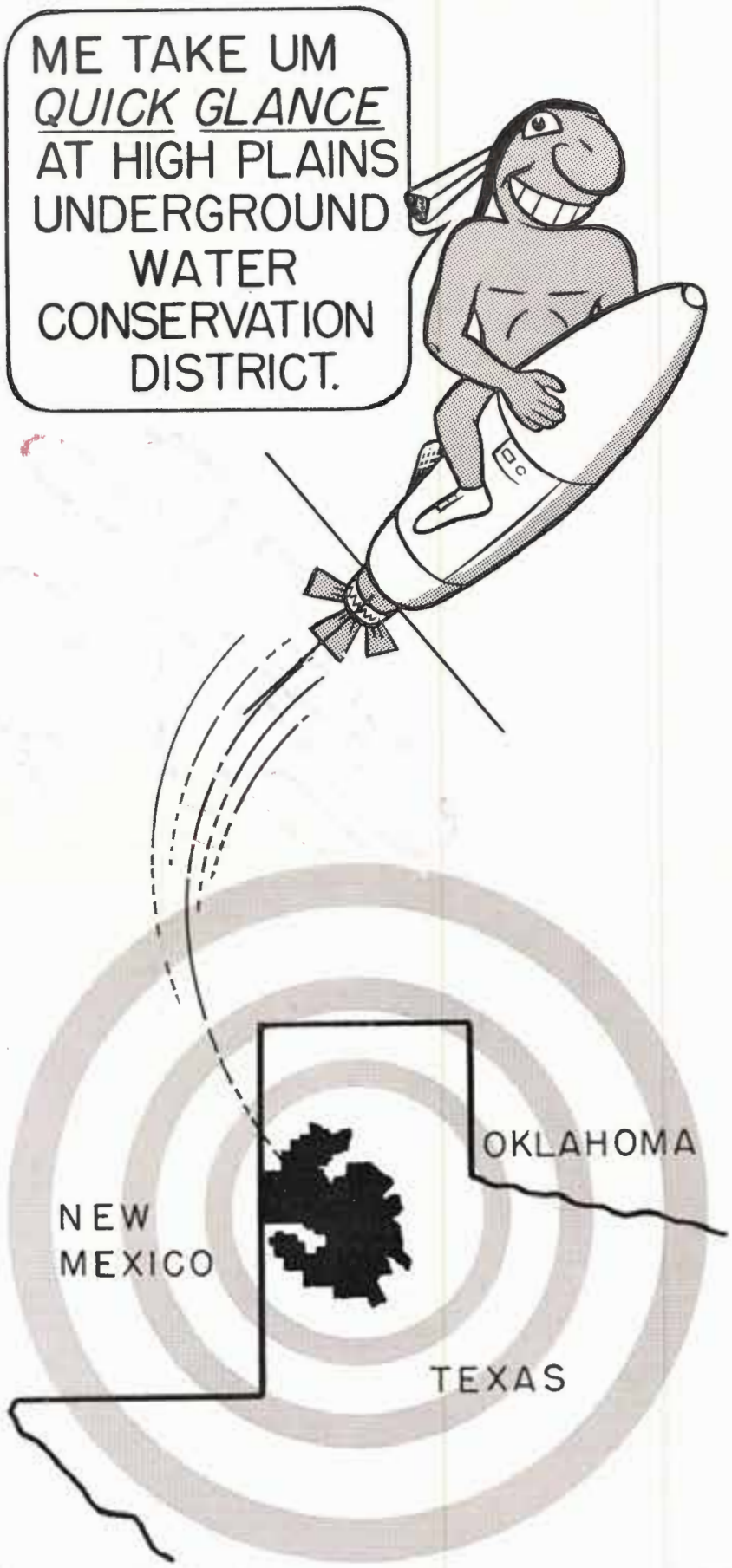
Lynn County
Mrs. Jean Lancaster
1628 15th Street, Lubbock
Earl Cummings, 1964 ..... Wilson, Texas
Robbie Gill, 1965 ..... Rt. 1, Wilson, Texas
Frank P. Lisemby, Jr., 1964 Rt. 1, Wilson, Texas
Erwin Sander, 1963 ..... Box 34, Wilson, Texas
T. J. Swann, 1965 ..... Rt. 1, Wilson, Texas
Committee meets on the third Tuesday of each month at 10:00 a. m., 1628 15th Street, Lubbock, Texas.

Parmer County
Aubrey Brock
Wilson & Brock Insurance Co., Bovina
Joe B. Jennings, 1964 .... R.F.D., Muleshoe, Texas
Lee Jones, 1963 ..... Rt. 1, Farwell, Texas
Walter Kaltwasser, 1964 .... R.F.D., Farwell, Texas
Carl Rea, 1965 ..... Rt. 1, Bovina, Texas
Ralph Shelton, 1965 ..... Friona, Texas
Committee meets on the first Thursday of each month at 8:00 p. m., Wilson & Brock Insurance Agency, Bovina, Texas.

Potter County
T. G. Baldwin, 1964 ..... Bushland, Texas
W. J. Hill, Jr., 1963 ..... Bushland, Texas
L. C. Moore, 1965 ..... Bushland, Texas
Temple Rogers, 1965 ..... Rt. 1, Amarillo, Texas
R. C. Sampson, Jr., 1964 ..... Bushland, Texas

Randall County
Mrs. Louise Knox
Randall County Farm Bureau office, Canyon
Harold Bryan, 1965 ..... Rt. 1, Happy, Texas
A. C. Evers, 1965 ..... Rt. 1, Canyon, Texas
J. R. Parker, 1963 ..... Canyon. Texas
Lewis A. Tucek, 1964 ..... Rt. 1, Canyon, Texas
Ed Wieck, 1964 ..... Rt. 1, Canyon, Texas
Committee meets on the first Monday of each month at 8:00 p. m., 1710 5th Ave., Canyon, Tex.

NEW FOLDER PUBLISHED BY DISTRICT



Above you see Chief Running Water taking his first trip into outer space. As he orbits the earth, the area covered by the High Plains Underground Water Conservation District is visible below. What you see above is the cover for a new informative and interesting folder about the Water District. The folder will answer most of your questions concerning the Water District and its operation. Cut out the coupon below and send for your free folder today.

HIGH PLAINS WATER DISTRICT
1628 — 15th Street
Lubbock, Texas

Will you please send me _____ of the folders entitled, "A Quick Glance at the High Plains Water District." Send them free of charge to the address shown below:

Name _____

Street Address _____

City and State _____

HIGH PLAINS WATER DISTRICT WILL HOLD ELECTIONS JANUARY 8

As always the High Plains Water District's annual elections will be held on the second Tuesday of January—that date this time is January 8, 1963. At present, arrangements are being made to secure voting places and election officials in each of the thirteen counties that make up the District.

At the end of this year, three of the five men who serve as members of the Board of Directors will conclude their present terms of office. The three men are, Elmer Blankenship of Wilson, who represents Lubbock and Lynn Counties; John Gammon of Lazbuddy, who represents Bailey, Castro and Parmer Counties; and T. L. Sparkman, Jr. of Hereford, who represents Armstrong, Deaf Smith, Potter and Randall Counties.

Besides the election of Board members in the counties mentioned above, there will also be one person elected to each five-man County Committee in the District. Each county has a "County Committee" that signs well-drilling permits and makes recommendations on various matters to the District Board. At the end of this year, the term of office of one "Committeeman" in each county will terminate.

All qualified voters are eligible to cast ballots in the Water District elections. This is one point that has been universally misunderstood. Many have the mistaken idea that because they do not own land or operate an irrigation well that they are not qualified to vote. The barber, grocer, etc. who lives in town is eligible to vote even though he does not own or operate irrigated land. The ladies are also eligible.

Nominations of qualified persons for District Directors and County Committeemen are made by the respective County Committees, or they may be made by petition signed by any twenty-five qualified voters in the area involved.

Polling places are listed below by county. A voter must cast his ballot in his home county; however, he may vote at any one of the voting places in that county.

Nominees for Director and Committeeman places are also listed below.

VOTING PLACES

Armstrong County
1. Schoolhouse, Wayside

Bailey County
1. Enochs, Gin Office, Enochs
2. Community House, Muleshoe

Castro County
1. Hardware Company, Nazareth
2. County Courthouse, Dimmitt
3. Easter Community Center
4. American Legion Hall, Hart

Cochran County
1. County Activities Bldg., Morton
2. Star Route Co-Op Gin, 5 miles west of Morton

Deaf Smith County
1. County Courthouse, Hereford

Floyd County
1. County Courthouse, Floydada
2. City Hall, Lockney

Hockley County
1. City Hall, Anton
2. Farm Center Gin, Ropesville
3. County Courthouse, Levelland
4. Farmer's Co-Op Gin, Whitharral
5. City Hall, Sundown

Lamb County
1. City Hall, Olton
2. City Hall, Sudan
3. Community Bldg., Earth
4. County Courthouse, Littlefield
5. Farmer's Co-Op Gin, Spade

Lubbock County
1. Community Clubhouse, Shallowater
2. City Hall, Wolfforth
3. Old County Courthouse, Lubbock
4. City Hall, Idalou
5. Community Clubhouse, Slaton

Lynn County
1. Community Center, New Home
2. City Judge's Office, Wilson State Bank, Wilson

Parmer County
1. City Hall, Friona
2. Wilson & Brock Insurance Agency, Bovina
3. County Courthouse, Farwell
4. Schoolhouse, Lazbuddy

Potter County
1. Schoolhouse, Bushland

Randall County
1. Consumer's Fuel Assn. Elevator, Ralph Switch
2. V. F. W. Hall, Canyon
3. Columbus Club Hall, Umbarger

NOMINEES FOR DISTRICT DIRECTORS

Director's Precinct No. 1
(Lubbock and Lynn Counties)
(One to be Elected)
1. Russell Bean, 2806 — 21st Street, Lubbock

Director's Precinct No. 3
(Bailey, Castro and Parmer Counties)
(One to be Elected)
1. John Gammon, Lazbuddy

Director's Precinct No. 4
(Armstrong, Deaf Smith, Potter and Randall Counties)
(One to be Elected)
1. Earl Holt, Rt. 3, Hereford
2. T. L. Sparkman, Jr., Rt. 1. Hereford

NOMINEES FOR COUNTY COMMITTEEMEN

Armstrong County
(One to be Elected)
1. Cordell Mahler, Wayside
2. Dewitt McGehee, Wayside

Bailey County
(One to be Elected)
1. Douglas Bales, Rt. 5, Muleshoe
2. D. O. Burlesmith, Rt. 2, Muleshoe
3. Melvin Hale, Box 76, Maple
4. J. W. Witherspoon, Box 261, Muleshoe

Castro County
(One to be Elected)
1. Lester Dowell, Rt. 1, Dimmitt
2. E. E. Foster, Hart

Cochran County
(One to be Elected)
1. Willard Henry, Rt. 1, Morton
2. D. A. Ramsey, Star Rt. 2, Morton

Deaf Smith County
(One to be Elected)
1. Labry Ballard, 120 Beach St., Hereford
2. Marvis Southward, Rt. 4, Hereford

Floyd County
(One to be Elected)
1. J. S. Hale, Jr., Rt. 1, Floydada
2. Bill Sherman, Rt. F., Lockney

Hockley County
(One to be Elected)
1. C. R. Rushing, Box 765, Anton
2. S. H. Schoenrock, Rt. 2, Levelland

Lamb County
(One to be Elected)
1. W. B. Jones, Rt. 1, Anton
2. J. A. Stubblefield, Rt. 1, Anton

Lubbock County
(One to be Elected)
1. Edward C. Mosely, Rt. 1, Slaton
2. Howard M. White, Rt. 1, Slaton

Lynn County
(One to be Elected)
1. Roy Lynn Kahlich, Wilson
2. L. C. Unfred, Rt. 4, Tahoka

Parmer County
(One to be Elected)
1. Wendol Christian, RFD, Farwell
2. Webb Gober, Farwell

Potter County
(One to be Elected)
1. W. J. Hill, Jr., Bushland

Randall County
(One to be Elected)
1. Paul Dudenhoeffer, Rt. 2, Canyon
2. J. R. Parker, Rt. 2, Canyon

Bill Broadhurst came into the office the other day after having made a speech about ground water to a group of people. He was telling about a lady who came up to him after his talk and asked why we always talk about *"water conservation"* in terms of economics or politics. She wanted to know why we don't stress *"water conservation"* simply because it's right and just, and because we are expected by God to care for the resources He has entrusted to us; rather than merely because it is good business or because if we don't someone disinterested in our problems will make us do it.

I think that perhaps this lady had a good thought that she expressed and pretty well hit the nail on the head. There are naturally many reasons why we should take care of our water and make every drop we pump perform a beneficial job, but I doubt very seriously that any of the many reasons we can think of would overshadow the one of *"personal responsibility."*

We do have responsibilities to God, because He has allowed us the privilege of living in such a bountifully endowed area. We are blessed with an abundance of good quality underground water, good soils and perhaps most important, more than our rightful share of good morally substantial people.

Perhaps there is no season of the year when we recognize the goodness of the Lord more than during this interim between Thanksgiving and Christmas. The crop harvest is generally in full swing—evidence of a successful year; everyone is a little more relaxed now than a few months back when many were having to get up during the night and change irrigation sets. It's a good season, and one when most can reflect back over the past year and realize that perhaps it was, after all, worth the hard work and anxious moments that are always part of making a crop.

But, what about next year—did you do the job last season as well as you could have have done it? If you're honest, you'll probably have to give a negative answer to that question. We seldom do the job at hand as well as we could have done it—there's generally always room for improvement.

Did you do as good a job irrigating as was possible? Or, did you waste some water that you could have saved for future use? Did you do a good job of caring for one of God's greatest gifts to you—the water you pump to make the abundant crops you're harvesting?

You know, next year, or the year after next, or the year following, you will be passing from the scene and that boy of yours, or someone else's boy, will be attempting to make a living from the land you're farming. Are you going to leave him his rightful share of the farm's resources—will you leave him an opportunity to succeed where you've had so much success?

You'll have to start now if he has that chance—you're casting the die not only for yourself but also for future generations of this area who must look to you for their opportunity.

Make up your mind now to be a better steward of your God-given resources this next year.

The cotton harvest in the Southern High Plains will soon be completed. It will then be time to start laying plans for another year and another crop. Include in your plans for next year, procedures and methods for more efficiently using and taking care of your underground water.

NEW SPRINKLER IRRIGATOR USED BY FARMER NEAR CLOVIS, NEW MEXICO

By ALLAN H. WHITE, Jr.

Harold House, who farms near Clovis, New Mexico, irrigated his crops during the season just past using a newly-designed sprinkler system. The system is called "The Waterdog" irrigator and was developed by another farmer in the Clovis area, Roy Anderson.

The sprinkler is a self-propelled machine that constantly, but slowly, moves along a standard irrigation ditch toward the source of water. The machine straddles the ditch and is designed to dam up the water in the ditch and prevent its running past. Utilizing a centrifugal pump, water is pumped to the crop through a single sprinkler nozzle mounted at the rear. The nozzle sprays water over a 180 degree pattern to the rear and sides of the machine. The unit travels along the irrigation ditch at a speed of 2 to 10 feet per minute depending upon the quantity of water in the ditch and the desired amount of water to be applied. It has an application range of 1/2-inch to 4-inches of water per acre. No operator is required to man the sprinkler as it moves along the ditch. It is equipped with a standard automatic furrow guide which travels in the ditch at the front of the unit. Should the guide come out of the ditch, the machine and sprinkler stop.

The machine is designed to follow straight or curved ditches, level or unlevel, with equal efficiency.

This year, House used the machine to irrigate 60 acres of grain sorghum and 50 acres of wheat. He cut parallel permanent ditches perpendicular from a main underground pipeline across his land 200 feet apart. His use of the machine so far has been for experimental purposes — it is capable of handling much more land.

He says that the sprinkler did a good job, and that by using it he was able to water his land more uniformly than by using syphon tubes as in the past.

House also stated that before acquiring the sprinkler he was bothered by irrigation "tailwater" losses; now all the water that he pumps from his irrigation wells is put to beneficial use.

The sprinkler machine cost about $7000. It operates at a fuel cost of approximately 40c per hour. It weighs about 5200 pounds and is equipped to travel up to six miles per hour for movement between tracts of land and from the head of one irrigation ditch to the low end of the next.

Above is shown the "Waterdog" irrigator as it pumps irrigation water from an ordinary open ditch to the young wheat crop. Harold House, a Clovis, N. M. farmer, said the sprinkler machine solved his irrigation "tailwater" problems. He says that with the machine, he can uniformly distribute the required amount of water over his land.

Water Levels Will be Measured Again In January

By W. L. BROADHURST

The rock formations beneath the surface of the earth are great natural underground reservoirs in which a part of the water derived from rain and snow is stored to supply the wells and springs and to maintain the flow of streams during periods of fair weather. The water levels in wells register the stages of these natural reservoirs; they show the extent to which water supplies are depleted by drought or by heavy pumping for irrigation, industrial uses, and public water works, and also the extent to which they are replenished in seasons of abundant rainfall or melting snow.

Beginning in 1937, depths-to-water were measured periodically in several hundred observation wells throughout the High Plains. Some of the wells were used for irrigation, some for domestic purposes and stock, and some were unused. Until 1940, measurements were made for the most part at intervals of 1 to 3 months. It was found, however, that the most dependable information regarding net annual losses from, or additions to, storage in the groundwater reservoir can be obtained by comparing water-level measurements that are made in successive years in late winter or early spring before the start of spring irrigation.

Most of the observation wells that were selected in the early days of the program were naturally in, or adjacent to, the areas of heavy pumping. However, as the development of irrigation spread over the High Plains, the observation well program did not expand accordingly. Consequently, there are now numerous large areas in which there are hundreds of irrigation wells but only a very few observation wells.

In order that the entire region within the High Plains Underground Water Conservation District may have thorough coverage of observation wells, a cooperative program was started with the Texas Water Commission. Additional observation wells are being selected at strategic points so that in the near future there will be at least one observation well for each 2 1/2 minutes of latitude and longitude, or about one well every 2.5 to 3 miles.

Many of the new wells have been selected, permission has been obtained for their use, and metal identification tags have been cemented to the pump bases. Measurements of water levels will be made in the old and new observation wells soon after January 1, and the records will be published in "The Cross Section" about March 1963.

Well Drilling Statistics For Oct. And Nov.

During the month of October, 31 new wells were drilled within the High Plains Water District; 8 replacement wells were drilled; and 3 wells were drilled that were either dry or non-productive for some other reason. The County Committees issued 93 new drilling permits.

In November, 43 new wells were drilled; 12 replacement wells were drilled; and 4 wells were drilled that were dry. The Committees issued 78 new drilling permits.

Permits issued and wells completed for October and November are listed below by counties:

COUNTY	Permits Issued		New Wells Drilled		Replacement Wells Drilled		Dry Holes Drilled	
	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.	Oct.	Nov.
Armstrong	0	0	0	0	0	0	0	0
Bailey	5	1	3	0	4	1	0	0
Castro	1	8	4	5	1	0	1	0
Cochran	6	0	2	0	0	0	1	0
Deaf Smith	10	9	6	4	2	4	0	0
Floyd	15	0	2	9	0	0	0	2
Hockley	14	7	8	2	0	1	1	0
Lamb	10	14	0	5	0	0	0	0
Lubbock	16	18	0	6	0	0	0	0
Lynn	1	3	0	1	0	0	0	1
Parmer	10	16	5	11	1	6	0	0
Potter	1	0	0	0	0	0	0	0
Randall	4	2	1	0	0	0	0	1
TOTALS	93	78	31	43	8	12	3	4

High Plains Underground Water
Conservation District No. 1
1628 Fifteenth Street
Lubbock, Texas

Second Class Permit