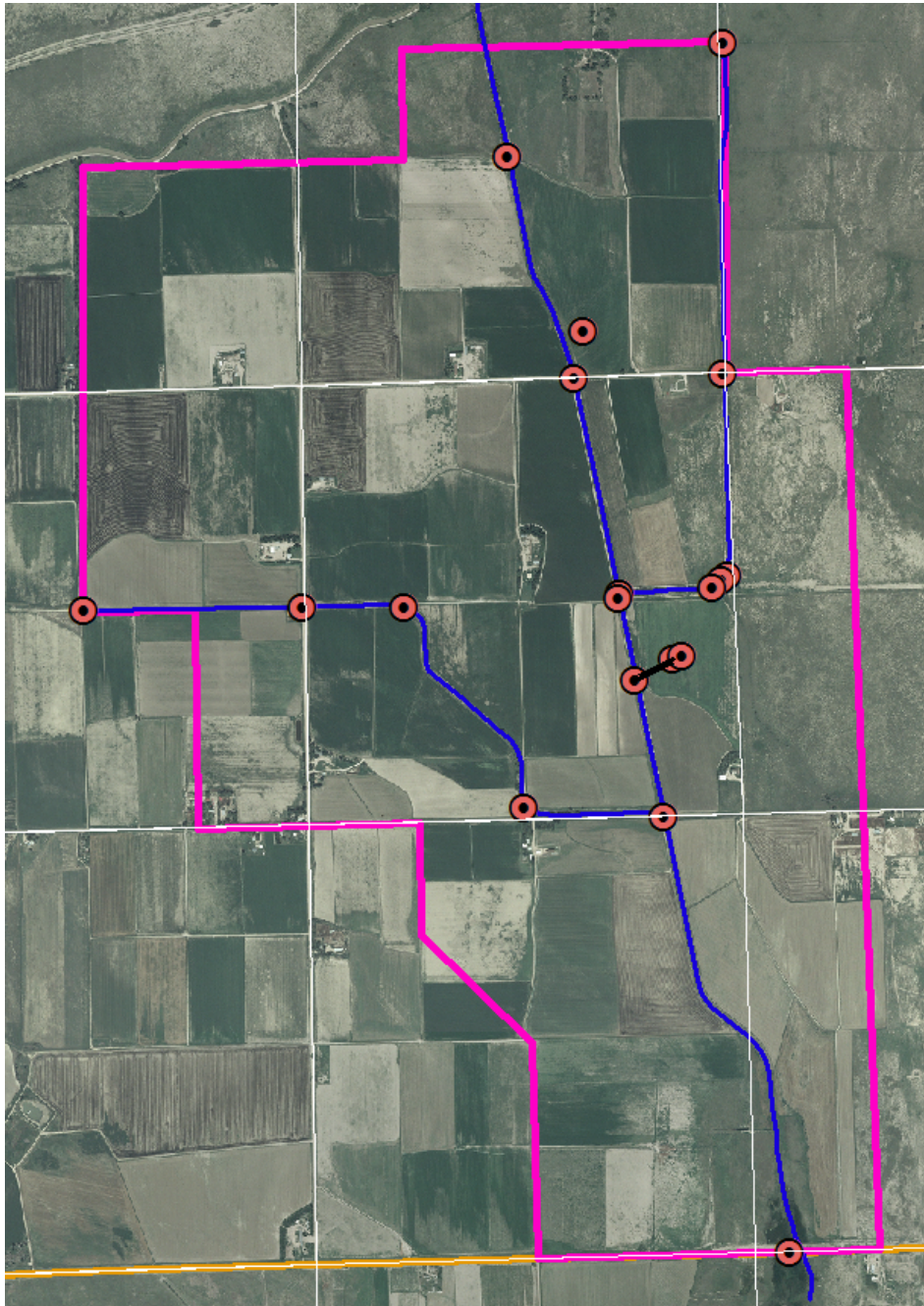


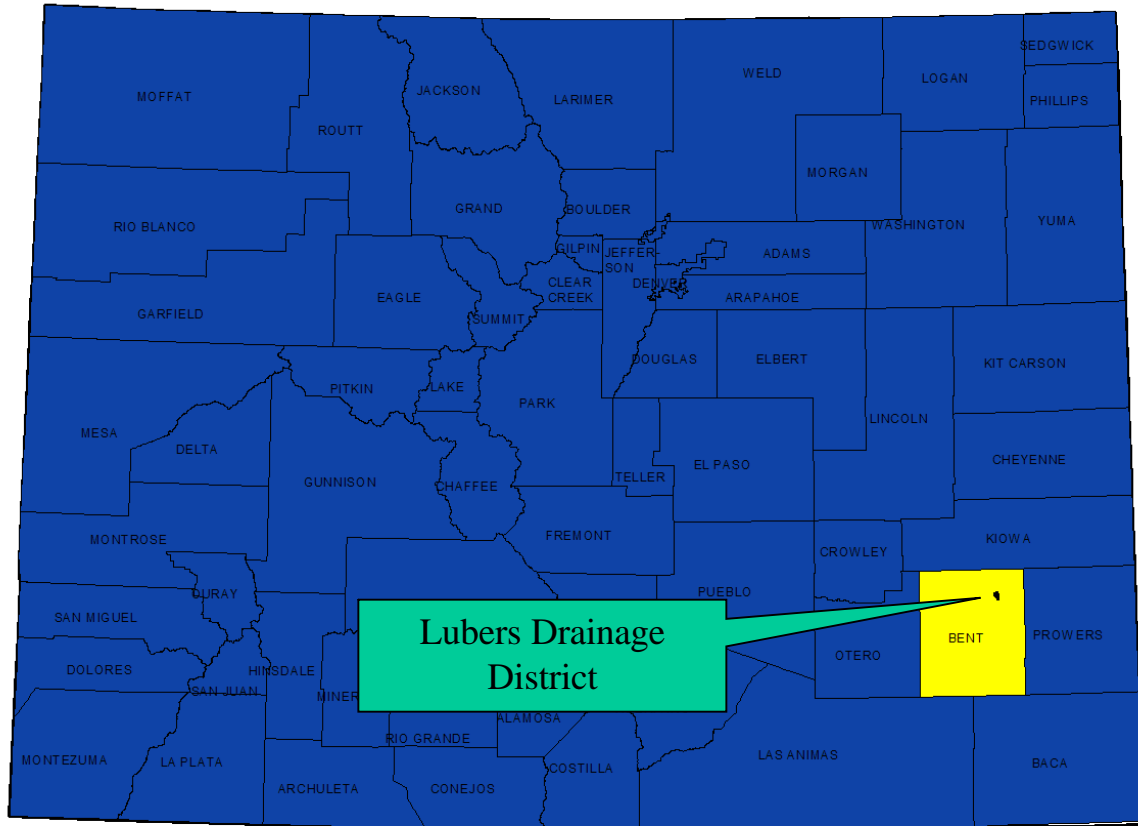
*Lubers Drainage District
Drainage System Inventory*



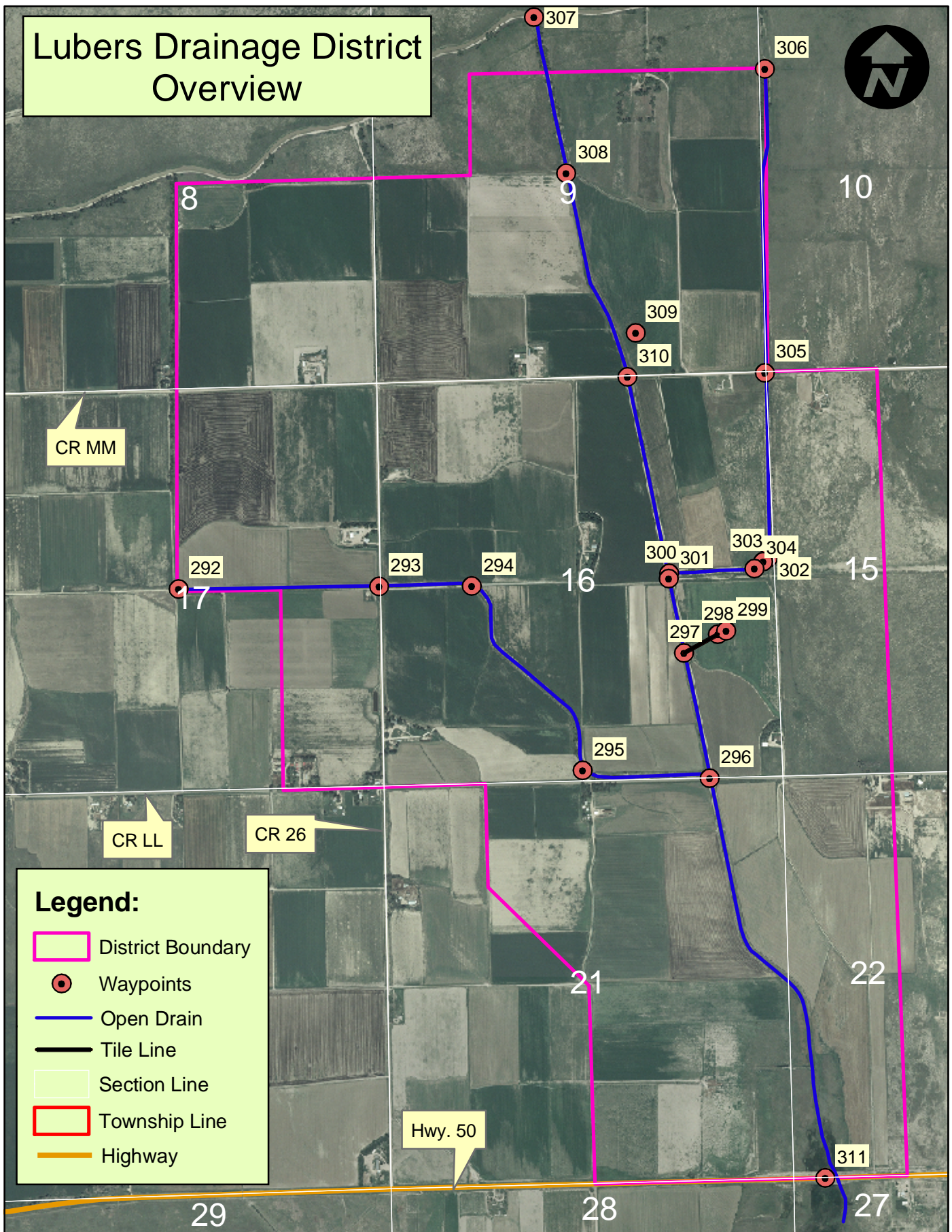
July 14, 2005, Rev.-July 18, 2007

Prepared by: Dean and Doug Smartt, Walter Epley
The Lower Arkansas Valley Drainage System Rehabilitation Study
Colorado State Univ., Dr. John Wilkins-Wells, Sociology Water Lab
Clark Building B258, Fort Collins, CO 80523 Ph: 970-491-5635

Location of Lubers Drainage District In Colorado And Bent County

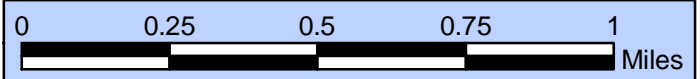


Lubers Drainage District Overview



Legend:

- District Boundary
- Waypoints
- Open Drain
- Tile Line
- Section Line
- Township Line
- Highway



Drainage Infrastructure notes on the Lubers Drainage District, Bent County, Colorado. This district includes all or parts of Sections 8,9,16,17 and 21 in T22S, R49W.

Waypoints and notes taken on March 18, 2005. We used the Garmin GPSmap76 handheld unit with a backpack differential correction unit borrowed from the NRCS in Lamar, Colorado. Waypoints and notes done by Doug and Dean Smartt and Walter Epley.

General Notes:

1. The district maintains the open ditch coming down from the Fort Lyon Canal through its center. There is also a spur that begins in the southeast corner of section 16, and runs to the north and west to the middle of section 17. One tile line is known to be present. It is possible there are other tile lines in the district, but the exact location is not known. The included maps show the known details of that tile line, as well as a separate map showing tile lines indicated in archive files of the NRCS.
2. On the whole the drainage infrastructure is adequate. Maintenance requirements include the frequent cleaning of the open drains. It is thought that the one tile line present is not functioning adequately. Perhaps this needs cleaning. An additional 2000 + feet of tile line draining the area where Section 16 and 15 meet might be helpful if feasible, practical or beneficial to install.
3. Note the spreadsheet included with these notes, which includes the recorded waypoint number (ident), latitude, longitude, date and time of reading, and elevation readings.

Waypoint Log Notes:

Waypoint 292:

Beginning of the open ditch on the west side of the district. Lubers Drainage District maintains this open ditch.

Waypoint 293:

Main open ditch goes under County Road 26 at this point.

Waypoint 294:

Main ditch crosses under a field road at this point.

Waypoint 295:

Main open ditch crosses under field road and turns straight east on the north side of County Road LL. We looked extensively for a tile outlet along the north side of the open ditch in this ¼ mile section. Notes from NRCS Archive files indicate a tile line may be located in this area. We found no evidence of a tile outlet.

Waypoint 296:

Point where the open ditch from the west joins the main north-south open ditch. At this point, the north-south ditch crosses under County Road LL.

Waypoint 297:

Point on the main open ditch where a tile line dumps into the main ditch. This is a 6-inch clay tile line.

Waypoint 298:

We go out into the field and point out the estimated location of the line beginning at waypoint 297. This may be the beginning of the tile line.

Waypoint 299:

On a bit further to the northeast, is a sour/wet undrained area. Going further to the northeast from here is a visible “row” in the vegetation, which may indicate the presence of a tile line.

Waypoint 300:

Point where the open drain from the east branch dumps into the main north-south drain. We are standing in the middle of the open drain from the east.

Waypoint 301:

Point taken standing on the old railroad trestle crossing over the open north-south main drain. The point is taken standing directly over the middle of the open drain on the trestle.

Waypoint 302:

This point is taken standing “in-line” with a north-south spur of open ditch on the east side of the district – a branch off the main north-south open drain. It is taken standing on the southeast bank of the open ditch.

Waypoint 303:

Point taken in the center of the curve in the open ditch coming from the north, curving westward at this point to the main north-south open ditch.

Waypoint 304:

This point is taken “in-line” with the east-west spur of open ditch, taken on the south bank of the open ditch. Field to the north of this point is very wet. About 5 years ago, a septic tank was installed in a part of this field. It was so wet, that they had to weigh the tank down in order to put it in place. It was “floating like a boat”.

Waypoint 305:

Taken in the middle of County Road MM over the middle of the open north-south ditch that dumps into the main ditch at waypoint 300. This was cleaned 10 years ago down to the main ditch.

Waypoint 306:

Waypoint taken on the upper end of the east branch of the open ditch system. This is also on the north edge of the district.

Waypoint 307:

Taken on the north end of the main open ditch for the Lubers District. Point is taken on the south side of the Fort Lyon canal road just above the middle of the ditch.

Waypoint 308:

Taken on property boundary/fence line over the top of the main open drain of the Lubers Drainage District. There is typically water in the drain. The district has cleaned it about 10 or 12 years ago.

Waypoint 309:

This is the location of a seepy spot, which will just grow weeds.

Waypoint 310:

Taken at the center of County Road MM, over the center of the main open ditch.

Waypoint 311:

Taken in the center of Highway 50 over the center of the main open ditch where it dumps into a small lake south of Highway 50.

Notes and statistics on the district, and drainage infrastructure.

Area of District:

95,806,802 Sq. Ft.
2,199.42 acres.

Areas of no wetness effect:	1909.80 Acres
Areas of moderate wetness effect:	124.56 Acres
Areas of severe wetness effect:	165.07 Acres

Length of Open Drains:	32,874 feet 6.23 miles
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Length of existing tile line (6")	510 feet (probably longer)
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Length of possible additional tiles (6")	2067 feet
Length of possible cleaning (6")	510 feet

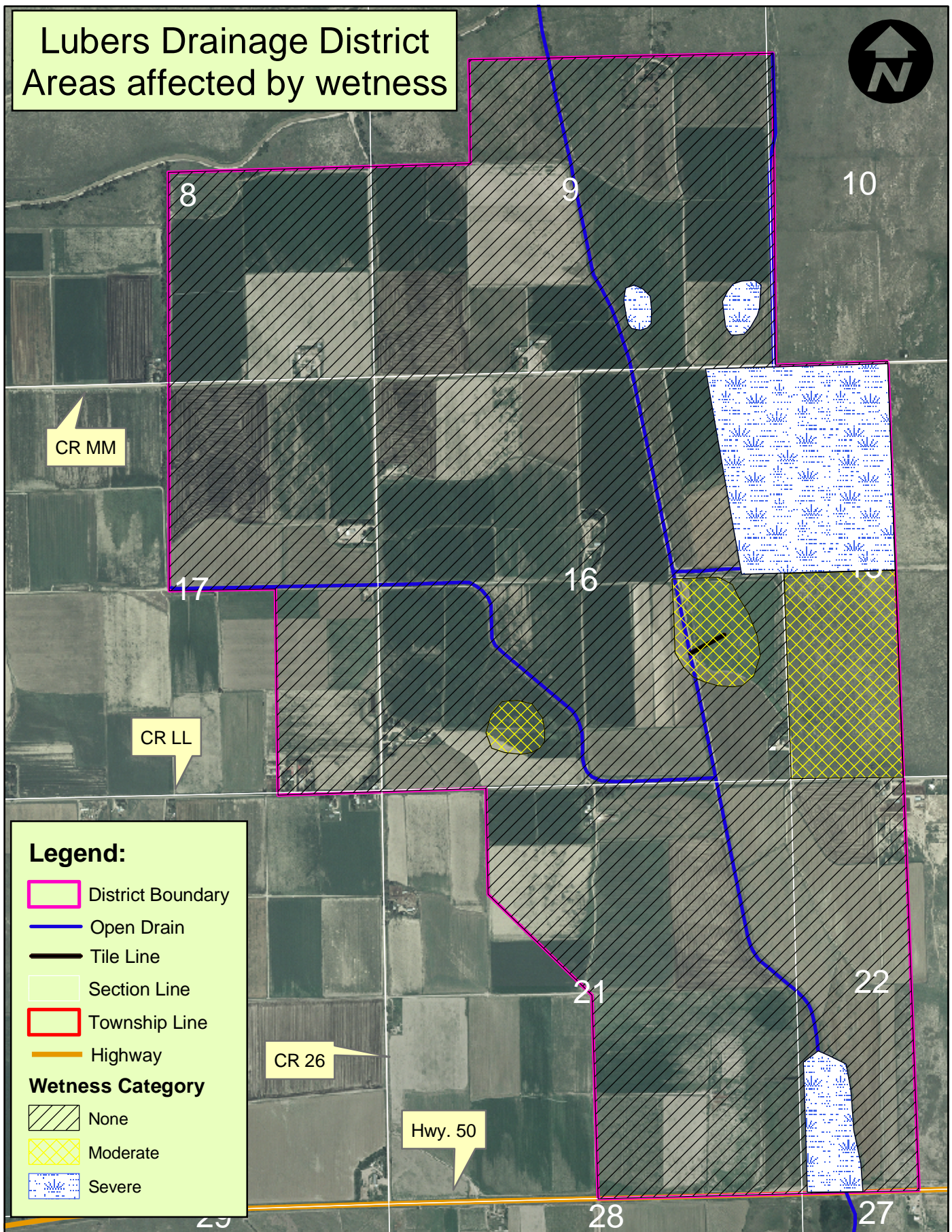
Following is a spreadsheet of the waypoint logs showing the waypoint number (ident), the occasion of taking the waypoint, or what it was (Type), Latitude and Longitude readings, and the date and time (Comment) when the waypoint was taken. On the page following these logs is a key to the items under "Type".

Ident	Type	Lat	Long	Comment
292	OpenDitch	38.136133	-102.9335754	3/18/2005 9:44
293	DitchRdCro	38.13606293	-102.9244415	3/18/2005 9:47
294	OpenDitch	38.13600442	-102.920202	3/18/2005 9:50
295	OpenDitch	38.1292787	-102.9153449	3/18/2005 9:54
296	OpenDitch	38.12888207	-102.90956	3/18/2005 10:11
297	TileOutlet	38.13342271	-102.9106011	3/18/2005 10:15
298	TileLoc	38.13407265	-102.9090257	3/18/2005 10:20
299	FieldObs	38.13419117	-102.9086549	3/18/2005 10:22
300	OpenDitch	38.13629536	-102.9111854	3/18/2005 10:29
301	OpenDitch	38.13611196	-102.9112178	3/18/2005 10:30
302	OpenDitch	38.13677573	-102.9066732	3/18/2005 10:35
303	OpenDitch	38.13664899	-102.906889	3/18/2005 10:36
304	FieldObs	38.13640583	-102.9072839	3/18/2005 10:37
305	DitchRdCro	38.14345518	-102.9066238	3/18/2005 10:45
306	OpenDitch	38.15440815	-102.9063007	3/18/2005 10:54
307	OpenDitch	38.15644805	-102.9167758	3/18/2005 11:02
308	OpenDitch	38.15079957	-102.9154739	3/18/2005 11:08
309	FieldObs	38.14498756	-102.9124755	3/18/2005 11:13
310	DitchRdCro	38.14341629	-102.9128979	3/18/2005 11:16
311	DitchRdCro	38.11439613	-102.9046874	3/18/2005 13:36

ArcView Field Title	Possible Entry	Explanation Key
Ident		GPS Waypoint Identification Number
Lat		Latitude of reading
Lon		Longitude of reading
Comment		Date and time of reading
Type		
	Manhole	Manhole
	ManhBur	Buried Manhole
	ObsPoint	observation point - generally vert. Pipe extending to tile line from surface
	Inlet	Inlet, or beginning of line
	TileOutlet	End of tile line dumping into seep ditch, or open drain
	BurOutl	Outlet of a tile drain that is buried beneath the surface
	OpenDitch	Open drainage ditch. Seep Ditch
	TileLoc	Location of Tile Line
	TileJunc	Loc. of Tile Junction where more than two lines meet
	TileElbow	Loc. of Elbow in tile line where line bends
	TileRdCross	Crossing of Tile Line under Road
	DitchRdCro	Crossing of Open Ditch under Road
	CanalTileCross	Crossing of Tile Line under Canal
	RepairsCar	Location of point where tile has been repaired: generally visible soil disturbance
	Sinkhole	Loc. of place where soil has washed down into tile line, leaving an open hole
	Openhole	Open hole in ground, varying depths and sizes. Relates to tile location.
	FieldObs	Location of relevant condition observed in the field relating to the possible location of tile lines.
	SurfDrainStr	Structure for drainage of surface water. May be culvert, or similar structure.

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Colorado State University
Sociology Water Lab
B258 Clark Building
Fort Collins, CO 80523
Phone Off: 970-491-5635
Cell: 303-842-0265

Lubers Drainage District Areas affected by wetness

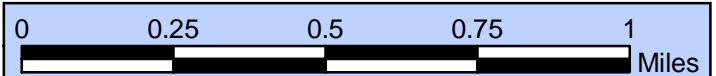


Legend:

- District Boundary
- Open Drain
- Tile Line
- Section Line
- Township Line
- Highway

Wetness Category

- None
- Moderate
- Severe



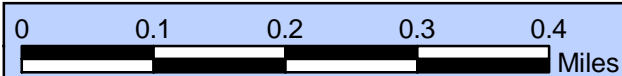


Lubers Drainage District Showing Potential Tile Additions on East Side

CR MM

Legend:

- District Boundary
- Open Drain
- Tile Line
- Section Line
- Township Line
- Highway
- Potential Tile Additions



NAME OF DISTRICT LUBERS DRAINAGE DISTRICT

WATER DISTRICT OR AREA No. 67

Irrigated by Ft. Lyon Canal Co. System

DATE OF INSPECTION September 1942

LAND LOCATION 16 MILES W OF Lamar and 3 mi. east of Hasty
IN Bent COUNTY. TOWNSHIP 22S RANGE 49WORGANIZATION

DATE OF ORGANIZATION August 1, 1921 UNDER LAW OF 1911 and 1919

AMENDMENTS TO ORIGINAL ORGANIZATION —

ACRES: GROSS 2500, ASSESSED 2239, SUSTAINING 1800

UNIT OF ASSESSMENT (1) Dollar of assessed benefits

TOTAL UNITS: ORIGINAL 137,139 SUSTAINING 108,000

UNITS OF ASSESSMENT PER ACRE: AVERAGE \$ 61.00, MAXIMUM \$ 100, MINIMUM \$ 23

LIABILITY FOR DISTRICT OBLIGATIONS Each tract liable for 100% of ass'ts levied against it

NAME AND ADDRESS OF SECRETARY John H. Roesch, McClave, Colorado

LOCATION OF ASSESSMENT RECORDS A. C. Gordon, Attorney, Lamar, Colorado

TYPE OF LAND

GENERAL Rectangular tract of bench land comprising drainage area of Lubers draw.

U.S.B.R. Classifications: Cl. 1 - 53%; Cl. 2 - 42%; Cl. 5 & 6 - 5%.

TOPOGRAPHY

1650 acres in cultivation

Gently sloping to undulating

SOILS: PREDOMINANT TYPES Prowers clay loam - 55%; Ft. Lyon loam - 25%; Minnequa clay - 15%; Minnequa clay loam - 5%.

PER CENT OF AREA: BAD ALKALI 5 %, SLIGHT ALKALI 35 %, HIGH WATER TABLE 3 %
TREND StableCLIMATE

ELEVATION 3900 FT., AVERAGE GROWING SEASON 164 DAYS April 28 TO October 10

RAINFALL AT Lamar STATION 16 MILES FROM DISTRICT 16.05 inches

LENGTH OF RECORD 53 YEARS 1889 TO 1941, ACCURACY good

CHARACTERISTICS OF RAINFALL 76% from 4/1 to 10/1; erratic-maximum 24.5"; minimum 7.4";
maximum daily 4.3". Intense storms of short duration in summer months.CROPS

CROPS	% OF AREA:	CROPS	% OF AREA:	CROPS	% OF AREA:
ALFALFA	: 31	POTATOES	: :		:
CLOVER	:	SUGAR BEETS	: 4 :		:
OTHER HAY	:	truck and other:	2 :		:
PASTURE	: 34		: :		:
CEREALS	: 13		: :		:
CORN	: 8		: :		:
SORGHUMS	: 8		: :		:

SOURCE OF INFORMATION U.S.B.R. survey and W.C. reports ACCURACY fair

YIELDS AND TRENDS Moderately good yields normally obtained on greater part of irrigated area. Trend toward corn and sorghums and away from small grain.

DISPOSITION OF CROPS About 50% of crops sold for cash, including $\frac{1}{2}$ to $\frac{2}{3}$ of alfalfa crop. Remainder fed to farm livestock, including turkeys.ECONOMIC CONDITIONS

NO. OF FARMS 17. TENANCY APPROX. 40% %. CONDITION OF FARM IMPROVEMENTS Generally modest improvements in fair condition.

GENERAL CHARACTER OF FARMS AND FARMERS Most of irrigated farms in good condition.
Good class of American farmers.

GENERAL TAXES ON LAND AND IMPROVEMENTS: AVERAGE \$ 1.25 PER ACRE

TRANSPORTATION FACILITIES Branch line of A.T. & S.F. Ry in center of district at Lubers;
U.S. Highway No. 50 at south end. Good intersecting roads.MARKETING FACILITIES Beet dumps and loading pens at Lubers, maximum haul 2 miles.
Elevator, packing sheds and alfalfa mill at McClave, 4 miles distant. Good outlet for cash crops, fair for surplus feed.

(1) Dollar of assessed benefits, or dollar of assessed valuation, or acre - district's method of assessment

GENERAL

LOCATION: STATE Colorado

COUNTY Bent

3 mi. east of Hasty
NEAR 16 " west " Lamar

ACRES: GROSS 2500

ASSESSED 2239

SUSTAINING 18000

UNIT OF ASSESSMENT (1) Dollar of assessed benefits

TOTAL UNITS: ORIGINAL 137,139

SUSTAINING 108,000

UNITS OF ASSESSMENT PER ACRE: AVERAGE \$61.00 MAXIMUM \$100 MINIMUM \$23

LIABILITY FOR DISTRICT OBLIGATIONS Each tract liable for 100% of ass'ts levied against it

LOCATION OF ASSESSMENT RECORDS A. C. Gordon, Attorney, Lamar, Colorado

LAND: BAD ALKALI 5 %; SLIGHT ALKALI 35 %; HIGH WATER TABLE 3 %; TREND stable

ELEVATION 3900 FT. AVERAGE GROWING SEASON 164 DAYS April 28 to October 10

PRECIPITATION IN INCHES: ANNUAL AVERAGE 16.05; CHARACTERISTICS OF RAINFALL 76% from 4/1 to 10/1

Erratic-maximum 24.5"; minimum 7.4"; maximum daily 4.3". Intense storms in summer

ECONOMIC & FINANCIAL CONDITIONS

GENERAL TAXES ON LAND AND IMPROVEMENTS: AVERAGE \$ 1.25 PER ACRE

CAPITAL DEBT AS OF August 1 1942; BONDS \$8,000 @ 6 % PAYABLE 1932-41

WARRANTS \$ @ % PAYABLE 19 ; OTHER DEBTS \$ accrued Int. @ 6 % PAYABLE 19

NET CAPITAL DEBT: \$, ADJUSTED TO AN EQUIVALENT 6% BASIS \$

OR \$ PER SUSTAINING (1)

B. & I. ASSESSMENTS FOR PERIOD 1932-41 AVERAGED \$ 0.0210 PER (1) \$1 of ass'd benefits

O. & M. ASSESSMENTS FOR PERIOD 1940-41 AVERAGED \$ 0.0007 PER (1) \$1 " " "

ESTIMATED FUTURE ANNUAL ASSESSMENTS PER SUSTAINING (1)

B. & I. \$ none O. & M. \$ (1) .0025

HISTORY AND TREND OF DEBT AND ASSESSMENTS District issued \$32,000 of 6% serial bonds in 192 payable 1932-41. B&I assessments levied for period 1930-41 as prescribed by law. None anticipated in future. No O&M levies in last 10 years except in 1940 and 1941. A considerable increase may be anticipated in future as laterals will require cleaning in next few years.

THESE LANDS ARE part SUBJECT TO OTHER ASSESSMENTS BY Ft. Lyon Canal Company

PHYSICAL CONDITIONS

EFFECTIVENESS OF SYSTEM AND ADEQUACY OF PAST MAINTENANCE System generally effective except on area served by east lateral in E $\frac{1}{2}$ E $\frac{1}{2}$ Sec. 16 and W $\frac{1}{2}$ W $\frac{1}{2}$ Sec. 15-22-49. Very little maintenance work has been done in past and laterals have filled to some extent, but the situation has caused no further alkali encroachment during the dry period of the 1930s.

AREA HAS not BEEN ZONED. (SEE ZONE DESCRIPTIONS IF IT HAS BEEN ZONED)

EXPECTED FUTURE ADEQUACY OF MAINTENANCE System expected to prove adequate in future to same extent it has in past. Quality of maintenance will probably not be first class but will be in conformity with the district's needs and keep the area in a stable condition.

CHARACTER OF FLOODS (2) None of hazardous nature.

RECOMMENDATIONS: APPRAISAL FACTORS IN (3) Percent of assessed benefits

TOTAL DEDUCTION \$ none UNTIL 19 19

ANNUAL B. & I. \$ none ANNUAL O. & M. 0.25%

(1) Dollar of assessed benefits, or dollar of assessed valuation, or acre- district's method of assessment

(2) Supplement by attaching gage record tables where available

(3) % of assessed benefits, or % of assessed valuation, or dollars per acre

(SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)
over

Records of the county treasurer show that approximately 75% of the lands in this district have paid off the drainage assessments against them and are free of any drainage debt. Loans should be considered only on lands that are free of drainage debt and a certificate from the county treasurer to this effect should accompany the application.

F. L. B. and ~~I. B. C.~~ loans recommended.

LUBERS DRAINAGE DISTRICT

OPERATION AND MAINTENANCE ACCOUNT AS OF August 1 19 42

ASSETS		:	LIABILITIES		:
CASH ON HAND	:\$ 139.19	:	WARRANTS OUTSTANDING	:\$:
ASSESSMENTS RECEIVABLE	:	:	OTHER	:	:
MISCELLANEOUS RECEIVABLE	:	:		:	:
TOTAL	:\$ 139.19	:	TOTAL	:\$ none	:

CAPITAL DEBT SCHEDULE

INDEBTEDNESS	:	AMOUNT	:	INT. RATE	:	AMOUNT PER UNIT	:	REPAYMENT PERIOD	:
BONDS	:	:\$:	%	:	PER	:		:
BONDS	:		:	%	:	PER	:		:
BONDS	:		:	%	:	PER	:		:
WARRANTS	:		:	%	:	PER	:		:
OTHER	:		:		:	PER	:		:
TOTAL	:	:\$:	%	:	PER	:		:

NOTE: IF ANNUAL PAYMENTS ARE VARIABLE ATTACH DETAILED REPAYMENT SCHEDULES

CAPITAL DEBT ACCOUNT AS OF August 1 19 42

ASSETS		:	LIABILITIES		:
CASH ON HAND	Int. fund :\$ 105.63	:	WARRANTS OUTSTANDING	:\$:
CURRENT ASSESSMENTS RECEIVABLE	:	:	BOND PRINCIPAL UNMATURED	:	:
DELINQUENT ASSESSMENTS RECEIVABLE	:	:	BOND PRINCIPAL DELINQUENT	: 8,000	:
MISCELLANEOUS RECEIVABLE	:	:	INTEREST DELINQUENT	: ?	:
	:	:		:	:
TOTAL	:\$ 105.63	:	TOTAL	:\$ 8,000 and int.	:

CAPITAL DEBT IF ALL ASSESSMENTS ARE COLLECTED..... \$

ESTIMATED CURRENT AND DELINQUENT ASSESSMENTS COLLECTIBLE.....

NET CAPITAL DEBT.....

NET DEBT ADJUSTED TO AN EQUIVALENT 6% BASIS.....

NET ADJUSTED DEBT PER SUSTAINING (1).....

PAST ANNUAL ASSESSMENTS IN DOLLARS PER dollar of assessed benefits

ITEM:	19 32	:	19 33	:	19 34	:	19 35	:	19 36	:	19 37	:	19 38	:	19 39	:	19 40	:	19 41	:	AVE.
A :		:		:		:		:		:		:		:		:		:		:	
B :	.0241	:	.0084	:	.0241	:	.0241	:	.0241	:	.0255	:	.0241	:	.0241	:	.0241	:	.0073	:	.0210
SUB :		:		:		:		:		:		:		:		:		:		:	
TO- :		:		:		:		:		:		:		:		:		:		:	
TAL :		:		:		:		:		:		:		:		:		:		:	
C :		:		:		:		:		:		:		:		:	.0007	:	.0007	:	.0007
		:		:		:		:		:		:		:		:		:		:	
TOTAL	.0241	:	.0084	:	.0241	:	.0241	:	.0241	:	.0255	:	.0241	:	.0241	:	.0248	:	.0080	:	.0211

A - WARRANTS. B - BONDS & INTEREST. C - O. & M.

ESTIMATED FUTURE ANNUAL ASSESSMENTS PER SUSTAINING (1) Per dollar of assessed benefits

ANNUAL B. & I. \$ none

ANNUAL O. & M. \$.0025

HISTORY AND TREND OF DEBT AND ASSESSMENTS District issued \$32,000 of 6% serial bonds in 1921, payable 1932-41. B&I assessments levied for period 1930-41. None anticipated in future. A few owners paid assessments currently but bonds became in default and most owners paid up drainage taxes through the purchase of depreciated bonds. Apparently no O&M tax for last 10 years except in 1940 and 1941. Much higher average O&M levies must be anticipated in coming years.

THESE LANDS ARE SUBJECT TO OTHER ASSESSMENTS BY Ft. Lyon Canal Co. and lateral ditch companies.

(1) Dollar of assessed benefits, or dollar of assessed valuation, or acre - district's method of assessment

LUBERS DRAINAGE DISTRICT

CONSTRUCTION

COST OF CONSTRUCTION: ORIGINAL \$ 32,000

PRESENT UNPAID \$ 8,000

OUTLET OF SYSTEM: STREAM East Prowers Arroya

SEC. 27 TWP. 22S R. 49W

EFFECT OF BACKWATER none

LENGTH OF MAIN DRAIN $3\frac{1}{2}$ MILES; LATERALS 3 MILES. TOTAL LENGTH $6\frac{1}{2}$ MILES

ADEQUACY OF SYSTEM System consists of open drains. Main drain extends south down Lubers Draw through center of district to East Prowers Arroya. Laterals on east and west side each about $1\frac{1}{2}$ miles long. System adequate except for about 160 acres on east side lateral in Secs. 15 & 16. Other uncultivated land on east side has no water rights.

PROBABLE NEW CONSTRUCTION None contemplated.

GENERAL EFFECTIVENESS OF SYSTEM AND ADEQUACY OF PAST MAINTENANCE

System generally effective except on 160 acres on east lateral in Secs. 15 & 16. Main drain is deep and of good velocity except a short distance from outlet. Inclined to cut rather than fill through cultivated section. Laterals are filled in to depth of 5 to 7 feet and will probably require some cleaning upon a return to normal water supply years. Very little maintenance work done in past but this condition has caused no further alkali encroachment through the dry period of the 1930s.

FUTURE MAINTENANCE: ANNUAL COST (1) \$.0025

EXPECTED FUTURE ADEQUACY System is expected to prove adequate in future to the same degree it has in past, and maintain the condition of cultivated lands stable. Increased maintenance expense will be necessary in future but it is believed that a satisfactory quality of maintenance may be expected, in conformity with the district's needs.

Estimated O&M costs - \$270.00 per year.

(1) Dollar of assessed benefits, or dollar of assessed valuation, or acre-district's method of asses