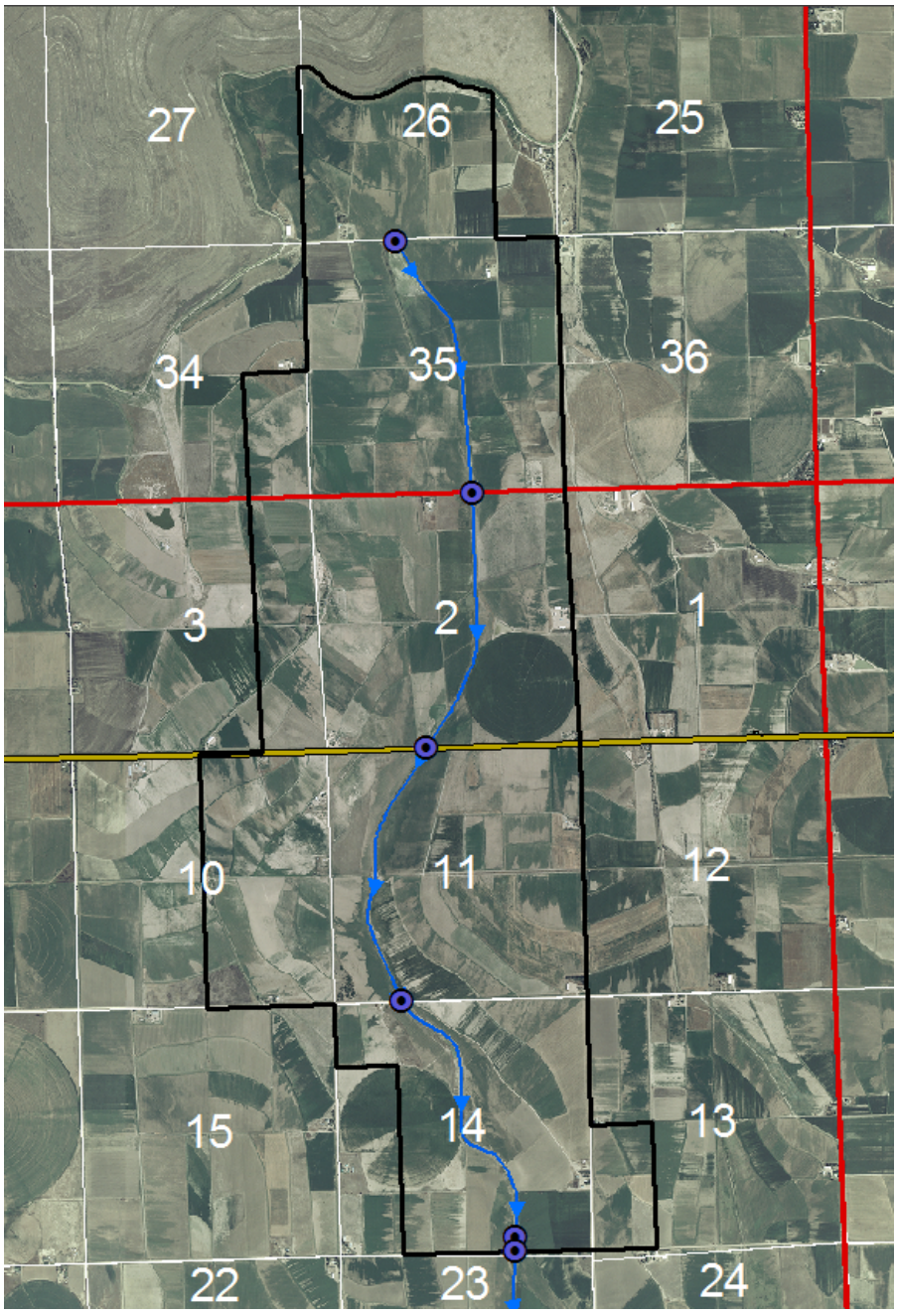
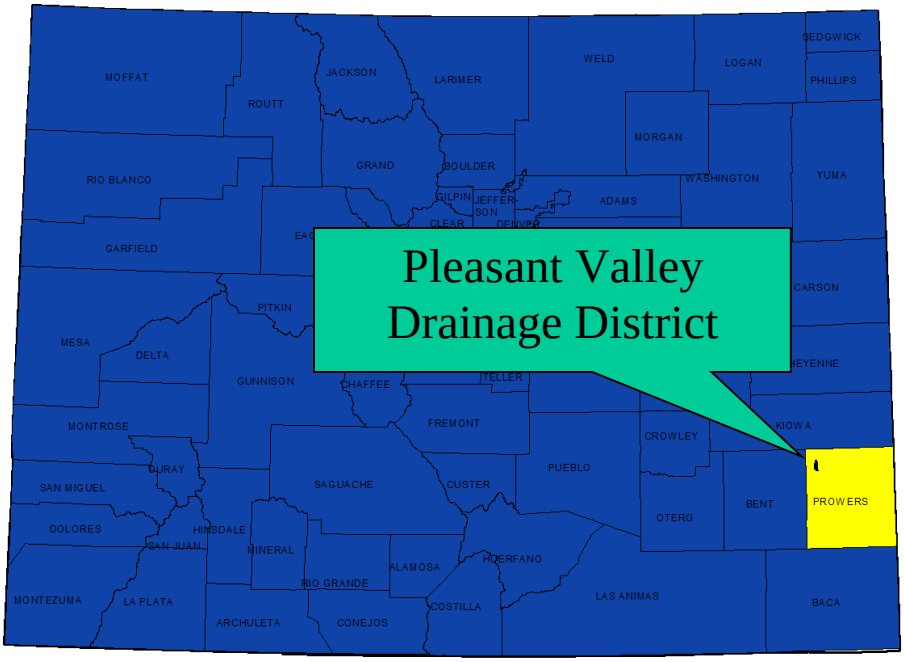
Pleasant Valley Drainage District
Drainage System Inventory

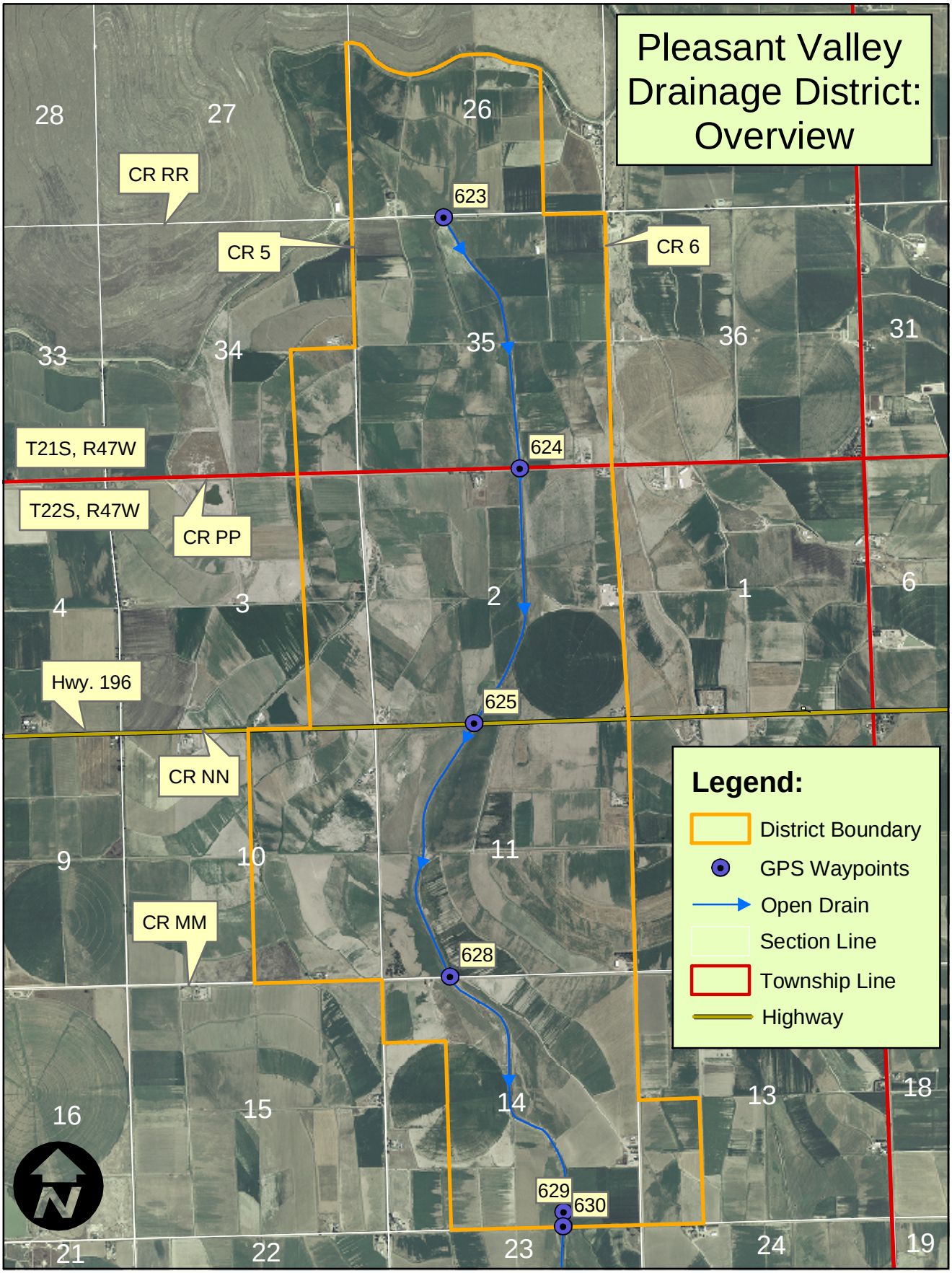


June 16, 2005, Rev. 7/23/07

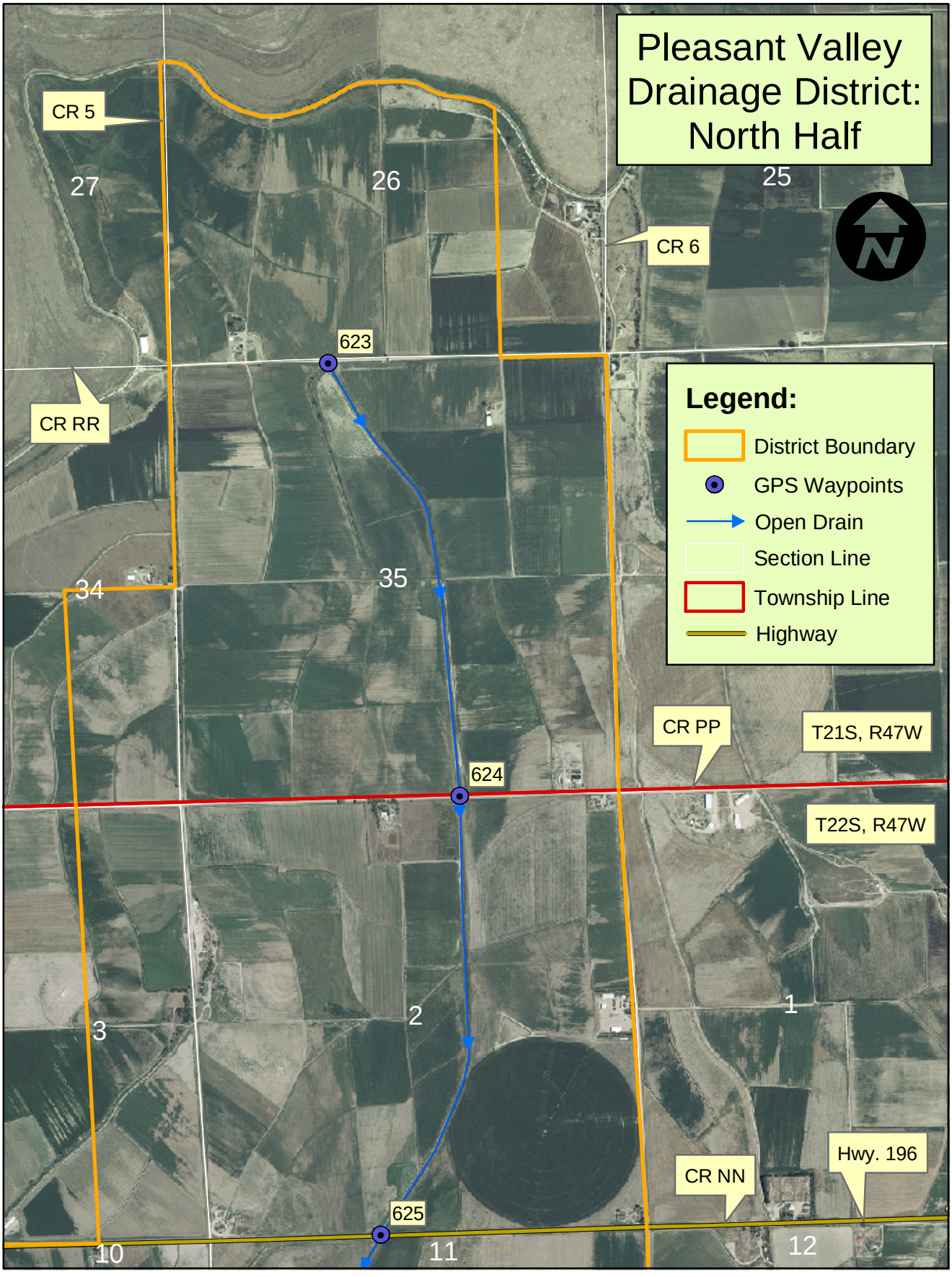
Prepared by: Charles Dunham, Walter Epley
The Lower Arkansas Valley Drainage System Rehabilitation Study
Colorado State Univ., Dr. John Wilkins-Wells, Sociology Water Lab
Clark Building B258, Fort Collins, CO 80523 Ph: 970-491-5635

Location of Pleasant Valley Drainage District In Colorado And Prowers County





Ark. Valley Drainage Project
6/10/07



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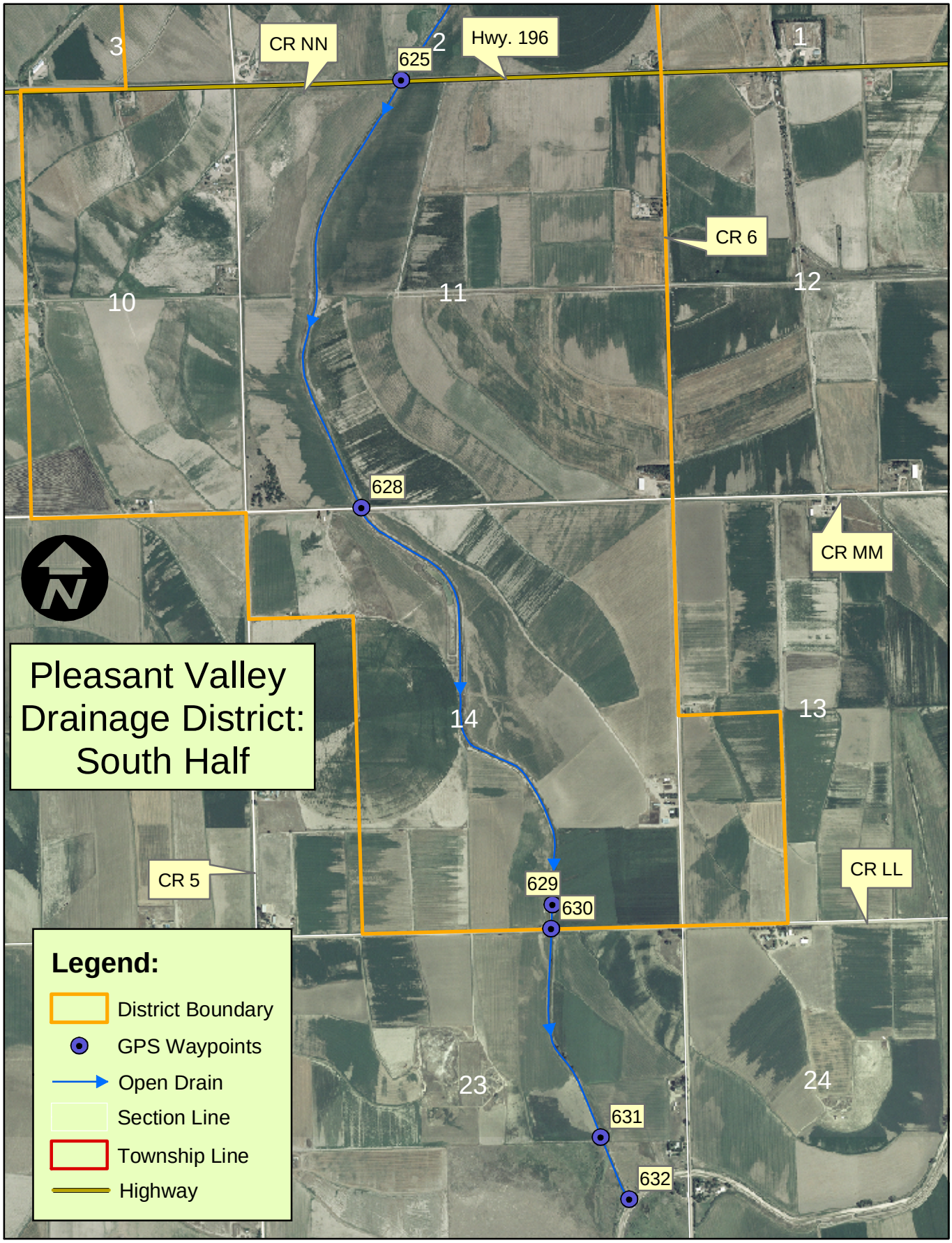

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Drainage Infrastructure notes on the Pleasant Valley Drainage District, Prowers County, Colorado. This district includes all or parts of Sections 26, 34, and 35 in T21S, R47W, and all or parts of Sections 2,3,10,11,13, and 14 of T22S, R47W.

Waypoints and notes taken on June 14, 2005. We used the Garmin GPSmap76 handheld unit with a backpack differential correction unit. Waypoints and notes done by Charles Dunham and Walter Epley.

General Notes:

1. The district maintains the open ditch winding down from the Fort Lyon Canal through its center. Some tile lines are present, but are the responsibility of individual farmers. Some shorter spurs of open drain off the main drain are also created and maintained by the individual farmers involved.
2. Annual assessments are collected by Prowers County on assessed lands. When repairs or maintenance work is needed, a "warrant" is issued to the contractor which is honored by the Assessor's Office of Prowers County.
3. Maintenance is completed on an as-needed basis every several years. The upper portion of the open ditch beginning at Waypoint 623 fills in more quickly than the lower portion of the open ditch as it is on a flatter grade. The open ditch in the north half of Section 2 and Section 35 must be cleaned more frequently due to the flatter slope of the drain. Water runs faster in the lower area keeping the ditch more clean. There are several areas, noted in the accompanying map of the wetness areas, identified as being moderately affected or severly affected by soil wetness. There are other areas where the yield of some crops is reduced, perhaps attributable to soil type and salinity issues. We have labelled an area directly south of and next to Waypoint 623 as "Severe" in the wetness category, but it is possible that the principle issue in this area is salinity. For the purposes of this study, we will include it in the "severe" wetness category.
4. Note the spreadsheet included with these notes which includes the recorded waypoint number (ident), latitude, longitude, and elevation readings.

Waypoint Log Notes:

Waypoint 623:
This is the upper end of the open drain on County Road RR. Point is taken standing in the middle of the road over the middle of the drain.

Waypoint 624:
Point taken in the middle of County Road PP over the middle of the open drain. The open ditch goes under the county road through an 8-ft galvanized corrugated culvert at this point. There is a good stream of water running through the culvert at this point. Occasionally, water will run over the road at this point.

Waypoint 625:
Point taken while standing in the middle of Highway 196 directly over the middle of the open seep ditch. This is also called County Road NN. Water is running through the 8-ft. round corrugated galvanized metal culvert. The ditch is 10 feet deep at this point. There is a spur of

open ditch straight west on the south side of the road dumping into the open ditch, which is maintained by the individual farmer involved. Maintenance issues which are common include "Water Lettuce" and Cattails which will fill up the ditch with trash at times. Waypoints 626 and 627 inadvertently taken in vicinity, and were deleted.

Waypoint 628:
Point taken standing in the middle of road MM over the centerline of the open seep ditch. Open ditch is 13 ft deep to the level of the water.

Waypoint 629:
Locates a diversion point off the main seep ditch for irrigation water. Water rights for seep ditch water are established and maintained according to Colorado Water Law.

Waypoint 630:
Point taken in the middle of County Road LL over the centerline of the open seep ditch. At this point, the flowing water is 8 feet below the surface of the deck on the county bridge crossing the open ditch. There is slightly less water running at this location than the previous ones.

Waypoint 631:
This point is taken standing on the west side of the open seep ditch. There is standing water at this point, apparently backing up from the nearby Amity Canal.

Waypoint 632:
Water from the open seep ditch flows over a low "berm" to dump into the Amity Canal at this point. A little water is flowing into the Amity at this time, perhaps a few inches wide and a quarter to a half inch deep.

<u>Notes on the Drainage Infrastructure:</u>

Area of District: 148,181,052.8 Sq. Ft.
3,401.77 Acres
5.32 Sq. Miles

Areas Affected by Wetness:

No Effect:	2,942 Acres
Moderate Effect:	369.3 Acres
Severe Effect:	90.51 Acres

Note: In calculating the above areas, officers or representatives of the districts were asked to delineate on a map areas that were affected in the following ways:

Moderate Effect: Yields of crops are affected in some way, or the types of crops that can be grown are affected.

Severe Effect: Cultivated crops cannot be grown on this area due to wetness.

Open Drain: Length: 26, 946 feet
5.10 miles

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	Lat	Long	Comment	Type
623	38.18678736	-102.6624621	6/14/2005 13:17	DitchRdCro
624	38.1722642	-102.6573752	6/14/2005 13:25	DitchRdCro
625	38.15771095	-102.6611734	6/14/2005 13:35	DitchRdCro
628	38.14318629	-102.663358	6/14/2005 13:48	DitchRdCro
629	38.12950124	-102.655551	6/14/2005 13:58	FieldObs
630	38.12868786	-102.6556261	6/14/2005 14:00	DitchRdCro
631	38.12153516	-102.6537104	6/14/2005 14:23	OpenDitch
632	38.11940021	-102.6525592	6/14/2005 14:29	OpenDitch

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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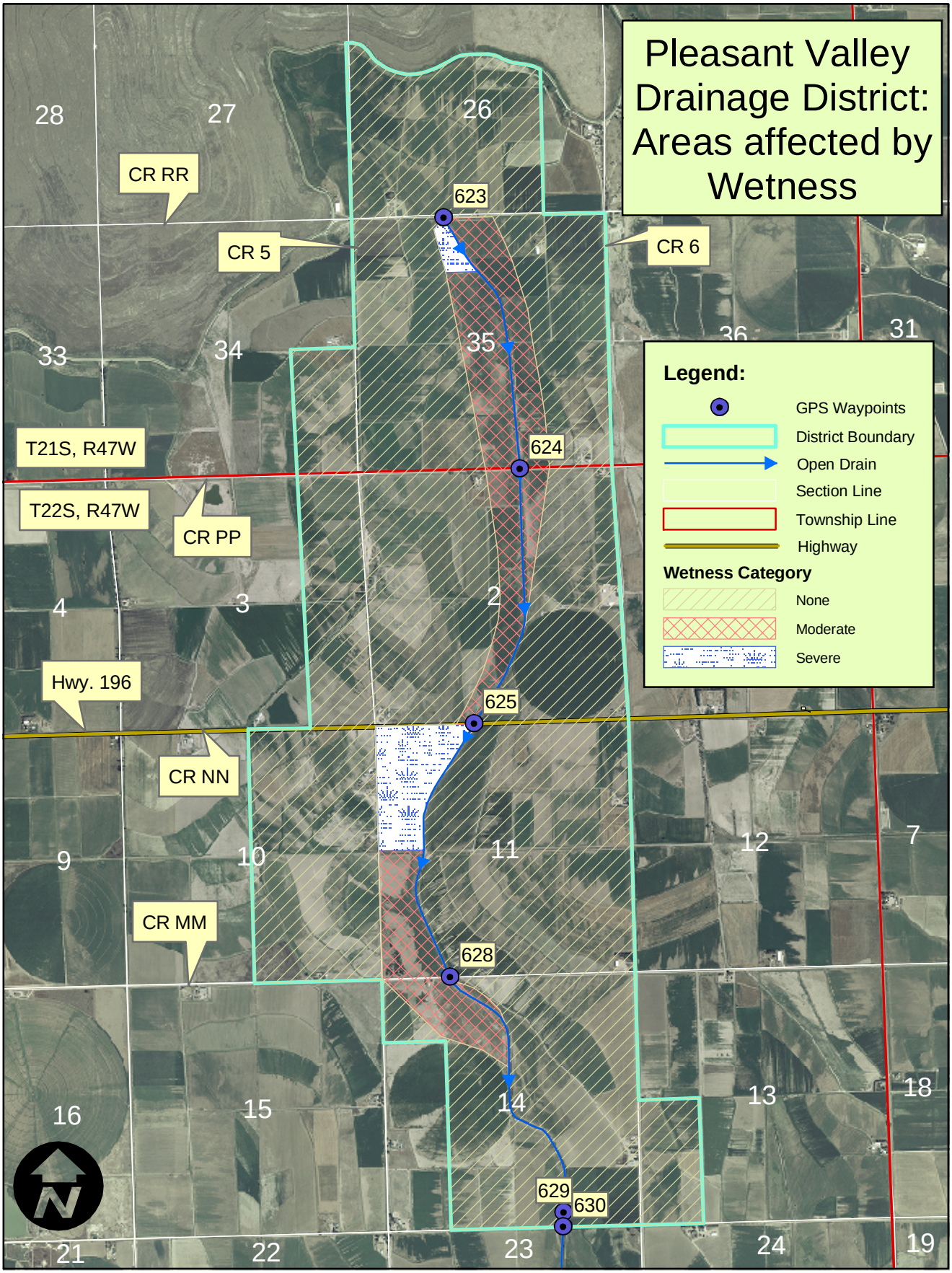

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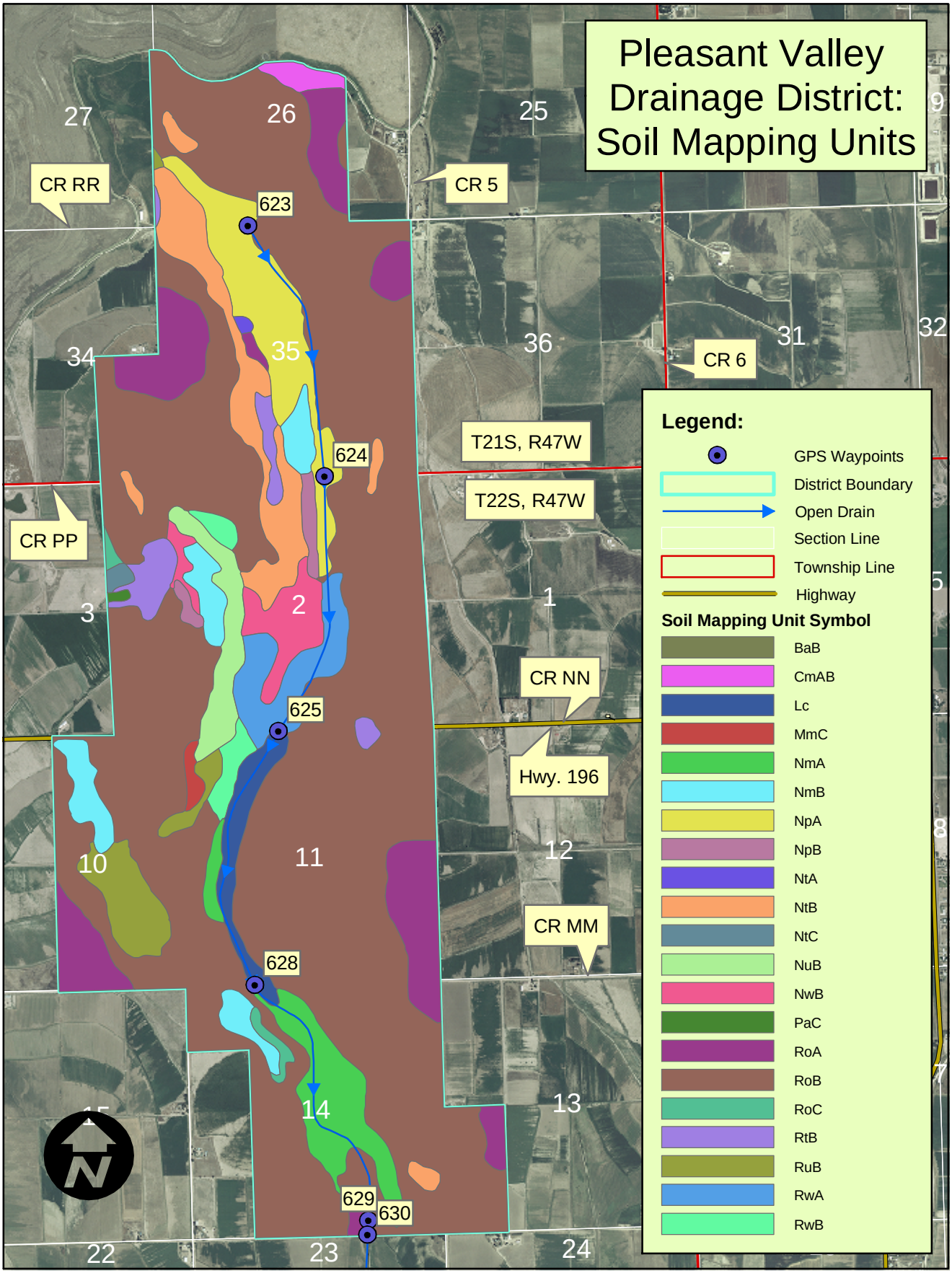

Ark. Valley Drainage Project
6/10/07

SUMMARY OF DRAINAGE DISTRICTS STATE Colorado
WATER DISTRICT OR AREA No. 67

SUMMARY OF DATA ON PLEASANT VALLEY DRAINAGE DISTRICT DATE September 19 42

Irrigate d by Ft. Lyon Canal Co. System

GENERAL

LOCATION: STATE Colorado COUNTY Prowers NEAR Lamar
ACRES: GROSS 3500 ASSESSED 3500 SUSTAINING 3250
UNIT OF ASSESSMENT (1) Percent of benefits
TOTAL UNITS: ORIGINAL -- SUSTAINING 93% of area
UNITS OF ASSESSMENT PER ACRE: AVERAGE $ 60% MAXIMUM $ 100% MINIMUM $ 15%
LIABILITY FOR DISTRICT OBLIGATIONS Each tract liable for 100% of ass'ts levied against it
LOCATION OF ASSESSMENT RECORDS W. A. McPherson, Sec'y., Lamar, Colorado
LAND: BAD ALKALI 3 %; SLIGHT ALKALI 40 %; HIGH WATER TABLE 4 %; TREND stable

ELEVATION 3800 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 months.

ECONOMIC & FINANCIAL CONDITIONS

GENERAL TAXES ON LAND AND IMPROVEMENTS: AVERAGE $ 1.25 PER ACRE
CAPITAL DEBT AS OF September 1 19 42; BONDS $ none @ % PAYABLE 19
WARRANTS $ @ % PAYABLE 19 ; OTHER DEBTS $ @ % PAYABLE 19
NET CAPITAL DEBT: $, ADJUSTED TO AN EQUIVALENT 6% BASIS $
OR $ none PER SUSTAINING (1)
B. & I. ASSESSMENTS FOR PERIOD 19 32-41 AVERAGED $ none PER (1) acre of 100% land
O. & M. ASSESSMENTS FOR PERIOD 19 32-41 AVERAGED $ 0.06 PER (1) " " " "

ESTIMATED FUTURE ANNUAL ASSESSMENTS PER SUSTAINING (1) acre of 100% land
B. & I. $ none O. & M. $ (1) 0.10
HISTORY AND TREND OF DEBT AND ASSESSMENTS 5 miles of open drains. District issued $26,000 of serial bonds in 1918, payable 1922-31. Bonds paid as presented and district has had no debt for 10 years. No B&I levies since 1930 and none anticipated in future. O&M charges have been made only at intervals. Very small O&M charge anticipated in future.

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

PHYSICAL CONDITIONS

EFFECTIVENESS OF SYSTEM AND ADEQUACY OF PAST MAINTENANCE System generally effective for surface and subdrainage. A few privately installed tile drains have been found necessar on individual farms. Maintenance not much problem as drain is built on steep grade down Pleasant Valley draw and has a tendency in most places to scour rather than fill. Past maintenance probably adequate but not first class.

AREA HAS not BEEN ZONED. (SEE ZONE DESCRIPTIONS IF IT HAS BEEN ZONED)
EXPECTED FUTURE ADEQUACY OF MAINTENANCE
Future maintenance will probably not be first class but will be sufficient to keep system functioning satisfactorily and maintain lands in good state of productivity.

CHARACTER OF FLOODS (2) No hazards

RECOMMENDATIONS: APPRAISAL FACTORS IN (3) Dollars per acre of land with 100% benefits.
TOTAL DEDUCTION $ none UNTIL 19 19
ANNUAL B. & I. $ none ANNUAL O. & M. 0.10 F.L.B. & L.B.C. loans

(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)

DRAINAGE DISTRICTS

STATE Colorado

WATER DISTRICT OR AREA No. 67

NAME OF DISTRICT PLEASANT VALLEY DRAINAGE DISTRICT DATE OF INSPECTION September 1942

Irrigated by Ft. Lyon Canal Co. System

LAND LOCATION 5 MILES NW OF Lamar

IN Prowers COUNTY. TOWNSHIP 21&22 RANGE 47W

ORGANIZATION

DATE OF ORGANIZATION September 4, 1917 UNDER LAW OF 1911

AMENDMENTS TO ORIGINAL ORGANIZATION --

ACRES: GROSS 3,500 ,ASSESSED 3,500 , SUSTAINING 3,250

UNIT OF ASSESSMENT (1) Percent of benefits

TOTAL UNITS: ORIGINAL --- SUSTAINING ---

UNITS OF ASSESSMENT PER ACRE: AVERAGE $ 60% , MAXIMUM $ 100% , MINIMUM $ 15%

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

NAME AND ADDRESS OF SECRETARY W. A. McPherson, Lamar, Colorado

LOCATION OF ASSESSMENT RECORDS " " " and Alfred Todd, Atty., Lamar, Colorado

TYPE OF LAND

GENERAL Long narrow strip of bench land lying adjacent to Pleasant Valley draw. U.S.B.R. classification: Cl. 1 - 40%; Cl. 2 - 53%; Cl. 5 & 6 - 7%.

TOPOGRAPHY

Gently sloping to undulating

SOILS: PREDOMINANT TYPES Prowers clay loan - 62%; Prowers loam - 15%; Ft. Lyon loam - 16%; Las Animas clay loam - 7%

PER CENT OF AREA: BAD ALKALI 3 %, SLIGHT ALKALI 40 %, HIGH WATER TABLE 4 %

TREND stable

CLIMATE

ELEVATION 3800 FT., AVERAGE GROWING SEASON 164 DAYS April 28 TO October 10

RAINFALL AT Lamar STATION 5 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	45	POTATOES			
CLOVER		SUGAR BEETS	5		
OTHER HAY		melons, truck &			
PASTURE	8	other	2		
CEREALS	20				
CORN	10				
SORGHUMS	10				

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

YIELDS AND TRENDS Fair to moderately good yields obtained over greater part of area. Trend toward more corn & sorghums and less small grain.

DISPOSITION OF CROPS About 50% of crops sold for cash, including ½ to 2/3 of alfalfa crop. Remainder fed to range cattle & farm livestock, including turkeys.

ECONOMIC CONDITIONS

NO. OF FARMS 30 . TENANCY APPROX. 40 %. CONDITION OF FARM IMPROVEMENTS fair to good - in fair state of repair.

GENERAL CHARACTER OF FARMS AND FARMERS - farms very from fair to good. Several old farmers in area who do not keep places up well.

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

TRANSPORTATION FACILITIES Branch line of A.T. & S.F. Ry. intersects area. Shipping point Sugar, [illegible] in district. Good gravel surfaced roads.

MARKETING FACILITIES Beet dump at Sugar. [illegible]. Alfalfa mill, elevator, beet dump and packing sheds at Kornman, 2 miles east. Turkey co-op. and feed lots at Lamar. Good outlet for cash crops and surplus feed.

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

DRAINAGE DISTRICTS - FINANCIAL CONDITION

PLEASANT VALLEY DRAINAGE DISTRICT

OPERATION AND MAINTENANCE ACCOUNT AS OF September 1 19 42

ASSETS		LIABILITIES	
CASH ON HAND	$ 268.78	WARRANTS OUTSTANDING	$
ASSESSMENTS RECEIVABLE		OTHER	
MISCELLANEOUS RECEIVABLE			
TOTAL	$ 268.78	TOTAL	$ none

CAPITAL DEBT SCHEDULE none

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 September 1 19 42

ASSETS		LIABILITIES	
CASH ON HAND	$	WARRANTS OUTSTANDING	$
CURRENT ASSESSMENTS RECEIVABLE		BOND PRINCIPAL UNMATURED	
DELINQUENT ASSESSMENTS RECEIVABLE		BOND PRINCIPAL DELINQUENT	
MISCELLANEOUS RECEIVABLE		INTEREST DELINQUENT	
TOTAL	$ none	TOTAL	$ none

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)..... none

PAST ANNUAL ASSESSMENTS IN DOLLARS PER acre of 100% land

ITEM:	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	AVE.
A											
B											none
SUB-TOTAL											
C	0.25	0	0	0.30	0	0	0	0	0	0	0.06
TOTAL											

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

ESTIMATED FUTURE ANNUAL ASSESSMENTS PER SUSTAINING (1) acre of 100% land

ANNUAL B. & I. $ none ANNUAL O. & M. $ 0.10

HISTORY AND TREND OF DEBT AND ASSESSMENTS District issued $26,000 of serial bonds in 1918, payable 1922-31. Bonds paid as presented and district has had no debts for many years. No. B&I levies since 1930 and none anticipated in future. O&M charges have been made only at intervals. Very small O&M charges anticipated in future.

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

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

PLEASANT VALLEY DRAINAGE DISTRICT

CONSTRUCTION

COST OF CONSTRUCTION: ORIGINAL $ 26,000 PRESENT UNPAID $ none

OUTLET OF SYSTEM: STREAM Amity Canal SEC. 23 TWP. 22S R. 47W

EFFECT OF BACKWATER Pondage above Amity Canal and area in immediate vicinity is unfit for cultivation but outlet drain is on steep grade and general adequacy of system is not affected.

LENGTH OF MAIN DRAIN 5 MILES; LATERALS none MILES. TOTAL LENGTH 5 MILES

ADEQUACY OF SYSTEM - Open drain running south down Pleasant Valley draw. System generally adequate and substantially the entire area is under cultivation. A few tile drains have been found necessary on individual farms. Drain runs down center of area - has good velocity and is 6 to 10 feet in depth except at the extreme north end, where it is rather badly filled in and has depth of possibly 4 feet.

PROBABLE NEW CONSTRUCTION None anticipated

GENERAL EFFECTIVENESS OF SYSTEM AND ADEQUACY OF PAST MAINTENANCE

System generally effective for both surface and subdrainage. Maintenance is not much of a problem as the drain is built on a steep grade and has a tendency in most places to scour rather than fill. Maintenance probably adequate but not first class.

FUTURE MAINTENANCE: ANNUAL COST (1) $ 0.10 per acre of land with 100% benefits.

EXPECTED FUTURE ADEQUACY

Future maintenance probably will not be first class but will be adequate to keep system functioning satisfactorily and maintain lands in good state of production.
Estimated costs - $200 per year.

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