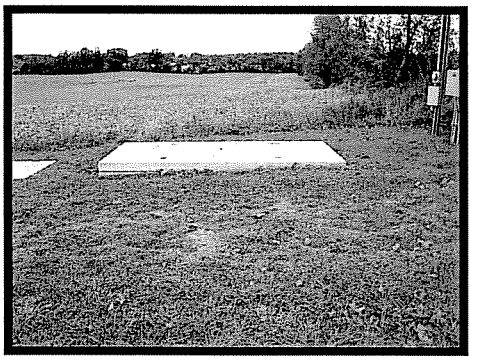
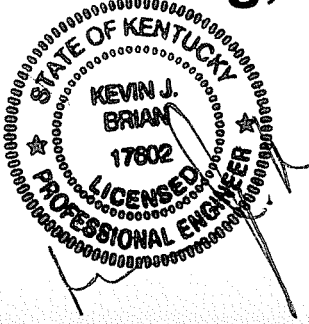
Preliminary Engineering Report
KY 228/Rhodelia Water System Expansion Project



Meade County Water District
Brandenburg, Kentucky



10/5/07

October 2007

HDR | Quest

Preliminary Engineering Report
KY 228/Rhodelia/Concordia Water System Expansion Project

Meade County Water District

General

This Preliminary Engineering Report is intended to analyze the proposed water system expansion that is being planned by the Meade County Water District (MCWD). The expansion is to accommodate the continued growth of western Meade County and improve the health and safety of residents by providing potable water.

This report includes figures showing the general location of Meade County, the existing water distribution system, and sites of the proposed system improvements.

Project Planning Area

Location

The MCWD currently serves 3,550 residential and commercial customers in Meade County, Kentucky. MCWD also has two wholesale customers; the City of Louisville (Otter Creek Park) and Doe Valley.

The general location of Meade County is shown in Figure 1.

Environmental Resources Present

- Land Use - The MCWD service area includes areas west of the Fort Knox Military Reservation and outside the City of Brandenburg. Communities currently served include Flaherty, Ekron, Payneville-Battletown, and Garrett. Land use is predominantly agricultural but also includes residential and commercial in the area of the aforementioned communities.

- Land Features

  - Topography - Meade County is in the Mississippian Plateaus Region of northern Kentucky. The Ohio River marks the northern boundary. The normal pool elevation of

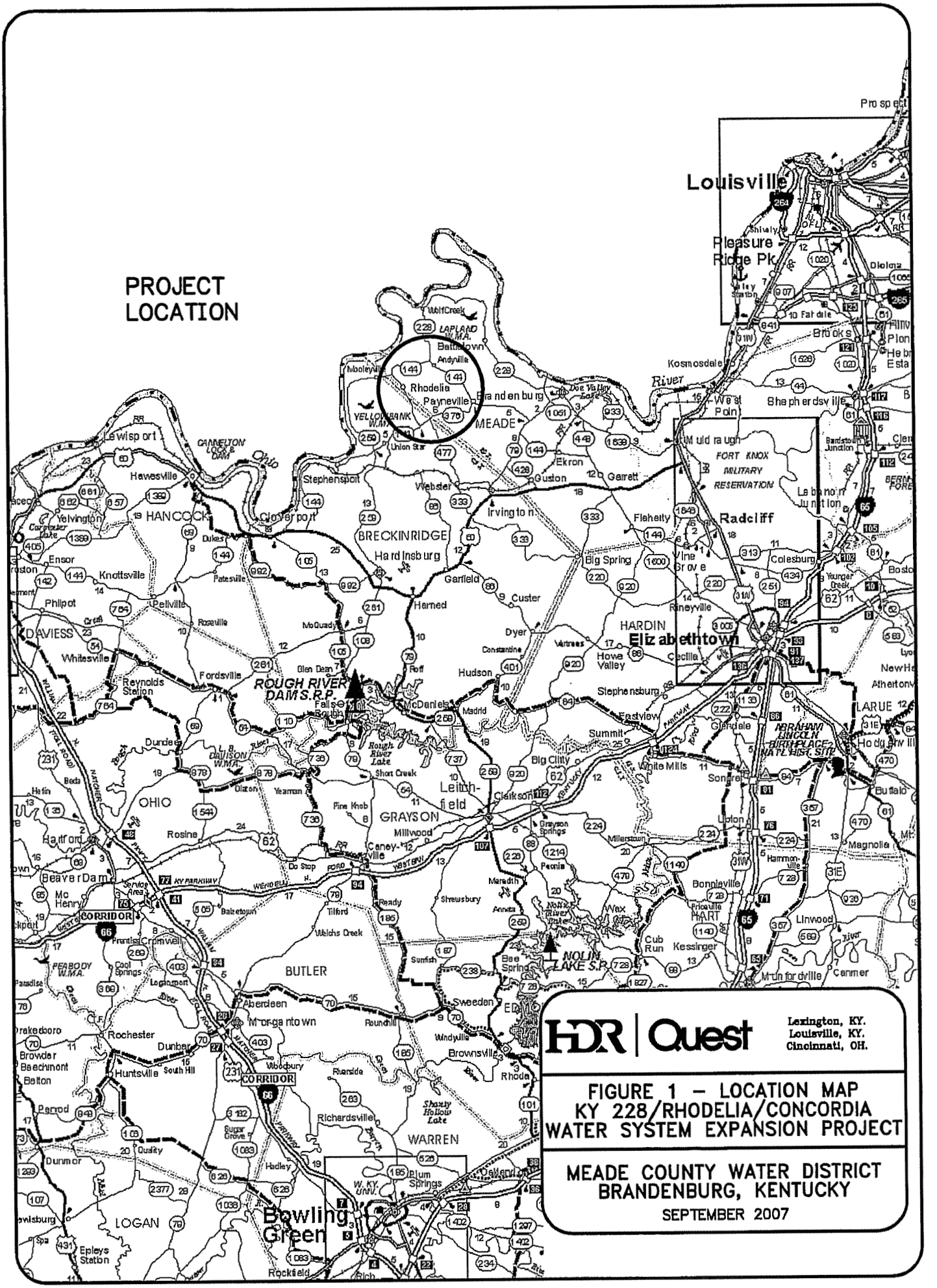


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FIGURE 1 – LOCATION MAP
KY 228/RHODELIA/CONCORDIA WATER SYSTEM EXPANSION PROJECT

MEADE COUNTY WATER DISTRICT
BRANDENBURG, KENTUCKY

SEPTEMBER 2007

L:\2007\Meade ...ure 1 Location Map.dwg, Fig1, 10/23/2007 9:44:34 AM, Quest TAG

the river, 383 feet, is the lowest elevation in the county. Most of Meade County is a karst (sinkhole) plain of low local relief. Sinkholes abound in this area, and surface streams are rare except close to the valley of the Ohio River. Elevations on the karst plain range from approximately 700 to 750 feet on the east to 600 to 650 feet on the west. The sinkhole topography is interrupted by an occasional hill or ridge that stands above the general plain level.

- Floodplain - The planning area for new construction was not identified as being floodprone.

- Water Supply - The MCWD currently purchases its water from two wholesalers. Forty percent is purchased from the City of Brandenburg at a rate of $1.15 per 1,000 gallons. Sixty percent is purchased from Hardin County Water District No. 1 at a rate of $1.41 per 1,000 gallons.

- Historical/Archaeoligical Sites - The planning area for new construction is under evaluation by the Kentucky Heritage Council as part of the state clearinghouse review process. The new construction is predominantly along public roadways and adjacent private easements.

Growth Areas and Population Trends

History

The MCWD was established under Kentucky Revised Statutes, Chapter 74. The Board of Commissioners consists of five persons appointed to staggered terms by the Meade County Judge/Executive.

The MCWD has the authority and duty to plan, finance, construct, install, operate, replace, and maintain a water distribution system within the service area approved by the Kentucky Public Service Commission and the Meade County Fiscal Court.

Current System

The MCWD had an average monthly demand of 760,000 gallons for 2006. The water distribution system consist of approximately 220 miles of 2-inch through 10-inch PVC/Ductile Iron water mains and the Brandenburg pump station (350-400 gpm capacity). The interconnect with Hardin County Water District No. 1 is a gravity interconnect with a capacity of 550 to 650 gpm. Water storage capacity is 600,000 gallons and consist of one 300,000 gallon elevated tank

located on KY 144 in Payneville and one 300,000 gallon elevated tank located on KY 1238 in Garrett.

A map of the current water distribution system is presented in Figure 2.

The MCWD has nearly completed design of the Phase VII Water System Improvements Project. Construction is scheduled to be complete by the end of 2008. This phase of expansion when completed will add one 500,000 gallon elevated water storage tank on KY 144 - 2 miles west of Flaherty, along with 70,200 lineal feet of 6-inch through 10-inch PVC/DI water mains and 270 potential customers.

Projected Growth

The MCWD completed a Water Master Plan in October 2006. In this study the population for Meade County is projected to grow at annual rate of 0.8% over the next 20 years based on Kentucky State Data Center data. Growth is also projected by expanding into unsewered areas. The MCWD's service area is approximately 60% served.

Based on historical data, the Study indicates MCWD has grown from 1,840 customers in 1999 to over 3,400 customers in 2006, for an annual growth rate of 9.2%.

The proposed KY 228/Rhodelia/Concordia water system expansion project is part of MCWD's Water Master Plan to provide potable water service into unserved areas of Meade County.

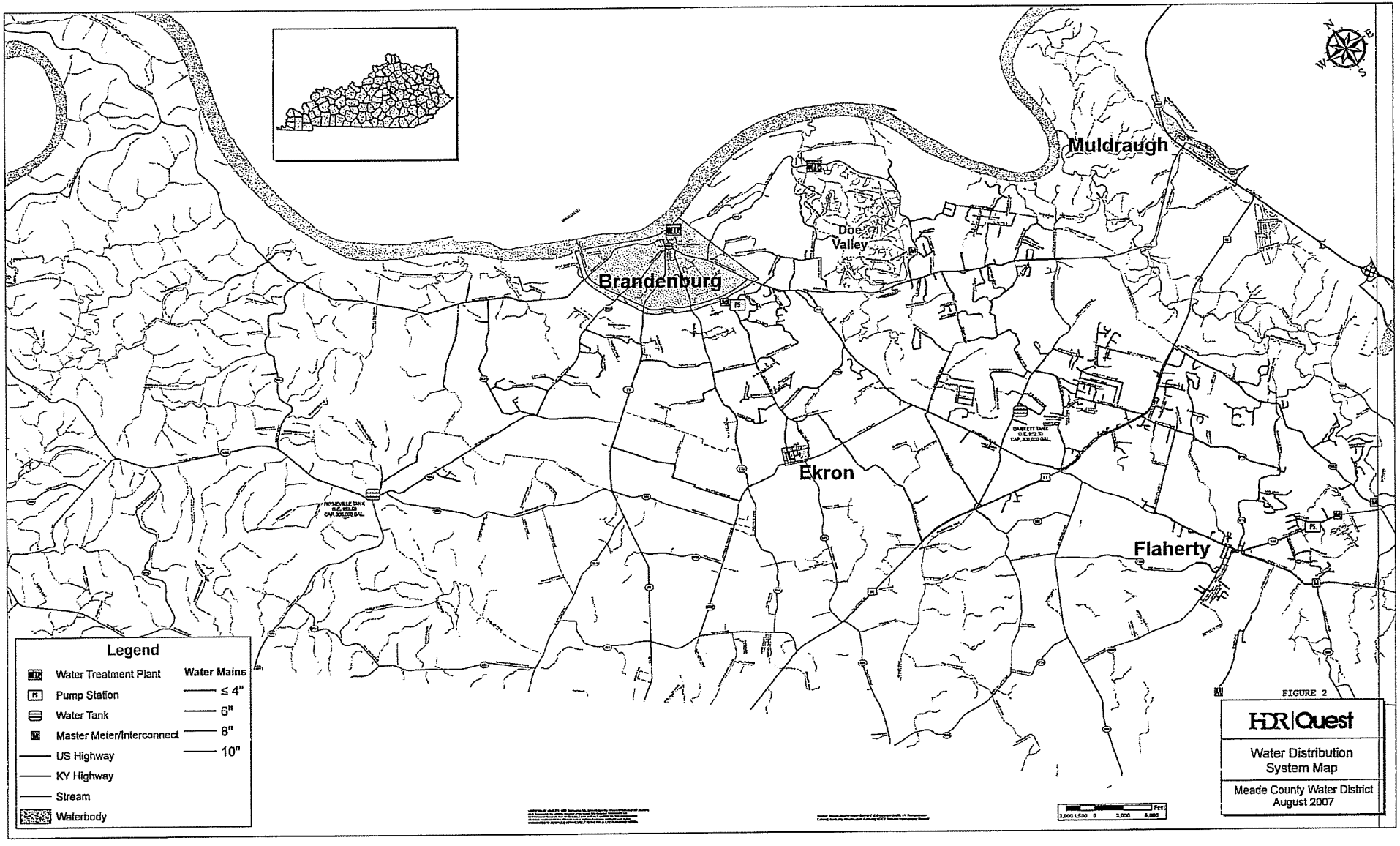
Condition of Facilities

The MCWD maintains its water distribution system in accordance with Kentucky Division of Water and Kentucky Public Service Commission regulations.

Need for the Project

Health and Safety

With only 60% of MCWD's service area served, a large number of residents are still dependent upon groundwater and/or cisterns. The proposed KY 228/Rhodelia/Concordia Water System Expansion Project will add approximately 150 customers to the MCWD system, thus providing a dependable source of quality water to more residents of Meade County.


Muldraugh
Doe Valley
Brandenburg
Ekron
Flaherty
Legend
Water Treatment Plant
Pump Station
Water Tank
Master Meter/Interconnect
US Highway
KY Highway
Stream
Waterbody
Water Mains
≤ 4"
6"
8"
10"
FIGURE 2
HDR|Quest
Water Distribution System Map
Meade County Water District
August 2007

System Operation and Maintenance (O&M)

The MCWD performs all routine maintenance required by the Kentucky Division of Water and Kentucky Public Service Commission, including:

- Documented annual inspections
- Periodic tank inspections
- Entire system flushing twice a year
- Annual meter changing

Alternatives Considered

Because of the nature of the proposed expansion, the only other alternative considered is a "no action" alternative.

Proposed Project

The proposed project is the eighth phase in a series of expansions by the MCWD.

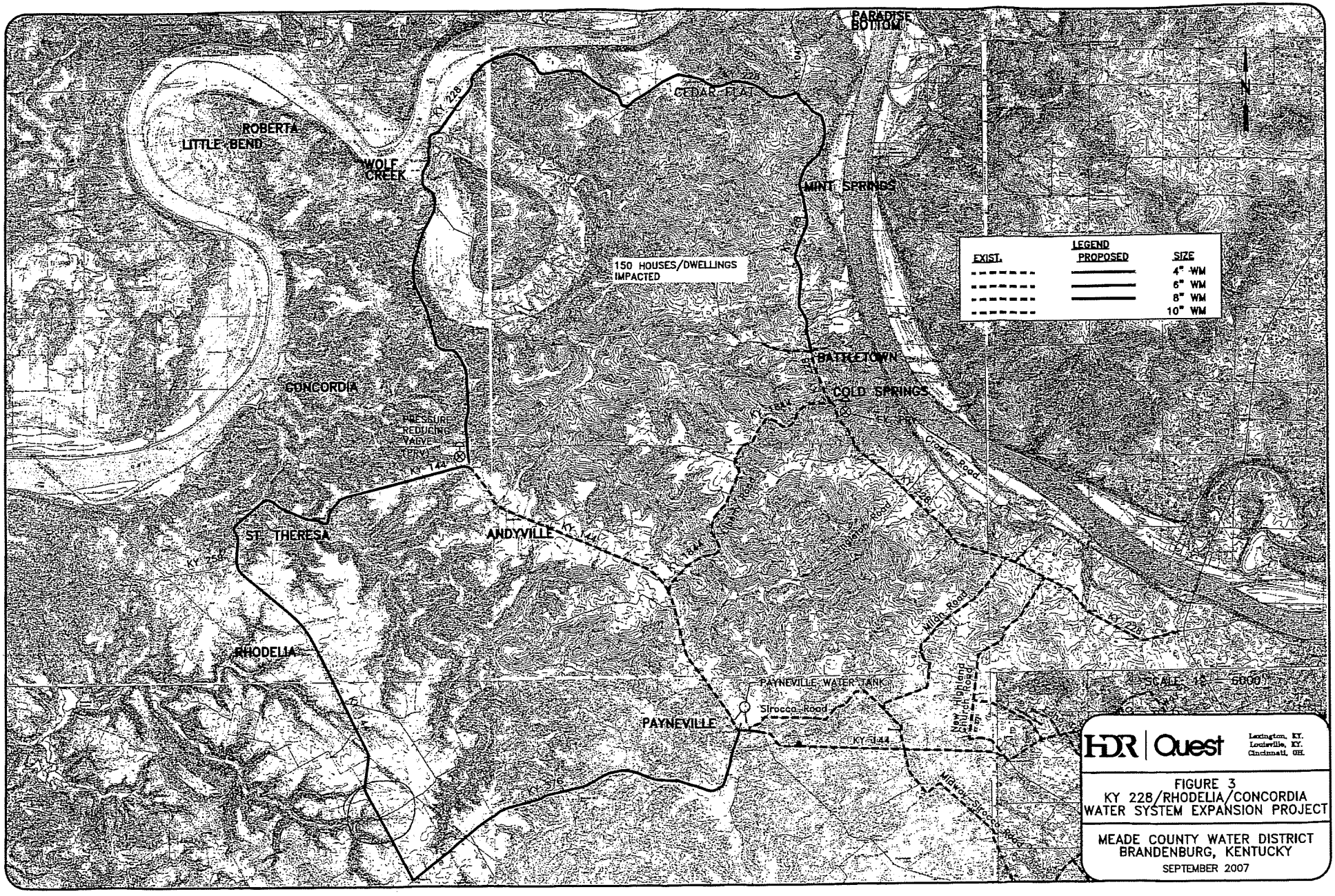
The proposed KY 228/Rhodelia/Concordia Water System Expansion Project consists of approximately 26 miles of 6-inch and 8-inch water line extensions along the following public roadways:

- KY 228 from KY 1844 to KY 144
- KY 144 (Rhodelia) from KY 228 to KY 376
- KY 376 from KY 144 to KY 1239/KY144

A map of the proposed line extensions is presented in Figure 3. A cost estimate for the proposed expansion project is shown in Table 1, detailed construction cost estimates are included in Appendix B.

TABLE 1
Preliminary Opinion of Probable Construction Cost
KY 228/Rhodelia/Concordia Water System Expansion Project

Summary by Road	Cost	Length (ft)
KY 228 from KY 1844 to KY 144	$1,485,300	79,660
KY 144 (Rhodelia) from KY 228 to KY 376	$847,400	49,800
KY 376 from KY 144 to KY 1239/KY 144	$179,750	7,900
Total Construction Cost	$2,512,450	137,360



L:\2007\Meade Co\Figure 3 Meade Co Water dwg, Fig3, 10/23/2007 8:22:52 AM, Quest, TAG

A hydraulic analysis was performed to verify that during a peak hour demand a minimum pressure of 30 psi can be provided at the customer meter. Hydraulic calculations are provided in Appendix A.

Annual Operation Budget

Income

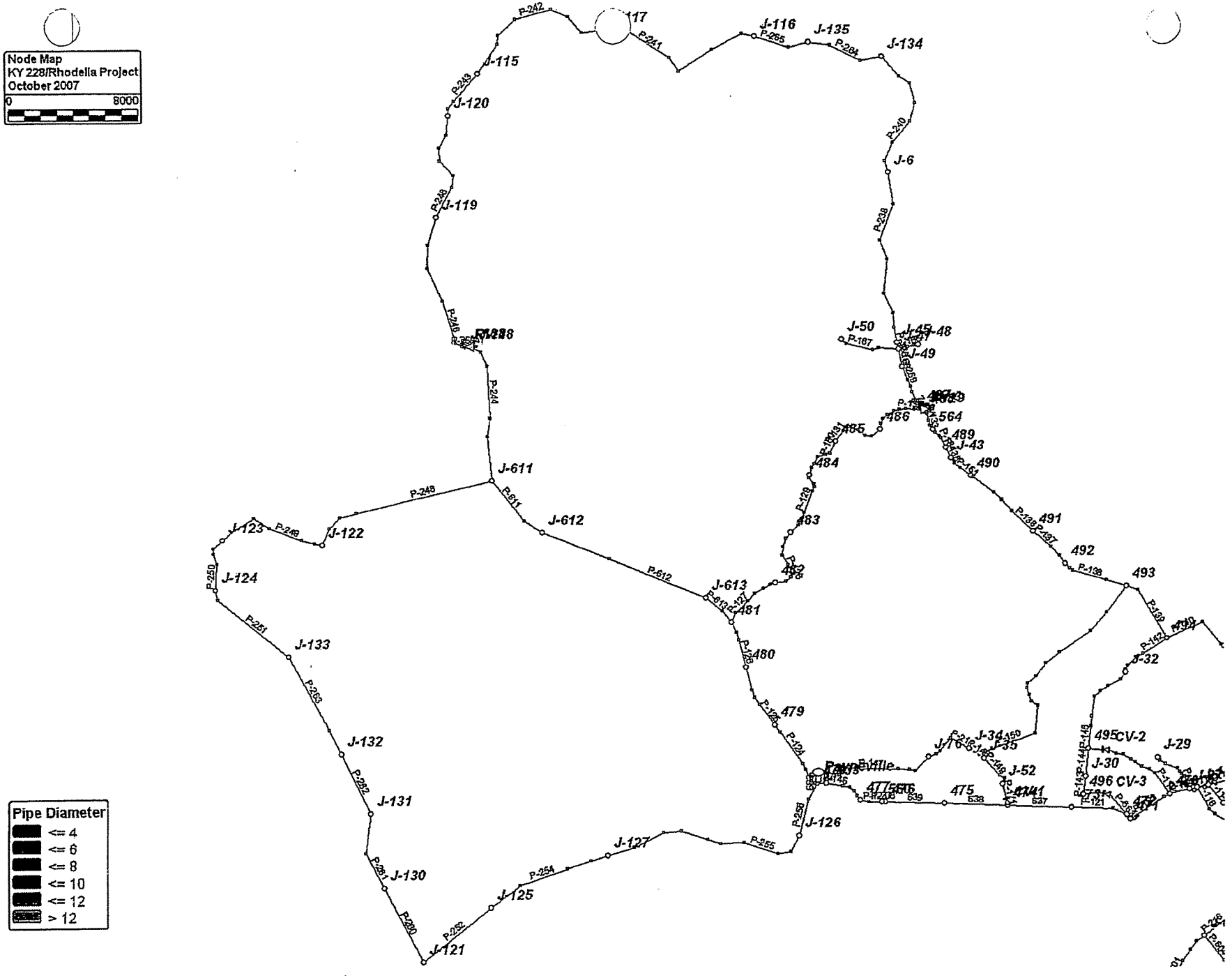
A summary addendum to the Preliminary Engineering Report will be prepared to assess the financial position of the MCWD. After completion of this assessment, a decision will be made regarding the need for a rate increase.

Conclusions and Recommendations

The MCWD has the opportunity to provide potable water service to unserved customers in northwestern Meade County who depend on alternative water sources. We recommend that the MCWD pursue design and construction of the proposed project.

APPENDIX A

HYDRAULIC MODELING RESULTS


Node Map
KY 228/Rhodella Project
October 2007
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Pipe Diameter
<= 4
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<= 8
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<= 12
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****
SUMMARY OF ORIGINAL DATA
****

U N I T S S P E C I F I E D

FLOWRATE ..... = gallons/minute
HEAD (HGL) ..... = feet
PRESSURE ..... = psig

R E G U L A T I N G V A L V E D A T A

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
RV-1	FCV-1	400.00
RV-2	PRV-1	904.62
RV-3	PRV-1	909.62

P U M P/L O S S E L E M E N T D A T A

THERE IS A DEVICE AT NODE Brandenbur DESCRIBED BY THE FOLLOWING DATA: (ID= 19)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
380.00	0.00	75.00 (Default)
320.00	280.00	75.00 (Default)
248.00	402.00	75.00 (Default)

THERE IS A DEVICE AT NODE Flaherty P DESCRIBED BY THE FOLLOWING DATA: (ID= 17)

HEAD (ft)	FLOWRATE (gpm)	EFFICIENCY (%)
190.00	0.00	75.00 (Default)
173.00	200.00	75.00 (Default)
68.00	400.00	75.00 (Default)

O U T P U T O P T I O N D A T A

OUTPUT SELECTION: THE FOLLOWING RESULTS ARE INCLUDED IN THE TABULATED OUTPUT

ALL CLOSED PIPES ARE NOTED
ALL PIPES WITH PUMPS

FOLLOWING PIPES
651
683
P-122
P-123
P-124
P-125
P-126
P-127
P-128
P-129
P-130
P-131
P-132
P-133
P-134
P-135
P-146
P-163
P-165
P-166
P-167
P-168
P-238
P-240
P-241
P-242
P-243
P-244
P-245
P-246
P-247
P-248
P-249
P-250
P-251
P-252
P-254
P-255
P-256
P-258
P-259

P-260
P-261
P-262
P-263
P-264
P-265
P-611
P-612
P-613
Z-651

FOLLOWING JUNCTION NODES
477
478
479
480
481
482
483
484
485
486
487
488
489
560
564
J- 6
J- 33
J- 43
J- 45
J- 47
J- 48
J- 49
J- 50
J-115
J-116
J-117
J-118
J-119
J-120
J-121
J-122
J-123
J-124
J-125
J-126
J-127
J-128
J-129
J-130
J-131
J-132
J-133
J-134
J-135
J-611

J-612
J-613
Payneville
I-RV-2
O-RV-3
MAXIMUM AND MINIMUM PRESSURES = 10

S U P P L Y Z O N E D A T A

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
~@R- 2 ~@R- 1 ~@R- 3
~@Payneville ~@RV-3 ~@RV-2

ZONE NO. 2 IS SUPPLIED THROUGH THE FOLLOWING PIPES:
~@R- 4

S Y S T E M C O N F I G U R A T I O N

NUMBER OF PIPES .....(p) = 464
NUMBER OF END NODES .....(j) = 420
NUMBER OF PRIMARY LOOPS .....(l) = 40
NUMBER OF SUPPLY NODES .....(f) = 6
NUMBER OF SUPPLY ZONES .....(z) = 2

==========

Case: 0

RESULTS OBTAINED AFTER 9 TRIALS: ACCURACY = 0.00238

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS #1	#2	FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL+ML/ 1000 (ft/ft)	HL/ 1000 (ft/ft)
651	J-129	488	70.22	0.02	0.00	0.45	0.12	0.12
683	Payneville	478	602.23	0.63	0.00	2.46	2.10	2.10
P-122	478	J- 33	332.58	0.40	0.00	1.36	0.70	0.70
P-123	477	560	321.11	0.88	0.00	1.31	0.66	0.66
P-124	478	479	187.97	3.26	0.00	1.20	0.72	0.72
P-125	479	480	179.74	2.66	0.00	1.15	0.66	0.66
P-126	480	481	171.51	1.79	0.00	1.09	0.61	0.61
P-127	481	482	119.61	1.20	0.00	0.76	0.31	0.31
P-128	482	483	111.38	1.14	0.00	0.71	0.27	0.27
P-129	483	484	103.15	0.99	0.00	0.66	0.24	0.24
P-130	484	485	94.91	0.58	0.00	0.61	0.20	0.20

P-131	485	486	86.68	0.61	0.00	0.55	0.17	0.17
P-132	486	487	78.45	0.46	0.00	0.50	0.14	0.14
P-133	488	564	11.50	0.00	0.00	0.07	0.00	0.00
P-134	564	489	3.26	0.00	0.00	0.02	0.00	0.00
P-135	J- 43	489	4.97	0.00	0.00	0.03	0.00	0.00
P-146	J- 33	477	329.34	1.75	0.00	1.35	0.69	0.69
P-163	488	I-RV-3	58.72	0.06	0.00	0.67	0.34	0.34
P-165	J- 47	J- 45	44.31	0.09	0.00	0.50	0.20	0.20
P-166	J- 47	J- 48	3.23	0.02	0.00	0.08	0.01	0.01
P-167	J- 47	J- 50	4.70	0.01	0.00	0.05	0.00	0.00
P-168	J- 49	J- 47	52.25	0.30	0.00	0.59	0.27	0.27
P-238	J- 45	J- 6	41.08	2.25	0.00	0.47	0.20	0.20
P-240	J- 6	J-134	26.08	0.75	0.00	0.30	0.09	0.09
P-241	J-116	J-117	17.08	0.42	0.00	0.19	0.04	0.04
P-242	J-117	J-115	9.58	0.14	0.00	0.11	0.01	0.01
P-243	J-120	J-115	5.42	0.02	0.00	0.06	0.00	0.00
P-244	J-611	J-118	29.42	0.95	0.00	0.33	0.11	0.11
P-245	J-128	J-119	20.42	0.49	0.00	0.23	0.05	0.05
P-246	J-119	J-120	12.92	0.17	0.00	0.15	0.02	0.02
P-247	J-118	I-RV-2	24.92	0.02	0.00	0.28	0.08	0.08
P-248	J-122	J-611	10.45	0.19	0.00	0.12	0.02	0.02
P-249	J-123	J-122	19.45	0.35	0.00	0.22	0.05	0.05
P-250	J-124	J-123	28.45	0.35	0.00	0.32	0.10	0.10
P-251	J-133	J-124	37.45	1.07	0.00	0.42	0.17	0.17
P-252	J-125	J-121	46.45	0.33	0.00	0.30	0.06	0.06
P-254	J-127	J-125	55.45	0.68	0.00	0.35	0.09	0.09
P-255	J-126	J-127	64.45	1.47	0.00	0.41	0.11	0.11
P-256	478	J-126	73.45	0.49	0.00	0.47	0.15	0.15
P-258	O-RV-2	J-128	24.92	0.02	0.00	0.28	0.08	0.08
P-259	O-RV-3	J- 49	58.72	1.04	0.00	0.67	0.34	0.34
P-260	J-121	J-130	37.45	0.88	0.00	0.42	0.17	0.17
P-261	J-130	J-131	37.45	0.84	0.00	0.42	0.17	0.17
P-262	J-131	J-132	37.45	0.68	0.00	0.42	0.17	0.17
P-263	J-132	J-133	37.45	1.14	0.00	0.42	0.17	0.17
P-264	J-134	J-135	26.08	0.42	0.00	0.30	0.09	0.09
P-265	J-135	J-116	26.08	0.30	0.00	0.30	0.09	0.09
P-611	J-612	J-611	27.79	0.13	0.00	0.18	0.03	0.03
P-612	J-613	J-612	35.73	0.48	0.00	0.23	0.04	0.04
P-613	481	J-613	43.66	0.15	0.00	0.28	0.06	0.06
Z-651	487	J-129	70.22	0.03	0.00	0.45	0.13	0.13

P U M P/L O S S E L E M E N T R E S U L T S

#PUMPS NPSH NAME	FLOWRATE (gpm)	INLET HEAD (ft)	OUTLET HEAD (ft)	PUMP HEAD (ft)	EFFIC- ENCY (%)	USEFUL POWER (Hp)	INCREMTL COST ($)	TOTAL COST ($)	#PUMPS PARALLEL	SERIES Avail. (ft)
Brandenbur	400.00	88.81	338.24	249.4	----	-----	---	----	**	** 121.9

E N D N O D E R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
477		8.23	944.72	680.00	264.72	114.71
478		8.23	946.87	800.00	146.87	63.64
479		8.23	943.61	773.00	170.61	73.93
480		8.23	940.95	791.00	149.95	64.98
481		8.23	939.16	800.00	139.16	60.30
482		8.23	937.96	785.00	152.96	66.28
483		8.23	936.82	800.00	136.82	59.29
484		8.23	935.83	831.00	104.83	45.43
485		8.23	935.25	810.00	125.25	54.28
486		8.23	934.64	824.00	110.64	47.94
487		8.23	934.18	755.00	179.18	77.64
488		0.00	934.13	755.00	179.13	77.62
489		8.23	934.12	591.00	343.12	148.69
560		0.00	943.84	640.00	303.84	131.67
564		8.23	934.13	674.00	260.13	112.72
J- 6		15.00	905.94	746.00	159.94	69.31
J- 33		0.00	946.47			
J- 43		3.23	934.13	591.00	343.13	148.69
J- 45		3.23	908.19	680.00	228.19	98.88
J- 47		0.00	908.28			
J- 48		3.23	908.26	670.00	238.26	103.25
J- 49		6.47	908.58	750.00	158.58	68.72
J- 50		4.70	908.27	752.00	156.27	67.72
J-115		15.00	903.92	434.00	469.92	203.63
J-116		9.00	904.48	774.00	130.48	56.54
J-117		7.50	904.06	738.00	166.06	71.96
J-118		4.50	937.46	750.00	187.46	81.23
J-119		7.50	904.10	550.00	354.10	153.45
J-120		7.50	903.93	427.00	476.93	206.67
J-121		9.00	943.89	750.00	193.89	84.02
J-122		9.00	938.59	550.00	388.59	168.39
J-123		9.00	938.95	490.00	448.95	194.54
J-124		9.00	939.29	624.00	315.29	136.63
J-125		9.00	944.22	760.00	184.22	79.83
J-126		9.00	946.38	805.00	141.38	61.26
J-127		9.00	944.91	566.00	378.91	164.19
J-128		4.50	904.59	750.00	154.59	66.99
J-129	PRV STATION	0.00	934.15	755.00	179.15	77.63
J-130		0.00	943.02	698.00	245.02	106.17
J-131		0.00	942.18	718.00	224.18	97.14
J-132		0.00	941.50	673.00	268.50	116.35
J-133		0.00	940.36	630.00	310.36	134.49
J-134		0.00	905.19	824.00	81.19	35.18
J-135		0.00	904.77	793.00	111.77	48.43
J-611		8.82	938.41	701.00	237.41	102.88
J-612		7.94	938.53	720.00	218.53	94.70
J-613		7.94	939.01	780.00	159.01	68.90
Payneville	Payneville T	----	947.50	812.50	135.00	58.50
I-RV-2		0.00	937.44	750.00	187.44	81.22
O-RV-3		----	909.62	755.00	154.62	67.00

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES (psi)	JUNCTION NUMBER	MINIMUM PRESSURES (psi)
J-120	206.67	J-134	35.18
J-115	203.63	324	37.38
J-123	194.54	323	37.40
492	186.00	I-Brandenbur	38.49
491	177.74	468	39.81
490	169.06	467	40.16
J-122	168.39	315	41.36
493	167.42	J-101	44.15
498	166.51	484	45.43
J-127	164.19	R- 4	45.50

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	FCV-1	400.00	ACTIVATED	146.18	123.74	400.00
RV-2	PRV-1	67.00	ACTIVATED	81.22	67.00	24.92
RV-3	PRV-1	67.00	ACTIVATED	77.60	67.00	58.72

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
Garrett	439.78	Garrett Tank
Payneville	602.23	Payneville T
R- 1	0.00	KY 144
R- 2	458.46	KY 1600
R- 3	400.00	Brandenburg
R- 4	20.58	Brizendine 1

NET SYSTEM INFLOW = 1921.05
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1921.05

***** HYDRAULIC ANALYSIS COMPLETED *****

APPENDIX B

DETAILED CONSTRUCTION COST ESTIMATES

Preliminary Opinion of Probable Construction Cost
KY 228/Rhodelia Water System Expansion Project
Meade County Water District

KY 228 from KY 1844 to KY 144

No.	ITEM	UNITS	QUANTITY	UNIT PRICE	EXTENSION
1	6-Inch PVC Water Main	LF	79,500	$ 12	$ 954,000
2	Freebore Asphalt Driveways	EA	8	$ 1,000	$ 8,000
3	14-Inch Stee Encasement Pipe, Bore & Jack	LF	300	$ 150	$ 45,000
4	6-Inch Horizontal Directional Drill @ Wolf Creek	LF	160	$ 250	$ 40,000
5	6-Inch Gate Valve	EA	32	$ 800	$ 25,600
6	**Total Preliminary Opinion of Probable Construction Cost**	EA	16	$ 1,500	$ 24,000
7	Pressure Reducing Valve Station	EA	1	$ 50,000	$ 50,000
8	Connect To Existing Water Line	LF	2	$ 750	$ 1,500
9	Trench Rock Excavation	CY	4,000	$ 60	$ 240,000
10	Mob/Demob/Bonds/Insurance/Gen Cond. (7%)	LS	1	$ 97,200	$ 97,200
				Opinion of Probable Cost	**$1,485,300**

Note: Trench rock excavation assumes 0.5' over entire length and 3.5' over 0.5 miles

Preliminary Opinion of Probable Construction Cost
KY 228/Rhodelia Water System Expansion Project
Meade County Water District

KY 144 (Rhodelia Road) from KY 228 to KY 376

No.	ITEM	UNITS	QUANTITY	UNIT PRICE	EXTENSION
1	6-Inch PVC Water Main	LF	49,700	$ 12	$ 596,400
2	Freebore Asphalt Driveways	EA	14	$ 1,000	$ 14,000
3	14-Inch Stee Encasement Pipe, Bore & Jack	LF	120	$ 150	$ 18,000
4	6-Inch Open Cut Crossing @ Wolf Creek w/HDPE	LF	100	$ 100	$ 10,000
5	6-Inch Gate Valve	EA	20	$ 800	$ 16,000
6	**Total Preliminary Opinion of Probable Construction Cost**	EA	10	$ 1,500	$ 15,000
7	Pressure Reducing Valve Station	EA	0	$ 50,000	$ -
8	Open Cut Pavement - Longitudinal	LF	100	$ 25	$ 2,500
9	Trench Rock Excavation	CY	2,000	$ 60	$ 120,000
10	Mob/Demob/Bonds/Insurance/Gen Cond. (7%)	LS	1	$ 55,500	$ 55,500
				Opinion of Probable Cost	**$847,400**

Note: Trench rock excavation assumes 0.5' over entire length and 3.5' over 0.5 miles

Preliminary Opinion of Probable Construction Cost
KY 228/Rhodelia Water System Expansion Project
Meade County Water District

KY 376 from KY 144 to KY 1239/KY 144

No.	ITEM	UNITS	QUANTITY	UNIT PRICE	EXTENSION
1	8-Inch PVC Water Main	LF	7,900	$ 16	$ 126,400
2	Freebore Asphalt Driveways	EA	6	$ 1,000	$ 6,000
3	14-Inch Stee Encasement Pipe, Bore & Jack	LF	60	$ 150	$ 9,000
4	6-Inch Horizontal Directional Drill	LF	0	$ 100	$ -
5	8-Inch Gate Valve	EA	4	$ 1,200	$ 4,800
6	**Total Preliminary Opinion of Probable Construction Cost**	EA	2	$ 1,500	$ 3,000
7	Pressure Reducing Valve Station	EA	0	$ 50,000	$ -
8	Connect To Existing Water Line	EA	1	$ 750	$ 750
9	Trench Rock Excavation	CY	300	$ 60	$ 18,000
10	Mob/Demob/Bonds/Insurance/Gen Cond. (7%)	LS	1	$ 11,800	$ 11,800
				Opinion of Probable Cost	**$179,750**

Note: Trench rock excavation assumes 0.5' over entire length

Preliminary Opinion of Probable Construction Cost
KY 228/Rhodelia Water System Expansion Project
Meade County Water District

Summary by Road

No.	ITEM	Dwellings	COST
1	KY 228	100	$ 1,485,300
2	KY 144 (Rhodelia Road)	58	$ 847,400
3	KY 376	40	$ 179,750
	Subtotal	198	$ 2,512,450
	Construction Contingency (10%)		$ 251,245
	Total Preliminary Opinion of Probable Construction Cost		**$ 2,763,695**