

Capital Improvement Plan



2016 FINANCIAL PLAN

(January 1 through December 31, 2016)



12/17/15

Supplement to the 2016 Financial Plan

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Management Team

Graham W. Rich, P.E., BCEE	Chief Executive Officer
Thad Luther, P.E., BCEE	Chief Operating Officer
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Robert Hart, P.E., BCEE	Technical Services Officer
Becky Linker	Chief Administrative Officer
Jeff Mascagni, CPA, CGFM	Chief Financial Officer
John Tynan	Director of Customer Relations & Public Affairs
Terry Bice	Director of Distribution
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Kevin Hall	Director of Environmental Health & Safety
Allen Vincent	Director of Information Services
Randy Easley	Director of Water Quality & Operations

Capital Improvement Plan Development Team

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Leo O'Bannion	General Accountant
John Tynan	Director of Customer Relations & Public Affairs

EXECUTIVE SUMMARY

Central Arkansas Water’s Capital Improvement Plan (CIP) is a five-year plan that projects the Utility’s spending for anticipated capital needs, addressing repair, replacement, and relocation of existing infrastructure as well as the development or acquisition of new facilities, property, and equipment. The CIP serves as a tool to identify capital expenditure needs, coordinate financing, and specify the timing of these improvements.

Across the nation, drinking water infrastructure is considered to be in “poor” overall condition. The American Society of Civil Engineers graded the nation’s drinking water infrastructure with a D or “poor” rating in their 2013 Report Card for America’s Infrastructure. CAW, however, seeks to proactively address infrastructure needs as part of the Utility’s Essential and Exceptional commitment to our community. CAW has developed this CIP Supplement to highlight and provide additional details for all planned capital projects with a financial impact greater than \$250,000 over the next 5 years. Each of these projects is included in this Supplement with descriptive pictures, purpose, estimated costs, duration, anticipated funding source(s), future impact on operations, and related Effective Utility Management (EUM) attributes.



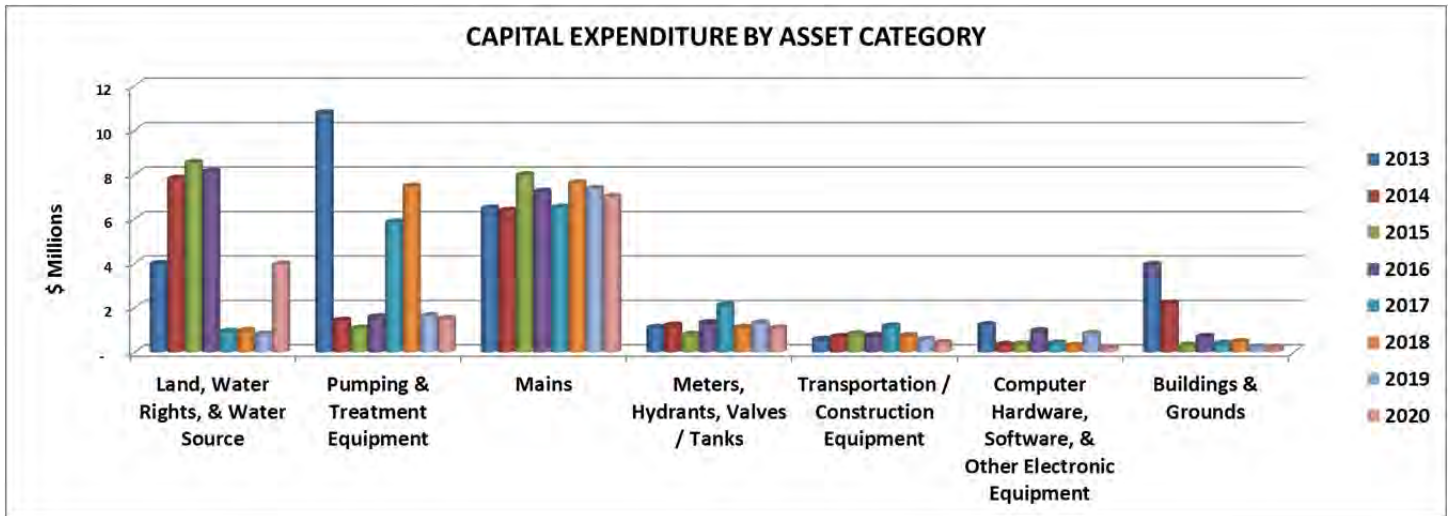
A Focus on Infrastructure Decision-Making

Timing and prioritization of infrastructure replacement and rehabilitation is influenced by a wide range of factors, including, but not limited to, regulatory requirements, relocations driven by local government street and drainage improvements, age and condition of assets, and availability of financial resources.

The Environmental Protection Agency’s (EPA) Safe Drinking Water Act Amendments of 1996 (SDWAA) imposed new and stricter requirements for numerous contaminants in drinking water, including arsenic, radioactive compounds, microbials, and disinfection byproducts. Complying with these EPA requirements has required CAW to expend a significant amount of financial and human capital in recent years. For example, CAW completed a \$17.5 million bond issue in 2012 and used these bond proceeds to upgrade our water treatment plants for regulatory requirements.

Water main relocation projects driven by city, county, and state road, highway, and drainage improvements have recently placed additional demands on CAW’s resources available for capital improvement projects.

Annual expenditures for required relocation projects will increase from \$1.0 million in 2012 to just under \$3.7 million in 2016, a 270% increase.



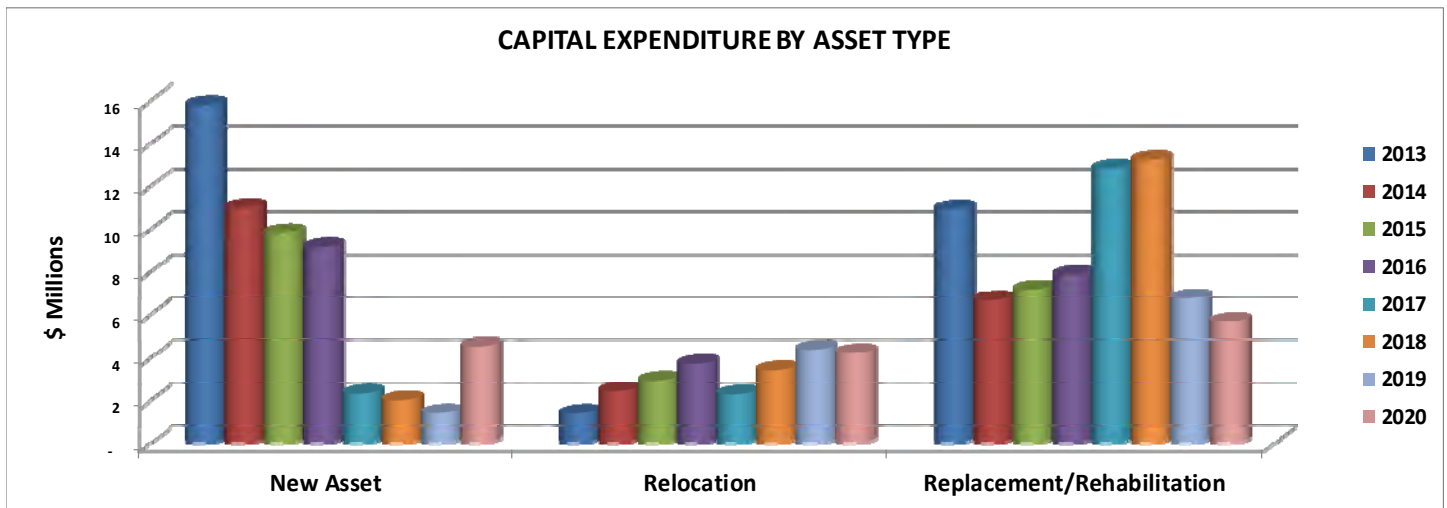
Using limited resources to comply with federal water quality regulations and water main relocations leaves fewer resources available for replacement or rehabilitation of other critical Utility assets. While water quality improvements and main relocations do result in newer infrastructure, these projects are not dictated by CAW system needs or assets that are past their useful life. Therefore, these mandatory projects compete for limited infrastructure funds that could otherwise be used for replacing aging infrastructure that is past its useful life or that has a chronic history of spontaneous breakage. As discussed previously, CAW financed water treatment plant improvements with a bond issue in 2012. The Utility was able to accommodate mandatory relocations in 2015 without a significant reduction in the replacement of galvanized pipe by using excess working capital funds and in house labor for galvanized replacements. Excess working capital funds are projected to expire in 2016.

Deferring infrastructure improvements on aging assets has contributed to the “poor” rating that drinking water infrastructure received from The American Society of Civil Engineers. Therefore, CAW is taking a proactive approach to identify, plan for, fund, and implement projects focused on aging infrastructure as well as mandatory projects. CAW’s primary goal is to maintain superior water quality and reliability for our customers. This CIP Supplement aids in identifying and planning for the completion of necessary projects that allow us to meet this goal.

Annual Expenditure Trend

CAW anticipates completing approximately \$83.7 million in capital improvement projects from 2016-2020. During this five-year period, the largest year of capital expenditures is projected to be in 2017, driven primarily by water main replacement projects and bond funded construction at the Ozark Point Plant and Wilson Plant Pump Station #1A.

Spikes in replacement and rehabilitation capital expenditures occur in 2017 and 2018 because of the bond funded rehabilitation and modernization of the Ozark Point Plant and Wilson Plant Pump Station #1A.

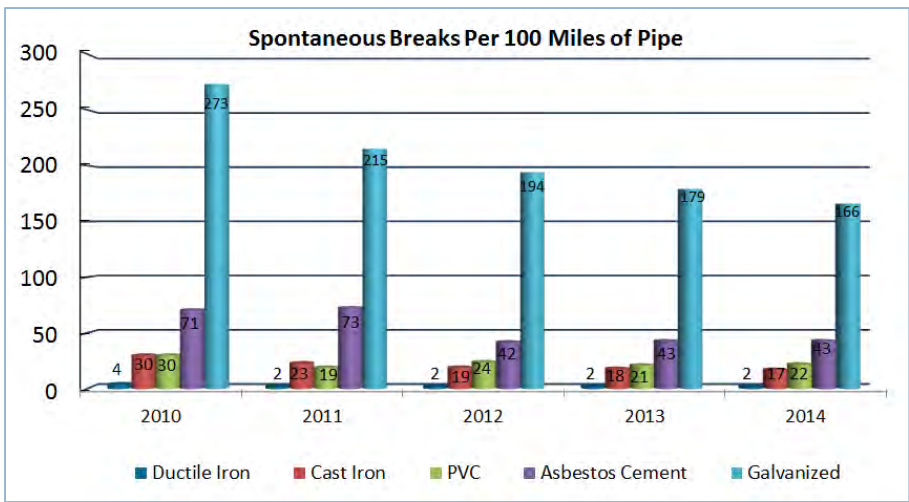


Mandatory water main relocation expenditures related to road, highway, and drainage improvements projects that occurred or are projected to occur from 2013 through 2020 will increase in 2016 to \$3.7 million followed by a decrease in 2017 to \$2.3 million as the number of bond-funded street and drainage projects decrease. Relocation will again increase in 2018 and 2019 with a peak of \$4.3 million in relocations in 2019. Relocations in 2018-2020 are primarily due to the 30 Crossing Project which will expand and rebuild the Interstate 30 corridor through downtown Little Rock and North Little Rock. This state bond funded roadway project will also replace the existing Interstate 30 bridge across the Arkansas River. CAW currently has a 24” main on the existing bridge which will require relocation during the project to the new bridge structure.

As the new asset and relocation capital expenditures decrease, replacement and rehabilitation expenditures are projected to increase from \$7.0 million in 2015, to \$7.8 million per year in 2016, \$12.8 million 2017, to \$13.2 million in 2018, to \$6.7 million in 2019, and to \$5.6 million in 2020. Increases in capital expenditures for replacement and rehabilitation projects will allow CAW to address critical aging infrastructure needs at Ozark Point Plant, Wilson Plant Pump Station #1A, and 2” galvanized pipe.

Why Galvanized Pipe

\$3.9 million of infrastructure expenditures from 2016-2020 are planned to fund galvanized pipe replacement projects. Currently, galvanized pipe accounts for approximately 6% of CAW’s water mains but are responsible for over 40% of the spontaneous breaks throughout the system.



CAW currently maintains 137 miles of galvanized pipe within its system. There are segments of galvanized pipe that have been in service for more than 114 years. Galvanized pipe, however, only has an anticipated useful life of 50 years; the Utility's weighted average age for galvanized pipe is currently at 56 years.

While galvanized pipe presents one of the more critical needs in

the CAW distribution system, funding for galvanized pipe replacement projects has been greatly reduced in the 2016 through 2019 planning window (\$3.5 million) compared to what was previously envisioned in the 2016 through 2019 planning window (\$12.4 million). This is primarily attributed to a limited amount of capital funds available and competing required relocation needs related to the state funded I-30 Crossing Project through the downtowns of Little Rock and North Little Rock from 2018 through 2020. The magnitude of these relocations were not known when the previous five year plan was produced.

Current System Pipe Types

Type Pipe	Miles	Percent of Dist. System	Weighted Age (Yrs)	Age Range (Yrs)	Est. Useful Life (Yrs)
Ductile Iron	810	35 %	17	1 - 50	100
Cast Iron	810	35 %	63	16 – 114+	100
PVC	450	20 %	21	1 – 52	100
Galvanized Iron	137	6 %	56	17 – 114+	50
AC	36	2 %	55	38 - 75	60
PCCP	38	2 %	46	32 – 61	80
Other	12	< 1 %	46	1 - 100	80

Primary Funding and Financing Methods

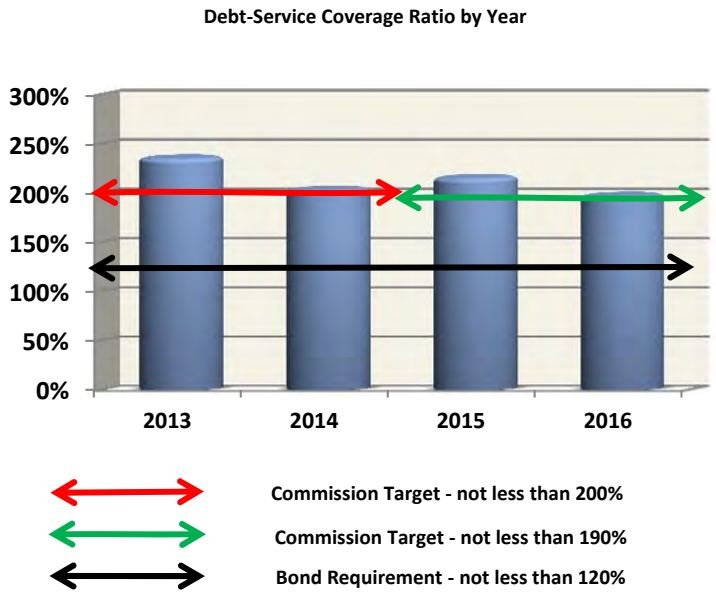
The primary funding sources for capital expenditures are revenue bonds and rates. The 2016 Financial Plan includes a planned bond issue in 2016 for \$15.2 million. The 2016 Bond Issue proceeds will fund Ozark Point Plant improvements and partial funding of Wilson Plant Pump Station #1A improvements.

CAW's bonds require revenue coverage not less than 120% of debt service. Prior to 2015, the CAW Board of Commissioners maintained a more conservative target of 200% including Rate Stabilization Account transfers. Resolution 2015-01 was enacted in March of 2015 and clearly defined triggers for Rate Stabilization

Account transfers. The resolution establishes a debt service coverage target of 190%. Coverage ratios at or below 175% at year-end will trigger a transfer from the Rate Stabilization Account to achieve a 175% coverage ratio. Conversely, coverage ratios in excess of 200% at year-end shall trigger the transfer of general revenue funds to the Rate Stabilization Account to achieve a 200% coverage ratio.

CAW completed a rate study in 2015 that examined multiple funding mechanisms in order to allow the Utility to meet all revenue requirements. Increased revenues are necessary in order to meet increasing operations and maintenance costs and capital needs in 2017 and beyond. The 2015 rate study recommends increases to improve revenue stability in light of increasing weather-related variability of water consumption as well as decreases in consumption attributable to technology and fundamental behavioral changes in CAW's customer base. The rate study and rates are more fully discussed in the 2016 Financial Plan document.

Over the next five years, capital expenditures are projected to average \$16.7 million per year. During this time CAW will rely primarily on a combination of rate-based revenue and bond proceeds to fund capital improvements. This funding decision will require CAW staff and Board to identify opportunities to increase revenue intended for capital improvements and to prioritize specific asset replacement projects based on limited resources.



Acknowledgement

This Capital Improvement Plan – Supplement to the 2016 Financial Plan is the result of the combined efforts of the Finance department, department directors, and staff to focus on the future capital needs of the Utility, the community, and our customers.

CAPITAL IMPROVEMENT PLAN – FIVE-YEAR PLAN

DESCRIPTION	2016	2017	2018	2019	2020	5yr Total
Land, Water Rights, And Water Source						
Purchase DeGray Lake Water Rights	4,640,000					4,640,000
Purchase Forest Legacy Projects (Grant)	2,590,000				3,140,000	5,730,000
Purchase Conservation Easements	300,000	300,000	300,000	300,000	300,000	1,500,000
Purchase Property	500,000	500,000	500,000	500,000	500,000	2,500,000
Professional Services - Property Appraisals	5,000	5,000	5,000	5,000	5,000	25,000
Professional Services - Land Surveying	5,000	5,000	5,000	5,000	5,000	25,000
Repair Spillway Concrete - Lake Winona		65,000				65,000
Rehab Vertical and Horizontal Drains on Dam - Lake Winona			150,000			150,000
Data Needs Analysis - Watershed			250,000			250,000
TOTAL	\$ 8,040,000	\$ 875,000	\$ 1,210,000	\$ 810,000	\$ 3,950,000	\$ 14,885,000
Pumping And Treatment Equipment						
Construct Booster Pump Station #26B - NLR High Pressure Zone (CO)	100,000					100,000
Replace Fluoride Feed Equipment - Ozark	35,000					35,000
Replace Fluoride Feed Equipment - Wilson	75,000					75,000
Install Generator - Station #19A Wye Mountain	28,000					28,000
Install Variable Frequency Drive - Station #27 Pump #1	8,000					8,000
Replace Main Breaker - Station #16A	25,000					25,000
Install Automatic Transfer Switch - Station #23 Generator	6,000					6,000
Improve Ozark Point Water Treatment Plant - Engineering Design	750,000	30,000	40,000	20,000		840,000
Improve Ozark Point Water Treatment Plant - Construction		3,500,000	5,750,000	1,263,000		10,513,000
Improve Pump Station #1A - Engineering Design - Wilson	500,000	30,000	25,000	50,000	25,000	630,000
Improve Pump Station #1A - Construction - Wilson		2,000,000	1,300,000		1,910,000	5,210,000
Preliminary Engineering Report - Intake Inspection - Winona/Maumelle/Jackson (CO)	45,000					45,000
Preliminary Engineering Report - Alternate Water Source - AR River (CO)	10,000					10,000
Replace Main Switchgear Backup Batteries - Wilson and Maumelle	9,000					9,000
Purchase Vac-Tron		70,000				70,000
Replace On-Line Turbidimeters - Ozark		40,000				40,000
Replace 800KW Generator - Station #22		176,000				176,000
Rebuild Pump #3 - Lake Maumelle		75,000	250,000			325,000
Rebuild Pump #4 - Lake Maumelle			100,000	350,000		450,000
TOTAL	\$ 1,591,000	\$ 5,921,000	\$ 7,465,000	\$ 1,683,000	\$ 1,935,000	\$ 18,595,000

(co) – Carry over from Previous Year

CAPITAL IMPROVEMENT PLAN – FIVE-YEAR PLAN

DESCRIPTION	2016	2017	2018	2019	2020	5yr Total
Water Mains						
Capital Labor - Distribution, Engineering, Water Quality And Operations	2,029,000	2,013,000	2,037,000	2,061,000	2,086,000	10,226,000
Professional Services - Engineering	15,000	15,000	15,000	15,000	15,000	75,000
TRANSMISSION MAINS - NEW CONSTRUCTION						
Install 20" Swing Connection - Gravity System - Chicot Rd/So. University - Contr.			75,000			75,000
Participation - 16" Upsizing - West Pulaski County Water Authority - Kanis/Burlingame	200,000	425,000				625,000
Install 42"/36" Remotely Operated Valves - Northbelt Trans. Main - Rodney Parham Rd		150,000				150,000
TRANSMISSION MAINS - REPLACEMENTS						
Replace 16" Steel Pipe Across Cantrell Rd - Pulaski Heights East Feed - LR W3 - (CO)	50,000					50,000
Replace 16" Asbestos-Cement Pipe - E Capitol/Rock - LR W1- 690' Distr.	42,000					42,000
DISTRIBUTION MAINS - REPLACEMENTS						
Replace 12" Asbestos Cement Main - E Roosevelt/Welch St -LR W1- 3,700' Contr. (CO)	300,000					300,000
Replace 2" Galvanized & 6" Asbestos Cement Pipe - Dixie Addition -NLR W2- Contr. (CO)	350,000					350,000
Replace 2" Galvanized Pipe - W 10th/Johnson -LR W1- 1,790' Distr.	38,000					38,000
Replace 2" Galvanized Pipe - E. Capitol/Bond -LR W1- 1,065' Distr.	22,000					22,000
Replace 2" Galvanized Pipe - Woodcliff/Ridge Park -LR W6- 1,930' Distr.	40,000					40,000
Replace 2" Galvanized Pipe - CreekrIDGE -SHRWD W4- 2,460' Distr. (CO)	55,000					55,000
Replace 2" Galvanized Pipe - Cordelia/Shade Tree -SHRWD W4- 3,150' Distr.	70,000					70,000
Replace 2" Galvanized Pipe - Ingram Rd -PulCty JP 13- 2,300' Distr.	50,000					50,000
Replace 2" Galvanized Pipe - Jericho Rd -PulCty JP 13- 2,030' Distr.	40,000					40,000
Replace 2" Galvanized Pipe - Linton/Birmingham -PulCty JP 13- 1,470' Distr.	30,000					30,000
Replace 2" Galvanized Pipe - Meadowcliff -LR W7- 6,400' Contr.		544,000				544,000
Replace 2" Galvanized Pipe - Jackson/Rose/Elm -LR W3- 6,200' Contr.		214,000	286,000			500,000
Replace 2" Galvanized Pipe and 6" Cast Iron Pipe - Warren/Arapaho -LR W2 - 6,725'			610,000			610,000
Replace 8" Cast Iron Pipe - River Rd -NLR W2- 350' Distr.		20,000				20,000
Replace 2" Galvanized Pipe Undesignated/Unknown Locations		350,000	386,000	400,000	425,000	1,561,000
DISTRIBUTION MAINS - RELOCATIONS						
Relocate 12" and 36" Main - Zoo Dr -LR W3- 400' Contr. (CO)	135,000					135,000
Relocate 2" Main - S Elm/W 26th -LR W1- 100' Distr.	6,000					6,000
Relocate 3" Main - Tyler/W 32nd -LR W1- 600' Distr.	10,000					10,000
Relocate 8" Main - Geyer Springs Rail Separation -LR W2- 1,500' Contr.	170,000					170,000
Relocate 8" Main - ML King/W 28th -LR W1- 750' Distr.	68,000					68,000
Relocate 8" Main/Meters/Hydrants - Asher Btwn Oak/Woodrow -LR W1- 510' Distr.	90,000					90,000
Relocate Meters/Hydrants - Fair Park Blvd Traffic Calming -LR W2- Distr.	11,000					11,000

CAPITAL IMPROVEMENT PLAN – FIVE-YEAR PLAN

DESCRIPTION	2016	2017	2018	2019	2020	Syr Total
Water Mains (Cont.)						
DISTRIBUTION MAINS - RELOCATIONS (Cont.)						
Relocate 12" and 8" Main - N Chicot Rd/Mabelvale Pike -LR W7- 2,400' Contr. (CO)	300,000					300,000
Relocate 6" Main/Meters/Hydrants - McAdoo Drainage/H St -LR W3- Distr. (CO)	10,000					10,000
Relocate 12" Main - Taylor Loop Rd/LaMarche to Carter -LR W5- 800' Distr. (CO)	50,000					50,000
Relocate 2" Main - 44th St/Potter to Boyd -LR W6- 400' Distr. (CO)	25,000					25,000
Relocate 12" Main - Potter St/W 40th to W 44th -LR W6- Distr. (CO)	25,000					25,000
Relocate 12" Main - Pinnacle Valley Rd/Pine Mtn to Burnett -LR W4&5- Distr.	20,000					20,000
Relocate 8" Main - W St/Grant to University -LR W3- 350' Contr. (CO)	45,000					45,000
Relocate 8" Main - Russ St/Piggee -LR W4- 80' Distr.	10,000					10,000
Relocate 8" Main - Rodney Parham/Buf Ln -LR W4- 80' Distr.	6,000					6,000
Relocate Meters - Kingsrow/Cantrell to Ridge Rd -LR W3- Distr.	5,000					5,000
Relocate 2" Main/Meters - White Willow Ct/Pleasant Valley Dr -LR W4- Distr.	10,000					10,000
Relocate Meters/Hydrants - Pine Valley Roundabout/Kavanaugh -LR W3- Distr.	5,000					5,000
Relocate 12" Main/Meters/Hydrants - Gamble Rd/Lorena to Arthur - 400' Distr.	60,000					60,000
Relocate 3" Main - Longlea Ct/Pebble Beach -LR W4- 225' Distr.	15,000					15,000
Relocate 6" Main/Meters - Marlborough St/ Vinewood to Brandon - Distr.	30,000					30,000
Relocate 12"/8"/6" Main - Kanis Rd/Shackleford to Autumn -LR W6- 2,650' Contr.	300,000					300,000
TRANSMISSION MAINS - RELOCATIONS						
Relocate 20" Main - Across Ark. River - Broadway Bridge Attachment - AHTD	1,400,000					1,400,000
Relocate 24" Main - Interstate 30 Arkansas River Bridge Crossing - 1,800' AHTD			250,000	2,750,000	1,150,000	4,150,000
Relocate 16" Main - Capitol Drain/N. Cantrell Rd - LR W1- 200' Contr. (CO)	100,000	100,000				200,000
Relocate 24"/20"/12"/8" Main - Interstate 30 Widening - AHTD			1,867,000	1,367,000	2,366,000	5,600,000
Relocate 12"/8"/6" Main - Counts Massie/Crystal Hill -NLR/Maumelle - 3,120' Contr.(CO)	380,000					380,000
Relocate 8" Main - Poe St/Alma/Glenview -NLR W2- 100' Distr.(CO)	35,000					35,000
Relocate 2"/6" Main - 39th St/Pike/Hays -NLR W3- 100' Distr. (CO)	20,000					20,000
Relocate 8" Main - Oakbrooke/Woodruff -SHRWD W1-30' Distr. (CO)	5,000					5,000
Relocate 12" Main - Crooked Creek at Interstate 30 -AHTD- 200' Distr.	10,000					10,000
Relocate 8"/3" Main - NE Quadrant Interstate 430/Cantrell Rd -AHTD- Distr. (CO)	40,000					40,000
Relocate 12"/8" Main - Hwy 10 Widening/I-430 to Sam Peck - Phase One (1) - AHTD - Contr.	150,000	890,000				1,040,000
Relocate 12"/8" Main - Hwy 10 Widening/I-430 to Sam Peck - Phase One (1) - REIMBURSEMENT		(530,000)				(530,000)
Relocate 12"/8" Main - Hwy 10 Widening/I-430 to Sam Peck - Phase Two (2) - AHTD - Contr.			410,000			410,000
Relocate 12"/8" Main - Hwy 10 Widening/I-430 to Sam Peck - Phase Two (2) - REIMBURSEMENT			(250,000)			(250,000)
Relocate 12"/8"/6" Main - Kanis Rd/Shackleford to Autumn -LR W6- 4,600' Contr.		800,000				800,000
Relocate 12" Main - S. University / 28th to Co Glenn -LR W6- 3,400' Contr.			475,000			475,000
Relocate 24" Main - Maryland Avenue -SHRWD- 4,400' Contr.		800,000	400,000			1,200,000
Relocate Undesignated/Unknown Locations	100,000	200,000	250,000	250,000	250,000	1,050,000

CAPITAL IMPROVEMENT PLAN – FIVE-YEAR PLAN

DESCRIPTION	2016	2017	2018	2019	2020	5yr Total
Water Mains (Cont.)						
DISTRIBUTION MAINS - NEW CONSTRUCTION						
Developer Participation - New Mains	50,000	50,000	50,000	50,000	50,000	250,000
Install 12" Main - W. Baseline - Interconnection W. Markham and Mabelvale - 2,100' Contr.		200,000	144,000			344,000
Install 12" Main - Pump Station #29 Suction Improvements - 2,000' Contr.			350,000			350,000
TOTAL	\$ 7,027,000	\$ 6,241,000	\$ 7,355,000	\$ 6,893,000	\$ 6,342,000	\$ 33,858,000
Meters, Hydrants, Valves						
Routine Meter Change-Out Program	422,000	432,000	443,000	454,000	466,000	2,217,000
Install New Services and Meters	463,000	427,000	433,000	440,000	446,000	2,209,000
Replace 3/4", 1", and 2" Diameter Services	214,000	217,000	220,000	224,000	227,000	1,102,000
Replace Hydrants	68,000	70,000	72,000	73,000	75,000	358,000
Replace Influent Valve #1 Actuator - Wilson	9,000					9,000
Replace Maumelle Valve Actuator - Wilson	10,000					10,000
Relocate Basin Influent Valve - Wilson	50,000					50,000
Replace Basin Sludge Valves - Wilson	16,000					16,000
Retro Fit Hydraulic to Electric Actuators Cone Valves 1-4 - Lake Maumelle	125,000					125,000
Replace Commercial Meters (outdated touchreads)	120,000	120,000	120,000			360,000
Install AMI/ AMR Meters				50,000	50,000	100,000
Replace Control Valve - Storage Tank #23		20,000				20,000
TOTAL	\$ 1,497,000	\$ 1,286,000	\$ 1,288,000	\$ 1,241,000	\$ 1,264,000	\$ 6,576,000
Storage Tanks						
Restore - Tank #2		1,000,000				1,000,000
Tank Management Improvements to Enhance Water Quality	35,000	35,000	35,000	35,000	35,000	175,000
Restore - Tank #25				210,000		210,000
TOTAL	\$ 35,000	\$ 1,035,000	\$ 35,000	\$ 245,000	\$ 35,000	\$ 1,385,000
Transportation Equipment						
Replace Dump Truck(s)	117,000	188,000	191,000	194,000	98,000	788,000
Replace Vehicles	561,000	733,000	540,000	362,000	329,000	2,525,000
TOTAL	\$ 678,000	\$ 921,000	\$ 731,000	\$ 556,000	\$ 427,000	\$ 3,313,000

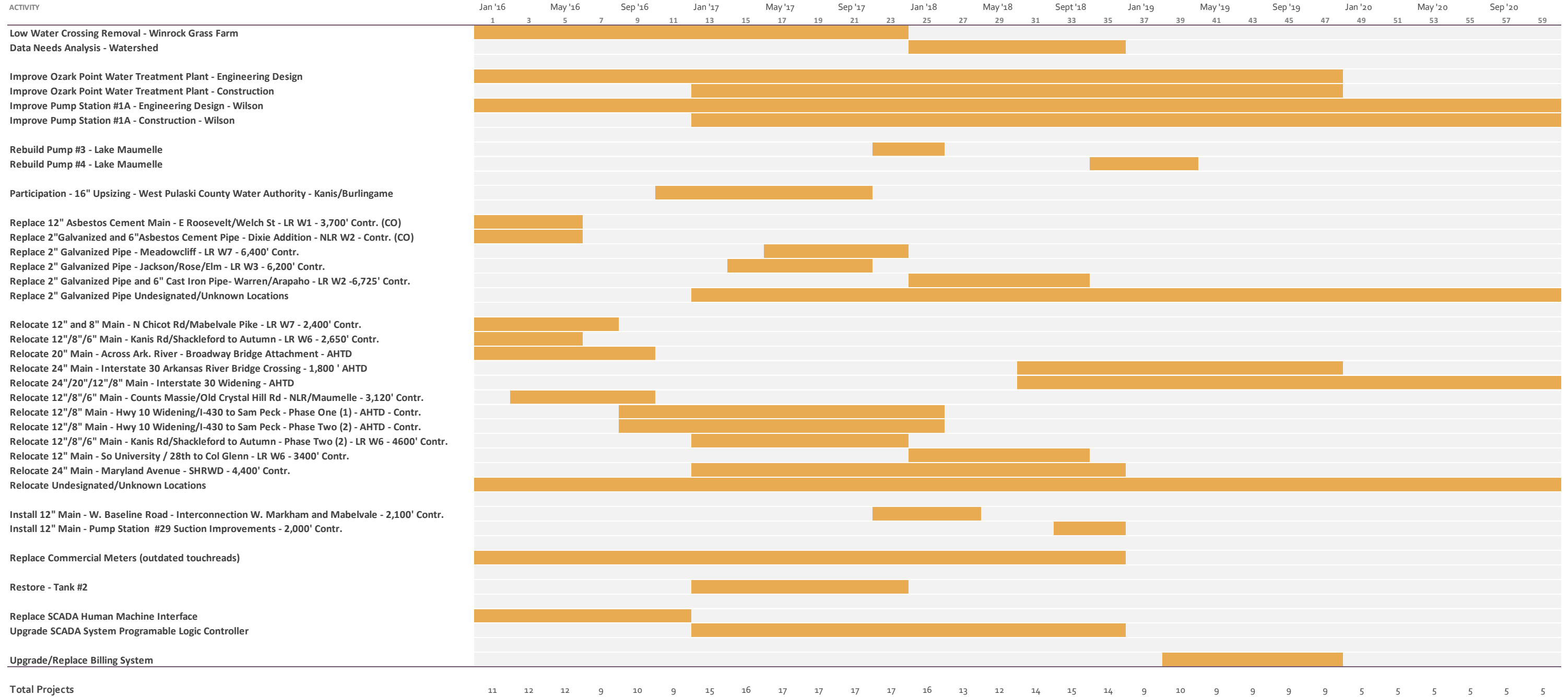
CAPITAL IMPROVEMENT PLAN – FIVE-YEAR PLAN

DESCRIPTION	2016	2017	2018	2019	2020	5yr Total
Construction Equipment						
Purchase Man Down Notification System	20,000					20,000
Replace Forklift	52,000					52,000
Purchase Directional Drilling Machine		235,000				235,000
TOTAL	\$ 72,000	\$ 235,000	\$ -	\$ -	\$ -	\$ 307,000
Computer Hardware, Software, And Other Electronic Equipment						
Purchase Additional SAN Disk VM Ware Servers				65,000		65,000
Replace Servers	10,000	20,000	20,000	20,000	20,000	90,000
Purchase Custom Map Tools for Cityworks Server	30,000					30,000
Replace Gas Chromatograph	125,000					125,000
Upgrade Financial Management Software					40,000	40,000
Replace Network Firewalls			30,000			30,000
Replace Global Positioning System Equipment	30,000				30,000	60,000
Replace SCADA Human Machine Interface	650,000					650,000
Purchase SCADA System Radios		50,000	50,000			100,000
Upgrade SCADA Plant Programmable Logic Controller		75,000				75,000
Upgrade SCADA System Programmable Logic Controller		150,000	150,000			300,000
Install SCADA in Surge Tank Building - Lake Maumelle		10,000				10,000
Upgrade Barracuda Web Filter	15,000					15,000
Purchase Virtual Machine Operation Management	15,000					15,000
Purchase Disaster Recovery Server for Call Center	25,000					25,000
Purchase Cisco Media Sense - Call Recording		25,000				25,000
Network PIN Test		15,000				15,000
Upgrade Operating Systems on Servers			20,000	20,000		40,000
Purchase Billing Printer	45,000					45,000
Purchase Compliance Backup Data Logging - Wilson		17,000				17,000
Replace and Upgrade Network Switches		40,000				40,000
Replace Server Uninterruptable Power Supply Units			20,000			20,000
Upgrade/Replace Billing System				700,000		700,000
Replace Large Format Scan/Print/Copy Machine					25,000	25,000
Replace SCADA Switches					35,000	35,000
enQuesta Disaster Recovery Server - ODA					45,000	45,000
Microsoft Server Licenses				23,000		23,000
TOTAL	\$ 945,000	\$ 402,000	\$ 290,000	\$ 828,000	\$ 195,000	\$ 2,660,000

CAPITAL IMPROVEMENT PLAN – FIVE-YEAR PLAN

DESCRIPTION	2016	2017	2018	2019	2020	5yr Total
Buildings And Grounds						
Low Water Crossing Removal - Winrock Grass Farm (Grant)	350,000	100,000				450,000
River, Floodplain and Wetland Restoration - Winrock Grass Farm	100,000	100,000	100,000	100,000	100,000	500,000
Improve Forest Road(s)	50,000	50,000	50,000	50,000	50,000	250,000
Sampling Stations	6,000	6,000	6,000	6,000	6,000	30,000
Rehab Chemical and Control Room - Wilson	30,000					30,000
Recoat Roof Admin Building - Wilson	9,000					9,000
Site Grading / Drainage Improvements - Jackson Reservoir	40,000					40,000
Aerial Photography of Watershed - Lake Maumelle	10,000	10,000	10,000	10,000	10,000	50,000
Forest Restoration and Enhancement - Winrock Grass Farm	75,000	50,000				125,000
Rehab Concrete and Roofs on Cone Valve and Generator Building - Lake Winona		15,000				15,000
Modify Generator Diesel Fuel Tank, Cleaning and Polishing - Lake Maumelle		40,000				40,000
Security Enhancements	75,000	35,000	35,000	36,000	36,000	217,000
Improve Buildings - Winrock Grass Farm	20,000	10,000				30,000
Improve Marina Facility	10,000	10,000	10,000	10,000	10,000	50,000
Purchase Property Maintenance Equipment		10,000	10,000	10,000		30,000
Replace Roofs Main Shop, Carpenter Shop and Office - Lake Winona		13,000				13,000
Replace Building Roofs - Lake Winona				15,000		15,000
TOTAL	\$ 775,000	\$ 449,000	\$ 221,000	\$ 237,000	\$ 212,000	\$ 1,894,000
GRAND TOTAL	\$ 20,660,000	\$ 17,365,000	\$ 18,595,000	\$ 12,493,000	\$ 14,360,000	\$ 83,473,000

Project Planner



Project Name: Purchase DeGray Lake Water Rights
Department: Engineering
Focus Area: Water Source
Location: DeGray Lake



Name:
Jim Ferguson
Est Start Date:
March, 2016

Duration: (Months)
N/A
Total Cost:
\$4,640,000

PROJECT PURPOSE

This project is the purchase of 100 MGD of the 120 MGD water rights currently under the right of first refusal contract with the Department of the U.S. Army Corps of Engineers. With this purchase, CAW will own or have rights to three water supply sources ensuring a sustainable long-term water supply which will meet the Utility's needs well into the next century. This purchase will decrease operation and maintenance costs approximately \$88,000 per year and increase debt service costs approximately \$560,000 per year.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
ARMY	4,640,000	0	0	0	0

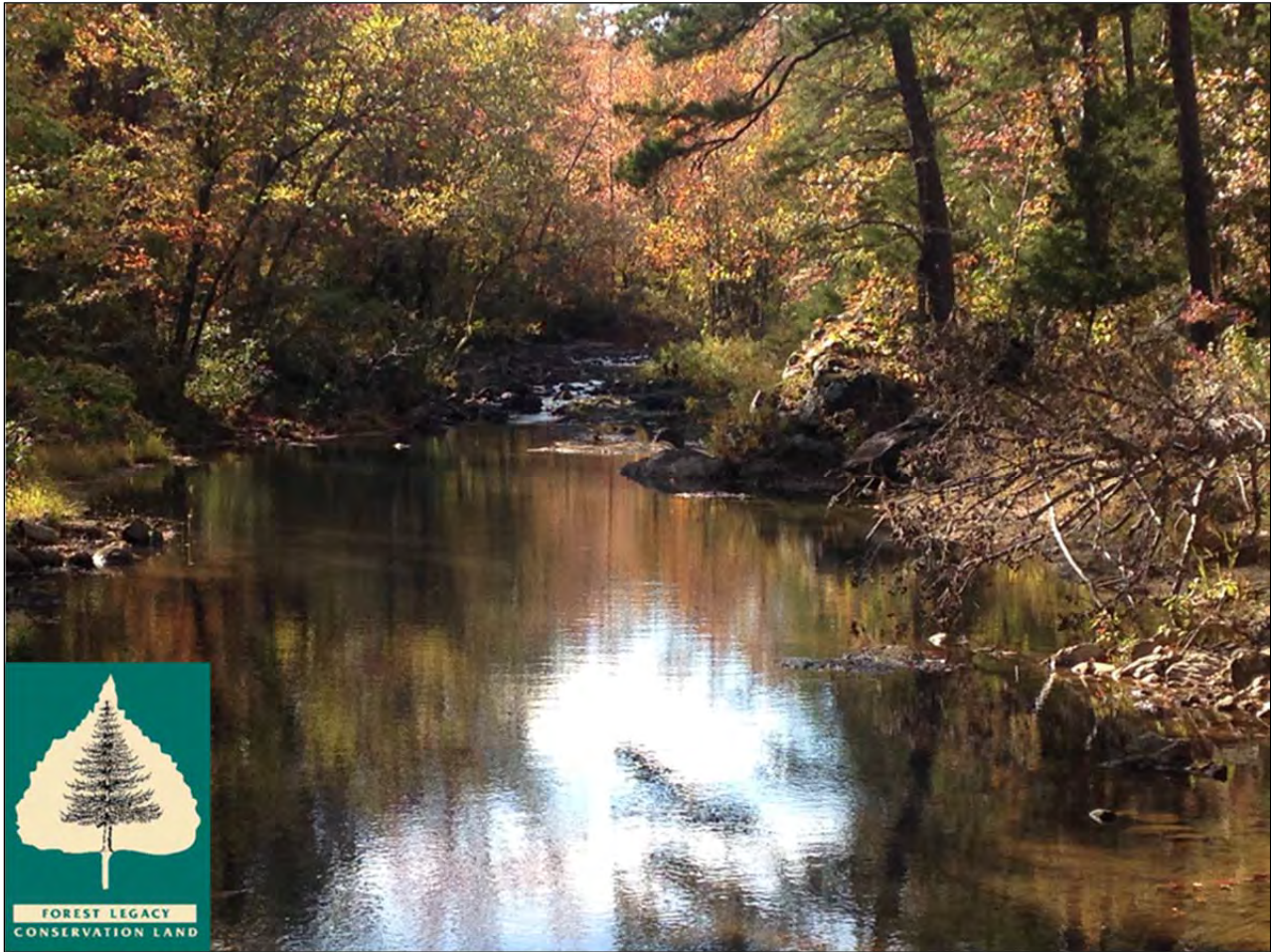
O&M Impact

G/L	2016	2017	2018	2019	2020
	-88,000	-88,000	-88,000	-88,000	-88,000

EUM ATTRIBUTE

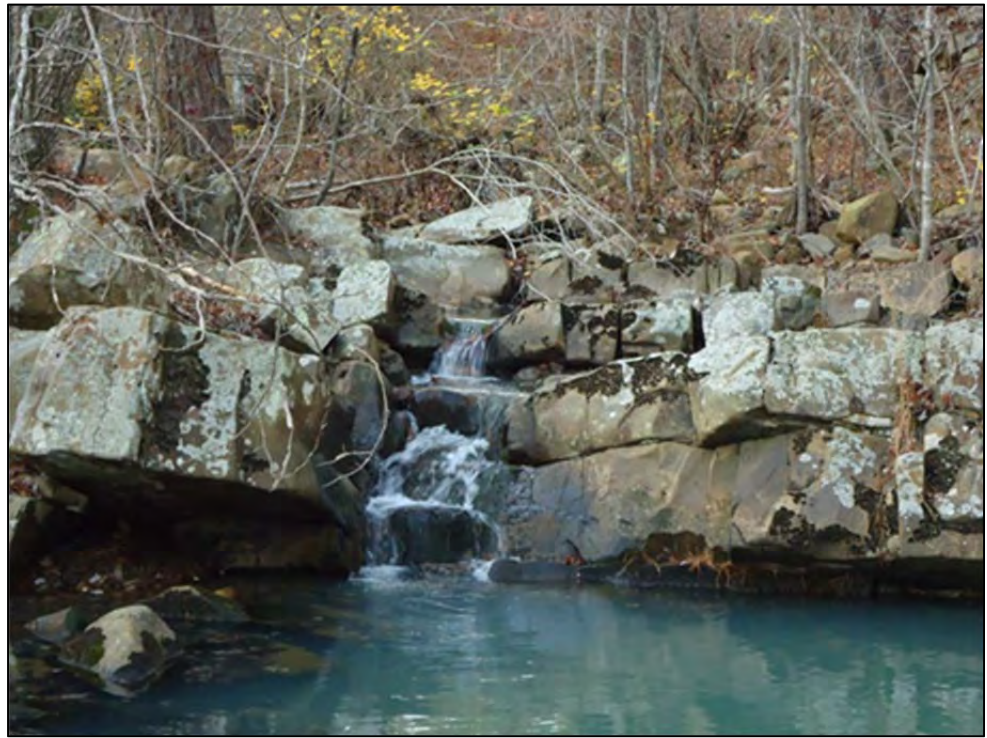
- **Water Resource Adequacy** – One of the core components of CAW's mission is to ensure a long-term water supply for future generations. The purchase of the 100MGD water rights from DeGray Lake ensures a reliable supply of water, projected to meet CAW needs for over 150 years. This project also adds a third water supply for CAW, ensuring a sustainable, long-term supply of water from a variety of sources.
- **Operational Resiliency** – With this purchase, CAW will have access to a total of three water supply sources. Due to the location of the three sources in relation to each other, it is highly probably that any natural or manmade disaster will only impact a portion of CAW's available water supply.

Project Name: Purchase Forest Legacy Projects
Department: Water Quality & Operations
Focus Area: Watershed Protection
Location: Lake Maumelle Watershed



Name:
Randy Easley
Est Start Date:
January, 2015

Duration: (Months)
Ongoing
Total Cost:
\$8,760,000



PROJECT PURPOSE

Development of forested areas in the Maumelle Watershed poses an increasing threat to maintaining the integrity of Central Arkansas' water supply. Intact forest lands supply timber products, wildlife habitat, soil and watershed protection, aesthetics, and recreational opportunities. However, as these forested areas disappear, so do the benefits they provide. While local governmental partners have guided development in the Maumelle Watershed through traditional land use controls (i.e. zoning and subdivision regulations), these measures are not always sufficient to fully protect the forested component of our natural resources.

The Forest Legacy Program (FLP) is a federal program that supports local efforts to protect environmentally sensitive forest lands and is one funding mechanism available to CAW for protection of significant properties. Protecting tracts of land in the Lake Maumelle Watershed through the FLP will protect forests critical to Central Arkansas' drinking water supply, help meet regulatory provisions under the Safe Drinking Water and Clean Water Acts, restore sustainable forest land use, protect steep sloped areas from development, protect habitat important to wildlife, and provide recreational opportunities within eight miles of the state capital.

Central Arkansas Water (CAW) will practice sustainable forest management for water quality, reduction of wildfire risk, and wildlife habitat enhancement on these properties, further enhancing the water quality value of these forested areas.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
GRANTS	1,943,000	0	0	0	2,355,000
WPF	647,000	0	0	0	785,000

O&M Impact

G/L	2016	2017	2018	2019	2020
Maintenance	12,950	12,950	12,950	12,950	28,100

EUM ATTRIBUTE

- **Community Sustainability** – CAW can best manage its water supply sources via direct ownership of lands within its source water areas. Through application of sound practices and strategies for land conservation and water management, CAW can help to ensure safe drinking water, thriving wildlife and aquatic ecosystems, and recreational opportunities for current and future residents of Central Arkansas.
- **Product Quality** – Ensuring the quality of water entering CAW's lakes is one of the best ways CAW can ensure quality treated water is provided to its customers. The ecosystems surrounding the water source lakes provide a natural filtering mechanism which reduces the amount of silt and contaminants entering the source water supply. By protecting these natural filters, CAW is able to ensure the highest quality source water, and thus the highest quality treated water possible.
- **Water Resource Adequacy** – Effective management of our current water sources is a key component of protecting overall water resource adequacy. Direct land ownership within CAW's watershed areas best positions the Utility to implement sound conservation and land management practices which will provide for long-term surface water sustainability and replenishment.

Project Name: Purchase Conservation Easement(s)
Department: Water Quality & Operations
Focus Area: Watershed Protection
Location: Lake Maumelle Watershed



Name:
Randy Easley
Est Start Date:
January, 2015

Duration: (Months)
Ongoing
Total Cost:
\$1,500,000



PROJECT PURPOSE

Conservation easements are one of the most powerful, effective tools available for the permanent conservation of private lands in the United States. Conservation easements are voluntary, legally binding agreements that limit certain types of land uses and developments in perpetuity. Each easement is a unique arrangement with the property owner. Benefits to the property owner can include cash payment or a substantial tax credit as well as fulfilling the landowner's long-term conservation vision for their property. Conservation easements benefit the public and the environment while keeping land in private hands.

A conservation easement's purpose will vary depending on the character of the particular property, the goals of CAW, and the needs of the landowners. An easement's purposes might include: maintain and improve water quality; perpetuate and foster the growth of healthy forest; or ensure lands are managed so that they are always available to benefit the sustainable use of our water supply.

The ability to utilize conservation easements as opposed to fee title ownership allows the landowner to continue use of their property while achieving the management objectives of the Utility at a reduced cost.

CAW regularly reviews property for fee-simple and conservation easement purchase. However, at this time, specific conservation easement projects have yet to be identified.





PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
WPF	300,000	300,000	300,000	300,000	300,000

O&M Impact

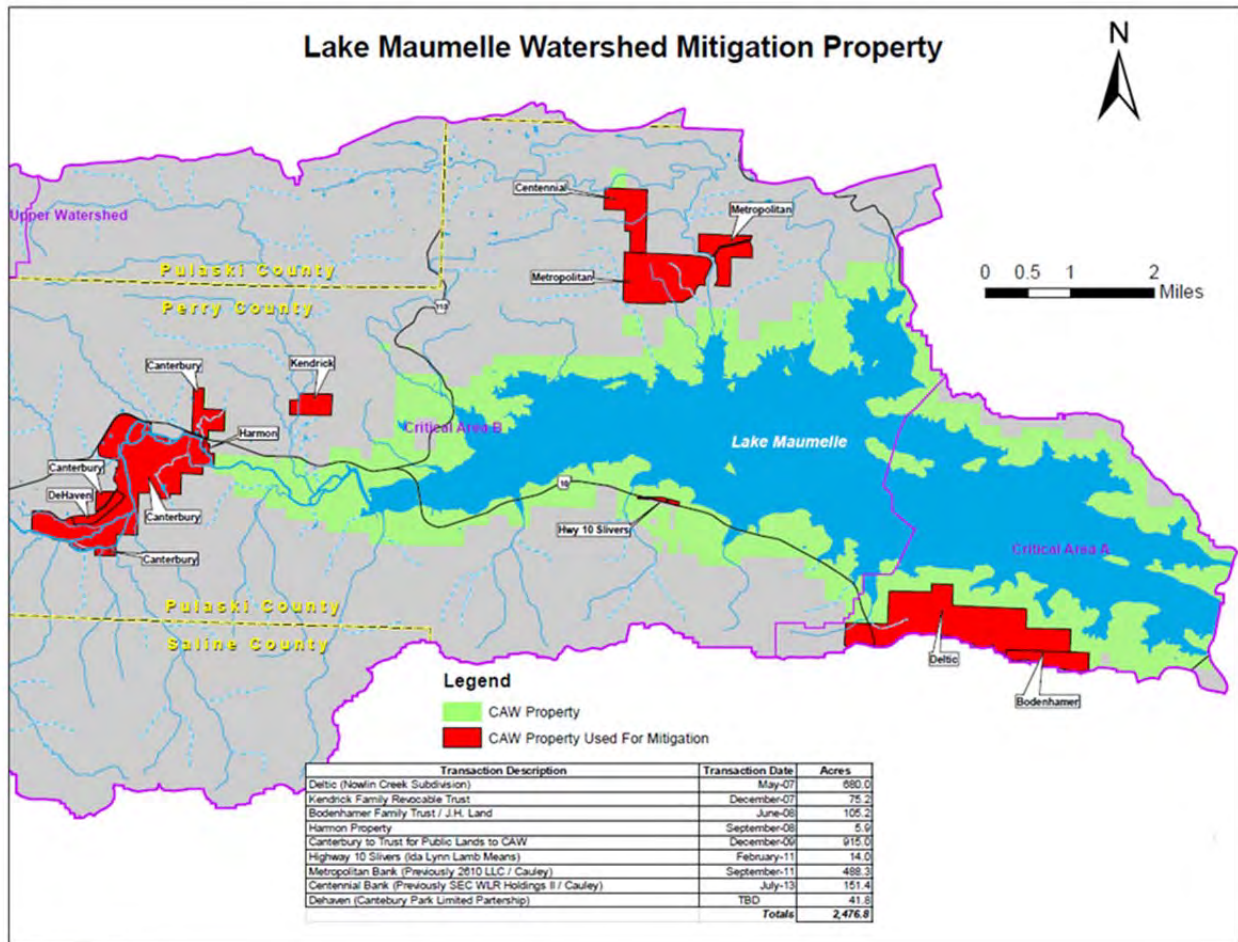
G/L	2016	2017	2018	2019	2020
Maintenance	3,000	6,000	9,000	12,000	15,000



EUM ATTRIBUTE

- **Community Sustainability** - Through the use of sound practices and strategies for land conservation and water quality management, CAW will help to ensure high quality source water, thriving wildlife and aquatic ecosystems, and recreational opportunities for current and future residents of Central Arkansas.
- **Product Quality** – Preventing or limiting the conversion of forest land to residential development through the use of conservation easements is an extremely effective way to ensure protection of source water quality in Lake Maumelle. The watershed protections gained by conservation easements help provide exceptional water quality by providing mitigation land to offset development exempt from regulation, preventing increased pollutant loads to the lake, and maintaining critical water quality functions of forested areas.
- **Stakeholder Understanding and Support** – By actively involving area landowners in water quality protection through the use of conservation easements CAW engenders understanding and support from watershed landowners as well as other community stakeholders. Because conservation easements are voluntary agreements that are tailored to the specific needs and goals of the landowner and CAW, the use of this watershed protection tool actively engages and educates individual landowners about conservation-oriented land management and water quality protection activities.
- **Water Resource Adequacy** - Effective management of our current water sources is a key component of protecting overall water resource adequacy. Conservation easements are a cost effective means of allowing CAW to achieve long-term protection of critical areas and encourage land management practices that provide water quality protection functions. The use of conservation easements provides CAW with long-term surface water protection without the operational responsibilities of direct ownership of these properties.

Project Name: Purchase Property
Department: Water Quality & Operations
Focus Area: Watershed Protection
Location: Lake Maumelle Watershed



Name:
 Randy Easley

Est Start Date:
 January, 2016

Duration: (Months)
 Ongoing

Total Cost:
 \$2,500,000

PROJECT PURPOSE

Land purchases are essential to the protection and management of our watersheds. CAW can best manage the source water from the watersheds of Lake Maumelle and Lake Winona by purchasing land and applying scientifically sound practices and strategies for land and water management and conservation. By acquiring land within these source water areas, CAW can ensure safe, high quality drinking water for current customers and future residents of Central Arkansas.

Since 2007, CAW has purchased over 2,500 additional acres for watershed protection and improvement of water quality. The continuation of land purchases are consistent with recommendations of the 2007 Watershed Management Plan and will assist in the full implementation of the plan.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
WPF	500,000	500,000	500,000	500,000	500,000

O&M Impact

G/L	2016	2017	2018	2019	2020
Maintenance	2,500	5,000	7,500	10,000	12,500

EUM ATTRIBUTE

- **Community Sustainability** – CAW can best manage its water supply sources via direct ownership of lands within its source water areas. Through application of sound practices and strategies for land conservation and water management, CAW can help to ensure safe drinking water, thriving wildlife and aquatic ecosystems, and recreational opportunities for current and future residents of Central Arkansas.
- **Product Quality** – Ensuring the quality of water entering CAW's lakes is one of the best ways CAW can ensure quality treated water is provided to its customers. The ecosystems

surrounding the water source lakes provide a natural filtering mechanism which reduces the amount of silt and contaminants entering the source water supply. By protecting these natural filters, CAW is able to ensure the highest quality source water, and thus the highest quality treated water possible.

- **Water Resource Adequacy** – Effective management of our current water sources is a key component of protecting overall water resource adequacy. Direct land ownership within CAW's watershed areas best positions the Utility to implement sound conservation and land management practices which will provide for long-term surface water sustainability and replenishment.

Project Name: Data Needs Analysis - Watershed
Department: Water Quality & Operations
Focus Area: Watershed Management
Location: Lake Winona and Lake Maumelle and Watersheds



Name:
Randy Easley
Est Start Date:
January 2018

Duration: (Months)
12 Months
Total Cost:
250,000

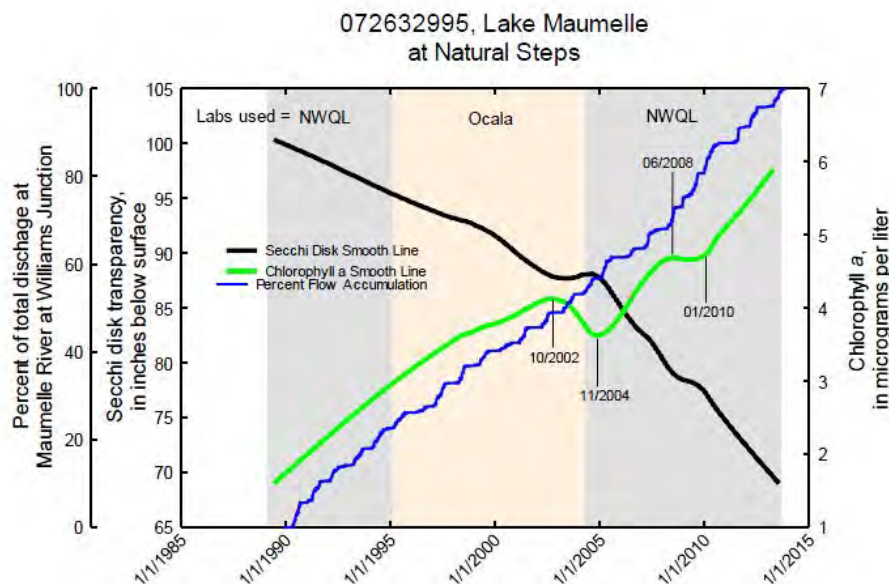
PROJECT PURPOSE

Because watersheds are dynamic entities that respond to changes in land use, forest management, climate, and other factors, a comprehensive water quality evaluation is important to the ongoing assessment of the impact of these changes.

Much has changed since the adoption of the Watershed Management Plan in 2007, including the adoption of the Subdivision and Development Code of Pulaski County, Arkansas in 2009; the Pulaski County Stormwater Management and Drainage Manual and Site Evaluation Tool for the Lake Maumelle Watershed in 2010; and the Pulaski County Lake Maumelle Watershed Zoning Code in 2013 and 2014. It is necessary to provide time for these aforementioned measures to be implemented, along with monitoring and tracking watershed development, before their impact can be evaluated.

Consistent water quality and biota monitoring for the lakes and their tributaries collected as part of this project will provide data and information that will document the success of our watershed protection efforts and guide the direction and priority of future efforts. As a component of this effort, CAW will seek a partnership with an organization that specializes in multiple aspects of water quality analysis. During this evaluation, the lakes, tributaries and other areas of the watersheds will be monitored and assessed for seasonal and land use impacts. Data from chemical, physical and biological monitoring as well as stream flow and meteorological data such as Next Generation Weather Radar (NEXRAD) will help provide an overall picture of the health of the watersheds and demonstrate any trends in improvement or degradation in the watersheds of Lake Winona and Lake Maumelle.

New data will allow watershed models to simulate changes associated with land use (as affected by the rules and regulations outlined above), such as impacts from storm water runoff, and provide direction for adaptive management of CAW's Watershed Protection Plan.

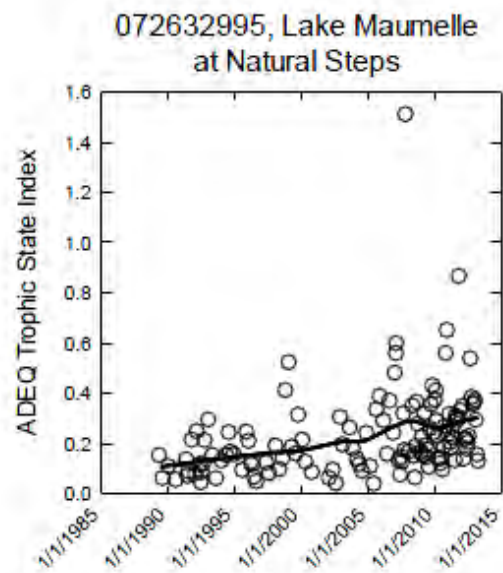
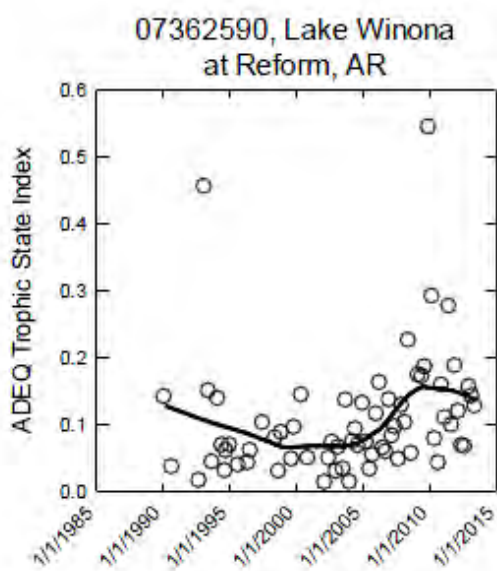




Cyanobacteria – also known as blue-green algae are a major concern for surface drinking water utilities.



Mayfly Nymph – (Order Ephemeroptera) are a pollution sensitive species that are often used to monitor and track water resource health.





PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
WPF	0	0	250,000	0	0

O&M Impact

G/L	2015	2016	2017	2018	2019



EUM ATTRIBUTE

- **Community Sustainability** – The resultant water quality assessment will assist CAW Watershed Protection staff in protecting, restoring, and enhancing the natural environment in the watersheds. It will help in development of future pollution prevention, watershed, and source water protection approaches as part of an overall strategy to maintain and enhance ecological and community sustainability.
- **Product Quality** – Data from this project will help define conservation objectives, public education projects, and sustainability measures to protect water quality through adaptive management of the Watershed Protection Plan.
- **Water Resource Adequacy** – Effective management of our current water sources is a key component of protecting overall water resource adequacy. The data produced by this project will provide development of future pollution prevention, watershed, and source water protection. Implementation of these approaches will help to ensure long-term surface water adequacy and sustainability for CAW's customers.

Project Name: Improve Ozark Point WTP – Engineering Design
Department: Engineering
Focus Area: Rehabilitation of Ozark Point Plant
Location: Ozark Point Plant



Name:
Jim Ferguson
Est Start Date:
January, 2016

Duration: (Months)
48 Months
Total Cost:
\$840,000



PROJECT PURPOSE

This project consists of the engineering and design work for the necessary rehabilitation and improvements to Ozark Point Plant that will increase functional life, efficiency, and effectiveness of the 77 year old treatment plant. The project will identify and design the structural rehabilitation and improvements to the flocculation and sedimentation basins, clearwells, filter/control/chemical building, filter pipe gallery, and the backwash/sludge/wastewater system.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
BOND	750,000	30,000	40,000	0	0
RATES	0	0	0	20,000	0

O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

- **Infrastructure Stability** – Without water treatment plants, CAW cannot fulfill its mission of delivering high quality drinking water to the residents of Central Arkansas. While the Ozark Point Plant has provided many years of great service to the Utility, upgrades are necessary to maintain this key piece of CAW infrastructure in order to preserve the long term stability of the overall water treatment capacity for the Utility.
- **Product Quality** – Providing high quality water is at the forefront of CAW's mission. These needed upgrades will allow the Ozark Point Plant to continue to provide the highest quality water possible by updating systems to newer technology and addressing areas of wear and tear before they can impact the quality of treated water produced by the plant.
- **Operational Optimization** – A well designed and maintained treatment system is key to providing high quality water to CAW's customers in an efficient manner.

Project Name: Improve Ozark Point WTP – Construction
Department: Engineering
Focus Area: Rehabilitation of Ozark Point Plant
Location: Ozark Point Plant



Name:
Jim Ferguson
Est Start Date:
January, 2017

Duration: (Months)
36 Months
Total Cost:
\$10,513,000



PROJECT PURPOSE

This project consists of the construction activities necessary to rehabilitate and improve the Ozark Point Plant and to increase functional life, efficiency, and effectiveness of the 77 year old plant. The engineering and design for this project is currently planned to be performed in 2016. The work will consist of structural rehabilitation of and improvements to the flocculation and sedimentation basins, clearwells, filter/control/chemical building, filter pipe gallery, and the backwash/sludge/ wastewater system.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
BOND	0	3,500,000	5,750,000	1,263,000	0

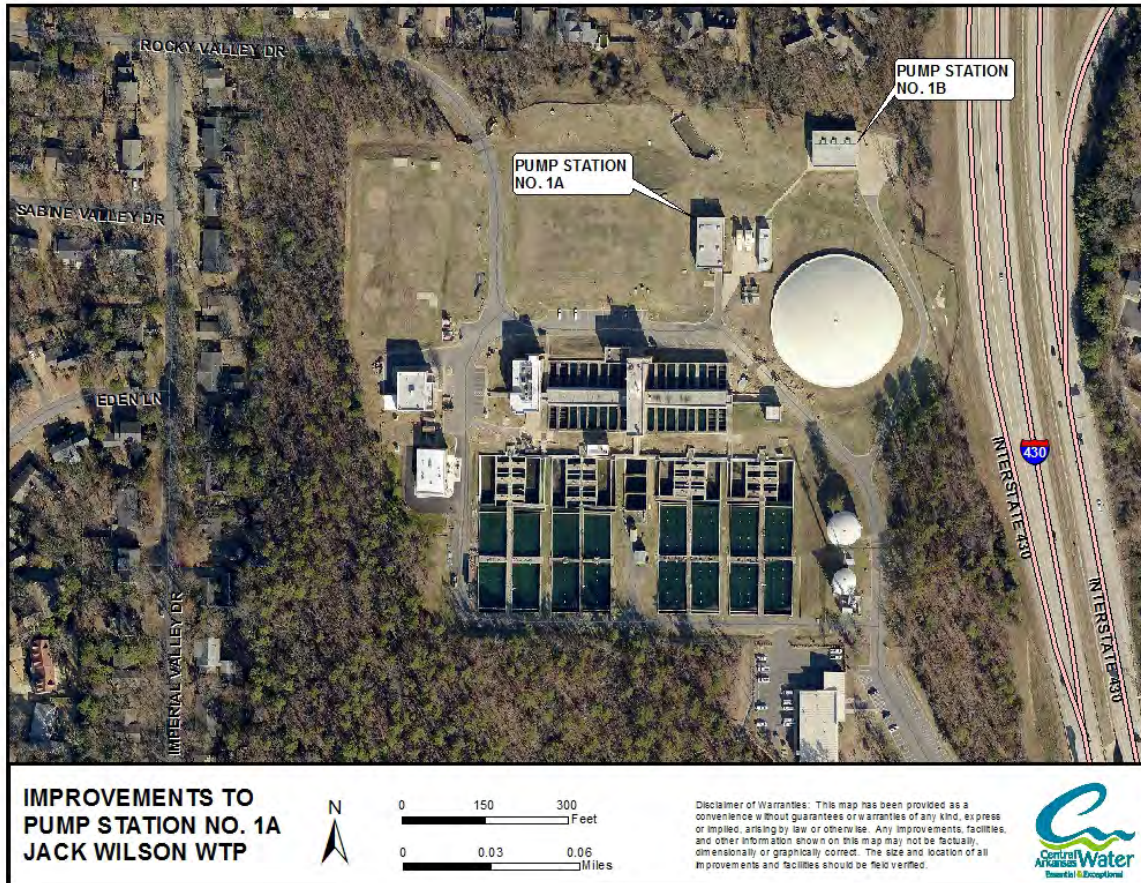
O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

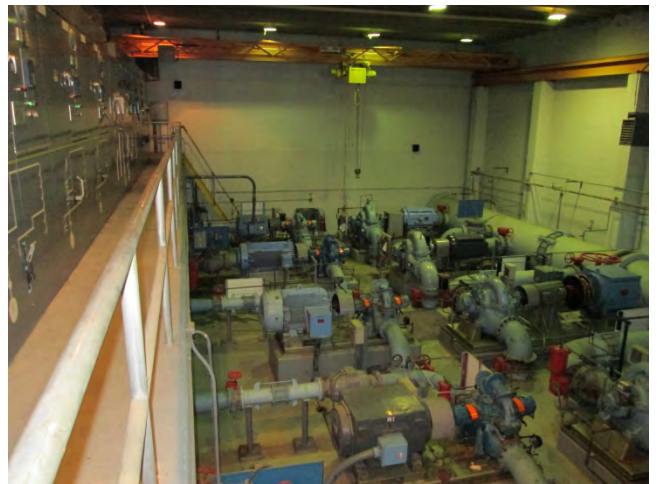
- **Infrastructure Stability** – Without water treatment plants, CAW cannot fulfill its mission of delivering high quality drinking water to the residents of Central Arkansas. While the Ozark Point Plant has provided many years of great service to the Utility, upgrades are necessary to maintain this key piece of CAW infrastructure in order to preserve the long term stability of the overall water treatment capacity for the Utility.
- **Product Quality** – Providing high quality water is at the forefront of CAW's mission. These needed upgrades will allow the Ozark Point Plant to continue to provide the highest quality water possible by updating systems to newer technology and addressing areas of wear and tear before they can impact the quality of treated water produced by the plant.
- **Operational Optimization** – A well designed and maintained treatment system is key to providing high quality water to CAW's customers in an efficient manner.

Project Name: Improve Pump Station #1A – Engineering Design - Wilson
Department: Engineering
Focus Area: Pumping System
Location: Wilson Plant



Name:
Jim Ferguson
Est Start Date:
January, 2016

Duration: (Months)
60 Months
Total Cost:
\$630,000



PROJECT PURPOSE

This project consists of the engineering design of recommended pump, structure, and electrical improvements to the existing Wilson Plant Pump Station #1A. A Preliminary Engineering Report (PER) was completed in 2015 that details needed improvements for Booster Pump Station #1A, the original pump station located at the Wilson Plant. This pump station is the primary station pumping into the LR Intermediate and the Pulaski Heights pressure systems. Originally constructed in 1964, the station is capable of delivering 57 MGD into the Intermediate system through five pumps and 17 MGD into the Pulaski Heights system through five pumps. Items to be addressed include the pump bodies, motors, motor starters, other electrical components, control equipment, and building integrity. The station also has a suction cavitation problem that will be addressed. The 2015 PER provided an Opinion of Probable Cost that is used in the projected budget needs shown in the 2016 - 2020 capital budgets.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
BOND	500,000	30,000	25,000	0	0
RATES	0	0	0	50,000	20,000

O&M Impact

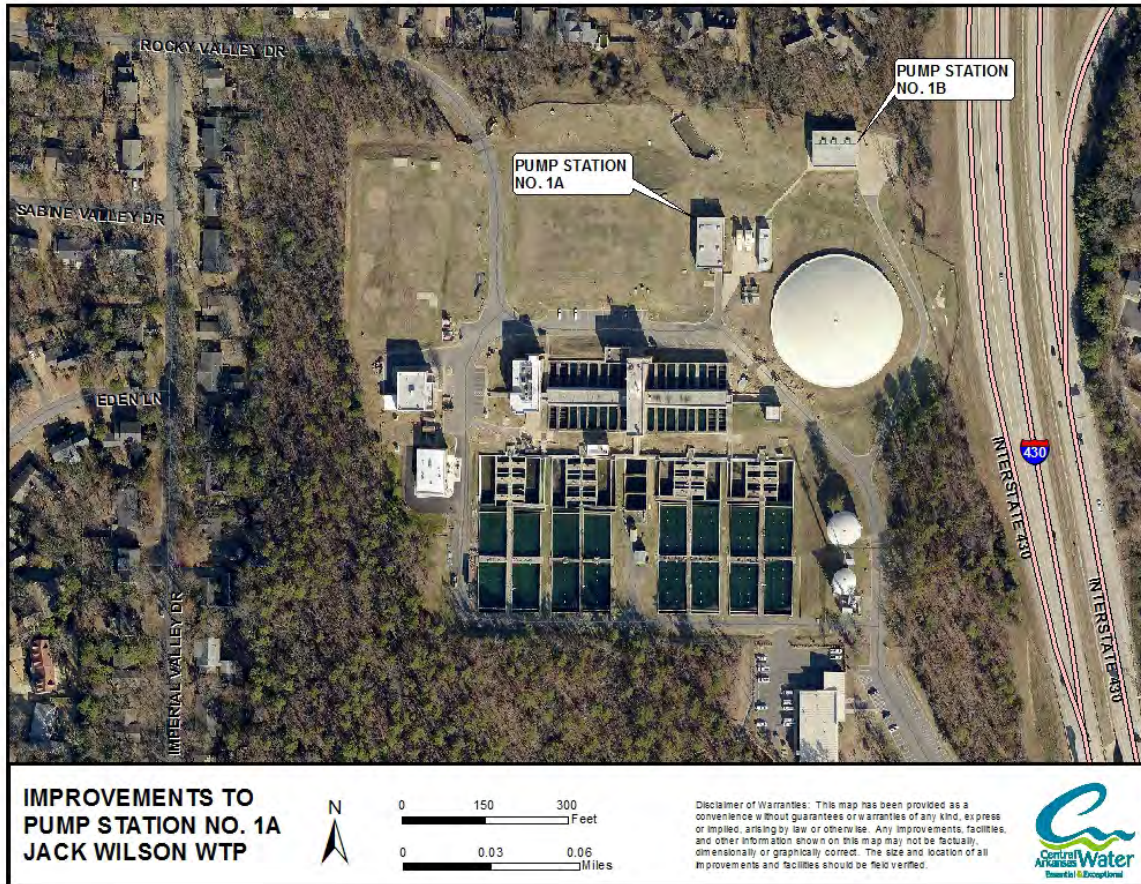
G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

- Infrastructure Stability** – Booster pumps are a vital piece of the CAW water distribution system and are necessary to maintain adequate volume and pressure to meet customer needs. Maintaining and, when necessary, replacing these critical pieces of infrastructure is vital to the long term stability of the distribution system. These activities must be carefully managed and coordinated to minimize disruptions to the system and other negative consequences.

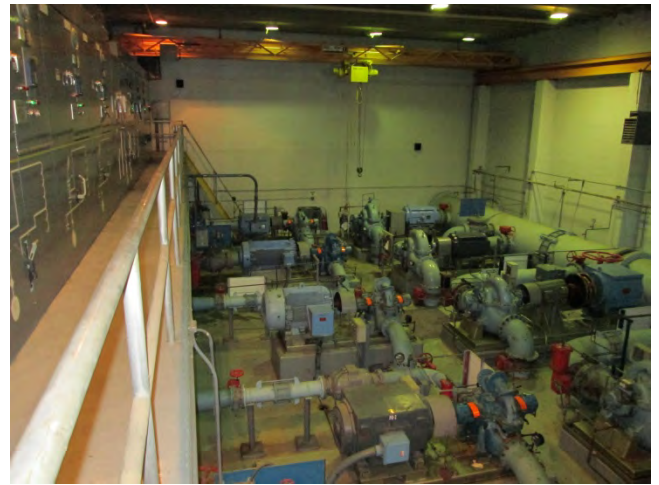
- **Operational Optimization** – A well designed and maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to adequately design and maintain these vital assets presents the opportunity for impacts to the customer from low water pressure and unplanned outages as well as costs to the Utility due to lost water from leaks, etc.

Project Name: Improve Pump Station #1A – Construction - Wilson
Department: Engineering
Focus Area: Pumping System
Location: Wilson Plant



Name:
Jim Ferguson
Est Start Date:
January, 2017

Duration: (Months)
48 Months
Total Cost:
\$5,210,000



PROJECT PURPOSE

This project consists of the construction element of Phase 1 of the recommended pump, structure, and electrical improvements to the existing Wilson Plant Pump Station #1A that will be designed in 2016. A Preliminary Engineering Report (PER) was completed in 2015 that details needed improvements for Booster Pump Station #1A, the original pump station located at the Wilson Plant. This pump station is the primary station pumping into the LR Intermediate and the Pulaski Heights pressure systems. Originally constructed in 1964, the station is capable of delivering 57 MGD into the Intermediate system through five pumps and 17 MGD into the Pulaski Heights system through five pumps. Items to be addressed include the pump bodies, motors, motor starters, other electrical components, control equipment, and building integrity. The station also has a suction cavitation problem that will be addressed. The 2015 PER provided an Opinion of Probable Cost that is used in the projected budget needs shown in the 2016 - 2020 capital budgets.



PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
BOND	0	2,000,000	1,300,000	0	0
RATES	0	0	0	0	1,910,000

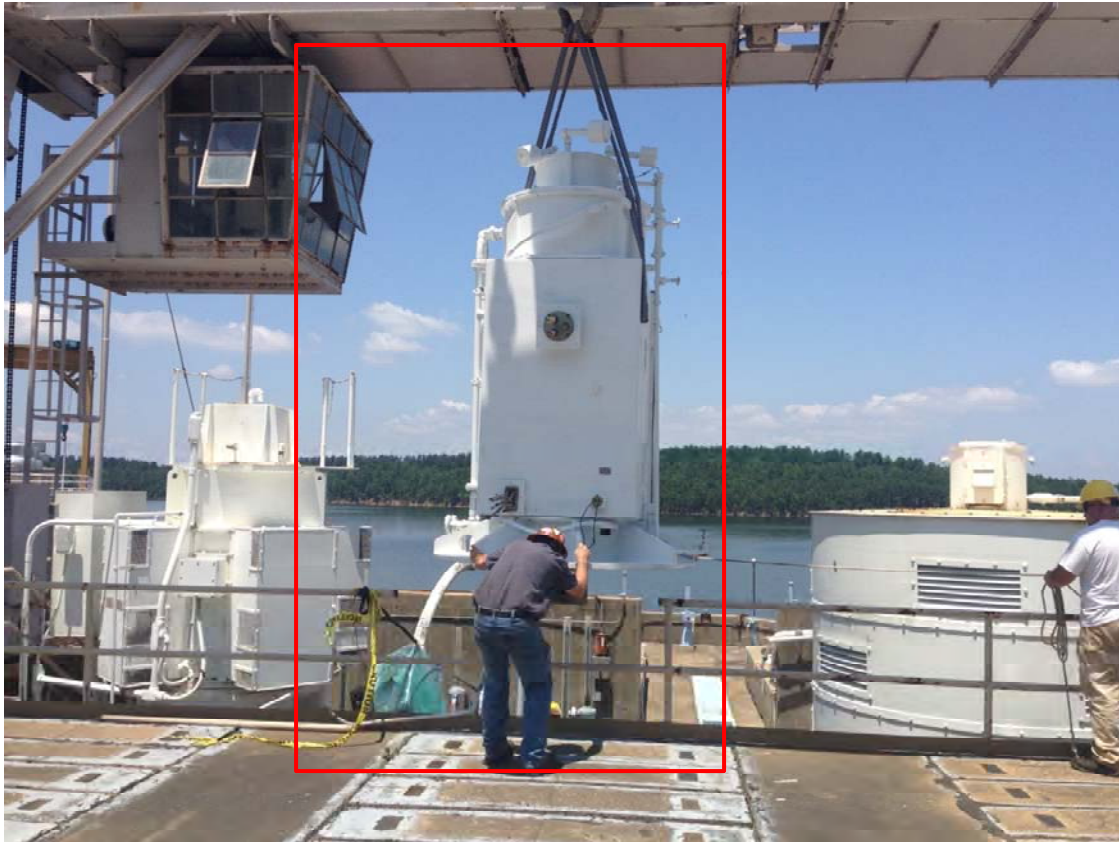
O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

- **Infrastructure Stability** – Booster pumps are a vital piece of the CAW water distribution system and are necessary to maintain adequate volume and pressure to meet customer needs. Maintaining and, when necessary, replacing these critical pieces of infrastructure is vital to the long term stability of the distribution system. These activities must be carefully managed and coordinated to minimize disruptions to the system and other negative consequences.
- **Operational Optimization** – A well designed and maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to adequately design and maintain these vital assets presents the opportunity for impacts to the customer from low water pressure and unplanned outages as well as costs to the Utility due to lost water from leaks, etc.

Project Name: Rebuild Pump #3 – Lake Maumelle
Department: Water Quality & Operations
Focus Area: Infrastructure Stability / Operational Resiliency
Location: Lake Maumelle



Name:
Randy Easley
Est Start Date:
October, 2017

Duration: (Months)
5 Months
Total Cost:
\$325,000

PROJECT PURPOSE

This project will service and rehabilitate Pump #3 at the Lake Maumelle Pump Station. While the motor for the pump was overhauled in 2015 the pump has not been pulled for service since the mid 1980's and is in need of required maintenance.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	75,000	250,000	0	

O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

- **Infrastructure Stability** – The raw water pumping infrastructure at Lake Maumelle is a critical piece of the CAW water treatment process; delivering raw water from the Lake Maumelle intakes and delivering it to the water treatment plants for purification and delivery to the CAW water distribution system. Failure to properly maintain the components of this infrastructure could hinder the Utility's ability to deliver sufficient raw water for the treatment process, particularly in high demand situations. The overhaul of these components must be carefully managed and coordinated to minimize disruption to processes further along in the water treatment and delivery process.
- **Operational Resiliency** – Performing preventative maintenance on all pieces of the raw water pumping infrastructure is vital in maintaining the redundancy of the raw water pumping process and delivery of maximum output during high demand situations. Pump #3 has not been serviced in nearly 30 years and is overdue for maintenance. Failure to perform service on this pump could jeopardize the operational resiliency of the water treatment process.

Project Name: Rebuild Pump and Motor #4 – Lake Maumelle
Department: Water Quality & Operations
Focus Area: Infrastructure Stability / Operational Resiliency
Location: Lake Maumelle



Name:
Randy Easley
Est Start Date:
October, 2018

Duration: (Months)
6 Months
Total Cost:
\$450,000

PROJECT PURPOSE

This project will service and rehabilitate Pump and Motor #4 at the Lake Maumelle Pump Station. The pump and motor were last overhauled in 2000. The pump has not been pulled for service since and will be due for maintenance in 2018.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0		100,000	350,000	

O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

- **Infrastructure Stability** – The raw water pumping infrastructure at Lake Maumelle is a critical piece of the CAW water treatment process; delivering raw water from the Lake Maumelle intakes and delivering it to the water treatment plants for purification and delivery to the CAW water distribution system. Failure to properly maintain the components of this infrastructure could hinder the Utility's ability to deliver sufficient raw water for the treatment process, particularly in high demand situations. The overhaul of these components must be carefully managed and coordinated to minimize disruption to processes further along in the water treatment and delivery process.
- **Operational Resiliency** – Performing preventative maintenance on all pieces of the raw water pumping infrastructure is vital in maintaining the redundancy of the raw water pumping process and delivery of maximum output during high demand situations. Pump and Motor #4 are reaching the scheduled date for overhaul. Pumps should be overhauled on schedule in order to maintain maximum operational resiliency of the water treatment process.

Project Name: Capital Labor
Department: Distribution, Engineering, Source & Treatment
Focus Area: Capital Projects
Location: CAW System



Name:
Terry Bice / Jim Ferguson / Randy Easley
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$10,226,000

PROJECT PURPOSE

This project is for the capitalization of labor costs for work performed on CAW capital improvement projects during the period of 2016 through 2020. This work will be performed by members of the Distribution, Engineering, and Water Quality Departments.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	2,029,000	2,013,000	2,037,000	2,061,000	2,086,000

O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

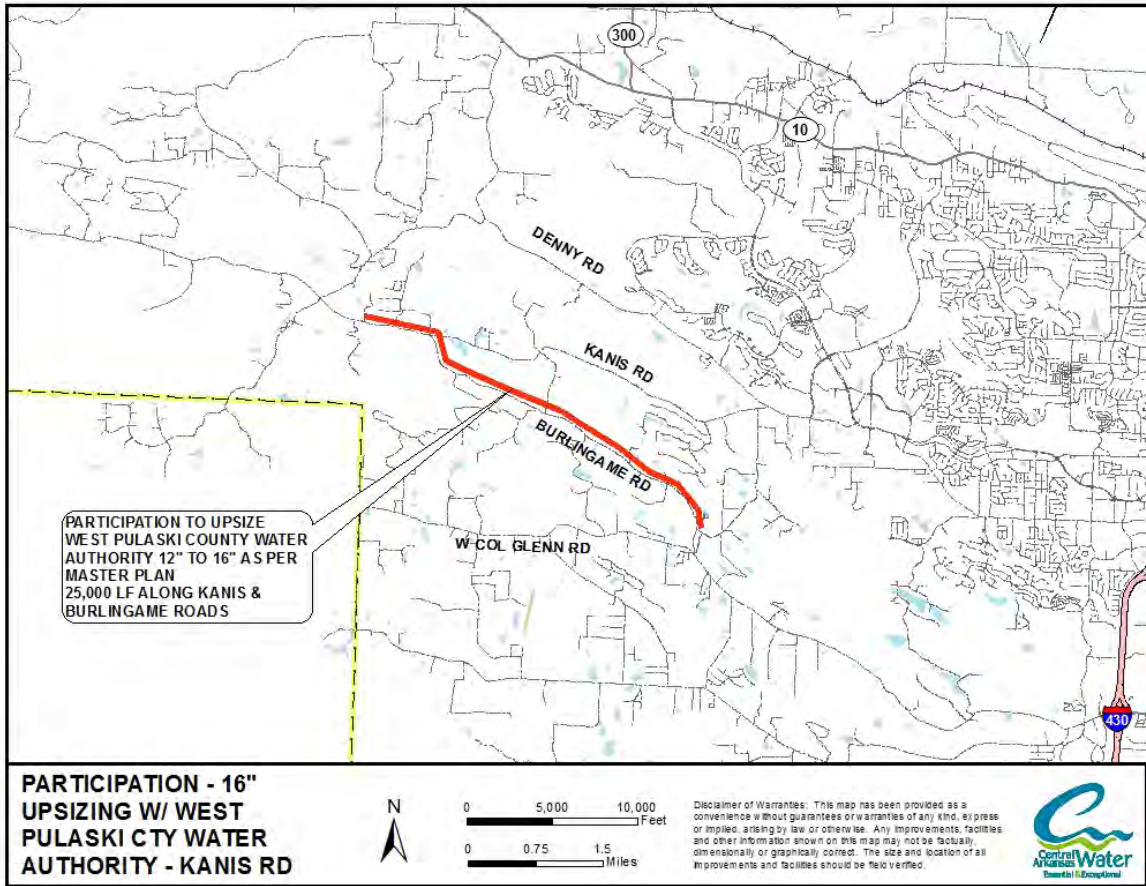
- **Infrastructure Stability** – Accounting standards allow labor costs associated with capital projects to be capitalized and depreciated over the useful life of the project. Capital projects relate to the asset repair, rehabilitation, and replacement efforts outlined in the document. All items enhance infrastructure stability.

Project Name: Participation – 16" Upsizing – West Pulaski County Water Authority – Kanis/Burlingame – 25,000'

Department: Engineering

Focus Area: Mains

Location: West Pulaski



Name:
Jim Ferguson
Est Start Date:
October, 2016

Duration: (Months)
12 Months
Total Cost:
\$ 625,000

PROJECT PURPOSE

This is a joint participation project with the West Pulaski County Water Authority (WPCWA) to increase the size of a 25,000 foot 12" main to a 16" main along Burlingame and Kanis Roads in Pulaski County for future growth and expansion of the CAW system. WPCWA only needs a 12" main for their extension project but a 16" main along this route is proposed in the 2010 Master Plan. CAW's anticipated participation in the upsize cost is estimated to be \$625,000.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
CIC	200,000	425,000	0	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020
	0	0	0	0	0

EUM ATTRIBUTE

- **Infrastructure Stability** – Expanding and maintaining the CAW water main network is critical to providing water to the Utility's customers. The increased size of the water main in this area will provide a redundant supply of water to this area of the system as well as improve overall system capacity, thus expanding the distribution system while maintaining its stability and reliability.
- **Operational Resiliency** – This project will increase flow to the area and provide a redundant supply of water to the area.

Project Name: Transmission and Distribution Main Replacement Projects
Department: Engineering
Focus Area: Asset Replacement
Location: CAW System



OVERALL PROJECT PURPOSE

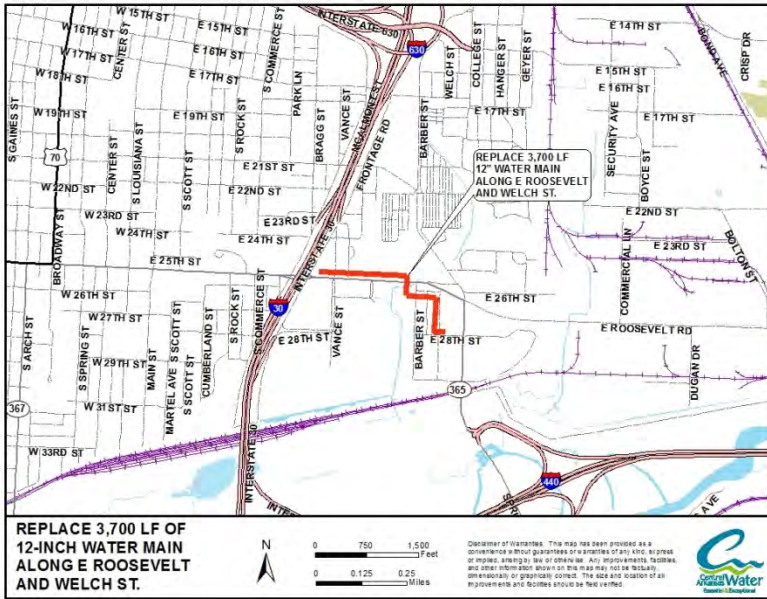
The replacements are prioritized as needed based on water main service life expectancy as well as mains that experience numerous leaks and breaks resulting in uncontrolled loss of water service. Replacement of the aging water mains provides an improved level of service to customers in the affected areas and reduces maintenance costs associated with leaks and breaks.

EUM ATTRIBUTE

- **Infrastructure Stability** - Maintaining the CAW water main network is critical to providing water to the Utility's customers. Due to age related deterioration and demand growth replacement and upgrades are necessary in order to keep the distribution system operating as designed. These projects will address those needs in future years as they are identified, thus maintaining stability throughout the distribution system.

- **Operational Resiliency** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents opportunity to impact customers with unplanned outages and costs to the Utility due to lost water from leaks, etc.

Project Name: Replace 12" Asbestos Cement Main – E Roosevelt/Welch St – LR W1



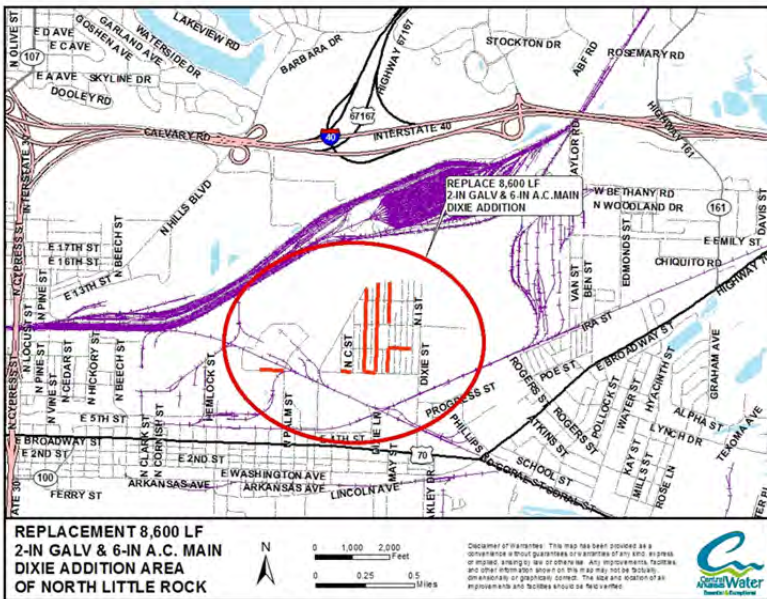
Est Start Date:
January, 2016

Duration: (Months)
6 Months

Total Cost:
\$300,000

Source	2016	2017	2018	2019	2020
RATES	300,000	0	0	0	0

Project Name: Replace 2" Galvanized And 6" Asbestos Cement Pipe – Dixie Addition – NLR W2



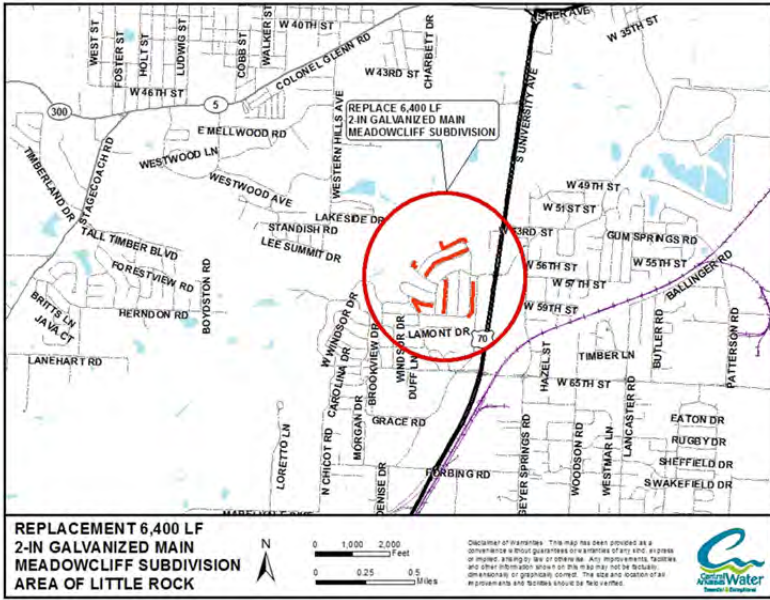
Est Start Date:
January, 2016

Duration: (Months)
6 Months

Total Cost:
\$350,000

Source	2016	2017	2018	2019	2020
RATES	350,000	0	0	0	0

Project Name: Replace 2" Galvanized Pipe – Meadowcliff – LR W7 – 6,400' Contr.



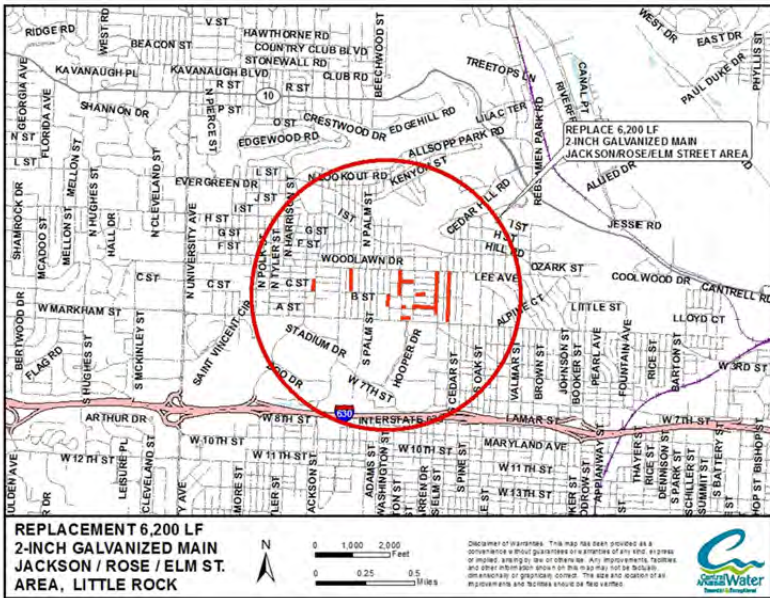
Est Start Date:
April, 2017

Duration: (Months)
8 Months

Total Cost:
\$544,000

Source	2016	2017	2018	2019	2020
RATES	0	544,000	0	0	0

Project Name: Replace 2" Galvanized Pipe – Jackson/Rose/Elm – LR W3 – 6,200' Contr.



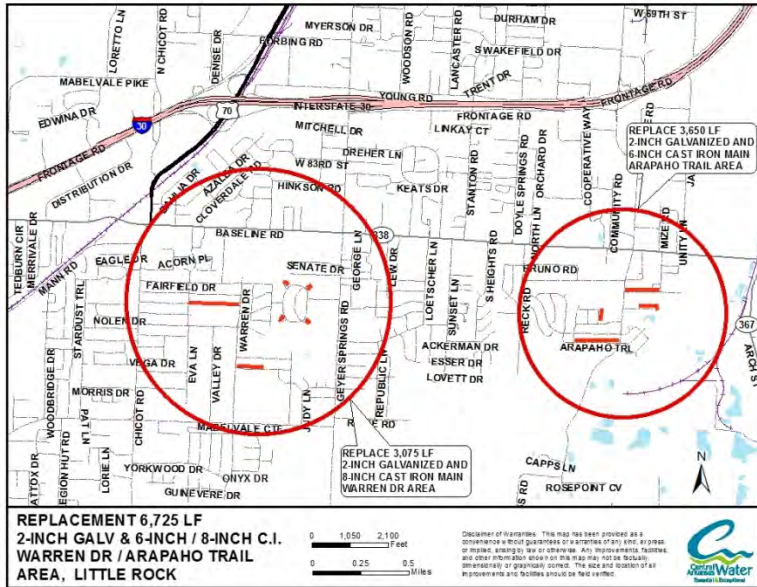
Est Start Date:
March, 2017

Duration: (Months)
8 Months

Total Cost:
\$500,000

Source	2016	2017	2018	2019	2020
RATES	0	214,000	286,000	0	0

Project Name: Replace 2" Galvanized and 6" Cast Iron Pipe – Warren/Arapaho –LR W2 – 6,725' Contr.



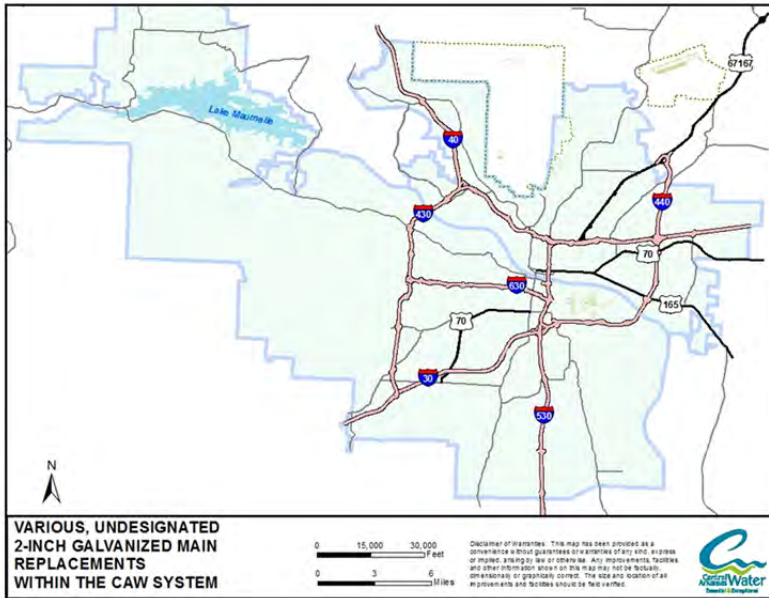
Est Start Date:
January, 2018

Duration: (Months)
9 Months

Total Cost:
\$610,000

Source	2016	2017	2018	2019	2020
RATES	0	0	610,000	0	0

Project Name: Replace 2" Galvanized Pipe Undesignated/Unknown Locations



Est Start Date:
January, 2017

Duration: (Months)
48 Months

Total Cost:
\$1,561,000

Source	2016	2017	2018	2019	2020
RATES	0	350,000	386,000	400,000	425,000

Project Name: Relocate 20" Main Across Ark. River – Broadway Bridge Attachment - AHTD

Department: Engineering

Focus Area: Mains

Location: Broadway Bridge



Name:
Jim Ferguson
Est Start Date:
March, 2015

Duration: (Months)
18 Months
Total Cost:
\$1,400,000

PROJECT PURPOSE

This project includes replacement of approximately 1,400 linear feet of 16" steel and cast iron pipe currently attached to the Broadway Bridge over the Arkansas River. The Arkansas State Highway and Transportation Department will replace the current bridge with a new structure in 2016. A new 20" water main crossing will be installed on the new bridge.



PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	1,400,000	0	0	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020



EUM ATTRIBUTE

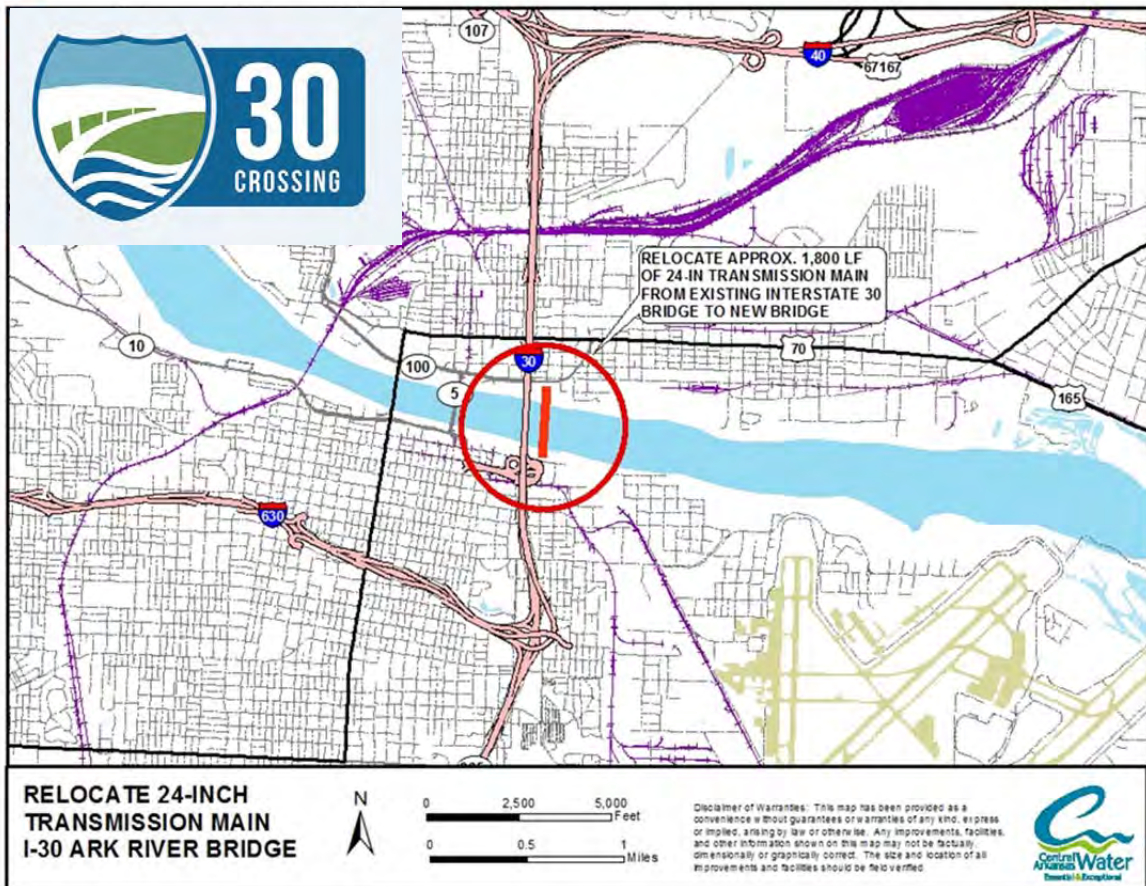
- Operational Resiliency** – As a condition of CAW water mains and other infrastructure components occupying roadway right of way areas, the Utility has a legal obligation to relocate these assets if they are in conflict with roadway expansion projects. CAW coordinates with its local government partners in advance of such expansion projects and this capital project is a result of this planning process.

Project Name: Relocate 24" Main - Interstate 30 Arkansas River Bridge Crossing - 1,800' AHTD

Department: Engineering

Focus Area: Mains

Location: Interstate 30



Name:
Jim Ferguson
Est Start Date:
July, 2018

Duration: (Months)
20 Months
Total Cost:
\$4,150,000

PROJECT PURPOSE

This project consists of the relocation of approximately 1,800 linear feet of existing 24" water transmission main currently located on the Interstate 30 Arkansas River Bridge. The existing transmission main is 56 years old. The AHTD plans to build a new bridge across the river during the Interstate 30 Improvement and Widening project anticipated to begin in 2018. It will be necessary for CAW to install a new pipeline on the new river crossing bridge. The existing Interstate 30 bridge will be demolished and replaced with a new structure. Northbound and southbound bridges will be separate structures. AHTD has not yet issued plans for the improvement and widening project and the relocation work required of CAW is being estimated at this time.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	0	250,000	2,750,000	1,150,000

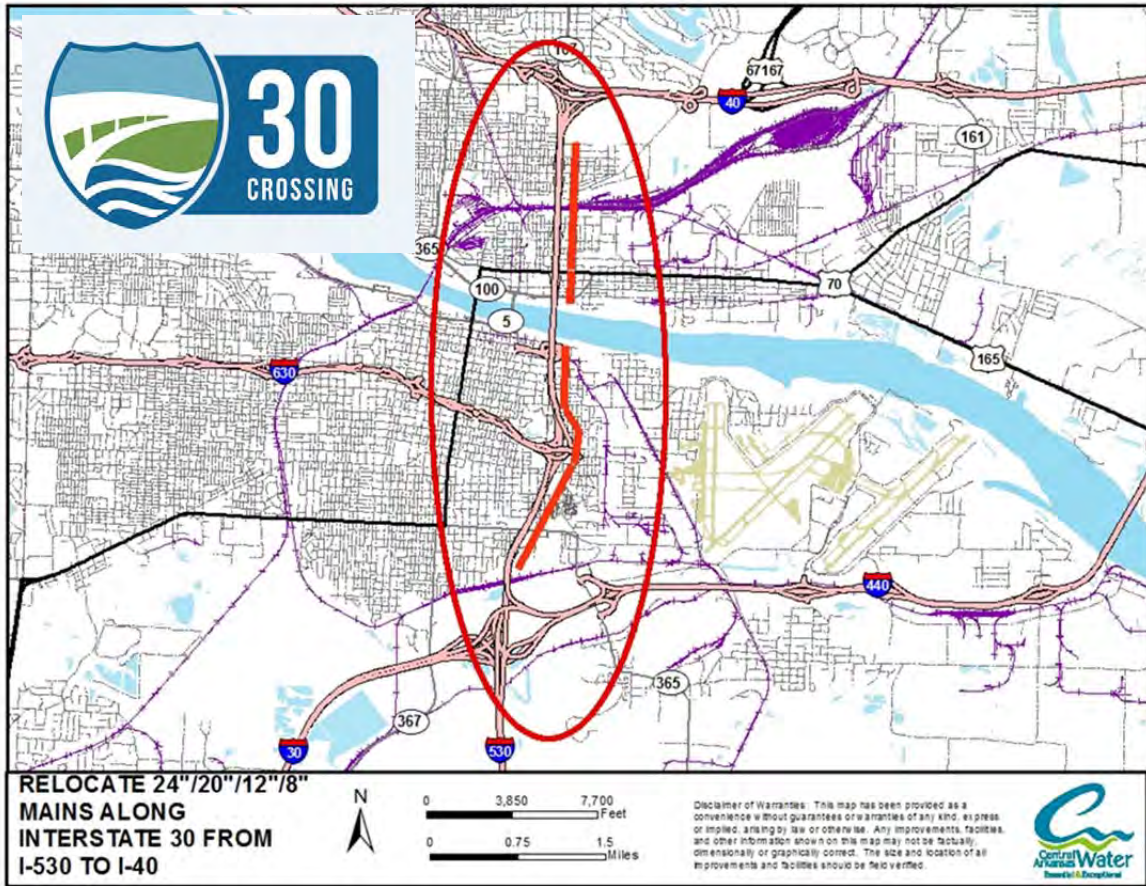
O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

- **Operational Resiliency** – As a condition of CAW water mains and other infrastructure components occupying roadway right of way areas, the Utility has a legal obligation to relocate these assets if they are in conflict with roadway expansion projects. CAW coordinates with its local government partners in advance of such expansion projects and this capital project is a result of this planning process.

Project Name: Relocate 24"/20"/12"/8" Main – Interstate 30 Widening - AHTD
Department: Engineering
Focus Area: Mains
Location: Interstate 30



Name:
Jim Ferguson
Est Start Date:
July, 2018

Duration: (Months)
30 Months
Total Cost:
\$5,600,000

PROJECT PURPOSE

This project consists of the relocation of an unknown linear footage of existing 24", 20", 12", and 8" water mains currently located along Interstate 30, through downtown Little Rock and North Little Rock. The existing mains vary in age from 30 to 90 years old. The AHTD plans to build a new bridge across the Arkansas River and widen Interstate 30 from I-530 to I-40. The project is anticipated to begin in 2018 and will run through 2022. It will be necessary for CAW to relocate existing water mains along the interstate due to conflicts with the new widening and drainage improvements. AHTD has not yet issued plans for the improvement and widening project and the relocation work required of CAW is being estimated at this time.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	0	1,867,000	1,367,000	2,366,000

O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

- Operational Resiliency** – As a condition of CAW water mains and other infrastructure components occupying roadway right of way areas, the Utility has a legal obligation to relocate these assets if they are in conflict with roadway expansion projects. CAW coordinates with its local government partners in advance of such expansion projects and this capital project is a result of this planning process.

Project Name: Transmission and Distribution Main Relocation Projects
Department: Engineering
Focus Area: Mandatory Relocation Projects
Location: CAW System



OVERALL PROJECT PURPOSE

As a condition of CAW water mains and other infrastructure components occupying roadway right of way areas, the Utility has a legal obligation to relocate these assets if they are in conflict with street or drainage improvement projects. Relocation of mains are budgeted as required within the Central Arkansas Water service area due to the street, road, drainage, or other public work improvements.

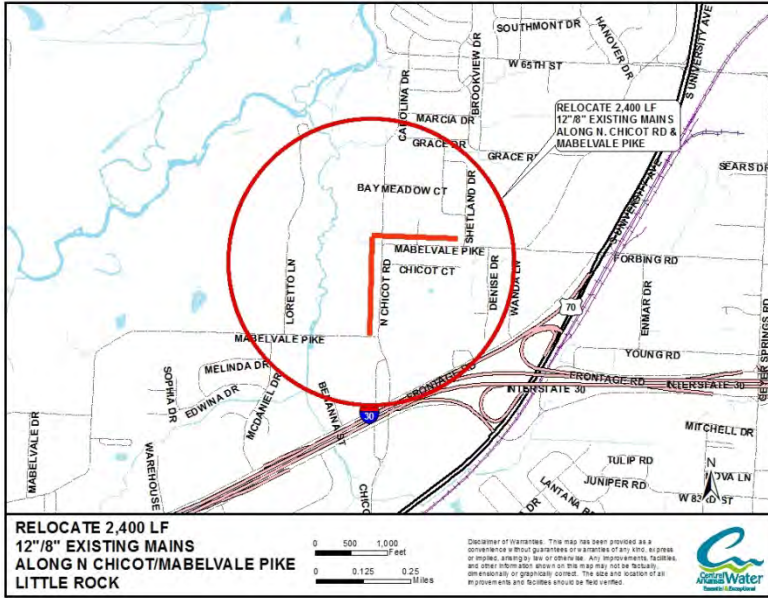
While relocations do result in newer infrastructure, these projects are not dictated by CAW system needs or assets that are past their useful life. Therefore, these mandatory projects compete for limited infrastructure funds that could otherwise be used for replacing aging infrastructure that is past its useful life or that has a chronic history of spontaneous breakage. The Utility was able to accommodate these relocations in 2015 without a significant reduction in the replacement of galvanized pipe by using excess working capital funds and anticipates doing

the same in 2016. Funds for relocations in 2017 – 2020 result in the decrease of galvanized pipe replacement projects in these years.

EUM ATTRIBUTE

- **Operational Resiliency** – As a condition of CAW water mains and other infrastructure components occupying roadway right of way areas, the Utility has a legal obligation to relocate these assets if they are in conflict with roadway expansion projects. CAW coordinates with its local government partners in advance of such expansion projects and this capital project is a result of this planning process.

Project Name: Relocate 12" and 8" Main – N Chicot Rd/Mabelvale Pike – LR W7 – 2,400' Contr.



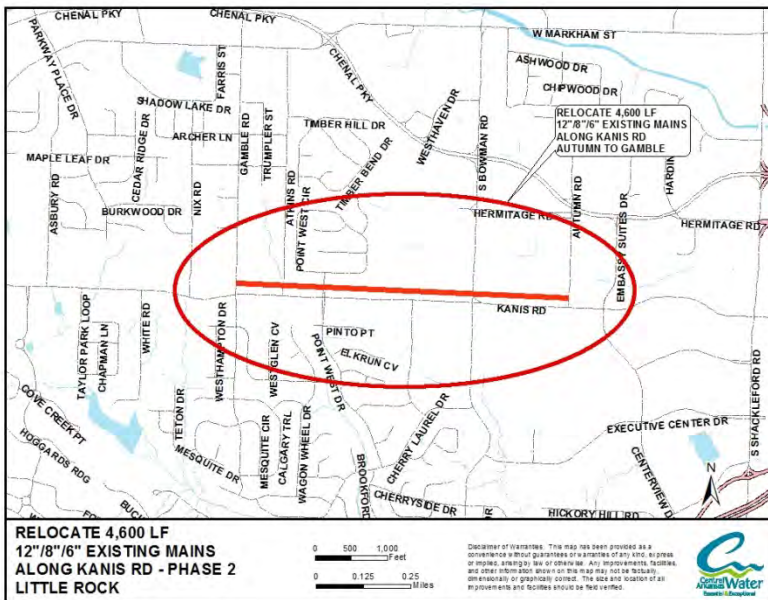
Est Start Date:
January, 2016

Duration: (Months)
8 Months

Total Cost:
\$300,000

Source	2016	2017	2018	2019	2020
EWC	300,000	0	0	0	0

Project Name: Relocate 12" / 8" / 6" Main – Kanis Rd/Shackleford to Autumn – LRW6- 2,650' Contr.



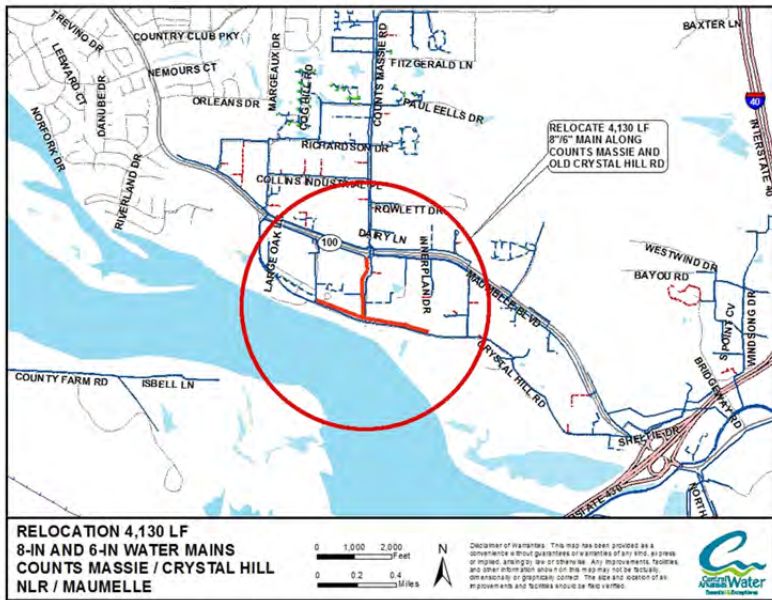
Est Start Date:
January, 2016

Duration: (Months)
6 Months

Total Cost:
\$300,000

Source	2016	2017	2018	2019	2020
CIC	300,000	0	0	0	0

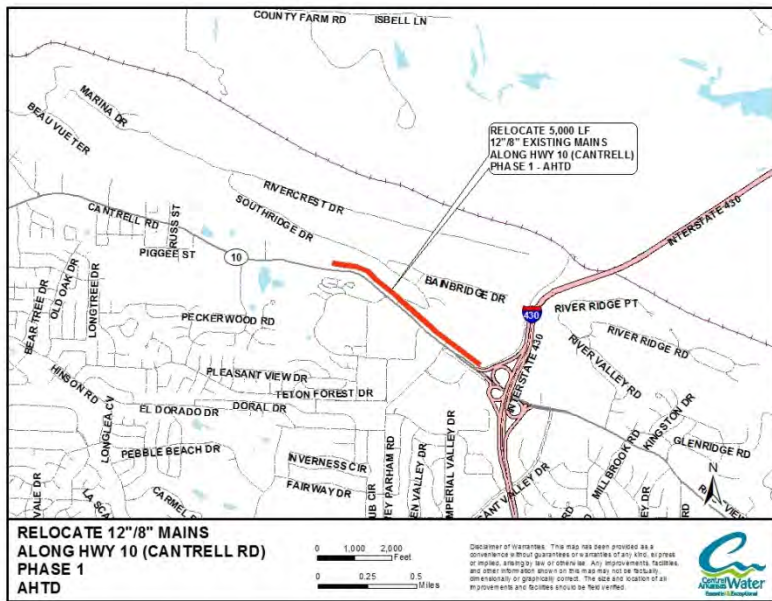
Project Name: Relocate 12"/8"/6" Main – Counts Massie/Old Crystal Hill Rd – NLR/Maumelle – 3,120'



Est Start Date:
March, 2016
Duration: (Months)
8 Months
Total Cost:
\$380,000

Source	2016	2017	2018	2019	2020
CIC	380,000	0	0	0	0

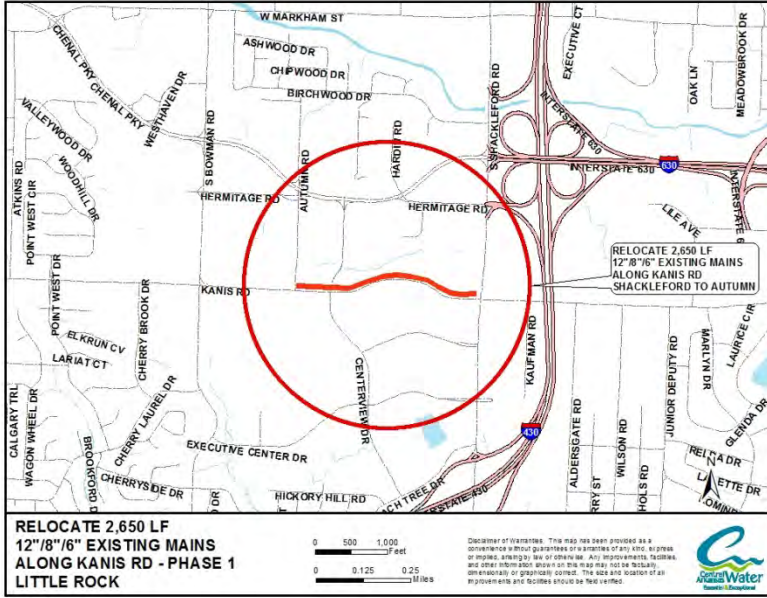
Project Name: Relocate 12"/8" Main – Hwy 10 Widening/I-430 to Sam Peck – AHTD – Contr.



Est Start Date:
August, 2016
Duration: (Months)
18 Months
Total Cost:
\$670,000

Source	2016	2017	2018	2019	2020
RATES	90,000	360,000	160,000	0	0
EWC	60,000	0	0	0	0

Project Name: Relocate 12”/8”/6” Main – Kanis Rd/Shackleford to Autumn –LR W6- 4,600’ Contr.



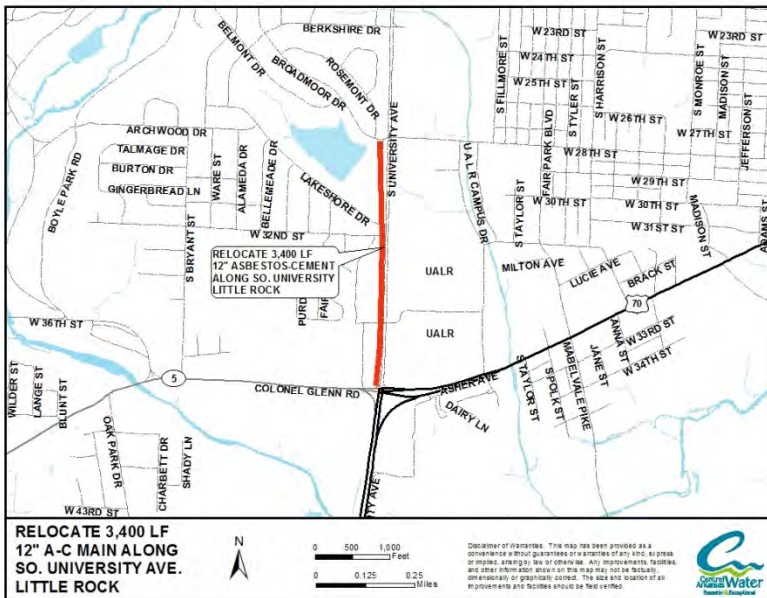
Est Start Date:
January, 2017

Duration: (Months)
12 Months

Total Cost:
\$800,000

Source	2016	2017	2018	2019	2020
RATES	0	800,000	0	0	0

Project Name: Relocate 12” Main – So University / 28th to Col Glenn –LR W6 – 3,400’ Contr.



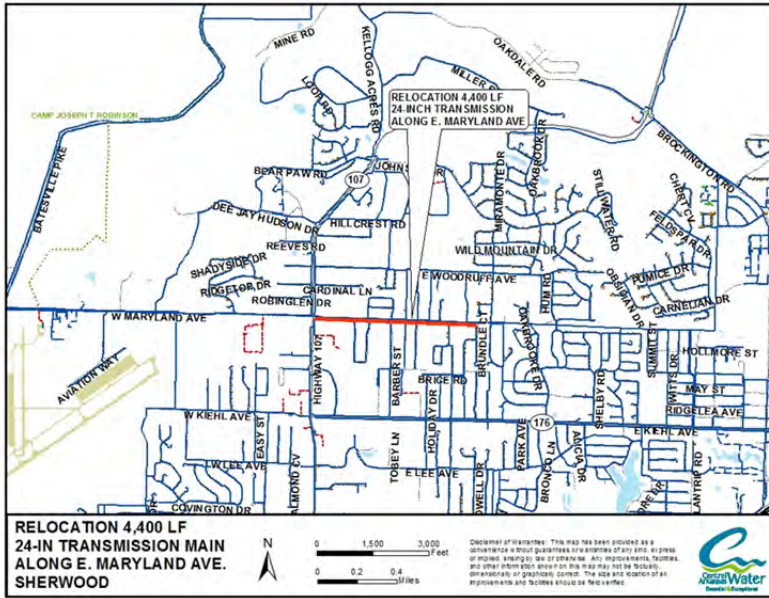
Est Start Date:
January, 2018

Duration: (Months)
9 Months

Total Cost:
\$475,000

Source	2016	2017	2018	2019	2020
RATES	0	0	475,000	0	0

Project Name: Relocate 24" Main - Maryland Avenue - SHRWD - 4,400' Contr.



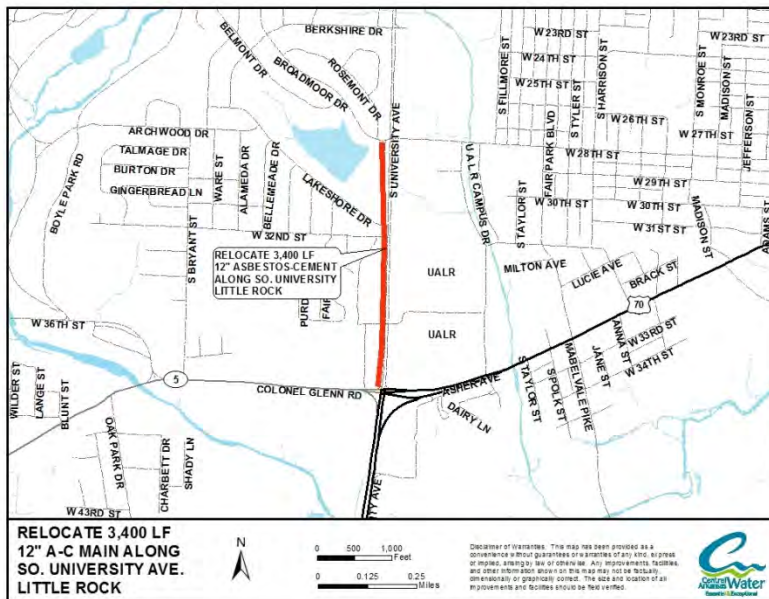
Est Start Date:
January, 2017

Duration: (Months)
24 Months

Total Cost:
\$1,200,000

Source	2016	2017	2018	2019	2020
RATES	0	800,000	400,000	0	0

Project Name: Relocate Undesignated/Unknown Locations



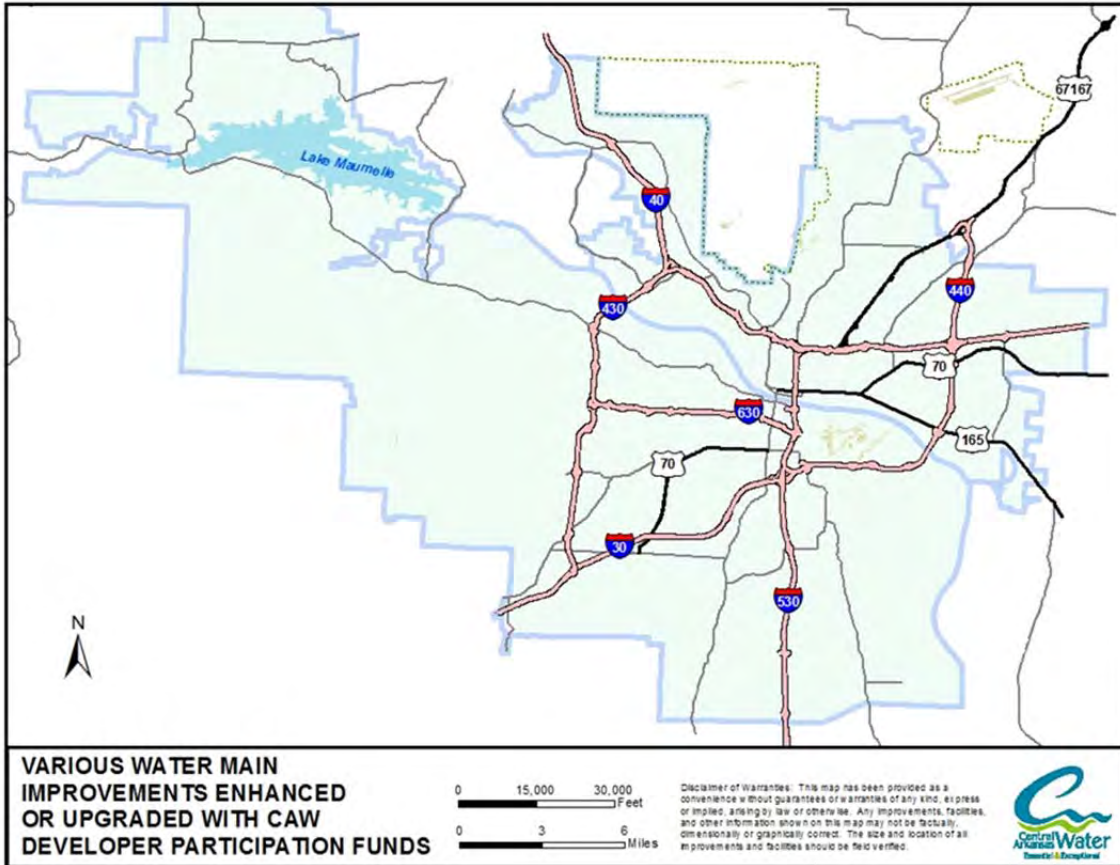
Est Start Date:
January, 2016

Duration: (Months)
60 Months

Total Cost:
\$1,050,000

Source	2016	2017	2018	2019	2020
EWC	100,000	0	0	0	0
RATES	0	200,000	250,000	250,000	250,000

Project Name: Developer Participation – New Mains
Department: Engineering
Focus Area: Mains
Location: CAW System



Name:
Jim Ferguson
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$250,000

PROJECT PURPOSE

Consistent with CAW's water main extension policies, Developers/Builders are required to design and install new mains to CAW specifications. If CAW determines, upon engineering review of plans submitted by Developers/Builders, that a larger length, different position, or increased capacity is needed due to current or future CAW system needs, CAW may financially participate with the Developer/Builder to make these modifications. This project includes these types of activities.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	50,000	50,000	50,000	50,000	50,000

O&M Impact

G/L	2015	2016	2017	2018	2019

EUM ATTRIBUTE

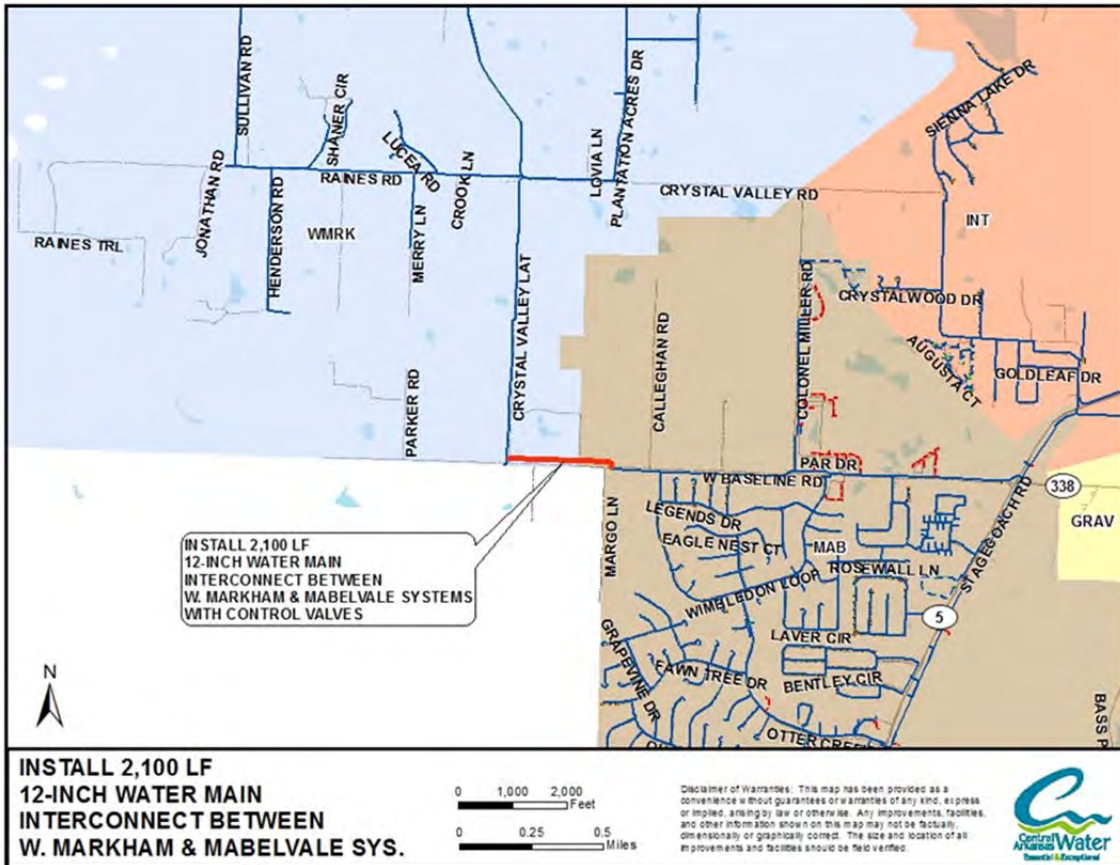
- **Infrastructure Stability** – Maintaining the CAW water main network is critical to providing water to the Utility's customers. Due to new developments and growth in the demand in areas of the distribution system, new mains and upgrades are necessary in order to keep the distribution system operating as designed. This project will address those needs in future years as they are identified in partnership with area developers, thus returning stability to the distribution system and ensuring capacity for future growth.
- **Operational Optimization** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents the opportunity for impacts to the customer from unplanned outages and costs to the Utility due to lost water from leaks, etc.

Project Name: Install 12" Main W. Baseline Road – Interconnection W. Markham and Mabelvale – 2,100' Contr.

Department: Engineering

Focus Area: Interconnection

Location: Little Rock



Name:
Jim Ferguson
Est Start Date:
October, 2017

Duration: (Months)
6 Months
Total Cost:
\$344,000

PROJECT PURPOSE

This project consists of the installation of approximately 2,100 linear feet of 12" water main to interconnect the West Markham Pressure Zone with the Mabelvale Pressure Zone. This interconnection, controlled by a remotely operated valve, will allow water to flow from the West Markham zone to the Mabelvale zone at a rate of approximately 0.5 MGD, thus providing redundancy and pressure assistance to the Mabelvale zone when needed.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	200,000	144,000	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

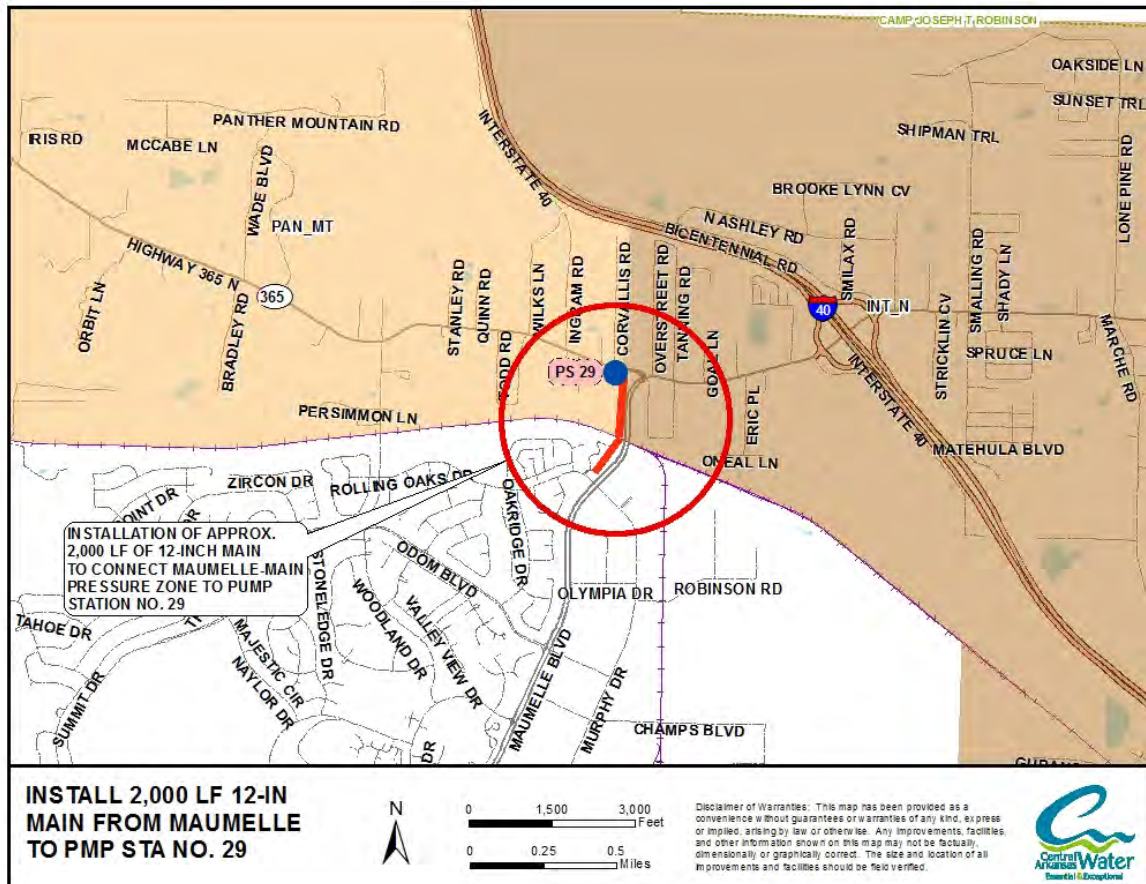
- **Infrastructure Stability** – Maintaining the CAW water main network is critical to providing water to the Utility's customers. Due to issues such as deterioration due to age and growth in the demand in areas of the distribution system, replacement and upgrades are necessary in order to keep the distribution system operating as designed. This project will address needed improvements in two pressure areas of the CAW system, thus returning stability to the distribution system by improving pressure control, water flow, and water quality in these areas.
- **Operational Optimization** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents the opportunity for impacts to the customer from unplanned outages and costs to the Utility due to lost water from leaks, etc.

Project Name: Install 12" Main – Pump Station #29 Suction Improvements – 2,000' Contr.

Department: Engineering

Focus Area: Mains

Location: Little Rock



Name:
Jim Ferguson
Est Start Date:
August, 2018

Duration: (Months)
4 Months
Total Cost:
\$350,000

PROJECT PURPOSE

This project will construct approximately 2,000 linear feet of 12" water main to interconnect the Maumelle Main Pressure Zone with the suction side of Pump Station # 29. This pump station experiences low suction pressure during high demand periods. Installation of an interconnection will provide additional flow and pressure to the pumping station when needed.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	0	350,000	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

- **Infrastructure Stability** – Maintaining the CAW water main network is critical to providing water to the Utility's customers. Due to issues such as deterioration due to age and growth in the demand in areas of the distribution system, replacement and upgrades are necessary in order to keep the distribution system operating as designed. This project will address needed improvements in two pressure areas of the CAW system, thus returning stability to the distribution system by improving pressure control, water flow, and water quality in these areas.

Booster pumps are a vital piece of the CAW water distribution system and are necessary to maintain adequate volume and pressure to meet customer needs. Maintaining and, when necessary, replacing these critical pieces of infrastructure is vital to the long term stability of the distribution system. These activities must be carefully managed and coordinated to minimize disruptions to the system and other negative consequences

- **Operational Optimization** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents the opportunity for impacts to the customer from unplanned outages and costs to the Utility due to lost water from leaks, etc.

Project Name: Routine Meter Change-Out Program
Department: Distribution
Focus Area: Meters
Location: CAW System



Name:
Terry Bice
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$2,217,000

PROJECT PURPOSE

The meter change out program consists of a routine cycle to change out meters which have reached the end of their useful lives as determined through prior research: 16 years for 5/8" meters; 10 years for 1" meters; 12 years for 3/4" meters; 8 years for 1-1/2" meters; and 6 years for 2" meters.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	422,000	432,000	443,000	454,000	466,000

O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

- **Infrastructure Stability** – As meters age, they become more troublesome and impair the ability of the Utility to accurately measure water provided to customers throughout the system. Proactive replacement of meters prior to slowdown/failure preserves the Utility's ability to accurately account for water distributed throughout the system.
- **Financial Viability** – Water meters serve as the main tool for determining how much water customers consume on a monthly basis and in turn, the Utility's ability to recoup for those services provided to the customer. As meters age, they begin to slow down, and in some cases fail, reducing the amounts metered and, in turn, billed to the customer. Proactive replacement of meters before slowdown and failure allows the Utility to maintain its ability to accurately bill for water provided to customers and serves to keep all customers' rates reasonable in light of lower amounts of unbilled water leaving the system.

Project Name: Install New Services and Meters
Department: Distribution
Focus Area: Meters
Location: CAW System



Name:
Terry Bice
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$2,209,000

PROJECT PURPOSE

These meters are dedicated to the installation of new residential, commercial, and industrial service accounts. These meters range from 5/8” to 6” in diameter and are essential for revenue generation.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	463,000	427,000	433,000	440,000	446,000

O&M Impact

G/L	2015	2016	2017	2018	2019

EUM ATTRIBUTE

- **Financial Viability** – Water meters serve as the main tool for determining how much water customers consume on a monthly basis and in turn, the Utility’s ability to charge for those services provided to the customer. Installation of new meters is a critical activity for the utility because of the link between consumption and revenue generation.

Project Name: Replace 3/4", 1", and 2" Diameter Services
Department: Distribution
Focus Area: Services
Location: CAW System



Name:
Terry Bice
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$1,102,000



PROJECT PURPOSE

The project will consist of replacing existing services for residential and commercial customers due to failure and/or preventative maintenance.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	214,000	217,000	220,000	224,000	227,000

O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

- **Infrastructure Stability** – Service lines serve as the connection point between CAW customers and the water distribution system. Planning for and maintaining these assets is vital to CAW being able to fulfill its mission of providing quality water to the customers of Central Arkansas and to the long-term stability of the distribution system.
- **Financial Viability** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents the opportunity for impacts to the customer from unplanned outages and costs to the Utility due to lost water from leaks, etc.

Project Name: Replace Hydrants
Department: Distribution
Focus Area: Hydrants
Location: CAW System



Name:
Terry Bice
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$358,000



PROJECT PURPOSE

The project will consist of installing new hydrants and the replacement of existing hydrants that have been hit and damaged by vehicles.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	68,000	70,000	72,000	73,000	75,000

O&M Impact

G/L	2016	2017	2018	2019	2020

EUM ATTRIBUTE

- **Infrastructure Stability** – Fire hydrants serve the extremely important purpose of providing water for fire protection in the community. Failure to maintain these assets has the potential of placing lives and property in harm's way within the CAW service area. Maintenance is also critical to the long term stability of the distribution system. Maintenance activities must be carefully managed and coordinated to minimize disruptions to the system and other negative consequences.
- **Operational Optimization** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents the opportunity for impacts to the customer from unplanned outages and costs to the utility due to lost water from leaks, etc.

Project Name: Replace Commercial Meters (outdated touchreads)
Department: Customer Relations & Public Affairs
Focus Area: Meters
Location: CAW System



Name:
John Tynan
Est Start Date:
January, 2016

Duration: (Months)
36 months
Total Cost:
\$360,000



PROJECT PURPOSE

The project will consist of converting touchread-based meters to meters that use Advanced Meter Reading (AMR) technology. CAW currently reads approximately 230 meters with a touchread technology due to accessibility issues because touchread technology does not require physical access to the meter to obtain a reading. However, the touchread technology has reached the end of its useful life and is beginning to fail. AMR technology allows readings to be obtained through a handheld unit and associated radio signal collector and does not require direct meter access. A number of the existing touchread meters can be retrofitted with AMR technology, but others are past their useful life, replacement parts are not available, and cannot be retrofitted with AMR technology. Therefore, these meters must be replaced in order to meet our meter reading needs.

Approximately 140 of the touchread meters were retrofitted or replaced in 2015. The remaining 90 meters will be retrofitted in 2016 and 2017.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	120,000	120,000	120,000	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020



EUM ATTRIBUTE

- **Operational Optimization** – The use of AMR technology in place of the failing touchread technology will improve the cost-effectiveness of reading these 230 meters. Use of AMR will not only reduce the time needed to repair failing touchreads, but it will also allow CAW to devote highly skilled staff members to functions other than basic meter reading towards other critical functions – for example direct customer assistance regarding usage and billing concerns.
- **Customer Satisfaction** – The use of AMR offers the potential to provide customers with additional information regarding their water consumption. AMR meters have the capability to provide customers with daily usage increments for the 30 days prior to the last meter read. If these features are utilized, this will facilitate improved customer understanding of usage patterns as well as improved customer satisfaction through the ability to identify leaks, establish usage alerts, and other abilities.
- **Water Resource Adequacy** – The ability of AMR to provide customers with additional data and usage patterns will also provide customers with the ability to modify behavior in order to reduce water consumption, therefore prolonging the life of our existing supplies, treatment, and distribution capacity. In addition, customers will be able to self-identify and fix leaks and, in turn, reduce water loss.
- **Community Sustainability** – Use of AMR will reduce energy, fuel, and chemical usage associated with water production and meter reading costs. Water loss reductions and customer conservation efforts will not only extend the life of our water sources, but will also lead to reduced energy costs and reduced chemical costs associated with less water treatment. Where AMR is used for meter readings, fuel efficiency of vehicles will significantly increase through a substantial reduction in starts/stops and idling as a slow, but constant speed can be maintained to obtain readings.
- **Infrastructure Stability** – Installation of AMR will be completed in compliance with utility guidelines on meter asset management. All AMR conversions on 1.5” meters and smaller will necessitate a new meter installation (existing direct-read meters removed will be tested and returned to inventory). AMR conversions on 2” meters and larger will require that staff track the age of the AMR equipment separately from the meter in order to allow for AMR replacement when the useful life / battery life of the AMR technology is reached.

Project Name: Restore – Tank #2
Department: Distribution
Focus Area: Tanks
Location: Little Rock



Name:
Terry Bice
Est Start Date:
January, 2017

Duration: (Months)
12 Months
Total Cost:
\$1,000,000



PROJECT PURPOSE

The project consists of required maintenance to steel water storage tanks. Treated water storage tanks are an integral part of the CAW water distribution system, allowing CAW to meet peak hourly demand needs as well as to provide appropriate water pressure and fire flows without the need for constant pump operation.

Regular tank maintenance is necessary to sustain high quality water and prevent corrosion and damage that results from normal wear and tear on the tanks. Tanks will be sandblasted and/or painted due to deterioration.



PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	1,000,000	0	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020



EUM ATTRIBUTE

- **Infrastructure Stability** – Treated water storage tanks are an integral part of the CAW water distribution system. Maintaining these critical pieces of infrastructure is vital to the long term stability of the distribution system. These activities must be carefully managed and coordinated to minimize disruptions to the system and other negative consequences.
- **Operational Optimization** – A well maintained distribution system is key to providing water to CAW's customers in an efficient manner. Failure to maintain these vital assets presents the opportunity for impacts to the customer from unplanned outages and costs to the Utility due to lost water from leaks, etc.

Project Name: Replace Dump Trucks
Department: Distribution
Focus Area: Construction Equipment
Location: Clearwater and Maryland Ave. Complexes



Name:
Terry Bice
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$788,000



PROJECT PURPOSE

Dump trucks are used throughout the CAW system for various activities in support of utility operations from hauling off excavated materials to hauling in proper fill and road repair materials and towing construction equipment. In line with the CAW fleet management plan, these trucks are evaluated regularly to project vehicle replacement needs. Dump truck replacements are determined based on chronic repair needs. Dump trucks are typically replaced when a major repair need dictates replacement, when excessive maintenance costs occur, or when parts are no longer available.

The utility anticipates replacing one dump truck per year over the next five years.



PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	117,000	188,000	191,000	194,000	98,000

O&M Impact

G/L	2015	2016	2017	2018	2019



EUM ATTRIBUTE

- **Operational Optimization** – Vehicle replacements will occur according to the Utility’s fleet management plan. The dump truck replacement schedule is based on historical fleet management data and allows for the most efficient use of these vehicles.

Project Name: Replace Vehicles
Department: All
Focus Area: Vehicles
Location: James T. Harvey Administration and Clearwater



Name:
Various
Est Start Date:
January, 2016

Duration: (Months)
N/A
Total Cost:
\$2,525,000



PROJECT PURPOSE

The Utility utilizes a fleet management plan as the primary guide to CAW's fleet management decisions. Truck replacements are determined based on chronic repair needs and projected mileage. Vehicle age also factors in to replacement, but is a secondary factor behind repair needs and mileage. Current draft fleet management guidelines dictate that a vehicle should be replaced when it reaches 100,000 miles or when chronic repair needs dictate replacement.

As chronic repair needs are difficult to forecast, the primary driver for capital planning is projected mileage and typical vehicle age when chronic repair needs occur. Customer Service vehicles are replaced every 100,000 miles, which is approximately every 10 years. Distribution trucks are

replaced when repair needs dictate replacement and are typically every 13 years and 80,000 – 100,000 miles. The Utility anticipates replacing the following number and types of trucks from 2016 – 2020:

- Four CS-Field trucks and eleven Distribution vehicles will be replaced in 2016
- Four CS-Meter reading trucks and nine Distribution vehicles will be replaced in 2017
- Three CS-Field trucks and ten Distribution vehicles will be replaced in 2018
- Three CS-Field trucks and six Distribution vehicles will be replaced in 2019
- Three CS-Field trucks and nine Distribution vehicles will be replaced in 2020

A key component of the fleet management plan is a vehicle “rightsizing” or optimization analysis prior to any new vehicle purchases. Therefore, all vehicles will be evaluated according to this analysis and purchases will be adjusted accordingly. The estimated budget for this item is based upon replacing vehicles with like vehicles. However, smaller trucks, sedans, hybrid, and other vehicles will be evaluated to determine if Departmental needs can be met at a lower lifecycle cost.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	561,000	733,000	540,000	362,000	329,000

O&M Impact

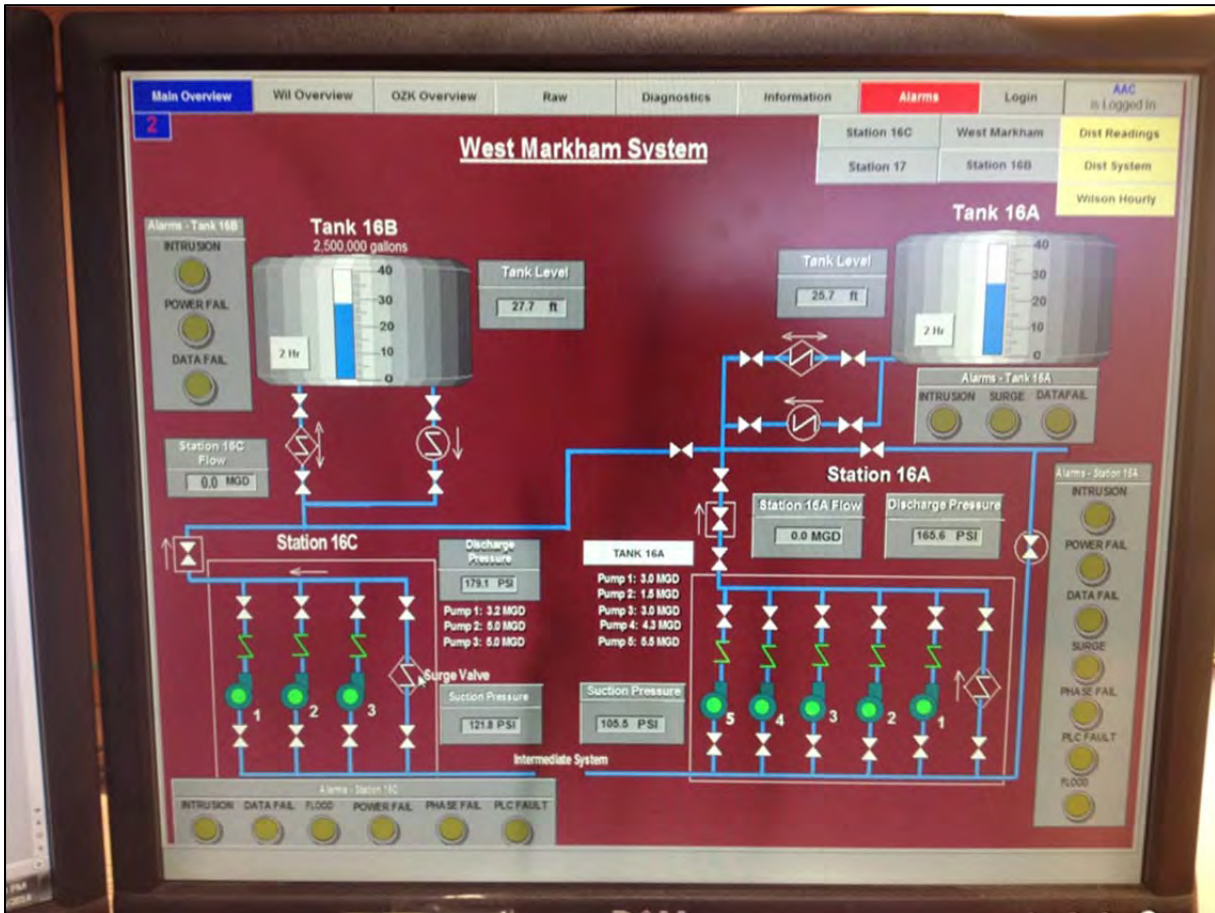
G/L	2016	2017	2018	2019	2020

NOTE : Vehicle replacements will reduce expenses related to maintenance of older trucks with higher mileage; however, other trucks in the fleet will accrue higher mileage. Therefore, the O&M impact will be negligible. Should vehicle optimization analysis result in a different type of vehicle purchase, O&M may be reduced due to lower repair costs and/or fuel costs.

EUM ATTRIBUTE

- **Operational Optimization** – Vehicle replacements will occur according to the Utility’s fleet management plan, dictating that vehicles with approximately 100,000 miles or chronic repair needs should be replaced. This is based on historical fleet management data and provides for a more efficient use of vehicles. In addition, the lifecycle cost-effectiveness of vehicles that fit Departmental needs will drive the specific vehicles purchased.
- **Community Sustainability** - Evaluation of more fuel-efficient vehicles is a key component to replacement analysis. By purchasing more fuel efficient vehicles, the Utility can reduce vehicle emissions associated with its operations while, at the same time, reducing fuel costs for the Utility.
- **Infrastructure Stability** – By completing a lifecycle cost analysis to determine the most cost-effective vehicle that meets the needs of a Department, the Utility will continue to enhance the operating condition of assets at the lowest life-cycle cost.

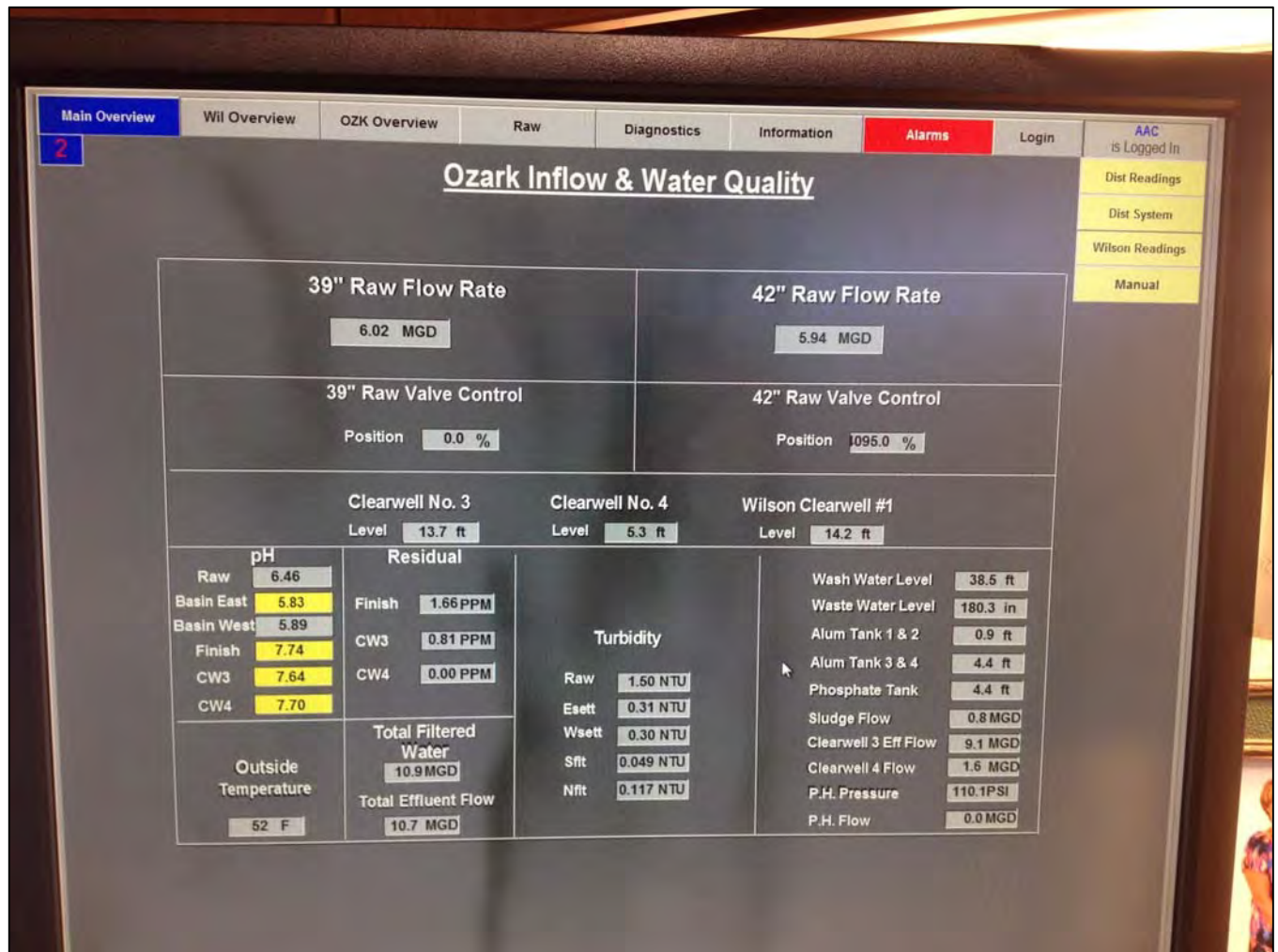
Project Name: Replace SCADA Human Machine Interface
Department: Water Quality & Operations
Focus Area: SCADA HMI
Location: Wilson Plant and Ozark Point Plant



Name:
Randy Easley
Est Start Date:
January, 2016

Duration: (Months)
12 Months
Total Cost:
\$650,000

PROJECT PURPOSE



Upgrading the Supervisory Control and Data Acquisition System (SCADA) Human Machine Interface (HMI) system will allow additional CAW staff to become familiar with the workings of SCADA HMI from the ground up, provide uniform code and screens as well as reducing dependence on a single source to repair and maintain the major components of the HMI system.

The present SCADA HMI was installed in 1995 and has been upgraded numerous times, but has kept the same code for controlling objects, alarms, and viewing data from the treatment plants and throughout the distribution system. Upgrades have allowed advances in our driver over time, but have not resulted in improvements to the HMI code portion of the SCADA system other than those version upgrades necessary to maintain customer service support. As a result, the SCADA screens and coding are not uniform from one CAW facility to another because different entities have developed portions of the HMI over the past 19 years.

A lack of staff with the skills and abilities to modify our current HMI code makes our SCADA system less resilient and in need of upgrade. Advances in industry software packages have been made that make SCADA coding much simpler to configure, maintain, and troubleshoot. In

addition, much of what was accomplished previously in custom scripting is now part of newer HMI packages, providing the opportunity for customer support to assist with any issues that may arise.

The HMI system upgrade will require new servers and computers along with screen and database development for communicating with our driver. This will be brought on-line in parallel with our present system in order to test and verify all system elements while maintaining our current system operation.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	650,000	0	0	0	0

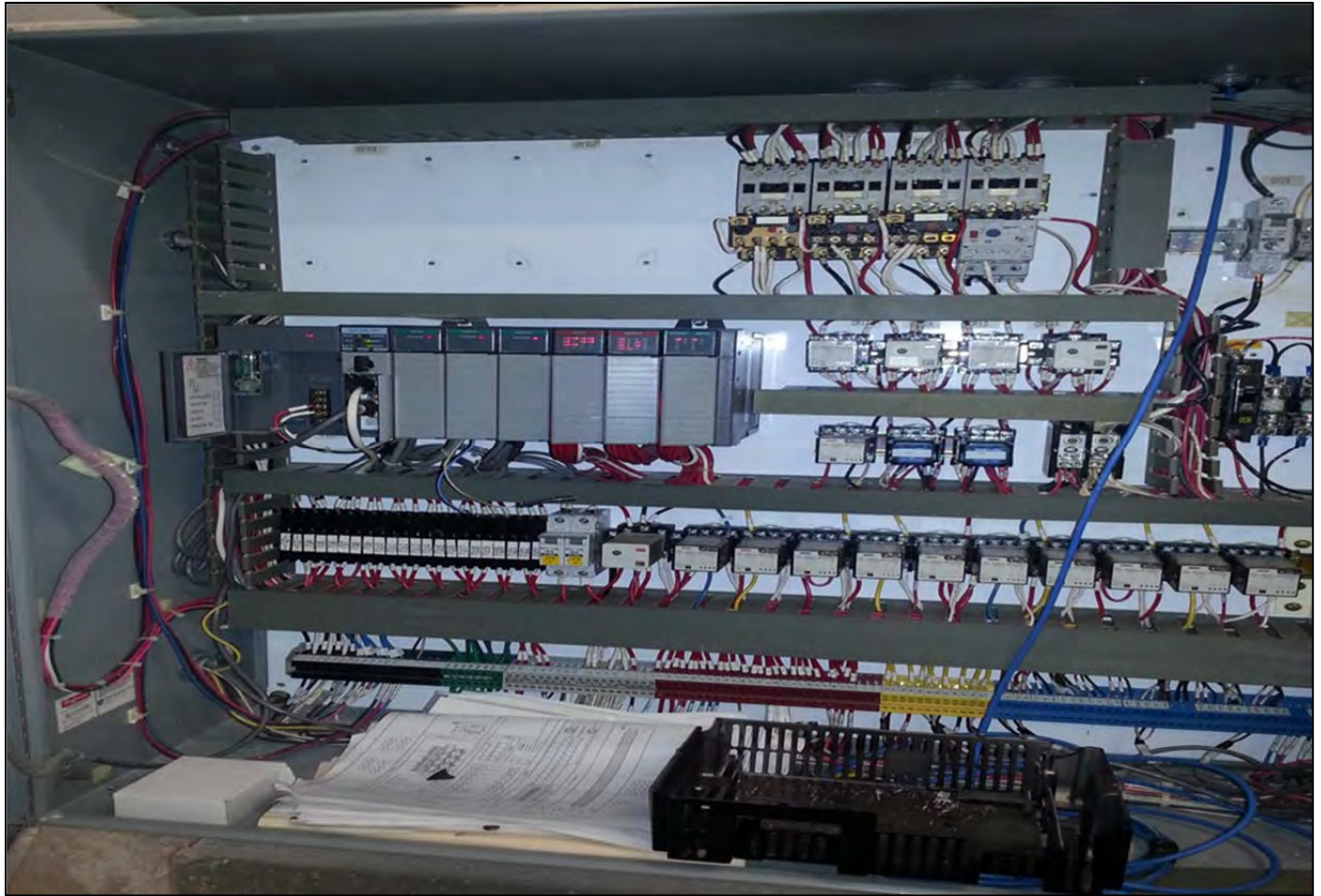
O&M Impact

G/L	2015	2016	2017	2018	2019

EUM ATTRIBUTE

- Infrastructure Stability** – The SCADA HMI system is a critical interface system which coordinates the operation of CAW’s water treatment and distribution systems. Coordinated upgrades and replacement of this system will ensure that CAW minimizes disruptions and other negative consequences to its customers.
- Operational Optimization** – The SCADA system is a key to ensuring the ongoing, timely, cost-effective, reliable, and sustainable performance of CAW’s water treatment and distribution operations. This upgrade will bring the system to the current generation of technology and reduce impacts to day-to-day operations due to the unreliable nature of the current system. Timely adoption of improvements will allow CAW to realize many improvements and system optimization that current technology provides.
- Operational Resiliency** – Proactive replacement/upgrade of the current SCADA system will mitigate a number of business risks which exist with the current system. The new system will reduce financial risk due to unplanned downtime and emergency repairs, improve safety and security controls due to newer technology, and provide CAW with a more reliable system consistent with current industry technology trends to enable better management of the treatment and distribution systems.

Project Name: Upgrade SCADA System Programmable Logic Controller
Department: Water Quality & Operations
Focus Area: SCADA HMI
Location: Wilson Plant and Ozark Point Plant



Name:
Randy Easley
Est Start Date:
January, 2017

Duration: (Months)
24 Months
Total Cost:
\$300,000



PROJECT PURPOSE

This project will replace the current Programmable Logic Controllers (PLCs), in the treatment plants which have functioned well past their expected useful life and are no longer vendor supported. The project will provide up to date hardware and software support. Recently, it has been necessary to replace some equipment with newer hardware and software due to expense of the legacy items and improved functionality of the newer hardware and software.

Numerous PLCs were installed in 1995 with additions made during projects in 1999, 2010 and 2014. These PLCs are now obsolete and need to be replaced. This equipment is critical to monitoring, controlling, and maintaining water treatment integrity/water quality and distribution systems.

The equipment can be purchased and installed by CAW staff. Equipment replacement can be scheduled to prevent emergency upgrades.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	150,000	150,000	0	0

O&M Impact

G/L	2015	2016	2017	2018	2019



EUM ATTRIBUTE

- Infrastructure Stability** – The SCADA HMI system is a critical interface system which coordinates the operation of CAW’s water treatment and distribution systems. Coordinated upgrades and replacement of this system will ensure that CAW minimizes disruptions and other negative consequences to its customers.
- Operational Optimization** – The SCADA system is a key to ensuring the ongoing, timely, cost-effective, reliable, and sustainable performance of CAW’s water treatment and distribution operations. This upgrade will bring the system to the current generation of technology and reduce impacts to day-to-day operations due to the unreliable nature of the current system. Timely adoption of improvements will allow CAW to realize many improvements and system optimization that current technology provides.
- Operational Resiliency** – Proactive replacement/upgrade of the current SCADA system will mitigate a number of business risks which exist with the current system. The new system will reduce financial risk due to unplanned downtime and emergency repairs, improve safety and security controls due to newer technology, and provide CAW with a more reliable system consistent with current industry technology trends to enable better management of the treatment and distribution systems.

Project Name: Upgrade/Replace Billing System
Department: Information Services
Focus Area: Customer Billing
Location: CAW System



HTML 5 Inquiry Portal



Communication Preferences			
Notification Type	Paper	Email	SMS/Text
Customer Correspondence	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Payment Reminder	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bill is Ready Notification	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Shut Off Notification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Customer Public Notice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Communication Preferences

As devices and displays become more diverse (larger monitors, tablet devices) - so should your customer information system. enQuesta 5R's Inquiry Portal has been redesigned with a responsive layout to leverage the various devices and display sizes preferred by the individual users.

With enQuesta 5R's new Communication Preference and Notification Management, utilities can now give their customers the option of signing up for account-based reminders via a range of methods - ranging from Email to Text Messaging.

Name:
Allen Vincent
Est Start Date:
March 2019

Duration: (Months)
9 Months
Total Cost:
\$700,000



PROJECT PURPOSE

The current enQuesta 4 system will only be supported until 2019, at which time the vendor (Systems & Software) will force CAW to upgrade. The newer system is expected to support a variety of new payment methods, new ways of interacting with CAW customers, as well as different ways to access the data. With the upgrade there will be some additional tools we can use to enhance CAW workflow. Some examples include:

- GO – A mobile app that will allow customer account registration, service requests, account histories, and usage graphs on our customers’ mobile devices.
- Identify Table and Field Names within enQuesta interface where enQuesta 5R allows business users to point-and-click to find the associated enQuesta table and field names from within the application to allow for easy report writing.
- Advanced Searches to provide a powerful way to locate customer accounts with AND/OR search parameters, similar to Google, where a user may view potential search results as they type. The goal is that each search is satisfied without the user having to scroll or page through a long list of results.
- An improved Inquiry Portal that is redesigned with a responsive layout to leverage the various devices and display sizes preferred by the individual users.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
RATES	0	0	0	700,000	0

O&M Impact

G/L	2015	2016	2017	2018	2019

EUM ATTRIBUTE

- **Customer Satisfaction** – The upgraded enQuesta interface will provide a number of new customer-facing interface options to provide customers with improved account management and informational sources. This will facilitate improved customer understanding of usage patterns as well as improved customer satisfaction through the ability to identify leaks, establish usage alerts, and other features.
- **Operational Optimization** – Upgrading to the latest release of the enQuesta system will ensure ongoing, timely, cost-effective, and reliable performance of CAW's business operations. Enhancements available in more current software releases will provide a number of improvements which will provide for not only efficiency gains within CAW's operations, but also to CAW's customers; allowing them to more efficiently manage their water usage and interaction with CAW.

Project Name: Low Water Crossing Removal – Winrock Grass Farm
Department: Water Quality & Operations
Focus Area: Watershed Protection
Location: Winrock Grass Farm

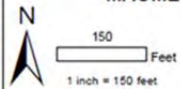


Name:
Randy Easley
Est Start Date:
January, 2015

Duration: (Months)
36 Months
Total Cost:
\$557,000

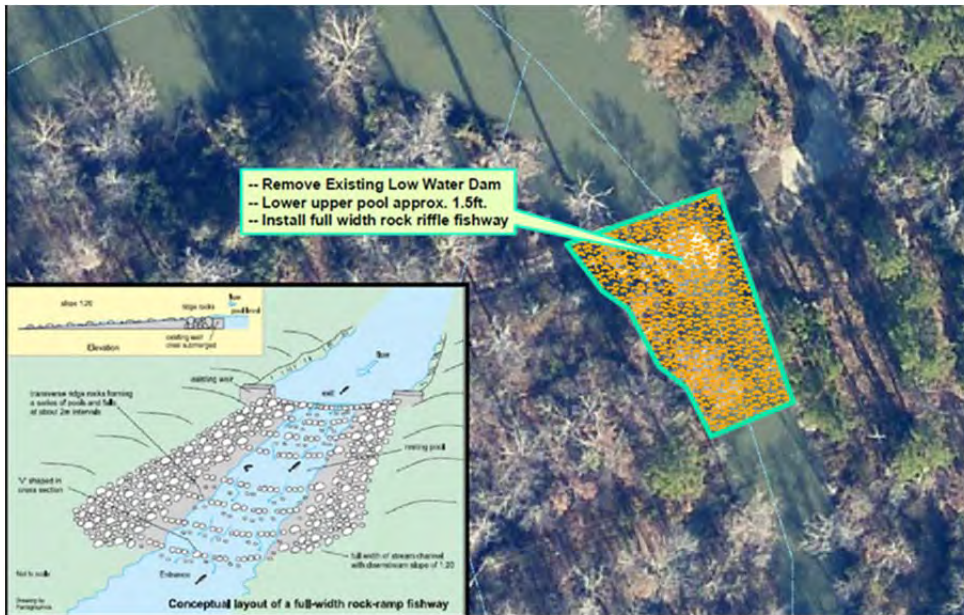


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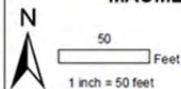


MAUMELLE RIVER FISH PASSAGE PROJECT

Central Arkansas Water
 Winrock Grass Farm
 42121 Hwy 10
 Bigelow, AR 72016



Disclaimer of Warranties: This map has been provided as a convenience without guarantees or warranties of any kind, express or implied, arising by law or otherwise. Any improvements, facilities, and other information shown on this map may not be dimensionally or graphically correct. The size and location of all improvements and facilities should be field verified.



MAUMELLE RIVER FISH PASSAGE PROJECT

Conceptual Rock Riffle Installation



PROJECT PURPOSE

This project is contingent on receipt grant funding. CAW will apply each year for U.S. Fish and Wildlife Service funds in order to remove three dams on the grass farm. This grant is based on pre-project flood and engineering studies that will benefit aquatic species by providing access to additional habitat.

The project will remove three concrete river crossings, restore the river bank, and construct one elevated crossing downstream to provide access to the rest of the property.

Prior year (2015) spending consists of \$107,000 from grants. (\$100,000 from U.S. Fish and Wildlife, and \$7,000 from the Arkansas Game and Fish Commission.)

The dam removal project will accomplish the following objectives:

- Reduce streambank erosion and increase attenuation and filtration of flood waters, ultimately reducing sediment and nutrient loadings to the Maumelle River and Lake Maumelle
- Produce better defined riffle, pool, run, and glide features that will improve assimilation of nutrients from the water column and will also provide improved aquatic habitat for fisheries and macro-invertebrates.
- Minimize the potential for flooding on Highway 10 resulting from debris build-up in standpipe of the structure.
- Improve fish passage and fishery health and provide opportunities to allow sensitive species to move back into the area

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
GRANT	100,000	100,000	0	0	0
WPF	250,000	0	0	0	0

O&M Impact

G/L	2016	2017	2018	2019	2020
	5,000	7,500	7,500	7,500	7,500

EUM ATTRIBUTE

- **Community Sustainability** - This project is also part of an overall strategy to maintain and enhance ecological and community sustainability.
- **Product Quality** - River, floodplain, and wetland restoration and conservation will enable CAW to better protect the quality of our source water through pollution reduction and general watershed protection.

Project Name: River, Floodplain, And Wetland Restoration – Winrock Grass Farm

Department: Water Quality & Operations

Focus Area: Watershed Protection

Location: Winrock Grass Farm

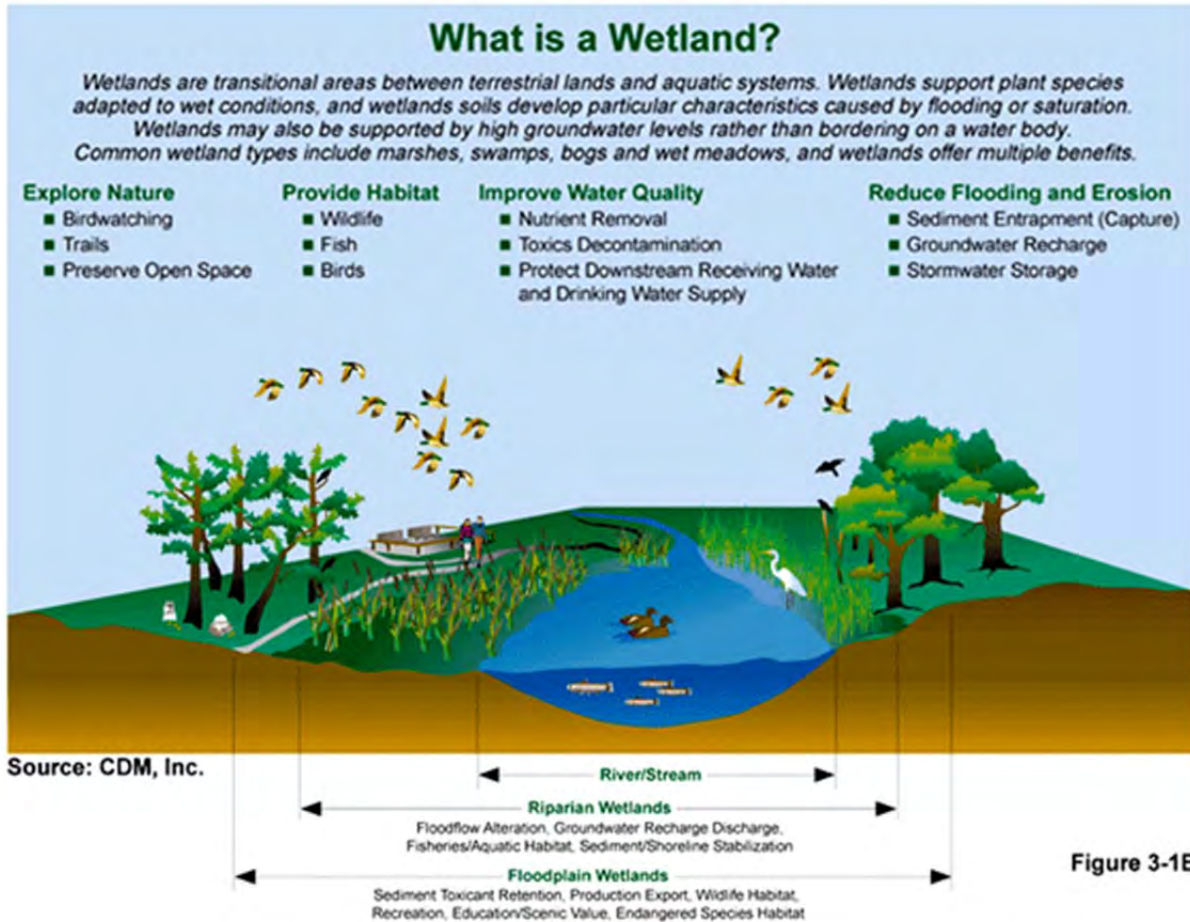


Figure 3-1B

Name:
Randy Easley
Est Start Date:
January, 2016

Duration: (Months)
Ongoing
Total Cost:
\$500,000



PROJECT PURPOSE

CAW acquired approximately 900 acres of the former Winrock grass farm in the watershed of Lake Maumelle in 2009. A portion of the property was acquired through the established Forest Legacy program with the intent of restoring it to primarily forested conditions, for the purpose of protecting the watershed and improving water quality. In the next five years CAW intends to complete a number of river, floodplain, and wetland restoration and conservation projects aimed at restoring natural water quality and watershed protection functions to these resources.

Future river, floodplain, and wetland restoration activities will be identified and prioritized based on water quality and watershed protection benefits, matching funding availability, and other utility needs.

Future river, floodplain, and wetland restoration activities will accomplish the following objectives:

- Reduce streambank erosion and increase attenuation and filtration of flood waters, ultimately reducing sediment and nutrient loadings to the Maumelle River and Lake Maumelle.
- Produce better defined riffle, pool, run, and glide features that will improve assimilation of nutrients from the water column and will also provide improved aquatic habitat for fisheries and macro-invertebrates.
- Minimize the potential for flooding on Highway 10 resulting from debris build-up in standpipe of the structure.
- Improve fish passage and fishery health and provide opportunities to allow sensitive species to move back into the area.



PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
WPF	100,000	100,000	100,000	100,000	100,000

O&M Impact

G/L	2016	2017	2018	2019	2020
	2,000	4,000	6,000	8,000	10,000

EUM ATTRIBUTE

- **Community Sustainability** – These river, floodplain, and wetland restoration projects are part of an overall strategy to maintain and enhance ecological and community sustainability by restoring the Winrock Grass Farm area to its natural condition prior to its conversion to grass farming activities.
- **Product Quality** – River, floodplain, and wetland restoration and conservation will enable CAW to better protect the quality of our source water through pollution reduction and general watershed protection.

Project Name: Improve Forest Roads
Department: Water Quality & Operations
Focus Area: Watershed Management
Location: CAW-Owned Watershed Properties



Name:
Raven Lawson
Est Start Date:
January 2016

Duration: (Months)
Ongoing
Total Cost:
\$250,000



PROJECT PURPOSE

A comprehensive network of forest and property access roads is needed to maintain, secure, and enhance CAW owned lands and minimize impacts to water quality. The goal of this project is to improve existing roads and install additional access as needed using Arkansas Forestry Commission's Best Management Practices for Water Quality Protection. Currently many of our access roads are in need of repair and many of CAW's properties have little or no accessibility.

The following objectives will be accomplished:

- Address improvements to existing roads including: washed-out areas, displaced roads, improperly surfaced and maintained roads, replace culverts, etc.
- Create access for ecological timber thinning, prescribed burning, and other forest and wildlife management actions that serve to improve the health, resiliency, and water quality function of CAW forest assets.
- Improve security through road maintenance and gate installation.
- Increase protection from wildfire by properly addressing fire lanes.
- Create Forest Road BMP demonstration areas to establish and promote stewardship with local governments and landowners in the watershed.
- Increase and improve accessibility to remote areas for emergency response.

PROJECT ESTIMATED COSTS & DURATION

Capital Expenditure

Source	2016	2017	2018	2019	2020
WPF	50,000	50,000	50,000	50,000	50,000

O&M Impact

G/L	2016	2017	2018	2019	2020
NONE					



EUM ATTRIBUTE

- Community Sustainability** - Managing forest roads and access for the health of the watershed is an important part of CAW's stewardship of its lands. Well planned and managed roads will enable CAW to effectively manage its lands by improving access and security and minimizing impacts to water quality. This project is also part of an overall strategy to maintain and enhance ecological and community sustainability and provide watershed landowners and stakeholders with a resource for understanding Forest BMPs pertaining to roads.
- Product Quality** – By providing good access to its watershed lands, CAW will be able to more effectively assess and manage its watershed resources. In turn, CAW will be able to more efficiently deal with potential issues in the watershed contributing to runoff and pollution that is detrimental to the Utility's source water supply.

Glossary of Acronyms and Abbreviations

ADA	Americans with Disability Act
AHTD	Arkansas Highway & Transportation Department
AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reading
AWWA	American Water Works Association
CAW	Central Arkansas Water
CIP	Capital Improvement Plan
CRPA	Customer Relations & Public Affairs
CO	Carryover
EPA	Environmental Protection Agency
EUM	Effective Utility Management
FLP	Forest Legacy Program
F/T	Full-Time Employee
GLP	Good Laboratory Practice
HMI	Human Machine Interface
MGD	Million Gallons per Day
NEXRAD	Next Generation Weather Radar
PER	Preliminary Engineering Report
PLC	Programmable Logic Controller
P/T	Part-Time Employee
RSA	Rate Stabilization Account
RTU	Remote Terminal Unit
SCADA	Supervisory Control and Data Acquisition System

SDWAA

Safe Drinking Water Act Amendments of 1996

WPCWA

West Pulaski County Water Authority