

CITY OF PECULIAR

2014 Preliminary Engineering Report Water Supply, Pumping, Storage & Distribution

July 21, 2014

Tony O'Malley, PE, ENV SP

"Leaving a Legacy of Enduring
Improvements to Our Community."

PURPOSE STATEMENT



— LARKIN —
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Minimum Design Standards for Missouri Community Water Systems

- Assess present facilities
- Use hydraulic modeling to address deficiencies
- Project future water demands
- Formulate Capital Improvement Plan (CIP)
- Assess funding for improvements and impact on rates
- Five-year Owner Supervised Program

ASSESS PRESENT FACILITIES

Currently **1537** meters are served by the City.

Facilities:

- Supply from three meter vaults
- Distribution system – 2” – 12” Mains
- Booster pump station
- 425,000 gal. Ground storage tank
- 400,000 gal. Elevated storage tank

ASSESS PRESENT FACILITIES

Distribution System Pipe Summary

Pipe Diameter(in.)	2 – 4*	6	8	10 - 12	Total
Total length, (ft)	74,711	26,649	111,095	27,513	239,975
% of total system	31.2%	11.1%	46.3%	11.4%	100.0%

*Pipe sizes of 6" or larger are required to deliver fire flow.

ADDRESS DEFICIENCIES

Problem Areas in the Distribution System

- Peculiar Dr./Main St. between Hurly St. and E. North
- Along Harr-Grove Rd.
- Along Elm St.
- E. Broadway St between E. 3rd St. and N. Main St.
- Gregory between Elm St. and Kayla Dr.

PROJECT FUTURE WATER DEMANDS

Projected Population			
Year	Population	Annual % Change	Population Change
1980	1571		
1990	1777	1.24%	206
2000	2604	3.90%	827
2010	4054	4.53%	1450
2011	4225	4.21%	171
2012	4403	4.21%	178
2013	4588	4.21%	185
2018	5638	4.21%	228
2023	6930	4.21%	280
2028	8516	4.21%	344
2033	10466	4.21%	423

HISTORICAL WATER DEMANDS

Recent Historical Water Usage

Year	2010	2011	2012	2013	Average
Customers	1,509	1,525	1,540	1,537	1,528
Annual Percent Change - (%)		1.06%	0.98%	-0.19%	0.62%
Annual Water Purchased (gal)	87,230,287	94,070,020	99,276,682	94,465,030	93,760,505
Annual Percent Change – (%)		7.84%	5.53%	-4.85%	2.84%
Annual Water Sales (gal.)	74,145,744	79,959,517	84,385,180	80,295,276	79,696,429
Annual Percent Change – (%)		7.84%	5.53%	-4.85%	2.84%
Total Water Not Sold – (gal)	13,084,543	14,110,503	14,891,502	14,169,755	14,064,076
Total Water Not Sold – (%)*	15%	15%	15%	15%	0.15
Avg. Consumption (gpm/meter)	0.11	0.12	0.12	0.11	0.11
Avg. Day Purchases (gal./day)	238,987	257,726	271,991	258,808	256,878

**Estimated water loss for 2010 through 2012*

FUTURE WATER DEMANDS

Projected Water Demands

Year	2018	2028	2033
Annual Water Purchased	116,096,211	175,352,517	215,505,811
Annual Water Sales	98,681,779	149,049,640	183,179,939
Average Day Purchased	317,203	479,105	590,427
Maximum Day Purchased	475,804	718,658	885,640

FUTURE WATER DEMAND

Possible Sources of Growth in Water Demands

- Interchange on I-49 at 211th Street
- Current Land Use Plan with consideration of service area limits
- Growth within platted subdivisions served by the City

WATER SUPPLY EVALUATION

Supplier Decision Matrix

Item	Consideration	Percent
1	20-Year Life Cycle Analysis	20
2	Water Rates	25
3	Capital Cost	20
4	Maintenance (Time) Requirements	10
5	Environmental	10
6	Accessibility	5
7	ROW Acquisition	5
8	Utility Consideration	5
		100%



EVALUATION RESULTS

Weighted Decision Matrix

Item	Consideration	Percent	Cass 2	KCMO	WaterOne	TCWA
1	20-Year Life Cycle	20	15	20	17	18
2	Water Rates	25	10	25	24	14
3	Capital Cost	20	20	7	5	3
4	Lower Maintenance	10	8	10	5	7
5	Environmental	10	10	8	4	6
6	Accessibility	5	5	4	2	3
7	ROW Acquisition	5	5	4	2	3
8	Utility Consideration	5	5	4	2	3
		100	78	82	61	57

PROJECTED SUPPLY COST COMPARISON

Rate and Annual Purchase Cost for Supply			
Source	Parameters	Year	
		2018	2033
CASS 2			
	Rate per 1,000 gal* (Effective 5/1 ann.)	\$ 5.57	\$ 10.63
	Assumed Increase	5%/3%	5%/3%
	Cost of Water Purchased	\$ 581,248	\$ 1,491,786
KANSAS CITY			
	Rate per 1,000 gal**(Effective 5/1 ann.)	\$ 3.31	\$ 6.89
	Repumping fee per 1,000 gallons	\$ 0.30	\$ 0.63
	Assumed Increase	5.0%	5.0%
	Cost of Water Purchased	\$ 377,416	\$ 1,055,996
	Loan Repayment	\$ 241,988	\$ 241,988
	Total	\$ 619,404	\$ 1,297,984

*Cass 2 has 3 components: Cost from KC, Cass 2 O&M, and Cass 2 debt service on shared facilities. (Annual rate increase is assumed at 5% for KC rate and 3% for O&M)

**Includes Kansas City as a direct water wholesaler at their wholesale restricted rate plus 1 repump charge (Annual rate increase is assumed at 5%)

WATER SUPPLY

Supply Conclusions

Weighted Decision Matrix indicated purchase directly from KC as the best long term supply option:

- ✓ Lowest costs for **20-year life** cycle analysis
- ✓ Lowest water rates **in the future**

Assumptions for annual increase in water purchase cost:

- Cass 2 - 5% due to KC & 3% for Cass 2 O&M.
- KCMO - 5% plus loan repayment of \$241,988

RECOMMENDED IMPROVEMENTS

Summary of Recommended Improvements	Cost
Supply Improvement	\$3,772,389
<ul style="list-style-type: none"> • 12" on Peculiar Dr., Hurley St. to Main St., north to E. North St. 	\$640,393
<ul style="list-style-type: none"> • 8" in Spencer Addition 	\$369,941
<ul style="list-style-type: none"> • 8" on Harr Grove Rd. between Elm St. and Highway J 	\$292,059
<ul style="list-style-type: none"> • 8" on Elm St. between Gregory and School Rd. 	\$261,482
<ul style="list-style-type: none"> • 8" on Gregory St. and Kayla St. from Harr Grove and Gregory 	\$184,248
<ul style="list-style-type: none"> • 12" on Peculiar Dr, between Maple Ave. and Willow St. 	\$452,156
<ul style="list-style-type: none"> • 12" on E. Broadway between E. 3rd St. and N. Main St. 	\$184,046
<ul style="list-style-type: none"> • 12" on E. 3rd St. between E. South St. and Legend Ln. 	\$278,154
Tank Mixing Systems (2)	\$100,000
Emergency Generator	\$35,000
Total	\$6,569,868

Priority Distribution Improvements

1. 12" on Peculiar Dr, Hurley St. to Main St., north to E. North St.

2. 8" in Spencer Addition

3. 8" on Harr Grove Rd between Elm St. and Highway J.

4. 8" on Elm St. between Gregory and School Rd.

5. 8" on Gregory St and on Kayla Dr., Gregory to Harr Grove Rd.

- ✓ Continue pursuit of DNR State Revolving Fund Loan Funding.
- ✓ Install 8" minimum diameter new mains.
- ✓ Continue to replace 2 and 3" as funds allow.
- ✓ Eliminate dead end mains with looping as funds allow.
- ✓ Update Plan for new subdivisions, commercial or industrial

5-YEAR OWNER SUPERVISED PROGRAM

DNR Submittals

- ✓ Preliminary Engineering Report
- ✓ 5-Year Owner Supervised Plan submittal
 - Facility Plan
 - Peculiar standard specifications
 - Peculiar construction details
 - City inspector resume.

UPDATE OF THE WATER RATE STUDY

- ✓ Inserted new revenue and expense figures
- ✓ Inserted rate increases approved by the Board
- ✓ Examined rate adjustments for the following:
 - Priority Main Improvements
 - Supply Improvements

Current Water Rates

Unit	City of Peculiar
Surcharge (Monthly Minimum Charge) 0 to 1,000 gallons	\$17.21
Each additional 1,000 gallons	\$12.77
Primacy fee (\$3 annual fee/meter to DNR)	\$0.25
Monthly bill for 5,000 gallons	\$68.54

THANK YOU!

Questions or Comments?

Anthony P. O'Malley, PE

[P] 816.361.0440

[D] 816.823.7282

[C] 816.830.1683

[F] 816.361.0045

Tony.OMalley@LRA-Inc.com

9200 Ward Parkway, Suite 200

Kansas City, Missouri 64114



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www.LRA-Inc.com



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