




East Side Water Supply Project Final Board Presentation

April 24, 2012



Presentation Outline

1. Project Objective
2. Project Team
3. Project Area and Task Summary
4. Key Conclusions
 - a) Phase 1 (2010/2011)
 - b) Phase 2 (2011/2012)
5. Resulting Capital Improvement Plan
6. Project Benefits and Follow Up






Project Objective

- Develop a publicly accepted series of capital projects, budgets and implementation schedules that will provide a long term, safe and reliable water supply for Madison's East Side.



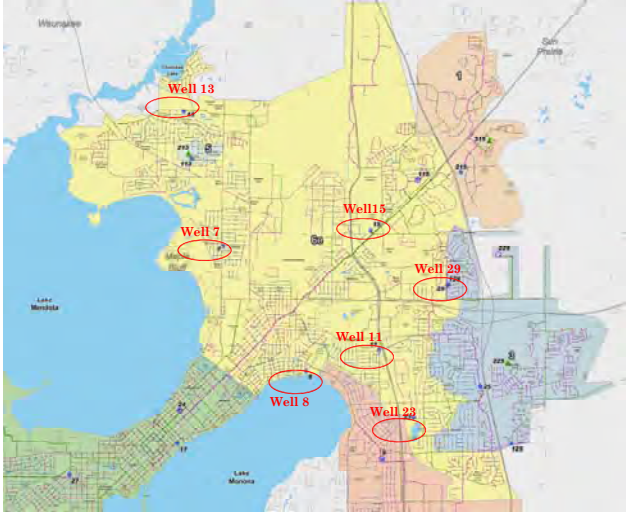
Project Team




- Madison Water Utility Staff
- Citizens & Board Members
- Consulting Team
 - Black & Veatch
 - Bert Stitt, Mark Stevens, Beth Foy
 - MARS and TRC
 - S.E.H

Project Area and Task Summary

- Overall Demand Analysis
- Overall Water Quality Analysis
- Overall Hydraulic Modeling Analysis
- Treatment for Wells 7, 8 & 15
- Replacement for Well 3

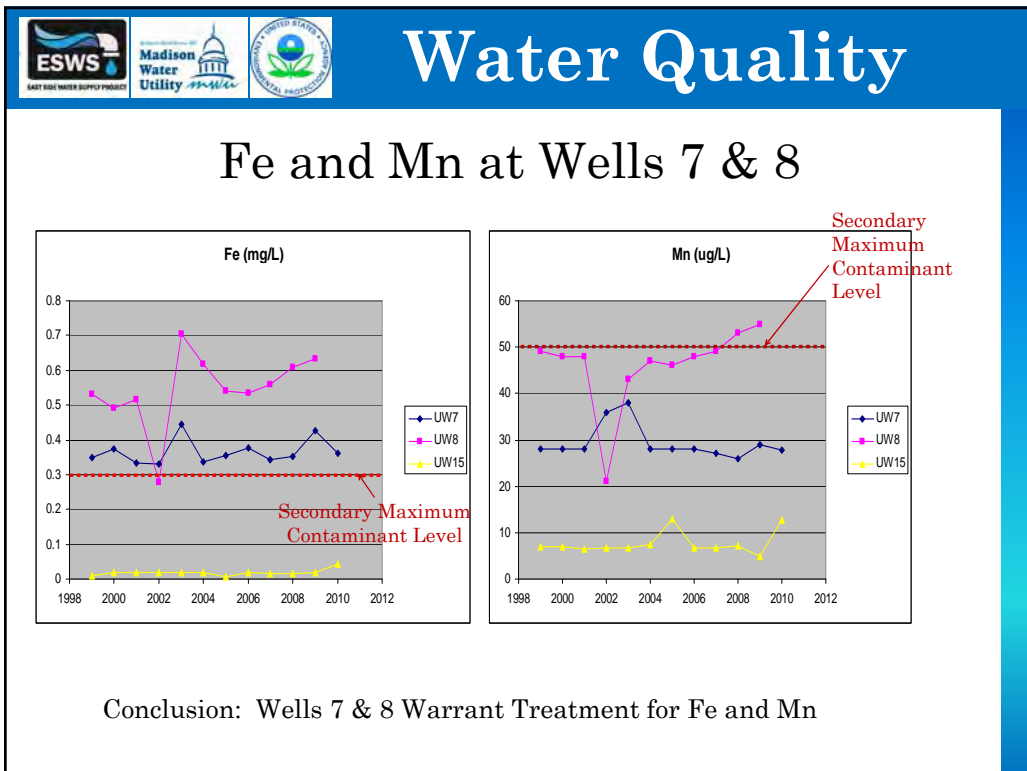
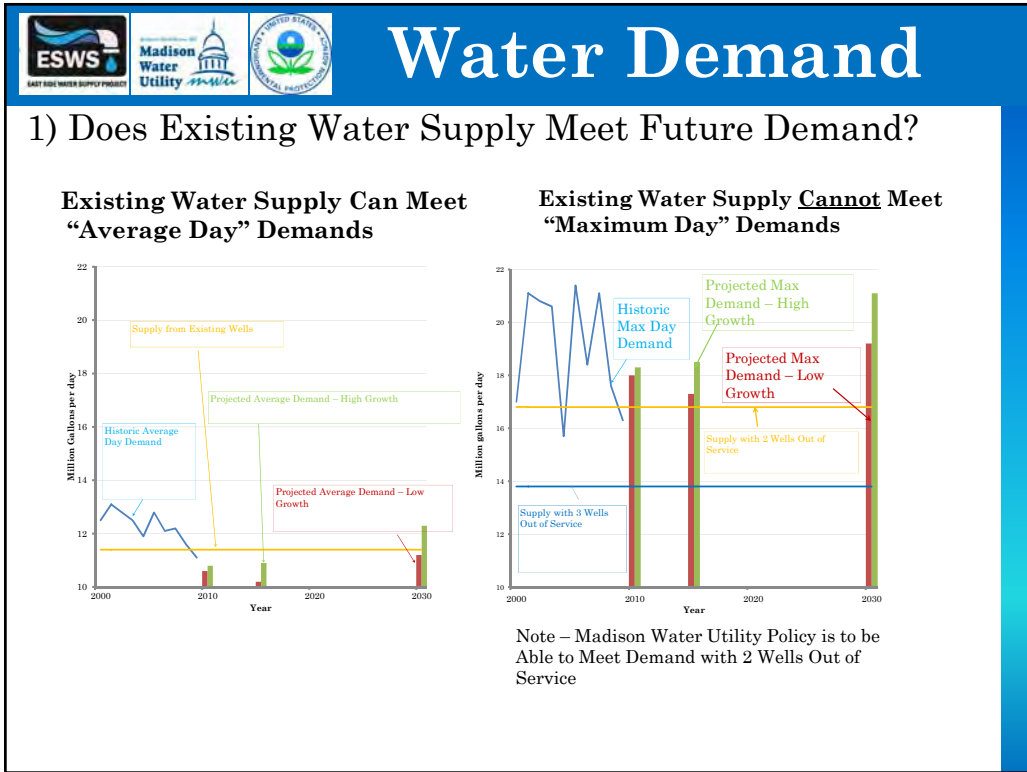


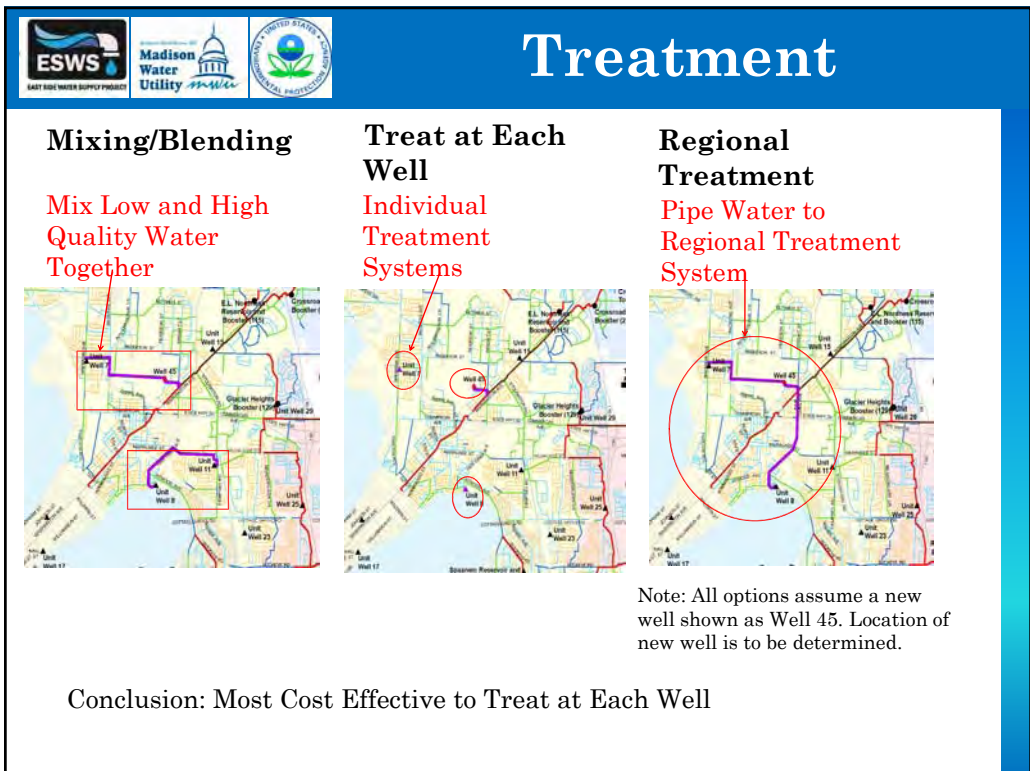
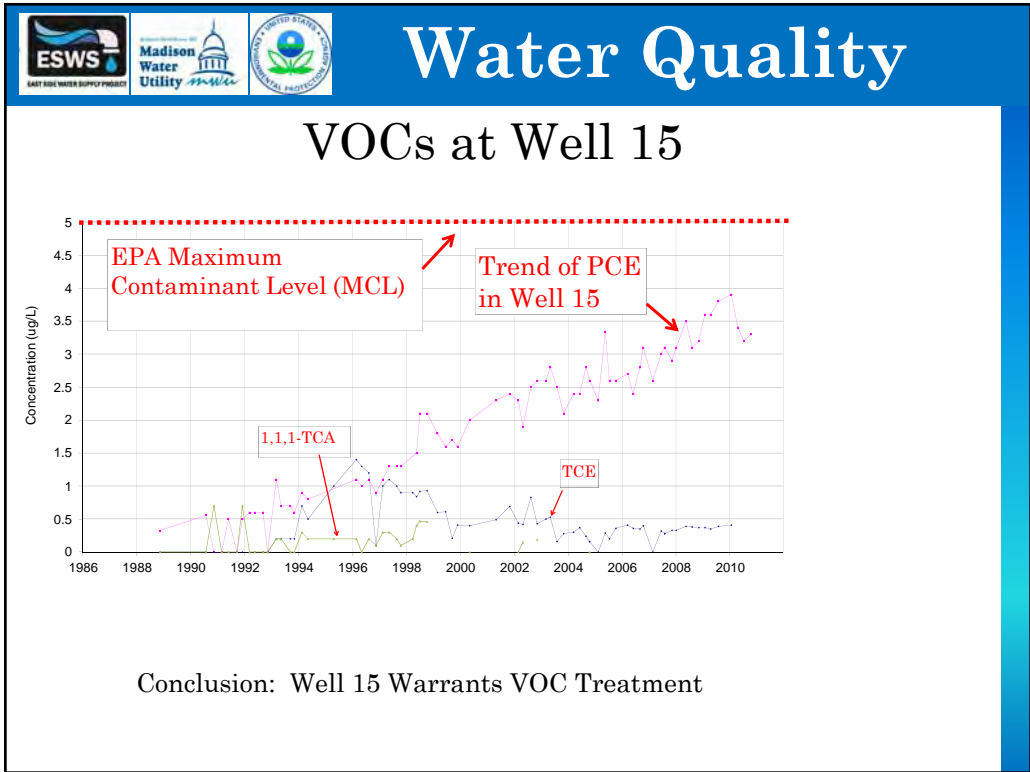





ESWS Project

Phase 1: 2010 – 2011

“Big Picture” Planning











Key Conclusions – Phase 1

<u><i>2011 CAP Study</i></u>	<u><i>2011 CAP Recommendations</i></u>
<ul style="list-style-type: none"> • 15 Citizens met for 8 months to Study East Side Water Supply and Quality • Public Meetings in June 2011 • Recommendations to MWU Board in July 2011 	<ul style="list-style-type: none"> • Locate a Suitable Site and Replace the Abandoned Well No. 3 (Quantity Advisory) • Install Iron and Manganese Filtration at Wells 7 and 8 (Quality Advisory) • Install VOC Treatment at Well 15 (Quality Advisory) • Conservation Advisory



ESWS Project Phase 2




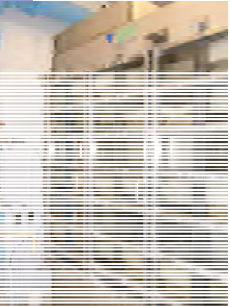
Implementing Advisories from Phase 1

Well 15

Well 15 VOC Removal Evaluation

- Well 15 CAP and Several CAP Meetings
- Evaluation of Several VOC Treatment Technologies
- Trip to Cedarburg to See Similar System
- Conclusions
 - Use Low Profile Air Stripper





Well 15

Unit Well 15 Treatment System – Under Design




Construction planned for 10/2012 to 7/2013

Conceptual Plan View of Well 15 VOC Treatment System




Artist Rendering of Facility








Well 7

Existing Site Plan




Existing Facility




Concerns:

- Older Well and at the End of its Design Life
- Fe & Mn Concentrations
- Undersized Reservoir










Well 7

Well 7 Fe & Mn Removal Evaluation

- Evaluation of Several Fe & Mn Filter Medias
- Pilot Testing
- Four Cap Meetings



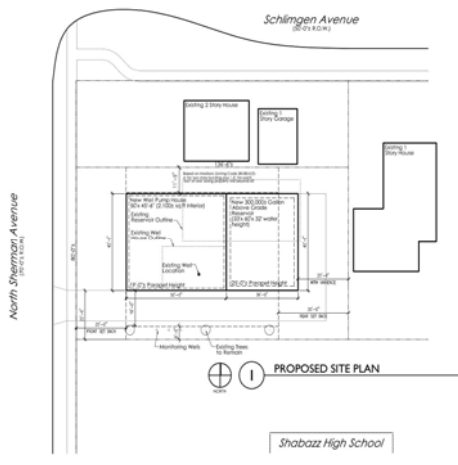


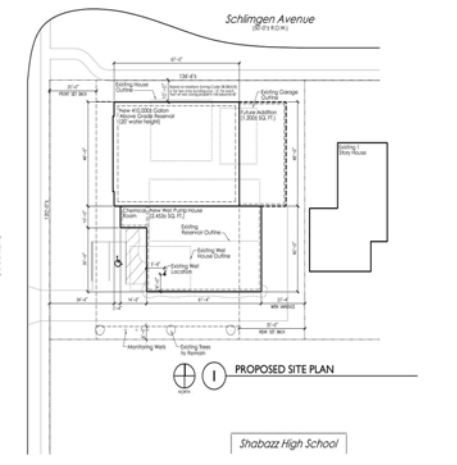
Well 7

Planning for Treatment and a Larger Reservoir

Option 1 - Small Facility
- Stay on Original Site



Option 2 - Larger Facility
with Property Acquisition










Well 7

Option 3 - Offsite Treatment and a Larger Reservoir



Considerations




1. ½ mile long 16-inch transmission main = \$500,000+
2. Property acquisition cost
3. Well building would remain on Sherman Avenue
4. Additional energy and operations cost

Well 7




Well 7 Recommendations

- Provide for Onsite Treatment
- Treatment System Similar to Well 29
- Continue CAP and Public Participation to Develop Final Site Layout

Well 8

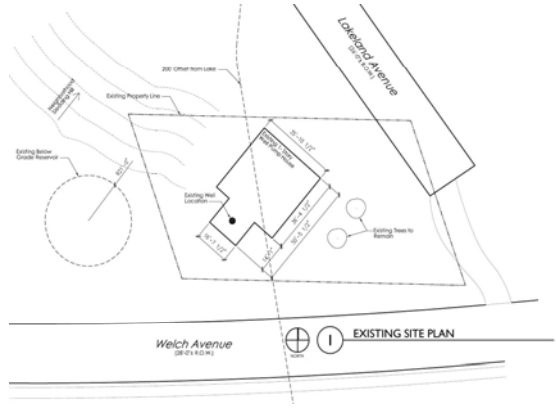
Existing Facility




Well 8

What are the Well 8 Issues?

- Iron and Manganese Filtration needed
- Larger Reservoir
- Facility at End of its Useful Life
- Located in Olbrich Park
- Potential impacts from Madison Kipp. Plan for VOC Treatment



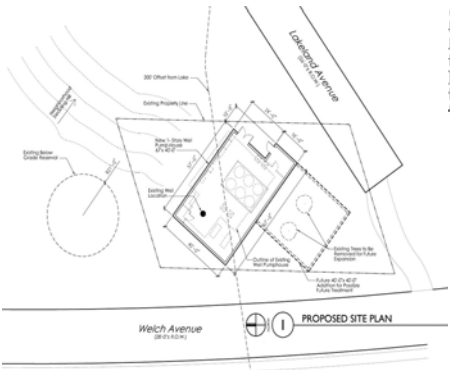
EXISTING SITE PLAN

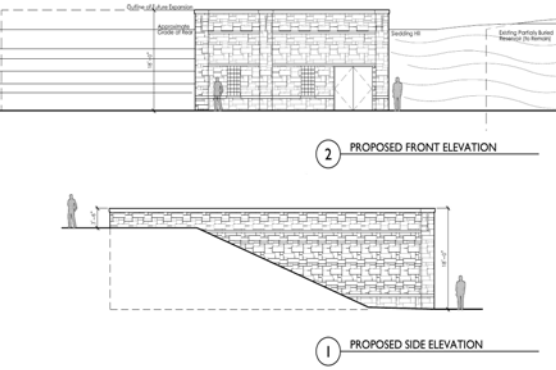
Well 8

Objective – Install filtration on existing Water Utility Property -Minimal Impact

Option 1






PROPOSED SITE PLAN



PROPOSED FRONT ELEVATION

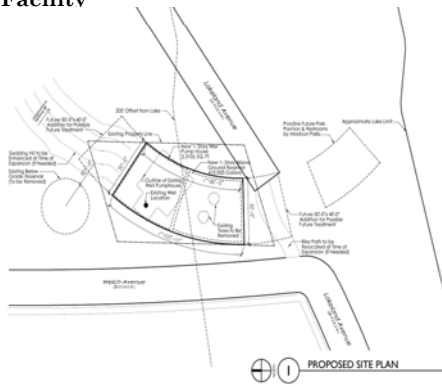
PROPOSED SIDE ELEVATION



Well 8




Option 2

Objective – Construct Filter, a New Reservoir, and Future Options for a Recreational Use Facility




PROPOSED SITE PLAN

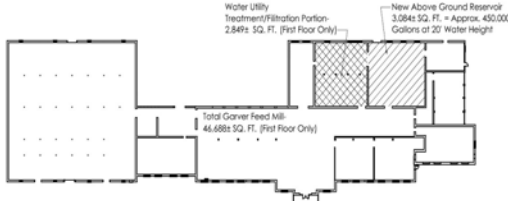
Well 8

Option 3 – Move Offsite to Garver? Route to Offsite Location







Considerations

1. ½ mile long 16-inch transmission main = \$500,000+
2. Garver Feed Mill restoration costs
3. Well building would remain in Olbrich Park
4. Additional energy and operations cost



Garver Feed Mill Floor Plan



Well 8

Well 8 Recommendations

- Treatment System Similar to Well 29
- Consider Need for Future VOC Removal
- Continue CAP and Public Participation to Develop Final Site Layout





Well 3 Replacement

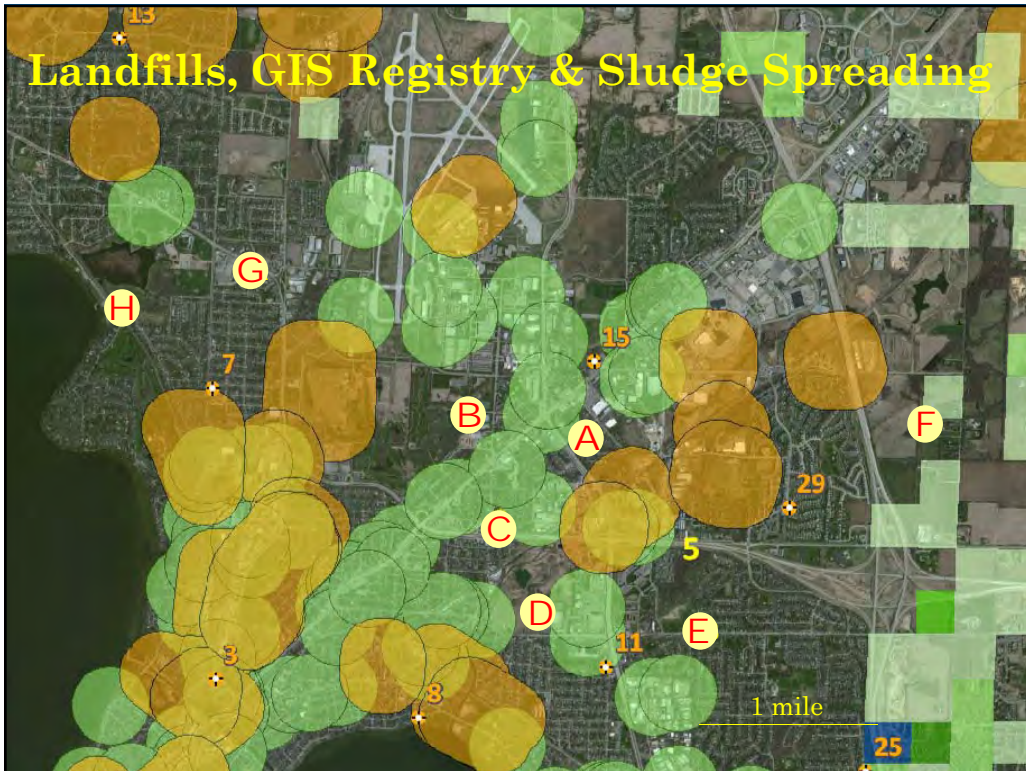
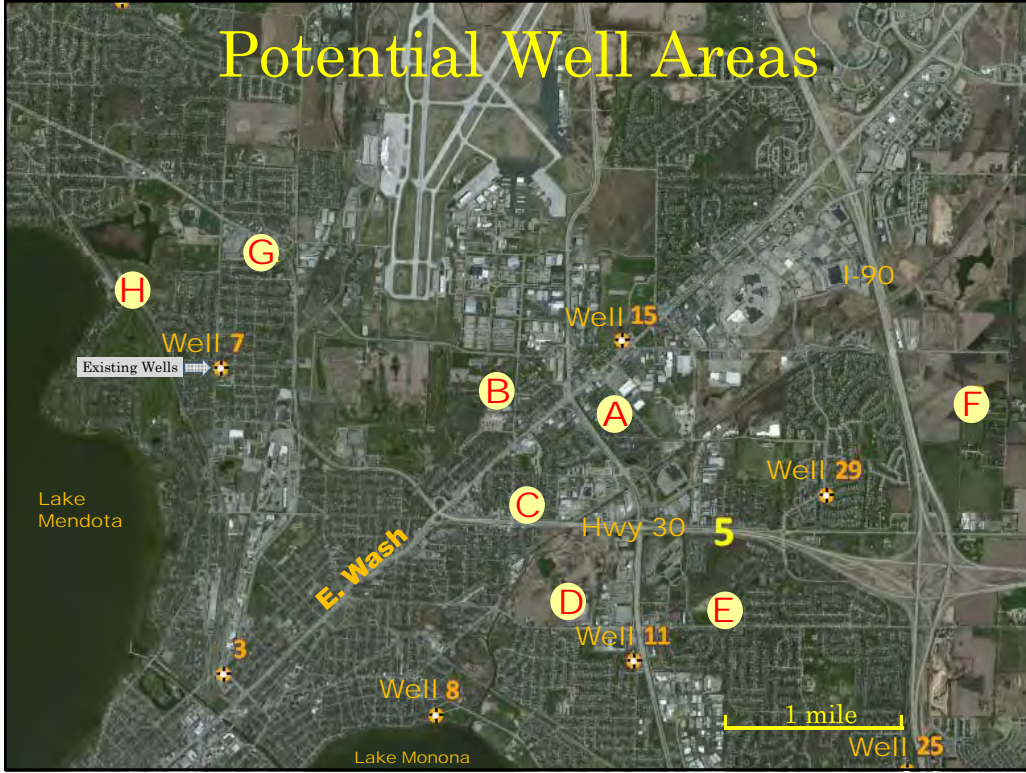
What are the issues in siting a new well?

- Location of known contaminant sources
- Extent of the shale layer
- DNR setback requirements
- Citizen concerns
- Property availability
- Well capacity and efficiency















 <h2 style="margin: 0;">Well 3 Replacement</h2>					
<h3>Well Area Comparison</h3> <p>(In Order of Expected Water Quality)</p>					
Area	Eau Claire Shale	Potential Contaminant Sources	Additional Piping Cost	Additional Property Cost	Neighborhood Impacts / Benefits
F	Present	Sludge spreading	\$2.8M ¹	\$0	?
E	Present	Petroleum sites downgradient	\$580K - \$700K	?	?
G & H	Present (?)	Petroleum sites & Truax landfill upgradient.	\$2.2M - \$3M ²	?	Water table might be lowered 1-7 ft
A	Present	Sycamore landfill & petroleum sites upgradient	\$290K	?	?

¹ Already planned for next 5 years even if no replacement well constructed.
² Planned after 2018 even if no replacement well, except \$550K for 7A and \$86K for 7B.

Well 3 Replacement

Well Area Comparison, Continued

(In Order of Expected Water Quality)

Area	Eau Claire Shale	Potential Contaminant Sources	Additional Piping Cost	Additional Property Cost	Neighborhood Impacts / Benefits
C	Near edge	Multiple sites ³	\$270K	?	?
D	Near edge	Multiple sites ³	\$970K	?	?
B	At edge	Multiple sites ³	\$350K	?	?

³ No DNR file review conducted.



Improvement	2012	2013	2014	2015	2016	2017	Total 5-year
Supply Improvements							
UW 15 Treatment	2,576,000						
UW 8 Treatment	461,000	5,411,000					
New UW 31 (Zone 4)	1,036,000	5,513,000					
UW 7 Treatment	430,000	438,000	5,179,000				
Replacement Well				869,000	869,000	6,119,000	
Total of Supply Improvements	4,503,000	11,362,000	5,179,000	869,000	869,000	6,119,000	28,901,000
Storage and Booster Pumping Improvements							
RES 113 and BPS 113	263,000	3,164,000					
BPS 115		175,000					
BPS 129				102,000	2,254,000		
Total of Storage and BPS Improvements	263,000	3,339,000	0	102,000	2,254,000	0	5,958,000
Pipeline Improvements							
New UW 31 Piping (Zone 4)	710,000						
RES 113 and BPS 113 Piping		1,020,000					
BPS 115 Piping		900,000					
New Replacement Well Piping					420,000		
BPS 129 Piping					1,874,000	3,521,000	
Upgrade/Expansion/Fire Piping				5,142,000			
Total of Pipeline Improvements	710,000	1,920,000	0	5,142,000	2,294,000	3,521,000	13,587,000
Total CIP	5,476,000	16,621,000	5,179,000	6,113,000	5,417,000	9,640,000	48,446,000

Project Benefits and Follow Up	
<p>Benefits to MWU</p> <ul style="list-style-type: none"> • Addressed Eastside Water Quality issues • Formulated long term water supply system • Long-Term Public Accepted CIP for Eastside • Increased CAP Participation • Used Advisories as a Model for CAP Involvement • Updated Hydraulic Model for Eastside Distribution System 	<p>Follow Up</p> <ul style="list-style-type: none"> • Final Report Due at End of April • Well 15 VOC Design in Progress • CAP Process to Continue the Development of the Filtration Projects at Wells 7 and 8 • Initial Siting and Land Acquisition for Replacement Well