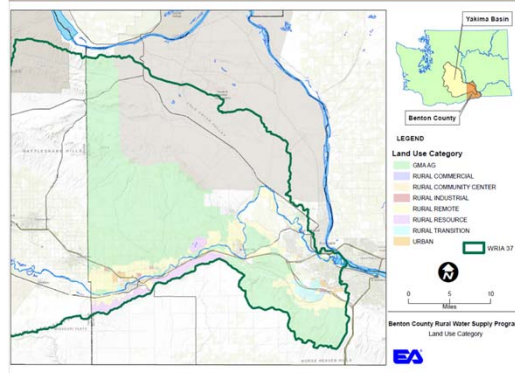


Benton County Rural Water Supply Program – Update to WTWG 3/2019



Agenda

Presentation Purpose – Status on Rural Water Supply Program Development

- Background and Context
- Technical Study
- Demand Forecast and Mitigation Estimate
- Draft Program Elements
- Status and Next Steps



Background and Context

- Feb. 2017 Ecology letter encouraging action on rural supply mitigation in Comp. Plan update
- Rural supply element added to updated Plan
- FutureWise challenged plan on rural water and a few other topics
- County working on FutureWise Settlement Agreement and Rural Water program
- Technical Team guiding County



Technical Study



Technical Study – Characterize Groundwater Conditions

- Yakima basin portion of Benton County (lower WRIA 37)
- Primarily water level focus
- Based on available info: USGS, Ecology EIM, Benton County
- Does not include incorporated areas
- Work done by EA team now at GeoEngineers



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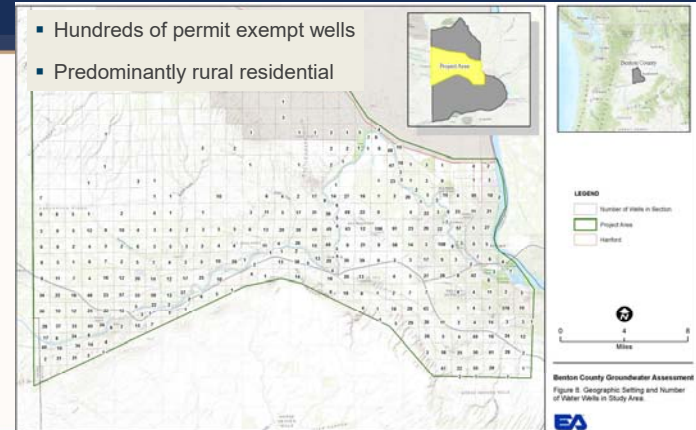
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Wells in Project Area

- Hundreds of permit exempt wells
- Predominantly rural residential



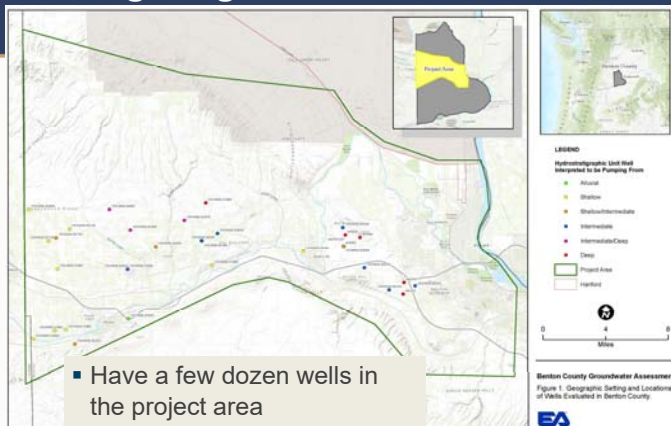
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Using Long Term Water Level Data



- Have a few dozen wells in the project area



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Declining Water Levels Normal

Table 1. Wells Used for This Study

Location ID	Well Tag ID	Open Interval Top (ft)	Open Interval Bottom (ft)	Units	Average Annual Water Level change (feet/year)	Comments
CRGW06 201523		204	325	S	0	
CRGW06 201734		235	330	S	0.14	slight upward trend
CRGW06 210964		29	29	S	-0.25	
CRGW06 210968		23	325	S	-0.30	
CRGW06 210962		14	340	S	-0.37	
CRGW06 210963		20	340	S	-0.38	
CRGW06 201729		235	320	S	-0.33	
CRGW06 201804		304	334	S	-1.46	
CRGW06 210961		230	316	S	-1.06	
CRGW06 201252		190	820	S/I	-0.13	
CRGW06 201999		200	425	S/I	0.32	
CRGW06 201753		134	445	S/I	-0.65	
CRGW06 203064		72	340	S/I	-0.72	
AL3302	AP3305	68	340	S/I	-0.30	trend not well developed
CRGW06 202022		23	532	S/I	-3.73	
CRGW06 202033		195	448	S/I	0.00	trend not well developed
CRGW06 202067		406	448	I	0.00	
CRGW06 203133	BU3130	650	720	I	-0.14	
CRGW06 203138		525	708	I	-1.12	
CRGW06 203130	BU3130	818	900	I	-2.14	
CRGW06 203038		406	705	I	-2.54	
CRGW06 210965		504	533	I	-1.56	
CRGW06 203240		825	880	I	-3.83	-2.13
CRGW06 203027		940	1320	I/D	-2.28	
CRGW06 201089	BU0099	720	1200	I/D	-3.16	
CRGW06 203576		768	1475	I/D	-3.36	3.00
AAL542	AAL542	960	1371	D	-2.15	
AMP781/297	AMP781/297	1180	1640	D	-2.40	
CRGW06 210959		928	1308	D	-3.11	
AAL543	AAL543	919	1300	D	-3.23	-2.72

Alluvial
S= Shallow Basalt
S/I= Shallow/Intermediate Basalt
I= Intermediate Basalt
I/D= Intermediate/Deep Basalt
D= Deep Basalt



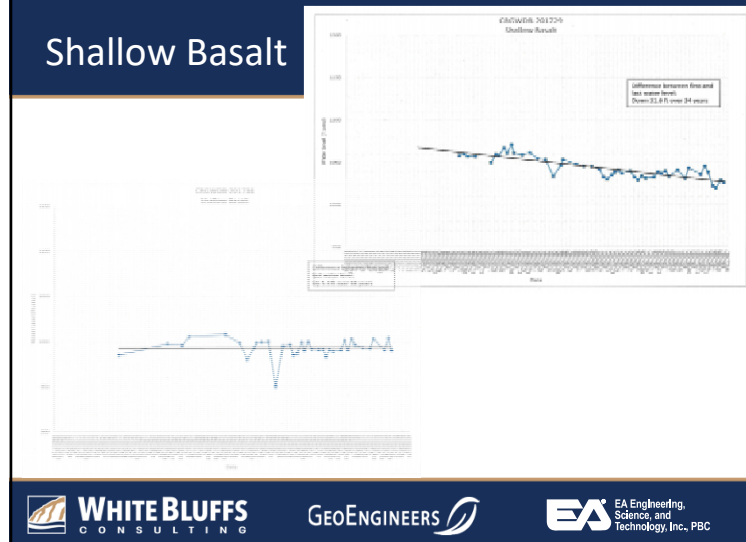
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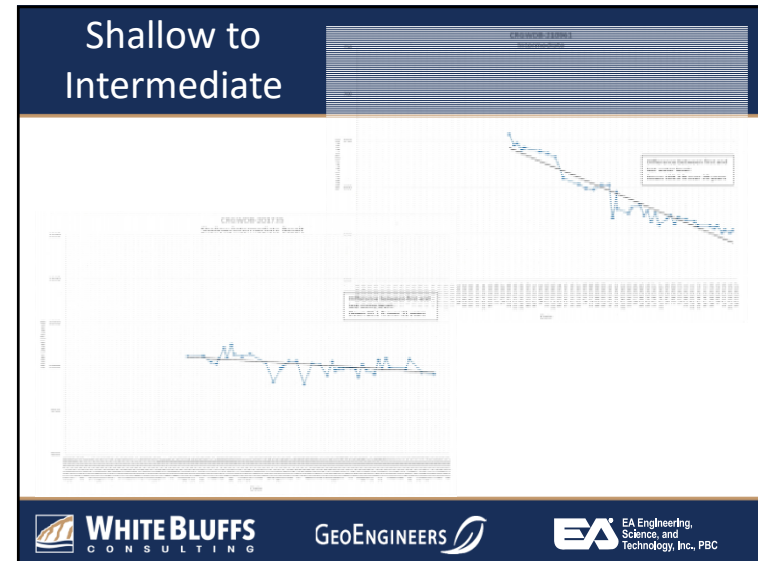


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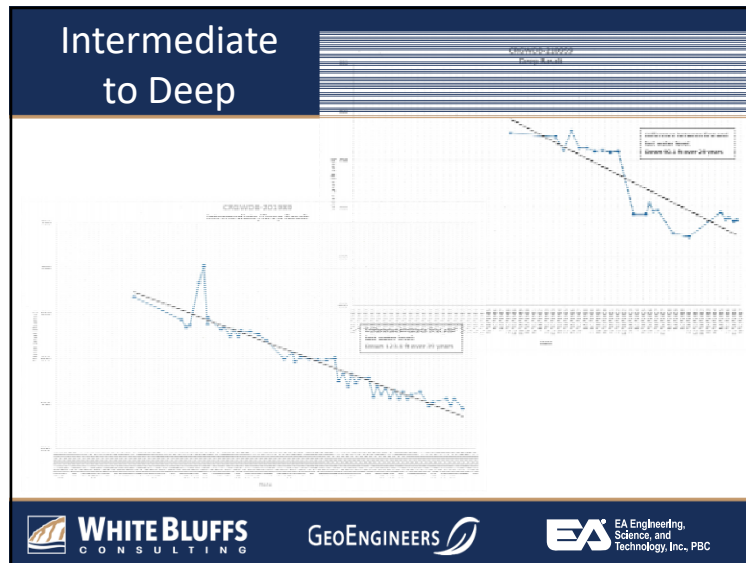
Shallow Basalt



Shallow to Intermediate



Intermediate to Deep



Conclusions

- Alluvial is laterally restricted and low yield
- Most basalt wells with long-term data show declines
 - Less in shallow
 - Higher potential recharge and surface connection?
- More in deep
 - More high capacity pumping?
 - Lower potential recharge and surface connection?

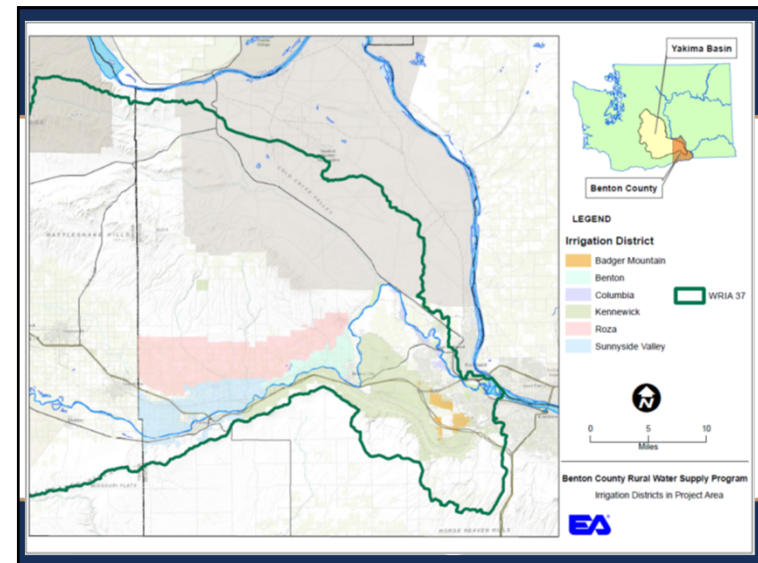
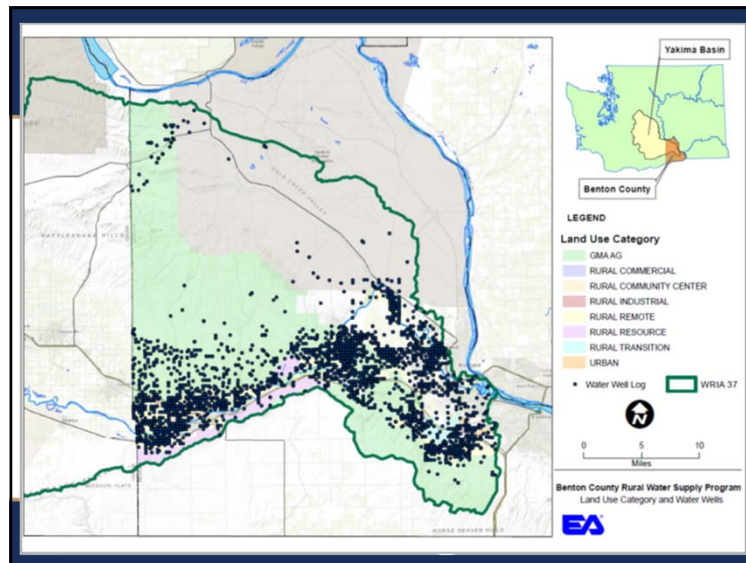
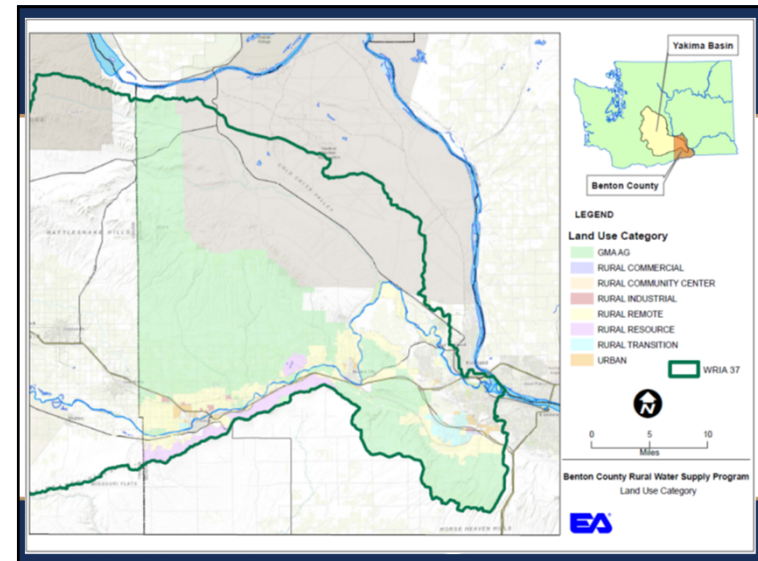
Demand Forecast and Mitigation Estimates (2018 – 2038)

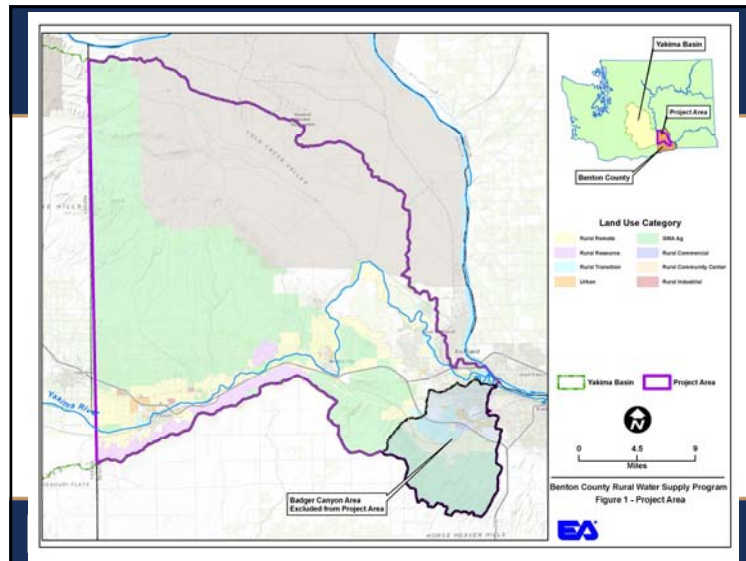


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Growth for Entire Benton County

Table 1 - Potential Future Rural Population Growth by Land Use Category
(Table 3-7 in Comprehensive Plan)

Land Use Category*	New Units
Urban	134
Rural Transition	1,142
Rural Remote	5,652
Rural Community Centers	34
Total	6,961

*Data represents all of rural Benton County.

- Approx. 18,800 population increase
- 6,961 Households (2.7 per household)



Growth for Mitigation Area

Table 2 - Range of Projected Rural Residential Growth Rates

	County	Modified Project Area	Modified Project Area 20-yr Total
Low Estimate*	205/yr	64/yr	1280
High Estimate^	348/yr	109/yr**	2176

* Rate based on 2013-2018 building permit data

^ Rate based on County Comprehensive Plan

** Assumes pattern of observed growth will not change (36.5% of total growth will occur in modified project area)

- Projecting 64 to 109 new households per year



Washington Irrigation Guide

Table 3 - Pasture/Turf Irrigation Requirements in inches (Appendix A, Washington Irrigation Guide, USDA, 1997)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Premier	0	0	0	0.75	5.88	7.27	9.27	7.57	4.91	1.64	0	0	37.29
Richland	0	0	0	0.88	6.59	8.05	10.31	8.36	5.49	2.07	0	0	41.75

- Different requirements for western vs eastern part of County
- Divided mitigation area into two parts and also within or outside irrigation district service area



Projected Water Use Values

Table 5 - Total Household Water Use in Gallons per Day

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total (Gallons)	Annual Daily Ave (GPD)	Annual Total (Acre-Ft)
Indoor Use Only		162	162	162	162	162	162	162	162	162	162	162	162	59,171	162	0.18
Indoor + Outdoor Water Use	Prosser															
	$\frac{1}{12}$ Acre	162	162	162	219	591	710	839	715	532	282	162	162	143,714	393	0.44
	$\frac{1}{4}$ Acre	162	162	162	332	1,430	1,807	2,192	1,820	1,273	521	162	162	312,478	856	0.96
	$\frac{1}{2}$ Acre	162	162	162	501	2,737	3,432	4,222	3,477	2,384	880	162	162	565,624	1,549	1.74
	Richland															
	$\frac{1}{12}$ Acre	162	162	162	228	643	789	915	772	576	313	162	162	153,807	421	0.47
Indoor + Outdoor Water Use		162	162	162	361	1,605	1,984	2,420	1,993	1,404	615	162	162	342,755	938	1.05
		162	162	162	560	3,048	3,805	4,677	3,823	2,647	1,069	162	162	626,178	1,714	1.92

- Indoor Only – Estimated 162 GPD/.18 AF
- Outdoor Varies by Location in Mitigation Area



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Estimated Consumptive Use

Table 6 - Total Household Consumptive Water Use in Gallons per Day

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total (Gallons)	Annual Daily Ave (GPD)	Annual Total (Acre-Ft)
Indoor Use Only		32	32	32	32	32	32	32	32	32	32	32	32	11,688	32	0.04
Indoor + Outdoor Water Use	Prosser															
	$\frac{1}{12}$ Acre	32	32	32	83	419	526	641	530	366	140	32	32	87,810	240	0.27
	$\frac{1}{4}$ Acre	32	32	32	185	1,191	1,513	1,839	1,524	1,032	356	32	32	239,698	656	0.74
	$\frac{1}{2}$ Acre	32	32	32	338	2,330	2,994	3,686	3,016	2,032	679	32	32	487,529	1,380	1.43
	Richland															
	$\frac{1}{12}$ Acre	32	32	32	92	465	579	710	582	405	168	32	32	96,893	265	0.30
Indoor + Outdoor Water Use		32	32	32	212	1,331	1,672	2,064	1,680	1,150	440	32	32	266,947	731	0.82
		32	32	32	391	2,630	3,311	4,096	3,328	2,269	848	32	32	522,028	1,429	1.60

- Indoor Consumption – 20 percent
- Outdoor Consumption – 90 percent



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Range for Mitigation: 2018 - 2038

Table 7 - Estimated Consumptive Use (Acre-Feet)

Growth Rate	Indoor Only		Indoor + $\frac{1}{12}$ acre	
	Annual	20 Year	Annual	20 Year
Low	2.30	46	9.26	185
High	3.91	78	15.37	307

- Minimum Indoor – 46 AF
- Upper Amount – 307 AF



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Securing Mitigation Water

- 75 AF of consumptive water acquired in October 2018 (former Boise-Cascade site in Yakima)
- Ecology maintaining existing trust water right conditions (with seller) until County/Ecology Trust Water Right Agreement put in place
- County actively seeking to purchase other rights



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Draft Program Elements



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Draft Program Elements

- Reserved mitigation water for households in mitigation area permitted between Feb 2018 and date program approved (summer 2019?)
- Mitigation Packages (*values subject to change*)
 - A = 200 GPD indoor with 675 GPD max
 - B = 200 GPD indoor + 100 GPD outdoor with 900 GPD max (for up to 1500 square feet for landscape area)
 - C = same as B except up to 250 GPD outdoor (up to 4000 square feet for landscape area)



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Draft Program Elements

- Metering – costs for meter installation and annual maintenance cost
- Annual reporting
- County Commissioners to make final decision on all program elements



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Status and Next Steps



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Status and Next Steps

- Finalize FutureWise Settlement Agreement
- Continue outreach efforts
- Coordinate with Technical Team
- Internal county meetings and Board of County Commissioners workshops



Status and Next Steps

- Define other program elements in more detail
- Secure additional water rights
- Establish program by summer 2019



Additional Questions/Comments?

