

Evaluating the Future Domestic Use Exposure Pathway

Presented by:

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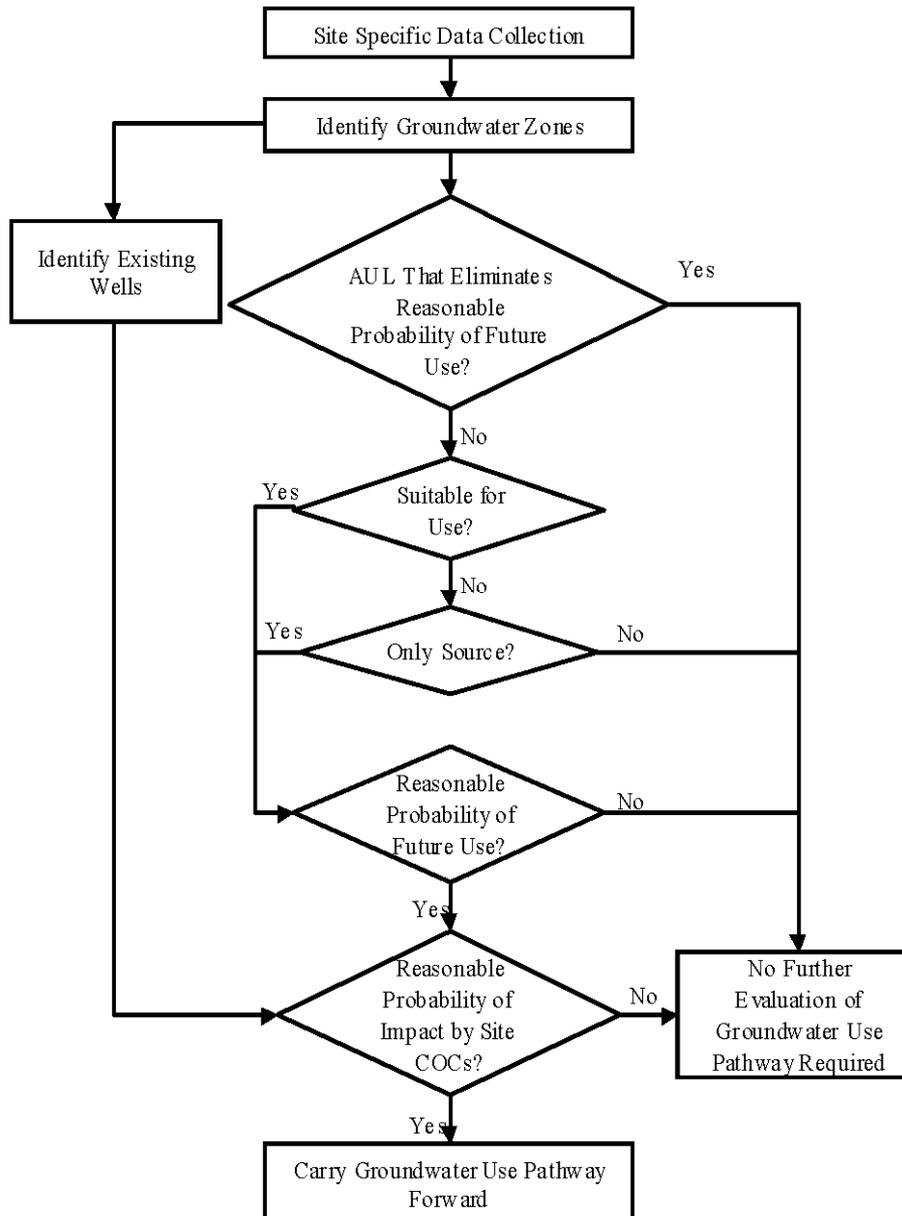
and

Jarrold Robertson



MRBCA Guidance

- Chapter 6
 - Section 6.3
 - Figure 6-2



Overview

- Section 6.3.2 MRBCA Guidance Document (2004)
- Need to Consider:
 - Unconsolidated Zone
 - All Potential Bedrock Aquifers
- Suitability Determination:
 - Total Dissolved Solids
 - Potential Groundwater Yield

Identify Groundwater Zones

- Unconsolidated Zone
- Bedrock Aquifers
 - All potential aquifers

Unconsolidated Zone

- Need to consider each saturated zone
 - If multiple saturated zones, each must be evaluated;
 - Evaluate whether a hydraulic connection exists between each saturated zone.

PROVIDE SUPPORTING DOCUMENTATION!

Bedrock

- Need to consider each potential aquifer;
- Discussion based on observed field conditions and/or literature information:
 - Bedrock Type
 - Competency
 - Confining Layers
 - Karst Features
- Karst bedrock will require a more detailed discussion.

Provide Supporting Documentation!

Suitable for Use

■ Two Primary Criteria

– Yield:

- *1/4 gal/min or 360 gal/day on sustained basis is considered sufficient yield*
- *Calculation based on Hydraulic Conductivity and thickness of aquifer*
- Appendix D, MRBCA Guidance

Suitable for Use

- Total Dissolved Solids (TDS):
 - *< 10,000 mg/l is sufficient natural quality to serve as potential domestic water source;*
 - *EPA Secondary Maximum Contaminant Levels (SMCL) are not an acceptable alternative.*

<http://dnr.mo.gov/env/hwp/tanks/mrbca-pet/docs/mrbca-pet-sect6.pdf>

Sole Source Determination

- Determine availability of alternatives:
 - Other viable groundwater zones;
 - Municipal supplies;
 - Surface water sources;
 - If groundwater is only viable source of water;
We should consider as reasonable future use
 - *(regardless of TDS or yield)*

Provide Supporting Documentation!

Weight Of Evidence

- Assessment will need to be very site specific;
- No single component will satisfy the weight of evidence criteria;
- “municipal water available” by itself does not satisfy weight of evidence criteria;
- Ordinances/Zoning limiting well installation or requiring connection to municipal water does not satisfy weight of evidence criteria;
 - not durable

Weight Of Evidence

- Hydrogeologic considerations;
- Geologic Considerations;
- Active Wells in vicinity of property;
 - When were wells installed?
 - Construction information.
- Pattern of Development;
- Fate & Transport;

Provide Supporting Documentation!

Activity Use Limitations (AUL)

- Deed Restriction limiting installation of domestic water wells:
 - Should cover all impacted properties
 - If no AUL exists, we will consider the groundwater unit to have a reasonable probability of future use

Activity Use Limitations (AUL)

- Well construction regulations are considered to be an AUL in Special Areas
- City of St. Louis/Memo of Understanding
 - Eliminates future well pathway
 - Does not include St. Louis County

Probability of Impact

■ Factors to consider & document

- Known extent of contamination

 - *Soil & groundwater*

 - *Vertical & Horizontal*

 - *Plume Stability*

- Site hydrogeology

 - *Hydraulic conductivity*

 - *Fate & Transport factors*

 - *Karst*

 - *Other site specific factors*

Fine'