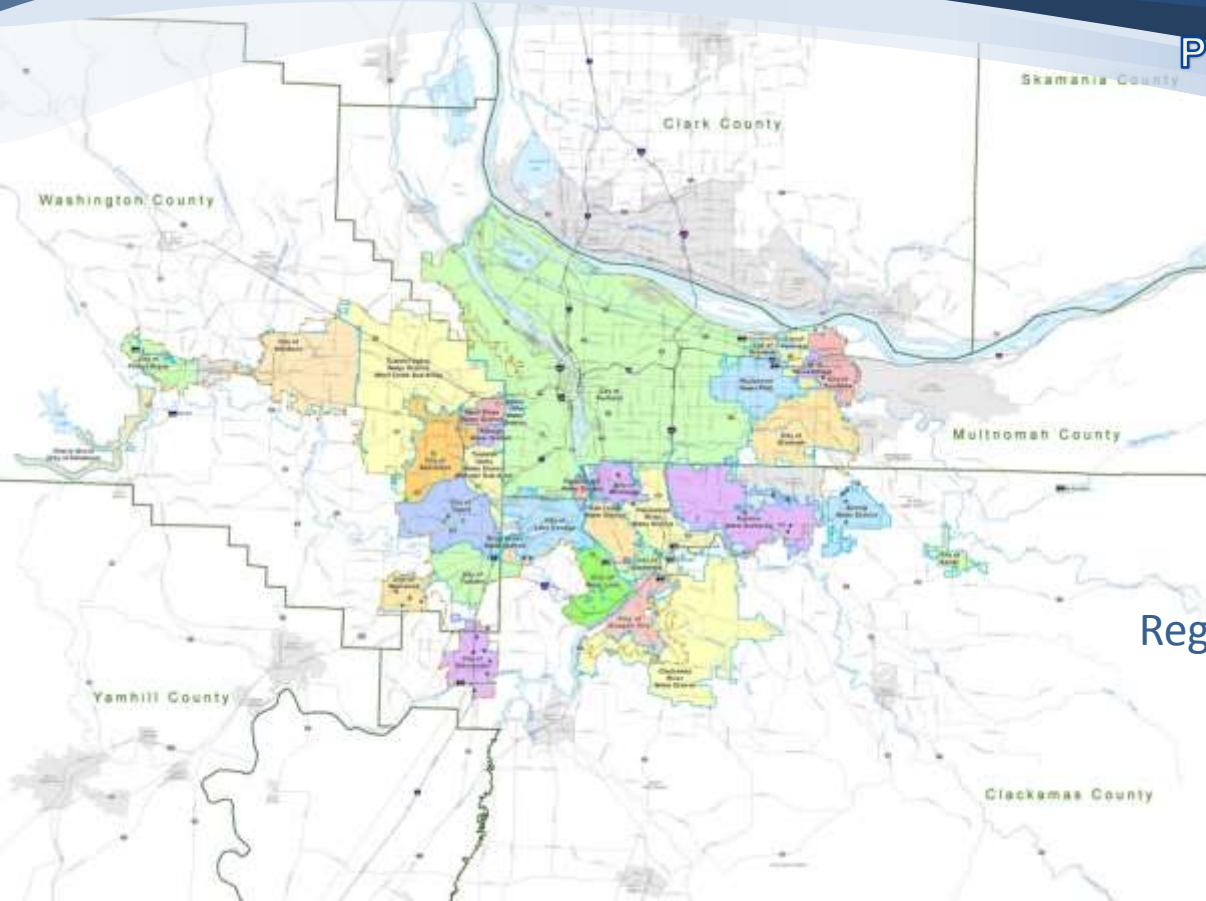


# Development of a Regional Water Geodatabase to Promote Emergency Planning Collaboration

April 25, 2018

PNWS-AWWA Section Conference



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Murraysmith

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Regional Water Providers Consortium



# Regional Water Providers Consortium

## OUR MISSION

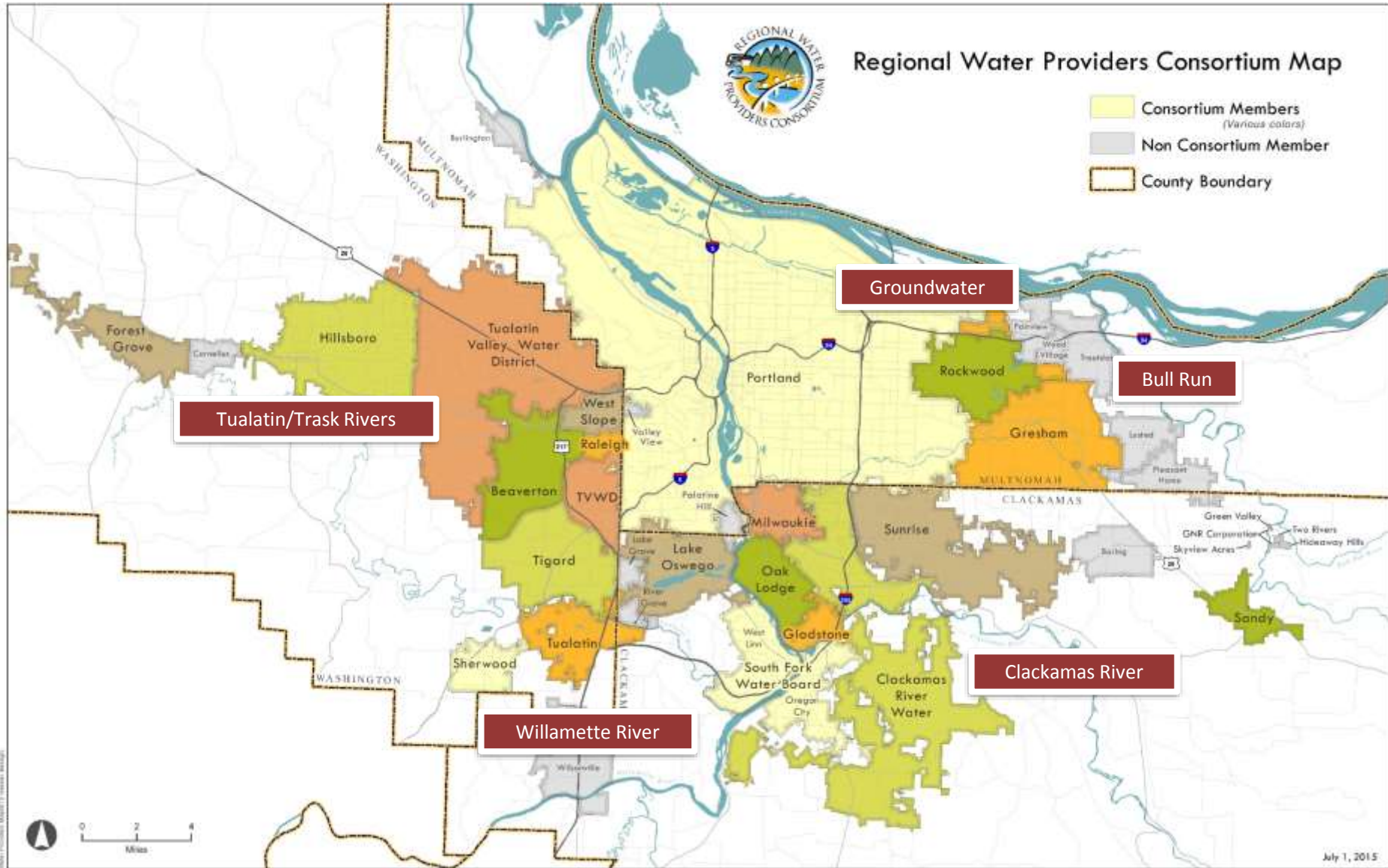
*To provide leadership in the planning, management, stewardship, and resiliency of drinking water in the Portland metropolitan region.*

- **Programs**
  - Conservation
  - Regional Coordination
  - Emergency Preparedness
- **Serves**
  - Clackamas, Multnomah, and Washington Counties
  - Collectively supply 80% of drinking water
- **20 Water Provider Members**
- **Funding: Membership dues**



*City of Beaverton  
Clackamas River Water  
City of Forest Grove  
City of Gladstone  
City of Gresham  
City of Hillsboro  
City of Lake Oswego  
City of Milwaukie  
Oak Lodge Water Services  
City of Portland  
Raleigh Water District  
Rockwood Water PUD  
City of Sandy  
City of Sherwood  
South Fork Water Board  
Sunrise Water Authority  
City of Tigard  
City of Tualatin  
Tualatin Valley Water District  
West Slope Water District*

# Water Providers & Their Sources



# WATER CONSERVATION

- Coordinated regional effort & messaging
- Multi-media campaign – TV and radio
- Children’s Clean Water Festival
- School Assembly Programs
- Website and social media
- Resources (brochures and devices)
- Meets state requirements for public outreach in water conservation



[www.conserveh2o.org](http://www.conserveh2o.org)



- Annual Population and Household Estimates and Forecasts for all members
- Legislative Review
- Regional Water Supply Plan
- Curtailment Communication and Coordination Plan
- Source Water Protection Strategy
- Drinking Water Advisory Tool/Water provider look-up tool

### Who is my water provider?

Use this simple lookup tool to learn about your water provider.\*

\*This lookup tool only works for customers whose water providers are members of the [Regional Water Providers Consortium](#).

# EMERGENCY PREPAREDNESS

- Training, exercises, drills, and resources
- Mutual aid and data sharing agreements
- Regional collaboration (e.g. Regional Disaster Preparedness Organization)
- Emergency water supply equipment
- **Interconnections Study**
- Grant support
- Citizen preparedness and education



*Nine* Emergency Water Distribution Systems (same design as Seattle area and Washington systems)



*Seven* Mobile Water Treatment Systems (treats up to 30,000 gallons/day with ultra-filtration)



*Three* Portable Piping System (trailer mounted hose reel)

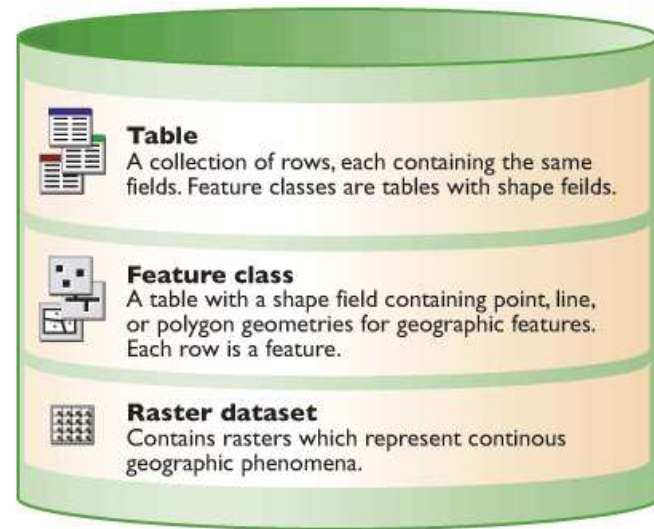


# INTERCONNECTIONS STUDY - PROJECT OVERVIEW

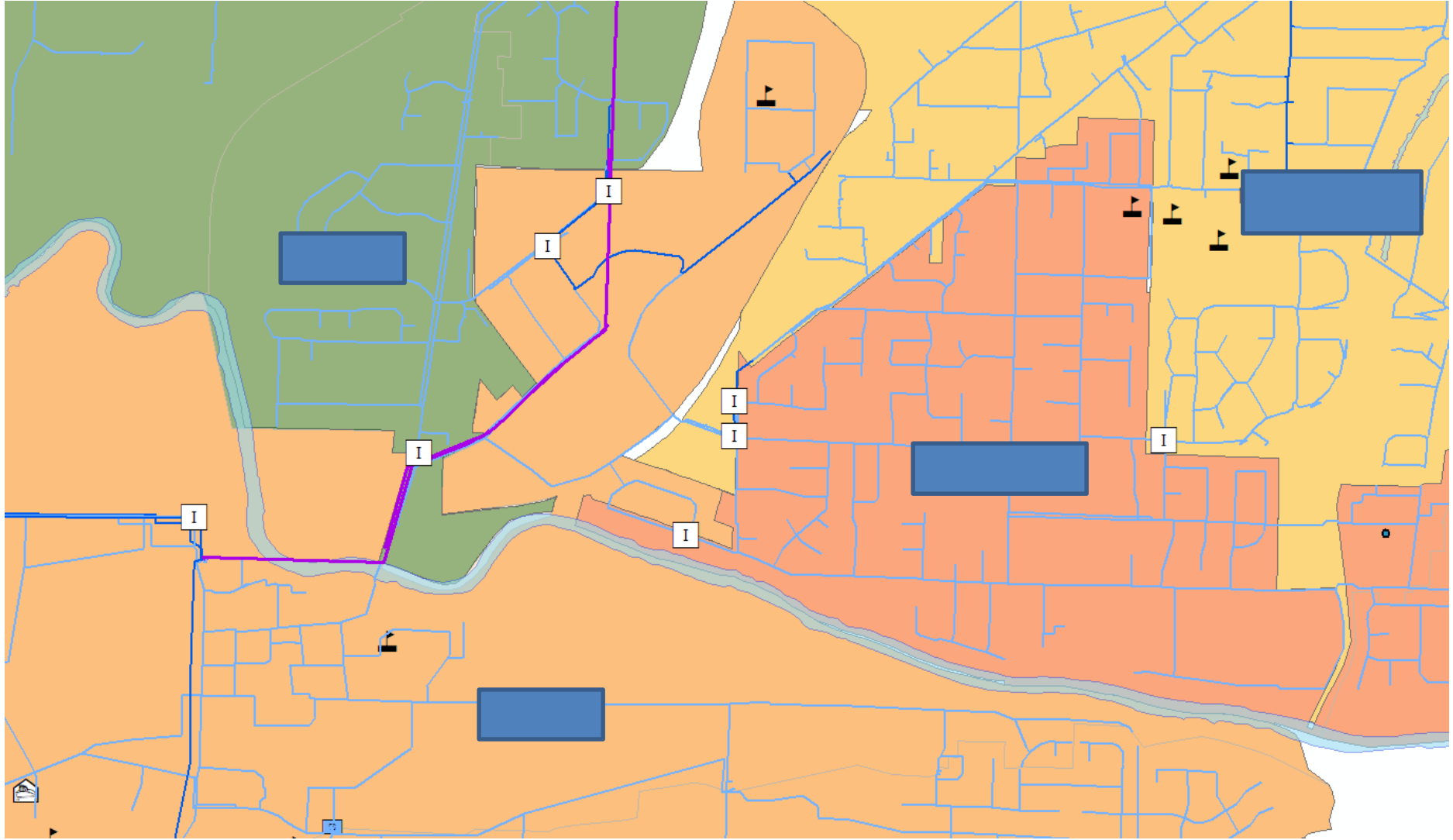
- Consortium initiated discussion about water system interconnections with regional workshop in May 2007
- 2009 Urban Area Security Initiative grant helped fund regional and sub-regional collaborative mapping (\$190,000)
- Developed a regional databank for water system data (geographic and key system information or GEODATABASE)
  - Support cooperative water system planning efforts
  - Analysis of regional supply opportunities
  - Regional water emergency management and planning tool
- Move beyond existing local interconnects and expand overall system knowledge
- Analyze and evaluate interconnections
- Regional water system facilities map

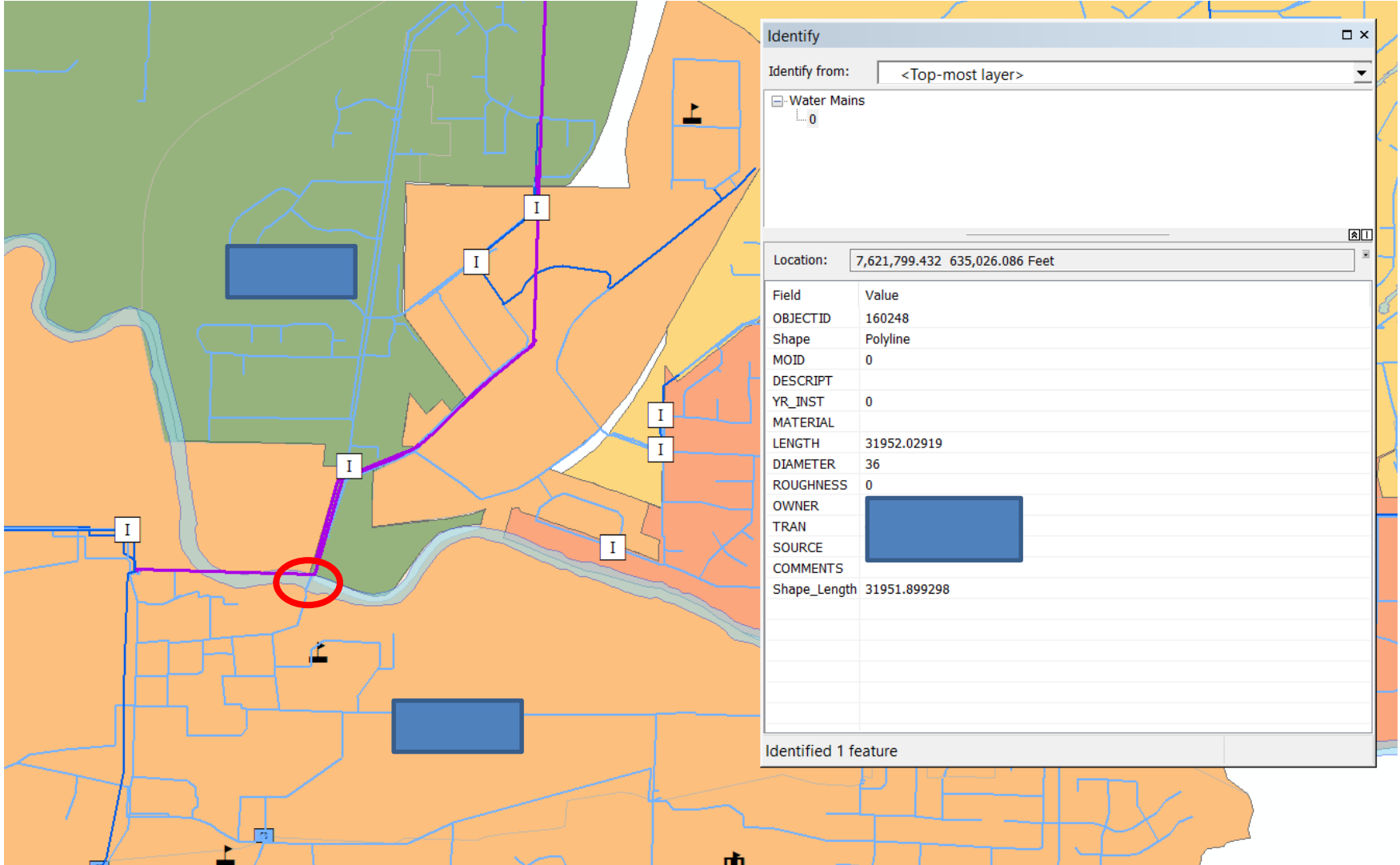


- What is a geodatabase?
- Data gathering
- Information in geodatabase
  - Service area
  - Reservoirs
  - Pump stations
  - Pipes
  - Sources
  - Interties
  - Pressure zones
  - Service area population and water demands
- Challenge: Data sharing and confidentiality









Identify

Identify from: <Top-most layer>

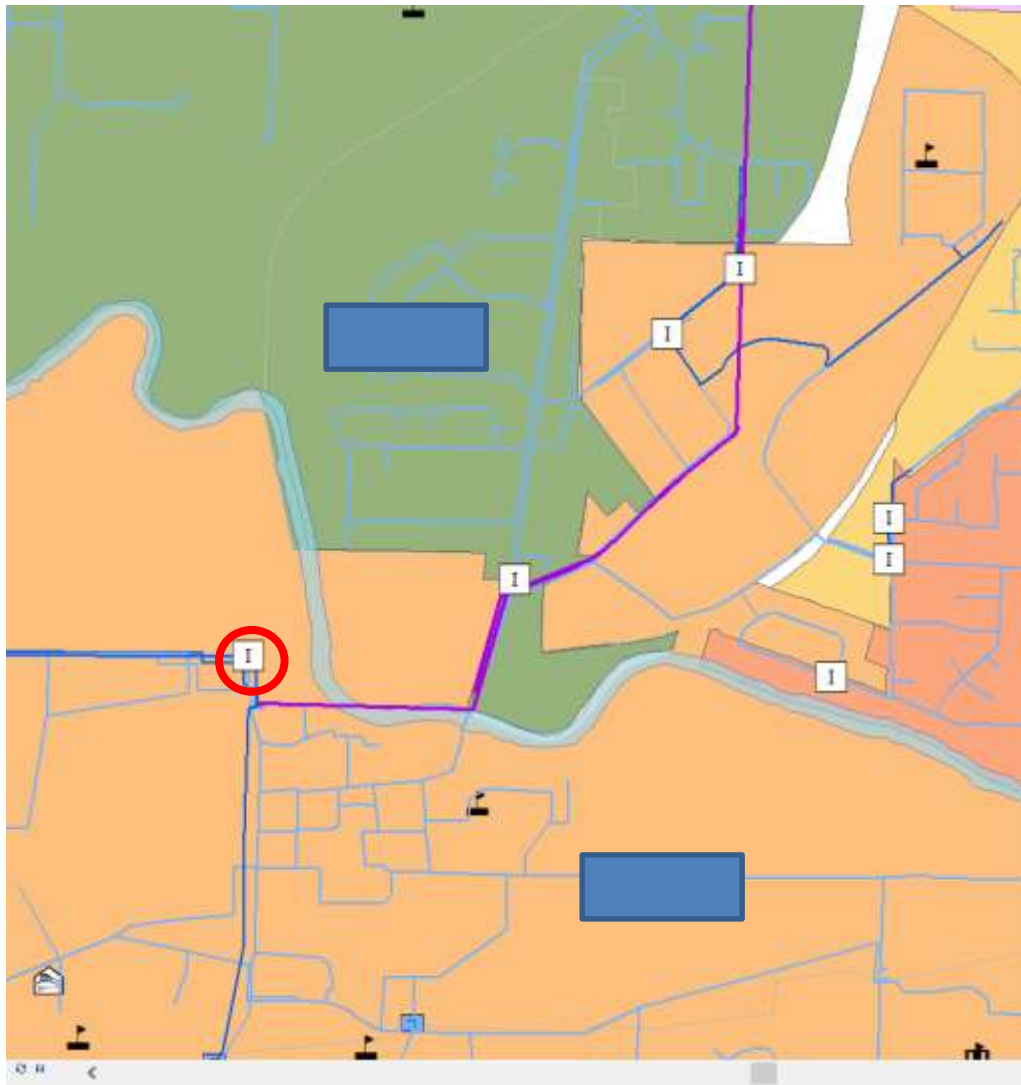
Water Mains

0

Location: 7,621,799.432 635,026.086 Feet

Field	Value
OBJECTID	160248
Shape	Polyline
MOID	0
DESCRIPT	
YR_INST	0
MATERIAL	
LENGTH	31952.02919
DIAMETER	36
ROUGHNESS	0
OWNER	
TRAN	
SOURCE	
COMMENTS	
Shape_Length	31951.899298

Identified 1 feature



Identify

Identify from: <Top-most layer>

Updated\_Interties

Location: 7,620,372.349 635,474.003 Feet

Field	Value
OBJECTID	14
Shape	Point
MOID	TU258
Location	[Redacted]
Size	24
Meter_size	12
ZONE_1	[Redacted]
ZONE_2	380
HGL_1	530
HGL_2	380
SYS_1	[Redacted]
SYS_2	[Redacted]
CAP_1_2	3
CAP_2_1	0
DESCRIPT	[Redacted]
COMMENTS	[Redacted]
INT_TYPE	Emergency
YR_INSTALL	0
SOURCE	GIS-2010; WMPU 2003
COMMENT	3 mgd when used, depends on [Redacted]
Name	
Active	Q
Capacity_Source	FT
Communication_1	<null>
Communication_2	STATUS

Identified 1 feature.

- Develop regional transmission facilities map
  - Developed criteria to identify facilities to include
  - Created layer for mapping key facilities
- Assess local interconnectivity
  - Identify relative strength of system inerties
- Assess regional interconnectivity
  - Assess range of access to region's major supply sources
  - Develop mapping to illustrate
- Identification of emergency water equipment staging locations
- Table top exercise using database

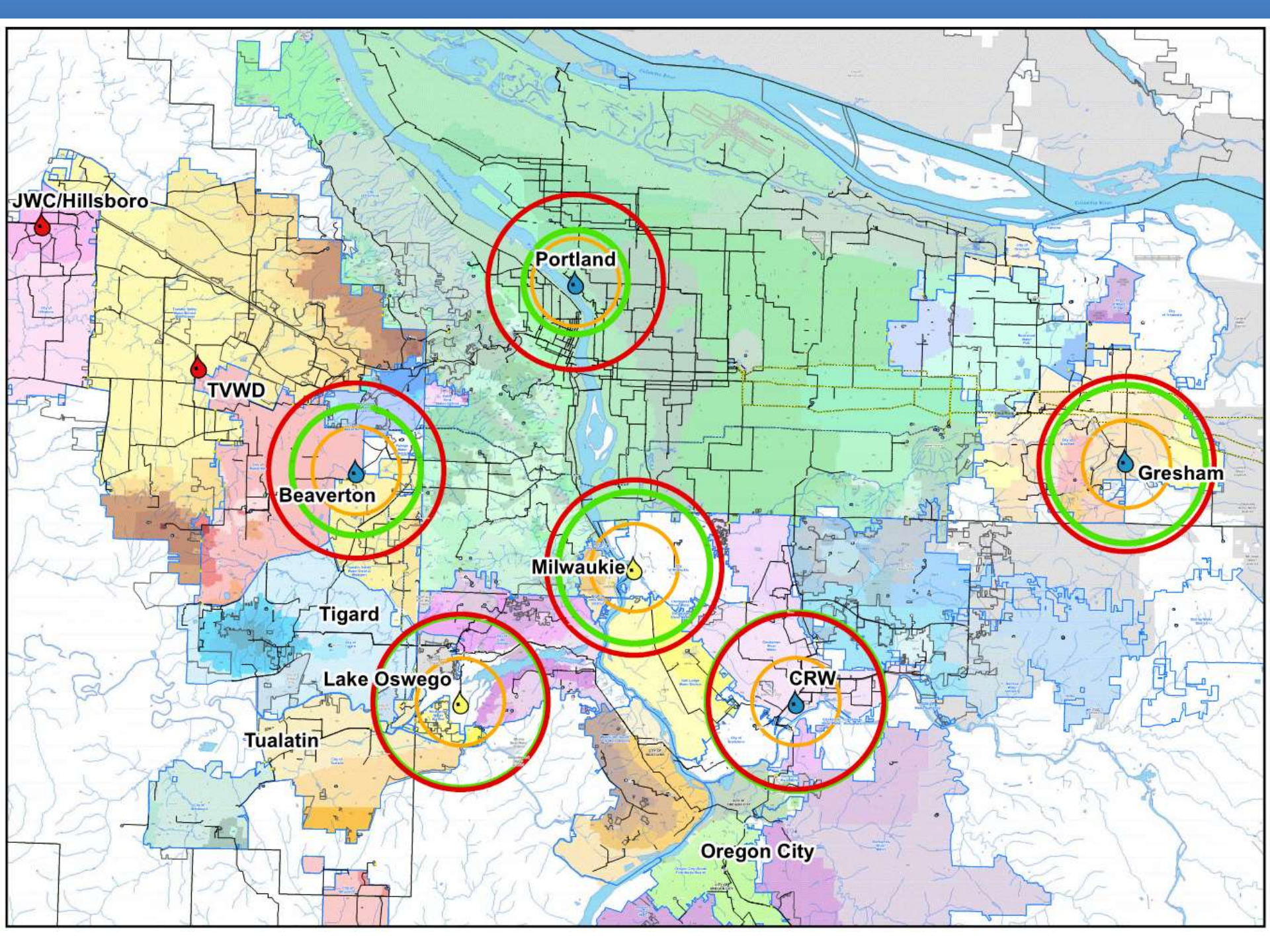
# REGIONAL INTERCONNECTIONS EVALUATION

- Goal of using geodatabase to identify regionally important interconnections
  - Almost all interconnections are important, focus on regional significance
  - Identify top 30 – not ranked by importance
- Criteria
  - Systems Connected
  - Size (diameter)
  - Population Connected
  - Source Capacity
  - “Subregions” Connected (West, PWB, Clackamas, Willamette)
- Try to temper system size with extent of connectivity





- Can geodatabase be used to identify potential staging locations for regional emergency water treatment and distribution equipment?
- Looked at regional distribution of asset storage locations
- Looked at reasonable distribution area (~1-2 miles) (1 gpcd)
- Added available planning layers: FEMA Floodplain, Metro Slopes, Boat launches, DOGAMI, PDX-(BECN, EOC, NET, emergency transportation routes)
  
- Geodatabase good tool to help identify population served and potential staging locations

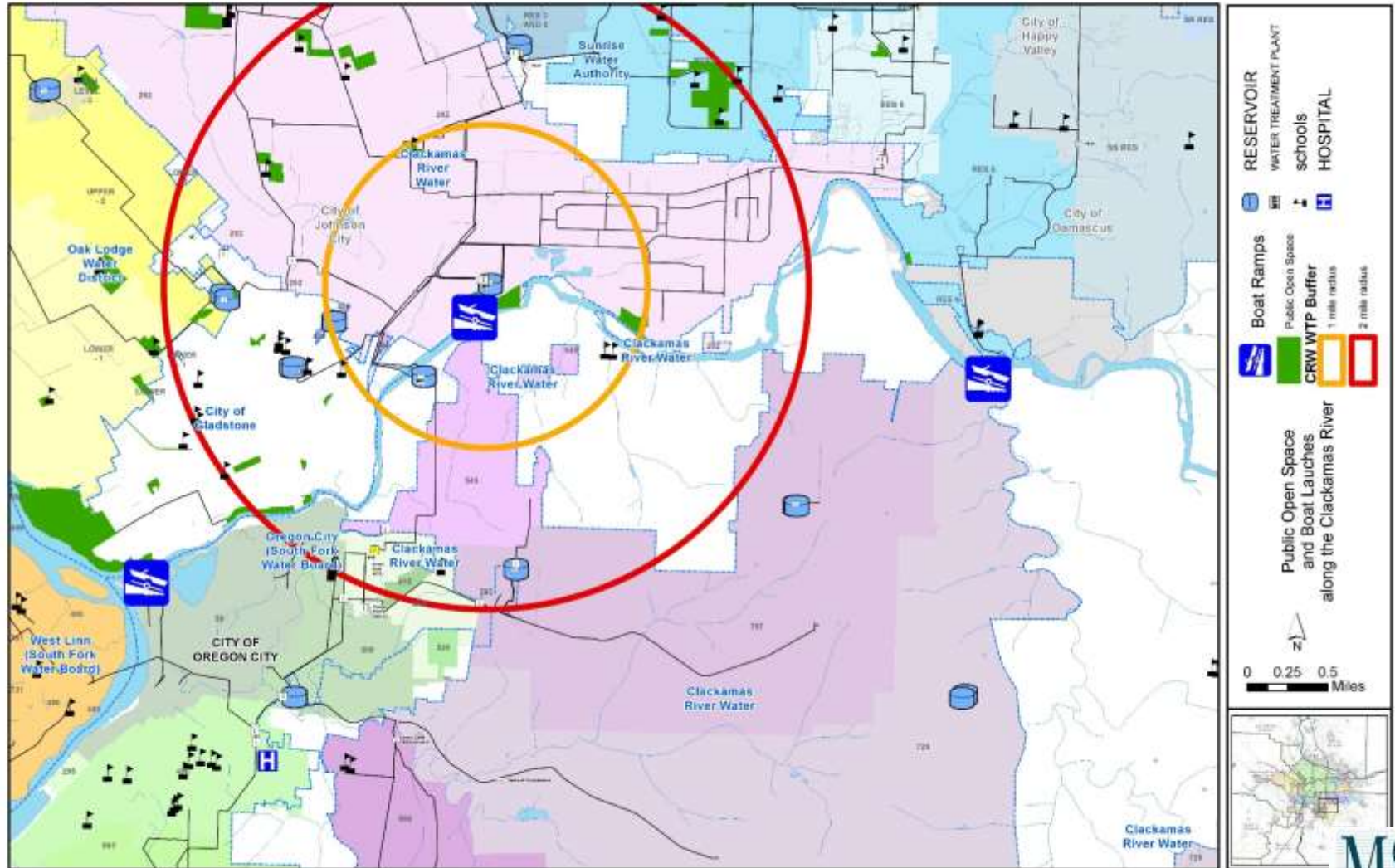


Siting criteria are dependent upon intended application.

Potential siting criteria:

- Proximity to raw water source.
- Adequate staging area for public access (if for distribution) or truck access (if to be transported by blivet).
- Proximity to emergency transportation routes or proximity to public area to be served.
- Topographic considerations:
  - Near raw water level (treatment)
  - Transportation route restrictions (bridges, rivers, gulleys, highways)
  - Flat areas for treatment and distribution staging
- Coordination with other emergency services.

# RIVER ACCESS SITES ALONG THE CLACKAMAS RIVER



Conducted two exercises at conclusion of initial study and 2017 update with water providers.

## Objectives:

- Identify geodatabase effectiveness and identify gaps as a regional emergency management tool
- Increase awareness of geodatabase tool to planning, operating, engineering and GIS staff
- Promote knowledge and understanding of regional water system operations and connectivity

## Outcomes:

- More water providers aware of geodatabase and importance of interconnections
- Geodatabase able to help to solve localized water supply issues
- GIS staff invested in tool and future updates
- Identified need to test interconnections “on the ground”

- Accuracy of data
  - Numerous sources of data
  - Extensive QA/QC completed, but this task is never complete...
  - Requires future updates to remain useful
- Geodatabase does not perform “automated” analyses
  - Primary use is qualitative analysis
  - Quantitative analysis requires further development of the tool as a regional hydraulic model
- Best use as a detailed map and source of information to support technical analyses
- Comprehensive regional map and database... first of its kind for the area

- GIS User Group met on April 10<sup>th</sup>
- Key Discussion Points:
  - Standardizing data
  - Automating routine updates
  - Managing security concerns
- Next Steps:
  - Manager consideration and buy-in to support development of protocols and responsibilities for annual or semi-annual updates