SITUATION ASSESSMENT OF WATER QUALITY ISSUES IN THE JORDAN RIVER

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OUTLINE

• THINKING ABOUT BIG, MESSY COMPLEX SYSTEMS
• THINKING ABOUT ADAPTIVE CAPACITY IN THE FACE OF CHANGE
• THINKING ABOUT THE JORDAN RIVER
• EXPERT AND STAKEHOLDER INTERVIEWS
• FINDINGS
  • KNOWLEDGE
  • OPTIONS
• CONCLUSIONS AND FUTURE DIRECTIONS
COMMON BARRIERS TO EFFECTIVE DECISION-MAKING

• ISSUES ARE “TOO COMPLEX”
  • RISK INACTION OR PARALYSIS
• OPPOSITIONAL
  • DIFFERENT INTERESTS ARE PLACED IN POSITION OF COMPETITION
• SCALE MISMATCH
• NOT DATA-DRIVEN
• NOT SET UP TO DEAL WITH RAPID CHANGE
• SINGLE SOLUTION APPROACH
BLIND MEN AND AN ELEPHANT

Complex, oppositional, scale mismatch
Adaptive Capacity

**Options**
What actions are available to us to steer the system in a desirable direction?

**Knowledge**
What do we know? How do we know it? Do we know what we need to know?

**Connections**
What does the network of stakeholders and actors involved look like?
Context:
  growth rate: 3.95%
- Projected population (2040): 1,492,884
- 22 sub watersheds
- Projected impervious surface (2030): additional 5,429 acres, or 3.7% of current.
INTERVIEWS

SPRING-SUMMER 2018
Starting point: Jordan River TMDL TAC members
Snowball sampling: Who else should we talk to?
Interviewed 31 individuals (22 TAC, 9 additional)
Report here on 27 transcribed interviews.
DIMENSIONS OF WATER QUALITY IN THE JORDAN RIVER

Pollutant sources:
- Utah Lake
- Waste Water Treatment Facilities
- Stormwater
- Agriculture

Water Quantity:
- Water use by growing population
- Treatment/reuse
- Water rights and diversions
- Ecological as beneficial use
- Future climate variability

Physical aspects:
- Channelized, loss of floodplain
- Infrastructure (pump stations, canal, etc.)

Ecological Aspects:
- Riparian vegetation
- Simplified, non-native aquatic invert/vert communities

System drivers
KNOWLEDGE
Do we know what we need to know?
**What informs your understanding of the river?**

**What additional data do we need?**

**Information Sources**
- Utah Division of Water Quality
- Salt Lake County Watershed
- TMDL process
- Research activities
- **Personal observations and experiences**

**Data Needs**
- Nutrients, pollutants [E.coli, pharmaceuticals, organic carbon, etc.]
- Stormwater, groundwater, inflows, use
- Role/needs of biota in system
- Riparian vegetation
- Climate change, drought impacts
What are the main challenges/drivers of water quality in the Jordan River?

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>CHALLENGES</th>
<th>Increased development/built-up</th>
<th>Highly Channelized River</th>
<th>Climate Change</th>
<th>Degraded Ecosystem</th>
<th>Money</th>
<th>Monitoring &amp; Data</th>
<th>Public Education/Awareness</th>
<th>Stormwater management</th>
<th>Complexity in water management &amp; water rights</th>
<th>Multiple stakeholder</th>
<th>Water issue not Legislative Priority</th>
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1 Most Discussed
2
3
4 Least Discussed
How would you rate the current condition of the river, and its likely future condition?

CURRENT CONDITION RANKING
Mean Rank = 3.4

FUTURE CONDITION RANKING
Mean Rank = 7.3

Already much better than 20 years ago!
What do you see as best case/worst case scenarios for the future?

**Options**

- River runs dry/ephemeral
- Highly eutrophic
- River is a waste conduit to the Great Salt Lake

- Natural floodplain restored
- River is seen as community amenity
- Pollutant/nutrient issues resolved
- Taken off impaired list
- Riverine habitat restored
Options

Opportunities

- Riparian habitat
- Floodplain

- Effect on biota
- Nutrients
- Groundwater

- Public engagement
- Value
- Stewardship

- Legislative
- Regulation
- Water rights

Paths to Solution

- Funds
- Time
- Effort

- Stormwater green infrastructure

- Wastewater treatment

Distributed Infra.

Restoration

Research

Social

Technical

Land Use

Political

Planning
- LID in building codes
SO, HOW ABOUT THAT ELEPHANT?

Interviewees see the big picture (but we could always learn more)

High level of optimism about the future (we’re on a good path)

Multiple “levers”, multi-dimensional solutions. No one entity holds the power to fix.

The public* has multiple critical roles:
- taxpayers
- pressure gov’t
- love the river
- volunteer
- education

*NOTE: We did not interview “the public” so we’re not sure how they feel about this.
GENERAL OBSERVATIONS

• THERE APPEARS TO BE A GENERAL AGREEMENT ON WHAT THE LEVERS ARE TO ACHIEVE POSITIVE FUTURE OUTCOMES (STORMWATER MANAGEMENT, WATER TREATMENT, RESTORATION, PUBLIC ENGAGEMENT, ETC.) BUT NOT OF THE RELATIVE POWER OF EACH LEVER.

• INTERVIEWEES SEE THEMSELVES AS PART OF A DYNAMIC SYSTEM THAT INCLUDES EVOLVING ATTITUDES AND UNDERSTANDINGS, POLITICAL CONSTRAINTS AND OPPORTUNITIES, AND SOCIAL AND ENVIRONMENTAL CHANGE.
QUESTIONS? COMMENTS? SUGGESTIONS?

THANK YOU to:
Interviewees
Transcribers

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