Watershed-based planning for Great Salt Lake

Presentation to the
Great Salt Lake Advisory Council
January 14, 2009

Robert W. Adler
Associate Dean for Academic Affairs
James I. Farr Chair and Professor
University of Utah, S.J. Quinney College of Law

Outline

- Views of Great Salt Lake
- Rationale for a watershed approach
- History of past Great Salt Lake planning efforts and potential lessons learned
- Lessons from other watershed programs
- Some key program design issues

Derived largely from:

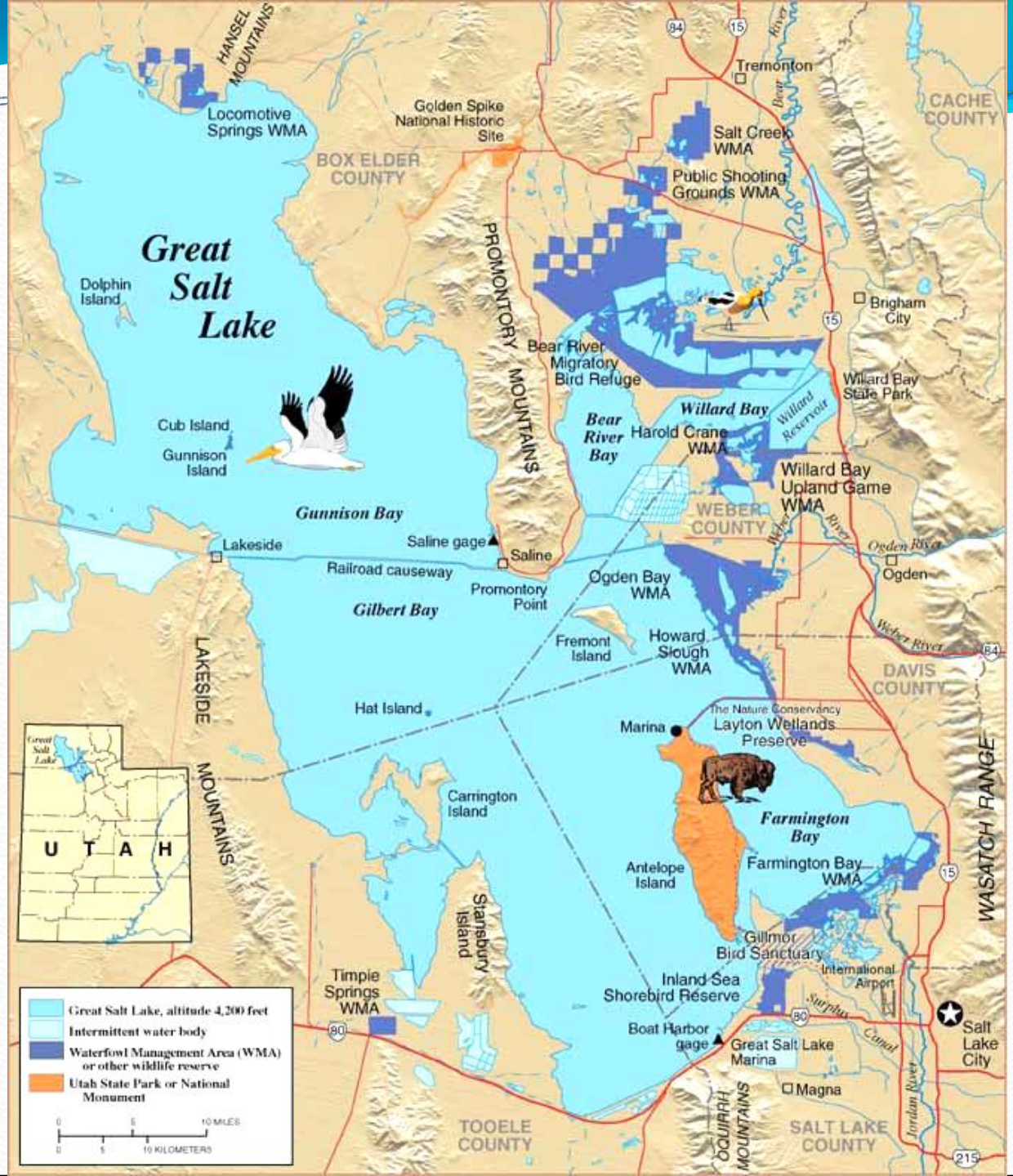
- Adler, R., *Toward Comprehensive Watershed-Based Restoration and Protection for Great Salt Lake*, Utah Law Review 1999:99-204.

Perspectives influenced by:

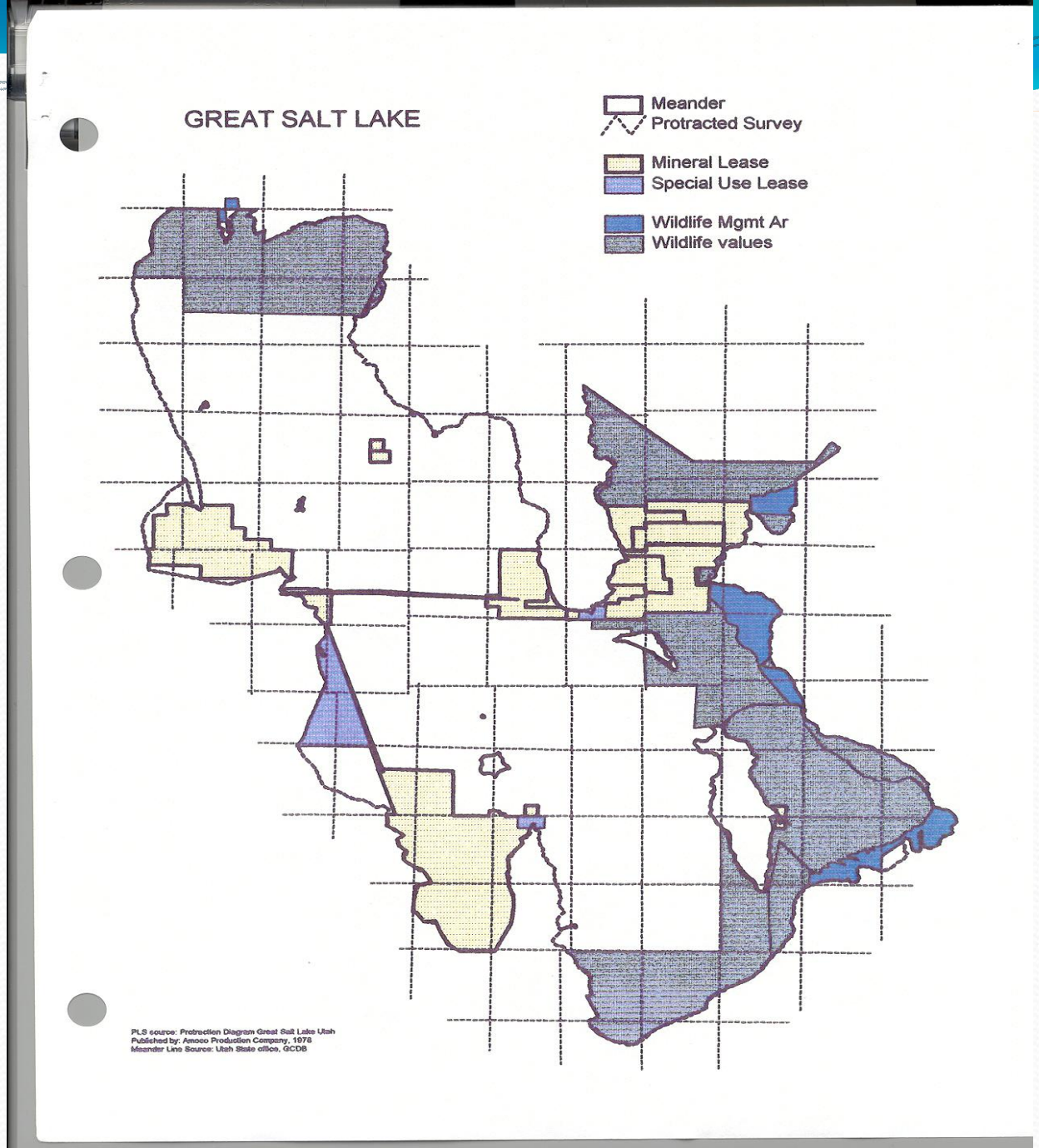
- Adler, *An Ecosystem Perspective on Collaboration for the Colorado River*, Nevada Law Review 8:1031-1044 (2008)
- Adler, R. & M. Straube, *Watersheds and the Integration of U.S. Water Law and Policy: Bridging the Great Divides*, William & Mary Environmental Law & Policy Review 25:1-67 (2000).
- Adler, R. and M. Straube, *Lessons from Large Watershed Programs, A Comparison of the Colorado River Basin Salinity Control Program with the San Francisco Bay Delta (CALFED) Program, Central and South Florida (Everglades) Project, and Chesapeake Bay Program*, A Report to the National Academy of Public Administration, Learning from Environmental Innovation Project (1999)
- Adler, R., *Addressing Barriers to Watershed Protection*, Environmental Law 25:973-1106 (1995).

Source:

USGS

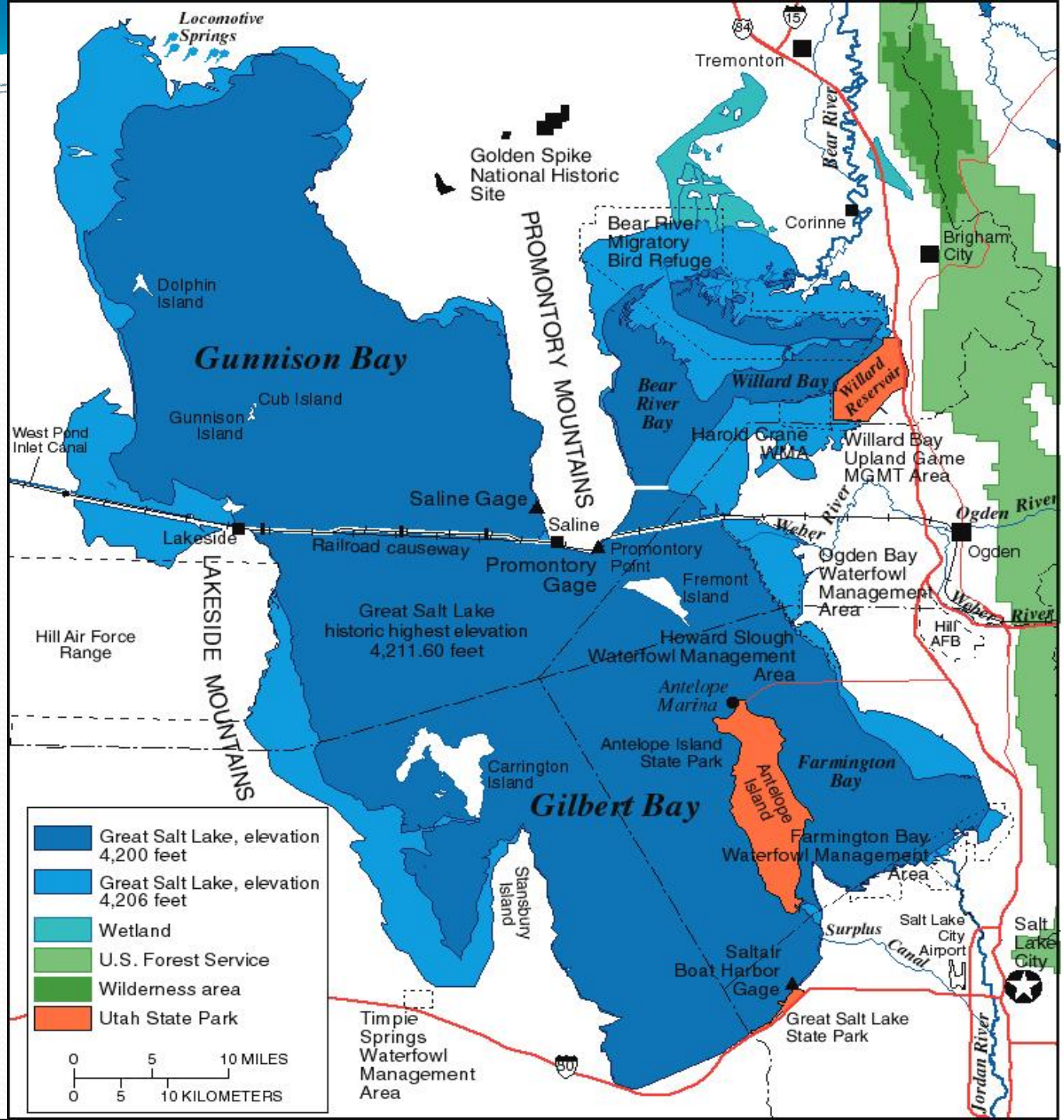

HANSEL MOUNTAINS
Locomotive Springs WMA
Golden Spike National Historic Site
BOX ELDER COUNTY
Tremonton
CACHE COUNTY
Salt Creek WMA
Public Shooting Grounds WMA
Great Salt Lake
Dolphin Island
PROMONTORY MOUNTAINS
Brigham City
Bear River Migratory Bird Refuge
Willard Bay State Park
Willard Bay
Willard Reservoir
Bear River Bay
Harold Crane WMA
Cub Island
Gunnison Island
Willard Bay Upland Game WMA
Gunnison Bay
WEBER COUNTY
Lakeside
Saline gage
Saline
Railroad causeway
Promontory Point
Ogden Bay WMA
Ogden
Gilbert Bay
Fremont Island
Howard Slough WMA
DAVIS COUNTY
LAKESIDE MOUNTAINS
Hat Island
Marina
The Nature Conservancy
Layton Wetlands Preserve
Carrington Island
Farmington Bay
Antelope Island
Farmington Bay WMA
WASATCH RANGE
Stansbury Island
Gillmor Bird Sanctuary
Timpie Springs WMA
Inland Sea Shorebird Reserve
International Airport
Boat Harbor gage
Great Salt Lake Marina
Salt Lake City
Magna
TOOELE COUNTY
OQUIRRH MOUNTAINS
SALT LAKE COUNTY
U T A H
Great Salt Lake, altitude 4,200 feet
Intermittent water body
Waterfowl Management Area (WMA) or other wildlife reserve
Utah State Park or National Monument
10 MILES
10 KILOMETERS

Source:
Utah DNR



Source:

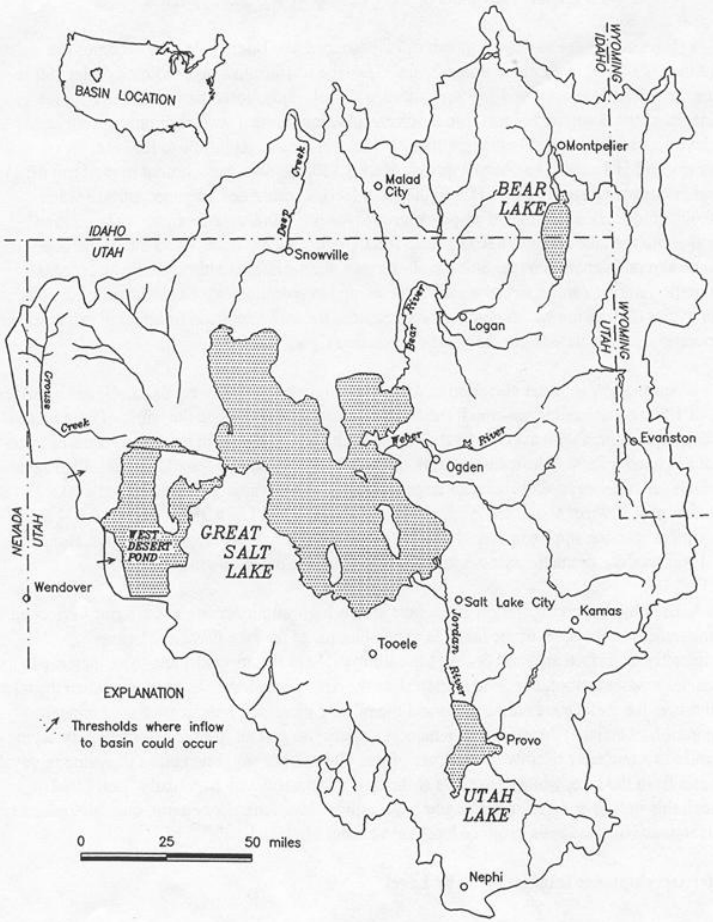
USGS


Locomotive Springs
Tremonton
Golden Spike National Historic Site
Bear River Migratory Bird Refuge
Corinne
Brigham City
Bear River
PROMONTORY MOUNTAINS
Dolphin Island
Gunnison Bay
Cub Island
Gunnison Island
West Pond Inlet Canal
Bear River Bay
Willard Bay
Willard Reservoir
Harold Crane WMA
Willard Bay Upland Game MGMT Area
Saline Gage
Saline
Lakeside
Railroad causeway
Promontory Gage
Promontory Point
Weber River
Ogden River
Ogden
Ogden Bay Waterfowl Management Area
Fremont Island
Hill Air Force Range
LAKESIDE MOUNTAINS
Great Salt Lake historic highest elevation 4,211.60 feet
Hill AFB
Howard Slough Waterfowl Management Area
Antelope Marina
Antelope Island State Park
Antelope Island
Farmington Bay
Carrington Island
Gilbert Bay
Farmington Bay Waterfowl Management Area
Stansbury Island
Surplus Canal
Salt Lake City Airport
Salt Lake City
Saltair Boat Harbor Gage
Great Salt Lake State Park
Timpie Springs Waterfowl Management Area
Jordan River
Great Salt Lake, elevation 4,200 feet
Great Salt Lake, elevation 4,206 feet
Wetland
U.S. Forest Service
Wilderness area
Utah State Park
0 5 10 MILES
0 5 10 KILOMETERS

Source:

USGS

Source:
Utah DNR



Map 2 Great Salt Lake Drainage Basin

What is a “watershed approach?”

- Considers and addresses the impacts and interactions of all human and natural conditions and activities within a watershed.
- Direct participation by all who have a stake in watershed uses (those who use, affect, are affected by watershed resources).
  - “Direct participation” is more than public notice and comment – active involvement in decisions and implementation.

Elements of Watershed Programs

- Collaborative decision making process.
- Independently-reviewed science leading to:
  - Watershed-wide resource inventories.
  - Specific , measurable watershed goals and objectives.
- Targeted, cost-effective, equitable solutions.
- Iterative and flexible process (adaptive management), with monitoring and feedback.
- Adequate, reliable funding sources.

Why is a watershed approach appropriate for Great Salt Lake?

- To address geographic, political, ecological and physiographic **complexity and uncertainty**.
  - Linkages between upstream activities and conditions and the health of the Lake.
- To address increasing **conflicts** among multiple, competing uses collaboratively and amicably.
- Lessons from **past planning efforts** that failed to adopt and implement watershed approach.

Complexity: Land owners in watershed:

- State of Utah (managed by DNR)
- 10 counties
- Dozens of municipalities
- Three other states (Idaho, Wyoming, Nevada)
- Federal Government
  - Fish and Wildlife Service, Forest Service, BLM, National Park Service, Department of Defense, Bureau of Reclamation
- Diverse private ownership

Complexity: Land and resource uses in Great Salt Lake and watershed:

- Mineral extraction and processing
- Recreation and tourism (hunting, fishing, hiking, birding, boating)
- Brine shrimp harvesting
- Grazing
- Transportation
- Fish and Wildlife
- Industrial and commercial uses
- Residential and other urban/suburban uses

Complexity: Managers/regulators in watershed:

- All public landowners
- 4 states, each with multiple agencies
- 10 counties (Utah alone)
- Many municipalities
- Several federal agencies (EPA, Corps of Engineers, FWS, Bureau of Reclamation)
- Intergovernmental (Bear River Commission, WFRC)

Complexity: Laws governing activities within the Great Salt Lake watershed:

- At least 7 titles of Utah Code
- Laws in 3 other basin states
- At least 12 major federal statutes (and accompanying regulations)
- County and municipal codes and ordinances
- Bear River Compact
- Even the Colorado River Compact and associated laws and regulations

Complexity and uncertainty: ecological and hydrological linkages (examples)

- **Surface and groundwater hydrology**:
  - withdrawals from tributaries
  - groundwater pumping
  - hydrological impacts of development

Complexity and uncertainty: ecological and hydrological linkages (examples)

- **Land use** (over 5 million people expected!):
  - significant filling of wetlands
  - public and private building in floodplains
  - changes and increases in runoff pollution
  - decisions about infrastructure development

Complexity and uncertainty: ecological and hydrological linkages (examples)

- **Ecological factors**:
  - Wetland functions and values change with changing lake levels
  - Species depend on regional, national, and international habitats
    - riparian habitat corridors
    - linked aquatic and upland habitats
  - Effects of pollutants on lake poorly understood

History of Planning Efforts

- 1958 Great Salt Lake Diking Study
- 1965 Master Plan
- 1971 Lake Commission Report
- 1976 GSL Comprehensive Plan
- 1987-88 GSL General Management Plan
- 1995 GSL Comprehensive Management Plan--Planning Process and Matrix
- 2000 GSL Comprehensive Management Plan

History of Prior Planning Efforts

- **1958 Great Salt Lake Diking Study**
  - Commissioned by Advisory Committee to State Road Commission – prepared by single engineering firm
  - Goal – control lake levels and plan dikes to islands
  - Limited to structural controls
- **1965 Master Plan-Great Salt Lake Authority**
  - Developed preliminary master plan – more ambitious
  - But prepared by same engineering firm – similar focus on engineered structures and lake level control
  - Proposed zoning lake for different uses
  - <u>Never fully developed or implemented</u>

Prior Planning Efforts (cont.)

- **1971 Lake Com Report – <u>key differences</u>**
  - Coalition of state, federal and local agencies
    - Recognized fragmented management
    - Recommended multiple-interest collaboration
  - Proposed science-based approach
    - Initial effort to study conditions and issues
  - Focused on broader range of uses
    - Recognized conflicts among competing uses
  - Suggested <u>management by single authority</u>
  - <u>Never fully implemented</u> (ownership dispute)

Prior Planning Efforts (cont.)

- **1974 GSL Policy Advisory Committee**
  - Again recommended single authority
- **1975 GSL Division Act**
  - Created DNR Division of GSL
  - Created GSL Board and Technical Team
  - Expressly recognized lake's ecological values
  - Required inclusive, interagency, iterative planning process

Prior Planning Efforts (cont.)

- **1976 GSL Comprehensive Plan**
  - Multi-jurisdictional and multi-interest
    - State, local, some federal participation
  - Much broader range of issues
    - Established set of goals and policies – but stated in general terms (not specific, measurable goals)
  - Jurisdiction limited to meander line
  - Plan intended as general and preliminary
  - ** **Never refined and implemented**

Prior Planning Efforts (cont.)

- **1979 – GSL Management and Development Act**
  - Eliminated GSL Division
  - GSL Board changed to purely advisory status (later eliminated)
- **1987-88 GSL General Management Plan**
  - Post-flood
  - Limited largely to lake level control issues

Prior Planning Efforts (cont.)

- **1995 GSL Comprehensive Management Plan--Planning Process and Matrix**
  - Prepared by DNR division with advice from broader technical team
  - Legal status relative to earlier plans never clear
  - Alludes to land use relationships, but legal authority still limited to meander line
  - Broader set of issues, but treated in isolation
  - Expressly recognizes state's public trust obligations
  - Only selected portions implemented

Prior Planning Efforts (cont.)

- **2000 Great Salt Lake Management Plan**
- <u>Positive elements</u>
  - Looked at broader range of lake levels
  - Based on scientific assessment of resource status and trends
  - Acknowledges and seeks to resolve use conflicts
    - Acknowledges public trust obligations
    - Promote other uses if consistent with public trust

Prior Planning Efforts (cont.)

- **2000 Great Salt Lake Management Plan**
- <u>Limitations</u>
  - Single agency
    - Input from stakeholders but developed entirely by DNR staff
  - Still limited to meander line
  - Still addresses discrete issues separately
  - No specific, measurable goals for Lake
    - Judgments about use compatibility subjective

Potential lessons from past efforts:

- **We've been here before!**
  - Build on best aspects of previous efforts
    - Improve on existing science (status and trends)
    - Continue to focus on public trust duties
  - Consistency and implementation critical
  - Don't reinvent when mistakes learned or conditions change
    - Adaptive management/iterative approach
    - Clarify relationship between new and old efforts

Potential lessons from past efforts:

- **Broader geographic scope needed**
  - Authority to address watershed factors – not just lake
  - Plan for full range of expected lake levels
- **Process needs to resolve rather than just consider multiple, competing uses**
  - Establish clear, measurable goals for the lake
  - Evaluate uses and actions relative to those goals

Potential lessons from past efforts:

- **More inclusive process needed**
  - All relevant state, federal and local entities
  - Nongovernmental stakeholders should be active participants (not just passive commenters)
  - Include other states in watershed?

Lessons from other watersheds

- **Many examples of success:**
  - Development of common goals and standards (Chesapeake Bay, Everglades, CALFED)
  - Avoidance or settlement of litigation (CALFED, Everglades, Colorado River)
  - Strong, independent science and monitoring programs (Colorado River, CALFED, Chesapeake Bay, Everglades, Great Lakes)
  - Successful habitat restoration and pollution reduction (Chesapeake Bay, Great Lakes, Colorado River)

Lessons from other watersheds

- **Also disturbing (and increasing) problems:**
  - Target species crashing (CALFED – Delta smelt; Chesapeake Bay – blue crabs; Colorado River – humpback chub, Colorado pikeminnow, razorback)
  - Pollution reduction and habitat restoration goals not met (Everglades, Chesapeake Bay)
  - New or renewed litigation (CALFED, Chesapeake Bay, Colorado River)
  - Increasing tension/disagreement between federal and state agencies (Everglades, CALFED)
    - Led to withdrawal of funding and implementation delays

Lessons from other watersheds

- **Key factors leading to program success**
- Specific, measurable performance goals
  - Consistent, reliable monitoring and feedback
- Targeted solutions
  - Chosen based on efficacy and cost-effectiveness
  - Active implementation program rather than passive plan
- High degree of consensus ("buy in") among all key stakeholders

Lessons from other watersheds

- **Key factors leading to program problems**
  - No entity has <u>authority</u> to make enforceable or accountable decisions (CALFED, Everglades)
    - Watershed entities purely advisory
    - Individual agencies not willing to cede any authority
  - <u>Inconsistent, unreliable funding</u> (CALFED, Everglades)
  - <u>Frequently changing program structures</u> (Great Lakes, CALFED, Everglades)

Lessons from other watersheds

- **Key factors leading to program problems**
  - Conflicts avoided rather than resolved
    - Stated program goals purport to maximize all interests
    - Every is "happy" but the goals are unrealistic
    - Difficult tradeoffs are essential
  - Classic cases involve water rights (CALFED, Everglades, Colorado River)
    - Program goals seek to support full human water development and complete ecosystem restoration

The Rolling Stones got it right

“You can't always get what you want
But if you try sometimes
You might find
You get what you need.”

Conclusion: Program considerations

- Should we broaden geographic focus from the lake to the watershed?
- Should we shift to multiple-interest entity with decision authority and active stakeholder roles?
- Should we develop specific, measurable environmental goals for the lake?
- Should we develop an independent science program for the lake?
- Should we develop dedicated funding sources?