WATER SUPPLY RESERVOIR VIABILITY AND WATER CONVEYANCE OPPORTUNITIES IN OKLAHOMA

GOVERNOR’S WATER CONFERENCE
OKLAHOMA WATER RESOURCES BOARD

Norman, OK
October 27, 2010
Oklahoma Water History
Oklahoma Water - 2010
Why a Reservoir Viability Study?
Methodology
Results
Conveyance Issues and Opportunities
Conveyance Feasibility
Next Steps for Conveyance
1907 Statehood
1910 Byrd’s Mill Spring
1919 Lake Overholser
1957 OWRB Created
OKLAHOMA WATER HISTORY

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1980 Comprehensive Water Plan
OKLAHOMA WATER HISTORY


FIGURE V: STATEWIDE WATER CONVEYANCE SYSTEM
Including Proposed Local Projects
OKLAHOMA WATER HISTORY

1907 Statehood
1910 Byrd’s Mill Spring
1919 Lake Overholser
1957 OWRB Created
1966 Potential Reservoirs Identified
1973 Extensive BOR Lake Studies
1980 Comprehensive Water Plan
1990 Federal Funding Dries Up
1995 Comprehensive Plan Update
OWRB Embarked on 2011 Comprehensive Water Plan in 2007
OKLAHOMA COMPREHENSIVE WATER PLAN – VIABILITY STUDY GOALS

Identify End-Users
Collect and Preserve Data
Liaison and Collaborate with Other Agencies
Make Data Available Online
Condense Data into Essential Elements of Information
Assess the Likelihood of a Reservoir Being Developed
Determine How Surplus Water Can Best Help the State
Provide Data for Future Planning and Decision Making
Arbuckle – Simpson Aquifer Study

OWRB Embarked on 2011 Comprehensive Water Plan

Regional Raw Water Supply Study for Central Oklahoma
Why a Feasibility Study?

Site Change
State Change - Groundwater
National Change - Funding
Climate Change
Consolidate and Protect Data
Stop the Propagation of Bad Information
Increase Focus on “Real” Prospects
Provide Information to “Stakeholders”
Enhance the Comprehensive Planning Process
METHODOLOGY

Literature Search (USACE, BOR, OWRB, NRCS)
**Methodology**

**Literature Search** (USACE, BOR, OWRB, NRCS)

**Database Population** (EEIs)

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**Reservoir Data Report**

- **Reservoir Name**: Albany Lake
- **Agency**: U.S. Army Corps of Engineers, Tulsa District
- **Location**: Bryan County, 58 miles southeast of Durant, OK, and 1.5 miles southwest of Albany, OK
- **Primary Study Document(s)**: Comprehensive Bass Study, Red River below Devol Dam, Arkansas, Louisiana, Oklahoma and Texas, Interim Survey Report, Albany Lake, Island Bayou, Oklahoma
- **Primary Study Date**: 04/28/76
- **Region**: Blue Boggy
- **Stream**: Island Bayou @ river mile 6.5
- **Beneficial Uses**: FR, WS, R, & W
- **Reservoir Area (Acres)**: 115
- **Lot/Section**: Section 10, T 8 S, R 11 E
- **Dam Type**: Relied earth embankment with 28' crest width
- **Conc. Sta. Surface Area (Acres)**: 0.060
- **Conc. Great Elevation**: 158.5
- **Max. Surface Area (Acres)**: 0.067
- **Max. Great Elevation**: 128.0
- **Dam Length (FT)**: 605.0
- **Embankment Volume (CY)**: 2,480,000
- **Valley Wall Height (FT)**: 15.7
- **Max Water Surface Elev.**: 164.9
- **Recreation Boundary (AC)**: 12.200

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**Spillway**: 400' wide limited spillway and a 6.5' diameter gated conduit
- **Spillway Elevation**: 133
- **Power Pool Elevation**: 149
- **Surcharge (AP)**: 157.100
- **Conservation Pool Storage (AC)**: 58.800
- **Closed Control Storage (AC)**: 65.100
- **Sediment Storage (AC)**: 6.000
- **Dead Storage (AC)**: 2.700

**Geology**


**Water Quality**

- **Sources**: Also Comprehensive Report of Southeast Oklahoma Water Supply Study, Bureau of Reclamation, September 1988. Above referenced reports shows power as a beneficial use and approximately twice the capacity.

**Previous Cost Estimate**: $27,100,000

**Year of Cost Estimate**: 1976

**Grouping**: 4

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**Qualifying Statements**

- Not near a population center
- Low cost per unit storage
**Methodology**

- Literature Search (USACE, BOR, OWRB, NRCS)
- Database Population (EEIs)
- Weighted Matrix Development

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**Weighted Matrix Development**

![Weighted Matrix Diagram](image)
METHODODOLOGY

Literature Search (USACE, BOR, OWRB, NRCS)
Database Population (EEIs)
Weighted Matrix Development
Environmental-Cultural Screen
**METHODODOLOGY**

- Literature Search (USACE, BOR, OWRB, NRCS)
- Database Population (EEIs)
- Weighted Matrix Development
- Environmental-Cultural Screen
- Mapping
**Methodology**

- Literature Search (USACE, BOR, OWRB, NRCS)
- Database Population (EEIs)
- Weighted Matrix Development
- Environmental-Cultural Screen Mapping
- Map Reconnaissance
- Cost Estimate
METHODOLOGY

Literature Search (USACE, BOR, OWRB, NRCS)
Database Population (EEIs)
Weighted Matrix Development
Environmental-Screen Mapping
Map Reconnaissance
Cost Estimate
Gap Analysis
Evaluation Workshop
RESULTS - 125 SITES

Category 4 – Apparently Feasible - 38 Sites
Category 3 – Possibly Feasible - 30 Sites
Category 2 – Sites with Fatal Flaws - 14 Sites
Category 1 – Insufficient Information - 29 Sites
Category 0 – No Information Available - 14 Sites
RESULTS - 125 SITES
RESULTS – CATEGORIES 3 AND 4

LEGEND:

Yellow = Category 3
Green = Category 4
Results – Website

Reservoir Viability Study

Click on Area of Interest

Reservoirs by Category
- Reservoir Sites w/ High Potential
- Reservoir Sites w/ Potential
- Reservoir Sites w/ Serious Flaws
- Reservoir Sites w/ Little Information
- Reservoir Sites w/ No Information

Quick Links
- Report Text
- Bibliography

Many documents available on this site are in Adobe Acrobat (.PDF) format and require the free Adobe Reader software to view and print.

Visit www.ok.gov, the Oklahoma State Portal
AVAILABLE INFORMATION

- Reservoir of Interest by Area
- Reservoir Data Sheet
- Maps/Aerials and Topographic Maps
  - Regional Planning Watersheds
  - Basins
- Category Lists
Moving Water East to West
CONVEYANCE ISSUES AND OPPORTUNITIES

16 inches

56 inches
Rainfall Distribution

Allocated Water Supply, Unused But Available
Rainfall Distribution

Underutilized Existing Resources

Precedence – Atoka to Oklahoma City Pipeline
Conveyance Issues and Opportunities

Rainfall Distribution
Underutilized Existing Resources
Precedence – Atoka to Oklahoma City Pipeline
Increasing Demands
Conveyance Issues and Opportunities

Rainfall Distribution
Underutilized Existing Resources
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Increasing Demands
Political Resistance
Conveyance Issues and Opportunities

Rainfall Distribution

Underutilized Existing Resources

Precedence – Atoka to Oklahoma City Pipeline

Increasing Demands

Political Resistance

Costs
Conveyance Issues and Opportunities

Rainfall Distribution

Underutilized Existing Resources

Precedence – Atoka to Oklahoma City Pipeline

Increasing Demands

Political Resistance

Costs

Alternatives
CONVEYANCE FEASIBILITY -- NORTHERN OKLAHOMA

Legend
- Northern Route
- Rivers
- Proposed Reservoirs
- Existing Lakes

Figure 1 - Northern Conveyance Route
CONVEYANCE FEASIBILITY
– SOUTHERN OKLAHOMA

Legend

- Southern Route
- Proposed Reservoirs
- Rivers
- Existing Lakes

Figure 2 - Southern Conveyance Route
CONVEYANCE FEASIBILITY
-- ALTERNATIVE SOUTHERN OKLAHOMA

Legend
- Alternative Southern Route
- Rivers
- Proposed Reservoirs
- Existing Lakes

Figure 3 - Alternative Southern Conveyance Route
Refine a business approach to “right-size” alternatives to the future demands, customer objectives and fiscal practicality; address reality.
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QUESTIONS?