JOHN REDMOND RESERVOIR DREDGING PROJECT



TODAY'S DISCUSSION

- Background & Need for Project
- Project Overview
 - Permits, Implementation Timeline & Major Project Components
- Total Costs
- Permitting Challenges
- Project Successes
- Ongoing Sediment Management Challenges



REDMOND OVERVIEW





Kansas Water Office

September 2003

REDMOND OVERVIEW





WHY REDMOND?



KANSAS RESERVOIR LOSS OF CAPACITY



RATE OF SEDIMENTATION





SUPPLY VS DEMAND



John Redmond Conservation Storage



PROJECT OVERVIEW



REQUIRED PERMITS

- **33 U.S.C. Section 408**
 - RoD Authorized KWO to conduct project on federal property
 - Programmatic Environmental Impact Statement (PEIS)
- Section 106 Programmatic Agreement
 - USACE Tulsa District, KSHS & Osage Nation of Oklahoma
 - Ensure any historic sites were identified/protected
- Section 404 Permit (USACE) & Stream Obstruction Permit (DWR)
 - Slurry pipeline crossing of Neosho River
- Dam Safety Permits KDA-DWR
 - Required for all CDFs (based on DWR dam criteria)
- Floodplain Fill Permits (DWR)
 - CDFs B and F (SFHA Zone A)
- Water Term Permit (DWR)
 - Authorized use of water from Redmond for dredging purposes (> 6 months)
- NOI for Stormwater Runoff from Construction Activities (KDHE)
- NPDES Permit (KDHE)
 - Effluent Limits at point of discharge

JOHN REDMOND DREDGING

Phase I Implementation Timeline

- 2012 Planning process begins with USACE
- May 2015 Section 408 Request Final RoD and FONSI on Programmatic EIS Issued.
- November 2015 June 2016: Confined Disposal Facility (CDF) construction takes place
- May 2016: Dredging operations begin
- October 2016: Dredging operations complete
- October 2016: CDF dewatering efforts begin
- 2017 and beyond: CDF reclamation begins.

CONFINED DISPOSAL FACILITY CONSTRUCTION



PIPELINE WORK



NEOSHO RIVER CROSSING



DREDGE MOBILIZATION



DREDGE "LP"



22" ELECTRIC DREDGE "LP"

- CSD "LP"
 - > 22" Discharge
 - > 3,500 Total HP
- Booster Pump
 - ≻ 1,000 HP
- > Crane Barge
- > Tug Boats
- Survey Vessels
- Crew Vessels
- > Skidder Barge



SHORE BOOSTER STATION



O/A Length: 40' Width: 12' Height: 16' HP: 1,000HP Cat. 399 Discharge Diameter: 18" 21,000 Gallon Frack Tank with 4" Electric Pump (175 GPM)

10,000 Gallon Fuel Tank with Secondary Containment



KICKOFF CEREMONY 5/17/2016



DREDGED MATERIAL



TREATED WATER ENTERING FINAL CLARIFICATION CELL (CDF B)



DISCHARGE TO NEOSHO RIVER



UPLAND CONFINED DISPOSAL FACILITIES



CDF DEWATERING & RECLAMATION

Continue Work with Great Lakes Dredge & Dock on CDF Reclamation

- CDF dewatering has progressed since October 2016
- June 2017, treated water no longer being released to Neosho River
- CDF F first in line to be put back into cropland production
 - All dredged material stays on site, CDF walls will be removed and dirt work will be completed to establish surface drainage network as well as re-slope perimeter to stabilize.

PROJECT SUMMARY & COSTS

3,000,000 CY of sediment removed (~1,900 AF)

- Average: ~19,000 CY/day
- Max: ~32,000 CY/day
- \$20 million ~ \$6/CY
 - Total cost includes permitting, engineering & design, construction, dredging, lease payments and land reclamation
 - Includes some funds for watershed practices above reservoir
- Project financed by 15-year Bond
 - State Water Plan Funds
 - Water Sales Revenue through Water Marketing Program

PERMITTING CHALLENGES

Required significant effort and coordination with Corps and other partners through permitting process

KDHE NPDES Permit

- Effluent Limits for TSS and Ammonia
- Lower limits in summer months and reduced CDF volume late in project
- Section 106 Agreement for Cultural Resources
 - Osage Nation concerns with archeological surveys required second surveys for several of the CDF locations

PROJECT SUCCESSES

- Project met its goal for planned sediment removal and restoration of water supply storage capacity
- First of its kind project and process developed a model which can be used in Kansas and nationwide when looking to restore water supply capacity lost to sedimentation within federal reservoirs.
- KWO was awarded a Department of the Army Certificate of Appreciation for work which resulted in the approval of the first and largest inland Section 408 request in the U.S. to be approved by USACE, Headquarters.
- Raised awareness of reservoir sedimentation issues

ONGOING SEDIMENT MANAGEMENT CHALLENGES

- Need to ensure long-term water supply storage capacity in Redmond
- Costs for long-term restoration needs to meet projected water supply demands
 - Funding for future phases
- Land availability for future dredging activities
- Applicability of other sediment management options
 - Limitations for Redmond

QUESTIONS & DISCUSSION



