




BETHANY - WARR ACRES PUBLIC WORKS AUTHORITY

BLUFF CREEK WASTEWATER TREATMENT PLANT

WWTP EVALUATION & ENGINEERING REPORT

FEBRUARY 20, 2024

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Bethany-Warr Acres
Public Works Authority
A Joint Trust Operating the Bluff Creek Plant

Presentation Overview

- ✓ Scope of Services
- ✓ Existing Facility & Project Need
- ✓ Alternative Evaluation
- ✓ Opinion of Probable Costs
- ✓ WWTP Current Status
- ✓ Recommendation
- ✓ Plan of Action
- ✓ Q & A

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Scope of Services

- ✓ Planning & Data Gathering
- ✓ Condition Assessment
- ✓ Hydraulic Review
- ✓ Alternative Evaluation
- ✓ Engineering Report
  - ✓ Recommendations
  - ✓ Opinion of Probable Construction Costs

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Existing Facility & Project Need

- ✓ Original Plant in 1979
- ✓ Current Plant in 1993
  - ✓ Sequence Batch Reactors – Treatment Process
  - ✓ New headworks & pump station facility
  - ✓ Grit handling building
  - ✓ Filters
  - ✓ Chlorine contact & post aeration basins
  - ✓ Flow measurement & cascade aerator at discharge point
  - ✓ Sludge holding basin & sludge processing building
  - ✓ Converted existing aeration system to aerobic digesters
  - ✓ Excess flow and emergency holding basin
- ✓ Additional Sludge Storage in 2004

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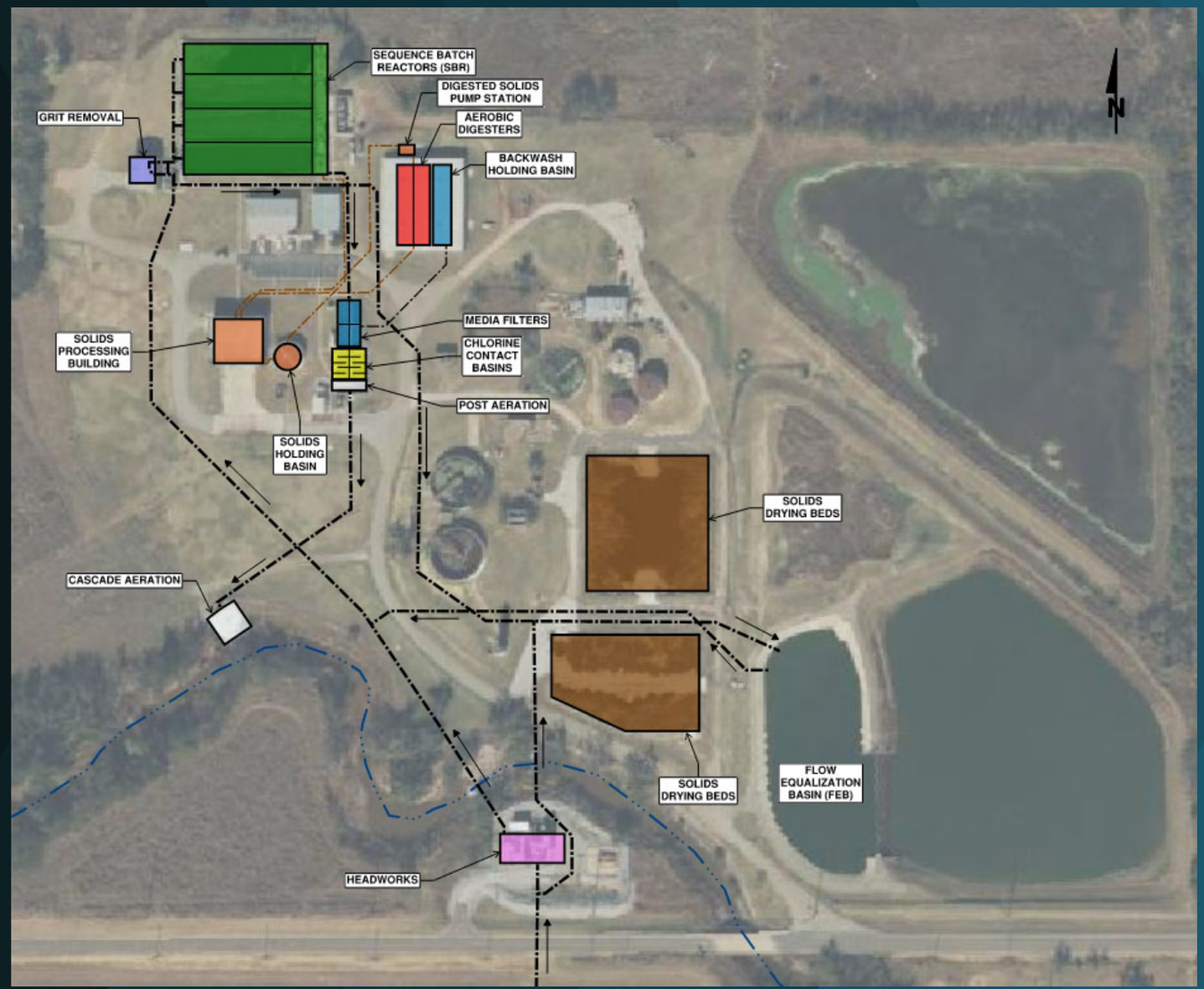
Existing Facility & Project Need



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Existing Facility & Project Need

- ✓ Notice of Violations (NOV)
- ✓ Consent Orders (CO)
- ✓ Administrative Compliance Orders (ACO)
- ✓ Compliance Evaluation Inspection (CEI) reports
  - ✓ Violations / Deficiencies
- ✓ Neglect of Regular Operation & Maintenance
- ✓ Failure of Response / Communication with ODEQ
- ✓ Unpermitted Discharges due to WWTP failures
- ✓ BWA PWA Order to Comply with CO 23-296

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Existing Facility & Project Need

- ✓ Growth Capacity & Wastewater Flows
  - ✓ Minimal projected population growth
  - ✓ Permitted WWTP Capacity (4.55 MGD)
  - ✓ No Capacity Expansion Required

- ✓ Evaluation of Treatment Processes:
  - ✓ Primary Treatment System
    - ✓ Headworks – Bar Screens, Grit Removal, Pump Station
    - ✓ Flow Equalization Basins

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Existing Facility & Project Need

- ✓ Evaluation of Treatment Processes:
  - ✓ Secondary Treatment System
    - ✓ Sequence Batch Reactors
      - ✓ Aeration, Motive Pumps, Decanters
    - ✓ Filters
  - ✓ Effluent Disinfection System
    - ✓ Chlorination / Dechlorination
    - ✓ Post Aeration Basin
  - ✓ Solids Processing and Handling System
    - ✓ Solids Holding Basins
    - ✓ Solids Drying Beds
    - ✓ Belt Thickener
    - ✓ Belt Filter Press
    - ✓ Aerobic Digestors

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Alternative Evaluation

1. **Alternative 1 - Rehabilitate Existing SBR WWTP**
   - ✓ Existing Treatment Process

2. **Alternative 2 – Rehabilitate Existing WWTP**
   - ✓ New Treatment Process - Conversion to Extended Aeration

3. **Alternative 3 - Decommission Existing WWTP & Flow to OKC for treatment**

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Alternative Evaluation

Alternative Design Criteria

- ✓Site Constraints
- ✓Present & Future Treatment Needs
- ✓Compatibility Existing WWTP
- ✓Compatibility Existing Equipment
- ✓Operation of Treatment Process
- ✓Capital Costs
- ✓Operation & Maintenance Costs

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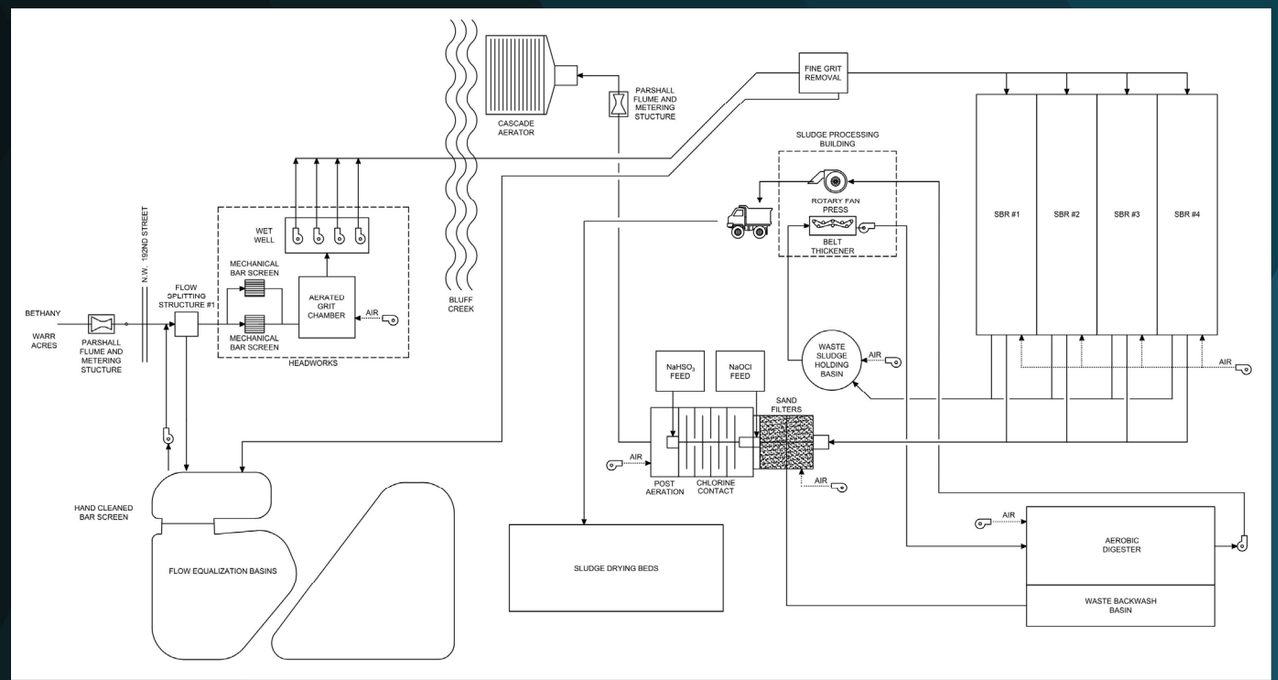
Alternative 1 – Rehabilitate WWTP

- ✓Utilize Same Treatment Process
- ✓Replace Inoperable and Degrading Equipment
- ✓Upgrade Processes for Efficiency & Effectiveness



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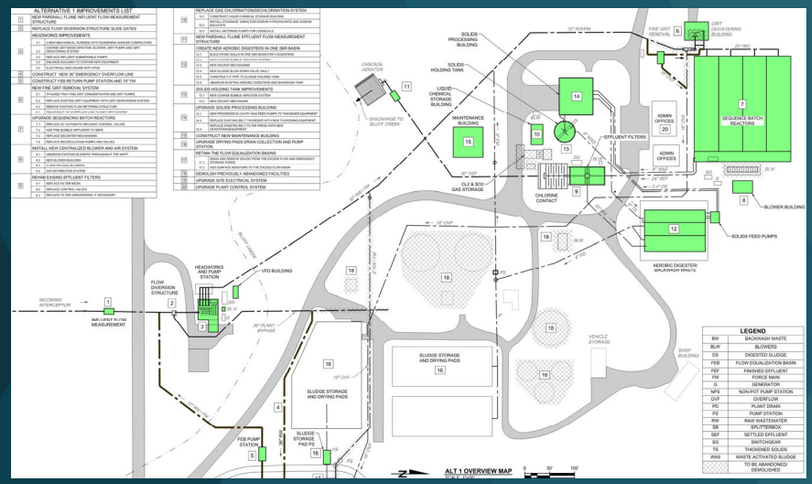
Alternative 1 – Rehabilitate WWTP

Major Changes & Improvements:

- ✓ Upgrade Headworks*
- ✓ Holding Pond Improvements*
- ✓ New Fine Grit Removal System*
- ✓ New Fine Bubble Aeration System*
- ✓ Upgrade Mixing Pumps & Valves*
- ✓ New Centralized Blower System*
- ✓ Upgrade Filters*



** Considered for Phase 1 project*

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Alternative 1 – Rehabilitate WWTP

Major Changes & Improvements:

- ✓ Upgrade Solids Processing Polymer Systems*
- ✓ Upgrade Sludge Drying Beds*
- ✓ Replace Power Distribution System*
- ✓ Replace Instrumentation & Control System*
- ✓ Sludge Processing Rehabilitation*
- ✓ Site Restoration*
- ✓ Yard Piping*

** Considered for Phase 1 project*

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Alternative 1 – Rehabilitate WWTP

Major Changes & Improvements:

- ✓ New Thickeners & Feed Pumps Δ
- ✓ Upgrade Aerobic Digestors Δ
- ✓ New Fan Press Dewatering & Feed Pumps Δ
- ✓ New Chlorination / Dechlorination Facilities Δ
- ✓ Pavement Replacement Δ
- ✓ Existing Structure Demolition Δ

Δ *Considered for Phase 1 Add Alternative or Phase 2 project*

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Alternative 1 – Rehabilitate WWTP

Alternate 1 Opinion of Probable Costs	
Item	**Total Cost**
Phase 1 Capital Improvements	$19,555,000
5% Mobilization	$977,750
1% Bonds and Insurance	$195,550
Engineering, Bidding, Construction Administration, & Inspection (Phase 1 & 2)	$5,211,900
20% Contigency	$3,911,000
Alternate 1 Phase 1 Cost	**$29,851,200**
Phase 2 Capital Improvements	$9,400,000
5% Mobilization	$470,000
1% Bonds and Insurance	$94,000
Bidding, Construction Administration, & Inspection (Phase 2)	$792,000
20% Contigency	$1,880,000
Alternate 1 Phase 2 Cost	**$12,636,000**
Total Alternate 1 Cost	**$42,487,200**

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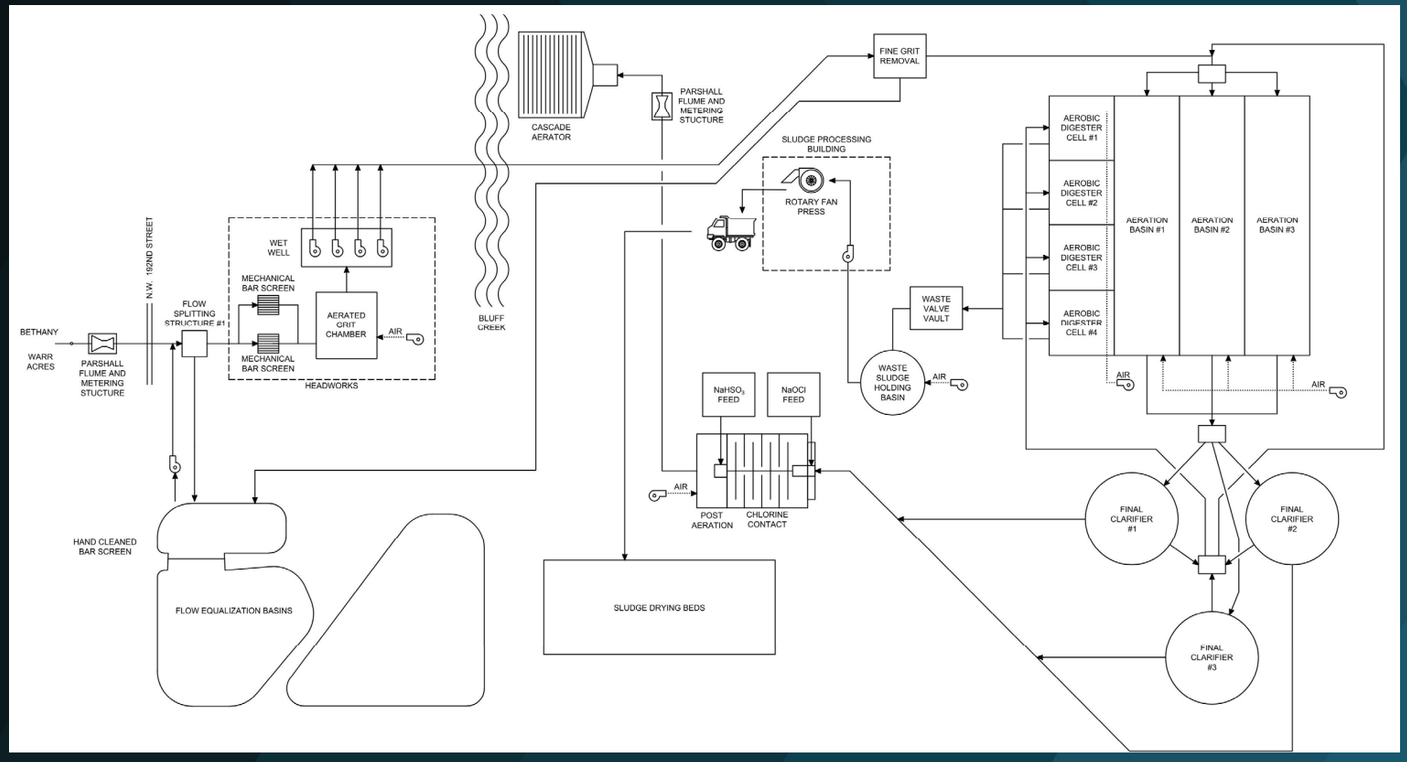
Alternative 2 – New Treatment Process

- ✓Utilize Existing Infrastructure
- ✓Similar Improvements to Alternative 1
- ✓Convert Treatment Process to Extended Aeration



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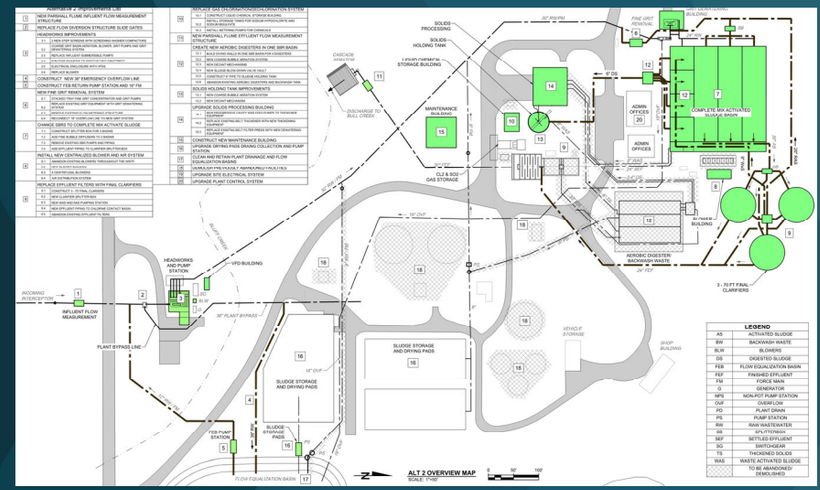
Alternative 2 – New Treatment Process

Major Changes & Improvements:

- ✓ Upgrade Headworks
- ✓ Holding Pond Improvements
- ✓ New Fine Grit Removal System
- ✓ New Fine Bubble Aeration System
- ✓ New Centralized Blower System
- ✓ **New Final Clarifiers (3)**
- ✓ New Chlorination / Dechlorination Facilities
- ✓ **New Aerobic Digestors**



Additional changes and improvements from Alternative 1

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Alternative 2 – New Treatment Process

Major Changes & Improvements:

- ✓ Upgrade Sludge Drying Beds
- ✓ New Fan Press Dewatering & Feed Pumps
- ✓ Upgrade Solids Processing Polymer Systems
- ✓ Replace Power Distribution System
- ✓ Replace Instrumentation & Control System
- ✓ Pavement Replacement
- ✓ Site Restoration
- ✓ Yard Piping
- ✓ Existing Structure Demolition

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Alternative 2 – New Treatment Process

Alternate 2 Opinion of Probable Costs	
Item	**Total Cost**
Capital Improvements	$37,450,000
5% Mobilization	$1,872,500
1% Bonds and Insurance	$374,500
Engineering, Bidding, Construction Administration, & Inspection	$6,741,000
20% Contigency	$7,490,000
Total Alternate 2 Cost	**$53,928,000**

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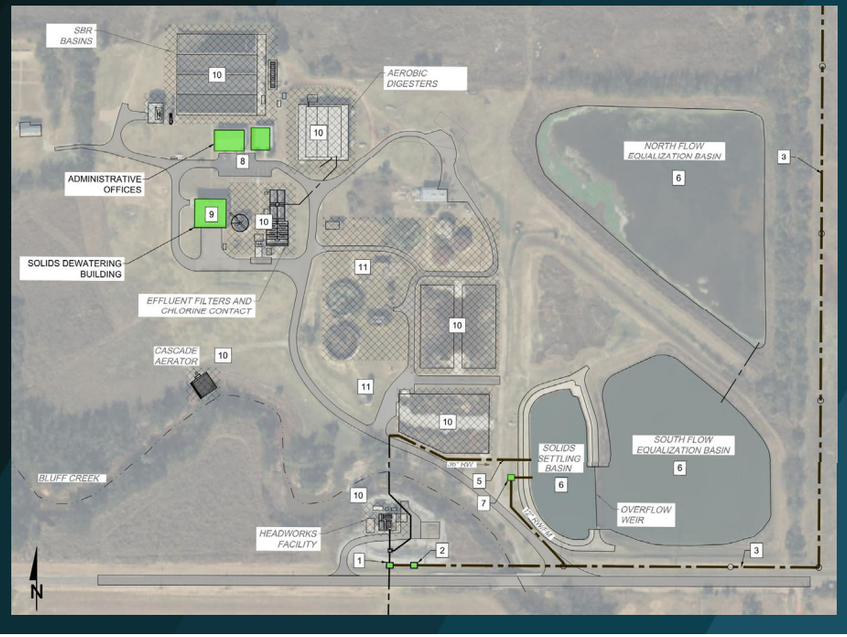
Alternative 3 – Decommission WWTP

- ✓Agreement with OCWUT for Wastewater Treatment
- ✓Construct 36-inch Interceptor to Deer Creek WWTP
- ✓Decommission Existing WWTP & Restore Site
- ✓BWA PWA responsible for O&M of interceptor
- ✓Multi-Phase Transition & Conversion Project



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Alternative 3 – Decommission WWTP

- ✓Phase 1 – Short Term
  - ✓Rehabilitate WWTP to operate until 2030
  - ✓Cost of Service Study for OCWUT treatment of BWAPWA flows
  - ✓BWAPWA develop plan to minimize inflow and infiltration
  - ✓Additional 5 MGD expansion to Deer Creek WWTP
  - ✓Agreement with OCWUT

- ✓Phase 2 – Long Term
  - ✓New 36-inch Interceptor to Deer Creek WWTP
  - ✓Connect to Deer Creek WWTP Headworks
  - ✓New FEB pump station for equalization basins
  - ✓Abandon WWTP & Demolish old facilities

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Alternative 3 – Decommission WWTP

Alternate 3 Opinion of Probable Costs	
Item	**Total Cost**
Phase 1 Construction Cost	$10,000,000
5% Mobilization	$500,000
1% Bonds and Insurance	$100,000
Engineering, Bidding, Construction Administration, & Inspection	$1,800,000
20% Contigency	$2,000,000
Alternate 3 Phase 1 Cost	**$14,400,000**
Phase 2 Construction Cost	$139,628,660
5% Mobilization	$6,981,433
1% Bonds and Insurance	$1,396,287
Engineering, Bidding, Construction Administration, & Inspection	$25,133,159
20% Contigency	$27,925,732
Alternate 3 Phase 2 Cost	**$201,065,271**
Total Alternate 3 Cost	**$215,465,271**

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Opinion of Probable Costs

- ✓Alternative 1 – Rehabilitate WWTP
  - ✓Phase 1 Cost – $29.9M
  - ✓Phase 2 Cost – $12.6M
  - ✓Total Cost – $42.5M

- ✓Alternative 2 – New Treatment Process
  - ✓Total Cost – $53.9M

- ✓Alternative 3 – Decommission WWTP & Flow to OKC
  - ✓Phase 1 Cost – $14.4M
  - ✓Phase 2 Cost – 201.1M
  - ✓Total Cost – $215.5M

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WWTP Current Status

- ✓Plant Operation Status
  - ✓Three (3) working SBRs by end February
  - ✓Estimated Filter Operation by mid to late April

- ✓Status of Current Improvement Loan
  - ✓Reimbursable Improvements Expended $1,182,200
  - ✓Estimated Improvements in FY2024 $1,818,052
  - ✓Estimated Improvements in FY2025 (as needed) $ 777,000

    $3,777,252
  - ✓CGE expects 95%-100% being incorporated into ER Project
  - ✓CGE is Tracking & Approving Improvement Expenditures in coordination with ER Project Recommendation

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Recommendation

- ✓ Alternative 1 – Rehabilitate WWTP
  - ✓ Provides Required Improvements to meet ODEQ Standards
  - ✓ Estimated Useful Life of 29 years for Improvements
  - ✓ Feasible Capital Cost for BWAPWA & Beneficiaries
  - ✓ Project Budget – $30M

- ✓ Alternative 1 Implementation
  - ✓ CGE Design Phase 1 & Phase 2 Improvements
  - ✓ Bid with Phase 1 as Base Bid and Phase 2 as Add Alternates
  - ✓ BWAPWA & Beneficiaries determine acceptance of any Phase 2 improvements within budget

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Plan of Action

✓Approval of ER & Recommendation	February 20, 2024
✓Approval of Loan as presented	February 20, 2024
✓Submit ER to ODEQ per CO 23-296	March 5, 2024
✓Submit Phase 1 & 2 Plans to ODEQ	March 4, 2025
✓Obtain ODEQ Permit for Construction	June 4, 2025
✓Start Construction of Phase 1	September 4, 2025
✓Complete Construction of Phase 1	September 4, 2027
✓Obtain Compliance with ODEQ	February 5, 2028
✓Start Construction of Phase 2	TBD
✓Complete Construction of Phase 2	TBD

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QUESTIONS?

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