

Scope of Work: Two Mile Pond Return Flow at Cerro Gordo Culvert Design and Flood Study

This scope of work details the professional services required for a flood study and engineering design for improving the Two Mile Pond return flow culvert under Cerro Gordo Road. The project's primary goal is to ensure adequate flood conveyance capacity, supported by a comprehensive hydrologic and hydraulic (H&H) analysis of the entire river corridor between Nichols Reservoir and the Cerro Gordo Road crossing. The objective of this study is to design a culvert at Cerro Gordo that will handle all of the 100 year event based on the future Santa Fe River realignment through the existing Two Mile Pond footprint.

Phase 1: Hydrologic and Hydraulic (H&H) Analysis

- **Task 1: Data Acquisition and Site Reconnaissance**
 - Conduct a geospatial survey of the project area, including the Cerro Gordo Road crossing and the surrounding floodplains. The survey will capture all relevant topographic features, extending from Nichols Reservoir to the confluence below Cerro Gordo.
 - Perform a detailed architectural, structural, and condition-survey of the existing culvert, bridge, and any other engineered structures within the study area, including the historic irrigation dam. This documentation will inform the design process and identify potential structural or hydraulic constraints.
 - Identify and map remnant structures, such as old check dams or abutments, that may influence water flow and limit the final design.
 - Compile and review all available historical flood data, geotechnical reports, and environmental documentation.
- **Task 2: Hydrologic Modeling**
 - Delineate the watershed boundaries for the study area, including the Two Mile Pond Complex.
 - Calculate peak flood discharges for the 10-, 25-, 50-, and 100-year storms including short duration and typical 24-hr events. The analysis must account for the influence of upstream reservoirs on flow regimes as well as anticipated changes in volume due to the future Santa Fe River realignment through the current Two Mile Pond footprint.
- **Task 3: Hydraulic Analysis and Culvert Sizing**
 - Develop a hydraulic model of the Santa Fe River from Nichols Reservoir to the confluence below Cerro Gordo. The model will incorporate the existing terrain, the Two Mile Pond area, and all identified remnant structures as well as anticipated changes in volume due to the future Santa Fe River realignment through the current Two Mile Pond footprint.
 - Simulate existing conditions to calibrate the model and establish a baseline for flooding potential.
 - Determine the optimal size and number of barrels required to pass the design flood event. The analysis will focus on minimizing head loss and preventing upstream backwater effects.

- Assess the potential for scour and erosion at the culvert's inlet and outlet and recommend mitigation measures.

Phase 1B: Public Engagement and Outreach

- Task 1B: Public Engagement and Outreach Plan
 - Stakeholder Identification: Identify, categorize, and initiate direct and early communication with all targeted stakeholders (property owners, neighborhood associations, advocacy groups).
 - Working Group Establishment: Engage a dedicated, smaller Working Group composed of key stakeholder representatives to provide consistent feedback on technical and design matters.
 - Facilitate consultative sessions with the City to define a coordinated access and work allowance strategy for all third-party, private and public, properties affected by construction.
 - Formal Commission Consultation: Schedule meetings and workshops with the Santa Fe River Commission to present project status, seek expert review, and incorporate policy guidance.

Phase 2: Engineering Design and Public Engagement

Task 4: Culvert Design

- Develop the final engineering design for the new culvert system, ensuring it meets the required hydraulic capacity and all applicable structural standards.
- Submit engineered plans at 30%, 60% and 90% and schedule respective review meetings with relevant parties.
- Incorporate design elements that promote aquatic connectivity and ecological function.
- Task 5: Public Engagement
 - Conduct visioning exercises (workshops, surveys, open houses) to assess community interest, desired site functions, and gather input on aesthetic preferences for the area.
 - Host regular meetings, alternating between targeted (Working Group/Stakeholders) and public formats to ensure continuous, transparent dialogue. Ensure comprehensive meeting minutes and engagement exercises are fully documented for record keeping purposes.
 - In coordination with the City's Communications Office, implement targeted media outreach such as public notices, social media updates, and press release to broaden awareness of the project and increase community participation.
 - Design Integration: Utilize the collected community dialogue, visioning results, and functional feedback to directly inform and refine the final conceptual design

- Task 6: Environmental and Regulatory Compliance
 - Prepare and submit all necessary documentation for environmental impact assessment as required by regulatory agencies.
 - Coordinate with federal, state, and local agencies to secure all permits.
 - Execute a comprehensive, multi-phased public engagement and outreach program. This includes conducting public meetings, soliciting community feedback, and maintaining transparent communication with all stakeholders.
- Task 7: Final Design and Project Documentation
 - Prepare a complete set of construction-ready plans and specifications, including detailed drawings, material schedules, and construction timeline (including a phased approach as required by potential funding limitations).
 - Provide a comprehensive budget estimate for the construction phase(s).

Deliverables:

- Hydrologic and Hydraulic Study Report: A technical report detailing the model methodology, findings, and the recommended culvert design.
- Geotechnical Report: An analysis of subsurface conditions and foundation recommendations.
- Architectural Survey Report: Documentation of existing conditions and structures within the study area.
- Permitting Memo: Provide overview of permit analysis, discussion and resulting permit requirements for future improvements to river channel alignment for future flood mitigation.
- Public Engagement and Outreach Memo: Comprehensive record of engagement methods, findings, and all public-facing materials.
- Final Engineering Designs: Complete plans for the new culvert system.
- Construction-Ready Documents: The final set of plans, specifications, and the project budget estimate.