



**The City of
OKLAHOMA CITY**
UTILITIES DEPARTMENT

Project Title: North Canadian Wastewater Treatment Plant Electrical Improvements

Project Location: North Canadian Wastewater Treatment Plant (WWTP)

Project Number: ST-0206

Estimated Project Cost: To Be Determined

1.0 Project Description:

This project will provide engineering services for the development of an electrical improvements plan at the North Canadian WWTP. This project seeks to improve the electrical equipment between the recently installed medium-voltage loop and process equipment as well as improve system redundancy and resiliency through various other improvements.

2.0 Project Intent:

The Engineer will perform an assessment of the North Canadian WWTP's major electrical equipment, including switchgears, motor control centers (MCCs), panels, and generators. The assessment should consider remaining useful life, system redundancy, over-current and over-voltage protection, and spare part sourcing challenges at a minimum. The assessment should also assess the criticality of major process structures, their current vulnerabilities, and the necessary electrical improvements to ensure operation of the most critical assets during an extended power outage.

The Engineer will use the findings of this assessment as the basis to develop their plans and specifications for the electrical improvements at the North Canadian WWTP.

3.0 Project Background:

Located in Jones, OK, the North Canadian WWTP was constructed in 1981 and is the largest WWTP for Oklahoma City with a rated capacity of 80 million gallons per day (MGD). The North Canadian WWTP has three (3) treatment trains constructed in 1981 (train 1) and 1985 (trains 2 and 3) that are rated for sixty (60), eleven (11), and nine (9) MGD, respectively. The North Canadian WWTP has undergone multiple CIP projects, upgrades, and modifications throughout its forty-five (45) years of operation and has been operated by different third-party operations companies across time.

The North Canadian WWTP has experienced the expected age-related deterioration during its service. During construction of capital improvement program (CIP) projects on the site, there has been an increasing frequency of unexpected issues arising from major electrical equipment which has resulted in change orders, project delays, and extra costs. Additionally, the wastewater treatment operations team has experienced an ever-increasing difficulty in sourcing replacement or spare parts for equipment, some of which is nearly half-a-century old.

To mitigate the likelihood and severity of unexpected electrical equipment failures, this CIP project is being executed to repair, rehabilitate, replace, and construct the improvements necessary for reliable plant operation well into the future.

4.0 Operations:

4.1 Core History:

The North Canadian WWTP is a traditional secondary treatment plant that was constructed in 1981 to include its first of eventually three treatment trains along with a workshop, water well, and administration building. Treatment Train 1 included a headworks Archimedes or screw pump lift station and bar screen facility, detritor grit removers, pre-aeration basin, primary clarifiers, primary sludge pumping, activated sludge tank, blowers, activated sludge pumping, final clarifiers, mixed sludge holding tanks, sludge processing, chlorine contact basin, and outfall structure.

Following construction of Treatment Train 1, the first major modification project added Trains 2 and 3 in 1985 as well as a dewatered sludge storage basin. Train 2 included a headworks Archimedes or screw pump lift station and bar screen facility, detritor grit removers, pre-aeration basin, primary clarifiers, primary sludge pumping, activated sludge tank, blowers, activated sludge pumping, final clarifiers, gravity thickeners, chlorine contact basin, and outfall structure. Train 3 included liquid sludge storage basins and blowers.

4.2 Significant Modifications:

There has been a variety of improvements, upgrades, and modifications performed at the North Canadian WWTP in its 45-year life. Major process structures that were added outside of the two construction projects that built the three Treatment Trains include a filter complex, final clarifiers, aeration basins, and stormwater holding basins. The plant also saw the addition of a berm surrounding the West and South sides of the facility to mitigate flood risk, above-grade air piping to connect all aeration blowers, and various site improvements.

4.3 Current Operation:

The North Canadian WWTP treats a blend of municipal and industrial wastewater, with industrial contributions accounting for approximately 40% of the total influent flow. During normal operation, the plant utilizes only treatment train 1. When flows begin to exceed train 1 capacity on a short-term basis, the treatment train 2 influent pump station is used to lift incoming wastewater so that it can flow to the flow equalization basins for temporary storage. When flows are expected to routinely exceed train 1 capacity, the treatment train 2 facilities are brought online in preparation for continued use. While train 2 is in use, flows that are in excess of trains 1 and 2 combined capacity are sent to the flow equalization basins for future treatment in train 3.

4.4 Known Points of Concern:

The North Canadian WWTP has a variety of structures and electrical equipment that is known to be in varying degrees of needing improvements. Some of those structures include 9, 13, 14, 20, 38, 53, 58, 65, 87, and 112, which are not in any order in relation to degree of need. These listed structures are known to be operating on electrical equipment that is original to the facility for which parts are difficult or impossible to source in the event of a component failure.

Additional points of concern for the facility are that the plant has two distinct electrical feeds to the facility as well as the presence of current emergency generators. The facility receives power directly from an OG&E substation located within the boundary of the facility, with one feed at 4,160 V and one feed at 1,247 V. The concern is that having two independent feeds may create difficulties in providing power to the entire facility in the event of a unified plant backup power loop. The facility also currently has two emergency power generators on site, which are known to have synchronization issues and to be undersized for powering the entire facility.

5.0 Current Projects:

- ST-0149 North Canadian Wastewater Treatment Plant Improvements and Upgrades
 - Status: Construction
 - Expected Completion: October 2026
- ST-0167-1 North Canadian Wastewater Treatment Plant Disinfection and Dechlorination Improvements
 - Status: Final Design
 - Expected Completion: October 2029
- ST-0167-2 North Canadian Wastewater Treatment Plant Groundwater Well Improvements
 - Status: Construction
 - Expected Completion: August 2026
- ST-0173 North Canadian Wastewater Treatment Plant Headworks Improvements
 - Status: Preliminary Engineering Report Received
 - Expected Completion: To Be Determined
- SY-0037 North Canadian Wastewater Treatment Plant Master Plan
 - Status: In Engineering Solicitation
 - Expected Completion: To Be Determined

6.0 Draft Project Scope:

The contract will include all tasks necessary for the assessment, design, and bidding of the project. Construction Administration/Management, As-Building, and Construction Inspection Services may be added to the scope as a possible future amendment. The following Major tasks and subtasks are proposed. This list is not exhaustive, and it is expected that the selected engineer will review and make recommendations for additional subtasks necessary to complete the project.

- Task 1 – Engineering Report Services
 - Project Management and Progress Reporting
 - Kickoff Meeting
 - Data collection and analysis
 - Field Investigations
 - Electrical Equipment Evaluation
 - Electrical Source Evaluation
 - Electrical System Resiliency Evaluation
 - Engineering Report
- Task 2 – Final Design Services
- Task 3 – Bidding Services
- Task 4 – Construction Administration Services (by possible future amendment)

- Task 5 – As-Built Documentation Services (by possible future amendment)
- Task 6 – Construction Inspection Services (by possible future amendment)

7.0 Letter of Interest Requirements:

In addition to the requirements outlined in the advertisement, Letter of Interest submittals must also provide the below information.

- Similar Project Experience
 - Indicate the key aspects or characteristics of the reference project that are relevant to OCWUT for the project the letter of interest is being submitted.
 - Indicate the members of the proposed project team that worked on the reference project and what role they served on the project.
- Project Team Availability
 - Specifically address the availability of each proposed project member and communicate in a quantifiable manner how much availability they have (e.g. 25%, 50%, 75%, 100%).
 - If the firm has existing projects with the City of Oklahoma City or any of its Trusts, provide a list of those projects, the members of the proposed project team working on those projects, and how much of their workload is allocated to those projects.

8.0 Available Information:

Upon execution of a non-disclosure agreement, the following information will be made available for review in preparation of Letter of Interest submissions. The executed form must be submitted to Larry Hare (larry.hare@okc.gov) and Patty Pool (patty.pool@okc.gov) via e-mail.

- Relevant plant operational data
- Available as-built drawings for the plant
- Available construction shop drawing submittals for the plant
- Available operation & maintenance manuals for the plant
- Available studies for the plant