

**PROJECT UPDATE
WASTEWATER TREATMENT FACILITY
CITY OF NEVADA, IA**

May 20, 2020

Background

The current City of Nevada's Wastewater Treatment Facility (WWTF) is located at the northeast corner of the intersection of US 30 and 6th Street in Nevada and treats the residential, commercial and industrial wastewater flows that are collected and conveyed through the City's sanitary sewer collection system. The existing collection system consists of approximately 30 miles of sanitary sewer, 550 manholes, one lift station, and one equalization basin. The City's two permitted Significant Industrial Users (SIUs), Burke Corporation and the former DuPont Cellulosic Ethanol Plant, discharge to the City's collection system. The City continues to improve and rehabilitate the collection system and reduce wet weather flows received at the WWTF.

The existing WWTF has served the City for approximately 60 years and has been modified many times to accommodate expansion and upgrades. However, it does not have sufficient capacity for: 1) planned industry expansion by the Burke Corporation, which is projected to be completed by 2021 and will double its wastewater discharge, and; 2) projected population growth in the future. The existing WWTF configuration is not readily amenable to be modified to provide additional effluent disinfection and nutrient removal requirements currently required by the Iowa Department of Natural Resources (IDNR). Additionally, the facility is near the end of its life due to infrastructure age.

The City considered options to renovate and expand the existing WWTF and build a new facility. Due to many reasons, including space constraints and separation from inhabitable buildings at the existing location, the decision was made to build a new facility on another site.

Site Selection

In early 2015, the City of Nevada began the search for a sufficiently sized parcel of land south of Nevada along the West Indian Creek corridor to accommodate the construction of a new WWTF. A site was sought that would allow discharge to West Indian Creek, be readily accessible, and provide adequate separation from inhabitable buildings. In early 2017, the City of Nevada purchased a 123.5-acre parcel of farmland approximately three miles south of the existing Wastewater Treatment Facility along West Indian Creek for this purpose. This parcel is located along 270th Street southwest of the intersection with West Indian Creek. A minor subdivision was required to create the parcel to be purchased by the City, which was approved by Story County.

To accommodate the required additional treatment required by IDNR and the increased wastewater discharge from Burke Corporation, a construction start date for the new treatment facilities on this site is planned for July 2021, with completion by the end of 2023.

Facility Plan

A Facility Plan, which was completed by HR Green, Inc. in mid-2019, was developed based on the requirements of the IDNR Design Standards. The existing loads and flows were reviewed and design flows and loads were established for the future residential projected population; non-Burke industrial loading limits, and; the SIU Burke design loadings from their expansion.

A Waste Load Allocation (WLA) was developed for West Indian Creek as the proposed receiving stream adjacent to the new site. The WLA limits along with the Iowa Nutrient Reduction Strategy goals were used to evaluate wastewater treatment technologies considered in the report.

Two interceptor sewer alternatives and two WWTF alternatives were evaluated in detail. No evaluations of the existing collection system were included. The City of Nevada is currently implementing improvements to the existing collection system to reduce I&I flows.

Interceptor Sewer

The interceptor sewer alternatives propose to either:

- S1) follow West Indian Creek with a gravity sewer before being pumped with a lift station to the headworks of the proposed WWTF, or
- S2) to use a lift station and force main to pump flow from the existing WWTF site to Country Road S14 and subsequently conveyed via a gravity interceptor sewer to the new site.

The recommended interceptor sewer between the existing and new WWTF sites is Alternative S2, which locates the lift station at the existing WWTF site; force main along US Highway 30 to the intersection of County Road S14; and gravity interceptor sewer along County Road S14 to the new WWTF site. This route was chosen due to the following:

- Most economical
 - Avoids canyon-like corridor along West Indian Creek and the accompanying construction challenges
 - Shallower gravity sewer through most of the corridor
- Fewer permanent and temporary easements required
- Accessibility for construction and future operation/maintenance
- Avoids wooded corridor along creek

Wastewater Treatment

In the Facility Plan, the main objective of the WWTF alternatives evaluation was to find an economical solution (capital and life-cycle costs) that best met the City's qualitative criteria:

- Ease of operation
- Process reliability to handle flow/loading spikes
- Ability to perform nutrient removal, specifically Enhanced Biological Phosphorus Removal (EBPR)

The evaluations included preliminary, primary, secondary (with nutrient removal capability, solids treatment, solids processing, biosolids storage, and effluent

disinfection treatment processes. It was determined the new treatment facility would include the following:

- Preliminary treatment
- Secondary treatment with a Three-stage Oxidation Ditch
- Aerobic digestion process for solids, which is waste activated sludge
- Liquid biosolids storage (180 days)
- Land application of biosolids

Design

The City of Nevada entered into Agreement with HR Green, Inc. to design the Wastewater Treatment Facilities and the Interceptor Sewer in October 2019. It is anticipated the design will be complete by Fall 2020. The WWTF and the Interceptor Sewer will be bid as separate projects. It is anticipated the WWTF will be bid in early 2021, and the Interceptor Sewer will be bid in Fall 2021. The WWTF will be completed and in operation by the end of 2023. The Interceptor Sewer should be completed in about a year.

At this time, the design is nearing completion of the preliminary plans, the so-called 60% design stage.

Exhibits are attached to this project update that indicate the general layout of the treatment plant site, site grading, Natural Resources provided by Story County, preliminary interceptor sewer alignment, and treatment plant site separation from inhabitable buildings in the vicinity.

Opinion of Probable Cost

The opinion of probable construction cost for the proposed WWTF and Interceptor Sewer is approximately \$51,500,000.

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Accompanying Exhibits - Nevada WWTF

WWTF Overall Site Plan

WWTF Site Grading Plan

Natural Resources Exhibits

Preliminary Interceptor Sewer Alignment

WWTF Site Separation