

## Technical Memorandum

**Date:** February 25, 2025  
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**From:** Julie Walters, Geosyntec Consultants, Inc.  
**Subject:** Bowerman Power Renewable Natural Gas (RNG) Plant Project Water Infrastructure and Availability Study  
**Project #:** HSW1898

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### BACKGROUND

Geosyntec Consultants, Inc. (Geosyntec) prepared this Water Infrastructure and Availability Study on behalf of Bowerman Power LFG, LLC (Bowerman Power) for evaluation of potential impacts on Irvine Ranch Water District (IRWD)-owned potable water, non-potable water, and sewage systems associated with the proposed development of a Renewable Natural Gas (RNG) plant at the Frank R. Bowerman (FRB) Landfill. This analysis considers the connection and consumption impacts of the new plant on existing infrastructure and is intended to address comments provided by IRWD in response to the Notice of Intent to adopt an Initial Study / Mitigated Negative Declaration for the RNG plant. This memorandum addresses only the RNG plant and does not address broader impacts of development and landfill operations that occur outside of the Bowerman Power Lease Boundary which are not part of the RNG plant project.

### FINDINGS FROM PREVIOUS STUDIES

The *Sewer Connection Feasibility Study* (Feasibility Study) prepared by Geo-Logic Associates (GLA) in August 2020 (GLA, 2020) for the FRB Landfill was reviewed and referred to throughout the preparation of this memorandum. The Feasibility Study examined the practicality of constructing a sewer line connection from the landfill to nearby IWRD-owned systems. The following information was included in the Feasibility Study:

- Sewer service providers, including septic system providers, in or near the desired service area.
- Regulatory guidelines and procedures for sewer improvement plan processing.
- Availability of a sanitary sewer system near the FRB Landfill.

- Conceptual layout plans and alignment alternatives for the proposed sewer system connection.
- Hydraulic capacities for the existing and proposed sewer system alternatives.
- Existing and future estimated quantities of landfill wastewater (i.e., condensate, leachate, and groundwater) generation.

The FRB Landfill is situated towards the northern portion of IRWD's service area. As described in the Feasibility Study, the closest sanitary sewer collection and conveyance piping owned by IRWD is located within a residential community approximately one to two miles south/southwest of the FRB Landfill. Wastewater from this community is conveyed to IRWD's Michelson Water Reclamation Plant for treatment.

### **Applicability to the Proposed RNG Plant**

The Feasibility Study was prepared prior to the proposed development of the RNG plant and does not account for the water infrastructure and potential demands from the RNG plant on IRWD-owned systems; however, an analysis of the condensate generation data included in the Feasibility Study indicates that the future estimated quantity of condensate generation addresses situations of FRB Landfill's ultimate capacity and/or maximum operational condition. These estimates demonstrate that the FRB Landfill has sufficient capacity to handle condensate generated from the RNG plant.

It is Geosyntec's understanding that, currently, there is no sanitary sewer discharge pipeline and active connection from the FRB Landfill to the previously discussed IRWD sanitary sewer collection/conveyance piping and no connection to the IRWD sanitary sewer system is planned as part of the RNG plant project. Therefore, no sanitary sewer discharge from the RNG plant is anticipated to an IRWD-owned system.

## **PROPOSED RNG PLANT DEVELOPMENT**

### **RNG Plant Operations Overview and Site Description**

The proposed RNG plant will process landfill gas (LFG) collected from the FRB Landfill to generate renewable natural gas. The plant will be located northeast of Bowerman Power's existing LFG to electricity generation station at the FRB Landfill and will consist of an outdoor LFG processing system, a one-story, 2,500 square foot control/electrical building, and ancillary systems including an office and bathroom. The plant is planned to operate 24/7, with five full-time operators for eight-hour day shifts (7 AM – 3 PM). While no operators are scheduled to be on-site during the night shift, they will be on-call, as needed.

### **RNG Plant Design Criteria**

According to the RNG plant designer, Tent Engineering, the plant will be sized to process up to 6,000 standard cubic feet per minute (SCFM) of LFG into RNG, which is estimated to produce between 1,300 and 3,140 gallons per day (gpd) of condensate (Friesen, 2025). The LFG processing system will include chillers, blowers, compressors, pressure swing adsorption towers, and a



thermal oxidizer. An overview of the proposed piping plan for the plant is shown on the attached utility piping layout.

## **ANTICIPATED IMPACTS TO IRWD-OWNED SYSTEMS**

### **Potable Water Use**

As illustrated on the attached utility piping layout, no potable water lines are included in the planned plant layout. Due to the small number of employees at the plant the limited hours of occupation, and the absence of potable water being piped into the plant, construction of the proposed RNG plant is not anticipated to impact IRWD-owned potable water systems.

### **Non-Potable Water Use**

The FRB Landfill is contractually obligated to provide non-potable water to Bowerman Power; therefore, it is assumed that the landfill's non-potable water use assumptions consider the demands of Bowerman Power. The RNG plant will tie into the existing non-potable water system as illustrated on the attached utility piping layout. Non-potable water demands will include handwashing stations and toilet flushing in the bathroom facilities. The bathroom facilities at the electricity generation station utilize an on-site disinfection system. Non-potable water is pumped to a tank on top of the building housing the bathroom facilities and treated for potable use. Non-potable water used at the RNG plant will be treated the same way.

Due to the small number of employees at the plant, the limited hours of occupation, and the minimal demand for non-potable water in the RNG plant bathroom facilities, construction of the proposed RNG plant is anticipated to have minimal impacts on IRWD-owned non-potable water systems.

### **Fire Suppression Water Demand**

The preliminary fire suppression water demand for the plant was assessed in the *Bowerman Landfill RNG Facility Alternative Materials and Methods (AM&M) Proposal* (AM&M Proposal) prepared by Tent Engineering in February 2024 (Tent, 2024). The AM&M Proposal evaluated the required fire flow per the *2022 National Fire Protection Association 1142 Standard on Water Supplies for Suburban and Rural Firefighting* (NFPA 1142) and the 2022 California Fire Code (CFC), *California Code of Regulations, Title 24, Part 9, Integrated with the January 2023 Errata*, which state that reduced fire flow requirements can be used in rural areas where development of full fire flow requirements is impractical. Under this definition, the fire suppression water volume required was calculated to be 16,500 gallons.

The fire suppression system for the plant will utilize the 46,000-gallon fire water tank that was constructed in early 2016 to service the adjacent electricity generation station. The system will draw water from the existing tank through dedicated hydrants positioned at the northeastern and southwestern ends of the plant, as illustrated on the attached utility piping layout.

As previously discussed, the FRB Landfill is contractually obligated to provide non-potable water to Bowerman Power, including filling the existing fire water storage tank as needed; therefore, non-

potable water needed to supply the RNG plant's fire suppression system has previously been accounted for and is not anticipated to impact IRWD's non-potable water system infrastructure.

### **Sewage Generation and Disposal**

As illustrated on the attached utility piping layout, no new sewer line connections to the IRWD sewage system are included in the planned plant layout. Septic waste from the plant's bathroom facilities will be pumped to a sanitary holding tank that will be regularly pumped out and hauled off-site by a licensed third-party vendor. The projected flow of sewage is expected to be minimal, consistent with sewage flows generated by office use.

Due to the small number of employees at the plant, the limited hours of occupation, and the lack of a planned sewer system connection at the plant, construction of the proposed RNG plant is not anticipated to impact IRWD-owned sewage systems.

### **Condensate Generation and Disposal**

Condensate is generated through the removal of water from the "wet" LFG that is withdrawn during the LFG upgrading process. As previously discussed, between 1,300 and 3,140 gpd of condensate is expected to be generated at the proposed RNG plant. This condensate will be pumped to the existing FRB Landfill tank farm. According to the *Industrial Activities Stormwater Pollution Prevention Plan for the FRB Landfill*, most recently updated in August 2024, approximately 10,000 gpd of condensate is generated by the landfill and the tank farm has capacity for approximately 20,000 gallons of condensate (Geosyntec, 2024). Currently, condensate is hauled off-site for disposal by a licensed third-party vendor.

As the proposed RNG plant is not anticipated to contribute condensate in quantities that exceed the current capacity of the FRB Landfill tank farm or the future estimates of condensate generation for the FRB Landfill as outlined in the Feasibility Study (GLA, 2020), construction of the proposed RNG plant is not anticipated to impact IRWD-owned sewerage systems should condensate be treated and disposed of in the sewer at some point in the future.

### **SUMMARY**

Overall, construction of the proposed RNG plant is anticipated to have minimal to no impact on IRWD-owned infrastructure as summarized below:

- Potable water use will be negligible and limited to office use. Potable water needs will be met by a third-party potable water supply vendor and are not anticipated to impact IRWD-owned potable water systems.
- Non-potable water use will be negligible and limited to handwashing and toilet flushing activities. Non-potable water needs will be met by the FRB Landfill's existing non-potable system and are not anticipated to impact IRWD-owned non-potable water systems.



- The fire suppression system will operate within the capacity of the existing fire water tank, requiring no additional improvements, and is not anticipated to impact IRWD-owned non-potable water systems.
- Sewage flow will be minimal and managed through on-site systems, including collection via septic tanks and off-site disposal via trucking; therefore, there are minimal to no impacts to IRWD-owned sewage systems anticipated.
- The RNG plant will generate up to an estimated 3,140 gpd of condensate, which will be routed to the existing FRB Landfill tank farm and hauled off-site for disposal. Should condensate generated at the RNG plant be disposed of via IRWD-owned sewer systems in the future, it is assumed that the impacts will not exceed those already estimated in the FRB Landfill's Feasibility Study.

## REFERENCES

California Fire Code (CFC), *California Code of Regulations, Title 24, Part 9, Integrated with the January 2023 Errata*, January 2023.

Friesen, J. Email correspondence with Emily Yates, "RE: Bowerman RNG: IRWD Water Study," February 3, 2025.

GeoLogic Associates (GLA), *Sewer Connection Feasibility Study for Frank R. Bowerman Sanitary Landfill, Orange County, California*, August 2020.

Geosyntec Consultants, Inc (Geosyntec). *Industrial Activities Stormwater Pollution Prevention Plan for the FRB Landfill*. August 26, 2024.

National Fire Protection Association 1142 (NFPA 1142), *Standard on Water Supplies for Suburban and Rural Firefighting*, 2022Geosyntec Consultants Inc. (Geosyntec), *Industrial Activities Stormwater Pollution Prevention Plan for Frank R. Bowerman Landfill*, August 2024.

Tent Engineering (Tent), *Bowerman Landfill RNG Facility Alternative Materials and Methods Proposal*, February 2024.

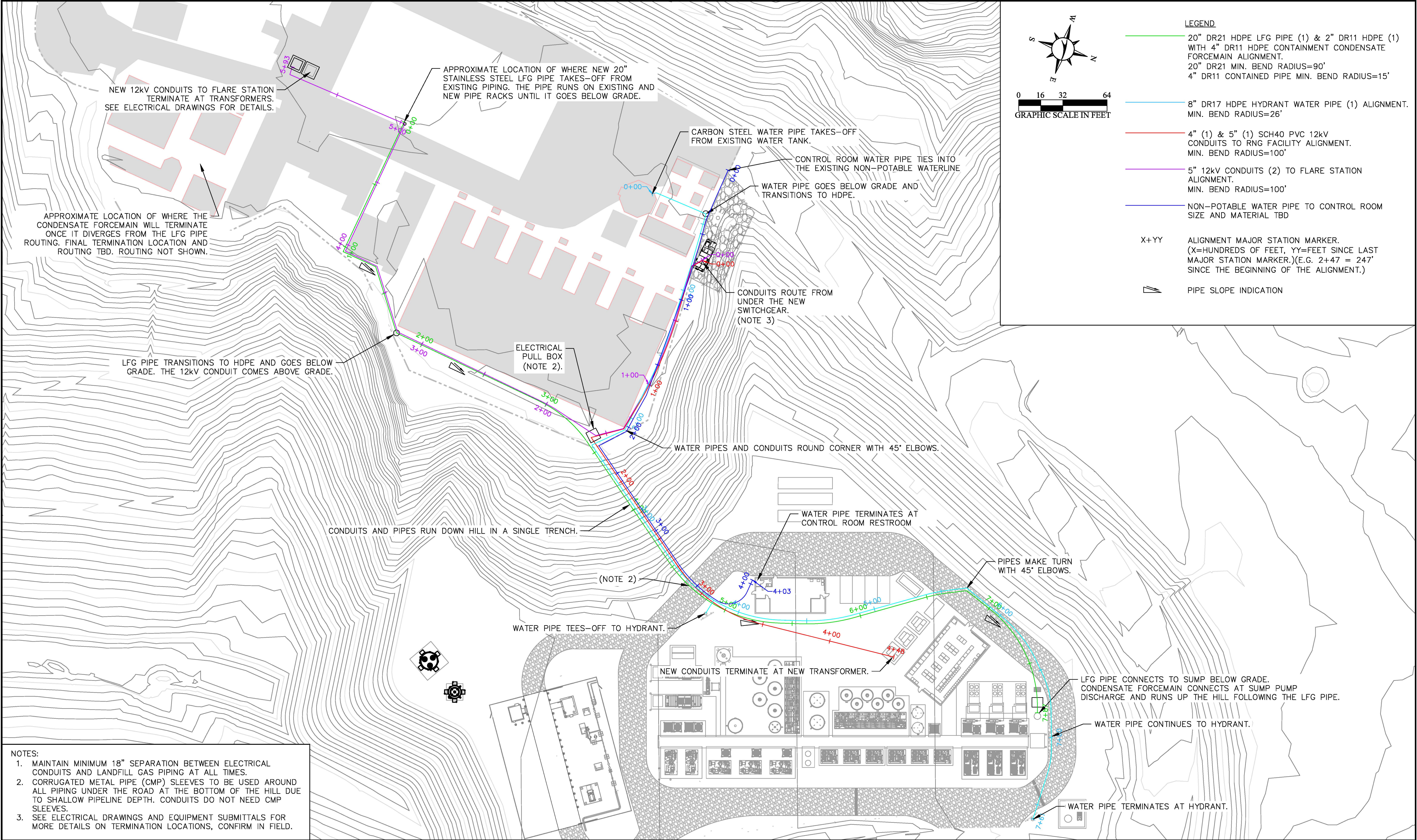
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# **ATTACHMENT A**

## **Bowerman RNG Plant**

### **Utility Piping Layout Overview**





NOTES:

1. MAINTAIN MINIMUM 18" SEPARATION BETWEEN ELECTRICAL CONDUITS AND LANDFILL GAS PIPING AT ALL TIMES.
2. CORRUGATED METAL PIPE (CMP) SLEEVES TO BE USED AROUND ALL PIPING UNDER THE ROAD AT THE BOTTOM OF THE HILL DUE TO SHALLOW PIPELINE DEPTH. CONDUITS DO NOT NEED CMP SLEEVES.
3. SEE ELECTRICAL DRAWINGS AND EQUIPMENT SUBMITTALS FOR MORE DETAILS ON TERMINATION LOCATIONS, CONFIRM IN FIELD.

0	11/25/24	ISSUED FOR 60% DESIGN	EB	ES-JF	JF-KP
REV	DATE	DESCRIPTION	DRN BY	DSN BY	CHK BY



5313 Campbells Run Road,  
Pittsburgh, PA 15205



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PIPE ROUTING FROM EXISTING FACILITY - OVERVIEW

Bowerman RNG Facility  
Bowerman Power LFG, LLC  
11006 Bee Canyon Access Road,  
Irvine, CA 92602

DRAWING NO.

M201

PROJECT NO.

164.02