211 N. 13<sup>th</sup> Street, Suite 503 Philadelphia, PA 19107 215-545-7295

# verdantas

#### Memo

**Date** May 7, 2025

To New Castle County Public Works

From Verdantas, LLC

Subject Blue Diamond Park Lot 2 Warehouse

Sanitary Design Memo

Project Number 25449

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Bryan Ammermon

#### 1. Introduction

The purpose of the Blue Diamond Park Lot 2 project located on Tax Parcel #10-045.00-021 is to redevelop the site into a warehouse. The proposed warehouse, guard shack and fire pump house will be served by a new private on-site sewer system that will discharge to an existing private sewer system on Lot 1 of Blue Diamond Park. Wastewater from the entire Blue Diamond Park is conveyed to an existing private pump station on Lot 1 where it discharges into the New Castle County public sewer system through a 3-inch force main to an existing manhole at the intersection of Chadwyck Boulevard and Shetland Drive.

The proposed Lot 2 sewer system will discharge to an existing manhole located along the Lot 1 and Lot 2 property boundary. Due to site constraints, connecting the proposed sewer laterals that serve the guard shack and bathrooms located on the southern corner of the warehouse via gravity flow with minimum allowable slope is infeasible. Therefore, flow from these laterals will be directed to a pump station and discharge through a 2-inch force main to SMH-101 of the proposed on-site sewer system.

#### 2. Policy No.6

On behalf of the Owner, PR-STOLTZ PROPCO BLUE DIAMOND-LOT 2, LLC, Verdantas, LLC is requesting a special exception from New Castle County allowing the use of a private grinder pump station for partial flows at the Lot 2 site. This request is made in compliance with the Department of Public Works (DPW) Sewer Capacity Group Policy No. 6, dated October 6, 2003. The total anticipated sewer flows are 35,100 GPD for the site with 1,400 GPD directed to the new grinder pump station. As discussed above the grinder pump station will service the guard shack and three bathrooms in the south corner of the building.

The approval of a grinder pump station for partial sewer conveyance is based on several factors:

- A gravity sewer connection is not feasible at the minimum allowable slope and utility crossings.
- A septic system designed for the proposed facilities wastewater flows would not be feasible on the property with the current development.
- The proposed grinder pump station will be owned by the applicant, which will facilitate the proper operation and maintenance of the system.

For these reasons, the subject property should qualify for a special exception to be served by a private grinder pump station and force main.

#### 3. Design Standards

The analysis was conducted in conformance with the following standards:

- New Castle County Department of Public Works (NCCDPW) Sewer Design Policy No. 7, May 1, 2012 (last revised August 16, 2024)
- Recommended Standards for Wastewater Facilities ("Ten State Standards"), 2014 edition.

#### 4. Pump Station Design Flows

The pump station will convey flow from the proposed guard shack and bathrooms located on the southern corner of the proposed warehouse. Table 1 shows the average and peak daily flows for the pump station.

**Peak Hourly Peak Hourly Average Daily Peak Factor** Description Flow **Flow** Flow (GPD) (GPM) (GPD) Southern Warehouse 4,200 2.9 1,050 4 **Bathrooms** 1.400 1.0 **Guard Shack** 350 4 3.9 TOTAL 1,400 4 5,600

**Table 1. Pump Station Design Flows** 

## 5. Pump Station Design

The design for the pump station was based on a Myers duplex submersible grinder pump package. The pump station wet well will be a 36-inch diameter fiberglass basin with a concrete anti-flotation base. The wet well is sized to have sufficient volume to allow no more than six pump starts per hour in accordance with NCCDPW Sewer Design Policy No. SS 7. The recommended pump is a WGX20 series, Model WX20-43, with a 4-inch impeller, and a 2 HP motor operated at 3450 RPM. The design point for the pump station is 27.5 gpm at 20.9 feet TDH. Pump station calculations and system curve are included in **Attachment A**.



### 6. Force Main Design

The force main is sized to provide a minimum cleansing velocity of 2.0 feet per second at the design pump flow rate in accordance with NCCDPW Sewer Design Policy No. SS 7. **Table 2** shows the size and velocity of the proposed force main.

Table 2. Force Main Sizing and Velocity

Design Pump Flow Rate	2" HDPE DR 11 I.D.	Pipe Velocity
(GPM)	(inches)	(ft/sec)
27.5	1.92	3.05

The total length of the force main will be approximately 634 feet. In-line cleanouts will be provided at 400-foot maximum intervals along the force main. The force main will be installed with direct bury tracer wire and metallic locator tape to facilitate locating the underground pipelines. Soil markers will also be set at regular intervals on the ground surface above the force mains in non-paved areas. The force main will discharge to SMH-101 of the proposed on-site sanitary sewer system.

Should you have any questions concerning this memo or require any further information, please feel free to contact me.

Respectfully,

**VERDANTAS** 

Ryan K. Minnick, P.E.

**Project Engineer** 

