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ENGINEERING & CONSULTING SERVICES

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File No. 14-08015

Tina M. O'Rourke, Business Manager
Horsham Water & Sewer Authority
617 Horsham Road
Horsham, PA 19044

Reference: 14-06018 – Review of Final Stormwater Treatment Conceptual Design Tech. Memo.

Dear Ms. O'Rourke:

On behalf of the Horsham Water and Sewer Authority (HWSA), we have reviewed the following:

- Final Stormwater Treatment Conceptual Design Technical Memorandum for the Perfluorinated Compound Facility Investigation at the Horsham Air Guard Station (111th Attack Wing) Horsham, Pennsylvania, by Leidos, dated December 7, 2018.

This document details a variety of proposed conceptual designs for treating PFAS contaminated storm and surface water from the Horsham Air Guard Station (AGS) on behalf of the Air National Guard (ANG). The purpose of this letter is to provide HWSA a summary of the document and comments as they pertain to HWSA groundwater supply. We note that a draft of the above document was not previously reviewed by HWSA.

Summary of Drainage Areas at the Horsham AGS

Horsham AGS drainage is divided into three zones: Drainage Area (DA) 001, 002, and 003 conveying stormwater to Outfalls 001, 002, and 003, respectively. The drainage system was initially constructed as part of former Naval Air Station Joint Reserve Base (NAS-JRB). The three (3) outfalls on the Horsham AGS also receive run off from portions of NAS-JRB property. These drainage areas are characterized as follows:

DA 001. Approximately 186 acres in size (10 acres on NAS-JRB) of which 71% is reported to be impervious surface. Features include the Horsham Air Guard Stormwater Basin and Privet Road Basin. Dry-weather flow to Outfall 001 is approximately 40 gallons per minute (gpm).

DA 002. Approximately 165 acres in size and collects mostly surface water from the NAS-JRB (148 acres on NAS-JRB). Features include the Western Stormwater Basin, Building 348 and Manhole SW06. Dry-weather flow is consistently observed in the trench drains south of Building 348 with rates of approximately 5 to 15 gpm. Sampling of Outfall 002 has indicated the primary source of PFAS contamination is from the NAS-JRB stormwater system and flight apron run off. The flight apron is serviced by trench drains conveying stormwater to Horsham AGS.

DA 003. Approximately 21.6 acres in size (3.6 acres on NAS-JRB) including the location of former Waste Water Treatment Plant (WWTP) and a series of culverts and outfalls along Easton Road. Dry-weather flow has not been observed in DA 003.

Outfall 001 Proposed Treatment Modifications

The December 7, 2018 report recommends the following modifications for the treatment of stormwater in DA-1:

1. **Increase Capacity of Existing Treatment System**

- Increase the storage capacity of the existing Stormwater Basin located upstream of the treatment system
- Supplement GAC with ion exchange resin treatment
- Evaluate supplementing the treatment system with perchlorate selective resin
- Perform a detailed hydrologic study to evaluate stormwater volumes.

2. **Lessen Stormwater Runoff by installing Best Management Practices (BMPs)**

- Disconnect the downspouts on Buildings 201, 230, 335, 345, and 346 and install level spreaders to receive rooftop runoff from the buildings.
- Remove or replace any unused pavement with porous paving.
- Modify existing swales to have a more porous subsurface.
- Reconfigure the concrete-lined drainage channel along Privet Road to be a grass swale.
- Reduce the size of the existing 44-acre flight apron or replace with impervious pavement and infiltration trenches.
- Modify the concrete drainage channels in the area around the Former Water Treatment Building and convey rooftop runoff to grass areas.

3. **Decentralized Treatment**

- Install storm drain with commercial filters designed to treat PFAS with GAC and/or resin. In order to select appropriate treatment media, further site evaluation and pilot testing would be required.

Outfall 002 Proposed Treatment

The December 7, 2018 report recommends the following modifications for the treatment of stormwater in DA-2:

- Seal the outlet that leads from stormwater sample location SW04 to stormwater sample location SW05, in order to prevent stormwater coming from the NAS JRB site onto the Horsham AGS property. Perform additional sampling and assess potential residual sources in the area.

Outfall 003 Proposed Treatment

The December 7, 2018 report recommends the following modifications for the treatment of stormwater in DA-3:

- Install a retention basin, which includes treatment of stormwater prior to infiltration.
- Install passive filters to treat stormwater prior to infiltration.
- Perform additional sampling and assess potential residual sources in the area.

Comments

1. The concept of treating PFAS-contaminated stormwater prior to infiltration is innovative. We recommend further assessment of these technologies, including performance criteria, operation and maintenance, and consideration of regulatory requirements.
2. Residual sources of contamination on the Horsham AGS site are qualified in the report as being "minor" while groundwater sources, presumably from the NAS JRB site, are characterized as being the "primary" sources. The designation of "minor" does not lessen the need to remediate the source material at the Horsham AGS site.
3. Prior to removing pavement as part of addressing the stormwater runoff at the site, evaluation of the concentration of PFAS in site soils beneath the pavement should be performed. The report does not propose a method for treating stormwater entering the Horsham AGS in drainage area DA-2. We recommend that a method be evaluated for such treatment regardless of origin of the stormwater being the Horsham AGS site or NAS JRB site.

We note that the ANG investigation of PFAS is ongoing and will further evaluate the extent of contamination and long-term solutions. We appreciate the ongoing communication. Should you have any questions please do not hesitate to contact me.

Sincerely,



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TJK/dmk

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