



FAIRFAX COUNTY  
WASTEWATER MANAGEMENT

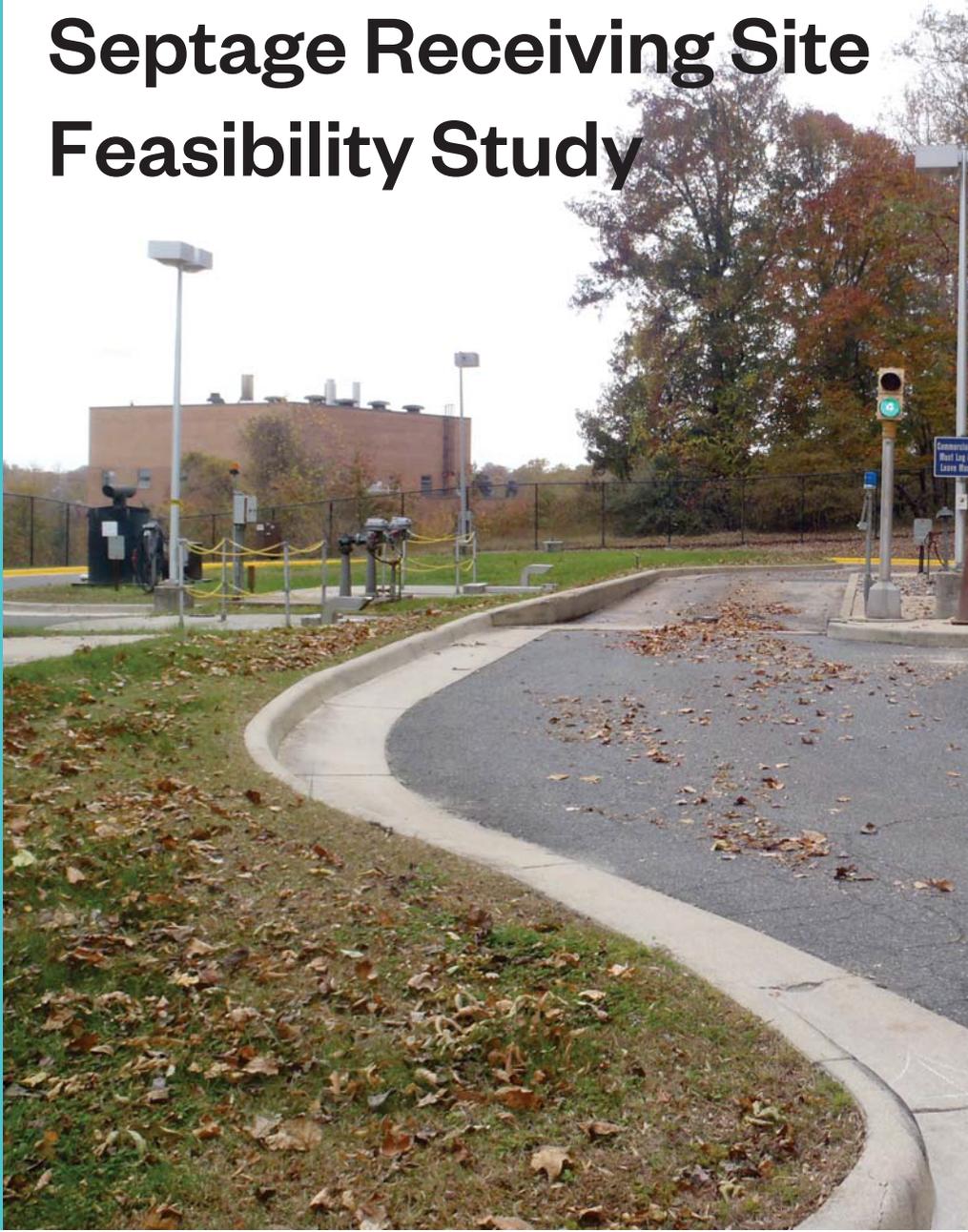


*Quality of Water = Quality of Life*

Fairfax County Department of  
Public Works and Environmental Services

Wastewater Collection Division

# Septage Receiving Site Feasibility Study



**Hazen**





Fairfax County Department of Public Works and  
Environmental Services

FAIRFAX COUNTY  
WASTEWATER MANAGEMENT

Wastewater Collection Division



*Quality of Water = Quality of Life*

Task Order No. 14-05 under  
Agreement dated April 11, 2013

# Septage Receiving Site Feasibility Study

Draft

June 2015

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## ABBREVIATIONS

AACE	Association for the Advancement of Cost Engineering
AWTP	Advanced Wastewater Treatment Plant
BRWRF	Broad Run Water Reclamation Facility
County	Fairfax County
DPWES	Fairfax County Department of Public Works and Environmental Services
FCHD	Fairfax County Health Department
FCPA	Fairfax County Park Authority
FOG	Fats, Oils, and Grease
ft	Feet
gal	Gallons
GIS	Geographic Information System
Hazen	Hazen and Sawyer
in	Inches
NMPCPCP	Noman M. Cole Jr. Pollution Control Plant
ORP	Oxidation-reduction Potential
POTW	Publicly-owned Treatment Works
PS	Pump Station
PWCSA	Prince William County Service Authority
RPA	Chesapeake Bay Preservation Area or Resource Protection Area
SCADA	Supervisory Control and Data Acquisition
SCAT	Sewage Collection and Treatment
SHAD	Sewage Handling and Disposal
UOSA	Upper Occoquan Service Authority
VDEQ	Virginia Department of Environmental Quality
VDH	Virginia Department of Health
VDOT	Virginia Department of Transportation
VOC	Volatile Organic Chemical
WCD	Wastewater Collection Division
WPMD	Wastewater Planning and Monitoring Division
WSSC	Washington Suburban Sanitary Commission



# EXECUTIVE SUMMARY

## BACKGROUND, PURPOSE, AND SCOPE

Fairfax County (County) currently operates two septage receiving stations, one at Colvin Run, near the Difficult Run Pump Station, and one at the Noman M. Cole Jr. Pollution Control Plant (NMCPCP). In response to a citizen petition received regarding the Colvin Run site, the Wastewater Collection Division (WCD) of the Department of Public Works and Environmental Services (DPWES) commissioned this study to perform a review of the existing septage receiving program and consider the feasibility of different program alternatives. The goals and objectives of this study are to:

- Review the existing operations of each facility and compare with best practices and operations of other area utilities.
- Assess community needs for continuation of the septage receiving program.
- Identify potential alternative sites for replacement of the Colvin Run site.

The scope of this study included the following tasks:

- Review operating data for the two existing facilities.
- Review Fairfax County Health Department requirements and related environmental regulations.
- Review other projects that may impact the Colvin Run site, including the Difficult Run Pump Station (PS) improvement project and the Virginia Department of Transportation (VDOT) plans for widening Route 7.
- Survey other local utilities to obtain information on their septage receiving sites and practices.
- Survey septage haulers to understand their needs regarding septage receiving sites.
- Meet with citizens to understand their concerns regarding the Colvin Run site and obtain feedback regarding other options.
- Identify potential improvements to the Colvin Run site in the context of citizen input and the Difficult Run PS upgrade and Route 7 widening projects.
- Identify and evaluate potential alternative sites for replacement of the Colvin Run site.

The report summarizes the results of each of these tasks and presents recommendations for improvements.

## EXISTING SITES

The Colvin Run septage receiving station is located near the intersection of Route 7, Colvin Run Road, and Carpers Farm Way, along the access road for the Difficult Run Raw Sewage Pump Station. This location is convenient to the Great Falls/Hunter Mill unsewered areas of the County, as shown in Figure ES-1. Based on data collected from the access gate, it is estimated that approximately 6,000 trips were made to this facility in 2014.

The Noman Cole septage receiving station is located at the NMCPCP. It is convenient for serving the Clifton and Gunston unsewered areas of the County. Based on data collected from manifests, approximately 4,000 trips were made to this facility in 2014.

## REGULATIONS AND PERMITTING

Haulers must be registered with the Fairfax County Health Department (FCHD) in order to discharge at Fairfax County septage receiving stations. FCHD issues registrations on an annual basis and also conducts truck and receiving site inspections. No hauled wastewater may be discharged into the Fairfax County system from outside of the County except for that generated in the Cities of Fairfax and Falls Church and the Towns of Clifton, Herndon and Vienna. Wastewater having a pH below five or above twelve may not be discharged to the system.

## SURVEY OF LOCAL UTILITIES

The surrounding local utilities were surveyed regarding features of their septage receiving programs. The utilities surveyed included:

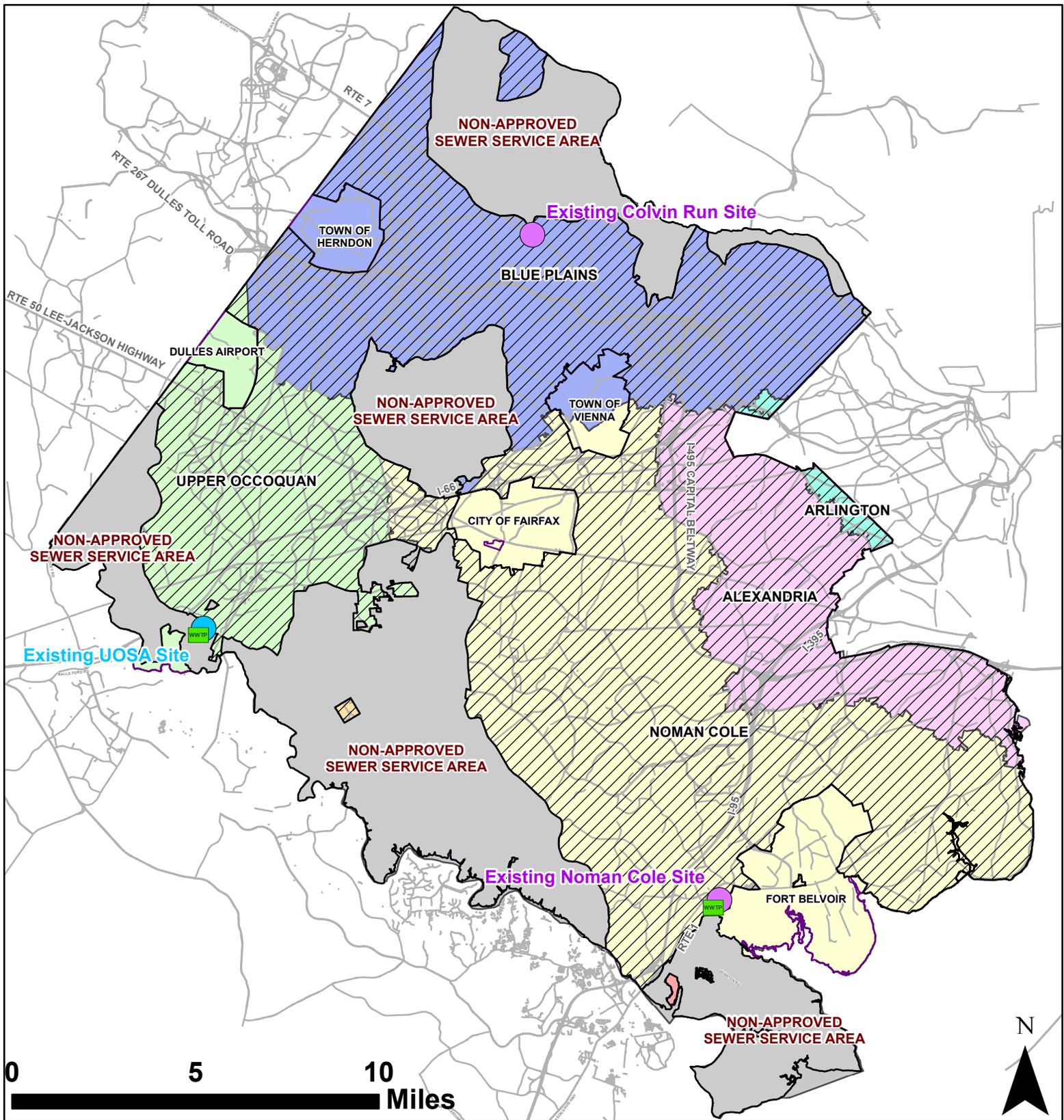
- Alexandria Renew
- Arlington County
- DC Water
- Loudoun Water
- Prince William County Service Authority
- USOA
- WSSC

The responses indicated a range of treatment options, from no treatment, with discharge directly or almost directly into a large pipe, to providing essentially full preliminary treatment. All of the utilities surveyed provide some type of access control at their facilities. All of the facilities charge some type of capacity-based rate in addition to basic registration fees.

## HAULER SURVEY

Haulers registered in Fairfax and Loudoun Counties were surveyed regarding how potential changes to Fairfax County's septage receiving program would affect sewage haulers. The following are some major findings from the survey:

- Domestic septage and grease trap waste were the most commonly reported waste types.
- The need for hauling services is expected to increase at least slightly in the future.
- The Colvin Run site is important to haulers.
- At least 20% of the waste being discharged at Fairfax County sites may originate from other jurisdictions.
- Additional fees would have a significant impact on the decision of sewage handlers to use Colvin Run or NMCPCP and the costs would be passed on to consumers.



**Wastewater Treatment Areas**

	ALEXANDRIA
	ARLINGTON
	BLUE PLAINS
	HARBOR VIEW
	NOMAN COLE
	PUMP AND HAUL
	UPPER OCCOQUAN



Septage  
Receiving Site  
Feasibility Study



	Existing Fairfax County Septage Receiving Sites
	Existing UOSA Septage Receiving Site
	Wastewater Treatment Plants
	Approved Sewer Service Area
	Non-Approved Sewer Service Area
	Major Roads

**Figure ES-1 - Fairfax County Approved and Non-Approved Sewer Service Areas, Wastewater Treatment Areas, and Existing Septage Receiving Sites DRAFT**



## COMMUNITY OUTREACH

In order to better understand the residents' concerns regarding the existing Colvin Run site, a community meeting was held with the petitioners and a representative from the Dranesville Supervisor's office. Major community concerns identified at the meeting included traffic and odor. These items were included as criteria in the site evaluation. A second community meeting is planned at the conclusion of this study.

## SITE EVALUATION

A siting analysis was performed in order to identify and evaluate potential alternative sites for replacement of the Colvin Run site. Based on a review of GIS data and aerial photography, along with a drive-through of the study area, six potentially feasible sites were identified, as follows:

- Site 1 – Existing Colvin Run site
- Site 2 – I-66 Transfer Station
- Site 3 – Scott's Run Meter Vault
- Site 4 – Dead Run Pump Station
- Site 5 – Tysons Pump Station
- Site 6 – Lake Fairfax Park Maintenance Facility

The sites were evaluated with respect to a series of criteria using a screening matrix approach. Site 6, the Lake Fairfax Park Maintenance Facility, was the highest ranked site in the evaluation, with Site 1, the existing Colvin Run site, ranked second.

## RECOMMENDED SITE

The recommended site to replace the existing Colvin Run site is Site 6, the Lake Fairfax Maintenance facility. The next step in implementing this site will be a preliminary engineering report that will further refine the concept plan developed herein. The report scope should also include a community outreach component that includes the Hunter Mill Supervisor's office and area stakeholder groups in the process. The planning-level construction cost estimate for the proposed facilities is \$3,420,000.

In the event that the County is unable to proceed with the Lake Fairfax site, the secondary recommendation would be to improve the Colvin Run site, with the next steps again being a preliminary engineering report and additional community outreach to refine the design concept.

## NOMAN COLE SITE IMPROVEMENTS

The recommended improvements for the Noman Cole site include:

- Separate entrance from Old Colchester Road.
- Odor control system replacement.

- Instrumentation upgrades, to include addition of ORP monitoring and electronic log sheet capture.

The planning-level construction cost estimate for the proposed facilities is \$730,000.

## RATES

Based on a review of other local utilities' septage rate structures and in consideration of the objectives of improving cost recovery and attaining regional rate parity, a new, capacity-based rate structure is proposed.

The initial proposed rate structure is as presented in Table ES-1. It is recommended that the rates be reviewed annually. Also, a review of surrounding utilities' rates should be conducted at least once every five years, with the results incorporated into the rate study as appropriate to meet both partial cost recovery and regional rate parity objectives.

**Table ES-1. Proposed Septage Receiving Rates, FY17 through FY21**

Vehicle Capacity (gallons)	FY17	FY18	FY19	FY20	FY21
1 to 49	\$611	\$629	\$648	\$667	\$687
50 to 899	\$820	\$840	\$860	\$886	\$912
900 to 2,999	\$1,315	\$1,341	\$1,363	\$1,404	\$1,446
3,000 or more	\$2,023	\$2,056	\$2,082	\$2,144	\$2,208

## ADDITIONAL RECOMMENDATIONS

The following short-term improvements to the Colvin Run site were recommended as part of this study and have been implemented or are in the process of being implemented, as noted below.

- The County is in the process of updating signage at the Colvin Run site with explicit direction on discharge of in-County waste only.
- The County's Wastewater Planning and Monitoring Division (WPMD) of DPWES and the FCHD have jointly increased the frequency of FCHD inspections of haulers using the site.
- The County is in the process of installing a manifest drop-off point at the site.
- The County is coordinating with WSSC, Loudoun County, and DC Water to obtain information on haulers that bring waste generated outside of the County to the site. Violators are given a warning, and, if violations continue, a notice of violation is issued. If necessary, enforcement may be escalated to include revocation of gate card privileges and/or the FCHD registration.
- The County has repaired the access road (used stone fill for potholes).
- The County has installed sealed manhole lids on selected manholes to reduce odor.

- The County has installed a no left turn sign for drivers exiting the access road at Colvin Run Road. Ongoing tree trimming is required to keep this sign visible; this should be a part of routine site maintenance.
- The County has removed the accumulated debris from the top of the storm drain where it crosses under the access road between the septage receiving station and the Difficult Run PS. This item should also be incorporated into routine site maintenance.

The following are general program recommendations:

- Consider establishing an agreement with the City of Alexandria to allow waste generated in Alexandria to be discharged at Fairfax County sites.
- Consider establishing an agreement with Loudoun County to allow waste generated in Loudoun to be discharged in Fairfax and vice versa.
- Conduct community outreach with the hauling community in advance of implementing significant changes such as opening and closing sites. There is a need for education and assistance regarding a closure or relocation, so that haulers understand where the alternate facilities are, when they are open, and how to obtain access to them.



# SECTION 1 – INTRODUCTION

## 1.1 AUTHORIZATION

The Fairfax County Department of Public Works and Environmental Services (DPWES) authorized Hazen and Sawyer (Hazen) to prepare this feasibility study of septage receiving in the County as Task Order No. 14-05 (Hazen Task No. 8) under the Wastewater Basic Ordering Agreement dated April 11, 2013.

## 1.2 BACKGROUND

Fairfax County (County) currently operates two septage receiving stations, one at Colvin Run, near the Difficult Run Pump Station, and one at the Noman M. Cole Jr. Pollution Control Plant (NMCP). In response to a citizen petition received regarding the Colvin Run site, the Wastewater Collection Division (WCD) of DPWES commissioned this study to perform a review of the existing septage receiving program as detailed in Section 1.4 below.

## 1.3 STUDY AREA

The study area for this assessment encompasses Fairfax County's existing wastewater collection system and the Noman M. Cole Water Pollution Control Plant (NMCP). The collection system is divided into treatment areas as shown in Figure 1. While these treatment areas provide a general indication of where wastewater flows are directed, there are individual septic systems located in each treatment area. A map provided by the County showing parcels with individual septic systems is included in Appendix A. Based on the County GIS data, there are approximately 21,000 parcels in Fairfax County using septic systems. They are concentrated in the northern portion of the County in the Great Falls and Hunter Mill areas, and in the southern portion of the County in the Clifton and Gunston areas.

The Colvin Run site is located in Great Falls, in the northern portion of the County, within the Blue Plains AWTP treatment area. The Noman Cole site is located in the southern portion of the County and discharges into one of the main NMCP influent sewers.

## 1.4 PURPOSE AND SCOPE

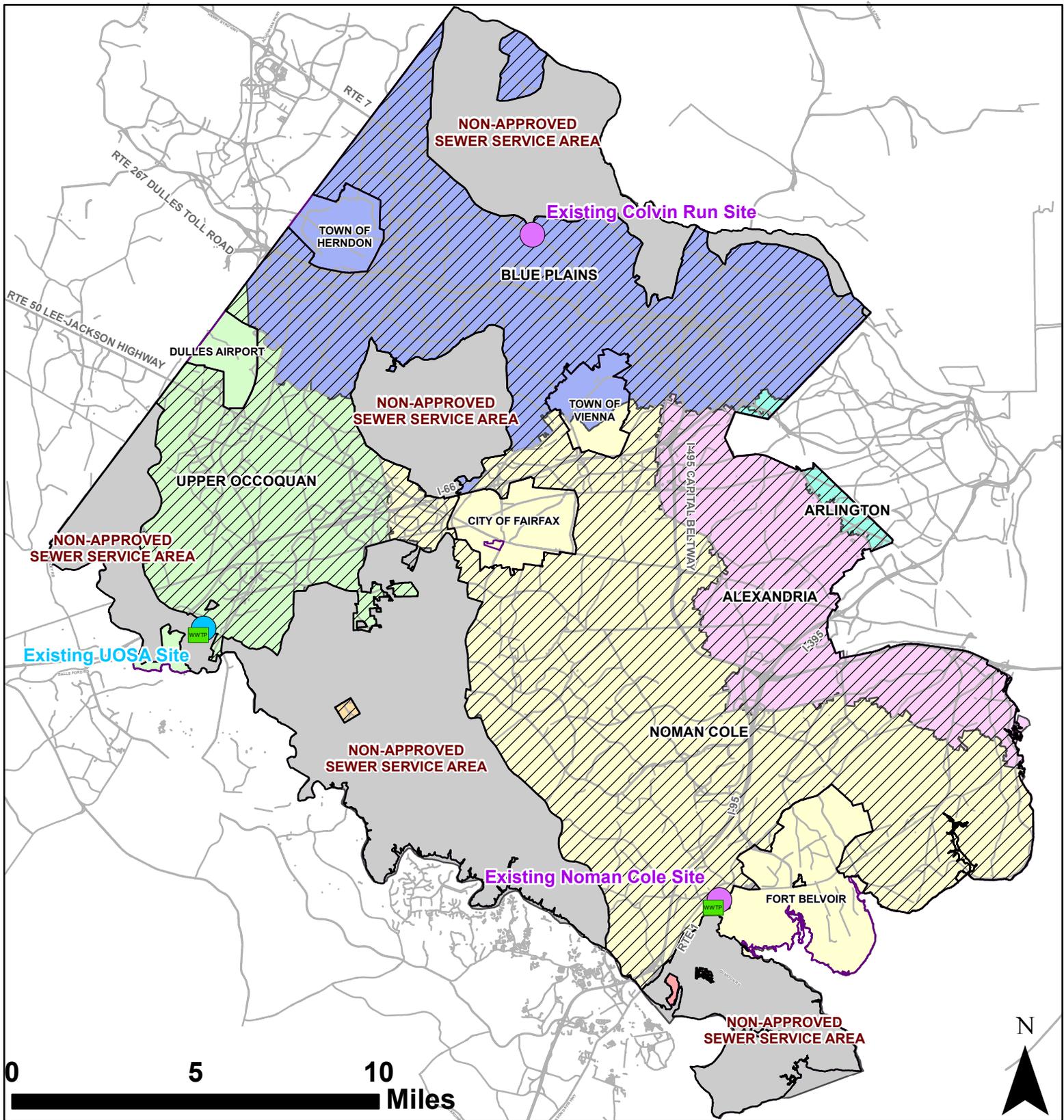
The purpose of this study is to evaluate Fairfax County's existing septage receiving program and consider the feasibility of different program alternatives. The goals and objectives of this study are to:

- Review the existing operations of each facility and compare with best practices and operations of other area utilities.
- Assess community needs for continuation of the septage receiving program.
- Identify potential alternative sites for replacement of the Colvin Run site.

The scope of this study includes the following tasks:

- Review operating data for the two existing facilities.
- Review Fairfax County Health Department requirements and related environmental regulations.
- Review other projects that may impact the Colvin Run site, including the Difficult Run Pump Station (PS) improvement project and the Virginia Department of Transportation (VDOT) plans for widening Route 7.
- Survey other local utilities to obtain information on their septage receiving sites and practices.
- Survey septage haulers to understand their needs regarding septage receiving sites.
- Meet with citizens to understand their concerns regarding the Colvin Run site and obtain feedback regarding other options.
- Identify potential improvements to the Colvin Run site in the context of citizen input and the Difficult Run PS upgrade and Route 7 widening projects.
- Identify and evaluate potential alternative sites for replacement of the Colvin Run site.

This report summarizes the results of each of these tasks and presents recommendations for improvements.



**Wastewater Treatment Areas**

	ALEXANDRIA
	ARLINGTON
	BLUE PLAINS
	HARBOR VIEW
	NOMAN COLE
	PUMP AND HAUL
	UPPER OCCOQUAN



Septage Receiving Site Feasibility Study



	Existing Fairfax County Septage Receiving Sites
	Existing UOSA Septage Receiving Site
	Wastewater Treatment Plants
	Approved Sewer Service Area
	Non-Approved Sewer Service Area
	Major Roads

Figure 1 - Fairfax County Approved and Non-Approved Sewer Service Areas, Wastewater Treatment Areas, and Existing Septage Receiving Sites DRAFT



## SECTION 2 – EXISTING SITE INFORMATION AND DATA REVIEW

### 2.1 REGULATIONS AND PERMITTING

The two major regulatory documents that govern sewage handling in Fairfax County are the Virginia Sewage Handling and Disposal Regulations and the Fairfax County Code.

#### 2.1.1 Virginia Sewage Handling and Disposal Regulations

The Virginia Sewage Handling and Disposal Regulations is part of the Virginia Administrative Code. The purpose of this regulatory document is to assure that all sewage is handled and disposed of in a safe and sanitary manner, to determine whether a permit for handling or disposing should be issued or denied, and to demonstrate to the owner the process to obtain a permit for handling and disposing of sewage. According to 12VAC5-610-240, any person who removes or contracts to remove and transport sewage shall be considered an owner and requires a sewage handling permit issued by the Commissioner.

The process to obtain registration as a sewage handler is documented in 12VAC5-610-380. First, handlers must submit an application to the district or local health department. The district or local health department shall meet with the applicant to discuss the methods and equipment required to properly handle the sewage, and then establish a time to inspect the handler's equipment. The district or local health department must approve the disposal site or sites before issuing a registration to the handler. Once issued, registrations require renewal every twelve months and may be revoked at any time based on unsafe changes to the sewage handler's operation. If necessary, the State may issue an order to require any owner to comply with these regulations; the failure to do so is a violation and may result in a misdemeanor.

In Fairfax County, the Fairfax County Health Department (FCHD) is the local health department responsible for this process. In addition to annual truck inspections, FCHD conducts random site visits to the receiving stations and has developed an inspection form for use during these visits.

#### 2.1.2 Fairfax County Code

Chapter 67.1-2-1 of the Fairfax County Code describes prohibited discharge standards within the County. In general, no pollutant may be discharged into the sewer system which will cause an interference or as a pass through or is harmful to the health, safety or welfare of publicly owned treatment works (POTW) personnel or the general public. Additionally, no industrial waste may be discharged into the POTW unless approved by the Director of DPWES (or other persons designated by the Director to administer and enforce standards relating to sewer use). Pollutants with a pH below five or above twelve may not be discharged to the POTW.

Chapter 67.1-3-5 requires septic tank waste, portable toilet waste and any other wastes authorized by the Director to be discharged at designated locations only. Haulers must possess a valid Fairfax County Health Department Sewage Handler License in order to discharge at these facilities. No hauled wastewater may be discharged into the Fairfax County POTW from outside of the County except for that generated in the Cities of Fairfax and Falls Church and the Towns of Clifton, Herndon and Vienna.

Chapter 68 of the Fairfax County Code governs individual sewage disposal facilities. Section 68.1-9-1 lists the annual fees associated with sewage handling. The annual cost of registration is \$710.00 for one vehicle and \$360.00 for each additional vehicle. Sewage handlers must go through the application process documented in 12VAC5-610-380 and pay this fee before they will be allowed to handle sewage in Fairfax County; every truck that hauls septage for a business must be registered.

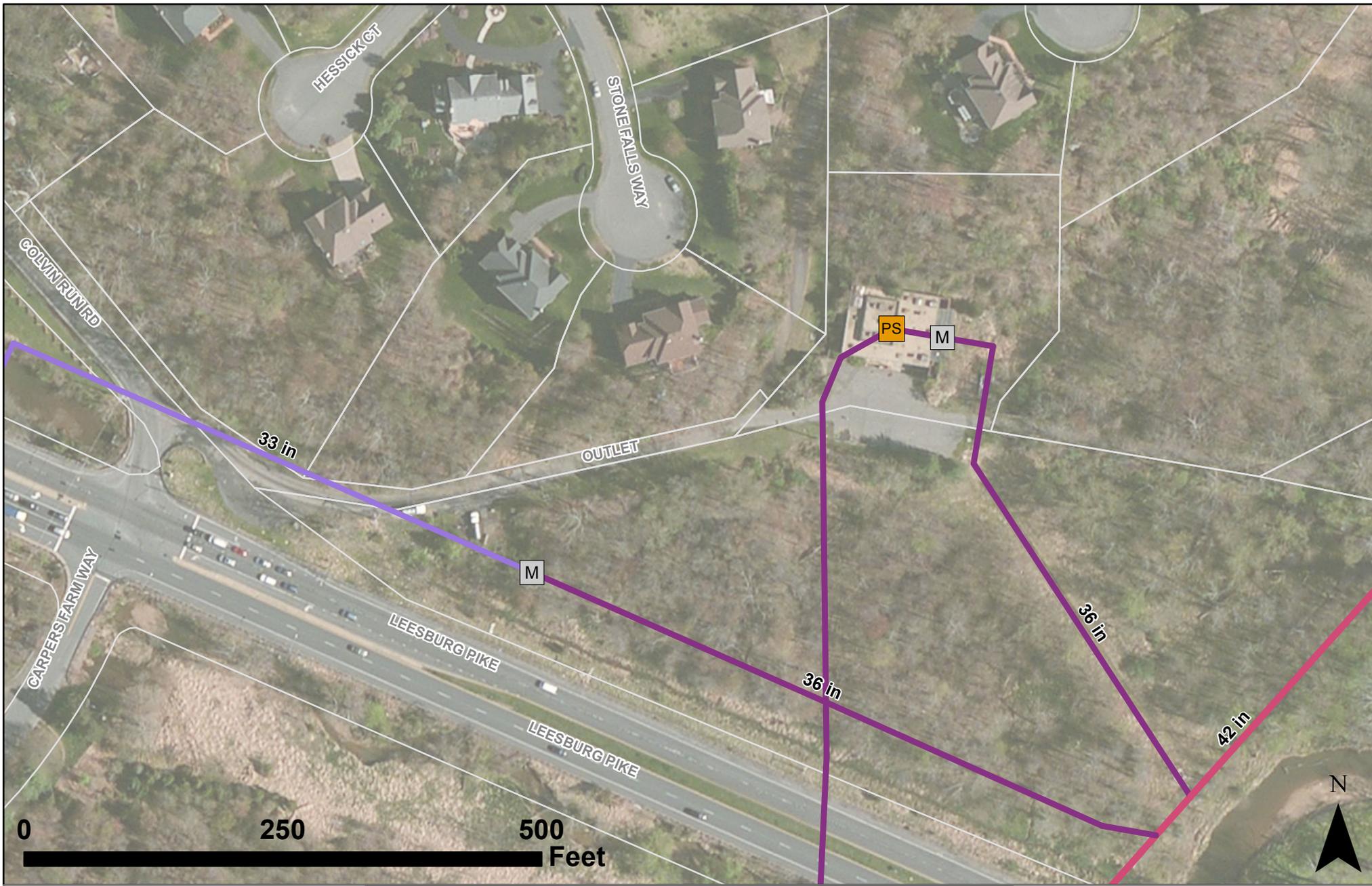
Chapter 118 of the Fairfax County Code is the Chesapeake Bay Preservation Ordinance. Section 118-3-2 of this document states that all on-site disposal systems not requiring a Virginia Pollutant Discharge Elimination System permit shall be administered by the Director of the Department of Health. Each disposal system in Fairfax County shall be pumped out at least once every five years. According to Section 118-9-1, the Director of the Department of Health shall serve a notice of violation to any property owner in violation of the above requirement. Failure to address the violation may lead to a Class 1 misdemeanor charge for the property owner. In order to monitor disposal systems that have been pumped out, sewage handlers are required to provide two copies of their manifests to the property owner and keep two for themselves. Both the property owner and the sewage handler are required to mail a copy to the Fairfax County Department of Health to serve as a record. These records, along with registration payment records, are input into the Fairfax County Health Department's database system (FIDO).

## **2.2 EXISTING FACILITIES**

### **2.2.1 Colvin Run Septage Receiving Site**

The Colvin Run septage receiving station is located near the intersection of Route 7, Colvin Run Road, and Carpers Farm Way, along the access road for the Difficult Run Raw Sewage Pump Station (Difficult Run PS), as shown in Figure 2. It is an unmanned station and has been in operation since at least the late 1970s. The access road connects to Colvin Run Road, which is heavily used by the surrounding community. The access road is also part of the Cross County Trail and receives pedestrian, bicycle, and vehicular use by park patrons. The access road and Difficult Run PS site are owned by the County Board of Supervisors, while the receiving station site is located on an easement on Fairfax County Park Authority (FCPA) property.

This site originally operated 24 hours per day, 7 days per week, but WCD reduced hours of operation to 6:00 am to 9:00 pm daily to address noise complaints from residents. The station is gated as shown in Figure 3 and only accessible by registered haulers with key cards provided by WCD.



10	20	36	66
12	21	39	72
14	24	42	78
15	27	48	84
16	30	54	
18	33	60	



Septage Receiving Site  
Feasibility Study



<b>PS</b>	Wastewater Pump Stations	<b>M</b>	Meter Vaults
	Sewer Treatment Area		Parcels

Figure 2 - Existing Colvin Run Septage Receiving Site  
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The site is operated by WCD and receives periodic inspections from WCD Pumping Station Branch personnel, the Fairfax County Health Department (FCHD) and DPWES Environmental Monitoring-Industrial Waste Section.

The station itself consists of a concrete ramp with an open pipe that fits the typical four-inch hose used by the haulers. The pipe is a short (less than 10 feet) connection to a deep 33-inch sewer. The short connection and depth of sewer allow haulers to pressurize their trucks during discharge without backups or splash back, which shortens the time it takes to drain a truck. The septage flows from this facility to the Potomac Interceptor and the Blue Plains AWTP. The site is sloped downward towards the pit and a yard hydrant is provided for washdown of the truck and pad.



**Figure 3. Existing Colvin Run Septage Receiving Station**

The location of the Colvin Run site is convenient to the Great Falls/Hunter Mill unsewered areas of the County. Based on data collected from the access gate, it is estimated that approximately 6,000 trips were made to this facility in 2014. This estimate includes an increase of 15% over the recorded number of gate card readings to account for times when the gate is out-of-service or multiple trucks enter using a single card reading.

### 2.2.2 Noman Cole Septage Receiving Site

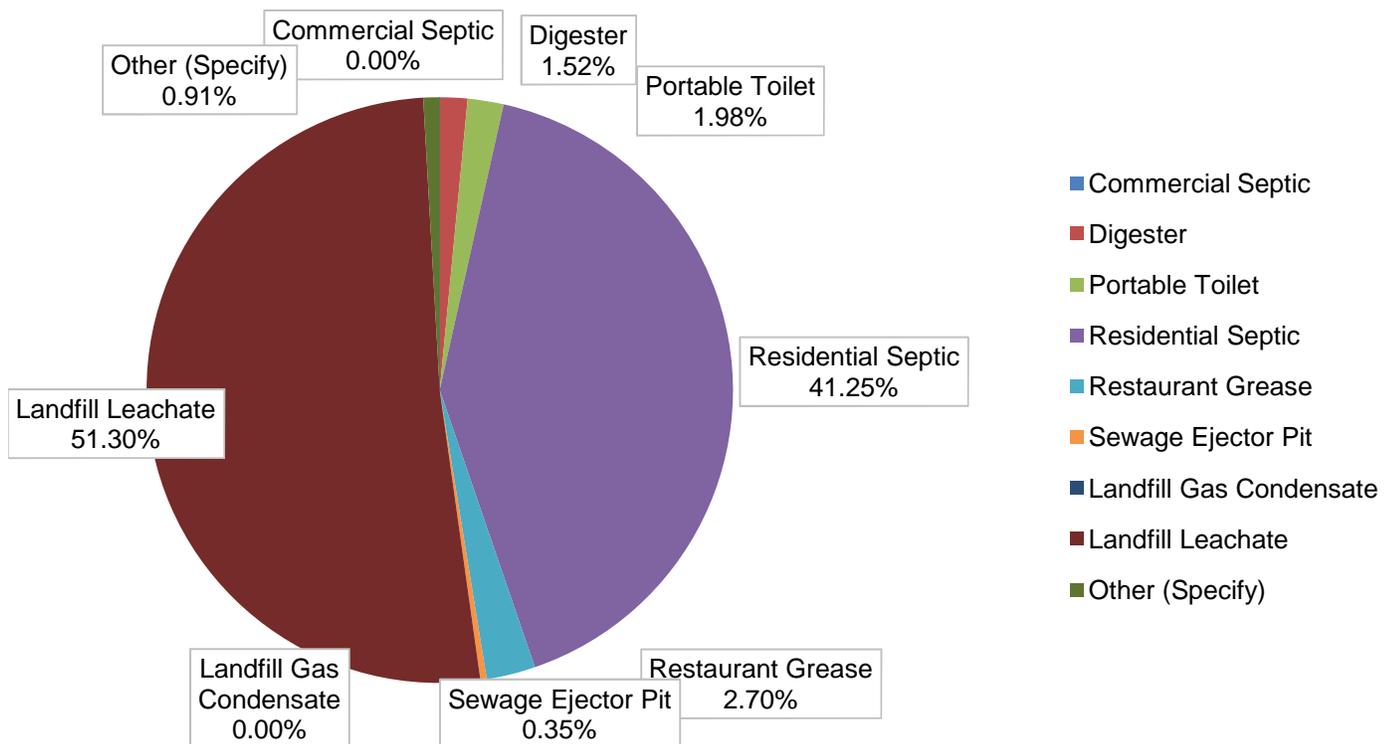
The Noman Cole septage receiving station is located at the NMPCP as shown in Figure 4. The site can be accessed through either of the two plant gates that are manned during the hours of operation. The septage receiving station is accessible from 6:30 am until 5:00 pm, Monday through Friday.

The station has two separate points (see Figure 5), allowing two trucks to discharge simultaneously. Each is equipped with a holding tank where pH monitoring occurs. If the pH is within the acceptable range (pH of 5 to 12), a green light indicates this to the hauler, who then presses a button that actuates a control valve and allows the tank to empty to the Accotink Trunk Sewer, which flows to the head of the plant. After discharging, haulers are expected to fill out the log book with their name, company, type of septage being hauled and the measured pH of their waste. Haulers are also expected to leave a copy of their manifests in a drop box. The log book and drop box are located in a building at the station. If a pH is out of range, this will be indicated by a red light and an alarm is sent to the main plant control panel. An operator must then respond to address the situation. When this occurs, it is typically due to a grease load with a low pH, and the operator manually adds dry lime to the tanks to raise the pH. The pH monitoring is primarily intended to monitor for industrial waste, which is not accepted at this facility without advanced permission.

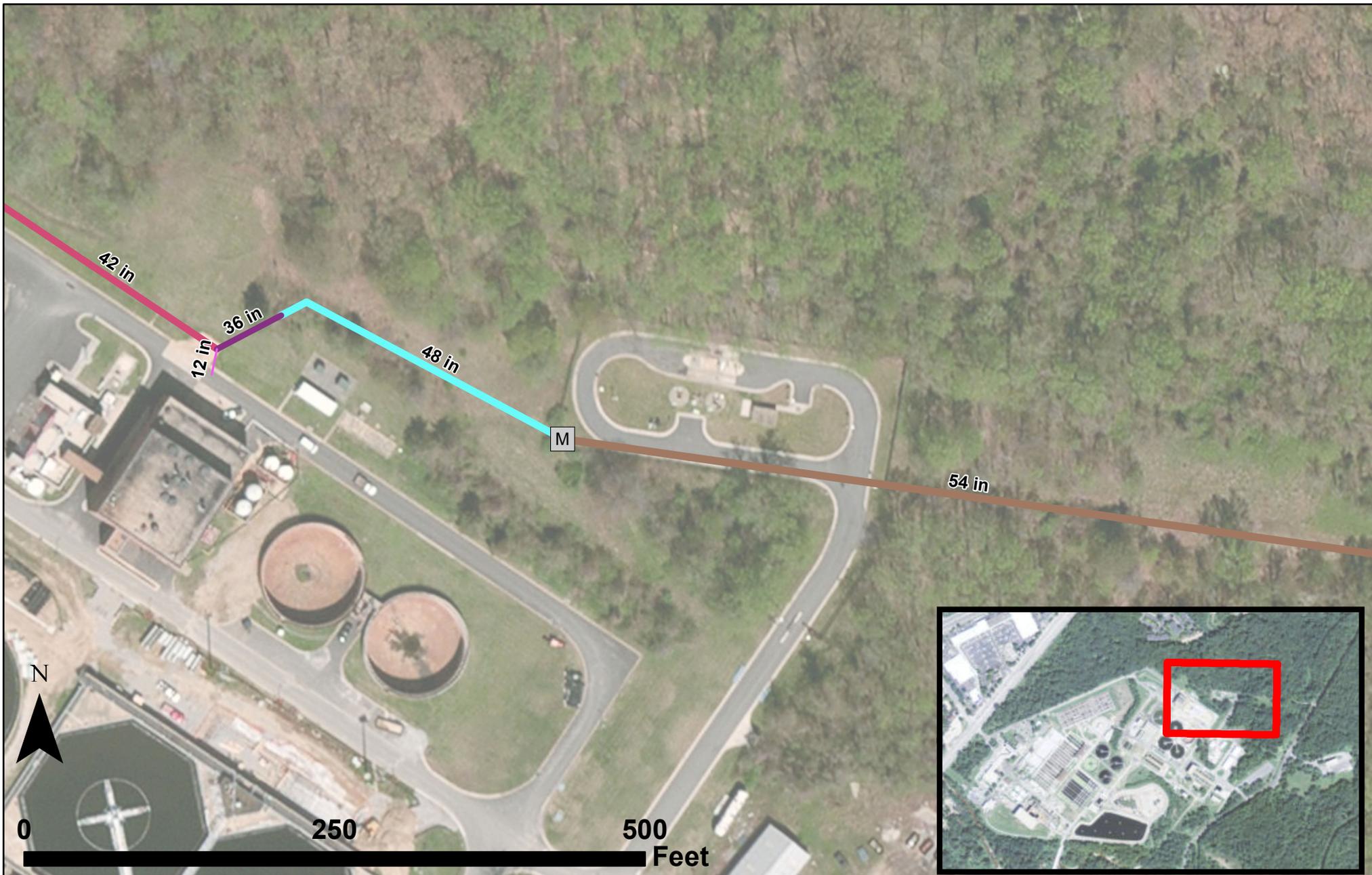


The Noman Cole site is convenient for serving the Clifton and Gunston unsewered areas of the County. Based on data collected from the manifests, approximately 4,000 trips were made to this facility in 2014. A breakdown of waste type based on volume recorded in the log in 2014 is provided in Figure 6. Landfill leachate, primarily from a nearby construction debris landfill, comprised about half the hauled waste, with residential septic comprising the majority of the remainder, along with smaller amounts of restaurant grease and portable toilet waste.

**Figure 5. Existing Noman Cole Septage Receiving Station**



**Figure 6. NMCCPCP Septage Received in 2014 by Waste Classification**



10	20	36	66
12	21	39	72
14	24	42	78
15	27	48	84
16	30	54	
18	33	60	



Septage Receiving Site  
Feasibility Study



<b>1</b>	Possible Sites	<b>M</b>	Meter Vaults
<b>PS</b>	Wastewater Pump Stations		Parcels
	Sewer Treatment Area		

Figure 4 - Existing Noman Cole Septage Receiving Site  
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## 2.3 SURVEY OF LOCAL UTILITIES

The surrounding local utilities were surveyed regarding their septage receiving programs. The surveys were conducted by phone and email, and the results are described in this section. Table 1 summarizes the results.

### 2.3.1 Alexandria Renew

Alexandria Renew does not accept any hauled waste. The respondent was unsure as to whether haulers are provided with a suggested discharge location. In the hauler survey (see Section 2.4), one hauler indicated that they transport waste generated in the City of Alexandria to Baltimore, because no closer option exists, and requested that Fairfax County consider accepting waste generated in the City of Alexandria.

### 2.3.2 Arlington County

Arlington County does not have a septage receiving program. All septage must be transported by approved haulers to DC Water's Blue Plains AWTP. Each hauler must obtain a permit from DC Water before arrival.

### 2.3.3 DC Water

DC Water has one septage receiving site at the Blue Plains AWTP, located at 5000 Overlook Avenue SW, Washington, DC. This site only accepts waste from the District of Columbia and other jurisdictions that contribute to the operation of Blue Plains. These jurisdictions include Loudoun County, Fairfax County, Arlington County, Prince George's County, and Montgomery County. The septage received at this site is primarily domestic, portable toilet waste, and grease trap waste. Stormwater/groundwater and commercial/industrial waste are accepted on a case-by-case basis if discharge standards are met.

No treatment of the septage is performed at the receiving site itself; the septage enters an influent channel where it is combined with other plant influent prior to screening and grit removal. Sampling is performed directly from the trucks twice a month to monitor that waste meets local limits. The exact operating cost for the site is unknown, but DC Water staff report that it is minimal. A general enforcement response plan for the Pretreatment Program is used to address violations of existing regulations.

Access to the facility is controlled by an on-site security guard during the hours of 4:30 AM to 6:00 PM, Monday through Friday. Access outside of these hours requires advanced written authorization. In order to receive a permit to access the site, haulers must submit an application and are charged an annual fee based on the capacity of their truck(s). Haulers are to provide a paper manifest upon arrival at the site.

### 2.3.4 Loudoun Water

Loudoun Water has one site for septage receiving, the Broad Run Water Reclamation Facility (BRWRF). The BRWRF accepts domestic waste from the hauling community, portable toilet waste, and waste from the community systems within Loudoun County. The facility has accepted landfill leachate in the past; however, this is now collected via the collection system that leads to DC Water Blue Plains. Only domestic waste from within Loudoun County is

accepted, however portable waste from other locations may be accepted based on approval of the plant

Haulers can obtain access to the BRWRF septage receiving facility via a key card. The key card is obtained by completing the permit process, which consists of submitting a permit fee, documentation of a county hauling permit (to demonstrate that they are bonded), and undergoing a formal truck inspection. If key cards are lost they can be replacement at a fee of \$100. Haulers are issued one key card per truck, though there is no procedure or mechanism to ensure that cards are matched to the appropriate truck at the time of discharge.

The facility is open 24 hours per day, 7 days per week, and discharging septage does not require assistance from the plant staff. The fee for disposal is based on a sliding scale of \$35 per 1,000 gallons, with all trucks assumed to be full (e.g. a 3,000 gallon truck would be charged \$105, regardless of its actual load). The operation cost of the receiving site was not known at the time of the survey; however, it was factored into the development of the discharge rate, which was documented in 2010. Loudoun Water has provided Hazen with a copy of this document. An electronic kiosk was intended to be used as the primary entry access; however, haulers do not normally comply due to common malfunctions of the kiosk due to dirt. Loudoun Water thus relies on paper manifests as the primary record keeping system. Septage receiving facility improvements currently in design will feature a touch screen electronic kiosk.

Loudoun Water currently monitors the receiving site via cameras and does not collect samples, but plans to improve monitoring of the receiving site. The current system contains only screening; however, the new facility will include screening, channel grinders, and a holding tank. Pressurized discharge is not allowed, but is used on occasion due to time constraints. The screening system has experienced issues with clogging and jamming with rocks. When the process equipment is shut down for maintenance, a manhole just off site is opened for temporary use. There is no access control or volume-based fee charged when the manhole is in use.

### 2.3.5 Prince William County Service Authority

The Prince William County Service Authority (PWCSA) has one site for septage receiving, the H.L. Mooney Advanced Water Reclamation Facility, located at 1851 Rippon Boulevard, Woodbridge, VA 22191. Waste from other jurisdictions is not normally accepted. The facility primarily accepts domestic sewage and portable toilet waste. VDOT retention pond water is occasionally delivered to and discharged at the facility. Industrial discharges are not accepted at the septage receiving facility, but rather are dealt with under the Pretreatment Program. The septage receiving facility consists of a manhole inside a fenced area on the H.L. Mooney Advanced Water Reclamation Facility site. As septage is discharged, it is sent through a grinder, ultimately reaching the head of the plant, where it is mixed with the incoming wastewater and passed through screens. The operating cost of the site is unknown.

Haulers must fill out an annual application and pay a \$125 permitting fee to use the site. In addition, haulers must submit insurance documentation naming the Service Authority as the insured. After authorization, haulers receive a code to enter the facility during the hours of 7:30 AM to 3:00 PM, Monday through Friday. A fee of \$40 is charged per truckload. All haulers are

provided with the septage receiving facility rules, and if violated, their access is revoked. PWCSA collects a manifest, has the hauler enter the parcel identification number (GPIN) for each property where septage was collected using a provided laptop at the station, and a sample is tested for volatile organic chemicals (VOCs) using a Grey Wolf probe prior to providing the hauler with the keys to the manhole.

### 2.3.6 UOSA

The Upper Occoquan Service Authority (UOSA) has one site, located at the UOSA Regional Water Reclamation Plant located at 14631 Compton Road, Centreville, VA 20121. UOSA encourages only residential and domestic septage. Portable toilet waste may be accepted on a case-by-case basis. Grease trap waste is discouraged although not explicitly prohibited. Waste is only accepted from UOSA's four member jurisdictions: Fairfax County, Prince William County, the City of Manassas, and the City of Manassas Park. However, UOSA suspects that haulers are bringing waste from outside jurisdictions.

Haulers must complete an application package (what is accepted, hours of operation, and fees, etc.) and if the hauler is approved, they are provided with a permit for residential and domestic septage along with a gate card to the receiving site. The receiving site is accessible during daylight hours, seven days a week, and is unmanned with no surveillance cameras.

The fee is \$40 per truck load regardless of the truck size. The septage receiving site has two holes at ground level where the hauler can insert a 4-inch hose. Septage flows by gravity into a building which currently has two systems: bar screens and an auger screw system. Both systems are implemented to remove large debris from the waste stream, with the auger screw system used more frequently. All screenings are deposited in a dumpster and the liquid into two large underground holding tanks for circulation, to be pumped to the head of the plant. The treatment systems are enclosed in a building, where the air is put through chemical scrubbers before being released. The receiving area has a canopy but is not enclosed. UOSA does not know the exact operating cost of this portion of the facility, but is hoping to re-assess what the actual cost is and is interested to see what other jurisdictions are implementing.

There is no formal program for septage waste limits; however, each hauler is required to provide a sample to UOSA, in case there is something that affects the plant. UOSA usually does not test the sample. The site is not continuously manned, but a group of operators perform routine operational checks of the facility every couple of hours. Haulers are also required to provide a paper manifest at the sample refrigerator for the finance department to process. If a spill occurs on site, UOSA will take action using their formal spill response program.

### 2.3.7 WSSC

The Washington Suburban Sanitary Commission (WSSC) has four receiving sites, Muddy Branch, Ritchie Road, Tanglewood Drive, and Temple Hills Road. The sites, located in Montgomery and Prince George's County, only accept waste from within the Blue Plains service area. WSSC is currently in the process of evaluating their hauled waste program, and the information provided in the survey is only representative of current conditions.

The Muddy Branch facility is the only disposal site that accepts grease trap waste, all other sites accept domestic septage only. All industrial waste must be reviewed and approved by WSSC prior to disposal. WSSC collects random samples from septic haulers several times a year to ensure Enforcement Response Plan regulations are met. All disposal sites are monitored by a surveillance camera system that is recorded and reviewed by WSSC personnel. All sites are open from 7:30 AM to 5:00 PM, with Tanglewood Drive open from 7:30 AM to 8:00 PM during daylight savings time. The total operating cost of the sites was not provided.

Haulers are issued permits for a period of one year (fiscal year based). In order to receive a permit, haulers are required to complete a WSSC waste hauler application, submit copies of health department permits from Montgomery and/or Prince George's County, copies of motor vehicle registration information, and copies of material safety data sheets on any de-odorizer or sanitizer used within the waste. In lieu of the application process, a one-time hauler permit fee dependent on the size of the vehicle can be submitted. All haulers are required to submit paper manifests, with septic haulers providing the manifest at the time of disposal. Grease haulers are allowed to mail the manifest to WSSC.

Table 1. Summary of Local Utility Septage Receiving Programs

Site Features	Utility											
	Fairfax County		Alexandria Renew	Arlington County	DC Water	Loudoun County	Prince William County Service Authority	UOSA	WSSC			
Name of Site	Colvin Run	Noman Cole	No Septage Receiving Sites	No Septage Receiving Sites	Blue Plains	Broad Run	H.L. Mooney	UOSA	Muddy Branch Road	Ritchie Road	Tanglewood Drive	Temple Hills Road (will be closing in near future)
Location	9950 Colvin Run Rd, Great Falls, VA 22066	9399 Richmond Highway, Lorton, VA 22079	--	--	5000 Overlook Ave., SW, Washington, DC 22032	44865 Loudoun Water Way, Ashburn, VA 20147	1851 Rippon Boulevard, Woodbridge, VA 22191	14631 Compton Road, Centreville, VA 20121	Montgomery County	Prince Georges County	Prince Georges County	Prince Georges County
Area Served	Waste generated with Fairfax County; Towns of Clifton, Herndon, and Vienna; and Cities of Fairfax and Falls Church		--	--	Accepts waste from DC and jurisdictions contributing to operations of Blue Plains, including Fairfax, Loudoun, Arlington, Montgomery, and Prince Georges Counties	Loudoun County	Prince William County	Accepts waste from member jurisdictions – Fairfax, Prince William, Cities of Manassas and Manassas Park	Does not accept any hauled waste generated outside of the Blue Plains service area			
Types of Waste Accepted	Domestic septage, portable toilet waste, restaurant grease trap waste		--	--	Primarily domestic septage, portable toilet waste, and grease trap waste, but will also accept stormwater/groundwater and commercial/industrial on a case-by-case basis if discharge standards are met	Domestic residential waste from the hauling community, portable toilet waste, community systems waste	Domestic sewage and portable toilet waste is the primary waste that is accepted at the facility site, with VDOT retention pond water occasionally being accepted.	Encourage only residential and domestic waste. Discourage grease trap waste. Portable toilet waste accepted on case-by-case basis.	Domestic septage and grease trap waste; industrial waste must be approved prior to disposal	Domestic septage; industrial waste should be approved prior to disposal		
Site Access	Key card	Gate guard	--	--	On-site security guard	Key card access, unmanned site	Code access	Key card access, unmanned site	Surveillance cameras check truck stickers at all disposal sites.			
Hours	Daily 6 am - 9 pm	M-F 6:30 am - 5 pm	--	--	M-F 4:30 am - 6 pm	24 hours per day, 7 days per week	M-F 7:30 am - 3:00 pm	Daylight hours only, 7 days per week	7:30 am – 5 pm	7:30 am – 5 pm	7:30 am – 5 pm	7:30 am – 5 pm (8 pm during Daylight Savings Time)

Site Features	Utility											
	Fairfax County		Alexandria Renew	Arlington County	DC Water	Loudoun County	Prince William County Service Authority	UOSA	WSSC			
<b>Name of Site</b>	Colvin Run	Noman Cole	No Septage Receiving Sites	No Septage Receiving Sites	Blue Plains	Broad Run	H.L. Mooney	UOSA	Muddy Branch Road	Ritchie Road	Tanglewood Drive	Temple Hills Road (will be closing in near future)
<b>On-site Monitoring</b>	Periodic visits from Fairfax County Health Department and WCD personnel	Logbook, collect paper manifests, pH monitoring, operators respond if pH monitor alarms	--	--	Random samples taken from trucks twice per month	None	Collect a manifest, the parcel identification number for the waste source (provide laptop for number lookup), and a sample which is tested for VOCs in the air space of the samples using a Grey Wolf probe prior to giving the keys to the manhole.	Collect paper manifests. One sample taken per load and stored in case there is something that affects the plant. Operators perform route operations check of facility every couple of hours.	Collect paper manifests. Surveillance cameras with video reviewed by WSSC staff. Random sampling several times per year.			
<b>On-site Treatment</b>	None. Site discharges to large trunk sewer.	Holding tank for pH monitoring, then flows by gravity into major plant influent sewer	--	--	None. Waste goes directly to plant influent channel.	Screening and grit removal combination unit in building with odor control. Plan to add grinders.	None. Waste goes directly to the head of the plant.	Bar screens and auger screw system located in building with odor control (chemical scrubbers).	None. Sites discharge to large trunk sewers.			
<b>Disposal Fee</b>	Annual Health Department registration fee: \$710 for first vehicle, \$360 for each additional vehicle		--	--	Health Department fee for appropriate jurisdiction plus DC Water annual fee per vehicle: 0-49 gal \$160 50-799 gal \$2,265 800-1,499 gal \$6,170 1,500 gal or more \$14,640	Health Department fee of \$142 plus \$3,000 bond, Loudoun Water fee of \$750 plus volume charge of \$35 per 1,000 gal (assumes full truck)	\$125 Health Department fee plus \$40 per truckload	Health Department fee for appropriate jurisdiction plus \$40 per truckload	Health Department annual fee: Montgomery County \$231 Prince George's County \$150 per vehicle WSSC Annual fee per vehicle: 1-49 gal \$210 50-799 gal \$3,015 800-2,999 gal \$8,585 Over 3,000 gal \$20,375			

### 2.3.8 Hauler Survey

To understand how potential changes to Fairfax County's Septage Receiving Program would affect sewage haulers, surveys were sent to the 48 sewage-handling companies that are currently registered as sewage handlers in Fairfax County and/or Loudoun County (of the 18 haulers registered in Loudoun, 14 are also registered in Fairfax). Of the 48 surveys sent out, 27 responses were received (56% response rate).

The surveys consisted of fifteen multiple-choice questions and three short-answer questions covering a range of topics. A copy of the survey is provided in Appendix B. Sewage handlers were asked how specific changes to either Colvin Run or NMCPCP would affect their businesses, which facilities they primarily use and where their sewage originates. The short-answer questions were designed to obtain feedback regarding design features that make a facility more or less desirable to use. The results of the multiple-choice questions are presented graphically in Appendix B.

The following are some of the major findings from the survey:

- Domestic septage and grease trap waste were the most commonly reported waste types.
- The need for hauling services is expected to increase at least slightly in the future.
- The Colvin Run site is important to haulers.
- At least 20% of the waste being discharged at Fairfax County sites may originate from other jurisdictions.
- Additional fees would have a significant impact on the decision of sewage handlers to use Colvin Run or NMCPCP and the costs would be passed on to consumers.

The sewage handlers had a variety of opinions on what makes a facility more or less desirable to use. The key preferable features were:

- Easy access
- The ability to pressurize the tank while discharging
- Washdown stations
- Restrooms

All of these features, aside from restrooms, are available at the existing Colvin Run site.

Conversely, sewage handlers did not prefer facilities that have:

- Requirement to turn the truck around
- Long wait times
- Restricted hours
- Gravity discharge
- High fees
- Non-central location
- Lack of snow removal in winter

## 2.4 COMMUNITY OUTREACH

### 2.4.1 Review of Petition

The County initiated this study in response to a petition submitted by community members living near the Colvin Run facility to their representative on the County Board of Supervisors (the Dranesville District Supervisor). The petition is included in Appendix A. It was signed by 21 residents from 11 households. All of the households were in close proximity to the site (see map included in Appendix A). The petitioners are central system customers located on the edge of the sewer service area; their neighbors, starting with the street immediately to the north, are served by individual septic systems. The petition requested that a feasibility study be conducted to relocate the Colvin Run site.

### 2.4.2 Community Meeting No. 1

In order to better understand the residents' concerns, Community Meeting No. 1 was held on December 15, 2014 at the Great Falls Library. Attendees included several of the petitioners and a representative from the Dranesville Supervisor's office. The materials that were presented at the meeting and the minutes of the meeting are included in Appendix C. At this meeting, the two major community concerns identified were traffic and odor. Also, residents suggested the I-66 Waste Transfer Station as a potential site for consideration.

#### *Traffic*

Based on community feedback, the number of trips per day to the facility may be higher than what the key card data indicates. While the gate will not open without a key card to access it, once a sewage handler leaves the facility, there is a time delay before the gate starts to close. This allows time for other sewage handlers to back in without scanning their key cards. As a result of this practice, the data is not reflective of the actual traffic on site. Community members also indicated that the queue to use the facility backs up onto Colvin Run Road, blocking traffic, especially during the morning hours. In addition, there is no left turn signal at this intersection. Trucks will block community members while waiting to make a left turn eastbound onto Route 7, increasing congestion. There are also safety issues associated with the proximity of the truck traffic to park patrons using the access road and to a bus stop on Route 7. The truck traffic has led to substantial deterioration of the access road.

#### *Odor*

Residents indicated that odors from the station are most noticeable during the summer but are present at all times of the year. In addition to the septage receiving station itself, there are several unsealed manhole lids in the area that contribute to the odors. For pedestrians walking along the access road, it is not uncommon to find spilled sewage. This presents not only an odor concern, but also a health concern to the public who often walk in the area with their children and/or pets. Residents reported that the area floods periodically, which also creates the concern that floodwaters may mix with sewage from the open pipe connection and contaminate the neighboring environment.

### 2.4.3 Community Meeting No. 2

Community Meeting No. 2 will be held at the conclusion of this study to review the results with the community. Materials from the meeting will be included in the final version of Appendix C.

## 2.5 RELATED PROJECTS

Other work planned or ongoing was reviewed in order to determine the potential impacts on existing operations at the Colvin Run site.

### 2.5.1 Difficult Run PS Improvements

The rehabilitation of the Difficult Run PS includes upgrading all systems and equipment to conform to Class I reliability standards. The existing pump station has been largely out of service for nearly 20 years, so most of the equipment in the building will be replaced as part of this project. The PS will be brought back on-line to allow the County to divert flow from the Potomac Interceptor and the Blue Plains AWTP to the NMCPC. A flow diversion is required because the current flow rate from the Fairfax County collection system is nearing the contractual limit between the County and DC Water.

The proposed improvements include installing two pumps, each rated at 3,400 gpm at 261 feet of total dynamic head, with space for two future pumps. The existing force main is approximately 30,000 linear feet long and 36 inches in diameter and is planned to undergo improvements under a separate project. The force main discharges to the Fairfax County collection system and flows to the NMCPCP. Site improvements in the project include repaving the existing access road from Colvin Run Road to the PS.

The Difficult Run PS Improvements Project is expected to start construction in Fall 2015 and take approximately 21 months to complete. During this period, construction traffic is likely to conflict with septage truck and park patron use of the access road. Consideration should be given to coordinating hours for construction deliveries with the operating hours of the septage receiving station or temporarily closing the septage receiving station during construction.

### 2.5.2 VDOT Route 7 Widening Project

The Virginia Department of Transportation (VDOT) is currently in the concept development phase of the expansion and elevation of Route 7. A teleconference to discuss the project was held with VDOT and their consultant on April 22, 2015, and this section summarizes the information gathered at that time.

The project will increase the number of lanes from four to six in both directions and include an eight-foot buffer followed by a ten-foot asphalt trail for pedestrian/bicycle use on both the north and south sides of the road. The entire road will shift to the south to avoid encroaching on Colvin Run Mill and will be elevated an additional five to seven feet to prevent flooding. The new bridges over Difficult Run will be designed to pass the design year storm event without overtopping. The existing Colvin Run stream channel, which parallels Route 7 to the south, will be relocated several hundred feet further south and pass just north of the existing meter vault (Manhole No. 019-1-013) on the southern side of Route 7. The Cross County Trail will be rerouted to follow Colvin Run along the southern side of Route 7 and cross to the northern side

of Route 7 along the Difficult Run Bridge. The existing access road for the Colvin Run Septage Receiving Station and Difficult Run Pump Station will be partially re-paved and re-graded to compensate for the increase in elevation at the Colvin Run Road and Route 7 intersection. The increase in grade will be about four feet at the intersection of Colvin Run Road and the access road, and about two feet in the vicinity of the gravel lot just east of this intersection. There is a gas line regulator station adjacent to this gravel lot that may need to remain accessible from the access road. Existing grade will be matched before reaching the existing Septage Receiving Station. Additionally, the turning radius at the intersection of Colvin Run Road and the access road will be increased to improve the accessibility of the access road for larger vehicles.

There were items regarding wastewater infrastructure near Colvin Run and Difficult Run that will require further coordination between WCD and VDOT, including:

- Manhole 019-01-014 on the 42-inch pipe along Difficult Run will be underneath the new bridge. With the existing rim elevation at 192 feet, there will be about 11 feet of clearance between it and the new bridge. WCD should discuss with VDOT whether this distance is sufficient for maintenance, and, if not, what the alternatives might be.
- The meter vault at 019-1-013, on the 42-inch pipe south of Route 7, will be separated from Route 7 by the new alignment of the Colvin Run stream channel. This will create an access issue. If WCD needs truck access to this vault, VDOT will need to find a way to provide it through the trail system or some other means.
- Due to the increase in grade, additional fill will be required above existing pipes crossing Route 7. WCD should review the design of these pipes and determine if the additional loads is acceptable or if modifications will be required to support the additional loads.

The project is not anticipated to directly impact the existing receiving station or the adjacent stormwater management area.

## SECTION 3 – SITE EVALUATION

### 3.1 SITING APPROACH

A siting analysis was performed in order to identify and evaluate potential alternative sites for replacement of the Colvin Run site. The siting evaluation included the following steps, each of which are detailed in this section:

- Site identification using an analysis of GIS data and aerial photography
- Site screening with respect to a series of criteria representing design features important to the County, the residential community, the hauling community, and the overall functionality of a septage receiving station

### 3.2 SITE IDENTIFICATION

#### 3.2.1 Site Identification Criteria

The following key criteria were utilized in order to identify potentially feasible sites:

- Land use of site
- Land use of adjacent area
- Major road access
- Pipe size

The following paragraphs describe each criterion as it relates to siting a septage receiving station.

#### *Land Use of Site*

Non-residential land uses such as existing utilities, governmental, institutional, commercial, or industrial are preferred areas for locating a new septage receiving facility. However, the majority of the study area is residential, as shown in Figure 7. Therefore, residential land use areas were considered. Within residential land use areas, proximity to non-residential uses and the potential for a buffer between the site and residences are preferred.

#### *Land Use of Adjacent Area*

Sites with residences in close proximity were not considered feasible, based on the issues experienced at the existing Colvin Run site. Non-residential adjacent land uses or residential areas with buffers are preferred.

#### *Major Road Access*

A site that is accessible from a minor arterial or larger road is preferred in order to provide ease of access for haulers and limit truck traffic on neighborhood roads.

### *Pipe Size*

The ability to discharge to a large sewer is preferred in order to provide enough flow to carry solids downstream to the treatment plant and limit the potential for clogging with grease and hair, which are commonly found in septage. A sewer of 24-inches in diameter or larger is preferred. Use of smaller sewers would require additional treatment and more maintenance, and would create an increased risk of service interruptions and odor issues.

### 3.2.2 Site Identification Process

Potential replacement sites for the Colvin Run site were identified using an analysis of GIS data and aerial photography focused on the site identification criteria.

Figure 7 illustrates a number of the factors considered, along with the six sites identified. The map includes sewer pipes with diameters of 10 inches or greater (which represent the trunk and interceptor sewers in the system) and roads with speed limits of 30 miles per hour or more (which represent minor arterial or larger roads). Existing County-owned facilities such as wastewater pump stations, meter vaults, parks, schools, fire stations, and refuse facilities are shown. Wastewater treatment areas are also shown. The search generally focused on the Blue Plains treatment area, as that is the location of the Colvin Run site, but other neighboring areas were considered as well.

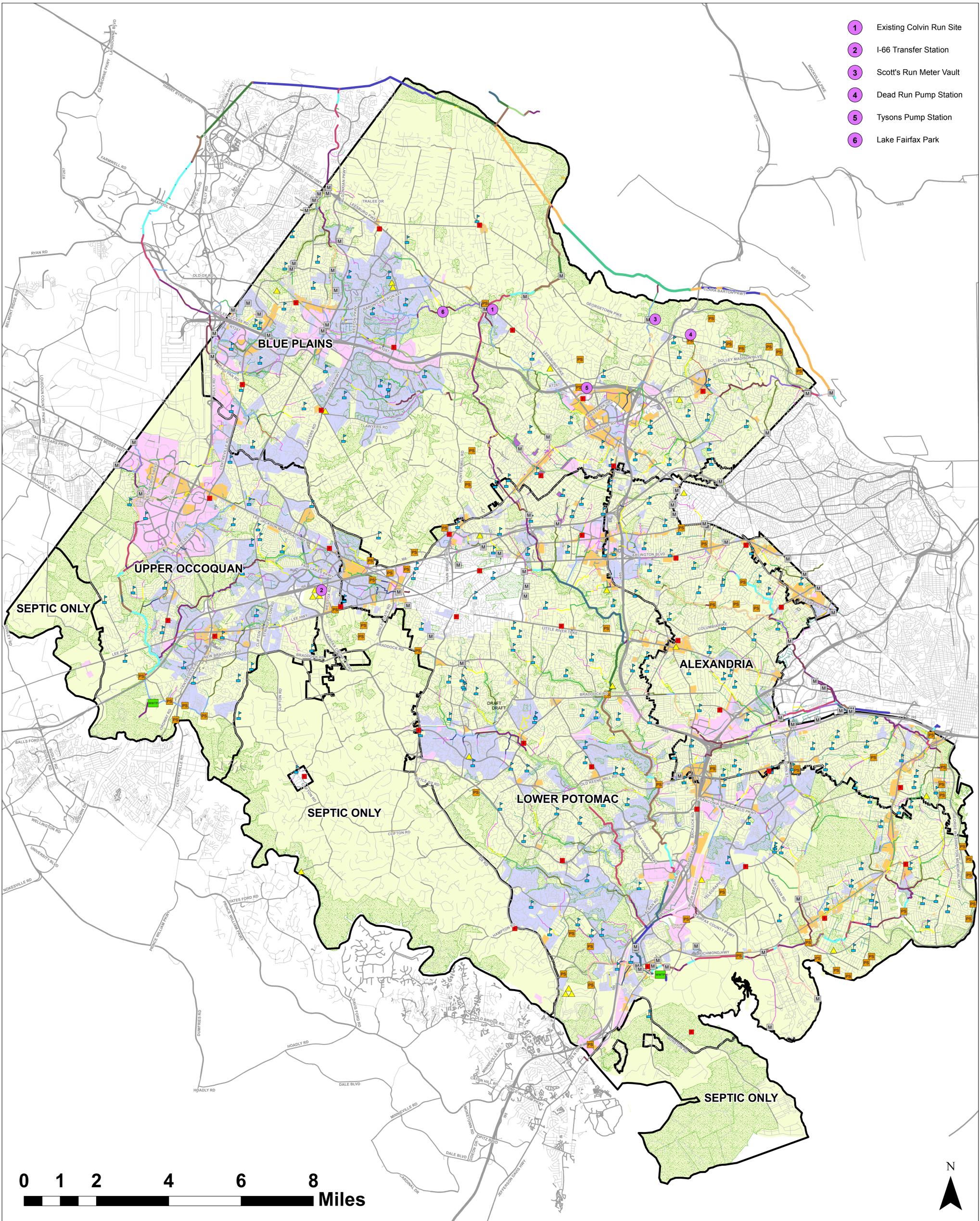
Many of the larger pipes in the area are located in parkland or in residential areas. The Potomac Interceptor (the 66- to 84-inch pipe along the northern edge of the County) and its major tributaries are largely isolated from major roads. The existing Colvin Run site (Site 1 on the map) represents one of the few places where a major tributary of the Potomac Interceptor crosses a major road (Route 7).

Based on a review of the maps and aerial photography, along with a drive-through of the study area, six potentially feasible sites were identified, as follows:

- Site 1 – Existing Colvin Run site
- Site 2 – I-66 Transfer Station
- Site 3 – Scott's Run Meter Vault
- Site 4 – Dead Run Pump Station
- Site 5 – Tysons Pump Station
- Site 6 – Lake Fairfax Park Maintenance Facility

These six sites were carried forward for evaluation in the site screening process. Figures 8 through 13 provide aerial views of each site. In each figure, the site number indicates an approximate location for a potential facility.

- 1 Existing Colvin Run Site
- 2 I-66 Transfer Station
- 3 Scott's Run Meter Vault
- 4 Dead Run Pump Station
- 5 Tysons Pump Station
- 6 Lake Fairfax Park



Diameter			
10	20	36	66
12	21	39	72
14	24	42	78
15	27	48	84
16	30	54	
18	33	60	

**Septage Receiving Site Feasibility Study**

Quality of Water = Quality of Life

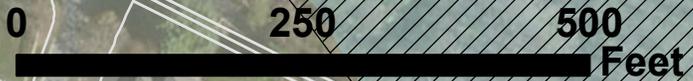
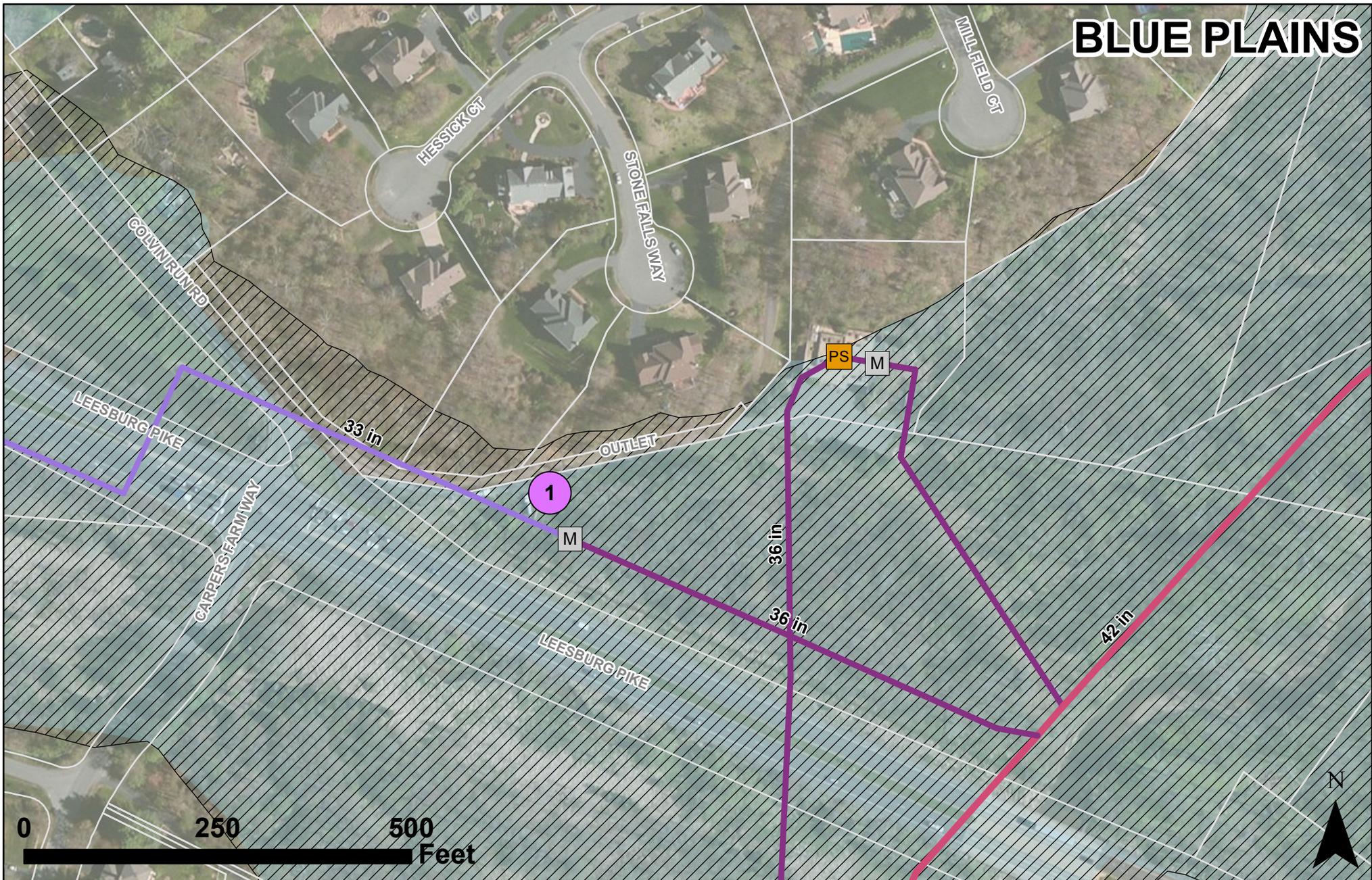
Wastewater Treatment Plants	Major Roads	<b>Zoning Codes</b>
Fire Stations	Minor Roads	Commercial
Wastewater Pump Stations	Sewer Treatment Area	Industrial
Meter Vaults	Parks	Planned Units
Schools	Residential	Other
Refuse Facilities		

**Figure 7 - Site Screening Map**

DRAFT



# BLUE PLAINS



10	20	36	66
12	21	39	72
14	24	42	78
15	27	48	84
16	30	54	
18	33	60	



## Septage Receiving Site Feasibility Study



Figure 8 - Site 1 - Existing Colvin Run Site  
DRAFT

<b>1</b>	Possible Sites	<b>M</b>	Meter Vaults
<b>PS</b>	Wastewater Pump Stations		Parcels
	Sewer Treatment Area		Floodplains
			Chesapeake Bay Preservation Area



# UPPER OCCOQUAN



10	24	48
12	27	54
14	30	60
15	33	66
16	36	72
18	39	78
20	42	84
21		



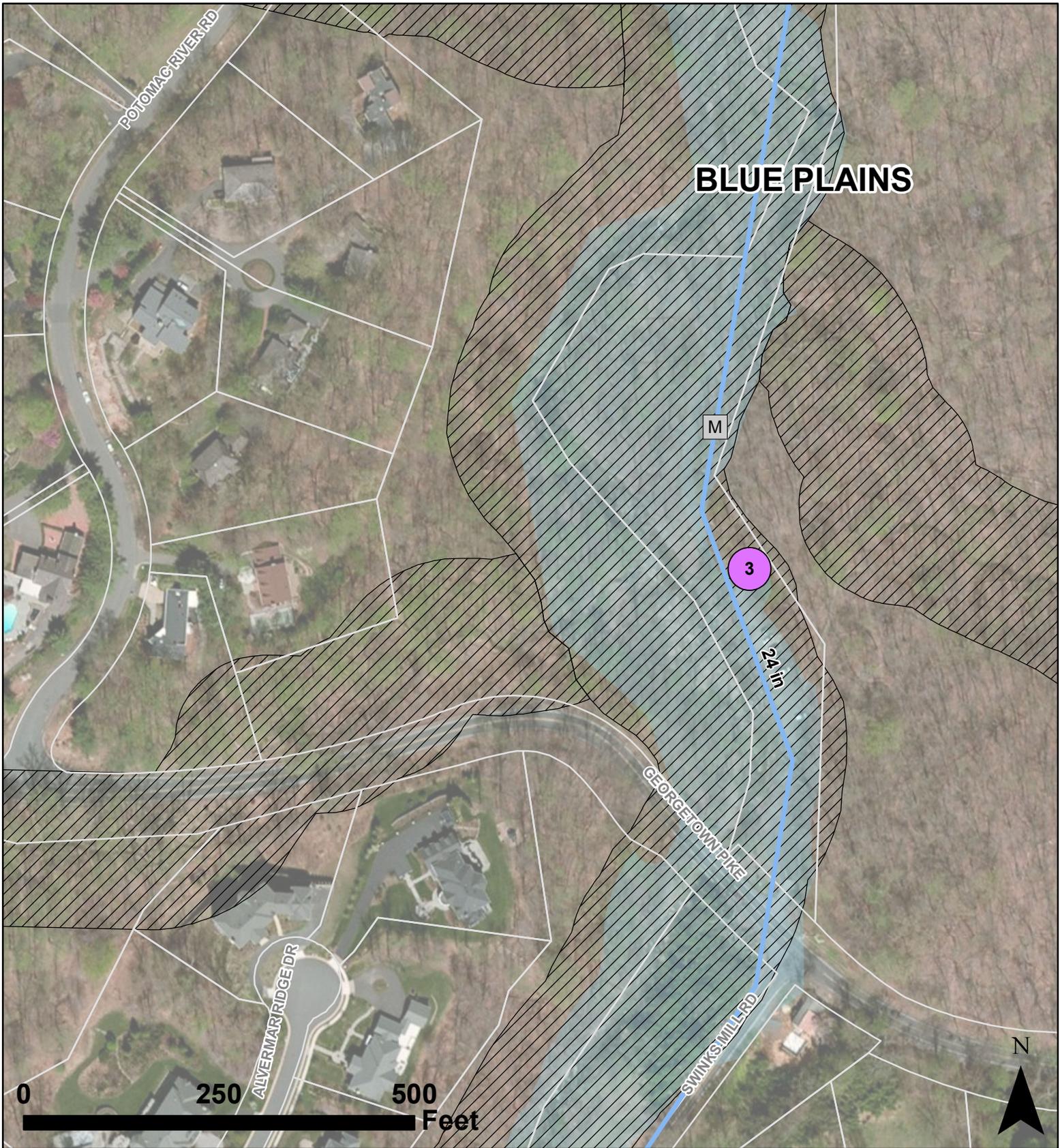
## Septage Receiving Site Feasibility Study



Figure 9 - Site 2 - I-66 Transfer Station  
DRAFT

①	Possible Sites
PS	Wastewater Pump Stations
M	Meter Vaults
[Outline]	Parcels
[Thick Outline]	Sewer Treatment Area
[Blue Area]	Floodplains
[Hatched Area]	Chesapeake Bay Preservation Area





10	24	48
12	27	54
14	30	60
15	33	66
16	36	72
18	39	78
20	42	84
21		



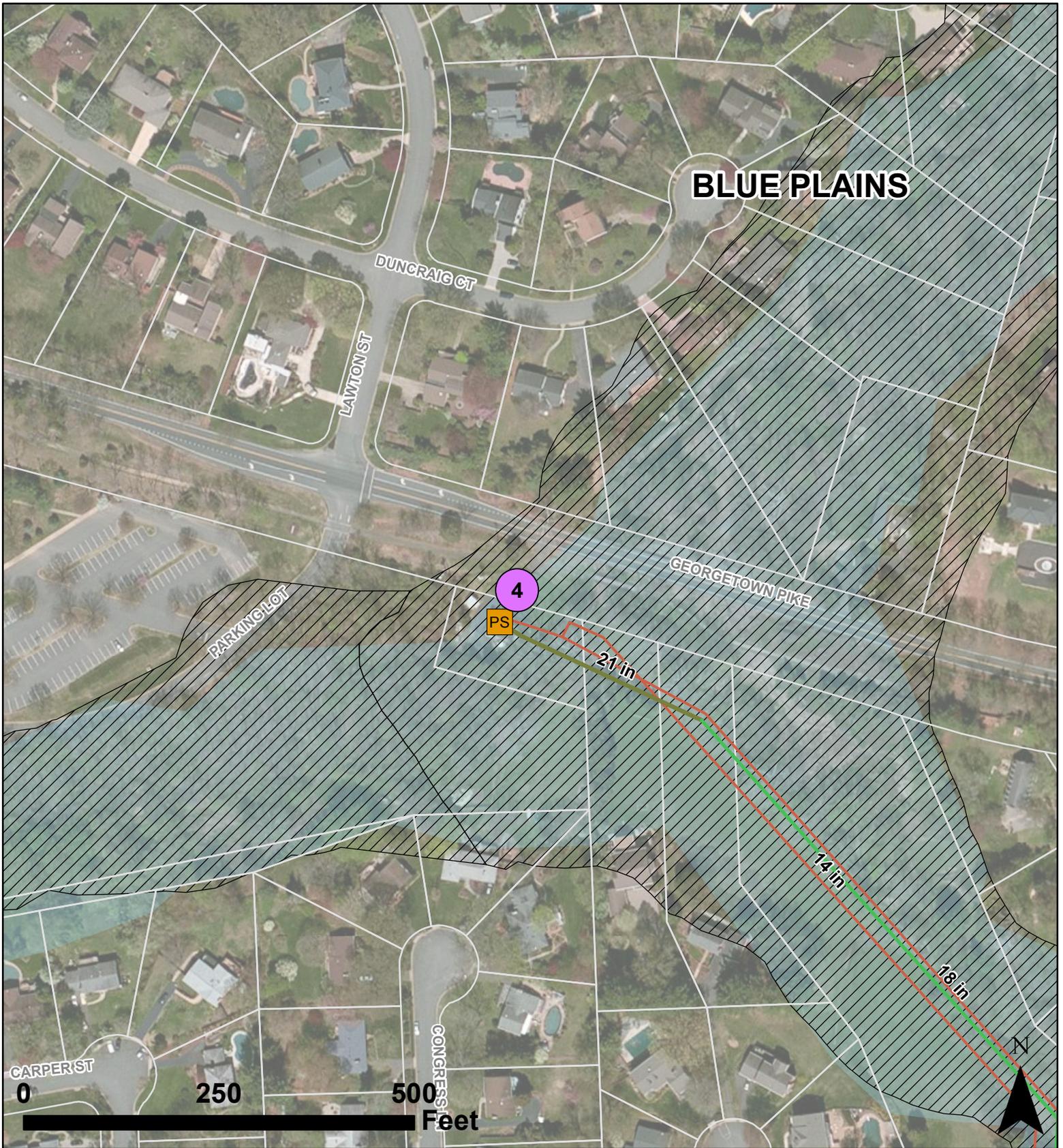
Septage  
Receiving Site  
Feasibility Study



	Possible Sites
	Wastewater Pump Stations
	Meter Vaults
	Parcels
	Sewer Treatment Area
	Floodplains
	Chesapeake Bay Preservation Area

Figure 10 - Site 3 - Scott's Run Meter Vault  
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10	24	48
12	27	54
14	30	60
15	33	66
16	36	72
18	39	78
20	42	84
21		



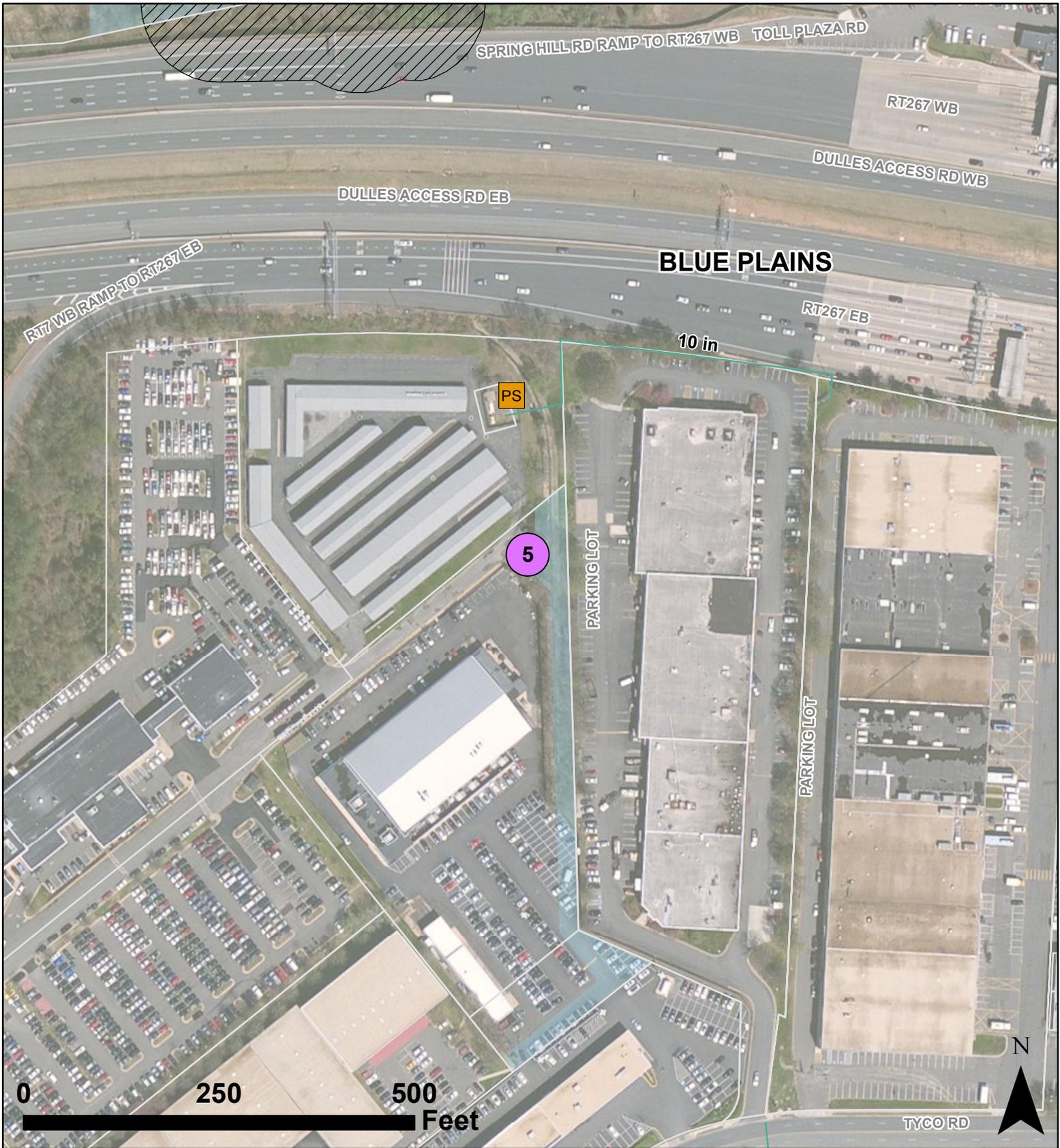
Septage  
Receiving Site  
Feasibility Study



	Possible Sites
	Wastewater Pump Stations
	Meter Vaults
	Parcels
	Sewer Treatment Area
	Floodplains
	Chesapeake Bay Preservation Area

Figure 11 - Site 4 - Dead Run Pump Station  
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10	24	48
12	27	54
14	30	60
15	33	66
16	36	72
18	39	78
20	42	84
21		



Septage Receiving Site Feasibility Study

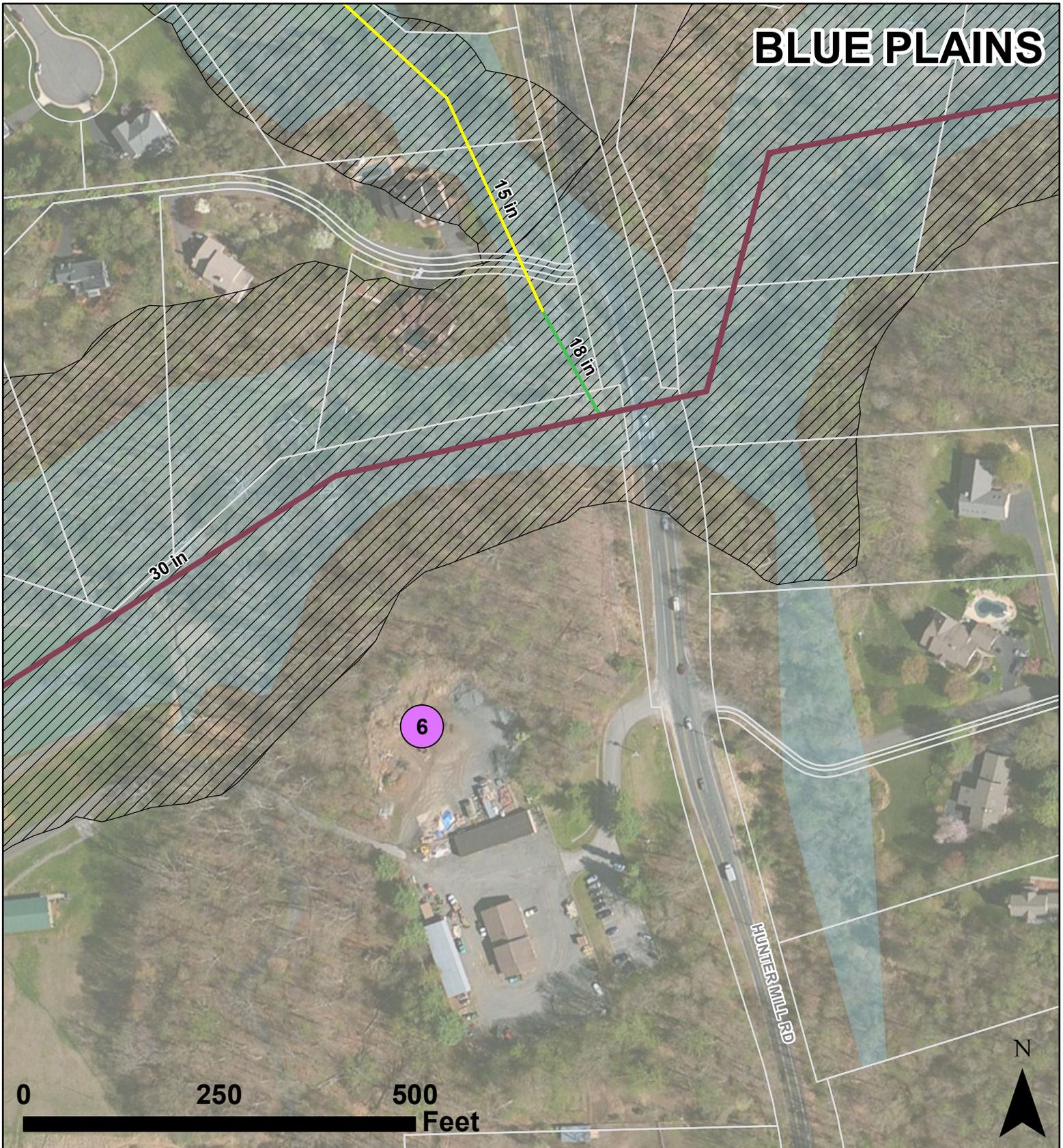


	Possible Sites
	Wastewater Pump Stations
	Meter Vaults
	Parcels
	Sewer Treatment Area
	Floodplains
	Chesapeake Bay Preservation Area

Figure 12 - Site 5 - Tysons Pump Station  
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# BLUE PLAINS



10	24	48
12	27	54
14	30	60
15	33	66
16	36	72
18	39	78
20	42	84
21		



## Septage Receiving Site Feasibility Study



- Possible Sites
- Wastewater Pump Stations
- Meter Vaults
- Parcels
- Sewer Treatment Area
- Floodplains
- Chesapeake Bay Preservation Area

Figure 13 - Site 6 - Lake Fairfax Park Facility Maintenance

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### 3.3 SITE SCREENING

#### 3.3.1 Site Screening Criteria

The identified sites were screened based on the site identification criteria plus the following additional criteria:

- Parkland/Historic Resource Impacts
- Wetland, Stream, and Floodplain Proximity
- Odor Impacts
- Traffic Impacts
- Impacts on Haulers
- Feasibility of Pretreatment on site
- Ability to provide Security, Tracking, and Monitoring
- Utility accessibility

##### *Parkland/Historic Resource Impacts*

Sites with limited or no impacts on parkland or historic resources are preferred. With many larger pipes located in stream valley parks, parkland impacts are difficult to avoid entirely, but should be minimized wherever feasible.

##### *Wetland, Stream, and Floodplain Proximity*

While construction of sewer utilities is an exception that is allowed in floodplains and Chesapeake Bay Preservation Areas (Resource Protection Areas or RPAs), sites with minimal impacts on these areas are preferred. This limits environmental impacts as well as the potential for closures and damage to facilities during a flood event.

##### *Odor Impacts*

Based on the input from Community Meeting No. 1, odor is an important consideration for neighboring residents and park patrons. A site where odors can be controlled and impacts to adjacent properties can be minimized is preferred.

##### *Traffic Impacts*

Traffic is another key consideration for the surrounding community. A site where the anticipated truck traffic would not represent a significant increase in traffic in the area or create traffic back-ups is preferred.

##### *Impacts on Haulers*

Based on the feedback obtained in the hauler survey, sites were rated as to their potential impact on haulers. Driving distance from the existing Colvin Run site was one measure considered as part of this criterion.

### *Feasibility of Pretreatment on Site*

Sites with sufficient area available to provide pretreatment at the site were preferred. The pretreatment facility considered was a building that could potentially accommodate grinders and screening and grit removal equipment.

### *Ability to Provide Security, Tracking, and Monitoring*

Sites that can be monitored either because they are already manned or can be monitored through a SCADA connection are preferred.

### *Utility accessibility*

Site with available power for security, monitoring, and treatment equipment and available water supply for washdown water are preferred.

### 3.3.2 Site Screening Matrix

Table 2 shows the site screening matrix containing the results of the criteria analysis. Each criterion received a weight from 1 (least important) to 4 (most important); these are shown at the top of the page. Each site was evaluated with respect to each criterion and assigned a rating from 0 (lowest rating--criterion was not met) to 4 (highest rating). The notes in each box describe key points from the evaluation. The score for each criterion was determined by multiplying the weight times the rating, and then the scores are summed at the far right. Site 6, the Lake Fairfax Park Maintenance Facility, was the highest ranked site in the evaluation, with Site 1, the existing Colvin Run site, ranked second.

Table 2. Site Screening Matrix

Criteria Weight	3	3	4	4	4	3	2	4	4	4	3	3	2	1	Total Score for Alternative	
Alternative No.	Location or Address	Land Use of Site	Land Use of Adjacent Area	Major Road Access	Pipe Size	Proximity to Unsewered Areas	Parkland/Historic Resource Impacts	Wetland, Stream, and Floodplain Proximity	Odor Impacts	Traffic Impacts	Impacts on Haulers	Feasibility of Pretreatment on Site	Ability to Provide Security, Tracking, and Monitoring	Utility Accessibility (Electrical, water)	Ability to Accommodate Semi-trailers and Class A RVs	
1	Existing Colvin Run Site 9950 Colvin Run Rd Great Falls, VA 22066 Treatment Area: Blue Plains Supervisor District: Dranesville	Site is on an easement on FCPA property; entrance road is County property	Colvin Run Mill Park, Residential, VDOT Right-of-way	Near Route 7	Direct connection to 33-inch pipe	Convenient to Great Falls and Hunter Mill areas	Considerable impacts to pedestrian and vehicular use of park and trails	Within floodplain of Diffucult Run, has experienced flooding	Odor is an issue for residents, especially in summer, trucks track septage onto road	Traffic backups and unsafe left turns onto Colvin Run Rd., access road in poor condition	Haulers prefer site due to convenient location, fast unload times	Limited area available for treatment	Unmanned, potential for remote monitoring through pump station SCADA	Existing services	Turning around (K-turn) is difficult and impedes park access	
	Rating	2	1	4	4	4	0	0	0	0	4	1	3	4	2	
	Score	6	3	16	16	16	0	0	0	0	16	3	9	8	2	95
2	I-66 Transfer Station 4618 West Ox Rd. Fairfax, VA 22030 Treatment Area: UOSA Supervisor District: Springfield	Fire and rescue training facility	Solid waste facilities, bus garage, animal shelter, potential conflict with helipad approach	On West Ox Road	Indirect connection to 12-inch pipe	Not convenient to unsewered areas	None known	Stormwater system impacts	Potential for impacts to nearby employees and at manholes in downstream residential area	Coordination with other County agencies and VDOT required	12.6 road miles from Colvin Run	Potentially feasible depending on land availability	Existing security in place, County-manned facility, multiple locations for gates	Available near site	Potentially feasible if land is available for a drive-through design or expansion of existing parking area	
	Rating	3	3	4	0	0	4	2	0	2	1	3	4	1	3	
	Score	9	9	16	0	0	12	4	0	8	4	9	12	2	3	88
3	Scott's Run Meter Vault 7400 Georgetown Pike McLean, VA 22102 Treatment Area: Blue Plains Supervisor District: Dranesville	Parkland (FCPA)	Parkland, residential	On Georgetown Pike	Direct connection to 33-inch pipe	Somewhat convenient to Great Falls area	Impacts to pedestrian and vehicular use of park	Partially within floodplain of Scott's Run	Potential for odor impacts to adjacent residents	Potential for noise impacts to adjacent residents	6.9 road miles from Colvin Run	Limited area available for treatment	Limited ability due to isolated location, park impacts	Power available near site, no water	Bordered by river and steep incline; narrow road leading to site	
	Rating	2	1	3	4	2	1	1	2	2	2	1	1	0	1	
	Score	6	3	12	16	8	3	2	8	8	8	3	3	0	1	81
4	Dead Run Pump Station 6925 Georgetown Pike McLean, VA 22101 Treatment Area: Blue Plains Supervisor District: Dranesville	Wastewater Pump Station	Church, residential	On Georgetown Pike	Direct connection to pump station with 14- and 18-inch forcemains	Somewhat convenient to Great Falls area	Impacts to pedestrain trail use	Partially within floodplain of Dead Run	Potential for odor impacts to adjacent residents	Potential for noise and traffic issues, limited sight distance when exiting	8.4 road miles from Colvin Run	Limited area available for treatment	Existing gate; potential for remote monitoring through pump station SCADA	Available on site	Adequate area not available; insufficient space to expand road	
	Rating	4	1	3	1	2	2	1	2	1	2	1	3	4	0	
	Score	12	3	12	4	8	6	2	8	4	8	3	9	8	0	87
5	Tyson's Pump Station 8608 Leesburg Pike Vienna, VA 22182 Treatment Area: Blue Plains Supervisor District: Providence	Commercial	Commercial/Industrial	Near Route 7	Indirect connection to pump station with 10-inch forcemain	Somewhat convenient to Great Falls area	None known	Partially within floodplain	Potential for odor impacts to adjacent businesses	Potential for traffic and noise impacts to adjacent businesses	4.2 road miles from Colvin Run	Limited area available for treatment; existing pump station basket screen would be inadequate to handle septage	Busy industrial area; surrounding area is gated; one entrance/exit	Available near site	Adequate area not available; narrow ingress/egress	
	Rating	3	3	3	0	2	4	1	2	2	3	0	2	1	0	
	Score	9	9	12	0	8	12	2	8	8	12	0	6	2	0	88
6	Lake Fairfax Park Maintenance Facility 1420 Hunter Mill Road Vienna, VA 22182 Treatment Area: Blue Plains Supervisor District: Hunter Mill	Park maintenance yard (FCPA)	Parkland, residential	On Hunter Mill Road	Indirect connection to 30-inch pipe	Convenient to Great Falls and Hunter Mill areas	Impacts to park maintenance staff, noise and odor	Site is outside floodplain	Potential for odor impacts to park employees and patrons	Increased truck traffic on Hunter Mill Road	2.9 road miles from Colvin Run	Feasible pending land availability	Existing fencing, feasible to add security features	Existing services on site	Adequate area potentially available with modifications to existing layout	
	Rating	3	2	3	3	4	1	4	2	2	4	4	4	4	4	
	Score	9	6	12	12	16	3	8	8	8	16	12	12	8	4	134

Criteria Weighting System	
Weighting	Description
1	Optional
2	Secondary importance
3	Primary importance
4	Critical

Site Rating System	
Rating	Description
0	Considerable drawbacks to meeting criteria
1	Minimal criteria adherence
2	Drawbacks and criteria adherence about equal
3	Some drawbacks but substantially meets criteria
4	Best meets criteria

Score = rating \* weight for each criterion  
Total score = sum of scores



## SECTION 4 – CONCEPTUAL SITE LAYOUTS AND COST ESTIMATES

### 4.1 CONCEPTUAL LAYOUTS

Based on the results of the site screening evaluation, two sites—Site 1, the existing Colvin Run site, and Site 6 – Lake Fairfax Park Maintenance Area—were selected for development of conceptual layouts. In addition, a conceptual layout was prepared for improvements to the existing Noman Cole site.

#### 4.1.1 Design Components

Typical design components for septage receiving stations were reviewed in order to identify components to include in the conceptual layouts. Table 3 summarizes design configurations for recent Hazen and Sawyer septage facility designs. Septage receiving facility designs vary greatly depending on the utility's specific needs, the region (in particular, the extent to which freezing is an issue), the location (at a treatment plant or remote), the amount of space available, cost, community impacts, and other factors. There is no one standard design. The two most common variations are:

1. Discharge directly or almost directly into a large pipe, either in the collection system (as at Colvin Run) or a treatment plant influent channel (as at NMCCPCP and Blue Plains AWTP) and do not provide any additional treatment.
2. Provide some form of screening and grit removal, elements of which may include: rock traps; channel or inline grinders; bar, drum, or perforated sheet screens; grit chamber (with or without aeration); and, screenings washing, compaction, and bagging.

Grease separation is another process that may be added. Grease may also be collected at a separate facility. Grease separation by one of these means this becomes more advantageous to consider at a treatment plant where fats, oils, and greases (FOG) are codigested and contribute to biogas production.

For purposes of this study, it was assumed that a screening and grit removal facility would be provided in a 50- by 60-foot building for either Sites 1 or 6.

For the Noman Cole site, County staff report that the no process upsets or significant maintenance issues have occurred with the existing facilities. This facility is also the less-utilized of the two sites. Therefore, treatment improvements are not recommended for the site. The County would like to add oxidation-reduction potential (ORP) monitoring to the existing pH monitoring scheme. The Count would also like to add a separate entrance such that trucks do not have to drive through the plant to reach the site. Additionally, the odor control system is aging and in need of replacement. It is also recommended that the existing paper log system be replaced with an electronic log entry system.

**Table 3. Features of Recent Hazen and Sawyer Septage Receiving Designs**

Project	Facility Access	Monitoring	Wet Well	Screening	Grit Removal	Odor Control and Washdown	Dewatering	Grease Removal
<b>Blue Plains AWTP</b>	<ul style="list-style-type: none"> <li>• Security Guards</li> <li>• Manifests collected</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes. (Yard hydrant)</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Not designed for grease removal.</li> </ul>
<b>Moores Creek WWTP</b>	<ul style="list-style-type: none"> <li>• Inlet valve is access controlled via Key and PIN keypad. (Linked to invoicing)</li> </ul>	<ul style="list-style-type: none"> <li>• Flow meters</li> <li>• Level Sensor</li> <li>• Data acquisition software</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Lakeside Package)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Lakeside Package)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes. (Fully enclosed and connected to foul air duct)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Not designed for grease removal.</li> </ul>
<b>East Central Regional WRF</b>	<ul style="list-style-type: none"> <li>• Manned at all times of receiving station operation</li> <li>• Gated</li> <li>• Security camera monitored</li> </ul>	<ul style="list-style-type: none"> <li>• pH monitor</li> <li>• Level sensor</li> <li>• Combustible gas detector</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Yes. (Wash down station, trucks back into an enclosed area and air is sent to a chemical scrubber)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Separate FOG receiving facility.</li> </ul>
<b>T.P. Smith WRF</b>	<ul style="list-style-type: none"> <li>• Inlet valve is access controlled via PIN keypad.</li> </ul>	<ul style="list-style-type: none"> <li>• Magnetic flow meter limits the flow rate and records the total flow</li> <li>• Combustible gas detector</li> <li>• Level sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Discharged to a grinder and stored in a wet well before being pumped to digesters)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Based on Lakeside Package)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Based on Lakeside Package)</li> </ul>	<ul style="list-style-type: none"> <li>• Not for the treatment unit. The sump air will be scrubbed for odors while being pumped to the digesters.</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Combined system.</li> </ul>
<b>Northside WWTP</b>	<ul style="list-style-type: none"> <li>• Gated Facility</li> <li>• Pin Access to the facility</li> <li>• Pin Access to pinch valve</li> </ul>	<ul style="list-style-type: none"> <li>• Flow Meter</li> <li>• Level Sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Lakeside Package)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (Lakeside Package)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes. (Yard hydrant; Foul air connections to chemical scrubber)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• Combined system.</li> </ul>
<b>Dry Creek WWTP</b>	<ul style="list-style-type: none"> <li>• Automatic Card Reader</li> </ul>	<ul style="list-style-type: none"> <li>• Flow meter</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Separate FOG receiving facility.</li> </ul>
<b>Hominy Creek WWMF</b>	<ul style="list-style-type: none"> <li>• Unmanned</li> </ul>	<ul style="list-style-type: none"> <li>• Flow meter</li> <li>• Low level float switch (Automatic or manual)</li> </ul>	<ul style="list-style-type: none"> <li>• Yes (One designed for gravity unloading and one for pressurized.)</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes. (Wash down station)</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Combined system (Chopper pumps)</li> </ul>

#### 4.1.2 Site Layouts

##### *Site 1 - Existing Colvin Run Site*

Figure 14 illustrates a conceptual layout for an improved facility at the existing Colvin Run site. The entrance road will be widened in order to ensure that both the septage receiving station and the Difficult Run PS can be accessed simultaneously and allow for additional queueing space. The existing discharge location will be demolished and will become additional queueing space for the new facility. A state-of-the-art facility will be constructed east of the existing facility. Due to site constraints, a full turn around will not be incorporated into the design. The facility will have one quick connect feed for a single discharge and a 24-inch pipe will be installed to connect this facility to the 33-inch sewer line to the south.

##### *Site 6 - Lake Fairfax Park Maintenance Facility*

Figure 15 illustrates the conceptual layout for this site. The existing facility will be separated into two sites. WCD will maintain the northern portion and FCPA will maintain the southern portion. For safety and security reasons, the two sites will be fenced off from one another and each will have a separate, gated entrance. The entrance road for the septage receiving station will branch off of the existing entrance from Hunter Mill Road, and the remainder of the existing entrance road will be used solely by FCPA. The entrance to the SRF will be gated, and only registered sewage handlers will be allowed to access the facility.

The design will include a full loop with a state-of-the-art facility at its center. The facility will be equipped with two discharge bays, so that two haulers may use the site simultaneously. A 24-inch pipe will be installed to connect this facility to an existing manhole in the 30-inch sewer line to the north. The FCPA's existing warehouse will be demolished and rebuilt on the southern portion of their site. Additional improvements on the FCPA portion of the site may include pavement surrounding the main building at the center of the site, drainage improvements, and an upgraded electrical service. The planned improvements will be further coordinated with FCPA during design.

##### *Existing Noman Cole Site*

The existing Noman Cole facility will have a new access path provided from Old Colchester Road to separate sewage handling traffic from the remainder of the facility, as shown in Figure 16. In addition, a new air scrubber will be installed at the facility for improved odor control.

The County has observed that the existing turns at this facility are difficult to negotiate for larger trucks; however, larger vehicles such as semi-trailers and RVs rarely use the site. The driving lane could potentially be widened to the north, as the County's property line extends beyond the current fence line. Expansion to the west or south would be difficult due to the steep grades in these areas. As the accommodation of larger vehicles is not a critical concern for this site, an expansion is not shown in Figure 16 but could be added if desired.

## 4.2 CONSTRUCTION COST ESTIMATES

Planning-level construction cost estimates were prepared based on each conceptual layout. Major cost factors include building and equipment costs and paving. Costs were based on recent costs for similar projects and budgetary quotations from equipment vendors. The detailed cost estimates are included in Appendix D and summarized in Table 4.

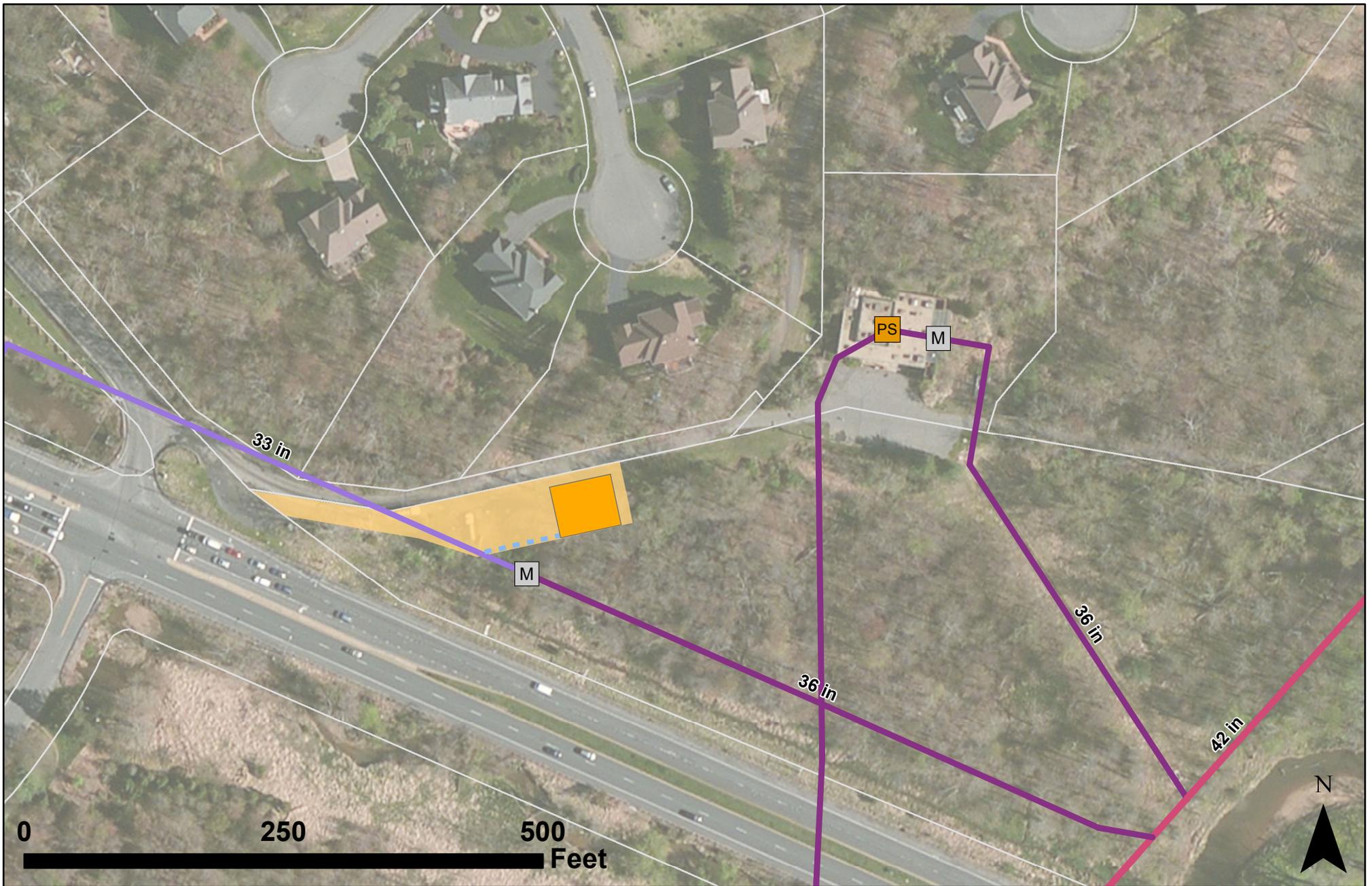
The higher cost for Site 6 than Site 1 is primarily due to the additional paving needed and the replacement of the existing shed. The benefit of the additional paving is that it permits a dual, drive-through loop configuration rather than the single K-turn configuration that is required due to site constraints at the Colvin Run site.

**Table 4. Cost Estimate Summary**

<b>Item</b>	<b>Cost<sup>1,2</sup></b>
Site Alternatives	
Site 1 – Existing Colvin Run Site	\$2,620,000
Site 6 – Lake Fairfax Park Maintenance Facility	\$3,420,000
Noman Cole Site Improvements	\$730,000

<sup>1</sup>These are AACE Class 4 estimates with an expected accuracy of -30 to +50 percent.

<sup>2</sup>Cost estimates include contractor's overhead and profit at 15%, insurance/bonds at 3%, and contingency at 30%.



10	20	36	66
12	21	39	72
14	24	42	78
15	27	48	84
16	30	54	
18	33	60	



Septage Receiving Site  
Feasibility Study

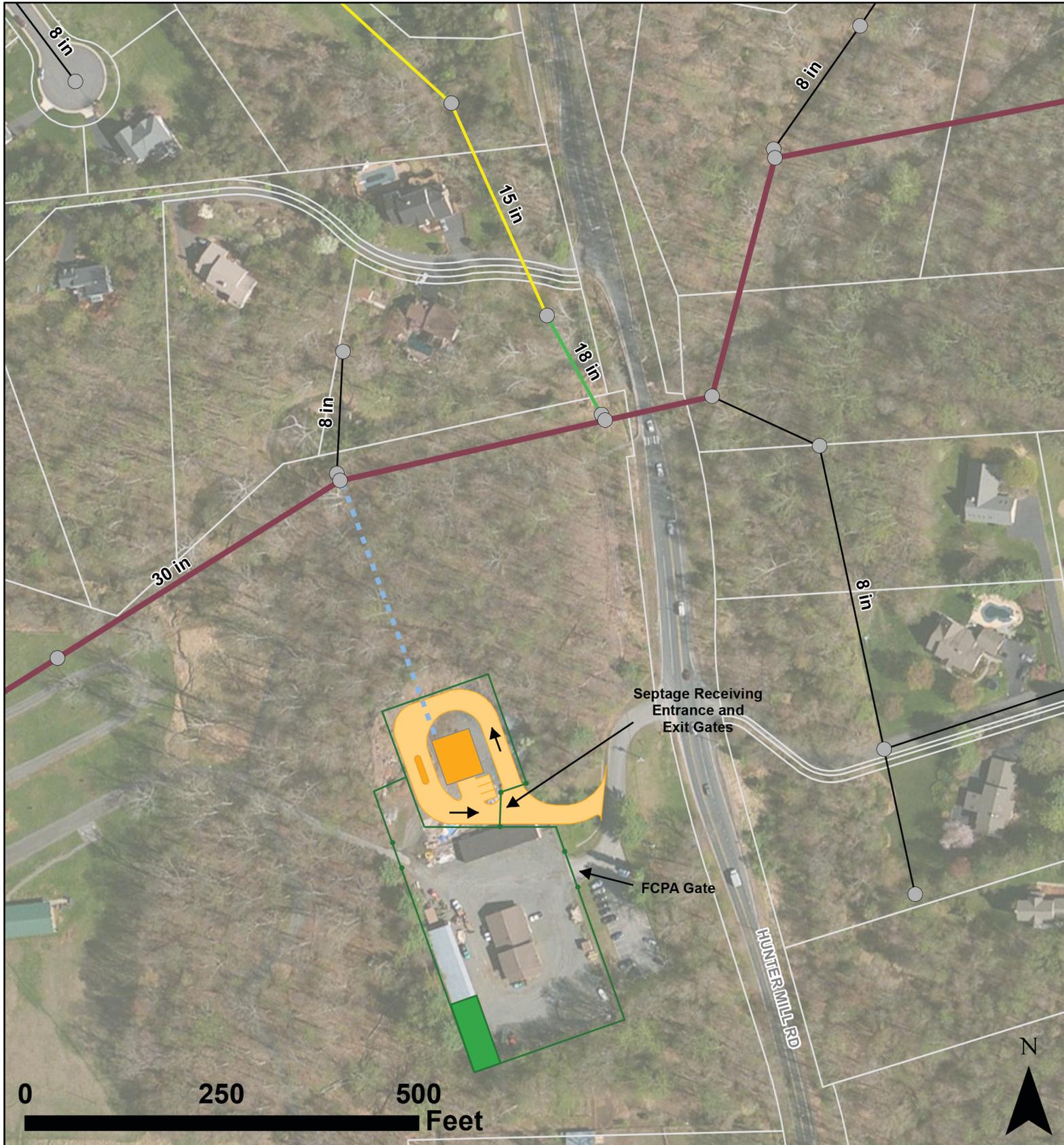


<b>PS</b>	Wastewater Pump Stations		Parcels
<b>M</b>	Meter Vaults		Proposed Facilities
	Sewer Treatment Area		

Figure 14 - Conceptual Layout  
Existing Colvin Run Site

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8	21	48
10	24	54
12	27	60
14	30	66
15	33	72
16	36	78
18	39	84
20	42	



Septage Receiving Site Feasibility Study



	Proposed CD Facilities
	Proposed FCPA Facility
	Proposed 24" Pipe
	Manholes
	Parcels
	Sewer Treatment Area

Figure 15 - Conceptual Layout  
 Lake Fairfax Park Maintenance Facility  
 DRAFT  
 DRAFT





	10		20		36		66
	12		21		39		72
	14		24		42		78
	15		27		48		84
	16		30		54		
	18		33		60		



Septage Receiving Site  
Feasibility Study



Figure 16 - Conceptual Layout  
Existing Noman Cole Site

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	Proposed Gate		Meter Vaults
	Wastewater Pump Stations		Parcels
	Sewer Treatment Area		Proposed Facilities



## SECTION 5 – RATE STUDY

### 5.1 RATE STRUCTURE

The local utilities surveyed used a variety of different rate structures for hauled waste (see Table 2). These included:

- Local health department fee
- Local health department fee + annual utility fee based on truck capacity
- Local health department fee + utility fee per truckload (regardless of truck size)
- Local health department fee + utility fixed fee + volumetric charge per truckload assuming a full truck

Fairfax County is the only utility surveyed that has solely a local health department registration fee, with no additional charge based on truck capacity or number of trips, and hence is the lowest-cost option in the region. For example, as shown in Table 5, the total annual cost for one 2,000 gallon truck making 53 trips per year<sup>1</sup> would be just \$710 for disposal at a Fairfax County site, in comparison with \$14,640 at DC Water or \$4,602 at Loudoun Water. The low cost, along with the speed and ease of use of the Colvin Run site, appear to be the primary drivers for the frequent use of the Colvin Run site.

**Table 5. Local Utility Total Annual Cost Comparison**

Utility	Total Annual Cost for One 2,000 gallon Truck
Fairfax County	\$710 <sup>1</sup>
DC Water	\$14,640 <sup>2</sup>
Loudoun Water	\$4,602 <sup>1</sup>
PWCSA	\$2,245 <sup>1</sup>
UOSA	\$2,120 <sup>2</sup>
WSSC	\$8,735 <sup>1</sup>

<sup>1</sup>Includes local health department fee and utility charges (where applicable).

<sup>2</sup>Total does not include local health department fee (will vary with jurisdiction).

Adding a capacity-based fee would have the advantages of helping Fairfax County to achieve rate parity with other local utilities and recover some of the costs associated with the septage receiving program from septic system and portable toilet users, who do not otherwise pay sewer service charges or availability fees. This approach is consistent with the County’s overall adopted policy that “growth pays for growth”, in that the costs would be recovered from the customer class that is using the services. Rate parity with other localities would also reduce the incentive for haulers to discharge waste generated outside Fairfax County at Fairfax County sites.

<sup>1</sup> Average number of trips per truck for the active trucks registered in Fairfax County in 2014, calculated as follows: (6,000 trips at Colvin Run + 4,000 trips at Noman Cole) / 189 active vehicles.

Disadvantages associated with additional fees include increased costs for septic system customers and a disincentive for maintaining their systems, the increased risk of haulers making illegal discharges, and the increased administrative burden on both haulers and the County.

When the septage receiving program was first established, the County determined that capacity-based fees should not be charged, in order to encourage the use of controlled access points rather than other manholes throughout the system. However, with the County's growth in recent decades and the adoption of capacity-based fees by the surrounding utilities, Fairfax County has determined that a new approach is required.

Several alternatives were considered, as follows:

- Local health department fee + annual utility fee based on truck capacity
- Local health department fee + utility fee per truckload (regardless of truck size)
- Local health department fee + utility fixed fee + volumetric charge per truckload assuming a full truck
- Local health department fee + utility fixed fee + volumetric charge based on actual volume discharged

Comments received during the hauler survey indicated that an annual fee structure is preferred over a volume-based or per truckload structure. This type of structure minimizes the administrative time associated with the billing process for both the hauler and the utility. Also, this type of structure was viewed by haulers as more fair than a volumetric charge that assumes a full truck. A volumetric charge based on actual, measured volume would address the fairness concern, but would also be more costly and labor-intensive to implement, with the need for additional equipment (flowmeter or truck scale) and information systems to record the volume data and generate bills. Therefore, an annual fee structure based on truck capacity was selected as the preferred type of rate structure.

## 5.2 RATE METHODOLOGY

The rate methodology utilized by WSSC in developing their annual fee based on truck size was reviewed for this study and a similar approach was developed for Fairfax County.

The rate methodology is based on a partial cost recovery method, in which the costs recovered are limited to those most directly attributable to the waste hauling process, including administration, monitoring, and compliance activities and sewer use costs.

### 5.2.1 Cost Categories

The costs to be recovered include labor, materials and equipment, and sewer use charges. For a detailed list of line items included, refer to Appendix E.

#### *Labor*

Labor costs include operations and maintenance labor associated with maintenance of two septage receiving stations—one at the NMPCP site and one at a second site, either Site 1 or Site 6. The labor cost for the NMPCP is based on the previous year's costs. The labor cost for the second site was initially based on a labor rate derived from the previous year NMPCP

costs (with plus fringe benefits added) and an estimate of hours based on a general understanding of costs for the Colvin Run site and experience with similar facilities.

Administrative labor is initially based on the current rate plus fringe benefits for an Administrative Assistant III and hours based on experience with similar facilities.

*Materials, Equipment, and Other*

Costs in this category include electricity; mileage from the Freds Oak Road facility to and from Sites 1 or 6; minor capital and equipment costs for typical repair and replacement needs, such as gate repairs and replacing washdown hoses; postal services for mailing of notices to haulers; solids removal for Sites 1 or 6; and testing and laboratory services for random testing. Initial costs for these items were estimated based on experience with similar facilities.

*Sewer Use Charges*

Sewer use charges are based on Fairfax County’s adopted sewer use charge per thousand gallons. This charge is applied using on an analysis of the capacity of the active vehicles currently registered with FCHD, along with the annual average number of trips per vehicle of 53 in 2014.

**5.3 PROPOSED RATES**

The proposed rates for the Fairfax County septage receiving program are shown in Table 8. The rate derivation is provided in Appendix E. The proposed rates would take effect beginning in FY17. It is recommended that the rates be developed in five-year increments and reviewed annually, following the same process used for the County’s sewer service charges.

**Table 6. Proposed Septage Receiving Rates, FY17 through FY21**

<b>Vehicle Capacity (gallons)</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>
1 to 49	\$611	\$629	\$648	\$667	\$687
50 to 899	\$820	\$840	\$860	\$886	\$912
900 to 2,999	\$1,315	\$1,341	\$1,363	\$1,404	\$1,446
3,000 or more	\$2,023	\$2,056	\$2,082	\$2,144	\$2,208

In future years, rates will be adjusted to take into account actual cost data that will replace estimates developed for this study. In order to accomplish this, the Wastewater Management Program will need to track costs related to septage receiving and also review cost allocations in the overall program rate study to ensure that the appropriate costs are recovered in the septage rate and the sewer use charge, respectively.



## SECTION 6 – RECOMMENDATIONS

### 6.1 SELECTED SITE

The recommended site to replace the existing Colvin Run site is Site 6, the Lake Fairfax Maintenance facility. The next step in implementing this site will be a preliminary engineering report that will further refine the concept plan developed herein. The report scope should also include a community outreach component that includes the Hunter Mill Supervisor's office and area stakeholder groups in the process. The planning-level construction cost estimate for the proposed facilities is \$3,420,000.

In the event that the County is unable to proceed with the Lake Fairfax site, the secondary recommendation would be to improve the Colvin Run site, with the next steps again being a preliminary engineering report and additional community outreach to refine the design concept.

### 6.2 NOMAN COLE SITE IMPROVEMENTS

The recommended improvements for the Noman Cole site include:

- Separate entrance from Old Colchester Road.
- Odor control system replacement.
- Instrumentation upgrades, to include addition of ORP monitoring and electronic log sheet capture.

The planning-level construction cost estimate for the proposed facilities is \$730,000.

### 6.3 RATES

The initial proposed rate structure is as presented in Table 6. It is recommended that the rates be reviewed annually. Also, a review of surrounding utilities' rates should be conducted at least once every five years, with the results incorporated into the rate study as appropriate to meet both partial cost recovery and regional rate parity objectives.

### 6.4 ADDITIONAL RECOMMENDATIONS

The following short-term improvements are recommended for the Colvin Run site and have been implemented or are in the process of being implemented, as noted below.

- The County is in the process of updating signage at the Colvin Run site with explicit direction on discharge of in-County waste only.
- The County's Wastewater Planning and Monitoring Division (WPMD) of DPWES and the FCHD have jointly increased the frequency of FCHD inspections of haulers using the site.
- The County is in the process of installing a manifest drop-off point at the site.

- The County is coordinating with WSSC, Loudoun County, and DC Water to obtain information on haulers that bring waste generated outside of the County to the site. Violators are given a warning, and, if violations continue, a notice of violation is issued. If necessary, enforcement may be escalated to include revocation of gate card privileges and/or the FCHD registration.
- The County has repaired the access road (used stone fill for potholes).
- The County has installed sealed manhole lids on selected manholes to reduce odor.
- The County has installed a no left turn sign for drivers exiting the access road at Colvin Run Road. Ongoing tree trimming is required to keep this sign visible; this should be a part of routine site maintenance.
- The County has removed the accumulated debris from the top of the storm drain where it crosses under the access road between the septage receiving station and the Difficult Run PS. This item should also be incorporated into routine site maintenance.

The following are general program recommendations:

- Consider establishing an agreement with the City of Alexandria to allow waste generated in Alexandria to be discharged at Fairfax County sites.
- Consider establishing an agreement with Loudoun County to allow waste generated in Loudoun to be discharged in Fairfax and vice versa.
- Conduct community outreach with the hauling community in advance of implementing significant changes such as opening and closing sites. There is a need for education and assistance regarding a closure or relocation, so that haulers understand where the alternate facilities are, when they are open, and how to obtain access to them.