

**Hydrogeological assessment if deemed necessary by  
the Department (Checklist Item #6)**

**Route 5 Solid Waste Transfer Station**

**Prepared For:**

Delaware Solid Waste Authority  
1128 S. Bradford Street  
Dover, Delaware 19903

**Prepared By:**

MALCOLM PIRNIE, INC.  
824 Market Street, Suite 710  
Wilmington, DE 19801

The facility has been designed to contain the release of leachate and washdown waters generated within the transfer station building. These facility wastewaters, as well as other liquids and fluids used in the operation and maintenance of the facility, will be managed in a manner to prevent release and exposure to the environment. The requirement for a hydrogeological assessment was deemed unnecessary by the DNREC, as further described in the attached letters, and the proposed facility design is consistent with that determination.



- Groundwater flow in the Columbia/water table aquifer (WTA) at the Route 5 Site is predicted to be in a southerly direction towards Unity Branch (Figure 1). While not quantitatively determined, this assumption is based on site topography and the findings of numerous researchers (regarding the relationship between the WTA and stream flow in the Coastal Plain). For instance, Talley (1982)<sup>2</sup> states, "This aquifer ... provides a source of recharge to underlying aquifers and base flow to streams", and Shedlock et. al. (1999)<sup>3</sup> states "groundwater discharge (base flow) provides between 48 and 88 percent of stream flow in the study area." However, the direction of flow could be influenced locally due to pumping wells (i.e. irrigation wells).

At the Route 5 Site, the saturated thickness of the WTA (which lies within the Pleistocene-aged Lynch Heights and/or Omar Fm.) is approximately 100 feet<sup>4</sup>. Beneath the unconformity located at the base of these Pleistocene-aged formations lie the Miocene-aged Bethany Fm. (interbedded confining units grading to the Pokomoke aquifer in the southeastern portion of the county), Manokin Fm. (containing the Manokin aquifer which is hydraulically connected to the Pokomoke aquifer east of the Site), St. Marys Fm. (confining layer), Choptank Fm. (containing various interbedded/discontinuous aquifers) and Calvert Fm. (containing the Frederica, Federalburg and Cheswold aquifers). Deeper formations range in age from Oligocene to Jurassic/Triassic (post rift and rift basin rocks respectively) and contain a number of aquifers<sup>5</sup>. These aquifers are not often tapped in the vicinity of the Site due to depth and an increase in salinity with depth.

- Groundwater in the WTA at the Milford Site is predicted to flow in a southeasterly direction towards Herring Branch (Figure 2). As above, this statement is supported by local topography, the aforementioned relationship between the Columbia/WTA and stream flow, and the location of the Site with respect to Herring Branch. However, as with the Route 5 Site, the local direction of flow at the Milford Site could be influenced by nearby pumping wells.

At the Milford site, the saturated thickness of the WTA (located within the Columbia Fm.) is approximately 70 feet<sup>6</sup>. Beneath the unconformity located at the base of the Columbia Fm. lies the Miocene-aged St. Marys Fm. (confining layer) followed by the Choptank Fm. (containing various interbedded/discontinuous aquifers) and Calvert Fm. (containing the Frederica, Federalburg and Cheswold aquifers). The Bethany Fm is not present in the vicinity of the Milford Site. As described above, deeper formations range in age from Oligocene to Jurassic/Triassic (post rift and rift basin rocks respectively) and

**MALCOLM  
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Mr. Robert Hartman  
DNREC

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contain a number of aquifers<sup>7</sup>. These aquifers are not often tapped in the vicinity of the Site due to depth and an increase in salinity with depth.

Due to the schedule of ongoing site work, we request that the SHWMB provide a written response to this request for determination by July 12, 2002.

Thank you for your assistance with this project. If you have any questions, please contact me at (302) 884-6901.

Very truly yours,

MALCOLM PIRNIE, INC.

  
Joseph C. Barbagallo, P.E.  
Project Manager

  
Matthew P. Lesley, P.G.  
Project Hydrogeologist

Enclosure

c: D. Sammons, DSWA

<sup>1</sup> Shedlock, R.J., Denver, J.M., Hayes, M.A., Hamilton, P.A., Koterba, M.T., Bachman, L.J., Phillips, P.J. and Banks, W.S.L. (1999). *Water-quality Assessment of the Delmarva Peninsula; Delaware, Maryland, and Virginia: Results of Investigations, 1987-91*. U.S. Geological Survey water-supply paper (2355-A).

<sup>2</sup> Talley, J.H. (1982). *Geohydrology of the Milford Area, Delaware*. Delaware Geological Survey, Hydrologic map Series No. 4.

<sup>3</sup> Shedlock, R.J., Denver, J.M., Hayes, M.A., Hamilton, P.A., Koterba, M.T., Bachman, L.J., Phillips, P.J. and Banks, W.S.L. (1999). *Water-quality Assessment of the Delmarva Peninsula; Delaware, Maryland, and Virginia: Results of Investigations, 1987-91*. U.S. Geological Survey water-supply paper (2355-A).

<sup>4</sup> Andres, A.S. (1987). *Geohydrology of the Northern Coastal Area, Delaware*. Delaware Geological Survey, Hydrologic Map Series No. 5, Sheet 2 - Geohydrology of the Columbia Aquifer.

<sup>5</sup> Numerous sources, including those listed above and: Andres, S.A. (1986) *Geohydrology of the Northern Coastal Area*. Delaware Geological Survey, Hydrologic Map Series No. 5, Sheet 1 - Basic Geohydrologic Data, Benson, R.N. et al. (1990). *Geologic and Hydrogeologic Studies of the Oligocene - Pleistocene Section Near Lewes, DE*, Delaware Geological Survey Report of Investigations No. 48., Groot, J.J. and Jordan, R.R. (1999) *The Pliocene and Quaternary Deposits of Delaware: Palynology, Ages and Paleoenvironments*. Delaware Geological Survey Report of Investigations No. 58, and Hodges, Jr., A.L. (1984). *Hydrology of the Manokin, Ocean City and Pokomoke Aquifers of Southeastern Delaware*. Delaware Geological Survey Report of Investigations No. 38.

<sup>6</sup> Talley, J.H. (1982). *Geohydrology of the Milford Area, Delaware*. Delaware Geological Survey, Hydrologic map Series No. 4.

<sup>7</sup> See footnote No. 5.

STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
& ENVIRONMENTAL CONTROL  
DIVISION OF AIR & WASTE MANAGEMENT  
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RECEIVED  
AUG 05 2002  
DSWA

SOLID & HAZARDOUS WASTE  
MANAGEMENT BRANCH  
TELEPHONE: (302) 739 - 368  
FAX No.: (302) 739 - 506

August 5, 2002

Hand Delivered

Mr. Drew R. Sammons, P.E.  
Senior Engineer  
Delaware Solid Waste Authority  
1128 S. Bradford Street  
P.O. Box 455  
Dover, Delaware 19903-0455

Subject: Hydrogeologic Assessment for Route 5 and Milford Transfer Station Sites  
Reference: Malcolm Pirnie Letter dated 7/2/02

Dear Mr. Sammons:

Based upon the assertions of the subject Malcolm Pirnie letter sent on behalf of the DSWA, the Solid & Hazardous Waste Management Branch concurs that the project has little potential to impact groundwater quality. In accordance with the provisions of the *Delaware Regulations Governing Solid Waste*, Section 4.E.1.e., hydrogeological assessments are hereby deemed unnecessary for the transfer stations known as "Route 5" and "Milford Transfer Station". This determination is subject to change if wastes other than tires, white goods and yard waste are to be stored or processed outside, or if our review of the engineering drawings and plan of operations (which have not been submitted yet) reveal a substantial risk for contaminate release to groundwater.

If you have any questions or concerns about this letter, please immediately contact Bob Hartman at (302) 739-3689.

Sincerely,

Handwritten signature of Jamie H. Rutherford in cursive.

Jamie H. Rutherford  
Environmental Program Manager I  
Solid & Hazardous Waste Management Branch

JHR: RH: jmr  
RH02055.doc

cc: Nancy Marker, Environmental Program Manager II, SHWMB  
Joseph Barbagallo, Project Manager, Malcolm Pirnie

*Delaware's good nature depends on you!*

September 18, 2002

Mr. Robert Hartman  
Delaware Department of Natural Resources and Environmental Control  
Division of Air and Waste Management  
Solid & Hazardous Waste Management Branch  
89 Kings Highway  
Dover, DE 19901

RE: Delaware Solid Waste Authority (DSWA), Proposed Indian Mission Corners  
(Route 5) and Milford (Route 113 South) Transfer Station Sites

Dear Mr. Hartman:

This letter serves to inform you that the design of each of the referenced solid waste transfer stations will include an on-site wastewater treatment system (septic system) as required by the DNREC Groundwater Discharges Section (GDS). The inclusion of this design feature is a modification of the design approach described to DNREC in our July 2, 2002 letter requesting a waiver of the requirement for a hydrogeologic assessment. The DNREC Solid & Hazardous Waste Management Branch (SHWMB) in its response dated August 5, 2002 granted this request.

Discharges to the septic systems will be restricted to sanitary sewerage, as combining sanitary sewage with the facility wastewaters (wash down water) will not be approved by DNREC GDS. The septic system design, including the required site evaluation, permitting, construction and operation, will be done in accordance with DNREC *Regulations Governing the Design, Installation and Operation of On-site Wastewater Treatment and Disposal Systems*.

The results of recent septic evaluations indicate that subsurface conditions are favorable for the on-site treatment of sanitary wastewater over a wide area at each site. In addition, the septic systems will be minimally sized (for 10 users or less) and will be located in areas where most of the available land surface will remain pervious. Finally, since the leachate and sanitary waste streams will not be combined (as was originally intended), and since a properly designed and properly operating septic system can mitigate the environmental concerns associated with sanitary wastewater, the installation and operation of a septic system at each site should not adversely effect groundwater quality. Therefore, we do not consider SHWMB's August 5, 2002 waiver to be impacted by this DNREC DGS requirement. We request written confirmation from DNREC SHWMB indicating their concurrence on this issue.

**MALCOLM  
PIRNIE**

Mr. Robert Hartman  
DNREC

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Due to the schedule of ongoing site work, we request that the SHWMB provide a written response to this request by September 30, 2002.

Thank you for your assistance with this project. If you have any questions, please contact me at (914) 641-2781 or Matt Lesley at (302) 884-6901.

Very truly yours,

MALCOLM PIRNIE, INC.

  
Joseph C. Barbagallo, P.E. /DES  
Project Manager

  
Matthew P. Lesley, P.G.  
Project Hydrogeologist

Enclosure

c: D. Sammons, P.E., DSWA

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STATE OF DELAWARE  
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September 27, 2002

Mr. Drew R. Sammons, P.E.  
Senior Engineer  
Delaware Solid Waste Authority  
1128 S. Bradford Street  
P.O. Box 455  
Dover, Delaware 19903-0455

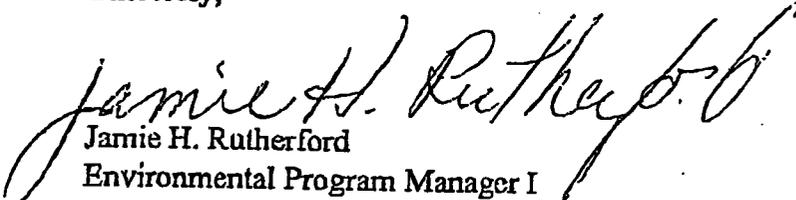
Subject: Hydrogeologic Assessment for Route 5 and Milford Transfer Station Sites  
Reference: Malcolm Pirnie Letter dated 9/18/02

Dear Mr. Sammons:

Based upon the assertions of the subject Malcolm Pirnie letter sent on behalf of the DSWA, the Solid & Hazardous Waste Management Branch concurs that the addition of a septic system to each site should not adversely effect groundwater quality as long as the system is restricted to sanitary sewage. Provisions must be included in the operation plan that specifically prohibit placing leachates, equipment/facility wash waters, and waste liquids from transfer station operations into the septic system. Design of the system must include reasonable features that limit access to the system and which do not promote discharge of prohibited materials to the system. This determination is subject to change if our review of the engineering drawings and plan of operations (which have not been submitted yet) reveal a substantial risk for a contaminate release into groundwater.

If you have any questions or concerns about this letter, please contact Bob Hartman immediately at (302) 739-3689.

Sincerely,

  
Jamie H. Rutherford  
Environmental Program Manager I  
Solid & Hazardous Waste Management Branch

JHR: RIL: jmv  
RH02085.doc

cc: Nancy Marker, Environmental Program Manager II, SHWMB  
Matthew Lesley, Project Hydrogeologist, Malcolm Pirnie

**An environmental assessment (Checklist Item #7)**

**Route 5 Solid Waste Transfer Station**

**Prepared For:**

Delaware Solid Waste Authority  
1128 S. Bradford Street  
Dover, Delaware 19903

**Prepared By:**

MALCOLM PIRNIE, INC.  
824 Market Street, Suite 710  
Wilmington, DE 19801

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## 1.0 INTRODUCTION

The Delaware Solid Waste Authority (DSWA) plans to build and operate a solid waste transfer station on its property along Route 5 in Hollyville, Sussex County, Delaware. The transfer station will consist of approximately 30 acres, of which approximately 16 acres will be used for the layout of the transfer facility. The facility will serve both residential and commercial haulers and as designed will be capable of handling up to 1,920 tons per day of solid waste.

This Environmental Assessment serves to satisfy the requirements of DNREC's Solid Waste Regulations. This report provides a detailed analysis of the potential impact of the proposed facility on the environment. This report is organized into sections as follows:

**Section 1.0 Introduction:** Describes the type of facility, and outlines the scope and organization of this Environmental Assessment.

**Section 2.0 Site Location and Description:** Describes the proposed facility location and surrounding areas.

**Section 3.0 Proposed Development:** Describes the proposed facility and service area.

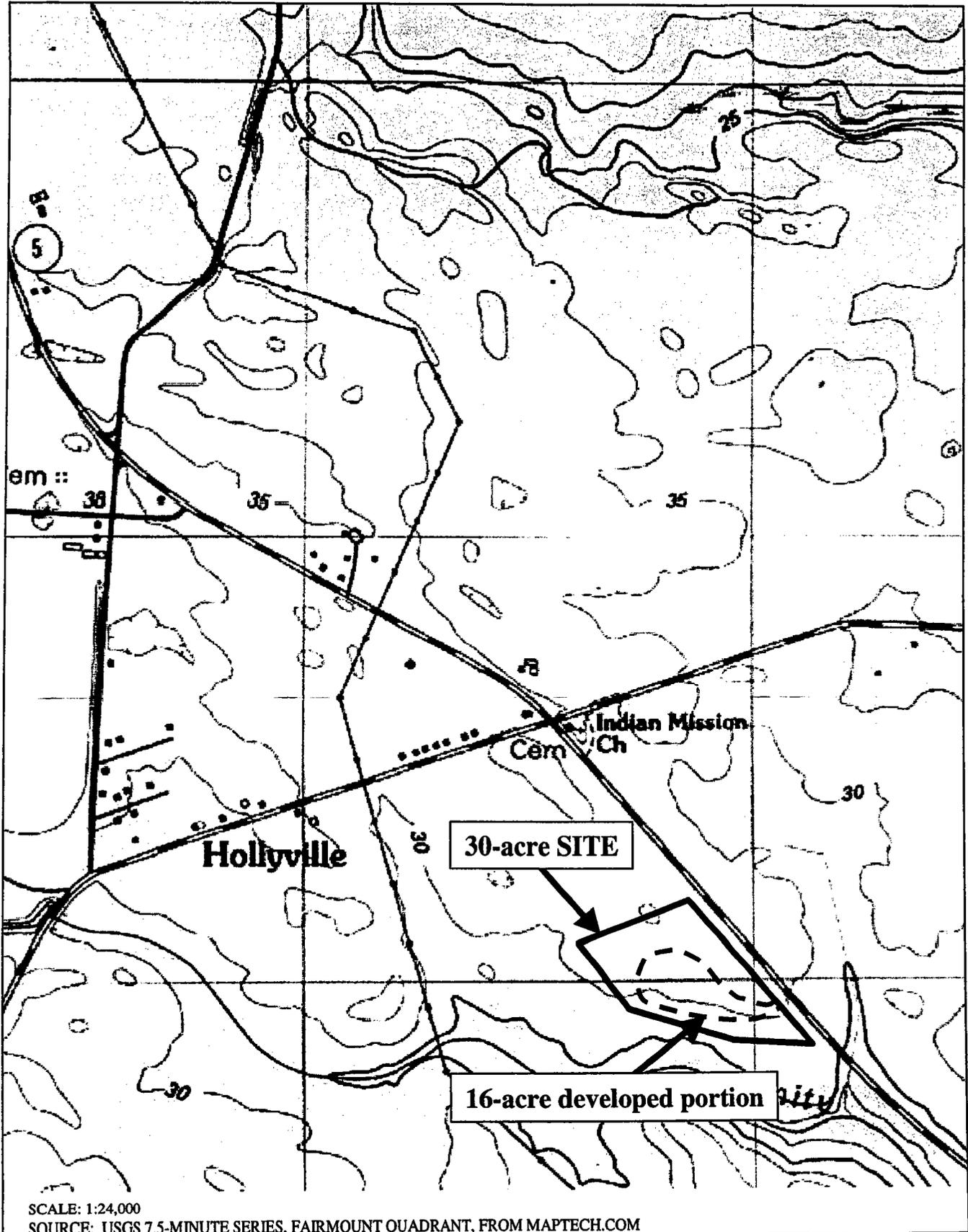
**Section 4.0 Impact of Proposed Development:** Discusses the potential impacts that the facility may have on air quality, water quality, water uses, land use, soil quality, traffic, noise, public health and safety, cultural, recreational, and natural areas, historic sites, social and economic factors, and stream flow.

**Section 5.0 Summary:** Summarizes the results of the environmental assessment.

## 2.0 SITE LOCATION AND DESCRIPTION

The subject property is located on the west side of Indian Mission Road, also known as State Route 5, just south of Hollyville Road, also known as County Road 48, in the township of Hollyville, in Sussex County, Delaware. The property location, as shown on the USGS 7.5 minute series Fairmount quadrant, is depicted in Figure 1.

The property is bounded to the north by County Road 48, to the east by State Route 5 and to the south and west by Unity Branch, a perennial stream surrounded by non-tidal



wetlands. The area surrounding the site is predominantly agricultural. Indian Mission Church and cemetery is located north of the site on the east side of Route 5. Few residences and commercial properties are located in the vicinity of the site; and the closest neighbor (residence, institutional or commercial facility) to the proposed development is more than a ¼-mile away to the north and east. Zoning of the property is Sussex County Zone AR-1. Previous and current land use is agricultural. The site slopes gently to the south from approximately 32 feet to 19 feet above mean sea level (AMSL).

### **3.0 PROPOSED DEVELOPMENT**

The site is intended to be developed as a solid waste transfer station serving areas in southeastern Sussex County (Lewes, Longneck, Milton, and Rehoboth areas). The proposed transfer station has been planned to have no negative effect on the rural area's land use. The DSWA owns 301 acres of adjacent parcels, of which approximately 30 acres is dedicated for the transfer station development. Of these 30 acres, a 16-acre footprint will be for the operating areas. The site plan includes a landscaping plan that is focused on screening the facility from traffic on Route 5 and Road 48. The proposed development does not encroach upon the 100-year Floodplain or non-tidal wetlands that exist on the property.

A split-level enclosed structure covering approximately 20,000 square feet will be constructed approximately 500 feet from Route 5. The proposed building will provide service to customers from southeastern Sussex County, Delaware.

### **4.0 IMPACT OF PROPOSED DEVELOPMENT**

In accordance with DNREC Solid Waste Regulations, an assessment of the effects of this proposed facility on the environment has been performed considering the following factors:

- Air quality
- Water quality
- Water uses
- Noise
- Public health and safety
- Cultural, recreational, and natural areas

- Land use
- Soil quality
- Traffic
- Historic sites
- Social and economic factors
- Stream flow

These factors are discussed in the following subsections.

#### **4.1 AIR QUALITY**

The waste transfer process (*i.e.*, unloading of vehicles and loading of transfer trailers) will be confined within the transfer station building. Standard operating procedures will require that all waste brought to the facility to be removed on a daily basis, thereby minimizing the generation of odors due to long-term storage. Uncontrolled vapor release to the atmosphere is restricted since the operations occur within the building. Building ventilation and operational procedures will minimize dust and odor emissions and protect human health.

Operational and engineering considerations for the control of odor, dust and vehicle emissions inside the building include:

- Roof ventilation to provide positive (upward) flow of air from within the building. The main source of outside air to ventilate the building will be the two truck bay doors at the transfer trailer area, below the tipping floor elevation. The building ventilation system is designed to provide up to 12 changes of the building air volume per hour.
- Truck bay doors will be powered so that they may be opened and closed rapidly.
- The building is equipped with water hoses so that the tipping floor can be wetted to reduce dust.
- As the primary means for odor control, standard operating procedures will be that all wastes are removed from the facility on a daily basis. Waste will not be allowed to remain in the facility for more than 72 hours. When the facility is not operating, all exterior doors will remain closed.

The rural area in the vicinity of the facility should experience little or no contact with solid waste odors, as the transfer station is located approximately 500 feet from the closest public access area (Route 5).

The DSWA conducted a study to evaluate the effect of this proposed transfer station on vehicle emissions in Sussex County. It was determined that overall, Sussex County air quality would benefit from the proposed transfer station due to a reduction in overall vehicle traffic (and fuel consumption and emissions) from that currently experienced at the Southern Solid Waste Management Center (SSWMC). The DSWA has estimated that the impact of the facility on road traffic would be a net reduction by approximately 1 million vehicle miles driven per year, resulting in an approximate reduction of carbon dioxide, carbon monoxide, and nitrous oxides emissions of 1.6 million pounds.

#### **4.2 WATER QUALITY**

The facility is designed and will be constructed to mitigate the potential for releases from the building and its appurtenances to the environment. This includes the self-contained facility leachate and washdown water collection and management system. DNREC determined a hydrogeological assessment not necessary for the site because the project has little potential to impact groundwater quality. All liquids coming in contact with waste handling areas will be maintained within the enclosed building. Restricting curbs and floor slopes will be utilized to direct facility wastewater to floor drains in the unloading, tipping floor, and trailer loading areas. Facility wastewater will be collected in a contained system and the holding tank contents will be disposed of by a contract, licensed hauler. No facility wastewater will threaten surface or subsurface waters outside of the building. Sanitary wastes will be managed in a DNREC-approved septic system.

The stormwater runoff generated by the proposed exterior impervious areas will be channeled through perimeter swales to a lined water quality retention pond in the northeast corner of the site. As all wastes will be managed inside the building, no stormwater will come in contact with these materials. The water quality pond has been designed to retain the first inch of runoff from the site. Stormwater in excess of one inch, through an overflow weir, will discharge to the second basin. A sediment and stormwater management plan has been prepared to ensure that surface water quality is not compromised by the proposed development.

#### **4.3 WATER USES**

Water supplies for the facility will provide potable water for employee usage, facility washdown water, and fire protection. Drinking water, water for sanitary purposes and facility washdown water will be obtained from a dedicated groundwater supply well installed in the semi-confined to confined Manokin Aquifer at a depth of approximately 180 feet below ground surface (BGS). The anticipated demand is expected to be less than approximately 10,000 gallons per day based on the number of site employees to be stationed at the facility, and the assumed frequency of facility washing activities. Portable restroom facilities will be made available for the public.

Water for fire supply will be obtained from a dedicated groundwater supply well installed in the Columbia or water table aquifer at a depth of approximately 100 feet BGS. In the event of an emergency, water will be pumped at a rate of approximately 300 gallons per minute on an as needed basis. Based on conversations with the DNREC Division of Water Resources, Water Allocations Branch, the operation of the fire supply well will not require a Water Allocation Permit.

Based on the anticipated rate of on-site groundwater usage, and published information regarding: 1) the nature of the aquifers to be tapped, and 2) the projected population growth and water withdrawal rates for Sussex County, installation of a domestic well and fire supply well is not expected to adversely affect the supply of groundwater in the vicinity of the Site.

#### **4.4 LAND USE**

The predominant land use in the immediate area surrounding the site is agricultural. Although this area is experiencing an increased level of development, the Sussex County Comprehensive Land Use Plan does not recognize the need for essential services such as transfer stations, landfills, wastewater treatment plants, and pump stations. Even though DSWA is not subject to local zoning regulations for siting appropriate solid waste management facilities, DSWA requested the assistance of the Sussex County Government, State and local government elected officials to determine an appropriate site

for this transfer station. DSWA did not receive any recommendations. In addition, DSWA placed ads in newspapers indicating a need for large parcels and solicited in writing to licensed realtors requesting assistance in finding an appropriate site.

DSWA has demonstrated at other DSWA facilities that a sufficient buffer zone is provided to harmonize with adjacent land uses. At the Route 5 site, zoned as AR-1 Agricultural-residential, approximately 10 percent of the total land acquired by DSWA will be used for the transfer station, providing more than ample buffer areas and providing a lasting benefit to the community through the planned dedication of the balance (+/- 270 acres) of the property to the State's Agricultural Preservation Program.

Screening is provided around the facility and along open areas (north and east exposures) as well as along Route 5. The facility is designed with architectural features to enhance the appearance of the facility and to reflect the traditional agricultural history of the area.

#### 4.5 SOIL QUALITY

Construction installation of paving and buildings will cause a temporary disturbance of site soils. This is a temporary disturbance and will be controlled using acceptable temporary and permanent soil erosion control techniques. Development has been planned to not disturb any existing forested areas, wetlands areas, or the 100-year flood plain. Stormwater management and erosion control procedures have been planned in accordance with DNREC regulations to prevent damage after construction is completed.

The site is currently used for agricultural purposes and most recently been used to grow corn and soybeans. These soils are expected to support the vegetation necessary for erosion and sediment control. The construction contractor will be required to establish vegetative cover in accordance with appropriate agronomic specifications regarding seed type and mixtures, soil amendments, and care.

The probable impact of the facility on the storm water management system is minimal, as all solid wastes will be managed within the building and facility-generated wastes (*i.e.*,

leachate and wash down waters) will be managed within contained systems. The facility has been evaluated based on DNREC requirements for storm water, and a permit application has been submitted to DNREC and the facility stormwater management system will be operated and maintained in accordance with the DNREC-approved plan.

Impacts to the stormwater system that require soils to be removed will be conducted in accordance with applicable DNREC regulations appropriate for the type of release causing such impact.

#### **4.6 TRAFFIC**

The facility has been designed to minimize traffic queues and maintain expected queues within the site. An on-site traffic queuing analysis has been performed and the layout of the site has been designed based on facility projections using actual incoming traffic count data at the DSWA's SSWMC.

The queuing analysis was developed to model future conditions at the facility to account for projected growth in the waste stream and a related increase in vehicular traffic. This analysis indicates that for inbound traffic, the maximum queue will occur on a weekday and consist of 11 vehicles. The queue length required for this scenario is 176 feet, less than the more than 320 feet of available queue length at the facility. This analysis also indicates that there will be insignificant or no queues at the unloading areas and that outbound traffic will result in a queue of approximately 4 vehicles.

Proposed traffic routing and traffic control signs are shown on Sheets G-5A of 15 and G-5B of 15 of the Engineering Report (Tab 5). The on-site traffic plan has been developed to segregate the three main user types for the facility: transfer trailers, commercial vehicles and pickups, and residential customers. These customers have separate traffic routes within the facility so that efficient and safe operations can be maintained. In addition, converging traffic patterns are controlled to minimize the potential for accidents. Traffic routing and signage may be temporarily modified from that shown on the engineering drawings to accommodate fluctuations in the make up of incoming

vehicles so that safe and efficient operations can be maintained and to minimize traffic queues. For example, Saturdays when high densities of residential vehicles come to facility, weighmaster may periodically route selected vehicles to the commercial unloading area to maintain satisfactory queues.

A Traffic Study has been completed for the facility and surrounding area by McCormick, Taylor & Associates. As detailed in the Traffic Study, Route 5 and other area roads should be capable of withstanding anticipated load limits, and the transfer station should not negatively impact traffic in its vicinity. Extended operating hours will have minimal impact to area traffic since during such times no incoming wastes will be received at the facility. The Traffic Study is provided as Attachment A to the Environmental Assessment.

To further reduce the traffic demands on Route 5, a southbound right-turn lane and a northbound left-turn lane have been proposed at the site entrance. The entrance of the facility will be reviewed with DeIDOT and will be constructed and maintained in accordance with the DeIDOT-approved plan.

Over time, the proposed transfer station will increase traffic in its immediate vicinity; however, the DSWA estimates that it will actually reduce overall traffic within Sussex County. The local presence of a transfer station in southeastern Sussex County will reduce commercial and residential trips to the SSWMC. As discussed above in Section 4.1, overall Sussex County air quality would benefit from the proposed transfer station due to a reduction in overall vehicle traffic (and emissions) from the SSWMC. It was estimated by DSWA that approximately 1 million vehicle miles per year would be saved utilizing the transfer station, resulting in an approximate reduction of carbon dioxide, carbon monoxide, and nitrous oxides emissions of 1.6 million pounds.

#### 4.7 NOISE

The potential for impact to the surrounding area from noise generated at the transfer station building was taken into consideration in the design of the facility. Areas where

concentrated noise generating activities will take place include the commercial truck unload queuing area, the truck maneuvering area (located at the entrance to the tipping floor), and the tipping floor. Noise control features included in the engineering design include the siting and layout of the transfer station, enclosure of the tipping area, and the planting of on-site vegetation. The closest sensitive receptor (Class A Noise Zone) is Indian Mission Church, located approximately 1,700 ft, north of the transfer station building. Existing vehicular and truck traffic at the adjacent intersection of Routes 5 and 48 typically dominate ambient noise levels at the Indian Mission Church. The facility does not result in an Intrusive Noise per Chapter 71, Section 7105 of DNREC Regulations Governing the Control of Noise.

The transfer station will be located approximately 1,700 ft from the closest receptor with the entrance to the tipping floor facing south. At this distance, a worst case operational Leq noise levels of 85 dBA (unenclosed outside) would be perceived as 55 dBA Leq at the church and would likely be masked by existing traffic on Routes 5 and 48 (60-70 dBA Leq). This calculation does not include additional attenuation from the partial interference from the transfer station building itself and the proposed on-site vegetation that would further reduce the off-site noise impact. Noise generated inside the transfer station on the tipping floor would primarily include the operation of a loader and the dumping of material from trucks onto the floor. These noise activities would typically range between 75-90 dBA and would be minimized by the enclosed structure. Noise impacts from these activities when the tipping area doors are open would still be mitigated by the enclosed structure, while noise directly traveling through the door openings would be projected away from potential receptors.

#### **4.8 PUBLIC HEALTH AND SAFETY**

The proposed station will offer to the public a convenient, controlled, and safe method for solid waste management. This proposed facility will enable the private sector to drop-off refuse in an economically feasible and environmentally acceptable manner. Commercial carriers, spending less time in transit, will have the opportunity to offer better and more economical service, and also expand their current local areas, reducing the possibility of

trash building up at residential and commercial sites. The construction and operation of the transfer station will also mitigate the potential for vectors due to the physical inaccessibility of the municipal solid waste.

As outlined in the Engineering Report (Tab 5), the facility has been designed with features to protect public health and safety. These include:

- a) Perimeter security fencing to secure site access, prevent vectors, and reduce blowing litter;
- b) Restricted area access: the general public is not permitted to enter the tipping floor without appropriate supervision
- c) Residential and commercial traffic has been segregated and their respective drop-off/unloading areas are separate.
- d) The facilities have been designated as non-smoking, in accordance with the State's current Clean Indoor Air Act. Designated smoking areas outside of facility buildings will be established.
- e) Scavenging will not be permitted at the facility.
- f) The facility has been designed to minimize the potential for falls by customers.
- g) Vectors are reduced through the use of site fencing and the proposed construction of the building

#### **4.9 CULTURAL, RECREATIONAL, AND NATURAL AREAS**

The transfer station will afford residents the opportunity to transport their own solid waste, making a small, positive, cultural impact. Though the project offers no recreational benefits, its design, construction, and operation is sensitive to the existing natural surroundings of the area. Avoidance of wetlands and utilization of existing features, such as wooded areas, in its design and installation allows the facility to operate with little impact on the surrounding area. The natural wooded buffer along Unity Branch will not be disturbed by the facility, as all construction and operational activities will take place outside of the existing tree line and delineated wetland areas. Additionally, the facility landscaping plan will greatly increase the wooded areas around the facility providing an aesthetic visual screen for the facility. The DSWA has also invited representatives from the Nanticoke Tribe to witness all intrusive activities at the site, including the geotechnical borings completed as part of the facility design.

As noted above, the DSWA owns 301 acres of adjacent parcels, of which approximately 30 acres will be dedicated for the transfer station. Approximately 271 acres of the DSWA's property will be dedicated as open space upon the issuance and acceptance of the required permits for this facility. This significant addition of preserved, open space will add an aesthetic value and environmental benefits to the area.

No impact to the Indian Mission Church is expected since the facility will be closed on Sundays.

#### **4.10 HISTORICAL SITES**

The site was previously used for agricultural purposes only, having no known supporting buildings or other structures. With no apparent evidence of historical human occupation, this project does not have an impact on historical sites. Little or no impact is expected on the nearest known historical site, the Indian Mission Church.

#### **4.11 SOCIAL AND ECONOMIC FACTORS**

The proposed transfer station will have a positive impact on the surrounding community. The transfer station will create new jobs and will reduce overall traffic and air pollution in Sussex County. The proposed transfer station will also provide the means for DSWA to more efficiently operate their statewide integrated solid waste management system.

#### **4.12 STREAM FLOW**

The Pre-Development and Post-Development flows of the site have been evaluated, and there is no increase in discharge to the Unity Branch. Accordingly, there will be no impact to Unity Branch. The facility has been evaluated based on DNREC requirements for stormwater. A permit application for stormwater management has been submitted to DNREC, and the stormwater management system will be constructed and operated in accordance with the approved permit.

## **5.0 SUMMARY**

The overall effects of this proposed facility are beneficial to the environment and community. The facility will contribute to the community by providing the public with a clean and economical solution to solid waste disposal and control. As discussed in this environmental assessment, proper controls will be implemented during construction and operation to mitigate negative impacts to the environment.