Solid Waste Management Facility
NEWSVT, Inc: Phase VI Application - Fact Sheet
Date: May 31. 2018

OPERATOR/APPLICANT:	New England Waste Services of Vermont, Inc. 21 Landfill Lane Coventry VT 05825
AUTHORIZED REPRESENTATIVE:	John Gay Casella Waste Management, Inc. 220 Avenue B Williston, VT 05495
SOLID WASTE I.D. NUMBER:	OL510
DEC PROJECT I.D. NUMBER:	SJ91-0001
FACILITY DESIGNATION:	Solid Waste Disposal Facility

I. GENERAL

This Fact Sheet is required by Section 6-305(a)(5) of the Vermont Solid Waste Management Rules, effective March 15, 2012 (Rules) and pertains to the re-certification New England Waste Services of Vermont Inc. (NEWSVT) Landfill located on Airport Road in Coventry, Vermont. The facility currently holds a Solid Waste Certification that was issued on June 25, 2015 and has an expiration date of March 31, 2025. The application under review would replace the current certification and proposes expansion of the landfill to include a new Phase VI disposal area.

The proposed ten-year certification would include the continued landfilling operations in Phases I, II, III, and IV of the lined landfill and the construction and operation of the Phase VI area. The certification would also allow continued operation of other management activities including: environmental monitoring of the site; operation of the residential drop-off for solid waste and recyclable materials; collection of used motor oil; collection and storage of leaf and yard waste; collection and storage of waste tires; collection and transfer of food residuals, and a staging area for approved household hazardous waste and conditionally exempt generator hazardous waste collection events. The certification also includes post-closure maintenance and monitoring of closed, unlined landfill areas A and B. The entirety of these activities is referred to hereinafter as the Facility.

NEWSVT applied to the Solid Waste Management Program (Program) for re-certification of the Facility and certification for the Phase VI expansion on March 31, 2017. The Phase VI operational expansion area is approximately 51.2 acres in size and will expand to the south of the current 78.2-acre lined landfill area. The landfill is located on a 627-acre parcel of land. Unlined areas A and B were closed in the early 1990's and will continue to be maintained under post-closure care and monitoring requirements. Lined landfill Phases I, II, III and IV are in various states of operation. Some portion of these existing lined phases have completed final closure and will be maintained and evaluated for continued performance and integrity. Other areas will remain open and will continue to accept waste under this certification.

Proposed Phase VI will consist of two cells. This certification allows for the construction and operation of both cells. The Phase VI development area will impact a small area of meadow wetland on the east side of the proposed project. This wetland lies within the required isolation distance of 300 feet from the waste management boundary and, as such, a variance was applied for and granted on November 1, 2016. Additionally, all other state and federal wetland permits have been obtained to allow for this development of the wetland.

The Fact Sheet pertains primarily to the siting criteria and design of Phase VI and the proposed expansions demonstrated compliance with the Vermont Solid Waste Management Rules (Rules). Development of Phases I, II, III and IV was thoroughly reviewed in previous certification processes.

II. DETERMINATION OF COMPLIANCE WITH THE VERMONT SOLID WASTE MANAGEMENT RULES AND APPLICABLE PROCEDURES

The applicant has submitted the following documents. These documents, including the addendums, revisions and attachments, which were submitted in response to Program comments, make up the materials referred to as the Application. The information used therein has been used to determine compliance with the Rules, applicable Procedures and to develop this Fact Sheet.

- CERTIFICATION APPLICATION: PHASE VI LANDFILL EXPANSION
  New England Waste Services of Vermont Inc. Landfill, Coventry VT.
  Originally submitted: March 31, 2017, final revisions dated May 31, 2018.

    - Technical Response Letter: Phase VI Expansion Certification Amendment – *dated May 6, 2017*
    - Technical Response Letter: Phase VI Certification Amendment – *dated October 5, 2017*
    - Technical Response Letter: Phase VI Certification Amendment – *dated January 26, 2018*

The application was reviewed in accordance with the Solid Waste Management Rules eff. March 15, 2012 and the following applicable Solid Waste Management Procedures (Procedures). Copies of these Procedures can be found on the Solid Waste Management Program website under Publications or by following the links below:

SUBJECT	PROCEDURE TITLE	ADOPTED
Proximity to Airports	**The Siting of Municipal Solid Waste Landfills in Proximity to Airports**	**Original: 7/20/94**
Alternative Daily Cover	**Approval of Alternative Daily Cover At Solid Waste Facilities**	**Original: 2/8/99**
Closure Cost Estimates	**Closure Cost Estimates for Solid Waste Landfills**	**Original: 2/8/99**
Corrective Action	**Corrective Action and Financial Responsibility for Corrective Action at Solid Waste Landfills**	**Original: 7/20/94 Revised: 2/8/99**
Water Quality Standards	**Requirements for Municipal Solid Waste Landfills to Demonstrate Compliance of The Landfill Design with Water Quality Standards**	**Original: 1/25/95 Revised: 2/8/99**
Explosive Gas Control	**Explosive Gas Control at Municipal Solid Waste Landfills**	**Original: 6/9/94**
Groundwater Monitoring	**Groundwater Quality Monitoring and Responses When A Groundwater Standard is Reached or Exceeded at Municipal Solid Waste Landfills**	**Original: 6/9/94 Revised: 2/8/99**
Liquid Waste Disposal	**Liquid Waste Disposal Restrictions in Municipal Solid Waste Landfills**	**Original: 6/9/94 Revised: 12/15/10**
Post-Closure Care	**Post-Closure Care and Post-Closure Certification at Solid Waste Landfills**	**Original: 2/8/99**
Run on/Run Off Systems	**Requirements for Run On/Run Off Control Systems for Municipal Solid Waste Landfills**	**Original: 5/27/94**
Seismic Event Consideration	**Incorporating Seismic Event Considerations into Municipal Solid Waste Landfill Siting and Design in Vermont**	**Original: 2/16/94**
Unstable Area Consideration	**Incorporating Unstable Areas into Municipal Solid Waste Landfill Siting and Design**	**Original: 6/9/94**
Medical Waste Management	**Regulated Medical Waste Definitions and the Handling and Treatment of Regulated Medical Waste**	**Original: 6/26/01**
Unregulated Hazardous Wastes	**Implementation of 10 V.S.A. 6606c Requirements for Unregulated Hazardous Waste Diversion at Solid Waste Management Facilities**	**Original: 10/13/94**
Variance from Solid Waste Rules	**Variances from the Solid Waste Management Rules; Hazardous Waste Management Regulations; and Air Pollution Control Regulations**	**Original: 8/22/05**

In order to demonstrate the determination of compliance with the Rules, this Fact Sheet has been developed to present the findings of the Program as pertains to all relevant sections of the Rules. Each relevant section of the Rules is presented in **bold** followed by the Program's finding, and where appropriate, the citation to relevant sections of the application where additional information can be found. As needed the Procedures listed above are referenced to when compliance with a Procedure is needed to demonstrate compliance with the Rule.

SUBCHAPTER 3 - Applicability and Administration

§ 6-303(d): Certification

Except for facilities that qualify for a categorical certification under 6-309, the Secretary may not certify a discrete disposal facility unless it is in compliance with the Groundwater Protection Rule and Strategy, as may be amended, adopted pursuant to 10 V.S.A. Chapter 48 Groundwater Protection; Vermont Water Quality Standards, as may be amended, adopted pursuant to 10 V.S.A. Chapter 47; and the laws of Vermont.

Finding: Under the Groundwater Protection Rules and Strategy the Program must determine whether the development of the Facility will adversely impact public trust uses of groundwater. To make this determination, the Program has considered the following:

1. *The activity will not result in an exceedance of the groundwater enforcement standards at points of compliance. (GWPRS § 12-801)*

The point of compliance is federally established for an active solid waste landfill at 150-meters from the edge of the double geocomposite liner system in which the waste is placed. As part of this proposed landfill expansion an existing groundwater monitoring network on the property will be expanded. Groundwater monitoring wells will be established along the 150-meter point of compliance to monitor any impact to groundwater quality and determine if an exceedance of a groundwater enforcement standard occurs.

The proposed landfill design includes a double geocomposite liner system, groundwater underdrain collection, leachate collection and removal system and a landfill gas collection and control system. Each of these systems serves a role in ensuring that potential environmental impact, and groundwater impairment, is prevented and the proposed design and operations is in conformance with best management practices and the Solid Waste Management Program Rules.

As demonstrated by the application, the hydrogeologic characteristics, landfill design and anticipated volume, physical and chemical characteristics of landfills leachate, coupled with the detection monitoring of groundwater at and prior to the compliance point provides sufficient support for making the determination that an exceedance at the point of compliance is not probable. Should a component of the landfill design fail, the monitoring systems in place will detect any discharge occurrence and will allow repairs or remediation to occur prior to an exceedance at the point of compliance.

In addition to the lined portions of the landfill, the property does include two closed, historic unlined landfills. For a closed landfill, the point of compliance is the property boundary. The applicant has established monitoring wells at or near the property boundary in the downgradient groundwater flow direction and a series of wells in between. There currently are exceedances documented in monitoring wells located close to the unlined landfill, but no exceedances have been documented at the compliance point. The monitoring network will continue to provide the ability to perform detection monitoring in this area and additional investigations or remedial responses can be pursued if there is an evident change in conditions that threatens to cause an exceedance at the property boundary.

2. *The activity will not involve the discharge to soil or groundwater of a substance when the discharge has a concentration of the substance in excess of the groundwater enforcement standard.*

The primary potential discharge in exceedance of a groundwater enforcement standard would be leachate generated by the waste mass of the landfill. Prevention of a discharge to soil or groundwater is achieved by placing the waste mass within a double geocomposite liner system and by the leachate collection and removal system. The double geocomposite liner system places a physical barrier between the waste mass and the underlying soils and groundwater; however, it also provides the ability to sample interstitial space between the two liners. The leachate collection and removal system separately access the drainage on top of the primary liner and on top of the secondary liner. This provides the ability to track leachate production in the interstitial space between the two liners and determine the integrity or leakage of the primary liner. If the primary liner were suspected of failure to retain leachate, the secondary liner would continue to provide protection and leachate management while a remedy or repair to the primary liner failure were pursued.

This proposed expansion also includes the construction of a groundwater underdrain system beneath the landfill. The underdrain captures groundwater flowing beneath the landfill and discharges it at a point source downgradient of the landfill. If a discharge from the landfill liner system were to occur, it would also be captured by this underdrain system. The underdrain discharge point is regularly monitored and if a discharge were identified the liquid could all be captured and managed as leachate to minimize any further discharge to the environment.

3. *The activity will not prevent the public's future use of groundwater as a public water source or source of water for a potable water supply. The Secretary may make this finding if the applicant provides information demonstrating that, subsequent to ceasing the activity, the groundwater enforcement standards will not be exceeded at any point on the property on which the activity is to be located.*

Upon ceasing active landfilling operations, the landfill will move into a period of post-closure care, which remains a permitted activity. During this period the landfill will be actively maintained, and groundwater will continue to be monitored. Unless it can be demonstrated that the landfill is not, and has no potential of, having any environmental impact, the landfill will remain permitted and in an active post-closure status. The presence of a landfill does inherently affect future use of groundwater on that property but maintaining the landfill in post-closure care, under regulatory control along with established institutional controls that document the use of the property as a landfill will effectively protect the public against use of groundwater on the property while ensuring that groundwater off the property remains unimpacted.

SUBCHAPTER 5 - SITING

§ 6-502 Prohibited Areas

(a) Facilities are prohibited from being sited in the following designated areas:

(1) In the case of discrete disposal facilities, in the Green Mountain National Forest except for a one-half mile corridor drawn from the center line of the right of way of each Federal and secondary highway or as approved by the National Forest Service. This prohibition does not apply to diffuse disposal facilities;
(2) Class I and Class II Groundwater Areas;
(3) Class I and Class II wetlands and their associated buffer zones, as defined in the Vermont Wetlands Rules, unless a Conditional Use Determination has been issued by the Agency;
(4) Class III wetlands, as defined by the Vermont Wetlands Rules, unless a Water Quality Certification has been issued pursuant to 40 CFR Part 401, or has been waived by the Agency;
(5) A National Wildlife Refuge as designated by the United States Fish and Wildlife Service;
(6) A wildlife management area as designated by the Agency;
(7) A threatened or endangered species habitat area as designated by the Agency, except for diffuse disposal facilities;
(8) A watershed for a Class A Waters; as designated by the Vermont Water Resources Board or the Natural Resources Board;
(9) In the case of discrete disposal facilities, within the floodway or within the 100 year flood plain;
(10) Within 500 feet of an Outstanding Resource Waters as designated by the Vermont Water Resources Board or the Natural Resources Board. This criterion does not apply to previously certified subchapter 12 facilities where there is no expansion of the facility beyond the previously certified waste management boundary;
(11) In cases of diffuse disposal facilities, within zone 1 or 2 of an approved Public Water Supply Source Protection Area, except that the Secretary may, on a case-by-case basis, make a determination that a diffuse disposal facility may be sited in zone 2 of an approved surface water Public Water Supply Source Protection Area.
(12) In the cases of discrete disposal, no facilities shall be located:
A. Within the Source Protection Area of a public water system using a groundwater source.
B. Within zone 1 or zone 2 of a Source Protection Area for a public water system using a surface water source.

Finding: No portion of proposed Phase IV expansion is located within any of these prohibited areas. The site has been reviewed by the Watershed Management Division for wetlands and water resources impacts and by the Department of Fish and Wildlife for wildlife management and endangered species areas. The wetlands representative for the Army Corp of Engineers has also reviewed the site for federal wetland compliance. These prohibited areas are discussed in Part C: Engineered Design: Section 3.2 of the Facility application.

§ 6-503 Siting Standards

(a) General Performance Standard. Facilities shall be located such that an emission or discharge from the facility will not unduly harm the public health and will have the least possible reasonable impact on the environment.

(b) In order to meet the general performance standard of subsection (a) of this section, the operator must satisfactorily demonstrate the following:

(1) that the isolation distances from the high seasonal water table, bedrock, and waters are sufficient to assure that an emission or discharge from the facility will meet all applicable environmental quality and public health standards and rules;

Finding: Seasonal High-Water Table: The proposed Phase VI landfill site lies to the south of the existing lined landfill. The surficial soils that have been evaluated on the NEWSVT landfill property are typically fine-grained, tight soils well suited for landfill siting as they would naturally help contain any contaminant release. Twenty-six borings and groundwater monitoring wells were established within the Phase VI footprint and adjacent areas to monitoring groundwater elevations from March 2015 to October 2016. The documented depth to high-water table within the Phase VI footprint ranged from 5 – 114 feet.

The proposed design of the landfill incorporates construction of an engineered underdrain. This underdrain will lower the water table beneath the Phase VI footprint to the elevations of installed underdrain pipes and drainage. The underdrain is design to maintain a minimum of six feet separation between the landfill liner and the engineered elevation of the groundwater table. This approach ensures that fluctuations in groundwater table elevation do no impair the functionality of the landfill liner and leachate collection systems. The construction of the underdrain also ensures that any discharge from the lined portion of the landfill could be captured and treated if there were failure of the liner. These measures serve to ensure that the facility will meet applicable environmental quality and public health standards. Information on the seasonal high-water table within the Phase VI footprint is provided in Part B-1: Hydrogeologic Site Characterization Report, Section 5.0 Groundwater of the facility application.

Bedrock: The depth to bedrock has been established within the footprint of the proposed Phase VI area from borings and monitoring wells. These depths are presented in the appendix of Part B – Site Characterization of the application. The depth to bedrock ranged from 38 to 210 feet below the current ground surface.

The proposed design of the Phase VI liner system provides for a minimum of 10 feet vertical separation between the liner and the underlying bedrock surface with the installation of the underdrain between the liner and the bedrock surface. Given the presence of the underdrain and the relatively fine-grained soils found at the site it can reasonably be expected that the minimum 10-foot separation is sufficient for protecting the bedrock aquifer from any potential discharge from the facility. Such a discharge would be captured by the underdrain system and if it did bypass the underdrain transmission through the in-situ soils would be sufficiently slow so as to enable alternative remediations approaches to be evaluated prior to bedrock impact.

The calculation used to establish the elevation of the liner at a minimum of 10 feet above the bedrock surface is presented in Part C-2, Section 2.1(H) of the application.

Surface Waters: The closest major bodies of water to the proposed Phase VI footprint are the Black River and its associated wetland complex. Two small wetlands are located adjacent to the Phase VI footprint. The meadow wetland located to the southeast has been informally named 'Wetland A' and state and federal permits have been obtained allowing for impact to this wetland and a variance from the Solid Waste Management Rules has been obtained in 2016 for impact to this wetland. The wetland located to the west lies approximately 440 feet from the Phase VI footprint. This wetland also contains several seasonal drainages that flow in to the Black River Wetland Complex. The landfill design, including the underdrain provide protection against groundwater impact to this wetland while stormwater controls, including a swale that surrounds the landfill on the south, east and western sides, will prevent runoff impacts from impairing the wetland.

The Black River is one of the largest rivers in northern Vermont and it discharge into the South Bay of Lake Memphremagog, approximately 6,000 feet northeast of the Facility. The closest section of the Black River lies approximately 2,000 feet to the northwest of the Phase VI footprint. The Black River wetland complex consists of approximately 600 acres on either side of the Black River and, at its closest, it lies within approximately 1,400 feet of the Phase VI footprint. As with the smaller wetland, the groundwater controls established for the landfill (liner system and underdrain) should prevent any discharge to groundwater that could impact the Black River and associated wetlands, while the stormwater controls on site should prevent any direct discharge of runoff from the Facility.

The underdrain collection system will have a discharge point located approximately 200 feet from the edge of the Black River wetland complex. This discharge point would be the location where all groundwater collected by the underdrain would be discharged to the ground surface. There currently are four underdrains in operation at the facility. Given the installation of underdrains beneath the waste mass, there is potential for elevated temperatures within the collected groundwater. Given the proximity of the wetlands to the underdrain discharge location a level spreader has been proposed at the discharge point. This level spreader will distribute the discharge from the underdrain over a larger area allowing for the temperature of the water to equilibrate prior to any impact on the wetland complex.

The separation distances described above are sufficient to meet the requirements of the Rule.

(2) that the isolation distance to public and private drinking water supplies is sufficient to assure that an emission or discharge from the facility will not adversely affect drinking water;

Finding: There are several potable and non-potable supply wells located in the vicinity of the Facility; however, none are located downgradient of the Facility and the Phase VI expansion does not pose a risk to these supplies. The supplies are discussed in Part B – Site Characterization, Section 6.0: Neighboring Water Supplies of the application.

Private Water Supplies: NEWSVT, Inc. owns all private water supplies located within 2,765 feet of the Facility. Locations of these supplies is provided within Appendix 1 of Part B- Site Characterization within the application. Two wells that lie closer than 1,000 feet of the landfill waste limits will be preserved as non-potable supplies for use (toilets, sinks) at the landfill office and maintenance garage. A supply well located 484 feet from the waste limit will be decommissioned prior to receipt of solid waste within the Phase VI footprint and all other supplies lie over 1,000 feet from the proposed landfill waste limit and upgradient of landfill operations. These are bedrock wells and serve residences with typical supply demands. The bedrock evaluations performed at the Facility indicate that groundwater from the surficial does not infiltrate significantly into bedrock. This is based on the type of rock, the

content of the rock and the weathering of the rock cores analyzed. In addition, fracture trace analysis shows little evidence of significant water-bearing fractures in the bedrock beneath the proposed and current landfill phases. The separation distance from the landfill liner to bedrock, the character of bedrock, the separation distance to the three drinking water supply wells and the location (up-gradient) of the wells are sufficient to assure that the landfill will not impact these wells.

Public Water Supplies: Three public supplies lie within three miles of the facility. These are, Coventry Public Community, Northeast Kingdom Airport and Newport City water system supplies. The Coventry Public Community system supply well is located approximately 2.6 miles upgradient to the southwest of the Phase VI waste limit. The Northeast Kingdom Airport supply is located 2,975 feet south and upgradient of the expansion area. Given the distances and locations, there is no anticipated impact on these supplies.

The Newport City Water System utilizes two supply wells that lie 4,200 and 4,600 feet north of the northern most landfill cells (unlined areas A and B). Current groundwater monitoring data from wells located to the north of these unlined areas does indicate that the unlined landfills are having some impact on groundwater, but the contamination is not moving off the landfill property. Monitoring wells located in this area are sampled semi-annually for a suite of organic and inorganic compounds. This groundwater monitoring data shows persistent low concentrations of metals (iron, manganese, nickel and arsenic) and volatile organic compounds (benzene, vinyl chloride, acetone, 2-butanone). All current and historic monitoring data are available within the landfill Semi-Annual Water Quality Monitoring Reports. Work continues (continued monitoring and expanding groundwater flow measurements) in this area to demonstrate that this contamination remains on the landfill property and is not migrating beyond the point of compliance (the property boundary). Given the limitation of this contamination to the surficial groundwater aquifer and on the landfill property and the distance to these bedrock supply wells, the Newport City Water System supplies are not anticipated to have any impact from the Facility

Based on the information provided by the applicant and summarized above, the isolation distances to water supplies is found to meet the requirements of this section of Rule.

(3) that the isolation distances to property lines, or any of the following not owned by the applicant: residences, schools, day care facilities, hospitals, and nursing homes are sufficient to assure that the facility will not:

- **(A) result in objectionable odors off site of the facility;**
- **(B) result in an unreasonable visual impact for anyone off site of the facility;**
- **(C) unreasonably increase the level of noise detectable off site of the facility; or**
- **(D) otherwise adversely affect public health.**

Finding: The proposed Phase VI expansion is approximately 300 feet from Airport Road. This is the closest property line to the expansion and is the property line with the greatest potential for impacts. Airport Road lies to the east of the landfill expansion. The prevailing winds in this region are from the north and west, with some seasonal variations.

Phases I, II, III, and IV of the lined landfill and the unlined landfill lie between Phase VI and the property line to the north. Recreational users of the Black River would potentially be the most affected by the expansion, but the topography and wind direction will prevent odors, noise and litter from reaching areas to the north. Site inspections occur annually along the Black River and wetlands have indicated that landfill waste, noise and odors from existing operations have not been an issue.

The majority of the houses around the Facility and the proposed expansion are located to the south, along Airport Road and to the west, along a bluff on Maple Ridge Road. The landfill is not visible from any residence or building to the south and odors and litter have never been detected to the south.

Maple Ridge Road is approximately 3,500 feet west of the landfill expansion. The road is north-east of the Facility which is generally upwind; however, seasonal variations include southerly or southeasterly winds that have the potential to blow toward this neighborhood. The landfill is visible from residences in this area with an eastern facing viewshed; however, distances are great enough that the landfill is not reasonably obtrusive.

The separation distances mentioned above, coupled with Facility design and operations, are sufficient to assure that the expansion will not cause objectionable odors, noise or visual impacts or otherwise adversely affect public health.

(4) That the minimal isolation distances for the facility or activity listed in Table A are met, or sufficiently increased, to make the demonstration under subdivisions (1), (2) and (3) of this subsection. Any facility, which is not listed in Table A, shall have an isolation distance to property lines of at least 50 feet.

CATEGORY	FACILITY TYPE			
	Diffuse Disposal[1] Injection	Other	Discrete [2] Disposal	Subchapter 12 facilities
Minimum Vertical Separation from High Seasonal Water Table[3]	3'	3'	6'	n/a
Minimum vertical separation to bedrock	3'	3'	10'	n/a
Minimum distance to waters from the waste management boundary	50'	100'	300'	100' [4]
Minimum distance from waste management boundary to drinking water source not owned by the applicant.	300'	300'	1000'	100' [4]
Minimum distance to property line from waste management boundary	25’	50’	300’[8]	50’[6]
Minimum distance from waste management boundary to residences, schools, daycare facilities, hospitals, and nursing homes, not owned by the applicant.	100'	100'	1000'[5]	100' [7]

[2]Minimum criteria for a discrete disposal facility are based on underlying soils with a maximum permeability of 1 x 10^{-4} cm/sec. Discrete disposal facilities with more permeable soils will be evaluated on a case by case basis but are generally not acceptable.

Finding: The proposed Phase VI expansion complies with all, numerical criteria for a discrete disposal facility above, except the minimum distance to waters. Wetland A lies within 300 feet of the waste management boundary; however, a variance for impact and development within this meadow wetland was approved on November 1, 2016 by the Solid Waste Program and state and federal wetland impact permits have been obtained. The separation distance to ground water, surface water and bedrock are discussed in section 6-503(b)(1) above. Isolation distances to drinking water are discussed in detail in section 6-503(b)(2) above. Distances to property lines are discussed in detail in section 6-503(b)(3) above.

The subsoils of the Phase VI area have been found to meet the permeability criteria. As described within Part B-1: Hydrogeologic Site Characterization Report; Section 3.5 Hydraulic Conductivity the representative permeability for the Phase VI development area was determined to be 8.2 x 10^{-5} cm/sec. Downgradient of the development area,

four monitoring wells resulted in a geometric mean value of 2.1 x 10^{-5} cm/sec and this value was used in the contaminant transport modelling that was performed. These permeability values are more protective than the requirement and indicate that if a discharge of a contaminant were to occur, the site soils would naturally slow the migration of the contaminated groundwater.

(5) That the facility is not located in areas that have serious development limitations, such as highly erodible soils, steep slopes, or do not have the physical capability to support the facility.

Finding: There is no indication that the landfill site possesses any physical limitation that would prohibit development. The native soils are generally dense glacial soils that are stable and conducive to loading (see page 4 of the Design Report). The landfill meets the requirements of the *Procedure for Incorporating Unstable Areas into Municipal Solid Waste Landfill Siting and Design*. The site is located outside of the Seismic Impact Zone, as indicated in the *Procedure for Incorporating Seismic Event Considerations into Municipal Solid Waste Landfill Siting and Design in Vermont*, dated February 14, 1994 (Part C-1: Design Report; Section 8.0 Stability Analysis of the Application).

(6) That the facility is accessible from a state highway or a Class III or better town highway.

Finding: The landfill is accessible from Airport Road, which is a Class II town highway.

(7) Discrete disposal facilities which may attract birds located within 10,000 feet of a runway used by turbojet aircraft or 5,000 feet of a runway used only by piston-type aircraft, shall not pose a bird hazard to aircraft.

Finding: The Program's *Procedure Addressing the Siting of Municipal Solid Waste Landfills in Proximity to Airports*, as well as the Rule, do not prohibit the expansion or siting of a landfill; however, they do require the Facility to demonstrate that its existence does not increase the hazard to aircraft.

The proposed Phase VI expansion is located within 5,000 feet of both the primary and backup runways located at the Newport State Airport. NEWSVT has a bird management plan that has been operational since 1992. This plan developed from a bird migration and population study performed by Dr. David Capen (Consulting Wildlife Biologist, Professor Emeritus, University of Vermont (UVM)) on Lake Memphremagog and Lake Champlain. The NEWSVT bird plan was originally developed by Dr. Capen based on the results of that study and has been upgraded as needed to its current form.

The bird management plan utilizes the expertise of United States Department of Agriculture (USDA) Animal and Plant Health Inspection Services to station a biologist in the vicinity of the airport and landfill for control of birds. Management techniques include shot crackers, propane cannons and other deterrents. Documented by the original study and the ongoing bird counts completed under the current plan, demonstrates that the number of gulls and other birds has decreased significantly at the landfill. Observations made during Solid Waste Program quarterly inspections are consistent with these results. Dr. Capen's most recent report dated April 2018 states "Numbers of birds remain so low that it is not even meaningful to attempt to an analysis of whether the landfill attracts more birds to the area of the airport than what would normally occur in the absence of a landfill. This is especially true in terms of gulls. The regular presence of biologist from USDA Wildlife Services at the landfill and airport almost certainly assures fewer gulls and crows than what would occur in their absences. It still is my opinion that there likely would be more gulls in the absence of the landfill and the absence of the biologist who regularly scares birds from the site of the landfill, except possibly in winter months".

Based on this data and observations, current landfill operations have been determined to cause no additional threat to the aircraft using the Newport airport. Additionally, in a October 24, 2014 Agreement Between the State of Vermont Agency of Transportation and NEWSVT, VTrans conclude in Section 6(b) that "VTrans has determined that the Landfill Expansion Project will have no adverse impact on Airport operations".

The expansion of the landfill to include Phase VI should not increase bird activity and pose any greater threat. Operations of Phase VI will be sufficiently similar to current operations that it is reasonable to presume that the bird management techniques currently employed will remain effective. The bird counts, observations and diversions will continue to occur and be performed by both USDA and landfill staff. If this bird management program were to become ineffective, it would be evident in the bird counts and alternative approaches could be pursued.

SUBCHAPTER 6 - DESIGN STANDARDS

§ 6-601 General

(a) Design of all solid waste management facilities shall be addressed in a facility management plan that contains a basis of design and an operating plan for all components. The plan shall contain sufficient information to permit the Secretary to determine whether the facility conforms to the provisions of these rules. Sections 6-604 through 6-606 provide the criteria which must be specifically addressed for each component of a solid waste management facility.

Finding: The application includes a Facility Management Plan (FMP) in Part D-1: Facility Management Plan. Findings regarding specific criteria provided in § 6-604 to § 6-606 will be discussed below.

§ 6-602 Submittals

(a) The management plan documentation shall be prepared under the direction of an engineer, licensed in the State of Vermont, unless the Secretary specifically waives the requirement that the engineer be involved.

(b) The engineer shall make appropriate use of available expertise for evaluating geology and hydrogeology, soils science, air pollution control and impacts, and other areas of specialized knowledge which may be required to assemble a management plan.

Finding: The Application contains a Facility Management Plan (FMP) which addresses portions of the design and addresses all aspects of operations for the landfill. The FMP was prepared by NEWSVT's engineers. The landfill was designed by Sanborn, Head and Associates (SHA), Consulting Engineers and Scientists with the help of Waite and Heindel Environmental Management (WHEM) for the geological and hydrogeological investigation. Management of the gas collection and control system is regularly supported with work completed by SHA and as previously described expertise in bird management has been utilized to develop the bird management plan for the facility.

§ 6-603 Site Characterization

A facility management plan document must be developed by the applicant. Except for facility management plan documents prepared for facilities regulated under Subchapter 12 of these rules, this document shall include information necessary to fully characterize the site and the facility operation. Such site characterization shall be adequate to determine all mechanisms of emission or discharge to the environment and to allow modeling of contaminant transport with a level of resolution sufficient to determine compliance with applicable environmental quality standards (e.g., drinking water, surface water or groundwater quality, or air quality standards). At a minimum, the site characterization must address, unless deemed nonapplicable by the Secretary:

(a) soil and surficial geology;
(b) bedrock geology;
(c) integrated ground water geology and geochemistry;
(d) topography;
(e) surface water;
(f) groundwater location and flow direction;
(g) air quality; and
(h) airshed characteristics such as prevailing wind speed and direction, meteorology, and climatology.

Finding: The site has been adequately characterized as described in Part B-Site Characterization and in Part C-1-Design Report of the application. The information presented in the application primarily addresses soil borings and well log data obtained directly from the Phase VI expansion area used to supplement existing site characterization work previously submitted under earlier applications.

The Site Characterization addresses surficial and bedrock geology and hydrology. In addition to the site characterization work utilized in the development of Phases I-IV, soil borings and well log data from the Phase VI expansion area have been used to further characterize the soils, bedrock and the groundwater.

The permittee submitted information that summarizes the air quality and airshed site characterization for the development of Phase VI of the landfill. Air quality and airshed characteristics data were specifically addressed and utilized in the design and operation of the landfill.

§ 6-606 Disposal Facilities

(a) General Performance Standards

(1) Facilities shall be designed to minimize the possibility of an emission or discharge of contaminants from the facility and, should an emission or discharge occur, the threats from the emission or discharge to public health and the environment.

Finding: The proposed Phase VI expansion has been designed with two High Density Polyethylene (HDPE) liners with a leachate collection system located above the primary liner and a leachate detection/collection system located between the primary and secondary liners. This double liner system is the primary design component in minimizing the likelihood of a contaminant release from the landfill to groundwater. In addition to the liner, a layer of Geosynthetic Clay Liner (GCL) material will be placed immediately below the primary geomembrane in the base area of Phase VI and two layers of GCL will be installed below the primary and secondary sumps to provide additional leakage protection beyond that required by the Rules. See Part C-1: Design Report, Section 6.0 – Geomembrane Liner System for details on the liner design.

As required by the *Procedure Addressing Requirements for Municipal Solid Waste Landfills to Demonstrate Compliance of the Landfill Design with Water Quality Standards* the application included leachate migration modeling utilizing the EPA groundwater solute transport model MULTIMED. This model is used to help predict possibility impacts to groundwater quality in the advent of a release. Components of the model include site specific

geology, hydrological characteristics, landfill design parameters and estimates of leachate quantity and quality (determined by analysis of current landfill leachate). There are several assumptions utilized in the model, and the most conservative assumptions were employed such that the model represents a 'worst-case-scenario'. The results of this modelling indicate that releases of leachate to the groundwater would not significantly elevate groundwater concentrations or surface water concentrations of contaminants to values greater than background conditions.

Emissions into the air will be controlled by cover material on a daily basis, by synthetic and natural soil intermediate cover in areas that have reached final grades and by the synthetic liner cap that will be placed over the landfill once an area has reached final grade. The active gas collection system will capture the majority of the gases produced by the decomposing waste and transport those gases for processing at the gas-to-energy plant on the north end of the Facility. Part C-1: Design Report; Section 10.0: Landfill Gas Management and Collection System of the application outlines the agreement with Washington Electric Cooperative (WEC) to allow WEC operate this gas-to-energy plant. Electrical generation is an alternative to burning the methane and other landfill gasses via a flare. NEWSVT is ultimately responsible for managing the landfill gas collection system, the balancing of that system and the destruction of landfill gas. Odors must not result as part of the electrical generation agreement. In addition, WEC operations must not interfere with landfill construction, operation, closure and post-closure operations. If the gas-to-energy plant is inactive for any reason, or unable to process all or some of the landfill gas, two flares are maintained at the Facility and can independently destroy all landfill gas produced by the landfill.

A Title V Air Pollution Control Permit is required for this Facility, as the in-place waste will exceed the volume triggering a Title V permit. The Title V permit will be modified/ updated as the permitting of Phase VI progresses by the State of Vermont Air Quality and Climate Division. This permit is a Federal permit, administered by the State, and regulates the landfill gas collection and control system and the destruction of landfill gas. The permit requires periodic monitoring at the surface of the landfill for any landfill gas emissions to ensure the gas collection system is adequately capturing landfill gas produced. The application for this permit has been submitted to the Air Quality and Climate Division and is currently being reviewed. This permit will provide additional assurance that landfill gas will be properly and effectively managed at the Facility such as to ensure minimal threat of impact to public health and safety or the environment from landfill gas emissions.

(2) Facilities shall be designed to identify a means to control odor, vectors, and dust so as to preclude hazards to public health and safety or the creation of nuisance conditions.

Finding: Part D-1: Facility Management Plan; Sections 3.13 through 3.17 of the application, outline the methods the landfill operators will use to control odors, dust, wind-blown litter, birds and vectors. Limitations on the size of the working face, utilization of odor neutralizers and deodorizers, as needed, and the use of six inches of earthen daily cover material or approved alternate, are three primary methods that will be implemented at the landfill for controlling odors, litter and vectors. The active gas system mentioned in Section 6-606(a)(1) above is a major factor in controlling odors. This system is discussed in more detail in Section 6-606(a)(3) below. Road dust will be controlled by the maintenance of vegetation and the application of water and/or calcium chloride.

(3) Facilities shall be designed to protect surface water, groundwater and the air, and to detect, through appropriate monitoring, the emission or discharge of contaminants from the facility to surface water, ground water, or the air.

Finding: Surface and groundwater will be protected from possible discharge of contaminants by the engineered double liner system and underdrain controls proposed in the landfill design. Part D-3: Water Quality Monitoring Program of the application describes the surface, groundwater and underdrain monitoring that will occur throughout the operational, closure and post-closure life of the landfill. Surface water monitoring will occur at twelve locations, thirty-four monitoring wells a proposed for sampling and all five underdrain locations at the facility will be sampled for inorganic and organic compounds and physical characteristics. Sampling of these locations will occur semi-annually, at a minimum, with report submitted to the Solid Waste Management Program. The water quality monitoring program proposed in the application complies with the *Procedure Addressing Groundwater Quality monitoring and Groundwater Remedial Action at Municipal Solid Waste Landfills*. The landfill must also meet the requirements of the *Procedure Addressing Corrective Action and Financial Responsibility for Corrective Action at*

Solid Waste Landfills. This provides the SWMP with the ability to request additional water quality monitoring or management, as needed to prevent significant damage to public health and safety and the environment and to demonstrate continued compliance with the *Groundwater Protection Rule and Strategy.*

Air emissions will be controlled via active management and maintenance of the landfill gas collection and control systems. The landfill gas monitoring plan is described in detail in Part D-1: Facility Management Plan; Section 9.1: Gas monitoring and Control of the application. Gas extraction wells, both horizontal and vertical, have been, and will continue to be, placed within the landfill waste mass. These wells are connected to a vacuum system that extracts and transports the gasses to the gas-to-energy plant or backup flares for destruction. This system is regularly monitored, at least once a month, with the vacuum system adjusted accordingly to maintain maximum efficiency of the collection system. Additionally, monitoring for fugitive landfill gas is performed monthly at locations around the landfill property line to determine if any explosive gases are migrating off the landfill property. These monitoring locations will be expanded as part of the Phase VI expansion project.

(4) Facility management plans shall include provisions for contingencies for the proper management of wastes during both planned and unplanned events when the facility is not in operation.

Finding: The landfill may close temporarily for unplanned events such as high winds or local transportation issues (emergencies). The landfill could temporarily postpone waste acceptance for an afternoon or day and has the capacity handle the delayed waste during the following business days. The FMP, Section 12.4 of the application discusses to development of a contingency transfer station if the landfill must cease accepting waste prior to the expected closure date. The contingency transfer station would operate within the limits of the lined landfill and will be certified under the landfill certification.

(5) Facility management plans shall include operator training plans that assure that all facility personnel involved in the handling of waste receive organized instruction that teaches them to perform their duties in a way that ensures the facility's compliance with these rules and conditions of certification.

Finding: Sections 3.11 and 3.12 of the FMP outline the personnel training plan. Employees will receive training to properly perform the duties of the assigned position. At least one person on site during hours of operation will have the OSHA 40-hour Hazardous Waste Operations and Emergency Response training. A safety and accident prevention program will train employees on operating and emergency procedures and regular safety meetings will be conducted at the facility. This training plan meets the objectives of this Rule.

(6) Final cover systems for discrete disposal facilities shall be designed, constructed and maintained to minimize erosion and infiltration from precipitation.

Finding: Part C-1: Design Report; Section 9.0 of the application provides discussion of the Final Landfill Cover System that would be utilized for final closure of the landfill. The application proposes three final cover systems for all Phases of the lined landfill. The final cover systems proposed include: (1) traditional, (2) modified, and (3) alternative. As described in the application these cover systems consist of the following:

1) Traditional: Consists of a soil erosion layer, soil drainage layer, flexible geomembrane and soil infiltration layer;
2) Modified: Replaces the traditional soil drainage layer with a drainage geocomposite, but otherwise is consistent with traditional final cover; and
3) Alternative: Proposes the use a manufacture product, ClosureTurf®, which is a synthetic turf and geomembrane system replacing the soil erosion and drainage layers of the traditional cover system.

At this time, the traditional and modified final cover systems will be approved designs that limit infiltration of precipitation. The upper layer of the traditional and modified final cover system will support vegetation that will minimize erosion. The final cover system will be maintained during post closure period and any erosion will be repaired. It is noted that the alternative final cover system is a new approach for this site and could include changes to the design such as elevation limits and slope configurations. The alternative final cover system will not be

included at this time. The permittee has the ability to apply for an amendment for an alternative final cover system as technology of this system progresses.

The design and operations proposed in the application provide sufficient erosion and infiltration protections. Additionally, the annual engineer's inspection of the facility would serve to identify any performance and integrity issues with the final cover system such that corrective action could be pursued, if needed.

(b) Standards for Specific Facilities

(2) Discrete Disposal Facilities

> **(A) New discrete disposal facilities or new operational units at an existing facility, placed in operation after July 1, 1987, shall have liner and leachate collection systems and appropriate provisions for leachate treatment, except as otherwise provided in Section 6-309(b) or in Section 6-606(b)(2)(B) of these rules. The Secretary may further waive the liner requirement for discrete disposal facilities or portions of discrete disposal facilities that are designated solely to receive particular waste components that are not the source of leachate harmful to public health and safety or the environment or the creation of nuisance conditions.**

Finding: The landfill has agreements established with several waste water treatment plants (WWTP) for the acceptance and management of leachate captured by the leachate collection and removal systems. Current agreements are in place with the Vermont Newport City WWTP, Montpelier WWTP Essex Junction WWTP, Barre City WWTP and Burlington North WWTP. Additional out-of-state agreements are in place with the Concord WWTP in Concord, New Hampshire; the Plattsburgh Water Pollution Control Plan in Plattsburgh, New York. These agreements are listed in Section 5.1 of the FMP.

> **(E) All liner systems installed after February 7, 1989 shall be of double liner construction. The primary liner shall be a synthetic material, or a composite of synthetic and natural material. The secondary liner shall consist of a synthetic material, or a composite of synthetic and natural materials. All natural components of liners, must consist of an appropriate thickness of soils or minerals having an in-place permeability of 1×10^{-7} cm/sec or less. All liner systems must be approved by the Secretary on a case-by-case basis. All such facilities shall be equipped with leak detection and leachate collection systems capable of detecting and collection leaks from the primary liner system.**

Finding: The Phase VI landfill liner design consists of a textured 60-millimeter High Density Polyethylene (HDPE) primary liner underlain by a textured 60-millimeter HDPE secondary liner. A GCL will be placed under the primary liner throughout the base of the landfill. Two layers of GCL will be used under the primary and secondary sump collection areas. Leachate is collected on the primary liner via a sand drainage layer and a pipe collection system. There is a leak detection/collection system located between the primary and secondary liners. Any liquid that migrates through the primary liner system would be collected in this drainage layer installed above the secondary liner. This liquid would be pumped and collected as part of the leachate collection system and removed for treatment. The design is described in detail in section 6.0 of the Design Report and shown on pages 15 through 26 of the Design Drawings. If more than 20 gallons per day per acre of liquid is captured by this leak detection system above the secondary liner, within any individual landfill cell, the landfill would be required to determine the source of the liquid and perform any remediation needed to stop liquid migration into the leak detection system. The series of actions that would be taken to determine the source of the liquid and the need for remediation are described in the FMP; Section 5.4: Leachate Contingency Considerations within the application. The design and response action meet the design requirements of the Rule.

> **(G) Leachate collection systems shall be placed and sized to minimize ponding on the liner. The components of leachate collection systems that feed to leachate storage facilities shall be designed to ensure that the depth of leachate does not exceed 12 inches over the liner. Leachate can be stored on the primary liner in excess of 12 inches for up to five days following a 25 year/24 hour or greater storm event.**

Finding: The leachate collection system has been designed to adequately handle the expected volume of leachate for the for the existing Phases and the proposed Phase V1 expansion using local rainfall data. A new 438,000-gallon tank will be added immediately north of the existing 438,000-gallon tank to provide sufficient storage capacity for leachate produced within the existing and proposed expansion areas of the landfill prior to transport for treatment at a waste water treatment plant (WWTP). The two dual-walled above-ground storage tanks are discussed in Part C-1: Design Report; Section 7.0 of the application. The Rules do allow for storage on the liner following a 25 year/24-hour storm event for a five-day period. The leachate storage tanks along with the capacity to transport leachate to a WWTP with an existing agreement with the landfill provides sufficient storage and transport volume to meet this requirement.

(I) Discrete disposal facility designs shall provide a sequential capping plan for closing operational units of the disposal facility during its life. Such operational units shall be designed for a life not to exceed five years unless otherwise approved by the Secretary.

Finding: A plan for sequential capping is discussed in Section 3.6 of the FMP and shown in the Conceptual Capping Sequence Plan in Part C-1 (Section 13.0 and Figure 2) of the Design Report. Low Emission "Interim" Capping will be utilized to achieve desired settlement followed by Final Capping. Final Capping is anticipated to start in 2022 with 11 acres, following the five-year increments with 9 acres in 2027 and 16 acres in 2033.

Conditions in the certification will require annual review of settlement rates, existing and proposed cover and cap at the landfill and a schedule for anticipated capping activities. With this provision the Secretary approves operational units at the landfill for waste acceptance for a period of greater than five years.

(J) Facilities shall assure the control and treatment, if determined necessary by the Secretary, of gases resulting from the decomposition of waste to prevent hazards to public health and safety, the environment, or creation of a nuisance.

Finding: Landfill gas will be controlled and monitored as described above in response to Sections 6-606(a)(1) and 6-606(a)(3) of the Rules. Active gas collection wells will be placed vertically and horizontally throughout the landfill. A vacuum collection system will transport collected landfill gasses to a gas-to-energy plant or flare for destruction. This landfill gas collection and control system should prevent migration of the landfill gas off of the landfill property and prevent hazards to public health and safety or the environment and minimize odor production. Additional monitoring for fugitive landfill gasses at the property line ensure that the system is function as intended. An odor control plan is presented in the FMP; Section 3.14 of the application. This plan provides methods that will be implemented to minimize odor production, evaluate sources of odors when they are detected and approaches to respond to such odor detections. The information provided in the Application sufficiently addresses this Section of Rule.

(K) Discrete disposal facility designs shall provide for the appropriate control of surface water run-on and run-off, as determined by the Secretary.

Finding: The proposed Phase VI expansion is designed to prevent surface water flow from entering the lined landfill during construction and operation. This is particularly important as the landfill liner is below grade. Surface water will be collected along the perimeter of the Facility and flow via gravity to several stormwater detention basins located around the Facility. Detention basins have been designed to control a 25 year/24-hour storm event. This is described in Part C-1: Design Report; Section 11.0 of the application. Upon final capping of the landfill, stormwater management systems will be installed as part of the final cap construction to manage stormwater and minimize infiltration and erosion of the landfill cap. This stormwater management plan meets the requirements of this Section of Rule and the requirements of the *Procedure Addressing Requirements for Run On/Run Off Control Systems for Municipal Solid Waste Landfills*.

(L) The engineering design and plan for lift development shall insure proper drainage on the discrete disposal facility site and prevent ponding of water on the facility surface. This requirement applies both during the working life of the facility and after the final cover system has been installed and vegetation established.

Finding: Daily cover must be in place at the end of every operating day and grading shall prevent ponding. Lift development will be accomplished through the construction of small units or cells containing one day's refuse. Lift development is described in detail in Section 3.8 of the FMP.

Sufficient compaction of the waste mass during placement provides the structural integrity throughout the operating life of the landfill and closure period. The combination of compaction during operations and attainment of a minimum slope of five percent and a maximum slope of 33 1/3 percent at closure ensures sufficient protections against inadequate drainage and ponding. Additionally, the annual engineer's inspection of the facility during operations and post-closure period would identify any issues and provide opportunity to implement corrective actions as needed.

(M) The final cover system design for lined discrete disposal facilities shall include a gas collection layer, an infiltration layer consisting of a minimum 18 inch thick layer of earthen material with a permeability less than 1 x 10^{-5} cm/sec, a flexible membrane liner with a minimum thickness of 40-mil, a drainage layer and an erosion layer consisting of a minimum six-inch thick earthen material layer capable of sustaining native plant growth. The Secretary may approve an alternative final cover design and materials that includes an infiltration layer and/or an erosion layer of different specifications or materials which are demonstrated to achieve equivalent performance.

Finding: The closure plan described in Section 9.1 of the Design Report outline the final landfill slopes. The design is also shown on pages 40 - 42 of the Design Drawings. The cap design meets the definition for a lined landfill cap which includes 18" of compacted soil with a permeability less that 1x10^{-5} cm/sec overlain by a synthetic liner. A 12" granular drainage blanket, 8" common borrow, and 4" topsoil will be placed on the synthetic cover and vegetation will be established. No slopes will be greater than 33 1/3 percent or less than 5 percent. The proposed design meets the requirements of this section of the Rule.

(O) The final cover system design for either lined or unlined discrete disposal facilities shall provide for a minimum slope of five percent and a maximum slope of 33 1/3 percent.

Finding: The final cover system of the landfill will be designed so the grades are no steeper than 33 1/3 percent and no flatter than 5 percent.

SUBCHAPTER 7 - OPERATION STANDARDS

§ 6-701 General Standards Applicable to All Facilities

Operational requirements are provided below for all solid waste management facilities. Facilities which qualify for categorical certification under Section 6-309 or Subchapter 11 and all facilities regulated under Subchapter 12 are exempt from the provisions of this Subchapter but have operational requirements applicable to those facilities contained within the provisions of those sections.

(1) Adequate and qualified personnel must be retained to operate solid waste management facilities.

Finding: The FMP (Section 3.11) outlines the number employees required to operate the Facility. The table outlines the number of employees required based on 1,500, 2,500, 3,500, and 5,000 tons per day. NEWSVT provides training to employees as necessary to properly perform duties of positions. At least one person on site will have OSHA 40-hour Hazardous Waste Operations and Emergency Response training.

(2) Before a solid waste management facility may commence operations, a professional engineer licensed in the State of Vermont must certify it was built in accordance with requirements of the certification and furnish a complete set of as-built drawings to the Secretary. Upon written request of the applicant, the Secretary may waive the requirement that the certification referred to above be furnished by a professional engineer.

Finding: Part C-3: Technical Specifications of the application describes the responsibilities of the various involved parties in documenting and providing construction quality assurance during the development of the landfill operational cells. The requirement to submit these quality assurance/quality control documents and as-builts to the Program prior to placing waste within a landfill cell will be a condition of any issued certification.

(3) Owners and operators of a solid waste management facility shall adhere to all conditions of the facility certification and these rules.

Finding: This is a requirement of any solid waste facility certification issued by the Program.

(4) At least one contact person identified in the certification application shall be on site during all hours of operation, unless specifically waived by the Secretary, in which case a contact person must nevertheless by able to be contacted at all times.

Finding: A NEWSVT, Inc. engineer is listed at the primary contact person for the Facility, while the landfill Operations Manager is listed at the secondary contact. The FMP lists essential staff that can be contacted during an emergency and the contacts provided include work, home, and cellular numbers.

(5) All sampling must be performed by properly trained and qualified personnel. Qualified personnel must have a minimum three months training and six months experience in sampling or analysis.

Finding: All sampling will be performed by trained personnel. As needed the Facility contracts with trained personal for specific sampling requirements. Groundwater and surface water sampling is currently being completed by Waite-Heindel Environmental Management consultants and will continue to be performed by qualified personnel.

(6) The owner and operator shall take all steps necessary to prevent and/or control spills, nuisance dust, vectors, wind blown debris, and odors.

Finding: The Facility is required and has a spill kit in the event of a spill event happening at the Facility. A private contractor will be called for larger spills. Section 3.15 of the FMP addresses dust control procedures the will be implemented at the facility. This includes proper maintenance of vegetated area, road sweeping and routine water or calcium chloride application to gravel service roads. During high wind events, the facility has the ability to cease operations to prevent wind-blown debris and to reject loads if waste odor is found offensive.

(7) The owner and operator shall take all practicable steps to prevent the inclusion of hazardous wastes, as defined and regulated by Vermont's Hazardous Waste Management Regulations, into the waste stream being managed by the facility.

Finding: Sections 2 and 4 of the FMP discuss the following programs used to ensure that hazardous waste will be excluded from the Facility: (1) signage notifying haulers and customers what material can be disposed of at the landfill; (2) random load inspections of incoming waste; (3) sponsoring of household hazardous waste days for the proper collection of prohibited waste; and, (4) through ongoing inspections of waste by landfill personnel during operations. All detected hazardous waste will be removed by the customer, when identified, or the operator to be removed from the site by a certified hauler. The methods discussed above meet this section of the Rule.

Additionally, the Facility will be required to comply with *the Procedure Addressing Liquid Waste Disposal Restrictions in Municipal Solid Waste Landfills and the Procedure Addressing Implementation of 10 V.S.A. 6606c Requirements for Unregulated Hazardous Waste Diversion at Solid Waste Management Facilities*.

(8) Access to the facility shall be controlled, as appropriate, in a manner approved by the Secretary

Finding: Section 3.2 of the FMP discusses access to the site is controlled by a gate at the entrance on Airport Road. The gate will be locked during non-operational hours.

§ 6-702 Standards for Disposal Facilities

(d) Discrete Disposal Facilities

(1) A qualified operator familiar with procedures and the facility management plan shall be on site during all hours of operation.

Finding: The FMP indicates that at least one person on site will have OSHA 40-hour Hazardous Waste Operations and Emergency Response training. The Facility Manager, or the Landfill Operations Manager or their assignee will be on site during all hours of operation. A copy of the Rules, Procedures and FMP are kept on site at all times.

(2) Properly maintained and calibrated scales should be used to measure the weight of solid waste received and disposed at the facility.

Finding: Scales are monitored and certified by the Vermont Agency of Agriculture, Food and Markets. The methods for tracking waste are discussed in Section 3.4 of the FMP.

(3) Adequate horizontal and vertical benchmarks shall be established prior to depositing any waste and maintained throughout the life of the facility.

Finding: The Certification requires that benchmarks be established prior to operations and maintained during the life of the Facility.

(4) The owner and/or operator shall make provisions for standby equipment to be operational within 24 hours of breakdown of the primary equipment.

Finding: Section 3.11 of the FMP discusses the number and type of equipment used at the landfill. In the event of equipment breakdown, back up equipment is available and there is a full-time mechanic on site to support equipment maintenance and repair. Additionally, backup equipment is available from rental operations and other regional landfill facilities that the landfill operator could access.

(5) With the exception of construction and demolition waste landfills, cover material shall be in place at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires and odors, to prevent blowing litter, and to discourage scavenging by animals, without presenting a threat to human health and the environment. Grading shall be accomplished to prevent ponding. At least a six-inch thickness is required when earthen material is used as cover material. In all areas other than the working face which have not received waste material in any given operating day, the owner or operator shall take all steps necessary to ensure that the cover material remains functional and stable until such time as the final cover system is installed. Construction and demolition waste landfill shall maintain cover pursuant to the cover requirements contained within facility's approved facility management plan.

Finding: Section 3.9 of the FMP outlines the use of daily cover and alternative daily cover (ADC) as required in this section of the rule.

(6) Lift development shall be carried out in accordance with the engineering plans, to ensure proper drainage and to prevent ponding.

Finding: Lift development is addressed in Section 3.8 of the FMP.

(7) The operator shall notify the Agency in writing when the facility has reached final grades or capacity limits. The final cover system shall be in place within 90 days of attaining the final grades, final capacity, or of the last date of receipt of waste for disposal. Grass or ground cover shall be established within four months of final cover. The Secretary may approve an extension to these deadlines if weather conditions cause an extension to be necessary.

Finding: The closure plan includes ongoing assessment of obtaining settlement rates and final grades. Final grades may be reached in some areas while other areas need additional waste due to settlement or lift development. Final Closure takes place when settlement is minimal, and the area is significant in size to make closure economical. The permittee is required to submit closure plans on a yearly basis.

(8) Industrial and commercial solid waste, sludge, septage or other materials which may combine to form hazardous substances shall only be deposited only as specified in the certification.

Finding: The existing certification does not provide specific provisions for these materials and hazardous substances, no issues under existing operations have been noted. No significant changes in operations or waste types is proposed by this application and it is not reasonably anticipated that hazardous substances will be produced by the waste mass. Waste is only accepted from municipalities that have approved Solid Waste Implementation Plans that include HHW collection events and educational programs to prevent unwanted/ banned items from entering the landfill. The landfill accepts special wastes, with prior approval by the Secretary, on a case-by-case basis.

§ 6-704 Record Keeping

(a) The following records must be kept in a dry and secure location by the owner and/or operator of the facility:

(1) All information that demonstrates compliance with Subchapters 5 through 11;
(2) Copies of the quarterly report forms that have been submitted to the Secretary as a requirement of certification; and
(3) Copies of any reports, records, data or other information required to be submitted to the Secretary as a requirement of certification.

(b) All records must be kept for the time period specified below:

(1) For discrete disposal facilities, from the date on which the application for initial certification is signed through the end of the post-closure period. The record keeping requirements shall cease upon written notification by the Secretary of the completion of post-closure care, in accordance with Section 6-1003(i);

Finding: Records will be kept at the landfill office/scale house for the life of the landfill in accordance with these requirements.

E. SUBCHAPTER 9 - FINANCIAL RESPONSIBILITY AND CAPABILITY

§ 6-901 Financial Capability - Private Facilities

(c) Evidence of financial responsibility shall be in one or a combination of the following forms:

(1) a trust fund maintained by the applicant for the benefit of the Agency with a surety bond guaranteeing full payment into the fund;
(2) a surety bond guaranteeing performance of closure or post-closure care;
(3) an irrevocable standby letter of credit;
(4) a deposit of acceptable collateral, as determined by the Secretary;
(5) a financial test and corporate guarantee, as determined appropriate by the Secretary; or
(6) other financial responsibility instruments that the Secretary may deem appropriate.

Finding: The total amount required for closure is $11,340,614.51 and $6,656,262.65 for post closure. NEWSVT has provided surety bonds from The Evergreen National Indemnity Company for these amounts. The Surety Bonds are in conformance with Subchapter 6-901(c)(1) of the Rules.

F. SUBCHAPTER 10 - CLOSURE AND POST-CLOSURE

§ 6-1002 Closure Plan

(b) The closure plan must identify steps necessary to completely close the facility at any point during its intended life. The closure plan must include, at least:

(1) A description of the steps necessary to close the facility;
(2) A listing of labor, materials, and testing necessary to close the facility;
(3) An estimate of the expected year of closure;
(4) A schedule for final closure including, at a minimum, the total time required to close the facility and the time required for the various steps or phases in the closure process;
(5) A cost estimate for facility closure that satisfies the requirements of Section 6-1004;
(6) A description of the methods for compliance with the closure requirements; and
(7) Any remedial action necessary prior to closure, if required by the Secretary pursuant to Section 6-311.

Finding: Part D-2: Closure and Post-Closure of the application describes the closure plans and costs. The worst-case closure cost scenario will change throughout the operation of the landfill as cells are constructed and filled. The plan describes the steps necessary to close the facility, including the labor, material and testing that is required and the schedule/timeframe to meet full closure. The maximum cost of closure (based on the area of waste in place requiring capping and the potential for leachate production) has been estimated to be after the construction of Phase VI Cell 1E which is anticipated to be constructed around 2033. The Engineering Design Report addresses the anticipated capping sequence Plan during the operational years of the landfill. The side slopes will generally be temporarily and/or permanently capped first, while the top of the landfill will be capped last. This allows for additional settlement and waste settlement to occur in these areas off of the side-slopes. Emissions control over these areas experiencing settlement may include the placement of interim capping materials, consisting of exposed geomembrane, for a limited duration until such time that final settlement is obtained at the certified elevation.

A cost estimate as described in Section 6-901 above and Section 6-1004 below is provided in the FMP. The information provided in the Design Report and FMP, as described above, meets the requirements of Section 6-1002 of the Rule.

§ 6-1003 Post-Closure Plan

(c) The post-closure plan must identify the activities that will be carried out after closure, the frequency of these activities, and include at least:

(1) a description of the appropriate air, surface water, ground water monitoring activities;
(2) a description of the planned maintenance activities;
(3) the name, address, and phone number of the person or office to contact about the facility during the post-closure period;
(4) a post-closure cost estimate that satisfied the requirements of Section 6-1005.

Finding: A 30-year post-closure plan has been submitted with the Application. The surface and groundwater monitoring details are described in the Monitoring Plan. Maintenance activities for the facility, leachate collection and landfill gas destruction are provided in the post closure plan section of the certification application. The post-closure cost estimate is also given in this section. The information provided meets the requirements of this section of Rule. NEWSVT will also comply with the *Procedure Addressing Closure and Post-Closure Care Requirements at Municipal Solid Waste Landfills*.

§ 6-1004 Closure Cost Estimates

(a) All facilities required under section 6-1002 to prepare a closure plan must have a written estimate of the cost of closing the facility in accordance with the closure plan.

Finding: Part D-2: Closure Plans are presented in the application. The plans include cost of closure in today's dollars.

(b) The closure cost estimate shall be based on the work required for a third party contractor to effect proper closure at the point in the life of the facility when closure would be most expensive. Those factors to be considered in estimating the closure cost shall include at least:

(1) the size and topography of the facility;
(2) the daily and weekly tonnage to be received at the facility;
(3) the availability of cover and fill material needed for facility grading;
(4) expected amounts of leachate production and requirements for treatment and disposal;
(5) the disposal method and plans;
(6) the location of the facility and the character of the surrounding area;
(7) requirements for surface drainage;
(8) leachate collection and treatment systems, as required;
(9) environmental quality monitoring systems, as required;
(10) structures and other improvements to be dismantled and removed;
(11) facility storage capacity for the types of wastes being received;
(12) off-site disposal requirements;
(13) an appropriate forecasted average rate of inflation over the active life of the facility; and
(14) vector control requirements.

Finding: The Closure Plan included within the application considers a worst-case closure scenario when the cost to close the facility would be at its highest. If Phase VI is developed fully, this highest cost to close would occur when Cell 1E is constructed, but not filled.

The cost estimate presented in the application considers final design for construction bids, all gas extraction materials and installation, capping material and installation, final cover soil and seeding, drainage requirements for the closed landfill, leachate requirements and closure of the drop-off/recycling portion of the Facility. The cost of closure of a particular cell is at its highest when the cell first becomes active. Because of this, the Closure Plan is

updated on a yearly basis and recognizes cell development and lifecycles of the cells. The "worst case" closure for Phase VI has been estimated to be at the point in time when construction of Cell 1E becomes on line. Cost estimates are based on final closure using the Traditional Final Cover System as previously permitted. The closure cost estimate provided in the Application meets the requirements of this section of the Rule.

§ 6-1005 Post-Closure Cost Estimates

(a) Facilities that are required under Section 6-1003 to prepare a post-closure plan must have a written estimate of the cost of post-closure monitoring and maintenance of the facility in accordance with the post-closure plan.

(b) The post-closure cost estimate shall be based on the work required for a third party contractor to implement the post-closure plan. The factors to be considered in estimating post-closure monitoring and maintenance cost shall include at least:

(1) the size and topography of the facility;
(2) the type and quantity of waste received;
(3) the disposal method and plan;
(4) the potential for significant leachate production and the possibility of contaminating ground or surface waters;
(5) environmental quality monitoring systems;
(6) soil conditions;
(7) an appropriate forecasted average rate of inflation over the active life of the facility and the post-closure care period;
(8) the location of the site and the character of the surrounding area.
(9) leachate and gas collection and treatment systems.

Finding: A post-closure plan is presented in Part D-2: Closure and Post-Closure Plans of the application. The post-closure plan provides continued management and maintenance of operational systems, like the leachate removal systems and third-party inspections and sampling, including groundwater, surface water and underdrain sampling. Directly, or by inference, consideration of the criteria required by Rule is included in this post-closure plan. The cost estimate associated with this work does consider an appropriate rate of inflation and reasonably anticipated changes to the post-closure plan over the 30-year financial planning period. Additionally, the post-closure plan and associated cost-estimates will be updated on an annual basis providing the Program with additional opportunity for review and consideration of the post-closure activities and these criteria.

G. SUBCHAPTER 12 - STORAGE, TRANSFER AND RECYCLING FACILITIES

§ 6-1201 General

All solid waste recycling, storage and transfer facilities are subject to the requirements of this Subchapter and the requirements of Subchapters 3,5,9 and 10, except for those facilities which manage sludge or septage, facilities used in conjunction with diffuse disposal, and those facilities covered under Section 6-1207.

§ 6-1202 Facility Management Plan

Design and operation of storage, transfer and recycling facilities shall be addressed in a facility management plan, which shall describe how the facility will meet the requirements of Sections 6-1203, 6-1204, 6-1205 and all applicable requirements of 6-1206. The management plan shall be prepared under the direction of a professional engineer, licensed to practice in the State of Vermont, unless the requirement that an engineer be involved is specifically waived by the Secretary. The management plan shall be submitted with the application for certification.

Finding: The FMP included within the application describes the management and operations of both the landfill disposal operations and the drop-off facility. The FMP meets the requirements of the Rule with the findings pertaining to the specific sections described below.

§ 6-1203 General Performance Standards

(a) Facilities shall be designed and operated to control vectors, and to control emissions or discharges to the environment, including odor and dust, so as to preclude the creation of nuisance conditions and undue threats to public health and safety or to the environment.

Finding: The facility of this nature is not expected to produce emissions or discharges. Frequent transport of collected materials and proper facility hygiene reduces the attraction of vectors. A spill kit is immediately available if a spill were to occur.

(b) Facilities shall be designed and operated to prevent, to the greatest extent feasible, the reduction of the quality of the waste, such as the rotting or contamination of stored wastes or recyclable materials.

Finding: The application indicates that the municipal solid waste collected at the drop-off will be removed within 48 hours or less.

(c) Facilities shall be designed to assure the effective collection, storage and/or processing of waste or recyclable materials.

Finding: Materials are placed into roll offs and other covered collection containers for protection from the elements.

§ 6-1204 Design Standards

(a) All designs for storage, transfer and recycling facilities shall consider the following aspects of the site and the applicable requirements of Subchapter 5 in the design of the facility in order to comply with the General Performance Standards set forth in Section 6-1203 above:

(1) soils and surficial geology;

Finding: The residential drop-off is located on a paved, impervious surface thereby minimizing any soil or surficial geology interaction. The soils and surficial geology described in the site characterization do not limit the ability of the drop-off to efficiently function and control emissions or discharges.

(2) topography; and

Finding: The topography is relatively flat in this area and does not create any site limitations.

(3) surface water.

Finding: There is a small stream approximately 200 feet east of the residential drop off area. The facility is designed and operated to prevent spills or other potential emission sources to the greatest extent feasible. However, the Facility has spill response equipment readily available in the event of a spill.

(b) Facilities shall be designed to provide for all weather access, with access controlled and limited to hours of operation identified in the facility management plan.

Finding: The residential drop off is part of the main parking lot adjacent to the scale house. All weather access will be provided by snow removal and general maintenance of the facility entrance. Hours of operation are limited to the landfill hours of operation listed above.

(e) Recycling facilities shall be designed to have storage capacity for all recyclable materials and any process residuals.

Finding: The Facility will provide collection areas for recyclables, scrap metal, white goods, waste oil, food scraps, leaf and yard debris tires, batteries, mercury containing bulbs and municipal solid waste. There are three roll off boxes for MSW, one roll off box for metal, two closed roll off boxes for recyclables, one roll off box for leaf and yard debris, two rear load containers for cardboard and one totter for food scraps. Once the recycling containers are full, the containers will be transported off-site for recycling. Sufficient storage capacity has been obtained.

§ 6-1205 Operation Standards

(a) A contingency plan must be developed which addresses the proper management of wastes or recyclable materials during both planned and unplanned events when the facility is and is not in operation. The contingency plan must be submitted with the application for certification.

Finding: If the residential drop-off area were to close residents would be directed to use other transfer stations in the area.

(b) An operator training plan must be developed which provides for all facility personnel involved in the handling of waste to receive organized instruction that teaches them to perform their duties in a way that ensures the facility's compliance with all applicable statutes, rules and conditions of certification. The operator training plan must be submitted with the application for certification.

Finding: Operator training for the management of the drop off facility is completed by the Operations or Division Manager upon hiring and an annual refresher is conducted during the FMP training meeting for all staff.

(c) A qualified operator shall be on site during all hours of operation, unless specifically waived by the Secretary in writing, in which case a contact person must nevertheless be able to be contacted at all times.

Finding: Sections 3.11 of the FMP outline the personnel training plan. In addition to formal training, there is a significant amount of on the job training.

(d) Personal protection materials and equipment appropriate to the materials being handled shall be available at all times for material handling and spill control.

Finding: Personal protection and a spill response kit is available at citizen drop off facility.

(g) Hours of operation shall be specified in the facility management plan.

Findings: Hours are included in Section 3.1 of the FMP. The Facility proposes waste acceptance from 6 am to 5 pm Monday through Friday and 6:30 am to 4pm on Saturdays.

§ 6-1206 Standards For Specific Materials

(a) Solid Waste

(1) Except as specifically provided below or in Subsections (b) through (g), all solid waste shall be stored in containers. The facility shall be managed to minimize the possibility of an emission or discharge of contaminants from the containers.

Finding: Waste will be deposited directly into containers. The containers are removed every 48 hours or less to minimize any potential for emissions from the containers.

(2) All solid waste shall be transported to a treatment or disposal facility on a schedule adjusted as necessary to minimize odors from the waste.

Findings: The roll-offs are removed every 48 hours at a minimum.

(b) Recyclable Materials

(1) Materials to be recycled, contaminated recyclable materials, and process residuals which may be dispersed by wind shall be stored inside buildings or other roofed structures, in box trailers, or in other closed containers which are covered except when the facility is operating.

Findings: Recyclables are collected and stored in a closed top roll-off container. Household recyclables are transported to a materials recycling facility for further processing.

(c) Lead-acid batteries

(1) All lead-acid batteries shall be stored under cover on an impervious surface.

Finding: Batteries will be placed undercover in an inpervious plastic tub or an impervious connext box.

(2) The facility must maintain a supply of absorbent materials and acid neutralizers sufficient to clean up a spill of up to one (1) gallon of battery acid solution.

Finding: A supply of acid neutralizers is kept at the Facility.

(3) All batteries shall be transported off-site in accordance with all applicable federal and state hazardous materials transport regulations.

Finding: Batteries are removed in accordance to the applicable regulations.

(e) Tires

(1) No more than 3000 tires may be stored uncovered at the facility site at any time, unless the facility processes tires on-site, in which case, the maximum amount and the storage design shall be dictated by the facility management plan.

Findings. Tires will temporarily placed onto the ground and moved into a tire trailer at least once weekly.

(f) Construction & Demolition Waste (C&D)

(1) C&D collected at a facility that treats the material on-site, either by pulverizing or sorting, may be stored uncovered for a period not to exceed one hundred twenty (120) days from the date of receipt. The maximum on-site volume shall not exceed 800 cubic yards at any time.

(2) C&D collected at a facility that does not treat the material on-site must be stored in containers or in an enclosed or covered area.

Finding: All C&D collected at the drop-off will be placed into the roll-off and ultimately dumped for disposal or processed for beneficial re-use in the landfill.

END OF FACT SHEET