State Environmental Review Act (SEQRA)

Draft Environmental Impact Statement For
The County of Franklin Solid Waste Management Authority Landfill Expansion

EIS Type: Draft Environmental Impact Statement (DEIS)

Proposed Action: The County of Franklin Solid Waste Management Authority (CFSWMA) is proposing to expand their current sanitary landfill facility. The total acreage of this proposed project, including property proposed for acquisition, is 586 acres with the total maximum build-out of the proposed landfill expansion footprint approximating 142 acres. The proposed landfill expansion will include the construction of a double composite liner system and will also include ancillary and support facilities such as stormwater ponds, leachate storage and conveyance facilities, pump stations, perimeter and access roads, groundwater monitoring wells, equipment storage and maintenance facilities, a landfill gas collection and control system, and fencing. The proposed project will also include a site upgrade to three-phase power.

Location of Action: Towns of Constable and Westville, Franklin County, New York

SEQR Lead Agency: County of Franklin Solid Waste Management Authority (CFSWMA)

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DEIS Accepted by SEQRA Lead Agency On: September 25, 2008

DEIS Public Hearing Date and Location: November 5, 2008 at 7:00 p.m. at Malone Middle School, 15 Francis Street, Malone, New York 12953

DEIS Available for Review: http://www.franklincony.org/content/Generic/View/18

Deadline for Submittal of Written Comments on the DEIS: December 1, 2008

Any written comments should be addressed to the CFSWMA Office, located at 828 County Route 20, Constable, New York, 12926. The submission of non-anonymous electronic comments may be completed using the website referenced above.

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Summary

Overview of Proposed Project

The County of Franklin Solid Waste Management Authority (CFSWMA), also referred to as "The Authority", proposes to expand its current sanitary landfill facility, located along the south side of County Route (CR) 20 in the Towns of Constable and Westville, Franklin County, New York. The total acreage, including properties proposed for acquisition, of this proposed project is 586 acres. The total maximum build-out of the proposed landfill expansion footprint is 142 acres, with the total area of disturbance approximating 165 acres. The total disturbance acreage consists of the proposed landfill footprint, perimeter roads, leachate facilities, a new maintenance gauge, proposed stormwater ponds, and grading areas. The remaining 421 acres, located both north and south of CR 20, will be used as buffer area and will be considered for potential wetland mitigation in the future. Approximately 320 acres of private property south of CR 20 and approximately 261 acres of private property north of CR 20 will be acquired from four (4) separate owners during the project's land acquisition phase. The CFSWMA currently owns approximately 378 acres of land, including the existing landfill site and surrounding parcels. The CFSWMA Landfill is used for the disposal of solid waste generated by households, commercial and institutional establishments, and industries. Wastes disposed of at the landfill include construction and demolition debris, sludge, and any residues from recycling, composting, incineration, or other waste processing technologies. This proposed landfill expansion does not include any changes in the types or quantities of waste permitted to be disposed of at the Authority's existing landfill.

Purpose of the Proposed Action

The purpose of the proposed landfill expansion is to continue to ensure that local residents and businesses will be provided with long-term, environmentally sound disposal capacity within Franklin County, and to guard against uncontrollable costs and potential costs and liabilities that would be associated with long-term reliance on long distance (out-of-county) waste transportation and disposal.

Alternatives Considered

No Action/Waste Exportation

If not action were taken, the existing County of Franklin Solid Waste Management Authority (CFSWMA) landfill would reach capacity in the year 2014, depending on actual waste densities and quantities received. At that time, no additional waste could be accepted at the Authority's landfill site. The Authority would be obligated to cap the landfill and to pay for post-closure monitoring and cap maintenance costs for at least a thirty-year (30 year) period. In addition, wastes generated within Franklin County would then need to be transported to an out-of-county landfill. Such waste exportation is projected to result in significantly higher transportation and disposal costs ($26 to $104 per ton more than the proposed landfill expansion), which will increase further as fuel prices continue to rise.

Alternative Waste Disposal Technologies

A series of alternative waste disposal technologies are available for consideration by the Authority. Some of these were considered by Franklin County in its solid waste planning activities in the late 1980's and early 1990's. Technologies reviewed include: pyrolysis, biogasification, combustion waste-to-energy, and composting/co-composting.

Pyrolysis and biogasification are considered to be relatively unproven, unreliable waste processing technologies that have suffered from operational complexities and inabilities to successfully market the end-products. Combustion waste-to-energy technologies are technically but not economically viable at this time at the CFSWMA landfill, due to the relatively high costs to construct and operate such facilities. The economic feasibility of municipal solid waste (MSW) composting is highly dependent on the cost of other disposal alternatives (e.g. landfilling) that are available for a region and also upon the quality of the compost and availability of local markets for the compost end-product produced. Where landfilling is available at a relatively economical price as it is here, and where there are no other critical environmental issues ruling out continued landfilling, composting of mixed MSW is not cost-competitive.

The byproducts or end products of the majority of these alternative technologies would still require a landfill for disposal. At some point in the future, some type of alternative waste disposal technology could potentially be used as a component of the Authority's solid waste management plan, and would help extend the useful life of the proposed landfill, but, in the short-term, they are not practicable alternatives to landfilling.

Alternate Landfill Sites

The existing CFSWMA landfill site remains suitable for landfill activities. Developing an alternate site would necessitate a series of expensive and time intensive studies. Site suitability investigations, environmental assessments, impact analyses, geologic investigations and engineering investigations would all be required to pursue the development of an alternative landfill site. A new landfill site could not be identified, evaluated, permitted, and built in time to meet Franklin County's need for new disposal capacity, which is anticipated to be in the year 2014, depending on waste densities and waste quantities accepted.

Alternative Scale or Magnitude

The primary disadvantage of smaller footprint configurations is that they will ultimately not provide as much disposal capacity as a larger footprint, such as what is being proposed as part of the Authority's landfill expansion project. This, in turn, means that the costs and environmental impacts associated with the development of a new landfill site, or with the long distance transportation of waste to an out-of-County disposal site, will occur sooner.

The phased approach that is proposed for the future permitting and construction of the proposed landfill expansion will not only provide further assurances that all environmental requirements will be met, but it will also mean that the amount of landfill disposal capacity built and made available at any point in time can be adjusted to match what the projected waste disposal needs are at that point in time.

Sale or Lease of the CFSWMA Landfill or Transfer Stations During Their Useful Life

The sale or lease of the CFSWMA landfill, and/or the sale or lease of the three Authority transfer stations in Tupper Lake, Lake Clear, and Malone, plus a fourth collection site in St. Regis Falls, are not currently contemplated or proposed by the Authority. In the event that such sales or leases become a serious consideration, then the Authority would undertake appropriate environmental reviews and analyses in accordance with SEQRA. However, public ownership and operation of the Authority's landfill and transfer stations is expected to continue for the foreseeable future.

Potential Environmental Impacts and Proposed Mitigation Measures

Topography and Subsurface Geologic Conditions

The topography of the project area will be changed by re-grading, excavation, and the deposition and covering of waste. These topographic changes will occur over the approximate 95-year estimated useful life of the proposed maximum build-out landfill expansion, since construction will occur in stages. The topography of the closed landfill expansion will consist of a gently sloping hill with an elevated plateau at its highest point, which is estimated to occur at an elevation of 357 feet above mean sea level. Currently, the capped portion of the existing landfill, Cell 1, reaches a height of 340 feet above mean sea level.

The geologic units at the site are designated as glacial till and marine silt in the overburden unit and Ordovician age Ogdensburg Dolostone as the bedrock unit. Sufficient appropriate soil material exists on-site to construct, operate, and cap the proposed landfill expansion area. The subsurface geologic conditions at the proposed

landfill expansion site are suitable for a sanitary landfill. A minimum separation distance of 10 feet will be provided between the top of the bedrock and the bottom of the double composite liner system.

Groundwater and Drinking Water Concerns

The Authority's proposed landfill expansion will comply with important regulatory standards and construction design safeguards to ensure that nearby groundwater and drinking water supplies will not be impacted by the landfill.

Double Composite Liner System

Municipal solid waste will be deposited on top of a double composite liner system at the proposed landfill expansion site. This liner system is currently in place and performing effectively at the existing landfill site, Cells 1-4. See Figure 2.1 for a typical cross section of the double composite liner system proposed for the footprint of the expansion area. The top portion of the liner system (i.e. the primary liner system) will be designed to collect virtually all of the leachate (water which comes into contact with solid waste). Collected leachate will be piped to the Authority's leachate storage tank and then hauled to the Village of Malone Wastewater Treatment Plant for treatment. In the event that a backup leachate treatment facility is needed, due to the temporary unavailability of the Authority's primary leachate treatment arrangement, then leachate will be hauled to the City of Plattsburgh Wastewater Treatment Plant.

The bottom portion of the liner system (i.e. the secondary liner system) collects any leachate that passes through the primary liner system. The amount of leachate collected in the secondary system is monitored daily to measure the performance of the primary liner system. With the primary liner system functioning as designed, minimal

amounts of leachate flow to the secondary collection system. In the event that such daily monitoring activities identify concerns regarding the primary liner system's performance, a series of steps would be initiated to investigate and to take appropriate corrective action. Based on 2007 data, 99.8% of all leachate generated at the Authority's existing landfill was collected by the primary liner system and the remaining 0.2% of the landfill's leachate was collected by the secondary liner system.

Pore Water Collection and Drainage System

The pore water collection and drainage system would be constructed directly above the low-permeability foundation subgrade soils and below the landfill liner system. The pore water collection and drainage system would consist of a composite geonet that would collect groundwater seeping inward toward the landfill. This groundwater would be removed by side riser pump stations. In the unlikely event that leachate migrates through both landfill liner systems, the pore water collection and drainage system would serve as another active collection system for the removal of leachate. Water quality within the pore water collection and drainage system would be monitored as an additional measure. The pore water collection and drainage system therefore would act as a tertiary layer in addition to the leachate collection and detection systems for detection of any release from the landfill.

Groundwater Monitoring

The network of groundwater monitoring wells at the landfill site will be expanded with the addition of new wells. These wells will be regularly sampled to provide another means to identify whether landfill operations have impacted groundwater.

Surface Water Resources

The majority of the proposed project area drains south into Briggs Creek (NYSDEC Water Index No. SLC-28). The existing landfill site and the eastern extent of the proposed expansion area drain east, flowing into an unnamed tributary of the St. Lawrence River (NYSDEC Water Index No. SLC-26). Briggs Creek and Tributary 26 of the St. Lawrence River are classified as Class D waters with D Standards according to the New York State Department of Environmental Conservation (6 NYCRR Part 910). Class D waters are not included in the definition of a protected stream according to 6 NYCRR Part 608 Use and Protection of Waters. According to the NYSDEC, the best usage of Class D waters is fishing.

Construction and operation of the proposed landfill expansion would include a number of mitigative measures to prevent and/or minimize the potential for impacts to surface water resources. Stormwater runoff from the landfill footprint area will be directed to on-site sedimentation basins. The proposed maximum build-out expansion will require the construction of four (4) new stormwater basins to offset the increased stormwater quantity from the additional cell construction. Other measures to reduce the potential for siltation of surface waters include: the use of vegetated buffer zones, the used of hay bales and silt fences as filters, the construction of riprap lined ditches to direct stormwater runoff and minimize erosion, and the re-vegetation of disturbed soil areas.

As described in the preceding section on groundwater, the double composite liner system, leachate collection system, and monitoring activities will prevent leachate from contaminating nearby creeks and wetland areas.

Air Quality

Over time, decomposition of solid waste in the landfill will produce different gases. Methane, carbon dioxide, and non-methane organic compounds are some of the gases produced during decomposition of solid waste. The landfill's design includes a landfill gas management system that will collect the gas. The gas will then either be combusted in flares or used as an energy source once sufficient volumes of landfill gas are produced. A landfill gas monitoring program will also be implemented during operations, to ensure compliance with all applicable requirements.

Ecological Resources

Information regarding the ecological resources of the proposed landfill expansion site was gathered through site visit, aerial photography, review of prior studies, and correspondence with various agencies. Based on these sources, no endangered or threatened species or unique ecological resources have been identified on-site.

Wetland Resources

A field delineation by Barton & Loguidice, P.C. confirmed the presence of wetlands on the proposed landfill expansion site. The field assessment was conducted in accord with the 1987 US Army Corps of Engineers Wetland Delineation Manual. During subsequent stages of construction of the proposed expansion area, wetland resources would likely be impacted. These impacts would be appropriately mitigated through the use of approved compensatory mitigation procedures, as outlined and required by the US Army Corps of Engineers. There are no New York State regulated freshwater wetlands located within the proposed expansion area boundaries.

Local Land Use

Current land uses on the proposed expansion area include agricultural and vacant land. Local land cover includes: agricultural fields, brushland, pastureland, forestland, open space, and meadow. Land uses within the vicinity of the landfill site are consistent with those land uses observed throughout Franklin County.

Even if it is assumed that all 581 acres of the proposed landfill expansion area are converted from agricultural uses, this would result in the loss of only 0.4% of Franklin County's farmland and only 4.5% of farmland in the Towns of Constable and Westville. Therefore, on a County-wide and Town-wide level, the proposed landfill expansion will not significantly affect the agricultural community as a whole or the agricultural productivity of the area.

Noise

The results of noise impact analyses indicate that noise from landfill operations will be below applicable noise standards (57 dBA) at the proposed expansion area site boundaries.

Noise levels generated during landfill construction will be temporary and limited to the duration of construction activities. Noise generated during landfill construction will be mitigated by ensuring that all equipment used is properly mufflered in accordance with state regulations. Noise levels during landfill construction will be further reduced by preventing any unnecessary operation of equipment near property lines, ensuring proper maintenance of equipment, and limiting potential noisy construction operations to normal daytime operating hours.

Visibility

The final height of the proposed landfill expansion will be approximately 20 feet higher than the maximum permitted elevation of the capped and closed Cell 1. A viewshed analysis was conducted for the proposed landfill expansion project. This analysis indicates that the visibility impact and view reaction to the proposed expansion will vary based on landscape and geographical setting, extent of screening and structural obstructions, viewer sensitivity, and distance of the respective viewer from the proposed project site. The project's overall impact on the visual character of the area could be considered to be very low to moderate, depending on the distance of the viewer to the proposed landfill site. The greatest visual impacts of the proposed landfill expansion project are located immediately adjacent to the landfill site along County Route 20. Screening mechanisms such as earthen berms, fences or planted vegetation will be utilized to decrease visual impacts, when appropriate.

Odors

Once wastes are received at the landfill, best management practices will be used to minimize odors and prevent them from emanating off-site. Waste loads having particularly strong odors will be covered immediately after being emptied from the delivery vehicles. On those days when atmospheric conditions are optimal for odor generation, wastes will be covered more frequently throughout the day, rather than just at the end of each day. The Authority's proposed landfill gas collection and control system will help to reduce odors generated at the facility. The operation of this system will limit off-site odors from the facility because the odor causing components of the gas will be thermally destructed.

Historic and Archeological Resources

A farmstead site, located on Authority property, has been determined to be eligible for inclusion in the state and national registers of historic places by the NYS Office of Parks, Recreation, and Historic Preservation (OPRHP). The proposed expansion footprint was designed to avoid this farmstead in order to minimize all impacts to this historic resource.

Glossary of Terms

Alternative Daily Cover (ADC) – A material, other than soil, which performs the necessary functions of soil cover. The use of ADC must be approved by the New York State Department of Environmental Conservation (NYSDEC) "upon a demonstration that the alternative daily cover material will adequately control vectors, fires, odors, blowing litter, and scavenging, without presenting a threat to human health and the environment: (6 NYCRR Part 360.2.17 (c)).

Aquifer – A consolidated or unconsolidated geologic formation, a group of formations or part of a formation capable of yielding a significant amount of groundwater to wells or springs. Two types of highly productive aquifers in unconsolidated (non-bedrock) formations are defined below. The ultimate determination of the presence and extent of these aquifers rests with the NYSDEC. A "primary water supply aquifer" or "primary aquifer" means a highly productive aquifer which is presently used as a source of public water supply by major municipal water supply systems. A "principal aquifer" means a formation or formations known to be highly productive or deposits whose geology suggests abundant potential water supply, but which is not intensively used as a source of water supply by major municipal systems at the present time. Some water supply development has taken place in some of these areas, but it is generally not as intensive as in the primary aquifer areas.

Ash – Incinerator residue.

Authority – The County of Franklin Solid Waste Management Authority.

Buffer Area Properties – Land which may be purchased by the Authority, pending negotiations with the involved landowners. No construction activities are currently proposed for these properties. Buffer areas provide additional distances between existing and proposed landfill operations and adjacent sensitive receptors (residential properties).

Bypass Wastes – Non-recycled wastes which are diverted from a recycling center or non-processible wastes which are diverted from a waste processing facility.

C&D Debris – Waste resulting from the construction, remodeling, repair, and/or demolition of buildings or roads. This waste includes, but is not limited to bricks, concrete, masonry, soil, rock, wood, land clearing debris, wall coverings, roof coverings, glass, pipes, and plumbing and electrical fixtures.

Cell – Individual waste disposal area which is underlain by a landfill liner system.

Cfs – Cubic feet per second.

CFSWMA – The County of Franklin Solid Waste Management Authority.

Contaminated Soil – Soils contaminated with spilled petroleum, solvents, or other liquid matter that is not classified as a hazardous waste.

Cultural Resource – Historic or prehistoric site, structure, or district.

dBA – A-weighted decibel scale which is weighted towards those portions of the frequency spectrum, between 20 and 20,000 Hertz, to which the human ear is most sensitive.

DEC/NYSDEC – New York State Department of Environmental Conservation.

DEIS – Draft Environmental Impact Statement.

DOT/NYSDOT – New York State Department of Transportation.

Double Composite Liner System – A liner system which is placed beneath a landfill that restricts the downward and lateral escape of solid waste and leachate. The double composite liner on the landfill bottom consists of a secondary composite liner system overlain by a primary composite liner system. Each composite liner on the landfill bottom consists of a leachate collection and drainage layer underlain by a geosynthetic (plastic-like) liner, underlain by a low permeability soil layer. The liner system on the landfill's side slopes is similar, but does not include a soil layer in the primary system.

Draft Scoping Document – A Draft Scoping Document is prepared during the State Environmental Quality Review (SEQR) process, usually by the Lead Agency, in accordance with NYCRR Part 617. Draft Scoping Documents aim to identify all the topics and concerns that will be detailed in the Draft Environmental Impact Statement for a project.

FEIS – Final Environmental Impact Statement.

Final Scoping Document – Similar to a Draft Scoping Document, the Final also identifies all areas of a project that will be included in the Draft Environmental Impact Statement. This document is completed after the Public Comment Period has ended. All public and agency comments made during this period are taken into consideration when putting together the Final Scoping Document.

Footprint – A portion of a landfill site where solid waste will be buried on top of a liner system. Also referred to as a fill area or potential fill area.

Full Service Landfill – A landfill site which can be used for the long-term disposal of raw waste, construction and demolition debris, sludge, bypass waste, and any residues from recycling, composting, incineration, or other waste processing technologies.

Green Waste – Leaves, grass clippings, garden debris, and brush/branches.

Groundwater – Water below the land surface in a saturated zone of the soil or rock. This includes perched water separated from the main body of groundwater by an unsaturated zone (6 NYCRR 360-1.2(b)(81)).

Groundwater Table – Groundwater table means the surface of a body of unconfined groundwater between the zone of saturation and zone of aeration at which the pressure is equal to that of the atmosphere. Groundwater table does not include the potentiometric head level in a confined aquifer (6 NYCRR 360-1.2(b)(82)).

HDPE – High Density Polyethylene.

Historic Resource – Building, district, structure, structural remain or feature, object, or archeological site dating to the historic period (in New York, usually post-dating A.D. 1600) and generally 50 years or older.

Hydric Soils – Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.

Level of Service – A rating of highway operating conditions described by six letter designations, from A to F, with Level of Service "A" representing the best operating conditions and Level of Service "F" the worst.

LFG – Landfill gas.

Mil – One thousandth (0.001) of an inch.

MSL – Mean Sea Level.

National Register – A listing of historic properties maintained by the Keeper of the Register (United States Department of the Interior).

NYCRR – New York Compilation of Rules and Regulations.

Part 360 – DEC's solid waste management regulations, codified at 6 NYCRR Part 360 (Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York), effective May 12, 2006.

Pore Water Drainage System – Also known as a groundwater suppression system.

Permeability – The property or capacity of a porous rock, sediment, or soil for transmitting a fluid. It is a measure of the relative ease of fluid flow under unequal pressure.

Ppm – Parts per million.

Proposed Expansion Area – The area on which landfill and related facilities construction, operation and maintenance activities are proposed to occur (see Figure 1).

SEQRA – State Environmental Quality Review Act, codified in Article 8 of the New York State Environmental Conservation Law.

Sludge – Any solid, semi-solid, or liquid waste generated from a wastewater treatment plant, water supply treatment plant, or air pollution control facility (6 NYCRR 360-1.2(b)(155)).

Statement of Findings – A written statement adopted by State or local agencies after reviewing a *Final Environmental Impact Statement*, summarizing the basis for the agency's decision whether to approve or proceed with the proposed action described in the *FEIS*.

Stratigraphy – A geologic term – stratigraphic data are formational designations, age, thickness, areal extent, composition, sequence, and correlations.

SWMP – CFSWMA Solid Waste Management Plan, as updated and revised on April 14, 2006.

µg/m^3 – Micrograms per cubic meter.

USACE – United States Army Corps of Engineers (U.S. Army Corps of Engineers).

USGS – United States Geological Survey.

USEPA – United States Environmental Protection Agency.

Variance – An exemption from one or more specific provisions of Part 360 that is granted to an applicant by the NYSDEC.

Viewshed – The geographic area within a defined distance surrounding a landfill site from which the landfill footprint would be visible.
Wasteshed – The geographic area to be served by a solid waste management facility.

Willing Seller – A landowner who has expressed a willingness to have his or her land evaluated by the Authority for consideration as a potential landfill site.

1.0 Project Description

1.1 Project Overview

The County of Franklin Solid Waste Management Authority (CFSWMA), herein referred to as "The Authority" or "CFSWMA", proposes to expand its current sanitary landfill facility, located along the south side of County Route (CR) 20 in the Towns of Constable and Westville, Franklin County, New York. Currently, the CFSWMA Landfill is used for the disposal of solid waste generated by households, commercial and institutional establishments, and industries. Waste disposed at the landfill include construction and demolition debris, sludge, and any residues from recycling, composting, incineration, or other waste processing technologies.

As proposed, this project will require the acquisition of multiple properties currently under private ownership. Approximately 320 acres of private property south of CR 20 and approximately 261 acres of private property north of CR 20 will be acquired from four (4) separate owners. Overall, the total acreage of this proposed project, including properties proposed for acquisition, is 586 acres with the total maximum build-out of the proposed landfill expansion footprint approximating 142 acres. The total area of disturbance is estimated at 165 acres. This total disturbance acreage includes the proposed landfill footprint, perimeter roads, leachate facilities, a new maintenance garage, proposed stormwater ponds, and grading areas. The remaining 421 acres, located both north and south of CR 20, will be used as buffer area and will be considered for potential wetland mitigation in the future. A general site location map is presented as Figure 1.1. This figure depicts the proposed property acquisition boundary included as part of the project. Figure 1.2 depicts the proposed initial

landfill expansion that will incorporate an overlay of the existing landfill footprint. A preliminary design of the ultimate landfill site build-out, based on current project planning, is shown as Figure 1.3. The environmental impact assessments described in this Draft Environmental Impact Statement (DEIS) are based upon the potential long-term site build-out depicted in Figure 1.3.

Waste quantities requiring disposal vary year to year. This variation is caused by a variety of factors including economic conditions, waste processing, recycling and waste reduction measures, legal issues, and population changes. The Authority's Landfill is currently permitted by the New York State Department of Environmental Conservation (NYSDEC) to accept a maximum of 125,000 tons of waste per year. There are no plans to increase the existing tonnage limit at the landfill as part of this project. The types of waste to be accepted for disposal at the landfill will also remain unchanged.

Based on current usage projections and currently permitted tonnage levels, the landfill site's current disposal capacity will be consumed by the year 2014. The proposed maximum expansion of the CFSWMA Landfill will provide an additional 19,000,000 cubic yards of disposal capacity. At a maximum annual disposal rate of 125,000 tons per year of mixed municipal solid wastes, the proposed landfill expansion would provide an additional 94.8 years of site life. The proposed stage one (1) expansion consists of the construction of three (3) cells, adding approximately 19 years of site life to the currently permitted four (4) cells at the landfill's permitted tonnage rates.

This Draft Environmental Impact Statement (DEIS) has been prepared to satisfy the requirements of the New York State Environmental Quality Review Act (SEQRA). This document is consistent with the requirements of 6 NYCRR Part

617, which was adopted pursuant to Section 8-0113 of the Environmental Conservation Law (ECL) to execute the provisions of SEQRA. The issues addressed in this DEIS are based on the Final Scoping Document, which was developed following consideration of written and verbal comments that were received during the scoping session for this project and that were associated with potential environmental concerns. This document is intended for regulatory and public review and to provide a basis for discussion, comment, and decision making in connection with the proposed action.

The Authority has already completed the initial steps in the SEQRA environmental review process for the proposed landfill expansion project. These initial steps include the establishment of the Authority as the Lead Agency for this project, the issuance of a significance determination, the preparation and issuance of the Draft and Final Scoping Documents, and conductance of a public meeting and public comment period (as part of the public scoping).

As of September 15, 2008, additional steps in the SEQRA review process that will be undertaken for this project are as follows:

- The Draft Environmental Impact Statement (EIS) for the proposed landfill expansion will be approved by the Authority and made available for public and involved agency review and comment;
- A public hearing will be held to receive comments on the Draft EIS. Written comments on the Draft EIS will also be accepted for a specified period of time;

- Written responses to substantive, non-anonymous comments received on the Draft EIS will be prepared, and revisions to the Draft EIS may be prepared following a review of the public and agency comments received. These written responses will be presented in the Final EIS, along with any revisions that are made to the Draft EIS; and
- Following the acceptance of the Final EIS, a Statement of Findings will be prepared and filed as the last step in SEQRA's EIS review process.

1.2 Purpose

The purpose of the proposed landfill expansion is to ensure a long-term economic, environmentally sound, and dependable facility that would provide for the disposal of all non-recyclable and non-hazardous waste generated in the County of Franklin. A landfill expansion will help guard against the costs, market fluctuations, increasing fuel prices, and potential liabilities that would be associated with the closure of the existing CFSWMA landfill and the subsequent reliance on out-of-region disposal capacity. A landfill expansion will also keep the tipping fees and landfill revenue within the County to re-circulate within the local economy. Even with local recycling and reuse programs, the public and private sectors of the County of Franklin and surrounding areas will continue to rely upon landfilling for most of their waste management and disposal needs.

1.3 Public Needs and Benefits

Public needs and benefits for the landfill expansion can be described by the following environmental and economic factors:

Economic Viability – Expansion of the CFSWMA Landfill would ensure that economically secure long-term disposal capacity would be available to the County of Franklin.

Environmental Security – Expansion of the CFSWMA Landfill would provide the County with the highest level of long-term security because of the certainty and control over the design, construction, and operation of the expansion's environmental protection system.

Economic Security – Prices in the solid waste disposal marketplace can fluctuate significantly. Expansion of the CFSWMA Landfill would continue to ensure that the County of Franklin has a local disposal facility that is cost-based rather than market driven. This would help to insulate local disposal prices from market influences such as industry consolidation, reduction in available disposal capacity outside of the County, and changes in laws governing the interstate transport of solid waste.

Local Economic Benefits – Exporting waste from the County of Franklin would result in less money in the local economy. Tipping fees would be paid to disposal facilities located outside the County, meaning that money as well as waste would be exported out of the local economy. Development of the landfill expansion would also involve economic spin-offs from the local expenditure of construction money and annual landfill operating money, substantial portions of which would stay in the local economy. By exporting waste, the Authority would not receive tipping fees and the local economy would not benefit from construction revenue. Waste exportation would result in the payment of fees to an out-of-County facility which is neither a local employer nor a local taxpayer. The CFSWMA is also a local employer, currently providing numerous local citizens with fulltime employment.

Local Environmental Infrastructure – Development of the proposed landfill expansion would help protect the region from market-driven price increases associated with exporting waste, and would provide a long-term economic, environmentally sound disposal facility that could be relied upon by local residents and businesses as an integral component of the County's environmental infrastructure.

1.3.1 Host Community Benefit Agreement

The CFSWMA voluntarily passed a resolution on February 17, 1994, establishing a rate of $0.50 per ton of all disposed materials to be paid to both the Town of Westville and the Town of Constable. On October 17, 1996, an amended resolution was passed which limited the materials for which the Towns received reimbursement to only municipal solid waste. This resolution outlined the payments and benefits that CFSWMA agreed to provide to the Towns as compensation for the presence of the landfill. In 2008, the Authority Board invited representatives for the Towns of Westville and Constable to participate in discussions regarding the terms of a Host Community Agreement and potential modifications to this resolution. As of the date of this DEIS, one such meeting has been held involving representatives from the Town of Westville and the Authority. As a facility that serves the entire County of Franklin, the Authority considers host community payments to the Towns of Westville and Constable principally a matter of fairness.

1.4 The County of Franklin Solid Waste Management Authority

The County of Franklin Solid Waste Management Authority was established in 1988, pursuant to State law, for the purposes of managing the solid waste generated within the County of Franklin. The establishment of the Authority occurred, in part, due to the policies set forth in the original New York State Solid Waste Management Plan, which called for solid waste planning at the local level, and self-sufficiency in the management of municipal solid waste (NYSDEC, 2001). Under these statutory provisions, the Authority is authorized to provide solid waste management services and to develop appropriate solid waste management facilities for the benefit of the County of Franklin. The population of the County was estimated at 50,968 in 2006 (US Census Bureau, 2008).

The CFSWMA Board consists of seven (7) members that are appointed by the Legislature of the County of Franklin. As of July 1, 2008, there is one vacancy on the CFSWMA Board. The CFSWMA Board members vote on resolutions and issues pertaining to the operations and planning of the CFSWMA Landfill, transfer stations and recycling facilities and programs. The Board members receive no compensation for their service to the Authority, but they are eligible for reimbursement of expenses incurred in connection with the carrying out of their position. Currently, Board members serve a three (3) year term. The State Public Authorities Law, Article 8, Title 13-I, Section 2051-c, states that Board members may be re-appointed for a second term of three (3) years and they remain on the Board until they resign or are replaced by an appointed qualified successor.

1.5 Site Description

1.5.1 Franklin County

Franklin County is bounded by Clinton County to the east, Essex County to the southeast, Hamilton County to the southwest, St. Lawrence County to the west, and the Regional Municipality of Haut-St-Laurent, located in the Province of Quebec, to the north. Franklin County is 1631.49 square miles in size (US Census Bureau, 2008).

1.5.2 Landfill Expansion Area

The CFSWMA Landfill is located amidst scattered residential properties, active farming operations, and other vacant and wooded lands in the northern section of the County of Franklin. CFSWMA currently owns approximately 282 acres of land in the Town of Constable and approximately 96.0 acres of land in the Town of Westville. During a vegetative analysis of the proposed expansion area, the following vegetative cover types were observed on-site: agricultural field, open water, pastureland, shrubland, deciduous forest, evergreen forest, and grassland/meadow. Wetland cover types identified within the expansion area limits include: wet meadow, emergent, scrub-shrub, and forested. Figure 1.4 shows the limits and locations of these cover types within the expansion area south of CR 20.

The proposed CFSWMA Landfill expansion area includes land that is proposed for the future development of landfill footprint (where waste will be deposited on a liner system) and land that is proposed for buffer area. The total maximum build-out of the proposed landfill expansion

footprint is 142 acres, with the total area of disturbance approximating 165 acres. The 325 acres included in the maximum build-out are proposed to be located on private property, currently split among three (3) owners. The total disturbance acreage includes the development of access roads, stormwater management ponds, maintenance facilities, leachate conveyance and storage facilities, and other landfill support facilities. Approximately 421 acres of land north and south of CR 20 will serve as buffer area to separate waste disposal activities from adjacent properties. No development is proposed for these parcels as part of this project, except perhaps as future mitigation areas for wetland impacts, for example. All properties located within the proposed expansion area boundary may be purchased by the Authority, pending negotiations between the landowners and the Authority. The proposed expansion area is shown on Figure 1.3.

1.6 County of Franklin Solid Waste Management Authority Regional Landfill

1.6.1 CFSWMA Landfill Siting Process

In the original CFSWMA Solid Waste Management Plan, dated 1991, various options for solid waste management and disposal were evaluated. These options included waste reduction, recycle/reuse, waste-to-energy facilities, and landfilling. The long-term disposal method selected by CFSWMA was landfilling. This method was selected based on the relatively low waste generation rate for the County of Franklin, New York State's policy that favors regional solid waste disposal (as stated in the New York State Solid Waste Management Plan), and based on

landfilling having a substantial cost advantage when compared to the waste-to-energy option. The CFSWMA landfill was sited and permitted in conformance with 6 NYCRR Part 360 Regulations for the siting and construction of municipal solid waste landfills.

The factors considered by the Authority in selecting the proposed landfill expansion area, including a summary of the original landfill siting process that led to the development of the Authority's currently operational landfill, are set forth in Section 8.2.3 of this DEIS.

1.6.2 Existing Landfill Facilities

The CFSWMA Regional Landfill is located on an approximately 205 acres site in the Towns of Constable and Westville, Franklin County, New York. The access road to the site is located on County Route 20. The landfill was sited in accordance with 6 NYCRR Part 360 rules and regulations. The original municipal solid waste landfill footprint was designed with four (4) cells totaling an area of approximately 20 acres (Cell 1:4.8 acres, Cell 2: 5.5 acres, Cell 3: 5.1 acres, and Cell 4: 5.0 acres). Cell 1 was constructed in 1993 and opened on May 31, 1994, the opening day of the landfill site. This cell was filled to capacity in 1998. Cell 2 was constructed in 1998 and Cell 3 was constructed in 2003. As of September 2008, solid waste is currently being deposited in Cell 3. The construction of Cell 4 started earlier this year, 2008, and is projected to be completed by the end of the year. As of September 2008, at the current maximum annual permitted disposal rate of 125,000 tons per year of

municipal solid waste, the remaining site life available at the landfill, using the remaining areas of Cells 2, 3, and all of Cell 4, was estimated at 6.4 years.

Landfill Cells 1, 2, and 3 were all constructed using a double composite liner system, as is Cell 4, which is currently under construction. These cells were previously described and approved as a result of the initial landfill design and the 1992 CFSWMA Landfill SEQR and permitting applications. Prior to construction of each landfill cell, NYSDEC approval of the final construction documents was obtained. The Authority has an existing NYSDEC Part 360 permit (No. 5-1699-00003/00005), which includes the disposal capacity remaining in Cells 2, 3, and 4. Usage of Cell 1 was removed from the Authority's Part 360 permit in January 2003 since the final geomembrane capping system was constructed over Cell 1 in 2002. The NYSDEC permit authorizes the Authority to receive and dispose of up to 125,000 tons per year of mixed municipal solid waste. Table 1 shows annual waste tonnages disposed of at the landfill from its inception in 1994 to June 2008.

Table 1
Annual Waste Tonnages Disposed of at the CFSWMA Landfill

	Municipal Solid Waste	Construction & Demolition Debris*	Asbestos	Sludge*
1994 (6 months)	10,681	820	3	693
1995	26,882	5,274	7	3,228
1996	25,026	6,475	15	1,226
1997	26,985	5,155	27	7,048
1998	23,591	7,998	11	1,246
1999	18,442	5,229	1	1,111
2000	37,428	7,383	0	2,790
2001	31,523	12,447	4	4,945
2002	36,582	9,972	0	6,179
2003	37,112	10,364	50	2,304
2004	37,515	10,109	1	2,623
2005	33,323	9,682	10	5,168
2006	32,832	9,343	22	6,632
2007	34,909	8,756	116	8,949
2008 (6 months)	19,830	4,002	33	4,336
Totals:	**432,661**	**113,009**	**300**	**58,478**

* Portions of the construction and demolition debris and sludges accepted at the landfill have been utilized as alternate cover material.

Packed solid waste transfer trailers or trucks arrive at the landfill and are weighed in at the truck scale, located in the interior of the landfill site contiguous to the landfill office. After being weighed, the waste trailers or trucks proceed on the facility access roads to the lined landfill working cell area where they unload. Typical landfill operating equipment is used for the management of the waste at this point, including dozers and compactors.

The Authority's three (3) major transfer stations are located in the Villages of Tupper Lake and Malone, and in the Hamlet of Lake Clear. All three (3) of these facilities accept solid waste, construction and demolition debris, and recyclable material from residential and commercial customers. A fourth facility is a satellite collection site that is located in Saint Regis Falls (Town of Waverly). This satellite location accepts municipal solid waste and recyclables and operates on Saturdays. MSW and recyclables are primarily separated at the source and brought to these transfer stations by residents and haulers. The materials are then further inspected and sorted at each facility. MSW is loaded into Authority-owned containers and transported in bulk volumes by Authority-owned vehicles to the regional landfill for disposal. Table 2 shows the total annual tonnages of solid waste and recyclables cumulatively collected at all four (4) of the Authority's transfer stations located within the County of Franklin. Figure 1.5 is a County-based map that depicts the locations of the regional landfill and all four (4) transfer stations.

Table 2
Total Recyclables and Wastes Collected at the Four CFSWMA Transfer Stations

	Recyclables (tons)	Municipal Solid Waste (tons)	Construction and Demolition Debris (tons)
1994 (6 months)	539	3,732	221
1995	774	11,927	622
1996	947	10,063	1,199
1997	1,016	12,202	1,963
1998	973	14,869	2,459
1999	764	13,019	4,446
2000	802	12,021	4,197
2001	1,380	12,297	6,008
2002	1,458	13,656	7,129
2003	1,568	12,387	7,056
2004	1,430	14,290	6,716
2005	1,542	15,402	7,205
2006	1,361	14,458	6,844
2007	1,252	13,628	5,749
2008 (6 months)	839	6,708	2,760
Totals:	**16,645**	**180,659**	**64,574**

In addition to waste that originates within the County of Franklin, solid waste and beneficial use materials (such as petroleum contaminated soils that can be used as alternate daily cover materials at the landfill) have been accepted in recent years from sources located in Essex County, Clinton County, St. Lawrence County, Jefferson County, Washington County, and Ontario Canada. The solid waste hauled from Canada originates from Cornwall Island and the other portions of the Mohawk Reservation located in the Province of Quebec.

The CFSWMA Landfill historically and currently accepts out-of-County wastes from Essex County and other sources, as noted above. The NYSDEC approved (May 2006) the proposed modification of the County of Franklin Solid Waste Management Plan, which explicitly incorporated the acceptance of waste from out-of-County sources. Provisions for the acceptance of out-of-County waste are also included in the County of Franklin's 1992 Local Law. In pursuing waste from out-of-County sources, however, the Authority cooperates with other solid waste management planning units and takes all reasonable measures to help ensure that such waste importation does not adversely impact other planning units' NYSDEC approved solid waste management plans.

1.6.2.1 Liner System

Landfill Cells 1, 2, and 3 were all constructed with a NYSDEC approved double composite liner system, as is Cell 4, which is currently under construction. In general, the existing double composite liner system consists of two separate composite liner systems, one constructed above the other. Each composite liner system consists of a leachate collection and removal system underlain by a composite of low permeability soil or geosynthetic clay liner, and high-density polyethylene geomembrane.

The following is a general description of the double composite liner system for each of the existing four cells. The lower, or secondary, liner system consists of a bottom 2.0-foot thick clay liner with an overlying 60 mil (0.060 inch) high-density polyethylene (HDPE) geomembrane. The secondary leachate

collection system is constructed over the secondary liner system and consists of a geosynthetic composite geonet (Cells 1 & 2) or granular soil drainage layer (Cells 3 & 4) with perforated collection pipes. The upper, or primary, liner system for each existing cell consists of a geosynthetic clay liner with an overlying 60 mil HDPE geomembrane. Over the upper composite liner system is a primary leachate collection system which consists of a 2.0-foot thick granular soil drainage layer with perforated collection pipes.

The liner systems of the existing Cells 1, 2 and 3 are sloped to low points where the perforated leachate collection pipes collect the leachate and convey the leachate via gravity to leachate transfer structures or pump stations. Cells 1 and 2 convey leachate to both the north and south sides of the landfill to two different pump stations (LP1 – North, LP2 – South) while Cell 3 collects and conveys leachate to the north side of the landfill to LP1. Cell 4 has been designed and is currently being constructed to convey leachate to the south side of the landfill where the leachate will be pumped from the cell via a sideriser pump station and conveyed to LP1. Both of the existing pump stations (LP1 and LP2) are dual contained and pump the collected leachate to the leachate storage tank via dual contained force main. For maintenance and capacity reasons, both pump stations underwent major pump and piping upgrades in 2003 as part of the Cell 3 construction project.

All leachate transfer piping outside of the double composite lined landfill is constructed from double-walled pipe. The double-walled pipe configuration allows for detection if a leak occurs in the main inner pipe.

A pore water drainage system is constructed below the double composite liner system of the existing landfill to remove any groundwater which might come in contact with the lower liner system. The pore water drainage system consists of composite geonet and granular soil drainage trenches with perforated collection pipes. The collection pipes convey the collected groundwater into pump stations for final discharge into the surrounding surface waters. In the unlikely event that the primary and secondary liner systems fail and that leachate contamination of the collected groundwater is detected during landfill operation, such groundwater can be contained and transferred into the leachate collection system. This has not been necessary to date.

The CFSWMA landfill has an extensive liner system monitoring network to meter the secondary leachate collection system flow rates for each cell area. The existing liner systems maintain secondary flow rates well below the 20 gallons per acre per day maximum required by 6 NYCRR Part 360, based on a 30 day average. Based on 2007 data, the overall landfill primary liner system efficiency was 99.8 percent (%). This means that 99.8 percent of all leachate generated in 2007 was collected by the primary (upper) leachate collection system, with the remaining 0.2

percent of the landfill leachate collected by the secondary (lower) leachate collection system. Laboratory analytical data also indicates that the water collected in pore water drainage layer beneath the landfill is not impacted by landfill leachate.

1.6.2.2 Leachate Storage, Treatment, and Disposal

Existing pump stations LP1 and LP2 pump collected leachate to the existing leachate storage tank via double walled piping. The existing leachate storage facility consists of one glass-lined steel tank with a total capacity of 1,100,000 gallons with the capability of adding a second tank of the same size. The existing secondary containment for the storage tank consists of a 60 mil geomembrane lined berm with protective soil cover capable of handling 110% capacity of the storage tank in accordance with 6 NYCRR Part 360 regulations. Leachate is removed from the leachate storage tank and pumped into tanker trucks. The tanker trucks haul the leachate primarily to the Village of Malone Wastewater Treatment Plant for final treatment and disposal. The Authority also maintains one backup disposal site for leachate, the City of Plattsburgh Wastewater Treatment Plant. Both facilities have shown adequate capacity and processes to properly treat the landfill leachate prior to discharge from the plant. Each treatment facility is required to meet strict discharge standards enforced by the NYSDEC.

1.6.2.3 Landfill Gas System

The two methods typically used to collect the landfill gas (LFG) from landfills are vertical extraction wells and horizontal collection trenches. The objective with either collection method is to optimize the gas extraction under vacuum from a reasonably large area of influence, without air infiltration. The CFSWMA landfill currently operates an active landfill gas collection system which utilizes both collection methods.

The existing LFG collection system's main components include vertical extraction wells located in Cell No. 1 and Cell No. 2, horizontal trenches in both Cell No. 1 and Cell No. 2 and primary leachate collection cleanout connections in Cell No. 1 and Cell No. 2. During waste placement in Cell No. 3, vertical and horizontal wells have been installed to collect gas. The vertical extraction wells in Cell No. 3 are typically 20 to 25 feet deep and consist of polyethylene pipe bedded in stone. Typical spacing between horizontal trenches in Cell 3 is 10 feet vertical and 75 feet horizontal. The leachate collection system cleanouts of Cell No. 3 are also connected to the gas collection system. The gas collection system components for Cells 1, 2 and 3 are connected by a series of main collection piping which conveys the gas to the blower skid and burner.

The design of the Cell No. 4 liner system, which is currently under construction, incorporates a perimeter gas collection pipe in the primary leachate collection layer. This piping will be placed into service once enough waste is installed over the pipe to limit air intrusion. The Authority will install vertical extraction wells and

horizontal collection wells, connect the leachate collection piping cleanouts and install main collection piping to convey the gas collected from Cell No. 4 to the blower skid and flare.

The LFG blower skid and burner is located on the north side of Cell No. 2. The current blower skid consists of a condensate knockout and two 5-hp blowers. The blowers run simultaneously to maintain a negative pressure on the system. The negative pressure of the LFG blowers conveys the LFG from the extraction points through the interconnecting piping network and onto the burner for final combustion.

The current LFG system has been providing sufficient landfill gas management for the site. Future modifications to the blower skid and flare are anticipated to maintain adequate LFG management for the existing permitted landfill. These modifications include a blower and/or burner upgrades. Blower upgrades would require an upgrade to three phase power at the site.

1.6.2.4 Recycling Programs and Facilities

Recycling, composting, and waste reduction programs implemented by the Authority have significantly reduced the amount of solid waste requiring disposal. Since the landfill opened on May 31, 1994, the Authority's recycling program has processed over 20,000 tons of recycled materials that have been delivered to facilities which manufacture new products. The following recyclable materials are currently included in the Authority's recycling

program: corrugated containers, commingled newspaper, magazines, boxboard, junk mail, office paper, telephone books, clear and colored glass containers, natural and colored high density polyethylene and polyethylene terephthalate plastic bottles, aluminum cans and foil products, mixed scrap metal, waste tires, and lead acid batteries. Other recycling services provided at the three main transfer stations (Malone, Lake Clear, and Tupper Lake) include brush chipping, yard waste composting, and refrigerant recovery and appliance recycling. Wood chips and compost are provided free to the public. Tires, metal, and batteries are accepted at the drop-off area at the Authority's Landfill site for storage until sufficient quantities are available for trucking to recycling markets.

The Authority also sponsors household hazardous waste collection days at the landfill site, or at one of the southern transfer stations, for County residents. These events provide for the environmentally sound disposal or recycling of: oil and latex paints/thinners/strippers, chemistry sets, photography and pool chemicals, motor oil, gasoline, kerosene, solvents, degreasers, cleaners, glues, sealants, pesticides, herbicides, fertilizers, household batteries, antifreeze, and oil filters. The previously referenced Table 2 (Section 1.6.2) lists the total amount of recyclables, in tons, cumulatively collected each year from Authority's four transfer stations. Table 3 lists the annual tons of recyclables collected at the landfill site's drop-off area from 1994 to the present. Table 4 shows the amounts of household hazardous waste collected by the Authority during scheduled Household Hazardous Waste Collection Days.

Table 3 **Total Tons of Recyclables Accepted at Landfill Drop-off Area Each Year**	
1994 (6 months)	N/A
1995	139
1996	152
1997	112
1998	78
1999	88
2000	104
2001	241
2002	54
2003	198
2004	130
2005	99
2006	48
2007	69
2008 (6 months)	72
Total:	**1584**

Table 4 **Household Hazardous Waste (HHW) Collection Details**				
	June 2004 Landfill	**June 2005 Lake Clear**	**Aug 2007 Landfill**	**July 2008 Lake Clear**
Antifreeze (gals.)	0	110	100	50
Automotive Batteries (no.)	0	0	0	0
Latex Paint (gals.)	700	540	764	1408
Pesticides (solids) (lbs.)	150	200	400	80
Fluorescent Bulbs (lbs.)	15	30	400	60
Mercury Containing Devices/Waste (lbs.)	3	5	1	10
Other HHW (lbs.)	1500	2460	903	486
Cathode Ray Tubes (lbs.)	500	1000	3900	2500
Used Oil (gals.)	40	30	0	0
Household Batteries (lbs.)	15	15	5	93
Oil Base Paint (gals.)	1500	540	1100	1304
Pesticides (liquid) (gals.)	20	25	60	100
Asbestos (lbs.)	2	1600 (tiles)	0	0
Bulk Mercury (liquid) (lbs.)	0	0	0	5
Other HHW (liquids) (gals.)	650	118	110	310
Total Drums/Containers	43	39	74	68

Even with such recycling programs in place, there remains a portion of the waste stream that requires disposal. Based on 2007 data, Franklin County's recycling rate is currently estimated to be at six percent (6%). The balance of the waste stream, approximately 94 percent (%), remains for disposal at the CFSWMA Landfill.

1.6.2.5 Permit History

After an extensive investigation of alternative sites, a thorough NYSDEC permit review process and facility design, the CFSMWA Regional Landfill received its initial 6 NYCRR Part 360 permit to construct and operate in 1993. Since that time, the facility has obtained some modifications to its Part 360 landfill permit, most recently in 2006. The 2006 permit modification provided the Authority with an increase in approved waste tonnage levels, increasing the allowable municipal solid waste receipts from 43,500 tons per year to 125,000 tons per year, excluding alternate cover materials.

1.7 Solid Waste Management Plan

1.7.1 Consistency with Local Solid Waste Management Plan

The County of Franklin Solid Waste Management Authority established its first long-term solid waste management plan in 1991. This document was drafted in order to comply with the New York State Solid Waste Management Act of 1988, which called for solid waste planning at the local and regional levels. The Authority's Solid Waste Management Plan (SWMP) examines the state of solid waste management within Franklin County, establishes goals and objectives, identified problems and

barriers, and outlines strategies for achieving the established goals. This Plan serves as the basis for solid waste management planning and decision making until its expiration date (originally 2010, but extended to 2020 per the SWMP update approved in 2006). The 2006 updates and modifications to the 1991 SWMP included the following:

- an increase in the annual permitted disposal tonnage at the Authority's Landfill to the currently permitted amount of 125,000 tons per year of waste;
- the option of utilizing flow control legislation; the acceptance of out-of-County waste under certain circumstances;
- a long-term landfill expansion; the extension of the planning period from the year 2010 to 2020; and
- a contingency plan to be implemented if the existing permitted landfill space becomes filled prior to having new landfill disposal capacity permitted and constructed.

1.7.2 Consistency with State Solid Waste Management Plan

The New York State Solid Waste Management Plan (State Plan) emphasizes the State's solid waste management hierarchy, which places a priority on waste reduction and recycling followed by energy recovery from waste, where feasible, with landfilling for the remaining waste materials. The State Plan recognizes the primacy of local planning units in the development of local solid waste management plans, which are reviewed by the NYSDEC to ensure consistency with State solid waste management policies that are embodied in the State Plan. The Authority's

local solid waste management plan was initially approved by the NYSDEC in 1991 and it was updated, modified and extended in 2006 as noted in Section 1.7.1, above. The proposed landfill expansion is explicitly included as an integral component of the Authority's updated Local Comprehensive Solid Waste Management Plan. The Authority's proposed landfill expansion is, therefore, consistent with the State Plan.

1.8 Waste Quantities and Acceptable Wastes for Disposal

The County of Franklin Solid Waste Management Authority Landfill is the only active landfill for mixed municipal solid wastes in Franklin County. The landfill accepts the wastes collected at the Tupper Lake, Malone, Lake Clear, and Saint Regis Falls Transfer Stations, as well as wastes delivered directly to the site. Recycling facilities are located at each of the transfer stations. Starting in October 1994, the CFSWMA Landfill accepted out-of-County waste from surrounding Counties, particularly Essex County, which is located entirely within the Adirondack Park Boundary; an area prohibited from landfill construction. Aside from the Counties of Franklin and Essex, materials have also been received and disposed of at the CFSWMA landfill from the following areas: St. Lawrence County, Jefferson County, Washington County, Clinton County, Quebec and Ontario, Canada.

The landfill accepts mixed municipal solid waste (MSW) generated by residents, institutions, and commercial entities. It also accepts selected industrial wastes, sludge, ash, asbestos, petroleum contaminated soils, and construction and demolition (C&D) debris. Alternate daily cover materials, in the form of materials which have been assigned a "beneficial use determination" (BUD) by the NYSDEC, such as petroleum contaminated soils, are used at the landfill as a cost-saving and revenue-generating measure.

The landfill does not accept septic tank pumpings, radioactive wastes, liquid wastes (<20% solids), junked vehicles, hot ashes, regulated hazardous waste, tires, separated recyclable materials, untreated regulated medical waste, vehicle batteries, waste oils, scrap metal, sealed containers, explosives, large dead animals, and pesticides and other chemicals. At the current maximum annual permitted disposal rate of 125,000 tons per year of municipal solid waste, it is estimated that the existing CFSWMA Landfill, Cells 1 through 4, will be out of disposal capacity as early as 2014, depending on actual waste density and waste quantities received.

2.0 Proposed Facility Design, Construction, Operation, Closure and Post-Closure Plans

Figure 1.3 shows the overall site development plan which illustrates the proposed layout of the expansion area and support facilities. The waste disposal areas, also known as cells, will be constructed in stages. New cells will be built every few years as needed to provide additional landfill capacity for wastes requiring disposal. Waste disposal areas will be constructed with liner and leachate collection systems. Support facilities will include roadways, leachate pump stations, leachate storage tanks and manholes. The following sections provide a summary of the proposed facility design, construction and operation procedures, closure plan and post-closure plan.

2.1 Site Capacity and Expected Site Life

Fifteen (15) cells totaling approximately 142 acres are being proposed for the overall landfill expansion. The total capacity of the expansion area (Cells 5 though 15) is approximately 19,100,000 cubic yards. At the currently approved maximum waste acceptance rate of 125,000 tons per year, an average overall landfill density of 0.9 tons per cubic yard, and an additional 45% cover soil/alternate cover material by weight, the anticipated landfill expansion (Cells 5 through 15) life is approximately 95 years.

The landfill expansion will not be constructed all at once. Instead, the waste disposal areas, or cells, will be constructed every few years as needed to provide additional landfill capacity. The first stage of the development is anticipated to be cells 5, 6 and 7, as shown on Figure 1.2. The total area of these

cells is approximately 22 acres with a total capacity of approximately 2,371,000 cubic yards. At the same parameters described above, the anticipated life expectancy of the first stage is estimated to be 12 years.

The anticipated site life of the landfill expansion may vary from the estimates above based on the actual waste quantities received at the facility. As noted in Section 1.1, there are no plans to increase the existing annual permitted tonnage limit (i.e., 125,000 tons per year of mixed municipal solid wastes) as part of this proposed landfill expansion.

2.2 Proposed Facility Design and Layout

2.2.1 Conceptual Nature of Proposed Facility Design and Layout

The proposed facility design and layout described in this DEIS is preliminary and conceptual in nature. This preliminary conceptual design will be further refined in the future, as the phased build-out of the proposed landfill expansion progresses.

2.2.2 Buildings and Roads

Existing site structures include a scale house / landfill office, a shop area/maintenance building, and a leachate storage facility. There are also various site manholes and pump stations located on the existing site.

As part of the expansion, 11 additional leachate side riser pump stations are planned to be built to provide for leachate management. In addition, it is anticipated that three (3) additional main pump stations will be required as common leachate collection locations prior to pumping the leachate into the storage system.

It is anticipated that the second leachate storage tank previously permitted for the facility will be added to the existing storage facility located east of the scale house. In addition, it is anticipated that a second leachate storage facility will be necessary on the south side of the landfill expansion area.

The existing paved site access road and scale house will be utilized for main access and access control to the expansion area. A new gravel perimeter road has been conceptually designed for the expansion area. The perimeter road will provide access to the perimeter of the landfill and will be utilized by haulers, operational equipment and operating personnel vehicles. The perimeter road will be extended as needed as part of the phased landfill development.

Access to the landfill waste mass will be achieved by a series of temporary access roads over the landfill containment berm. The roadways may be left in-place or removed when they are no longer necessary. A permanent access road on the landfill was not incorporated into the final grading plan. The Authority may choose to design and construct a permanent access road on the landfill at some point in the future.

2.2.3 Landfill Liner and Leachate Collection System

Water percolating down from the landfill surface will create leachate as it comes into contact with and passes through the waste that has been disposed. The leachate will be contained within the leachate collection and removal system, which will be constructed as an integral component

of two separate composite liner systems, one constructed above the other. Each liner system consists of a leachate collection and removal system underlain by a composite of low permeability soil or geosynthetic clay liner, and high-density polyethylene geomembrane. The leachate collection and removal system directs the flow of leachate to the leachate storage system.

Figure 2.1 shows a cross section of the landfill bottom liner system. The proposed expansion liner system will be compliant with 6 NYCRR Part 360 regulations and will be similar to the liner system currently being constructed for Cell No. 4. The lower, or secondary, liner system will consist of a bottom 2.0-foot thick clay liner with an overlying 60 mil (0.060 inch) high-density polyethylene (HDPE) geomembrane. The secondary leachate collection system will be constructed over the secondary liner system and will consist of a granular soil drainage layer with perforated collection pipes. The upper, or primary, liner system will consist of a geosynthetic clay liner with an overlying 60 mil HDPE geomembrane. Over the upper composite liner system will be a primary leachate collection system which will consist of a 2.0-foot thick granular soil drainage layer with perforated collection pipes.

As part of the anticipated first phase of development (Cells 5, 6 and 7), the liner system of Cell No. 5 will be tied into the existing liner system of Cell No. 1. The tie-in will be completed in similar fashion to the process in which landfill cells are currently joined together when a new cell development is constructed (similar to joining existing Cell No. 3 to Cell No. 4). The cover soils will be excavated to expose the different layers of the liner system to allow for a direct connection between the geosynthetics

and soil layers resulting in a continuous double composite liner system beneath the waste disposal area. Construction of the tie-in in this fashion will allow for waste placement in Cell No. 5 to overlay onto the waste mass of Cells No. 1 and No. 2, forming a continuous waste mass. The final cover system (capping system) currently present on Cell No. 1 will be removed in the overlay area to allow for the waste masses to be joined. The closure of the overlay area will be completed as part of the first phase of closure in the expansion area.

Upon completion of construction, the landfill liner system within each landfill cell will resemble the shape of a valley. The sloped sides of the liner system will facilitate leachate flow towards the low end of the cell where the leachate will be collected in a sump and pumped from the cell using a side riser pumping station. The side riser pump stations will be located along the perimeter road of the landfill footprint. After being metered in the side riser pump stations, the leachate will be conveyed by gravity to a main pump station which will in turn transfer the leachate to the leachate storage system. All leachate transfer piping from the cells to the leachate storage system will be constructed from double-walled pipe. The double-walled pipe configuration will allow for detection if a leak occurs in the main inner pipe. Figure 2.2 outlines the proposed locations of the side riser pump stations, main pump stations, and leachate piping.

A pore water drainage system will be constructed below the double composite liner system to remove any groundwater which might come in contact with the lower liner system. The pore water drainage system will consist of composite geonet and granular soil drainage trenches with perforated collection pipes. The collection pipes will convey the collected

groundwater to the low end of the cells where the groundwater will be pumped out via the side riser pump stations for final discharge into the surrounding surface waters. A separate pumping system from the leachate system is utilized for the pore water system. In the unlikely event that the primary and secondary liner systems fail and that leachate contamination of the collected groundwater is detected during landfill operation, such groundwater will be contained and transferred into the leachate collection system.

2.2.4 Leachate Storage, Treatment, and Disposal

The leachate storage system will consist of glass lined steel tanks. The existing 1,100,000 million gallon storage tank will continue to be utilized. A second 1,100,000 million gallon storage tank will be added to the existing storage area when warranted by leachate generation and storage requirements. It is currently anticipated that this second leachate storage tank will be built prior to the development of Cell 8A of the expansion. Another location for additional leachate storage facilities will be added in the future on the south side of the expansion area as new landfill cells are built. The second leachate storage area location will be constructed similar to the existing leachate storage area and will ultimately consist of two – 1,100,000 million gallon glass lined steel tanks with a geomembrane lined secondary containment area.

The leachate tanks will temporarily store leachate prior to disposal via truck hauling to a permitted wastewater treatment plant for final treatment and disposal. As with current operations, the primary disposal facility for the leachate will be the Village of Malone Wastewater

Treatment Plant. The Authority also maintains one backup disposal site for leachate, the City of Plattsburgh Wastewater Treatment Plant. Both facilities have adequate capacity and processes to properly treat the landfill leachate prior to discharge from the plant. Each treatment facility is required to meet strict discharge standards regulated by the NYSDEC.

Figure 2.3 presents a flow diagram of how leachate will be managed at the site.

2.2.5 Liner System Performance

The NYSDEC 6 NYCRR Part 360 regulations that govern siting, construction, operation and closure of the proposed landfill are designed to provide the maximum protection to the environment including groundwater and surface water resources. The installation of a double composite landfill liner system over relatively low permeability soils, coupled with a leachate collection and containment system, and an extensive network of groundwater monitoring wells, will ensure protection of groundwater resources.

Currently there are 27 double lined landfills with leak detection operating in New York State. Some of these double lined landfills have been operating for over 15 years. NYSDEC's review of on-site groundwater monitoring wells and liner system performance data at 18 of these facilities indicate that no groundwater impacts have been attributed to liner system leakage from a double-lined landfill (Phaneuf & Becker, 2001).

For the expansion area, the leachate collection system for each cell area will be equipped with metering systems to monitor secondary flow rates and primary liner system performance. Monitoring results will be provided to the NYSDEC in accordance with 6 NYCRR Part 360. Primary liner system efficiencies are anticipated to be similar to existing landfill cells at the site, all of which are operating well below the 20 gallons per acre per day maximum required by 6 NYCRR Part 360, based on a 30 day average (see Section 1.6.2.1, above).

In addition, NYSDEC Part 360 regulations require the Authority to provide financial assurance to maintain and monitor the integrity of the landfill for a minimum of thirty (30) years after closure of the landfill. The Authority currently implements and will continue to implement a comprehensive environmental monitoring program for the current landfill as well as the proposed expansion. The Environmental Monitoring Plan (EMP) will further ensure environmental protection.

2.2.6 Landfill Gas System

An active landfill gas (LFG) collection system will be installed in the expansion area. The expansion area gas collection system will be similar to the LFG system installed in the existing landfill. The LFG collection system will be designed with a series of horizontal collection trenches and vertical extraction wells.

The horizontal collection trenches will be constructed utilizing perforated piping encapsulated in a stone lined trench. The trench dimensions will be approximately 3 feet wide by 3 feet deep. The

perforated pipe will transition to solid pipe prior to penetrating the side slope of the landfill. Typical spacing between trenches will be 10-30 feet vertically and 75-100 feet horizontally. The horizontal collection trenches will be installed by Authority staff during waste placement operations and placed into operation as soon as adequate waste cover is installed over the trenches to prevent air infiltration.

On the top of the landfill (slopes 4% min.), the gas will be collected by vertical gas extraction wells installed to a depth sufficient to penetrate a minimum of ¾ the depth of waste. Wells will be either installed by Authority staff during waste placement and extended during waste placement or drilled by a contractor upon final waste placement. The typical vertical extraction well will be approximate 3-ft in diameter and contain a perforated piping backfilled with stone. The vertical well piping will either be extended through the surface of the landfill or connected to horizontal collectors below the landfill surface.

This active LFG collection system will include buried laterals tied into a network of header pipes which are under vacuum. Collected LFG will be flared or utilized as an alternative energy source.

2.3 Landfill Construction

2.3.1 Landfill Development

Figure 2.4 outlines each of the proposed waste disposal areas (cells). There are a total of 15 cells planned for construction over the life of the landfill expansion area, totaling an area of approximately 142 acres.

The cells are numbered in the order in which they are expected to be constructed and filled, however these may vary depending on final regulatory approvals.

The initial permitting phase will consist of Cell Nos. 5, 6 and 7. Initial construction will prepare Cell No. 5 and all necessary support facilities, including but not limited to the Cell No. 5 side riser pump station, a new main pump station to convey collected leachate from the expansion to the existing leachate storage tank, as well as necessary roadways and piping. Construction of Cell No. 5 is anticipated in the year 2013. From time to time in the future it will be necessary to construct an additional cell as each landfill disposal area becomes filled. Timeframes for construction of additional cells will depend on waste quantities actually received at the facility.

The initial construction of the support facilities and Cells No. 5 will be accomplished by seeking competitive bids or proposals for the work. Subsequent cell extensions could be accomplished by competitively procured contractors or undertaken by landfill staff, or by some combination of contractors and landfill staff. The construction of a landfill is a substantial undertaking requiring several different types of construction equipment. The construction workers will use bulldozers, front-end bucket loaders, dump trucks, scrapers, graders, hydraulic excavators, rollers and other heavy construction equipment to accomplish the work. Initial construction is anticipated to take one or two construction seasons to complete, depending on weather conditions experienced during construction.

2.3.2 Quality Assurance/Quality Control

The double composite liner systems are installed under constant inspection by trained quality control representatives. The inspection is backed up by verification tests for the soil liners, drainage media, geosynthetic materials and the seams of the synthetic geomembranes. The permit applications submitted to the NYSDEC at various phases of the landfill expansion's build-out will contain a detailed discussion of the quality assurance and quality control procedures to be employed, including construction specifications.

In addition to the required testing outlined in 6 NYCRR Part 360, the Authority specified that electrical resistivity testing be performed on the primary liner system for Cell No. 3 and Cell No. 4 as part of construction. This state of the art geomembrane integrity test is capable of finding minute defects in the liner systems and has proven to be very effective. Electrical resistivity testing will be implemented on the expansion area primary liner system.

A construction certification report is compiled for each landfill development project which summarizes construction activities and the testing results. The construction certification reports are submitted to the NYSDEC for review and approval prior to any waste placement in a newly constructed landfill cell. Permit applications submitted to the NYSDEC will contain a detailed discussion of the quality assurance and quality control procedures to be employed, including construction specifications.

2.3.3 Soil Management

On-site soil will be utilized during subgrade and landfill liner construction, operational cover soil application and final cover system construction. Where possible, the soil will be removed from proposed future landfill cell extension areas in an effort to bring such areas to their proposed subgrade elevations prior to cell construction. It will be necessary to segregate on-site borrow as topsoil, soils for liner and final cover construction and operational cover soil. The topsoil will be stockpiled for future use in final capping and other applications. The finer grained material will be used in the landfill liner system construction, final capping or operations, if necessary. Coarser grained material will be stockpiled for use in operational cover soil applications or in construction of roadways or embankments.

There are adequate quantities of soils on-site within the proposed expansion area for use in subgrade construction, perimeter berm and roadway construction and operational soil. Additional borrow areas outside the proposed landfill footprint are not anticipated. Below is the estimated general soil balance for the project:

I. Total Excavation: 4,230,000 cubic yards.
II. Soil Utilization:
    a. Liner Construction (berms, roads, ponds, liner): 853,000 cubic yards.
    b. Landfill Operations (cover excluding alternate cover): 1,910,000 cubic yards.

c. Landfill Closure: 581,000 cubic yards.
Total Soil Utilization: 3,344,000 cubic yards.

III. Soil Balance: 886,000 cubic yards excess.

Some soils for construction will be hauled into the facility from off-site, similar to previous and current construction projects at the site. Anticipated soils to be brought in from off-site for construction include secondary soil liner and granular drainage soils such as stone and sand.

Clearing and grubbing of the existing vegetation will be performed in advance of the landfill only as required, in an effort to minimize erosion. Siltation and erosion control measures will be provided down-slope of the fill and borrow areas by stone-lined ditches, sediment traps, stormwater ponds and aggressive reseeding of disturbed areas as soon as practicable. Temporary erosion control methods such as silt fences, stone check dams and hay bales will also be used to control any particular erosion problem areas that occur during operation and construction.

2.4 Landfill Operation

2.4.1 Hours of Operation and Site Access

The hours of operation for the expansion will be the same as the current facility. Normal waste receiving hours for the landfill operation will be from 7:30 a.m. to 3:30 p.m., Monday through Friday and 7:30 a.m. to 3:30 p.m. on Saturday. Fencing with a gate will be located on the access road, near County Road 20, to prevent access when the landfill is closed.

Changes in the operating schedule might occasionally be needed on an emergency basis during the winter, if severe weather has disrupted normal operating procedures.

All vehicles hauling wastes to the landfill will be required to have their loads properly covered. In addition, the Authority will enforce all applicable NYSDEC Part 364 waste transporter permit requirements. Trucks hauling waste to the site will turn onto the site entrance road from County Road 20 and then proceed to the scale house/office building.

All vehicles will be weighed both ways, upon arrival and departure, unless a consistent tare weight has been established. If a consistent tare weight has been established for a particular vehicle, only the incoming weight will be recorded.

Traffic will then move past the scale to the perimeter road where signs will direct the vehicles to a temporary access point on the active landfill face. A landfill staff employee will direct each load to a specific location to unload. After unloading, the trucks will return to the scale house to be weighed, have their outgoing weight recorded, and receive a weight receipt prior to exiting through the main gate.

2.4.2 Waste Inspections

The waste inspection procedures currently used at the existing CFSWMA Landfill will be used for the expansion. These procedures are described in the following paragraph.

Facility personnel are trained in waste screening and what wastes are prohibited at the landfill. In the event that unauthorized wastes are observed by solid waste facility personnel while wastes are being unloaded, the driver of the vehicle delivering the waste is notified of the situation and required to remove the waste. If unauthorized wastes are discovered after delivery, and the hauler of the waste cannot be identified, solid waste facility personnel segregate the unauthorized wastes from the remainder of the waste stream and arrange for an authorized disposal firm to transport and properly dispose of the unauthorized waste. Repeat offenses are cause for barring individuals from using the landfill facility. If any unauthorized wastes are suspected of being hazardous, the NYSDEC will be immediately notified. A record of each incident, which identifies the type and final disposition of the unauthorized waste, is recorded and submitted with the facility's annual report to the NYSDEC.

In addition to the constant waste screening during typical operations, random waste inspections at the landfill will be conducted once weekly, or more frequently at the discretion of the landfill supervisor. During the waste inspection, a truck will be selected at random and spot checked by unloading the wastes while pulling the truck ahead to create a thinner layer of waste. The wastes will be visually inspected for the presence of unauthorized wastes. Any unauthorized wastes will be returned to the vehicle and in the event illegal activity was involved, the NYSDEC will be notified.

Records will be kept as to daily, weekly, monthly and yearly tonnage totals with waste type recorded for each incoming truck. Waste inspections will be recorded on special forms and with photographs, if necessary. This information will be summarized and included in the facility's annual report to the NYSDEC.

2.4.3 Waste Placement

The initial lift of waste overlying the landfill liner system will consist of materials which do not have the potential to pierce the liner system. The initial lift of waste will be visually inspected to insure that potentially damaging materials (such as pipe, timbers, and large metal items) are removed prior to disposal. The completed first lift will be approximately 5 to 10 feet thick with compaction only on the top portion of the lift.

Typically, wastes placed above the first lift will be spread and compacted in 2-foot thick layers using a steel wheel compactor to spread and compact the waste. Using a maximum thickness of 2 feet will allow for a high degree of compaction. Compaction will be performed on the top of each lift as well as the sloped face of each lift.

On-site borrow soil or an approved alternative cover material will be used for daily and intermediate cover soil applications. Daily cover of 6 inch thickness will be applied to the operating landfill face at the end of each workday. Intermediate cover of 1-foot thickness will be applied to all landfill surfaces where no additional wastes will be placed for at least 30 days. For additional erosion control, the intermediate cover will be seeded with temporary cover crops when the season allows. To the extent

practicable, the intermediate and daily cover will be removed and reused to allow for easier movement of leachate down to the leachate collection system and to conserve soil material. This removal will take place before the next lift of waste is placed.

The Authority plans to utilize alternative daily and intermediate cover materials, with NYSDEC approval, as appropriate to help maximize operational flexibility and improve overall project economics. Many alternate covers are currently being utilized at the existing facility including petroleum contaminated soil, ash, sludges and construction and demolition debris. Continued used of these alternative covers and other alternate covers approved by the NYSDEC is planned for the landfill expansion. Such approvals will be sought on a case by case basis, utilizing detailed information that is specific to the alternative cover material under consideration.

2.4.4 Landfill Operation Equipment and Personnel

A variety of mobile heavy equipment will be necessary to operate the landfill. The equipment must be adequate to operate the landfill on a daily basis with any one unit down for service or repairs. The following is a list of landfill equipment and their functions currently being used at the CFSWMA Landfill and will most likely be utilized for operation of the landfill expansion:

- *Landfill Compactor* – Spread and compact solid waste, as well as spread daily cover. The compactor is restricted to the working face when above the landfill liner system, or where a minimum of five feet of selected and carefully placed refuse has been placed over the liner.
- *Excavator* – Excavate and load cover material, construct diversion berms and drainage swales, miscellaneous site maintenance and heavy loading and lifting.
- *Bulldozers* – Spread cover material for daily, intermediate and final cover, loosen soil in borrow areas prior to loading, spread solid waste, and compact solid waste if other equipment is being repaired or unavailable.
- *Articulated Haulers and Dump Trucks* – Move soil from excavated location to final location. Truck access is restricted to portions of the landfill liner system which have a minimum of five feet of selected and carefully placed refuse in place.
- *Pickup Trucks* – Move supervisory staff about the site to perform daily and scheduled checks on the work and the condition of the landfill. Also used to provide minor emergency service to mobile equipment and to travel off-site for parts and service materials where necessary.
- *Water Wagon* – Dust control during dry periods of the year, and first line of defense for firefighting.
- *Snow Plow* – Moving snow from site access and service roads.
- *Sweeper* – To keep asphalt roads clean.

- *Tractors – Equipped with a brush hog or sweeper for mowing and road maintenance.*
- *Screening Plant – For preparation of intermediate cover.*
- *Mechanic's Truck* – Maintenance for equipment in the field.

The day to day tasks of excavation of soil cover, and compaction and covering of waste will be carried out by the CFSWMA landfill staff. The landfill staff will generally consist of the executive director, executive board secretary, landfill superintendent, landfill equipment operators, mechanics, and a scale operator. The executive director and other landfill personnel, as deemed appropriate, will be trained in landfill solid waste management procedures at a NYSDEC approved training course.

2.4.5 Contingencies

A *Contingency Plan* which will address all of the contingencies summarized below will be prepared as part of the 6 NYCRR Part 360 permit application. Two site-specific contingencies, a primary or secondary liner system failure and occurrence of seismic activity, are also addressed in Appendix A.

2.4.5.1 Dust Control

Dust will be controlled by implementing the following measures: keeping soil borrow areas, and other areas where earth working activities are taking place, to the minimum practicable

size; re-vegetating exposed areas as quickly as possible; and using a water truck to water down haul roads during dry periods. See Section 3.1.6.4 for more information.

2.4.5.2 Litter Control

Litter control will include manually picking up windblown items and bringing them to the working face of the landfill. Permanent and/or portable fences will be used where necessary to prevent litter from blowing away from the working face of the landfill. The need for litter control will be reduced by selecting lower levels of the landfill for daily waste placement during extremely windy conditions, when practicable. Litter will also be controlled by requiring all waste loads delivered to the landfill to be completely covered.

2.4.5.3 Pest Control

Proper operation and maintenance of the landfill is the key to controlling pests. Measures which will be used to control pests include adequately compacting wastes, keeping the size of the landfill's working face to the smallest practicable area, covering the working face with a minimum of six inches of daily cover soil, and properly applying intermediate cover soil to inactive areas of the landfill. Any materials used as alternative daily cover (ADC) would be demonstrated to be as effective as cover soil in controlling vectors, as part of the NYSDEC's ADC approval procedures.

2.4.5.4 Fire Control

The primary risk of fires at the site would arise from small amounts of smoking or smoldering waste which is mixed with other wastes shipped to the landfill. This risk will be reduced by properly training Authority staff to inspect waste loads at the transfer stations prior to delivery to the landfill as well as at the landfill working face.

In the event that smoking or smoldering waste is delivered to the landfill, it would be pushed aside and covered with soil to extinguish any fires. The waste would not be placed in the landfill until it is cool. If such waste is delivered to the landfill in trucks other than Authority- owned vehicles, the responsible hauler would be notified to review and implement, as necessary, corrective procedures. If these wastes are delivered to the landfill in Authority-owned vehicles, transfer station supervisors would be notified and corrective procedures would be implemented.

Small fires which occur in an upper lift (depth of 20 feet or less) of an active cell after placement of waste would be extinguished by excavating the waste, spreading it out, and covering with soil until it is cool. These fires would be handled by landfill personnel with on-site equipment. Small fires may also be fought with on-site fire extinguishers and, when appropriate, the water wagon. A fire prevention and control plan will be maintained at the landfill as part of the Operations and Maintenance Manual. In addition, landfill staff will be properly trained in fire prevention and control.

Larger subsurface landfill fires (depth greater than 20 feet) may not be able to be handled by Authority personnel. Excessive surface settlement and the venting of smoke through cover soils are common subsurface fire indicators. If a deep seated fire occurs within the waste mass, NYSDEC Region 5 would be notified immediately. Specialized landfill fire contractors may be necessary to extinguish a deep seated landfill fire. Possible fire control techniques include water injection or inert gas injection. Additional borings may be necessary to analyze the waste mass and provide added injection points.

Fires in any of the structures or other fires requiring assistance would be immediately called into the Franklin County 911 system.

2.5 Leachate Generation and Disposal

As discussed in Section 2.2.3, leachate will be directed by the liner system to a system of collection piping, routed through an on-site leachate storage facility and eventually transferred via tanker trucks to an off-site wastewater treatment plant for final treatment and disposal. The amount of leachate generated will be a function of the amount of landfill surface area in use for waste disposal. That amount will increase each year until the landfill increases in elevation or parts of the site are closed and capped. Over time, the leachate generation from capped areas will decrease. Figure 2.5 provides a graph of estimating leachate generation over the life of the landfill expansion assuming maximum waste acceptance rates. Peak leachate generation of 20,395,095 gallons is anticipated to be in the year 2066.

Estimates have been derived based on the proposed fill progression for the expansion. Historical leachate generation estimates have been generated by the average of the existing facility data (2005-2007) and the neighboring Clinton County landfill data (2000-2006). Combined with the proposed fill progression, this is the most reliable way to estimate future leachate quantities since they both account for the area specific precipitation, operations, and closure.

The primary leachate disposal site will be the Village of Malone Wastewater Treatment Plant. Other wastewater treatment plants may also be utilized in the future, including at least one backup disposal site for leachate. Quarterly sampling and testing of the leachate will be performed along with the monitoring wells, as set forth in the landfill's 6 NYCRR Part 360 Environmental Monitoring Plan.

2.6 Landfill Closure

2.6.1 Preparation

Closure of the landfill will be progressive as landfill operation proceeds across the site. As with current operations, there will be sections of the landfill that are closed, and which may have been closed for many years, while other sections of the landfill are still operating.

Prior to constructing the landfill capping system, the final waste lift and intermediate cover soil will be graded to bring the closure area to 100 percent capacity according to the grades shown on the final design plans

outlined in the 6 NYCRR Part 360 permit. Any vegetative growth established on the intermediate cover during landfill operation will be removed prior to final cap construction.

2.6.2 Landfill Gas Management

An active landfill gas (LFG) collection system is currently being operated at the facility and will be expanded to collect LFG from the expansion area. LFG will be collected using horizontal gas collection trenches and vertical gas wells. The majority of the LFG collection system will be installed during waste placement operations to control landfill emissions and odors. See Section 1.6.2.3 for more information on the proposed LFG management system.

Additional vertical extraction wells may need to be installed as part of the landfill closure process. If the final landfill closure plans at the time call for additional vertical extraction wells, the wells will be installed prior to construction of the capping system as part of closure site preparation. The remaining portions of the collection header piping, valving, etc. will be incorporated into the closure system design to collect LFG from beneath the capping system. In most cases, the main header piping and valves will be relocated above the capping system hydraulic barrier.

2.6.3 Capping System

The top slope capping system will be constructed on slopes which are greater than or equal to 4 percent and less than 25 percent. The main hydraulic barrier for this system is a composite barrier (in accordance with

6 NYCRR Part 360-2.13(s)) consisting of 40 mil textured linear low density polyethylene (LLDPE) geomembrane which directly overlays an 18-inch thick low permeability soil layer or geosynthetic clay liner. A drainage layer consisting of composite geonet will be placed above the composite barrier followed by a 24-inch thick protective soil layer. An additional 6-inch layer of topsoil will be installed over the protection layer to establish sustainable and substantial vegetative growth.

The side slope capping system will be constructed on slopes which are greater than 25 percent and less than or equal to 33 percent. The main hydraulic barrier for this system is a 40 mil textured LLDPE geomembrane. A drainage layer consisting of composite geonet will be placed above the composite barrier followed by a 24-inch thick protective soil layer. An additional 6-inch layer of topsoil will be installed over the protection layer to establish sustainable and substantial vegetative growth.

Refer to Figure 2.6 for a detail of the proposed capping system for the landfill expansion area.

Various stormwater controls will be incorporated into the capping system design including sideslope diversion swales, stone lined down chutes and perimeter swales. The stormwater controls will be constructed to convey stormwater runoff effectively from the capping system thereby limiting erosion of the capping and preserving long term integrity. Runoff will be conveyed to a system of stormwater basins designed to handle runoff volumes. See Section 3.1.1.4 for more information on the proposed stormwater management system.

2.7 Landfill Post-Closure and Post-Closure Site Uses

After landfill closure, the landfill capping system and landfill support facilities (e.g., leachate collection and storage system, landfill gas collection and control system, and surface water collection and control systems) will be maintained in working order for the duration of the post-closure period (30 years minimum, unless otherwise approved by NYSDEC). Surface water, groundwater, and explosive gas monitoring will be conducted during the post-closure period as required by the NYSDEC's Part 360 regulations.

Future uses of a closed landfill are restricted. Any future use of the landfill, after it's closed and capped, has to be reviewed by the NYSDEC so that the uses comply with the site characteristics and do not interfere with post closure monitoring. Environmental exposures and safety concerns are also reviewed at this time, including any ways in which the integrity of the environmental protection measures such as the landfill cover, drainage, liners, monitoring system, or leachate and stormwater controls may be affected.

Due to such environmental restrictions, other closed landfills have been used as open spaces or made into nature preserves, recreational trails, bird sanctuaries, golf courses, and other conservation and/or recreational areas. Closed landfill sites have, however, also been used for the construction of development projects, including shopping malls, office parks, hotels, drive-in theaters, auto dealerships, and airfields. These more intensive uses of closed landfill sites obviously pose many technical challenges that would need to be addressed, including building in protections from the potential hazards of methane explosion, landfill settlement, and leachate management. The landfill

disposal area itself is not expected to be suitable for building any structures for a number of years after closure due to the potential for settling and the need to ensure the integrity of the capping system.

2.8 Regulatory Reviews and Approvals for Landfill Expansion

The following permits, reviews and approvals have been identified as being applicable to the proposed project:

- Compliance with the requirements of State Environmental Quality Review Act (SEQRA).
- A NYSDEC 6 NYCRR Part 360 Permit to Construct and Permit to Operate a solid waste management facility;
- An update to the site's existing Stormwater Pollution Prevention Plan (SWPPP) for compliance with the site's existing NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Industrial Activities (GP-0-06-002). For landfill facilities, General Permit GP-0-06-002 also includes procedures for management of stormwater discharges from Construction Activities;
- A requisite air permit for landfill gas emissions, pursuant to the requirements of Federal regulations found at Subpart WWW of 40 CFR 60.
- A Section 404 Individual Permit from the U.S. Army Corps of Engineers (USACE) for impacts to federally regulated wetlands. The initial application for the first phase of development (Cells 5, 6 and 7) is not anticipated to impact wetlands under federal jurisdiction; therefore, wetland permitting will not be required for this phase. Additional landfill

developments after the first phase are anticipated to require completion of the USACE wetland permitting process. No NYSDEC regulated wetlands are located within the limits of the proposed landfill expansion area, or within 100-feet of the expansion area boundary.

- Additional landfill developments after the first phase will also require a Section 401 Water Quality Certification from the NYSDEC.

The Authority will be submitting permit applications for development of the landfill expansion over time. The NYSDEC Part 360 permit applications will contain a detailed engineering report and permit application drawings. The engineering reports will provide an engineering analysis of the landfill development, will demonstrate compliance with the applicable regulatory criteria, and will contain the following appendices: a contingency plan, an operations and maintenance manual, a construction quality assurance/construction quality control (CQA/CQC) manual, stormwater pollution prevention plan, supporting landfill design calculations and data, and permit application forms and related documents. The permit application drawings will show the landfill's location, existing site conditions and the conceptual landfill support facilities design.

3.0 Existing Environmental Setting, Potential Impacts, and Mitigation

3.1 Natural Resource Characteristics

3.1.1 Land and Surface Water Resources

3.1.1.1 Topography

The project site and surrounding areas are generally flat with gently rolling topography to the north, particularly across the International Border between the United States and Canada. Natural elevations within the proposed expansion area range from 240 feet above mean sea level in the southern portion of the proposed expansion site to a height of approximately 280 feet above mean sea level at the northeast corner of the proposed expansion area (Figure 3.1). The elevation of the capped and closed section of the existing landfill, Cell 1, is 340 feet, at its highest point, above mean sea level. As currently approved and permitted, the ultimate height of the existing landfill would be approximately 345 feet above mean sea level, once Cells 2, 3, and 4 are closed and capped.

The proposed expansion area would undergo physical change as a result of expansion activities. Over the projected 94.8 year (approximate) life of the proposed landfill expansion, vegetation would be removed and soil would be mined from on-site sources for use during construction of the landfill liner system, for cover material during landfill operation, and for capping the landfill

when final grades are achieved. Construction activities associated with the landfill would continue throughout the approximate 94.8 year expected site life.

Based on the existing elevations within the proposed expansion area, the majority of the construction would involve cutting into existing areas in order to construct the proposed landfill at an appropriate depth. The soil obtained from these cuts will be used during construction and/or stockpiled and used by the landfill during future operation.

The expansion proposal's final grading plan will result in a larger top slope area (slopes 4% typical) with the landfill's highest elevation occurring over a larger area when compared to the currently permitted final grading plan (Figure 3.2). Ultimately, the proposed landfill expansion area would have a maximum permitted elevation of approximately 357 feet above mean sea level, approximately 12 feet higher than the existing maximum permitted elevation of the operational landfill.

Similar to the existing permitted grades, a land surface of a more uniform slope will result from the proposed expansion with a 3:1 (3 horizontal to 1 vertical) slope on all sides of the landfill. Topographic changes to the proposed landfill footprint are fundamental to the project. The visual setting and visibility viewshed analysis, Section 3.2.9, discusses the character of the surrounding landscape and assess such topographic changes to the site with regard to local landscape aesthetics. Refer to Section

3.1.1.4 for details on how appropriate erosion control measures will be utilized to prevent erosion and siltation problems that would otherwise be associated with topographic changes to the proposed landfill expansion area.

3.1.1.2 Surface Water

The proposed landfill expansion area is located within the St. Lawrence River Drainage Basin, and more specifically, the Chateaugay River Watershed. The majority of the proposed project area drains south into Briggs Creek (NYSDEC Water Index No. SLC-28). This stream has been disturbed in the past by private landowners/farmers in order to create a functioning drainage system for the surrounding agricultural crop and hay fields, the majority of which are tile drained.

The existing landfill site and the eastern extent of the proposed expansion area drain east, flowing into an unnamed stream (NYSDEC Water Index No. SLC-26). Briggs Creek and Tributary 26 of the St. Lawrence River are denoted with the letters "SLC" because these streams traverse the International Border between the United States and Canada and flow into other mapped waters before discharging into the St. Lawrence River (Fleuve Saint Laurent) within Canada.

Upon crossing the International Border, Briggs Creek flows into the Beaver River (Ruisseau Beaver) within the Township of Dundee, Quebec, Canada. Tributary 26 flows into the Discharge

(Décharge) of Wilson-McArthur, located within the Township of Godmanchester, before meeting up with the Beaver River in the Town of Dundee. From there, the Beaver River flows for approximately 7.7 miles before discharging into the Trout River (Rivière Trout). The Trout River continues for approximately 5.8 miles until it meets the Chateaugay River (Rivière Châteaugay). The Chateaugay River flows for approximately another 40.5 miles until meeting with the St. Lawrence River.

Briggs Creek and Tributary 26 of the St. Lawrence River are classified as Class D waters with D Standards according to the New York State Department of Environmental Conservation (6 NYCRR Part 910). Class D waters are not included in the definition of a protected stream according to 6 NYCRR Part 608 Use and Protection of Waters. According to the NYSDEC, the best usage of Class D waters is fishing. These waters are suitable for fish, shellfish, and wildlife survival and may also be suitable for primary and secondary contact recreation. Class D waters are not suitable as drinking water and do not meet the New York State Department of Health drinking water standards (6 NYCRR Part 701).

Construction and operation of the proposed landfill expansion project would include a number of mitigative measures to prevent and/or minimize the potential for impacts to surface water resources. If mitigative action is not taken, surface water resources within and adjacent to the project limits could potentially be impacted by activities associated with the construction and operation of the proposed landfill master build-out.

Clearing of vegetation, excavation of soil for liner installation, re-grading of soils and stockpiling of soils all create the potential for erosion. Surface water runoff carrying sediment-laden water could, if left unmitigated, cause siltation and flooding of surface water resources. Infiltration of precipitation through waste material produces leachate; measures would be implemented to minimize the generation of leachate during operation and closure of the landfill. See Sections 2.2.3 and 2.2.4 regarding potential impacts and mitigation measures associated with leachate generation and disposal. The proposed mitigating measures that would be implemented to reduce the potential impacts to surface water resources to less than significant levels are described in the following section. These measures would help to mitigate adverse effects that activities in the expansion area might have on surface water quality and subsequently stream health and function.

Presently, the CFSWMA Landfill follows a detailed Environmental Monitoring Plan (EMP). The Authority's current EMP would be updated as additional cells were constructed in order to ensure the protection of surface water resources at the site.

3.1.1.3 Stormwater Runoff and Drainage Patterns

3.1.1.3.1 SPDES and Stormwater Management Requirements

Under existing conditions, site runoff is divided into two drainage basins: Briggs Creek (NYS Water Index

Number SLC-28) and an unnamed tributary of the St. Lawrence River (NYS Water Index Number SLC-26). The primary drainage basin (Drainage Area 1) to Design Point 1 takes in the majority of the proposed landfill expansion site and encompasses the area from the headwaters of the east branch of Briggs Creek (Water Index #SLC-28) downstream to the point at which this tributary and all runoff from the proposed landfill expansion area joins the western branch of Briggs Creek. Design Point 1 represents the location at which compliance with the State Pollution Discharge Elimination System (SPDES) requirements is assessed.

Drainage Area 1 includes a total area of 340.33 acres and consists primarily of rural land intersected infrequently by roadways, characterized by a mixture of pasture, row crops, brushy overgrown areas, and forested land. Runoff from Cells 6, 7, 12A, 12B, 12C, 13A, 13B, 14, and 15, as well as parts of Cells 9, 10, and 11, will be routed into this drainage area during and following the landfill expansion. Briggs Creek ultimately flows north to a confluence with the Trout River in Quebec.

Drainage Area 2 (108.67 acres) is situated northeast of Drainage Area 1, and encompasses a small eastern part of the landfill expansion, including a New York State Freshwater Wetland (Figures 3.3 and 3.4). Design Point 2 is located at the confluence of the outlet flow from this wetland and a tributary of the St. Lawrence River (SLC-26) flowing

north along the east side of the landfill property where it crosses west of New Road. Once again, Design Point 2 is the location at which compliance with the SPDES requirements is assessed. A portion of the early phases of the landfill (primarily Cells 2, 3, and 4) is included in the central portion of this drainage area under existing conditions. Both the eastern and western thirds of the area are comprised of brushy and wooded areas, parts of which are designated wetlands. As the landfill is expanded, runoff from Cell 8 and parts of Cells 5, 9, 10 and 11 will be routed to flow to the western part of this drainage area.

Development of the landfill footprint, leachate storage tanks, stormwater ponds, and associated perimeter roads and a maintenance building area will disturb approximately 165 acres. This change in land use will increase the amount of stormwater runoff that occurs from the site, necessitating the need for four (4) new stormwater detention ponds as shown on Figure 2.4 to offset the increased stormwater runoff rates from the new landfill cells. The proposed stormwater detention ponds have been sized to provide a "no net increase" of stormwater exiting the site following construction of the landfill expansion.

The stormwater detention ponds have been designed to comply with the requirements of the SPDES Multi-Sector General Permit for Stormwater Discharges from Industrial Activity (GP-0-06-002), which mandates use of the

standards documented in the New York Stormwater Management Design Manual, and the 6NYCRR Part 360 Regulations. As such the ponds must provide treatment of the Water Quality Volume (the 90 percent runoff event as described in the New York State Stormwater Management Design Manual), the Channel Protection Volume (24-hour extended detention of the 1-year, 24-hour storm), Overbank Flood Control (attenuation of the peak discharge from the 10-year, 24-hour storm), and the Extreme Flood Control (attenuation of the peak discharge from the 100-year, 24 hour storm). The Part 360 requirements also require attenuation of the peak discharge from the 25-year, 24-hour storm.

Detailed hydrologic analysis is provided in the Hydrologic and Sediment Yield Study (Appendix B). The following Table 5 summarizes the results of proposed stormwater management measures.

Table 5 **Results of Proposed Stormwater Mitigation Measures**			
		Drainage Area 1	**Drainage Area 2**
Existing Area (acres)		340.33	108.67
Proposed Area (acres)		381.23	106.93
Peak Flows, pre-development (cfs)	1-year	16.12	7.67
	10-year	71.71	39.39
	25-year	95.29	52.96
	100-year	136.09	76.40
Peak Flows, post-development without treatment (cfs)	1-year	30.48	13.76
	10-year	106.84	52.15
	15-year	136.64	67.15
	100-year	186.72	92.37
Peak Flows, post-development with treatment (cfs)	1-year	16.15	6.32
	10-year	67.57	36.56
	25-year	92.88	47.16
	100-year	136.08	64.72
Water Quality Volume (ac ft)	Required	1.802	0.534
	Provided	17.003	1.969
Channel Protection Volume (ac ft)	Required	4.787	1.408
	Provided	5.875	1.408

3.1.1.3.2 Hydrologic Budget and Stream Flow Study

A hydrologic budget was prepared for the landfill to determine the impact of landfill construction on Briggs Creek and the unnamed tributary SLC-26 that receives drainage from the east side of the landfill. The design points for this study were designated as follows: Design Point A, at the point where Briggs Creek intersects the western property boundary of the landfill immediately downstream of its intersection with a receiving tributary of Briggs Creek that runs immediately south of the proposed landfill; and Design

Point B, immediately downstream of the point where flow from the Wetland A enters the tributary designated SLC-26 east of the site. The locations of there two design points are shown on Figures 3.5 and 3.6.

Drainage Area A includes a total area of 3,068 acres and consists primarily of rural land intersected infrequently by roadways, characterized by a mixture of forested land and brushy areas. Overall topography throughout the drainage area slopes to the north. Briggs Creek ultimately flows north to Quebec, reaching additional tributaries of the St. Lawrence River.

In contrast to the SPDES/Part 360 drainage study, this analysis encompasses the entire watershed of Briggs Creek rather than only the tributary upon which the landfill is located, to enable a more thorough ecological context to be applied to the study. Also, the full watershed of the unnamed tributary SLC-26 above is analyzed (a total of 479 acres).

Cover types found in the subject watersheds under existing conditions and at full build-out were examined in the Initial Hydrologic Sediment Yield Study (Appendix B). A decrease of 1.9 acres will occur in the area flowing to the unnamed tributary (SLC-26) of the Saint Lawrence River (Drainage Area B), and an increase of about 45 acres in the area flowing to Briggs Creek (Drainage Area A) will take

place following construction of the landfill at full build-out. However, both drainage areas will experience an increase in annual runoff volume. A total increase of 103 acre-feet of runoff volume per year is modeled in Drainage Area A; this equates to a 9.7 percent increase. An increase of 54 acre-feet of runoff is modeled in Drainage Area B. Because of the much smaller overall size of the watershed for Drainage Area B, the increase is relatively more significant (19.8 percent). Appendix B includes the hydrologic budget analysis.

Despite the volume increases described above, the proposed stormwater ponds will provide attenuation of the runoff volume from individual storms throughout the course of the year so that following each precipitation event, stormwater will be gradually released at a rate not exceeding that of pre-development conditions. Consequently, base flow in the stream should be maintained at approximately its present level, and fluctuations in stream flow will be moderated by the presence of the stormwater ponds.

3.1.1.4 Soil Erosion and Sedimentation

Clearing of vegetation, excavation of soil for liner installation, re-grading of soils and stockpiling of soils all create the potential for erosion and subsequent sediment deposition. In addition to loss of valuable soil from the site, surface water runoff carrying sediment-laden water can cause flooding, siltation, and damage to aquatic

habitat. The proposed mitigation measures and Best Management Practices that will be implemented to reduce erosion and control sediment are described below. Note that stormwater that comes into contact with solid waste will be managed separately through the leachate collection and removal system; refer to Sections 2.2.3 and 2.2.4, and Figure 7, for a detailed description of this system.

To demonstrate the risk of erosion and the impact of Best Management Practices (BMP) in reducing erosion from the site, a sediment yield analysis was performed for the first phase of landfill expansion using the Revised Universal Soil Loss Equation (RUSLE). It should be noted that interior areas of the landfill cells will not contribute to sediment load, as stormwater will either percolate through the waste and be collected by the leachate collection system or as runoff from vegetated cover areas. The calculations reflected in Section 4.0 of the Initial Hydrologic and Sediment Yield Study (Appendix B) depict sediment yield rates from exterior cell areas at cell closure, which represents the maximum potential sediment loss during the progression of each individual cell.

The Revised Universal Soil Loss Equation (RUSLE) is summarized as follows:

$$A = K(LS)RCP$$

Where:

A = tons of sediment lost per acre per year

K = soil erodibility index

LS = slope length factor

R = rainfall intensity factor

C = cover factor

P = practice factor

The following Table 6 summarizes the results of the sediment yield analysis.

Table 6
Sediment Yield Analysis Results

Part of Site		Landfill	Perimeter Roads	Total
Area (acres)		25.74	2.27	28.01
Weighted Soil Erodibility Factor from Franklin County Soil Survey (Kf)		0.356	0.273	--
Slope Length (feet)		600	1000	--
Slope Gradient (percent)		4	1	--
Soil Loss (tons per acre per year)	No control practices	43.91	5.16*	49.07
	Straw mulch, anchored, 2 tons/acre	2.72	5.16*	7.88
	80% grass or plant litter cover	0.61	5.16*	5.77
	Roughened surface with mulch	2.45	5.16*	7.61
	Roughened surface with grass	0.46	5.16*	5.62

* The best management practices above apply to landfill cell areas; perimeter gravel road areas will experience approximately the same sediment yield under all of the conditions listed.

As indicated by the table above, erosion control practices such as seeding and mulching can dramatically reduce erosion from the landfill cell areas. Mulching of the exposed exterior landfill slopes during construction has the potential to reduce erosion by up to 93 percent from the site. Establishment of 80 percent grass cover over open soil areas of the site would reduce sediment yield from the site by as much as 97.5 percent. Surface roughening in combination with either of these practices further reduces sediment loss. Perimeter roads will be stabilized with gravel surfacing to prevent additional exposed areas.

A number of practices will be employed to minimize erosion and prevent, to the maximum extent practicable, the siltation of surface water resources during construction and operation of the landfill expansion. Stormwater runoff from the expansion area will be conveyed to four new stormwater detention ponds, which will be constructed individually to receive runoff from different phases and areas of the expansion as detailed in Figure 3.7. Temporary sediment basins will also be used as necessary, and will be positioned to receive runoff from the landfill as the construction area changes. The sediment basins allow sediment to settle out of suspension prior to discharge to stormwater detention ponds and/or surface water resources. The existing water quality of stormwater exiting the site to surface water bodies will thus be maintained. During construction of the expansion, the following Best Management Practices will also be utilized to reduce the potential for erosion and sedimentation:

- A vegetated buffer zone will be maintained, where practical, around all stormwater ponds, streams, and wetlands. This vegetated buffer will act as a filter, slowing down the velocity of stormwater runoff and allowing suspended sediment to settle out.
- Silt fence will be installed at the toes of slopes and around soil stockpiles to reduce runoff velocity, allowing suspended sediment load to settle out on the upslope side of the fence.
- Riprap-lined diversion swales and down chutes will be constructed to direct runoff to the sediment basins and stormwater detention ponds and control flow velocity to ensure that flow is conveyed in a non-erosive manner.
- Exposed stockpiled soils, borrow areas, and closed landfill cells will be temporarily re-vegetated by application of grass seed during the interim period between closure and final capping of the landfill.
- Dust control will be conducted to prevent migration of particulates offsite by air movement.
- Construction roads will be stabilized with aggregate base course to prevent erosion from the roads.
- Stabilized construction entrances will be utilized at all points of ingress and egress to/from areas of the site where construction is taking place.
- Additional practices will be installed in accordance with the *New York Standards and Specifications for Erosion and Sediment Control.*

The above measures will help to mitigate adverse effects that activities in the expansion area might otherwise have on surface water quality, stream ecology and function, human health and safety, and condition of infrastructure and private property. All erosion and sediment control practices will be designed in accordance with the *New York Standards and Specifications for Erosion and Sediment Control*. Prior to any disturbance of greater than five acres at any one time, the NYSDEC Regional Office of the Division of Water will be notified in writing. Inspections of erosion and sediment control practices will be conducted during ongoing construction activities.

3.1.2 Geologic Subsurface Conditions

3.1.2.1 Introduction

The following summary of geologic conditions is based on investigations conducted at the site for the County of Franklin Solid Waste Management Authority by Barton & Loguidice (B&L), as well as interpretation of data developed for the existing landfill facility by Stearns & Wheler, in their report entitled *Regional Landfill Hydrogeologic Investigation – November 1991, Revised February 1993*.

The site investigation conducted by B&L included test pit excavations, exploratory borings, installation of monitoring wells, in-situ hydraulic conductivity tests, water level measurements, and the collection and analysis of groundwater samples. Detailed

descriptions of the subsurface conditions at the site and soil engineering properties are provided in the report entitled *Site Investigation Report – CFSWMA Proposed Landfill Expansion*, September 2008 (Appendix C).

3.1.2.2 Location

The landfill expansion area is located within the St. Lawrence Lowlands physiographic province (Figure 3.8). There is relatively little topographic relief in this region; the highest elevations are over 1,000 feet above mean sea level (amsl) approaching the Adirondack foothills to the south, while elevations are less than 230 feet (amsl) at the Trout River international crossing.

The natural topography in the immediate vicinity of the site is quite subtle, with total relief only on the order of thirty feet (Figure 3.9). A topographic ridge extends northeast-southwest through this area, reaching an elevation of approximately 260 feet (amsl) along portions of County Route 20 (Trout River), which generally follows the crest of the aforementioned ridge. Adjacent valley sections are generally less than 250 feet in elevation (amsl), with the lowest elevations occurring in the vicinity of Briggs Creek along the southwestern edge of the investigation area. In this vicinity, the lowest elevations are on the order of 232 feet (amsl).

The existing landfill facility is located generally along the crest of a secondary topographic ridge that parallels the primary topographic ridge discussed previously. Prior to development of the existing landfill facility, the secondary ridge achieved maximum elevations of slightly more than 250 feet (amsl). The secondary topographic ridge extends southwestward from the existing landfill facility for a distance of approximately 700 feet.

The spatial distribution of the surficial geologic materials in the site vicinity is shown on Figure 3.10. The spatial distribution of the bedrock formations in the site vicinity is depicted on Figure 3.11, and the bedrock encountered at the site is described in section 3.1.2.4. The surficial materials encountered on the site are summarized below.

3.1.2.3 Overburden

Overburden deposits underlying the expansion area are predominantly of glacial and proglacial origin, with basal lodgement till forming the most widespread overburden deposit.

Glacial Till

The basal lodgement till is typically described as a dense gray, matrix-supported SAND and SILT, with varying proportions of Gravel and would be typically described as a CL-ML to SM-SC soil in the Unified Soil Classification System (USCS). For purposes of stratigraphic mapping, this till has been termed the Lower Glacial

Till, and directly overlies the bedrock across the majority of the site. The thickness of the Lower Glacial Till, where present, typically ranges from five to more than sixty feet (Figure 3.12). The Lower Glacial Till was absent only in the extreme northern portions of the site where total overburden thickness is less than twenty feet.

As observed in the grain-size analyses results (Table 7) as well as the visual classification of split spoon samples, the matrix of the Lower Till Unit is reasonably consistent, with the percentage of particles passing the No. 200 sieve ranging from 40 to 60 percent and the clay content on the order of 15 to 30 percent. The sand fraction ranged generally from 30 to 40 percent, and the gravel fraction generally ranged from 10 to 15 percent. These samples would be classified CL-ML to SC-SM in the Unified Soil Classification System (USCS). By way of comparison, grain-size analyses of this unit completed as part of the original site investigation yield similar results, although samples from the expansion area investigation are somewhat finer-grained on average than the samples from the original site investigation.

Table 7
Summary of Geotechnical Laboratory Data

Sample	Type	Particle Size Distribution				Atterberg Limits			
		Gravel (%)	Sand (%)	Silt & Clay(%)	% passes #200 sieve	Liquid limit	Plastic limit[3]	Plasticity Index	USCS Class
TP-03, BS-1	Lower Glacial Till	15	41	44	44	10	14	4	SC-SM
TP-21, BS-1	Lower Glacial Till	12	36	52	52	9	14	5	CL-ML
TP-30, BS-1	Lower Glacial Till	16	29	55	55	12	16	4	CL-ML
TP-102, S-3[1]	Lower Glacial Till	N/A	N/A	N/A	41.7	12	14	2	SM
TP-107, S-2[1]	Lower Glacial Till	N/A	N/A	N/A	43.3	14	18	4	SC-SM
TP-108, S-3[1]	Lower Glacial Till	N/A	N/A	N/A	42.9	14	18	4	CL-ML
TP-109, S-2[1]	Lower Glacial Till	N/A	N/A	N/A	42.3	14	17	3	GM
TP-113, S-3[1]	Lower Glacial Till	N/A	N/A	N/A	48.2	12	14	2	SM
Mean[2]:		**14**	**35**	**50**	**47**	**12**	**16**	**4**	**SM-SC**

[1] Stearns & Wheler, November 1991, Revised February 1993.
[2] Overall mean of available data.
[3] Plastic limit calculated for Stearns & Wheler data.

In the upland portions of the site above an elevation of approximately 250 feet (amsl), the Lower Glacial Till is overlain by a brown glacial till unit that represents either an ablation till and/or lodgement till that has been weathered and/or winnowed, reducing

to a degree the percentage of fine-grained materials present. This till, termed the Upper Glacial Till, is typically described as a brown, loose to medium dense, matrix-supported SAND, little to some Silt, with varying proportions of Gravel, and would be typically described as an SM soil in the Unified Soil Classification System (USCS). Although this material typically appears dense on the basis of blow counts, test pit excavations indicated that the apparent density is due in large part to the presence of frequent tabular cobbles and boulders rather than to the density of the matrix. The thickness of the Upper Glacial Till ranges from a few feet to more than twenty feet (Figure 3.13) and is thickest to the northwest, generally along a line paralleling County Route 20.

In general, the total thickness of the overburden is inversely related to the topography of the site. That is, the greatest total accumulations of overburden, exceeding eighty feet in total thickness, occur in the topographically lowest portions of the site, while the thinnest accumulations of overburden occur in the topographically highest portion of the site along County Route 20. The greatest thickness of overburden is located at the southwest end of the area of investigation at the exploratory boring designated as EB-17 on Figure 3.14, where the total overburden thickness reaches 80 feet. Within the proposed expansion area, the total overburden thickness ranges from thirty feet to seventy-five feet, with the lower till unit accounting for the vast majority of the total overburden thickness.

Marine Silt Unit

At elevations below approximately 247 feet (amsl), a sequence of proglacial deposits frequently overlies the glacial till. This sequence includes glaciofluvial sand, beach deposits, and marine silt and clay that formed during a period of time when the low-lying areas of the site were inundated by an arm of the Champlain Sea. This unit has been termed the Marine Silt Unit for stratigraphic mapping purposes.

The Marine Silt Unit typically includes a massive to blocky Silt with varying proportions of Sand (ML), overlying laminated Silt and Clay (ML-CL) with dropstones. Both the massive Silt and the laminated Silt and Clay were observed in the test pit excavations to be jointed, with the walls of the test pits in these materials frequently failing along these columnar joints. The upper portion of the Marine Silt Unit sometimes includes a thin, fine-grained, moderately well-sorted Sand overlying the massive Silt.

The Marine Silt Unit typically occurs at elevations below approximately 245 feet (amsl); however, associated beach deposits, which have been assigned to this stratigraphic unit, generally occur at elevations between 245 feet and 247 feet (amsl). Although the beach deposits were directly encountered in only a single boring (MW-22), it is likely that similar deposits occur intermittently along the former shoreline in this elevation interval. In addition to its characteristic stratigraphic lithology and position, the Marine Silt Unit is frequently associated with the presence of shell

fragments. Two distinct types of shells can be recognized, including Hiatella arctica and Macoma balthica, both of which are marine bivalves dating generally to the period from approximately 10,100 years before present (BP) to 12,200 years BP. Where found in the fine sand and beach deposits, the shell fragments are typically of no more than millimeter size. Intact shell halves are frequently encountered in the fine-grained portions of the Marine Silt Unit.

The Marine Silt Unit, where present, ranges in thickness from three feet or less to twenty feet or more. This unit is thinner along the former shoreline and thickens to the south.

The primary shoreline features of the Champlain Sea and earlier proglacial lakes occur at elevations that are considerably higher than are present on the site. For example, the Salmon River formed a significant delta in the vicinity of Malone at an elevation of approximately 620 feet AMSL during the period corresponding with the Fort Ann stage of Lake Vermont (Clark and Karrow, 1984). The upper limit of the Champlain Sea is marked by a series of beaches occurring at an elevation of approximately 492 feet (amsl) (Clark and Karrow, 1984) in the Malone vicinity, or about 246 feet higher than the beach features mapped on the Site. It is interesting to note that the upland areas of the Site bear little evidence of an extended period underwater; i.e., there are no significant deposits of stratified materials present on site above an elevation of about 250 feet. This suggests that the upper portions of the Site may have been covered by ice during much of the period between the

Fort Ann lacustrine stage and the lower Champlain Sea stage. This is supported by the observation of the Upper Glacial Till overlying glaciofluvial sand in TP-20, with the upper contact of the sand occurring at an elevation consistent with the elevation of other similar sands at other locations on site.

3.1.2.4 Bedrock

The bedrock formations underlying the Site include the Ordovician age Ogdensburg Dolostone, which overlies the Theresa Formation of Upper Cambrian age. The spatial distribution of the bedrock formations in the site vicinity is depicted on Figure 3.11.

Bedrock cores obtained from beneath the proposed expansion area were that of the Ogdensburg Dolostone. The bedrock is typically described as a dark blue-gray, massive to wavy laminated Dolostone with occasional styolites and fossil beds. The upper portion of the bedrock was typically more fractured than the deeper bedrock and is reflected by the higher rock quality designation index (RQD) values at depth. Fractures observed in the cores were predominantly that of bedding plane fractures with occasional near vertical fractures. The bedding plane fractures or horizontal fractures typically were filled with clay and/or silt seams, whereas secondary mineralization was visible on the vertically oriented fracture or joint surfaces. Iron oxide staining was also evident on some of the fracture surfaces, but more confined to the upper portion of bedrock.

Figure 3.15 depicts the spatial configuration of the bedrock surface. The bedrock surface is highest in the northeast corner of the investigation area, near the site access road and parallel to County Route 20, where it reaches an elevation of 254.5 feet (amsl) at test pit location TP-11. The lowest elevation of the bedrock surface was observed to the southwest, in the vicinity of exploratory boring EB-17, where the bedrock surface elevation was measured at 151.4 feet (amsl).

3.1.2.5 Mitigation of Potential Impacts on Subsurface Geologic Conditions

Potential impacts to subsurface geologic conditions will involve the disturbance of soils through the excavation, filling and stockpiling activities during construction and operation of the landfill. The potential for instability of constructed slopes during construction of the landfill has also been analyzed for appropriate engineering design consideration. To prevent and/or minimize the potential for impacts related to these activities, a number of engineering design controls and mitigation measures, as discussed below, will be implemented to reduce these potential impacts to a less than significant level.

3.1.2.5.1 Soils

Construction of the landfill will involve both filling of low areas and excavation of overburden soils from within the proposed development area. The excavated soils will be

compacted and regraded, as necessary, for construction. Soils may also require wetting and drying to meet compaction requirements. Laboratory geotechnical testing of soil samples will be conducted during construction to ensure that soil properties meet specifications.

Excavation and stockpiling of soils on site will create exposed soil areas. However, landfill construction will occur in phases, thereby limiting the area of exposed soils and reducing the potential for erosion. Stockpiled soils which will not be in use for extended periods of time will be temporarily re-vegetated to reduce the potential for erosion. Additionally, hay bales and silt fences will be used to control sediment from runoff that occurs in areas of excavation and stockpiling of soils.

Excavated soils will be reused for construction of the landfill liner and as daily and intermediate cover. The use of on-site soils for landfill construction and operation will preclude the use of these soils for other purposes.

The alteration of site drainage due to construction and excavation will be mitigated by redirecting runoff to the sediment control system and stormwater detention basins prior to Briggs Creek or adjacent wetlands, in accordance with the proposed stormwater runoff management plan.

3.1.2.5.2 Stability

Excavation of soils and construction of the landfill subgrade and other landfill slopes will be performed in a manner that will create stable slopes. Engineered slopes would be constructed no steeper than 3 horizontal: 1 vertical. The landfill bottom will have a minimum grade of 2% to prevent ponding and infiltration of surface water. The groundwater suppression system will reduce hydrostatic pressure on the landfill liner system and subgrade soils by draining groundwater before it contacts the liner system. The proposed landfill would also be designed to withstand ground shaking from the maximum probable earthquake for the area, which is estimated to generate maximum horizontal bedrock accelerations at the site of 0.36g. The top of the landfill will have a minimum grade of 4% to promote drainage and prevent stormwater infiltration.

3.1.3 Groundwater Resources

The following summary of groundwater conditions is based on the hydrogeologic investigations conducted at the site for the Authority by Barton and Loguidice, as well as interpretation of data developed for the existing landfill facility by Stearns & Wheler in their report entitled *Regional Landfill Hydrogeologic Investigation – November 1991, Revised February 1993*.

3.1.3.1 Introduction

In this section, the conditions under which groundwater is contained within the various geologic deposits are described. Two hydrostratigraphic zones underlie the landfill expansion area. In ascending order, these include the top of bedrock groundwater flow zone consisting of moderately fractured bedrock, and the overburden groundwater flow system consisting primarily of dense glacial till. Each water-bearing zone is described below.

3.1.3.2 Top of Bedrock Groundwater Flow Zone

The top of bedrock groundwater flow zone occurs at elevations ranging from approximately 161.08 feet (amsl) at MW-23D, to 243.73 feet (amsl) at MW-25D (top of bedrock elevation). The geometric mean hydraulic conductivity calculated from in-situ falling head tests is 1.5×10^{-3} cm/sec and ranged from 1.0×10^{-4} cm/sec at MW-25D to 5.6×10^{-2} cm/sec at MW-29D. The geometric mean hydraulic conductivity values calculated during this investigation are generally higher than those calculated in the Stearns & Wheler report entitled *Regional Landfill Hydrogeologic Investigation – November 1991, Revised February 1993*, where the geometric mean hydraulic conductivity was reported as 4.08×10^{-5} cm/sec. The hydraulic conductivity data are summarized on Table 8.

Table 8
Summary of Hydraulic Conductivity Data

Unit	Well ID	Screen Interval (ft)	Displace-ment (ft)	Bouwer-Rice	Hvorslev	KGS	Butler	Geo-metric Mean
Marine Silt Unit	MW-23S	5-10	4.77	2.61E-03	3.87E-04	3.98E-04	NT	7.38E-04
	MW-24I	20.5-30.5	3.58	1.70E-04	2.07E-04	9.78E-05	NT	1.51E-04
	MW-24S	5-10	4.62	4.67E-05	7.05E-05	5.07E-05	NT	5.51E-05
	MW-27S	15-25	3.34	1.89E-03	2.39E-03	2.35E-03	NT	2.20E-03
Marine silt unit geometric mean:								**3.41E-04**
Upper Glacial Till	MW-21S	7-12	3.17	2.20E-03	3.31E-03	8.92E-04	NT	1.86E-03
Upper glacial till geometric mean:								**1.86E-03**
Lower Glacial Till	MW-22S*	15-25	4.78	2.19E-04	2.99E-04	3.16E-04	NT	2.74E-04
	MW-23I	20-30	4.38	3.32E-04	4.63E-04	4.15E-04	NT	3.99E-04
	MW-25S	8-18	3.28	6.23E-05	9.23E-05	5.66E-05	NT	6.88E-05
	MW-26S	20-30	3.85	7.10E-06	9.42E-06	5.41E-06	NT	7.13E-06
	MW-28S	14-24	4.45	2.09E-04	2.12E-04	1.95E-04	NT	2.05E-04
	MW-29S	8-18	2.91	2.62E-04	3.52E-04	3.75E-04	NT	3.26E-04
	RMW-14[A]	13.5-23.5	4.17*	1.46E-05	1.5-E-05	5.68E-06	NT	1.08E-05
Lower glacial till geometric mean:								**1.24E-04**
Bedrock	MW-20	7.5-17.5	4.01	8.80E-04	1.37E-03	3.27E-03	NT	1.58E-03
	MW-21D	16.2-26.2	4.22	2.46E-03	2.78E-03	2.29E-03	NT	2.50E-03
	MW-22D	68.5-78.5	5.47	7.57E-03	1.14E-03	2.29E-03	NT	2.70E-03
	MW-23D	64-74	2.48	9.03E-04	1.28E-03	9.48E-04	NT	1.03E-03

Table 8
Summary of Hydraulic Conductivity Data

Unit	Well ID	Screen Interval (ft)	Displace-ment (ft)	Bouwer-Rice	Hvorslev	KGS	Butler	Geo-metric Mean
	MW-25D	40.5-50.5	4.68	6.47E-05	9.94E-05	1.75E-04	NT	1.04E-04
	MW-26D	45-55	3.01	7.33E-03	1.15E-02	2.97E-02	NT	1.36E-02
	MW-27D	29-39	5.89	1.77E-04	2.66E-04	6.33E-04	NT	3.10E-04
	MW-28D	30-40	4.91	1.10E-04	1.58E-04	2.56E-04	NT	1.64E-04
	MW-29D	57-67	1.63	4.58E-02	7.49E-02	7.17E-02	4.11E-02	5.64E-02
							Bedrock geometric mean:	**1.53E-03**

* Indicates that screen and/or sand pack is exposed to upper glacial till.
[A] RMW-14 was installed at the existing landfill and is not included in the investigation calculations or discussion.

The potentiometric surface ranged from 231.33 feet (amsl) at MW-23D, to 247.83 feet (amsl) at MW-25D in late March/early April 2008. The general groundwater flow direction in the proposed expansion area is from north to south; however, the accumulated data shows that a bedrock ridge extends northeast-southwest along portions of County Route 20 and appears to produce a hydrologic divide, causing groundwater to flow north and south of the ridge (Figure 3.16). In addition, CFSWMA operates a groundwater suppression system that causes a significant depression in the potentiometric surface beneath the existing landfill. The hydraulic gradient is variable and ranges from approximately 0.02 to 0.008.

3.1.3.3 Overburden Groundwater Flow Zone

The overburden groundwater flow zone occurs at elevations ranging from approximately 201.59 feet (amsl) at MW-24I, to 249.72 feet (amsl) at MW-25S. Although the geologic units that constitute the overburden flow zone vary across the site, they behave as a single hydrologic unit.

The overall geometric mean hydraulic conductivity of the overburden unit calculated from in-situ hydraulic conductivity tests is 2.5×10^{-4} cm/sec and ranged from 7.1×10^{-6} cm/sec at MW-26S to 2.2×10^{-3} cm/sec at MW-27S, which is screened across a more permeable lens within the Marine Silt Unit. The geometric mean hydraulic conductivity of the Lower Till Unit ranged from 7.1×10^{-6} cm/sec at MW-26S to 4.0×10^{-4} cm/sec at MW-23I, with a geometric mean hydraulic conductivity of 1.2×10^{-4} cm/sec. The geometric mean hydraulic conductivity values calculated during this investigation are generally higher than those reported in the above-referenced Stearns & Wheler report, where the geometric means of the various overburden units ranged from 9.93×10^{-6} (upper grey till) to 8.55×10^{-5} (brown "field" till). The hydraulic conductivity data are summarized on Table 8.

The potentiometric surface ranged from 229.31 feet (amsl) at MW-24S to 256.63 feet (amsl) at MW-25S (Figure 3.17). The accumulated data indicates that the groundwater flow direction is generally north to south through the proposed expansion area. However, the topographic ridge which extends northeast-southwest

through the expansion appears to produce a hydrologic divide, north of which the flow direction is to the north, and south of which the flow direction is to the south. The hydraulic gradient is variable and ranges from approximately 0.01 to 0.04.

3.1.3.4 Groundwater Use

The geologic materials in the site vicinity are capable of providing modest yields to appropriately constructed water wells, and residences in the area are typically supplied by such wells. There are several residences located along County Route 20 (Trout River Road) that are located upgradient of the site. In addition, there are approximately twelve residences within a one-mile radius south of the site. However, these residences are located along Sand Road, which although generally in the downgradient direction from the site, is separated from the site by Briggs Creek, which serves as a groundwater discharge divide.

3.1.3.5 Groundwater Quality

The laboratory analytical results of samples collected from selected monitoring wells at the site indicate that the concentrations of detected parameters are typical of background groundwater quality. Concentrations of total iron and total manganese, however, exceed the ambient water quality standard of 300 micrograms per liter (ug/l) in samples from monitoring wells screened in both the overburden and bedrock. Concentrations of sodium also exceeded

the 20,000 ug/l standard at a number of locations. The observed concentrations of iron, manganese, and sodium are naturally-occurring and unrelated to existing landfill operations.

3.1.3.6 Primary and Principal Aquifers

The proposed landfill expansion site is not located over or near a primary or principal aquifer. Nor does groundwater or surface water from the site serve as recharge to a primary or principal aquifer. Aquifer potential in the site vicinity is depicted on Figure 3.18, which indicates that a potential aquifer area capable of producing groundwater yields in the range of 10 gallons per minute (gpm) to 100 gpm is located approximately two miles southeast of the site in the valley of the Trout River. This potential aquifer is both upstream and upgradient from the site and thus could not be impacted by site development.

3.1.3.7 Mitigation of Potential Groundwater Impacts

Potential impacts to groundwater resources at the site will be significantly minimized by the proposed landfill design and hydrogeologic setting of the site location, and by 6 NYCRR Part 360 regulations regarding design standards, siting criteria, and groundwater monitoring requirements.

The proposed landfill design and operational measures will significantly minimize the potential for impacts to groundwater beneath the site. The landfill design components and methods

have been developed in accordance with 6 NYCRR Part 360 regulations. The proposed landfill design includes a double composite liner system and a third collection layer beneath the entire footprint of the landfill (the groundwater suppression system). Together with the proposed stormwater management plan and low-permeability soils on-site, the probability of a landfill release (or leak) occurring and impacting groundwater is highly unlikely. Moreover, monitoring of the leachate detection system and groundwater suppression system beneath the landfill along with the groundwater monitoring well network around the perimeter of the landfill have been developed to detect and remediate such a release before it could enter the environment, in the unlikely event of such an occurrence.

The landfill design and operational features that will be implemented to significantly minimize the potential for impacts to groundwater quality and the monitoring programs proposed to detect a release from the landfill are briefly summarized below.

3.1.3.7.1 Dual Composite Liner System

The first line of defense for groundwater protection is the landfill liner system. The liner system contains two separate leachate collection systems (primary and secondary), and two separate composite low-permeability protective barrier layers. Leachate will be collected by a series of drains and a collection zone placed above the sloped liner surface. Downward migration of leachate into

the liner will be minimized by the runoff-inducing slope and high conductivity of the leachate drain materials, which will prevent the buildup of hydrostatic head on the liner. In the unlikely event of a failure of the primary leachate collection system, the secondary leachate collection system (leachate detection system) also serves as a collection system for leachate. Both the primary leachate collection system and leachate detection system (secondary leachate collection system) will be monitored during the operational and post-closure periods.

3.1.3.7.2 Groundwater Suppression System

The groundwater suppression system will be constructed directly above the low-permeability foundation subgrade soils and below the landfill liners. The groundwater suppression system will consist of a high permeability drainage layer that will collect groundwater seeping inward toward the landfill. This groundwater will be pumped to the surface via side riser pump stations located along the perimeter road around the landfill. In the unlikely event that leachate migrates through both landfill liner systems, the groundwater suppression system would serve as another active collection and pumping system for the removal of leachate. Water quality within the groundwater suppression system will be monitored as an additional measure. The groundwater suppression system, therefore, would also act as a tertiary layer in addition to the leachate

collection and detection systems for detection of a release from the landfill. It should also be noted that the underlying glacial till foundation soils, which will range in thickness (post-construction) from 15 to 30 feet, are a natural low-permeability liner system to limit further leachate migration.

Pumping of the groundwater suppression system during landfill operations will lower the water table, create an inward hydraulic gradient in the immediate vicinity of the landfill, and induce groundwater to flow towards the landfill area rather than away from the landfill. Groundwater recharge within the footprint area will also be eliminated as water is removed from storage by the groundwater suppression system, as the infiltration of precipitation through the waste is removed by the leachate collection system and as surface water runoff is directed to the detention basins.

3.1.3.7.3 On-Site Low Permeability Soils

The low permeability soils on-site would restrict the vertical and horizontal movement of a release from the landfill area. The in-situ vertical soil permeability over a majority of the footprint area is on the order of 1×10^{-7} cm/s to 7×10^{-7} cm/s, which approaches the required soil liner permeability of 10^{-7} cm/s. Furthermore, the post-landfill

construction thickness of the low permeability glacial till soils will typically be more than 25 feet throughout the footprint area.

3.1.3.7.4 Environmental Monitoring Program

In addition to the stringent engineering design criteria, 6 NYCRR Part 360 regulations also require an Environmental Monitoring Plan (EMP) for all landfills. The proposed EMP for the site includes a groundwater monitoring program that is in accordance with the regulations and is designed to detect a release from the landfill within the critical stratigraphic section (CSS) for the site. The CSS for the proposed facility would include all geologic units beneath the site through which a hypothetical release from the landfill could travel during the operational life (95 years) and a 30-year post-closure period.

Groundwater flow paths for a hypothetical release from the landfill were also estimated in order to predict the extent to which a hypothetical release would migrate away from the landfill. It should be noted that it is not plausible for leachate to migrate beneath the groundwater suppression system because of the overlying double composite liner system and collection layers, and the inward hydraulic gradient maintained by the suppression system. In addition, the estimate falsely assumes that no remedial action would be taken in the event a release did occur.

The analysis indicates that during the operational period hypothetical releases from locations throughout the majority of the landfill footprint would be captured by the groundwater suppression system. The only area where a release would not be captured is in the northeast corner of the footprint where the groundwater suppression system would be above the water table, and therefore, would not create an inward hydraulic gradient. During the post-closure period of the landfill, when the groundwater suppression system is not expected to be in operation, hypothetical releases from beneath the majority of the footprint would move only relatively short distances due to the low-permeability till beneath the landfill. For example, a hypothetical release from beneath the north-central portion of the footprint would take more than 200 years to reach the southern edge of the landfill footprint. From the southern edge of the footprint, calculated travel times in the glacial till to Briggs Creek are in the range of 50 to 60 years. The time required to migrate vertically through the low permeability glacial till to the bedrock is substantially greater than the lateral travel time in the glacial till. At a typical vertical gradient on the order of 0.05, a typical vertical hydraulic conductivity of 1.4×10^{-3} ft/day (5×10^{-7} cm/sec), an effective porosity of 0.20, and a thickness of 25 feet, it would take over 190 years to reach the bedrock beneath the glacial till.

This hypothetical release scenario **does not take into consideration** the fact that such a release would be detected through monitoring of the leachate detection system and groundwater suppression system. Further, the additional travel time for migration of a hypothetical release through the leachate collection/detection systems, the dual composite liners consisting of low permeability soils and geosynthetic liners, and the groundwater suppression system is not included in the calculated travel times. These landfill design features add years of additional protection during which a hypothetical release would be detected and addressed before it could ever enter the environment.

Before leachate could ever reach the points beneath the landfill where the estimated flow paths originate, it would be collected and removed by the primary leachate collection system and conveyed to the leachate storage tanks. In the unlikely event that this system failed, the secondary leachate collection system would detect, collect, and remove the leachate and convey it to the storage tanks. If both the primary **and** secondary collection systems failed, leachate would be detected and collected by the groundwater suppression system and conveyed to the storage tanks.

As an additional safeguard, the proposed groundwater monitoring network for the EMP has been developed to detect such a release years before it could migrate from the landfill. In the unlikely event of a

simultaneous failure of the leachate collection and detection systems, dual composite liner systems, and the groundwater suppression system, the groundwater monitoring network that will be located around the landfill footprint perimeter will provide an additional and immediate means to detect a release.

Based on the distribution of the various geologic units on the Site, the number of geologic units within the CSS to be monitored as part of the EMP will vary from north to south across the site. In the northern half of the proposed footprint, the CSS includes the Upper and Lower Till Units, and the bedrock. In the southern half of the footprint, the CSS includes the Upper and Lower Till Units, the Marine Silt Unit, and the bedrock. The groundwater monitoring program and monitoring well network for the facility will be based on this distribution of geologic units within the CSS across the site. As each phase of landfill construction is completed, the monitoring well network will be expanded to include wells adjacent to the new phase in each of the geologic units in the CSS.

The monitoring well network for the groundwater monitoring program will include a number of wells set at varying depths within the CSS around the perimeter of the landfill. Groundwater monitoring for the proposed facility will be conducted in a phased approach. Monitoring wells will be installed upgradient and downgradient of each landfill phase

prior to construction of that phase. To the extent possible, existing wells that are screened at appropriate depth intervals will be incorporated into the monitoring well network (wells located within the footprint area will be abandoned per 6 NYCRR Part 360 regulations prior to construction of cells in that area).

In accordance with 6 NYCRR Part 360 requirements for horizontal well spacing, a total of approximately 60 wells may be needed to establish the groundwater monitoring network for the site (30 well clusters with an average of 2 nested wells at each cluster). Data gained from the monitoring of initial phases would be factored into the monitoring plan for subsequent phases. According to 6 NYCRR Part 360, groundwater monitoring to establish existing water quality will be conducted prior to any deposition of waste in each new phase that is constructed. Over the course of the life of landfill operations, the wells will be sampled on a quarterly basis and the groundwater analyzed for 6 NYCRR Part 360 baseline and routine parameters. Groundwater monitoring will also be performed during the 30-year post-closure period.

At this point, residential well sampling will only be undertaken as part of the landfill's contingency monitoring plan. If the daily leachate system monitoring and quarterly groundwater testing of the landfill's monitoring wells lead to

the implementation of the on-site remediation efforts, and if those remediation efforts indicate that there is a reasonable concern that leachate may migrate off-site, then well sampling and testing of downgradient residential wells would be undertaken by the Authority.

3.1.4 Climate

Franklin County's climate is generally characteristic of the humid continental type, which prevails in the northeastern United States. The climate of northern New York is controlled by the patterns of atmospheric circulation and normal routes of air masses that travel across the geographical position of New York State. Specifically within the County, local weather patterns may differ based on localized topographic features, differences in latitude, and locations of large bodies of water (New York State Climate Office, 2008). Microclimates often result based on these natural features.

New York State commonly experiences the presence of cold, dry air masses that arrive from the northern interior of the continent and prevailing winds that arrive from the south/southwest transporting with them warm, humid air. Occasionally, air masses and weather systems are maritime, generated from the North Atlantic Ocean.

Throughout the year, New York State experiences a fairly uniform distribution of precipitation. There are no distinctly dry or wet seasons, which are regularly repeated on an annual basis. By late November, snow cover generally begins to develop in the Adirondacks and northern lowlands and remains on the ground until various times in April, depending

upon late winter snowfall and early spring temperatures (New York State Climate Office, 2008). The general climate of New York State supports many agriculture enterprises within the region, dairying being the largest. Precipitation and temperature conditions favorably support the growth of alfalfa and grasses for hay and corn for silage throughout rural New York (New York State Climate Office, 2008).

Average annual climatological data was obtained for Malone, New York from the National Weather Service (NWS, 2002). This data had been retrieved from the Malone Weather Station, located at 44º 51' north and 74º 18' west, 880 feet above mean sea level (MSL), between the years 1971 and 2000. The proposed CFSWMA landfill expansion area is approximately 205-357 feet in elevation, along gently rolling pasturelands, crop fields, and patches of mixed forest.

The climatological data obtained from the Malone weather station included information regarding yearly average temperatures, average rainfall, average number of rain days, average snowfall, and average number of snow days. This data is displayed at the annual level, averaging data from years 1971 to 2000, in Table 9. More specific and current weather data was obtained from the Massena weather station located in St. Lawrence County, at an elevation of 182 feet above mean sea level (Weather Underground, Inc., 2008). The climatological data obtained from the Massena weather station includes information regarding monthly and yearly average mean temperatures (ºF), average precipitation (inches), average snow depth (inches), and average wind speed (miles per hour of mph). The yearly averages, from 1978 to 2008, of this data are displayed in Table 10.

Table 9 **Annual Average Malone Climatological Data**	
Weather Data	**Annual Average (1971-2000)**
Average High Temperature	51ºF
Average Low Temperature	33ºF
Average Mean Temperature	42ºF
Average Rainfall	37.81 inches
Average Number of Rain Days	162 inches
Average Snowfall	97.5 inches
Average Number of Snow Days	52 inches

Table 10 **Annual Average Massena Weather Data (Jan. 1978 – Aug. 2008)**				
	Avg. Temp. (ºF)	**Avg. Rainfall (in.)**	**Avg. Snow Depth (in.)**	**Avg. Wind Speed (mph)**
1978	42	24.36	5.7	7
1979	45	30.57	10.8	7
1980	42	40.29	4.9	6
1981	45	29.85	7.7	6
1982	43	27.15	12.0	7
1983	45	31.42	2.9	6
1984	44	18.19	6.2	7
1985	43	30.79	9.4	8
1986	43	31.49	6.7	7
1987	44	24.58	8.6	6
1988	45	30.11	4.1	8
1989	42	32.19	4.0	6
1990	46	33.58	3.6	6
1991	46	32.12	4.8	6
1992	42	36.92	5.5	6
1993	44	63.40	10.0	6
1994	44	45.63	9.0	7
1995	45	90.37	6.6	6
1996	44	98.67	6.6	6
1997	44	30.59	1.7	7
1998	48	32.18	4.6	6
1999	45	27.70	5.4	6
2000	N/A	N/A	6.0	N/A
2001	45	26.37	N/A	7
2002	45	32.45	N/A	7

Table 10
Annual Average Massena Weather Data (Jan. 1978 – Aug. 2008)

	Avg. Temp. (ºF)	Avg. Rainfall (in.)	Avg. Snow Depth (in.)	Avg. Wind Speed (mph)
2003	42	36.82	N/A	7
2004	42	32.71	N/A	7
2005	44	37.37	N/A	6
2006	46	31.02	N/A	6
2007	N/A	N/A	N/A	N/A
2008	43	17.27	N/A	6
Avg. Totals:	**44**	**36.41**	**6.4**	**6.5**

3.1.5 Seismic Activity

Based on the United States Geologic Survey (USGS) Seismic Hazard Map (USGS, 2008), the CFSWMA landfill expansion area is located within a moderate seismic area compared to other parts of the United States. According to the USGS, which maintains records extending back prior to 1640, four significant earthquake epicenters (magnitude 5.0 or greater) have been recorded in the region. In 1877, an earthquake with a magnitude between 5.0 and 5.9 occurred south of Montreal, Quebec. In 1944, the 5.8 magnitude Cornwall-Massena earthquake occurred, the largest earthquake registered in New York State. In 1983, the Blue Mountain Lake area of New York experienced a magnitude 5.3 quake. Most recently a magnitude 5.1 earthquake occurred in Ausable Forks, New York. However, no significant tectonic faults have been mapped in Franklin County, and there are no know active faults (i.e., younger than 1.6 million years) in this region (USGS 2002). Effects from earthquakes in this region typically include ground shaking with no open surface fracturing.

Following the 1994 6.7 magnitude Northridge Earthquake in California, a team of earthquake experts examined 22 landfills within 44 miles of the Northridge epicenter. None of the landfills sustained major damage as a result of the quake, and of the seven Subtitle D municipal solid waste landfills, minor damage was discovered at only one. The damage was easily repaired and not necessarily attributed to the earthquake (Magnuson, 1995). This indicates that geosynthetic lined landfills can adequately handle seismic forces with little to no damage if properly designed, constructed and operated. Specific to northern New York State, the 2002 Ausable Forks earthquake, considered to be a significant earthquake with a magnitude of 5.1, resulted in no damage to the double composite lined landfills in New York State including the landfills in close proximity to the epicenter such as the active Clinton County Landfill, the closed Essex County Landfill or the active CFSWMA Landfill.

According to 6 NYCRR Part 360 Section 2.7(b)(7), a seismic analysis must be performed for new landfills located within a seismic impact zone. A seismic impact zone is defined as any area with a ten percent or greater probability of exceeding a maximum horizontal bedrock acceleration, expressed as a percentage of the earth's gravitational pull (g), of 0.10g in 250 years. This analysis must demonstrate, at a minimum, that all long-term containment structures including liners, leachate collection and removal systems, and surface water control systems, be designed with a minimum factor of safety of 1.0 for the maximum horizontal acceleration for the site.

The most current version of the USGS Seismic Hazard Map (USGS, 2008) shows that the landfill is located within an area exhibiting a maximum bedrock acceleration of approximately 0.36g. Therefore, a detail seismic impact analysis is required and will be performed as part of the supporting landfill design calculations submitted to the NYSDEC in the 6 NYCRR Part 360 permit application for the proposed landfill expansion site.

The proposed landfill expansion will be designed to withstand ground shaking from the maximum probable earthquake for the area. The design earthquake for the area, based on the USGS seismic source zone delineation map of the contiguous United States (USGS, 1982), has a maximum probable magnitude of 7.9. This is greater than the historic earthquakes in the area.

Current CFSWMA landfill designs have been subject to seismic impact analysis requirements of NYSDEC Part 360 and have shown that the minimum factor of safety of 1.0 can be achieved for the maximum horizontal acceleration for the site. Based on preliminary design parameters and stability analyses, the landfill design for the landfill expansion also demonstrates that a minimum factor of safety of 1.0 can be achieved.

In addition, liquefaction potential of landfill subgrade foundation soils will be analyzed during landfill permitting. Liquefaction of foundation soils occurs from the shaking of saturated granular soils during an earthquake which can increase pore pressure, resulting in a loss of

stiffness, or strength of the foundation soils. Based on the analyses of subsurface data and the design of the landfill subgrade, liquefaction of foundation soils is unlikely.

Excavation of soils and construction of the landfill subgrade and other landfill slopes will be performed in a manner that will create stable conditions. In general, the glacial tills in the area of the landfill have proven to provide a stable foundation for landfill construction. Any weaker veins of clay encountered will be removed during subgrade excavation to ensure the landfill is constructed on sound soils. The subgrade soils will be tested extensively prior to landfill construction to ensure a sound foundation. Engineered slopes would be constructed no steeper than 3 horizontal: 1 vertical. The landfill bottom grades will have a minimum grade of 2% to prevent ponding of leachate. The pore water drainage system will reduce hydrostatic pressure on the landfill liner system and subgrade soils by draining any groundwater before it contacts the liner system. The top of the landfill will have a minimum grade of 4% to promote drainage and prevent stormwater infiltration.

Further discussion of seismic activity, seismic design and site specific contingencies related to the occurrence of seismic activity are also addressed in Appendix A.

3.1.6 Air Quality

3.1.6.1 Local Air Quality

Potential air quality impacts which are likely to be associated with landfill construction and operation involve emissions from waste hauling vehicles and landfill equipment, the temporary and localized generation of dust, and the generation of landfill gas. The significance of these potential impacts will be limited through the use of proposed mitigation measures, as described in the following sections.

3.1.6.2 Landfill Gas Emissions

Landfill gas is a byproduct of anaerobic decomposition of the waste mass. The gas primarily contains methane, carbon dioxide, and non-methane organic compounds (NMOCs). During initial placement of the waste, there is generally enough available oxygen for aerobic decomposition to take place. However, once the available oxygen supply is consumed, the anaerobic decomposition process takes over, and landfill gas is produced.

In 1996, the Environmental Protection Agency added subpart WWW to the New Source Performance Standards (NSPS) regulations (40 CFR Part 60). This subpart contains standards of performance for new municipal solid waste landfills. This regulation was issued by the EPA as a means to address its concerns regarding the contribution of landfill gas emissions to air pollution,

and the potential adverse effects of these emissions on the public health and welfare. The New York State Department of Environmental Conservation incorporated the federal regulations into state rules as 6 NYCRR Part 208.

NSPS regulations require landfills with a design capacity greater than 2.5 million megagrams or 2.5 million cubic meters of municipal solid waste to install a landfill gas collection and control system, or show by site testing that emissions of NMOCs are below 50 megagrams (Mg) per year. Landfills subject to the rule are also required to obtain a Title V air facility permit for any air emissions from the operation.

The CFSWMA Landfill is currently not subject to NSPS requirements, as the permitted design capacity is under the threshold. As such, a landfill gas control system is not required by regulation at this time.

Although not required, the Authority has elected to voluntarily install a landfill gas collection and control system to reduce emissions and improve air quality. The existing system consists of active landfill gas collection piping connected to a blower skid which conveys collected landfill gas to a control device where it is combusted. The control system is currently permitted under the facility's NYSDEC Air Facility Registration Permit. The collection and destruction of landfill gas decreases the quantity of

methane and NMOC emissions at the facility. Typical control device destruction efficiencies are 100 percent for methane and 98 percent for NMOCs.

The landfill design capacity will exceed the NSPS design capacity threshold with the addition of the proposed landfill expansion. Once the permitted capacity exceeds this threshold, regulations require that the NMOC emission rate be estimated based on Tier 1 and/or Tier 2 procedures to determine if emissions are above 50 Mg per year. The Authority will also submit a NYSDEC Title V Air Facility Permit application prior to constructing the expansion landfill. The Title V Air Facility Permit will replace the Authority's existing Air Facility Registration Permit.

Landfill gas migration to off-site areas will be controlled by using various preventative measures. These include removal of daily and intermediate cover from the compacted waste before the next lift of waste is placed. This procedure will remove a potential barrier to vertical gas migration (the cover soil) and encourage upward movement of the gas until it is intercepted by the gas collection system. The active landfill gas collection system "draws" landfill gas to the system, which therefore directs landfill gas towards the landfill footprint, rather than away from the footprint and potentially to off-site areas. An additional mitigation measure to detect gas migration is the implementation of a gas-monitoring program. This monitoring program will be used to ensure that

landfill gas concentrations do not approach explosive levels, in accordance with regulatory requirements set forth in 6 NYCRR Part 360-2.17(f).

3.1.6.3 Vehicle Emissions

The Authority's Landfill is accessed through one location on the south side of County Route 20. Based on the preliminary site design of the master build-out of the landfill site, this existing access location will remain the sole access point for the landfill throughout its entire site life. No changes are proposed as part of this project that would affect the current transportation infrastructure at the landfill site, or on a regional transportation level. The number of trucks that access the landfill is not anticipated to change since an increase in the current permitted tonnage accepted per year at the landfill is not proposed as part of this project.

Counties that do not meet the National Ambient Air Quality Standards (NAAQS) are designated as non-attainment or maintenance areas and are flagged for exceeding levels of certain pollutants. Franklin County is not designated by the New York State Department of Transportation (NYSDOT) as having any non-attainment or maintenance areas.

During landfill construction, the primary source of vehicular emissions will be from the heavy equipment used. During landfill operation, the primary sources of vehicular emissions will be from the heavy equipment used at the landfill site and waste hauling

vehicles. Emissions from the construction equipment, the landfill's operating equipment, and waste hauling vehicles are not anticipated to have a significant impact on local air quality due to the emission controls installed on such equipment. In addition, waste hauling activities are not expected to increase from existing operations, therefore average vehicle related emissions are not expected to increase with the addition of the proposed landfill expansion.

3.1.6.4 Dust

Dust generation will be minimized by using best management practices. To reduce dust generation from borrow areas and other areas of the site where earth-working activities will take place, these areas will be kept to minimum practicable sizes. Areas where vegetation has been removed will be re-vegetated as quickly as possible. Sections of borrow areas and soil stockpiles which are not expected to be used for extended periods will be temporarily re-vegetated with herbaceous vegetation to prevent wind erosion, and consequently dust generation.

A water wagon is available at all times to water down unpaved haul roads during dry periods to minimize dust generated by vehicles moving over exposed soils. The site entrance road is paved which further minimizes dust generation.

Dust generation during initial construction of the proposed landfill expansion is expected to be short-term in nature, for the duration of construction. During landfill operation, the potential for dust generation will occur in limited areas of the site, specifically in the soil borrow area, on haul roads, and at the working face of the landfill. With the use of the mitigation measures proposed, no significant adverse impacts are expected to be caused by dust generation.

3.1.6.5 Odors

The Authority's efforts to control odor for the landfill expansion site will start at its transfer stations. The amount of time wastes are stored at the transfer stations will be minimized. The quicker the wastes can be moved through the transfer stations and delivered to the landfill site, the less opportunity there will be for odors to develop. In addition, the transfer trailers used to haul wastes to the site will be properly washed and maintained to prevent the generation of odors between the transfer station and the landfill. The transfer trailers used will be watertight in order to avoid any release of moisture from the waste during transport. In addition, waste loads delivered to the landfill will be required to be covered, which will also help to reduce odor impacts.

The odors generated at a landfill site are largely attributed to the production of hydrogen sulfide landfill gas components and organic acids which are byproducts of anaerobic waste decomposition. The potential for odor generation related to landfill

gas is the highest during the summer months when temperatures are optimal for microbial activity and the rate of decomposition is at its greatest. During this time, odors are also more noticeable to potential receptors because the level of outdoor activity generally increases and windows in residences are opened more often. During the winter months, the rate of anaerobic decomposition slows considerably, and the upward movement of landfill gas is impeded by frozen soil and waste. Both of these factors tend to reduce the level of odor generation during the colder months.

Once wastes are received at the landfill, best management practices will be used to minimize odors and prevent odors from emanating off-site. At a minimum, daily and intermediate cover soils will be applied to the waste mass in accordance with NYSDEC Part 360. Waste loads having particularly strong odors will be covered immediately after being emptied from the delivery vehicles. On those days when atmospheric conditions are optimal for odor generation (e.g., warm, humid days), wastes will be covered more frequently throughout the day rather than just at the end of each day.

The Authority's active gas collection and control system will also help reduce odors generated at the facility. The existing system will be expanded throughout the life of the landfill expansion in order to collect landfill gas from developed landfill areas. The gas collection and control system will significantly reduce odors through the destruction of odor causing components of landfill gas.

3.1.7 Greenhouse Gases

Methane from the generation of landfill gas is considered a primary source of greenhouse gas (GHG) emissions at municipal solid waste (MSW) landfills. Landfill gas generation is a byproduct of anaerobic decomposition of landfilled waste. The main constituents of landfill gas include methane and carbon dioxide, with the methane concentration of the gas typically ranging from 40 to 60 percent. Additional minor constituents include oxygen, nitrogen, hydrogen sulfide and non-methane organic compounds (NMOCs).

As a GHG, methane has 23 times the global warming potential of carbon dioxide over 100 years (IPCC, 2001). For this reason, the majority of greenhouse gas emissions from MSW landfills occur from landfill generated methane. It should be noted that the carbon dioxide portion of GHG generated through the anaerobic degradation of MSW is not considered to contribute to the net addition of carbon dioxide emitted to the atmosphere (USEPA, 2004).

The Authority currently controls landfill methane emissions through the operation of an active gas collection and control system (GCCS). The system has been voluntarily installed to reduce GHG emissions and improve air quality. The system consists of gas collection wells and piping which convey landfill gas to an onsite flare type combustion device. Approximately 100 percent of the methane collected and delivered to the combustion device is destroyed (USEPA, 1998). A secondary combustion product of methane combustion is carbon dioxide. As with carbon dioxide

emissions from waste degradation, carbon dioxide emissions from the destruction of landfill methane are not considered to contribute to the net addition of carbon dioxide emitted to the atmosphere (USEPA, 2004).

An expansion of the existing GCCS is proposed as part of the proposed landfill expansion to ensure a high GCCS collection and control efficiency, and therefore, will continue to provide for the destruction of methane in the landfill gas. The proposed GCCS expansion is described in Section 2.2.6.

Additional sources of GHG emissions at the facility include emissions from stationary source fuel combustion, mobile source fuel combustion, and electrical power purchases from utility companies. GHG emissions from these sources are not expected to increase from current levels with the landfill expansion, as supporting landfill facilities, equipment, and general operations regarding waste intake are not expected to increase with the addition of the proposed landfill expansion. GHG emissions from these sources may in fact decrease from existing emission levels throughout the life of the expansion as emission control technologies and equipment efficiencies improve. As such, GHG emissions from these additional sources are not included in this discussion.

3.1.7.1 Methane Generation Estimates

The generation of landfill gas is an incremental process, whereby increasing quantities of landfill gas are generated with subsequent placement of solid waste. Based on this methodology,

the maximum rate of methane generation occurs one year after closure, at which time the maximum amount of waste is in place within the landfill. In order to estimate the expected methane emission increase, the existing and proposed landfill expansion methane generation rates were modeled for comparison purposes. The following is a summary of this modeling:

3.1.7.2 Methane Generation Modeling

The USEPA's Climate Leaders Greenhouse Gas Inventory Protocol, Direct Emissions from Municipal Solid Waste Landfilling Module (USEPA, 2004) was utilized to quantify methane emissions at the landfill. The protocol presents methods for estimating methane emissions from MSW landfills, including the use of mathematical models.

The protocol references the use of the USEPA's Landfill Gas Emissions Model (LandGEM), version 3.02, May 2005, to estimate landfill gas and methane generation for the facility. The model estimates landfill gas emissions for various landfill gas constituents based on input parameters including: the volume of waste in place at the landfill (or annual waste acceptance rate), the type of waste in the landfill, the landfill design life, a methane generation constant (k), a methane generation potential (Lo), and the volumetric percent of landfill gas that is methane.

The LandGEM model was used to estimate methane generation using historical putrescible (degradable) waste receipts for the facility through 2007. Projected future waste placement was estimated based on the current maximum permitted annual waste acceptance rate of 125,000 tons per year until the expansion reaches design capacity. As a conservative assumption, all of the waste placed in the landfill was assumed to be degradable, or gas producing waste, providing a conservative estimate of landfill gas generation (i.e. it likely over-estimates the amount of landfill gas that will be generated).

The LandGEM model was configured for estimation of landfill methane emissions using the default parameters presented in the USEPA's Compilation of Air Pollutant Emission Factors (AP-42), Section 2.4 (USEPA, 1998). These default values are typically used to model gas generation when site-specific data is not available (USEPA, 2004). The following are the LandGEM model defaults used in the methane emissions modeling:

Methane generation potential (Lo) = 100 m^3/Mg solid waste
Methane generation rate constant (k) = 0.04 / year
LFG methane concentration [CH_4] = 50%

The modeling results for the existing and projected peak methane generation rates are presented in Table 11.

3.1.7.3 Methane Mitigation

The Authority currently mitigates methane emissions by collecting landfill gas using the GCCS and combusting it in a flare type control device. Methane mitigation by this method is generally affected by two main factors: GCCS collection efficiency and methane oxidation in cover materials. The following discussion describes the background for both factors used in calculating the methane emission estimates for the landfill.

3.1.7.4 GCCS Collection Efficiency

The quantity of methane emitted from the operation of a landfill is proportional to the collection efficiency of the GCCS installed at the facility. For the existing landfill operations, a GCCS collection efficiency of 75 percent (%) has been utilized. This collection efficiency factor is used as the default value when more precise estimates are not available (USEPA, 2004).

Following the proposed GCCS system upgrades expected to be constructed as part of the proposed landfill expansion, the GCCS collection efficiency is expected to improve. The expected upgrades include a new landfill gas flare skid, installation of deep gas vents, and system upgrades to the existing GCCS to accommodate predicted future landfill gas production rates. As a conservative assumption, we have assumed that active landfill areas of the proposed expansion will maintain the default collection efficiency of 75%. Areas under intermediate cover prior to capping

are estimated to have a collection efficiency of 85%, and areas under final geomembrane cap are expected to have a collection efficiency of 95%. This is supported by research findings that closed landfills designed to capture gas and capped with impermeable geomembrane final cover systems are expected to have collection efficiencies of 95% to 99% (SCS Engineers, 2007).

During normal operation of a municipal solid waste landfill, all three cover types are generally employed at any one time. Generally an area of the landfill is utilized for active filling, another area is covered with intermediate cover, and the remainder of the landfill is capped. As the fill progression continues, the acreage of the landfill that is capped increases while the acreage of active landfill area and acreage of intermediate cover generally remains the same. As the landfill progression continues towards the closure year, the GCCS collection efficiency for the site will continually increase as the amount of capped area increases in proportion to areas with soil cover.

In order to estimate GHG emissions, we have assumed a site average collection efficiency of 85% (75% for active areas, 85% for intermediate cover areas, and 95% for capped areas) following the GCCS system upgrades for 2015 through the closure year in 2110. This is a conservative assumption as the actual collection efficiency is expected to incrementally increase as areas are capped, and is expected to approach 95% by the closure year.

After closure of the last cell in 2110 and final capping in 2111, the GCCS collection efficiency for the entire site is expected increase to 95% to 99%.

3.1.7.5 Methane Oxidation

In addition to the quantity of landfill methane collected and destroyed by the GCCS, methane that is not collected may be oxidized as a result of naturally occurring methane oxidizing bacteria found within landfill cover systems, intermediate soils and alternative daily cover (ADC) systems. Studies have shown that oxidation rates range from 10 percent to over 25 percent. A conservative assumption for the methane oxidation rate is 10 percent of the non-captured landfill methane passing through the cover system or cover soils (USEPA, 2004). Landfill cover systems that incorporate a flexible membrane liner within the final cover system have negligible oxidation rates and are assigned a default oxidation rate of zero (USEPA, October 2004).

The Authority currently employs cover soils and other alternate daily cover materials to cover working face operations. The facility also utilizes cover soils as intermediate cover materials until capping occurs. The current capping system includes a 6 NYCRR Part 360 composite barrier consisting of a geomembrane directly overlaying low permeability soil layer. Current operations require all three cover systems at any one time. For the active working areas and landfill areas under intermediate cover, we have

conservatively assumed a methane oxidation rate for non-captured methane of 10 percent. For areas that are capped, we have assumed that oxidation will be zero.

For existing operations, the peak year of emissions is estimated to occur when three cells are capped and one cell is covered with intermediate cover soils. As such we have assumed that 25% of the landfill area will have a methane oxidation factor of 10%, and 75% will have a methane oxidation factor of zero. The resulting methane oxidation factor for the estimated peak year (2014) of GHG emissions for the existing landfill is 2.5%. However, as the landfill expansion progresses, the total capped area for the site will increase, causing the average site oxidation factor to decrease throughout the life of the landfill, nearing zero at closure when the majority of the site will be capped. As such, we have assumed zero oxidation for the year of peak emissions following closure of the proposed landfill expansion.

3.1.7.6 GHG Emission Estimates

The following table presents the estimated methane generation, mitigation, and emission quantities in megagrams per year (Mg/yr) for the existing landfill (expected to reach design capacity in 2015) and the proposed expansion landfill.

Table 11
Peak Methane Generation and Emission Estimates

Project	Peak Year of CH4 Emissions	CH4 Modeled Generation[1] (Mg/yr)	CH4 Mitigated[2] (Mg/yr)	CH4 Emitted (Mg/yr)
Existing Permitted Landfill	2014	2,328	1,761	568
Proposed Expansion Landfill	2110	7,483	6,361	1,122

[1] LandGEM model output for peak methane generation (by mass) for existing permitted landfill and proposed expansion landfill.

[2] Methane mitigated based on GCCS collection efficiency and estimated methane oxidation rate.

As shown in the Table 11 above, the existing permitted landfill emits approximately 24% of the GHG methane generated by the landfill. The proposed landfill expansion and associated GCCS system improvements reduce GHG methane emissions to approximately 15% of methane generated by the landfill. Although the proposed expansion results in an increase in landfill gas production due to the increased waste mass, the proposed landfill expansion project will reduce the GHG methane emission rate by approximately 11% as compared to the GHG emission rate from the existing landfill operations.

3.1.7.7 Future GHG (Methane) Mitigation Measures

Landfill gas collection and control will be the primary methane control method utilized at the site throughout the landfill expansion. As each new cell is constructed and filled, the GCCS will be expanded to collect and control landfill gas as soon as

possible after waste placement begins. The Authority also plans to examine alternative beneficial uses for landfill gas such as the use of landfill gas as a fuel source for electricity generation (landfill gas to energy) and sale on the open market or for powering onsite facilities. This mitigation method would reduce the State's GHG emissions through the generation of renewable "green power" which would replace power generated through traditional fossil fuel combustion methods. The Authority also plans to explore the use of landfill gas as renewable "green fuel" for building heat to replace existing fossil fuel usage. These potential methane mitigation measures could further reduce the landfill's GHG emissions and also serve to reduce the State's GHG emissions.

The amount of landfill gas generated at the Authority's landfill may also decrease in the future if the amount of organic wastes disposed at the landfill decrease. Such decreases in the amount of organic wastes to be landfilled may occur through the development of composting programs for organic wastes, including yard waste, sludges, and food waste, to the extent feasible.

3.1.8 Site Ecology

3.1.8.1 Vegetation

Over the life of this project, there would be some changes to the composition and vegetation types observed on-site. The approximate acreage of each cover type currently found within the

proposed landfill expansion area is included in the following Table 12. This table also includes the acres to be impacted by the maximum landfill build-out by cover type.

Table 12
Acreages of Existing Cover Types
Within Expansion Area

Cover Type	Approx. Area (acres)
Meadow	38.8
Open Space	2.2
Agriculture – alfalfa	16.8
Brushland	33.6
Forestland	20.4
Pastureland	31.6
Agriculture - corn	10.8
Total:	**154.2**

These cover types are based on the interpretation of 2004 aerial photography and field reconnaissance. Cell 1 of the existing CFSWMA landfill has been previously closed and capped. This cell is considered a meadow cover type since capped landfills have a vegetated surface of upland herbaceous plants and grasses. The proposed landfill expansion is also considered to be a meadow cover type since it would eventually be capped and closed once the landfill reaches full capacity.

Nine (9) wetlands, and associated drainage channels, were observed and subsequently delineated within the proposed expansion area. Within the landfill expansion limits, these wetland areas total 19.51 acres. Refer to Section 3.1.9 for information regarding the mitigation of impacted wetland areas.

All of the cover types and vegetative species observed on the existing landfill site and within the proposed expansion area are not ecologically sensitive or important areas and are abundant throughout Franklin County. Many of the existing cover types are associated with, or have been directly influenced by, current and previous agricultural land uses. These areas have been used as pasturelands for cattle, croplands, and hay fields.

3.1.8.2 Wildlife

The website of the Department of the Interior's (DOI) U.S. Fish and Wildlife Service's (USFWS) Cortland Field Office was searched in order to find information regarding the potential for any federally protected species to frequent Franklin County. There are no reports of any federally recognized threatened, endangered, or candidate species within Franklin County. During frequent field reconnaissance, no observations of any federally protected species were noted. Therefore, the proposed landfill expansion project will not impact any plant or animal populations under federal protection.

The New York State Natural Heritage Program (NYSNHP) was queried to determine if any threatened species, endangered species, or species of special concern were reported within or adjacent to the proposed landfill expansion area. The northern harrier (*Circus cyaneus*), a threatened species in New York State, is known to frequent areas within the Towns of Constable, Fort Covington, and Westville.

In order to determine whether the proposed landfill expansion would impact potential populations of northern harriers within or adjacent to the landfill site, or their habitats, a Northern Harrier Sampling and Monitoring Plan was prepared (Appendix D). This document, which was approved by the NYSDEC, outlined a monitoring plan to determine whether northern harrier populations utilized habitats within the expansion area, and if so, how these populations would be impacted by the proposed project.

Four site surveys were completed during May and June 2007. Ten (10) representative locations were selected as survey locations based on their habitat availability and distance from surrounding locations (Figure 3.19). At every survey location, characteristics of the surrounding habitat were noted, as well as all bird species that were either visually or audibly observed. Table 13 lists all bird species observed throughout this study, the total numbers of each species observed, and the survey location numbers where each species was observed throughout the study. The full survey results are available in the Proposed Franklin County Landfill Expansion Bird Survey, located in Appendix E.

Table 13
Bird Survey Result Totals By Species

Common Name	Total Number Observed	Sampling Locations Where Observed
Red-winged blackbird	46	1,2,3,4,6,7,8,9,10
White-throated sparrow	4	4,8,9
Bobolink	14	1,7,8,9,10
Barn swallow	44	1,2,3,4,8,9
European starling	98	1,2,3,4,5,9,10
American crow	50	3,4,5,6,7,8,9,10
Rock pigeon	8	1,2
Mourning dove	3	1,9
Yellow warbler	4	3,10
Chestnut-sided warbler	5	3,4,6
Canada goose	19	1,2,3,6,7,8,9
American goldfinch	9	2,5,6,8,10
Mallard duck	2	9
Wild turkey	12	4,5
Black-capped chickadee	5	3,7,8
Turkey vulture	15	2,4,5,8,10
American robin	3	1,3,5
Song sparrow	34	1,2,3,4,5,6,7,8,9,10
Chipping sparrow	4	1,4,5
Downy woodpecker	1	5
Unknown woodpecker	2	2,5
Pileated woodpecker	3	4,5
Hairy woodpecker	3	6,8,9
Great blue heron	1	8
Killdeer	3	3,8,9
Northern flicker	1	5
Overbird	2	4,5
American tree sparrow	14	1,2,3,4,6,8,10
Tree swallow	7	2,3,8
Red-eyed vireo	2	6,7
Total Birds Observed:	**418**	**--**

None of the species documented during this survey are listed as threatened, endangered, or rare by the NYSDEC or the USFWS. No northern harriers were observed during the course of

this study, likely due to the absence of high quality nesting and foraging habitat within the project area. It is also probable that northern harriers do not inhabit the project area because of the frequent land disturbance associated with the active agriculture in the area. Ultimately, no evidence was found to show that the proposed project area is being utilized by nesting or foraging populations of northern harriers; therefore, it can be concluded that no impacts to the regional or state-wide populations of this threatened species should occur as a result of the proposed project.

The proposed landfill expansion project will remove areas that are currently utilized as nesting and foraging habitat for many species of wildlife. Despite the potential impacts to these habitats, properties that exhibit similar characteristics and vegetative cover types exist adjacent to the project area, and more generally, throughout the Towns of Westville and Constable. These surrounding areas will be available and able to support the populations of wildlife that will be forced to relocate as a result of the proposed project. The widespread agricultural practices established in the Towns of Westville and Constable provide cover types and habitats that are similar to those observed within the proposed landfill expansion area. These areas are characterized by early successional grassland areas interspersed with mixed forested areas. Ample similar food sources are available nearby for relocating wildlife populations.

3.1.8.3 Critical Environmental Areas

Critical Environmental Areas (CEAs) are specific geographic areas that have an exceptional or unique character with respect to their ecological, social, cultural, and/or historical values or qualities. There are no NYSDEC Critical Environmental Areas recognized within Franklin County (NYSDEC, CEAs, 2008). Therefore, no impacts to any of these sensitive areas will occur as a result of the proposed landfill expansion project.

3.1.9 Wetland Resources

A wetland field delineation was completed for the proposed landfill footprint area on November 6, 7, and 8, 2006 and May 14, 2007. This delineation was conducted in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Library, 1987). Nine (9) wetland areas and associated drainages were delineated as a result of this field effort, totaling 19.51 acres. These areas are shown on Figure 3.20.

The proposed maximum build-out scenario of the CFSWMA Landfill expansion will require the filling of approximately 11.78 acres of delineated wetlands and drainages. These delineated areas are identified and described in the Wetland Delineation Report for the Proposed CFSWMA Landfill Expansion and the Supplemental Wetland Delineation Memorandum, both included as Appendix F.

The CFSWMA is currently awaiting a jurisdictional determination from the U.S. Army Corps of Engineers to determine which of the ten wetland areas, if any, are under federal jurisdiction. None of the delineated wetland areas are under state jurisdiction, as confirmed by Region 5 of the NYSDEC (NYSDEC, Wagner, 2007). During the permitting of future phases of the proposed landfill expansion, if any impacts to federally jurisdictional wetlands would occur, then the CFSWMA will prepare and submit a Joint Application for Permit to request an Individual Permit from the USACE to satisfy Section 404 regulations for impacts to Waters of the U.S. under federal jurisdiction, including wetlands.

Part of the permit application will require a detailed Wetland Mitigation Plan that will outline the actions that CFSWMA will take to mitigate the acreage, functions, and values of the impacted wetland areas. This procedure of off-setting unavoidable adverse impacts to wetlands, streams, and other aquatic resources is termed compensatory mitigation. Compensatory mitigation can be carried out through four methods: the restoration of a previously-existing wetland or other aquatic site, the enhancement of an existing aquatic site's functions, the creation of a new site, or the preservation of an existing aquatic site (USACE, 2008). The recently revised federal regulations for wetland mitigation include the completion of one or more of the following methods to satisfy Section 404 of the Clean Water Act:

- *Wetland Banking*: Wetland banking involves off-site compensation activities generally conducted by a third party or sponsor. Mitigation banks must conduct site selection activities, receive plan

approval, and provide financial assurances all prior to selling credits. Initial investing is crucial to the immediate success and approval of a banking site. In accordance with recently revised federal regulations, this is currently the USACE's preferred method of compensatory wetland mitigation. There are currently no known wetland banks located within Northern New York State.

- *Permittee Responsible Compensatory Mitigation*: This is the most common form of wetland mitigation and continues to represent the majority of compensation acreage provided each year (USACE, 2008). The project permittee retains the responsibility for making sure that the required mitigation activities are completed and successful. This mitigation method can be conducted at or adjacent to the impact site or at another location within the same watershed as the impact area. This mitigation can involve the construction of new wetlands or the restoration of previously impacted wetlands, or some combination of both.
- *In-lieu Fee Mitigation*: This method of wetland mitigation also involves off-site compensation activities that are conducted by a third party or program sponsor. Like mitigation banking, in-lieu fee mitigation results in aquatic resource restoration, enhancement, establishment and ecological preservation. These types of programs are generally administered by state governments, local governments, or non-governmental organizations. In-lieu fee mitigation is initiated through fees collected from the project permittee.

3.2 Local Community Characteristics

3.2.1 Land Use and Zoning (Assessment of Westville Local Law)

The Town of Constable does not have a zoning ordinance or other zoning-type regulations in effect. This section of the DEIS will, therefore, assess the Town of Westville's zoning regulations as they pertain to the Authority's proposed landfill expansion.

The Authority's proposed landfill expansion area is almost entirely located within the Town of Westville. On September 10, 1986, the Town of Westville adopted "Local Law No. 1 of the Town of Westville – Establishing Zoning Regulations for the Town of Westville, New York" (Westville Local Law). There are two provisions of the Westville Local Law that relate to landfills:

> "Sanitary Landfill: A parcel of land used for the deposition of solid refuse, followed by its compaction and covering with earth in a systematic and sanitary manner." (Westville Local Law, Section 5, Paragraph C.)

> "The Town of Westville prohibits the use of its lands, both public and private, for sanitary land fill (sic) sites. This includes sites designed for the incineration of refuse. Provided however, if the Town decides to provide a sanitary land fill (sic), it may do so." (Westville Local Law, Section 11, paragraph C.)

The stated purpose of the Westville Local Law is as follows:

> "The purpose of these regulations is to promote health, safety, morals, and general welfare and avoid undue concentration of populations, to facilitate adequate provisions for water, transportation and other public requirements, to protect the natural and scenic qualities of the community and to encourage the appropriate use of land throughout the town." (Westville Local Law, Section 3, paragraph A.)

As noted above, the Westville Local Law allows the Town of Westville to develop a sanitary landfill but it prohibits anyone else from doing so. There is no explanation or justification provided in the Westville Local Law for this distinction. Furthermore, the Westville Local Law does not restrict any such Town of Westville landfill to receive only those wastes generated within the Town – such a landfill could, for example, serve the entire County of Franklin plus all other customers currently served by the Authority's landfill (and those that would be served by the Authority's proposed landfill expansion).

Since the Westville Local Law allows for the Town of Westville to develop a sanitary landfill that could accept wastes from anywhere, with no limitation on its size or service area, it is not clear why the Authority's proposed landfill expansion should be prohibited by that same Westville Local Law. The types of potential environmental impacts from such a landfill are the same, regardless of whether it is developed by the Town of Westville or by the Authority. Similarly, the natural and scenic qualities of the community could be modified in the same manner by a Town of Westville landfill as by an Authority landfill. However, the Authority, as a State created county-wide agency, has greater resources than the Town

of Westville that can be utilized to finance the multi-million dollar capital investments that are necessary to build the double composite liner systems and other environmental protection measures required of modern sanitary landfills, thereby ensuring that local environmental resources will be protected, to the greatest extent practicable, from the operation of a landfill in the Town of Westville.

The Authority, under Title 13-I of the New York State Public Authorities Law, adopted in 1988 with an effective date of September 1, 1988, is authorized to provide solid waste management services and to develop solid waste management facilities. By statute, the Authority's purposes are considered to be public purposes which are performed as an essential government function and are for the benefit of the people of the County and the State for improvement of their health, welfare and prosperity (Section 2051-c(7) of Public Authorities Law). Moreover, there are two provisions in the Authority's statute that address inconsistent provisions of local laws such as the Westville Local Law's prohibition on non-Town landfills, which was adopted two years prior to the Authority's creation under State law:

> "In so far as the provisions of this title are inconsistent with the provisions of any other act, general or special, or of the county charter or any local law, ordinance or resolution of the county or any other municipality, the provisions of this title shall be controlling." (Section 2051-x of Title 13-I of Public Authorities Law.)

Section 2051-t(2) of the Public Authorities Law, in addressing contracts with municipalities and powers of municipalities, states that "…any such local law enacted by the County shall take precedence over and shall supersede any inconsistent provisions of any such local law

enacted by a municipality with[in] (sic) the County." The Westville Local Law is inconsistent with three Local Laws adopted by Franklin County (Local Law No. 7 of 1992, No. 3 of 2007 and No. 2 of 2008) which require all municipal solid waste generated within Franklin County to be disposed of at the Authority's landfill. Since the Westville Local Law is inconsistent with the provisions of these Franklin County Local Laws, the Westville Local Law is superseded by them.

Also, existing State requirements in the Environmental Conservation Law, in SEQRA, and in the Part 360 solid waste management regulations establish effective environmental protection requirements for the Authority's proposed landfill expansion. In addition, the public will continue to have extensive opportunities for comment and review in this DEIS/SEQRA process and during the future DEC permit review process, thereby allowing for significant local community involvement. Additional information regarding the public participation plan for the Authority's proposed landfill expansion project is provided in Appendix J.

A further review of the Westville Local Law is presented in Appendix K.

3.2.1.1 Agricultural Resources

According to the Franklin County Soil Survey (1958), the soils included in Table 14 are mapped within the parcels proposed for acquisition as part of this project. All soil types are classed 1 – 8, with 1 being the most agriculturally productive and 8 being the least productive for agricultural uses. Soils included in classes 1-4

are generally considered suitable for selected crops, hay, pasture, trees, and small grains (USDA, 1958). Soil types Croghan sandy loam (Cqb), Grenville stony loam (Gab), and Hogansburg stony loam (Hbb) are recognized as agriculturally important soils according to the 2008 New York Agricultural Land Classification. These agriculturally important soils constitute approximately 19% (approx. 110 acres) of the soils within the properties that are proposed to be acquired by the Authority as part of the expansion project, located both north and south of CR 20. These properties total approximately 581 acres.

Table 14
Mapped Soils Located Within Properties
Proposed for Acquisition by CFSWMA

Soil Symbol	Mapped Soil Unit	Slopes (%)
Sga	Scarboro loam, neutral variant	0-3
Mha	Muck, shallow	--
Gbb	Grenville and Hogansburg very stony loams	2-8
Sma	Sun stony loam	0-5
Wfa	Walpole sandy loam	0-5
Sna	Sun very stony loam	0-5
Cqb	Croghan sandy loam over till	0-6
Gab	Grenville stony loam	2-8
Hbb	Hogansburg stony loam	2-8
Gac	Grenville stony loam	8-15
Mdb	Massena very stony loam	0-8
Pcb	Parishville very stony loam	2-8
Gbc	Grenville and Hogansburg very stony loams	8-25
Mca	Massena stony loam	0-4
Mfb	Moira very stony loam	0-8
Edc	Empeyville and Moira very stony very fine sandy loams	8-25
Meb	Moira stony loam	3-8
Sfa	Scarboro loam, neutral variant	0-3
Wka	Walpole, neutral variant	0-6
Laa	Livingston silty clay loam	0-2

According to the U.S. Department of Agriculture's (USDA) Agricultural Statistics Service, 532 farms were registered in Franklin County in 2002 (2002 Census). This represents approximately 138,236 acres of farmland throughout the County, and approximately 13.2 percent (%) of the County's total land acreage. Franklin County ranks 39th out of the 62 Counties in New York State for the number of farms within the County boundary. The County ranks 26th out of the 62 Counties in New York State for the acres of land classified as farmland.

Data from the USDA 2002 Census of Agriculture indicates a total of 38 farms within the zip code 12926, which includes residents in the Town of Westville and the Town of Constable. Thirty-two (32) of these farms have a total acreage between 50 and 999 acres, the average calculated at 260 acres in size.

Assuming the conversion of all 581 acres of the proposed landfill expansion from agricultural uses, this would result in the loss of 0.4 percent (%) of Franklin County's farmland. According to the Franklin County Real Property Office, 6475.75 acres of land within the Town of Constable and 6603.61 acres of land in the Town of Westville are currently recognized as agricultural lands. In this case, agricultural lands refers to properties with the following class codes: 105 (agricultural vacant land, productive), 112 (dairy products: milk, butter and cheese), 113 (cattle, calves, hogs), 110 (livestock and products), 117 (horse farms), and 120 (field crops). Assuming the conversion of all 581 acres of the proposed landfill

expansion from agricultural uses, this would result in the loss of 4.5 percent of agricultural lands in the Towns of Westville and Constable combined.

The proposed expansion area is located immediately west of the current landfill operation. The CFSWMA anticipates entering into negotiations with adjacent landowners to purchase specified properties within and adjacent to the proposed landfill expansion area in 2009. Some of the properties proposed for acquisition by the CFSWMA as part of their expansion project are included in mapped agricultural district FRA01. Agricultural districts are planning/zoning methods that help preserve farms and farmland and help to ensure that the owners of such properties are provided the appropriate rights and protections related to their farming operations. Agricultural district lands receive legal protection under the New York State Farmland Protection Legislation (Article 25-AA of the New York State Agriculture and Markets Law Section 305 (4)).

Agricultural District FRA01 was created on September 12, 1988, and was certified on March 8, 2005 (Cornell Institute for Resource Information Sciences (IRIS), 2008). FRA01 is Franklin County's only mapped agricultural district, comprised of lands from the following 16 Towns: Bangor, Bellmont, Bombay, Brandon, Brighton, Burke, Chateaugay, Constable, Dickinson, Franklin, Fort Covington, Harrietstown, Malone, Moira, Waverly, and Westville. As part of the Authority's proposed landfill expansion project, approximately 325 acres of land included within FRA01 will be

acquired. Out of this total acreage, approximately 62 acres of land included within FRA01 will actually be disturbed as part of the proposed master build-out plan for the landfill expansion. This acreage is located within the proposed landfill expansion boundary, as shown on Figure 3.21.

Article 25AA of the New York State Agriculture and Markets Law, as amended through January 1, 2008, allows farmers to waive the Agricultural District impact review procedures, if they choose to allow for future non-agricultural uses of their land (NYS Agriculture and Markets, 2008). The Authority has obtained such a signed agricultural district waiver with regard to lands currently mapped as part of agricultural district FRA01 that are included in the proposed landfill expansion area.

Considering the prevalence of quality agricultural soils and land that is included in agricultural district FRA01, there are many farming opportunities in Franklin County. Therefore, on a County-wide and Town-wide level, the proposed landfill expansion will not significantly affect the agricultural community as a whole or the agricultural productivity of the area.

3.2.1.2 Open Space and Recreation

The proposed CFSWMA landfill expansion project will not impact any open space priority areas, as determined by the NYSDEC in their 2006 NYS Open Space Conservation Plan (OSCP). No National Forests or Parks, State Forests or Parks,

Forest Preserve Lands, or Wildlife Management Areas are located near the existing landfill or the proposed expansion area. The proposed landfill expansion area is located more than 10 miles from the Adirondack Park Boundary, classified as a Unique Area in the NYSDEC's OSCP.

The Authority's property and adjacent properties are currently not open to public recreational use. Recreational uses are not proposed for these properties in the future and therefore are not included as part of the proposed project plan. No adverse impacts to protected or currently used open space are anticipated as part of the proposed landfill expansion project.

3.2.2 Population Data

At 1,679 square miles in area, Franklin County is the 6th largest County in New York State. Franklin County is in the northernmost portion of New York State, in an area commonly referred to as the North Country. Generally speaking, the North Country refers to the northernmost part of Upstate New York which lies outside of the Adirondack Park Boundary and east of Lake Ontario. This area consists mostly of level lands, or Adirondack foothills, but is not within the Adirondack range itself. The North Country region is the least populated within New York State, but is also one of the largest regions geographically.

The Village of Malone is the county seat for Franklin County. According to the U.S. Census Bureau, the 2006 population of Franklin County was estimated at 50,968 persons. This translates to a population

density of approximately 31.2 persons per square mile. Until this past decade, Franklin County's population had been increasing since the 1970 U.S. Census Report. Table 15 illustrates the changes in Franklin County's population over the past century, years 1900 to 2006 (U.S. Census Bureau, 2008 and NYS Department of Economic Development, 2000).

Table 15
Changes in Franklin County's Population, 1900 to 2006

Year	Population (no.)	Population (% change)
1900	42853	--
1910	45717	6.7
1920	43541	-4.8
1930	45694	4.9
1940	44286	3.1
1950	44830	1.2
1960	44742	-0.2
1970	43931	-1.8
1980	44929	2.3
1990	46540	3.6
2000	51134	9.9
2006	50968	-0.3

The Towns of Westville and Constable are located in the north-central portion of Franklin County. Westville is approximately 34.8 square miles in area, and has a population of 1,823, according to the 2000 U.S. Census. The population density for Westville equates to 52.4 persons per square mile. The Town of Constable is approximately 32.8 square miles in area. According to the 2000 U.S. Census, this Town has a population of 1,428. These numbers translate to a population density of 43.5 persons per square mile. The population densities for the Towns of Westville and

Constable are slightly higher than the County average because these Towns are two of the smaller municipalities, in terms of land area, within Franklin County.

Demographically, the population of Franklin County is typical of predominantly rural counties in the North Country Region of New York. The median age for the County is 36.3 years and 84 percent (%) of the County population reported White as their race on the 2000 Census. Other races reported by the 2000 Census within Franklin County included Black or African American, American Indian, Alaska Native, Asian, Hispanic, Latino, and other.

Population growth should not be affected by the presence of the landfill, since the landfill has been in operation since 1994. The reluctance of people to live near the landfill is mostly based upon the perception that the landfill will not be a good neighbor. Such perceptions can be changed, thereby reducing the impacts upon population growth, by operating the landfill in a manner that minimizes the creation of nuisance conditions. The mitigation measures described throughout this DEIS will be employed during daily landfill operations to ensure that any impacts to the environment, adjacent properties, and the local community are minimized to the greatest extent practicable.

3.2.2.1 Environmental Justice

Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development,

implementation, and enforcement of environmental laws, regulations, and policies (NYSDEC, 2005). Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

The NYSDEC established an environmental justice program in March 2003 that aimed to promote greater involvement of minority and low income communities in DEC permitting and the project review process. As part of this NYSDEC project, potential environmental justice areas were mapped to help determine if environmental justice concerns were present within a given area. This program was designed to help with initial environmental justice screenings and does not replace qualified professional determinations of the project area. No potential environmental justice areas are mapped within the Towns of Westville or Constable. A total of three environmental justice areas are mapped within Franklin County. These areas will not be negatively impacted by the expansion of the existing CFSWMA Landfill.

During ground truthing activities around the project site, no areas of potential environmental injustice were noted. Throughout the public scoping process for this project, fair treatment of all people was achieved. Multiple media avenues have been routinely used throughout the progress of the proposed landfill expansion project, in an effort to reach as many Franklin County residents as

possible. The proposed project will not impact any mapped potential environmental justice areas or create additional areas requiring classification as an environmental justice area.

3.2.3 Public Services

The Towns of Westville and Constable provide local road maintenance, including snow removal, paving, and roadside ditch maintenance, as a community service within their respective boundaries. The Franklin County Highway Department provides these same services for County-owned roadways and bridges within Westville and Constable. Similar services along nearby State Routes are provided by the NYS Department of Transportation.

Fire protection within the two Towns is provided by their local Volunteer Fire Departments. However, in the event of a fire at the landfill that requires outside fire fighting assistance, the landfill staff will rely upon the County's 911 emergency system to dispatch any necessary fire fighting units. Ambulance service is provided by Northern Ambulance, located in the Village of Malone. The New York State Police provide police services to the Towns of Westville and Constable. The closest hospital facility to the two Towns is the Alice Hyde Hospital, located in the Village of Malone. Local school districts which children from the Town of Westville and the Town of Constable attend are the Salmon River School District and the Malone School District.

Since there have been landfilling operations on site since 1994, it is not anticipated that continued activity associated with an active landfill would cause any increase in demand on the local public services. By keeping the waste within the County, revenue that is generated from tipping fees that might otherwise go to another facility remains within the County and local communities. Continued landfill operations would retain existing employment opportunities, create new jobs during construction, and help keep money in the local economy that can contribute to the funding of public services. The addition of landfill acreage and support infrastructures may also provide new long-term employment opportunities at the landfill site. For more information regarding fire control at the landfill site, refer to Section 2.4.5.4.

3.2.4 Public Health

The state and federal regulations applicable to the Authority's landfill have been established to ensure that such projects do not have adverse impacts on the health of surrounding communities and populations. The proposed CFSWMA landfill expansion will comply with all established regulations regarding water quality, air quality, noise, and solid waste facility requirements. Procedures followed at the landfill site regarding leachate collection and disposal, landfill gas collection, waste disposal, and environmental monitoring are conducted in accordance with the regulations and policies established by the NYSDEC. As a result of compliance with these environmental regulations, the environmental mitigation and compliance measures incorporated into the proposed landfill expansion project will ensure that public health is protected.

3.2.5 Property Values

It is impossible to determine with certainty whether the operation of the current landfill has affected the value of any particular parcel of land. However, the statistics kept by the Franklin County Real Property Office indicate that there have not been any negative town-wide impacts on real property values in Constable or Westville during the period from 1993, before the landfill was opened, to 2007, the last year for which figures are available, when compared to other Towns in northern Franklin County. The average increase in real property values during that time period in northern Franklin County was 86.27 percent (%). Constable, where the current landfill cells are located, saw an increase in value of 94.29 percent (%) during that period, exceeding the average. Westville saw an increase of 77.44 percent (%), which approached the average. In comparison, nearby Fort Covington saw an increase in value of only 48.80 percent (%) during that same time period. Assessed and full property values for all Towns in northern Franklin County for the years 1993 and 2007 are included as Table 16.

Table 16 1993 and 2007 Property Values and Comparisons for Towns in Franklin County				
Town	**1993 Calculated Full Value**	**2007 Calculated Full Value**	**Increase in Value, 1993-2007**	**% Increase in Value, 1993-2007**
Bangor	$37,159,663.87	$64,891,343.58	$27,731,679.71	74.63
Bellmont	$71,038,053.29	$145,618,067.90	$74,580,014.60	104.99
Bombay	$19,388,398.27	$41,415,681.16	$22,027,282.89	113.61
Brandon	$11,062,962.03	$17,344,357.00	$6,281,394.97	56.78
Burke	$23,658,973.45	$50,924,117.49	$27,265,144.04	115.24
Chateaugay	$36,453,099.42	$68,375,603.33	$31,922,503.92	87.57
Constable	**$22,358,662.53**	**$43,440,458.20**	**$21,081,795.67**	**94.29**
Dickinson	$15,766,228.57	$36,711,892.86	$20,945,664.29	132.85
Duane	$12,756,872.35	$59,995,769.96	$47,238,897.60	370.30
Fort Covington	$32,013,148.28	$47,405,455.07	$15,392,306.79	40.08
Malone	$235,538,561.62	$391,591,796.05	$156,053,234,43	66.25
Moira	$38,824,911.43	$69,296,693.61	$30,471,782.18	78.49
Waverly	$35,626,240.31	$67,555,707.29	$31,929,466.98	89.62
Westville	**$28,315,329.88**	**$50,241,339.30**	**$21,926,009.41**	**77.44**
Totals:	**$619,961,105.30**	**$1,154,808,282.80**	**$534,847,177.48**	**86.27**
Source: Franklin County Real Property Office				

3.2.6 Utilities

The Towns of Westville and Constable are not serviced by public/municipal water and sewage collection/disposal systems. National Grid provides electric service to Westville and Constable, including the landfill site. Two metered overhead service lines transmit electricity to the landfill site. Propane gas is used to heat the existing buildings on the landfill site.

The proposed landfill expansion project includes upgrading the CFSWMA Landfill to three-phase electric power. Due to the proposed increase in size of the landfill and the proposed construction of additional

support facilities, an upgrade to the existing power system is required. A three-phase system is generally more economical than others because it uses less conductor material to transmit electric power than equivalent single-phase, two-phase, or direct-current systems at the same voltage. No impacts from this proposed power upgrade are expected. It is anticipated that the upgrade can be performed using the utility poles that currently line County Route 20 and service the existing landfill site.

3.2.7 Transportation Facilities and Traffic

Waste is currently transported to the landfill directly by private individuals or haulers, or they are transported from one of the Authority's three transfer stations located in the Villages of Tupper Lake and Malone, and the Hamlet of Lake Clear. The CFSWMA Landfill's current tonnage is permitted at 125,000 tons per year (TPY). The CFSWMA obtained a permit modification from the NYSDEC in May of 2006 to allow for the acceptance of up to 125,000 tons per year of waste at the landfill. As part of the environmental analysis undertaken for this 2006 permit modification, a traffic analysis was performed to determine the impact of the proposed tonnage increase on County Route 20. A potential 34 percent (%) increase in truck traffic was associated with the tonnage increase and was used in the level of service (LOS) analysis.

Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Letters designate each level of service, from A to F, with LOS A representing the best operating conditions and LOS F the

worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. Based on the analysis undertaken for the 2006 permit modification, existing LOS' were maintained following the tonnage increase, LOS A's and B's, with minor increases in delay along the County Route 20 corridor.

The amount of waste being disposed of at the landfill would not increase as part of this proposed expansion project, which in turn would not increase potential truck traffic accessing the CFSWMA Landfill beyond the levels previously analyzed in accordance with the requirements of SEQRA as part of the 2006 permit modification. The existing County Route 20 entrance would remain the only access point to the landfill site. The current permitted hours and days of operation would also not change as part of this expansion project. Potential truck traffic impacts were determined to result in insignificant adverse impacts under this prior SEQRA review.

The County Route 20 corridor and its adjacent intersections have, however, been analyzed further for this DEIS to determine the corridor's existing functionality and level of service under peak hour traffic conditions for the corridor and landfill operations. The landfill's truck traffic utilizes New York State and County routes to access the CFSWMA landfill from all directions. New Road was upgraded to a County route when the landfill site was initially constructed. NYS Route 37 and County Route 20 are used to access the landfill from the west and NYS Route 30 and County Route 20 from the east. All these roads are adequate truck routes, which

minimize environmental and traffic impacts. In addition, there are two residential access points/driveways on New Road, resulting in minimal impacts to residential populations along that County route.

Between July 21 and July 28 2008, traffic counters were placed in four locations on County Route 20 to determine existing traffic volumes, speeds and peak hours. The average Annual Average Daily Traffic (AADT) is 260 vehicles per day (vpd) and the average 85th percentile speed for the corridor was 60 miles per hour (mph). The peak hours were determined to be 9:30 to 10:30 a.m. and 3:30 to 4:30 p.m. On July 30, 2008, manual turning movement counts were taken at the NYS Route 37, County Route 40, New Road, and NYS Route 30 intersections with County Route 20 around the determined peak hours.

Landfill scale data supplied by the CFSWMA between July 2007 and July 2008 averaged 758 trucks per month and showed a peak of 11 trucks between 10:00 -11:00 a.m. on July 21, 2007. This peak truck volume was conservatively added to the collected turning movement counts and analyzed to determine a peak hour unsignalized LOS for each of the four intersections. The Unsignalized Intersection Analysis was conducted using Highway Capacity Software (HCS+T7F), Version 5.3. The following Table 17 summarizes the results of this analysis.

Table 17 2008 Unsignalized Levels of Service (LOS)	
Intersection Turning Movements	**LOS***
NYS Route 37/County Route 20	
SB (NYS 37) Left Movement	A(8.1)
WB (CR 20) Left & Right Movement	B(11.3)
County Route 40/County Route 20	
SB (CR 40) Left, Right and Thru Movement	A(8.5)
NB (CR 40) Left, Right and Thru Movement	A(9.0)
WB (CR 20) Left, Right and Thru Movement	A(7.3)
EB (CR 20) Left, Right and Thru Movement	A(7.3)
New Road/County Route 20	
SB (New Road) Left, Right and Thru Movement	A(9.0)
NB (New Road) Left, Right and Thru Movement	A(9.9)
WB (CR 20) Left, Right and Thru Movement	A(7.3)
EB (CR 20) Left, Right and Thru Movement	A(7.2)
NYS Route 30/County Route 20	
NB (NYS 30) Left and Thru Movement	A(7.7)
WB (CR 20) Left Movement	A(9.0)
EB (CR 20) Right Movement	A(8.4)
*Level of Service (Delay in Seconds)	

See Appendix G for HCS Unsignalized Intersection Summary Worksheets.

A LOS of A or B represents an average control delay between 0 and 15 seconds that a vehicle will encounter when making a conflicted movement within an unsignalized intersection. Each movement at an intersection faces a different set of conflicts that are directly related to the nature of the movement. During a daily peak hour for the corridor and a conservative peak for landfill traffic, the corridor functions at an acceptable level of service with minimal delays.

3.2.8 Historic and Archeological Resources

A preliminary review of the State Historic Preservation Office's (SHPO) website was conducted to determine if any sites listed on the State or National Historic Registers were located within or adjacent to the proposed expansion limits. This query reported no known historic sites within the referenced search area. There were also no archeologically sensitive areas depicted within landfill property or surrounding areas. A letter was submitted to the Office of Parks, Recreation and Historic Preservation (OPRHP) in order to obtain their opinion of whether the proposed project would affect any historic resources within the area.

Additional information was requested by OPRHP regarding the old brick farmhouse and adjacent wooden barn located on existing CFSWMA property in the abandoned agricultural field just to the west of the landfill's access road. OPRHP subsequently formed the opinion that the abandoned farmstead appears to meet the criteria for inclusion in the State and National Registers of Historic Places. This determination of eligibility was made based on the historic significance of the farmstead in the areas of architecture and agriculture. As a result of this determination, the farmhouse, barns, and majority of the agricultural setting will be avoided. The proposed expansion footprint was designed to leave the farmstead and adjacent barn intact. The area of the agricultural setting that is located within the proposed landfill footprint has previously been disturbed. The OPRHP agreed that the proposed expansion design, which provides a 350 to 400 foot buffer around the brick farmhouse and associated barn, is an "acceptable compromise" that may allow for future

preservation and use of the property (OPRHP, Warren, 2008). OPRHP agreed that the proposed project will not adversely impact the farmhouse and barns.

No other locations of historic significance were determined to be located within the proposed landfill expansion area. Therefore, it is anticipated that there will be no impacts on historic or cultural resources as a result of the proposed project.

3.2.9 Visual Setting

The proposed landfill expansion area is located on the south side of CR 20. This area is predominantly distinguished by flat lands with gently rolling topography surrounded by clusters of deciduous and coniferous woodlands. Currently, land use within the project area is largely dominated by undeveloped land (agricultural and wooded), farms, and scattered rural single-family farmsteads.

The Visual Impact Analysis (VIA) procedures utilized for the proposed project are consistent with methodologies developed by the NYSDEC, the U.S. Department of Transportation (USDOT), and the Federal Highway Administration (FHWA). Viewshed mapping was completed using United States Geological Survey (USGS) digital elevation model (DEM) data and the Geographic Information System (GIS) ArcView Spatial Analyst software program. These viewshed maps define the maximum viewable areas form which any portion of the existing and proposed landfill on the project site could potentially be seen within the study area (five (5) mile radius from the landfill site).

Figures 3.22 and 3.23 illustrate the viewshed of the existing landfill site during 'with' and 'without' vegetation conditions. Figures 3.24 and 3.25 show the viewshed of the proposed expansion site during the 'with' and 'without' vegetation conditions. As shown in these figures, the proposed landfill expansion will be visible to 12 percent (%) more land areas than the existing areas to which the current landfill site is visible (19 %).

In order to confirm the mapping, a field evaluation was conducted. Three (3) helium-filled balloons were floated at 80-100 feet in height, and were used to represent the maximum elevation points of the proposed landfill expansion area at the geographic center, upper-right corner, and lower-left corner. White the three balloons were elevated in the sky, a field crew traveled along adjacent roadways to specific vantage points within the five (5) mile radius study area. At each vantage point documentation was collected to determine whether or not the proposed landfill would be seen from these locations. Photographs were taken at every vantage point location. These photographs were used to create visual simulations of the view of the landfill from each vantage point. Points were selected from the United States and Canada that fell within the five (5) mile radius of the proposed landfill site. The visual simulations can be found in the Visual Impact Assessment, included as Appendix H. As indicated in Appendix H, portions of the landfill expansion area will likely be observed from five (5) of the nineteen (19) vantage point locations.

Visual simulations of the proposed project indicate that the visibility, impact, and view reaction to the proposed expansion will vary based on landscape and geographical setting, extent of screening and structural obstructions, viewer sensitivity, and distance of the respective viewer from the proposed project site. The project's overall impact on the visual character of the area could be considered to be very low to moderate, depending on the distance of the view to the proposed landfill site. The greatest visual impacts of the proposed landfill expansion project are located immediately adjacent to the landfill site along County Route 20.

Mitigative measures were considered in accordance with the NYSDEC Program Policy for Assessing and Mitigating Visual Impacts (DEP-00-2). Screening mechanisms such as earthen berms, fences, or planted vegetation will be utilized to decrease the visual impact of the proposed project, when appropriate. The natural colors of the landfill were demonstrated by the visual simulation to generally minimize contrast with the sky and background under most conditions. Typical landfill covers will be utilized in this project. The landscape surrounding this project will retain its open space character and overall spatial organization, even at the time in which the landfill expansion has been fully constructed. Although there are intrusions to the vertical and overhead planes in the landscape within the expansion boundary, mitigative measures to decrease the levels of these intrusions will be employed, as needed.

3.2.10 Noise Analysis

A noise impact assessment was conducted for the proposed expansion of the CFSWMA Landfill. This assessment consisted of

collecting background noise data during landfill non-operational hours to determine the existing background noise levels at the site, and collecting noise data during landfill operational hours at the landfill working face to determine the existing working face noise levels. The collected data was then used to calculate the "buffer" distance required between landfill noise sources and the property line to maintain compliance with the 57 dBA equivalent steady state (Leq) regulatory limit for solid waste management facilities established in 6 NYCRR Part 360 for rural areas.

Landfill operations, specifically the waste acceptance rate, are not expected to increase significantly with the addition of the proposed expansion. As such, it was assumed that future truck traffic levels and working face equipment operations would remain similar to existing conditions, and noise readings from current landfill working face operations provided a reasonable estimate of future noise levels. A Noise Assessment report is provided in Appendix I, with the results summarized below.

The landfill non-operational background noise assessment indicated that traffic noise associated with County Route 20 contributed to background noise levels at two monitoring locations being above 57 dBA. Noise levels from the remaining locations were typical of ambient, rural settings and were all less than 57 dBA. The landfill operational working face noise assessment indicated a Leq of 72.1 dBA.

Based on the data collected, the distance required to reduce noise levels created by landfill working face operational noise to a 57 dBA Leq was estimated to be 285 feet. The minimum distance between the landfill

expansion's proposed limits of waste and the landfill expansion property limits is approximately 300 feet, and therefore noise levels at the expansion limits are estimated to meet the 57 dBA requirement as specified in 6 NYCRR Part 360. In addition, the nearest residential receptors are also more than 300 feet away from the proposed limits of waste. Based on the results of this assessment, landfill operational noise will be reduced to 57 dBA or less within 285 feet. As background levels at these receptors are already above 57 dBA, landfill noise will not result in noise impacts for these receptors.

Noise levels generated during landfill construction will be temporary and limited to the duration of construction activities. Noise generated during landfill construction will be mitigated by ensuring that all equipment used is properly mufflered in accordance with 6 NYCRR 360-1.14 (p)(4). Noise levels during landfill construction will be further reduced by preventing any unnecessary operation of equipment near property lines, ensuring proper maintenance of equipment, and limiting potential noisy construction operations to normal daytime operating hours.

3.3 Energy Use and Conservation

3.3.1 Fuel Use and Conservation

The development of the proposed expansion of the existing CFSWMA Landfill would not result in a change in the permitted waste acceptance rate. Accordingly, there would not be any significant changes in daily activities of the landfill; there would be no significant change in the amount of fuel consumed by trucks delivering waste to the landfill or the

amount of fuel consumed by operating equipment. Also, the development of the proposed landfill expansion will continue to provide a local waste disposal facility for Franklin County. When considering alternatives such as exporting wastes to another landfill out of the County, it is apparent that the proposed expansion would result in less fuel consumption.

3.3.2 Electricity Use

Beyond the electricity that is already required at the site, the proposed landfill expansion would require additional electricity to perform normal operating activities at the site. An upgrade to three-phase power is included as part of the proposed expansion project. Details regarding this power upgrade are included in Section 3.2.6.

Additional pumps that would be installed over time as part of the landfill expansion will gradually increase power usage at the landfill. It is estimated that the landfill's current annual power consumption rate of 181,200 kilowatt-hours could ultimately be increased to 760,000 kilowatt-hours annually by the year 2109. Projected increases in electricity use at the proposed landfill expansion could be more than offset by the development of a landfill gas to energy project at the landfill. The proposed upgrade to three phase power at the site, which is a part of the proposed landfill expansion, will enable the Authority to move forward with the evaluation and potential future implementation of a landfill gas to energy project that could initially generate approximately 13 million kilowatt-hours per year. Such a future landfill gas to energy project could

ultimately generate more than twice that amount on an annual basis as the amount of landfill gas generated and converted to electricity increases over time.

3.4 Public Outreach

A Public Participation Plan was prepared in order to detail the environmental review process of the proposed landfill expansion project and to indicate the importance of public and other agency involvement, as well as to delineate when these opportunities are provided throughout the review process. The Public Participation Plan for the CFSWMA proposed landfill expansion project is included as Appendix J.

4.0 Cumulative Impacts

Although initial construction and operation of the proposed landfill expansion will only directly impact a portion of the total acreage that would be acquired by CFSWMA, the environmental analyses presented in this document address the cumulative impacts associated with the initial cell construction and subsequent development efforts, over an estimated 94.8 year operating life.

5.0 Unavoidable Adverse Impacts

With the implementation of the mitigation measures described throughout the previous sections of this document, no significant adverse impacts will be created by the proposed project. The construction of a landfill expansion west of the existing CFSWMA Landfill site will, however, create minor adverse impacts which cannot be completely mitigated. These minor impacts are described in the following sections:

5.1 Topography

Development of the proposed landfill expansion will unavoidably alter the topography of the landfill footprint area and the area immediately adjacent within the limits of construction. The lowest elevation in the proposed expansion area, located in the southern portion of the expansion area, is 240 feet above mean sea level. The highest elevation of the proposed capped landfill would be 357 feet above mean sea level. This would be approximately 12 feet higher than the final height of the currently active landfill. The sides of the cap would have approximately a 33 percent (%) slope. The height and shape of the landfill would be compatible with the gently rolling topography which is characteristic of the area. Upon capping and closure, the landfill footprint would be vegetated with herbaceous vegetation and resemble many of the agricultural fields and open meadows present in the surrounding area.

5.2 Local Groundwater Table

Construction of the proposed landfill expansion would include the installation of a pore water collection and drainage system underneath the double composite liner system. This system would slightly lower the local groundwater

table. However, most of the local area is already impacted by the pore water collection and drainage system in place for the existing landfill. There would be minimal lowering of the groundwater table outside of the project area. No nearby residential water supply wells would be noticeably affected by the lowering of the local water table.

5.3 Air Quality

Construction and operation of the proposed landfill expansion would involve excavating and moving soils, spreading and compacting soil cover, and the travel of vehicles over unpaved roadways. All of these activities have the potential to create dust. The proposed mitigation measures which include limiting the landfill working face areas to the minimum practicable sizes, re-vegetating exposed areas as soon as possible, and watering down haul roads, would minimize adverse impacts to local air quality, but not eliminate the creation of fugitive dust altogether. The minor amounts of fugitive dust created by the proposed project would be temporary in nature, and confined to the proposed development area, with the implementation of the mitigation measures previously discussed.

Construction and operation of the proposed landfill expansion would result in a continuation of vehicle emissions from waste hauling vehicles and landfill equipment. While these emissions are greater than if there were to be no future development of the site, they are not expected to have any significant adverse affects on air quality due to the emissions control devices installed on such vehicles, and the favorable air pollutant dispersion characteristics of the site.

Landfill gas will be generated as wastes buried in the landfill decompose. Without the operation of the active gas collection and control system, landfill gas would be passively vented to the atmosphere. In addition, while the active gas collection and control system is in operation, it is estimated that 15 percent (%) of the landfill gas could potentially vent to the atmosphere due to the possibility that even the best available control technology will not collect 100 percent of the gas generated. The emission of this fugitive gas from the landfill would not have a significant adverse affect on the environment since the landfill gas collection and control system would be operated in accordance with federal regulations (40 CFR Subpart WWW), which were designed to protect public health and welfare. Overall, the percentage of controlled landfill gas emissions will be increased, since as part of the landfill expansion, the Authority will provide active gas collection and treatment for the entire site including the existing landfill and all future cells constructed as part of the landfill expansion.

5.4 Ecological Resources

Existing lands and vegetative cover types will be converted within the limits of the proposed landfill expansion area. These areas consist of forest, shrub, and meadow lands, primarily associated with active and previous agricultural uses. Wildlife populations may move from the area as a result of the noise and change in land use. Although these adverse affects are unavoidable, they would not have a significant impact upon the abundance, population size, or distribution of plants, fish, or wildlife resources that currently reside in the area. Large tracts of rural lands with similar cover types as those found within the proposed expansion area exist adjacent to the landfill site and within the Towns of Constable and Westville. No unique, rare, or protected plants, fish, or wildlife were observed or reported within the expansion area.

5.5 Wetland Resources

Throughout the conceptual design of the proposed landfill expansion, potential wetland impacts were minimized to the extent consistent with the need to provide local, long-term landfill disposal capacity for users of the CFSWMA landfill. It has been estimated that 11.78 acres of wetlands and associated drainage channels will be disturbed at part of the proposed maximum build-out expansion. Compensation for these wetland impacts will be accomplished through a combination of in-lieu fee mitigation, permittee responsible compensatory mitigation, and wetland banking. This wetland mitigation will take into consideration the existing functions and values of all impacted wetlands in an attempt to restore these same qualities during the mitigation efforts. Furthermore, virtually all of the delineated wetland resources in the proposed landfill expansion area have been, or continue to be, disturbed by the agricultural uses of the lands within the proposed expansion area. Many of the crop fields have been previously tile-drained, which greatly alters the hydrology of the area. As part of the wetland mitigation effort that will be required, removal of tile-drains in selected areas may be conducted, helping to restore some of the historic wetland areas and natural drainage patterns of the area.

5.6 Demography

Construction and operation of the proposed landfill expansion will eventually result in the displacement of residents from properties owned by four (4) landowners. The timing for the relocation of each landowner will depend on the landfill cell construction schedule and the details of a land purchase agreement that will be negotiated between the CFSWMA and each landowner.

5.7 Noise

The current design of the landfill expansion incorporates a buffer distance of 300 feet around the proposed landfill expansion area and the surrounding private property boundaries. This buffer distance is adequate enough to ensure that noise generated at the proposed expansion site will not exceed the NYSDEC's regulatory standard of 57 dBA on all sides of the expansion.

It is important to note that noise levels would be comparable to the current noise levels at the site. The proposed expansion would not change the noise levels or machinery used on the site but rather the location of the noise source.

5.8 Visibility of Landfill Footprint

Landfill construction and operation would result in additional land areas being able to view portions of the landfill property (both existing and proposed). Since the proposed expansion will be constructed immediately adjacent to the existing landfill, only a slight visual contrast will result for that area. Mitigation measures which would be employed at the landfill to reduce visual impacts include keeping the area of exposed soils to the smallest practicable area, strategically placing soil stockpiles, re-vegetating areas of exposed soils as soon as possible, and construct vegetated berms along CR 20 to minimize the visibility of the expansion area.

6.0 Growth Inducing Impacts

The proposed landfill expansion is not expected to directly induce population growth within the Towns of Westville and Constable, or within Franklin County. However, the development of the proposed landfill expansion area will continue to ensure the availability of environmentally and economically sound long-term waste disposal capacity within Franklin County. The proposed expansion will thus help to extend the economic benefits derived from the CFSWMA Landfill and provide additional short-term economic benefits associated with the future construction activities.

7.0 Commitment of Resources

7.1 Introduction

The irreversible commitment of certain resources, which would be made unavailable for further use as a result of the proposed project, are described below

7.2 Soils

On-site soils would be used in the construction of the landfill liner system, for construction of additional on-site roads, for daily and intermediate cover, and in construction of the landfill cap. The use of soils for these purposes would preclude their use for other purposes. According to the calculated soil balance (Section 2.3.3), there is enough soil on-site to support the soil usage needs of the proposed landfill expansion.

7.3 Land Use

The dedication of the landfill footprint area for solid waste disposal purposes is considered an irreversible commitment of a land use due to the length of time the landfill is proposed to be in operation and the limitations which the presence of the landfill would impose upon future use of the area.

8.0 Alternatives Analysis

The County of Franklin Solid Waste Management Authority (Authority) has evaluated a number of alternatives with regard to the proposed expansion of the Authority's regional landfill located in the towns of Westville and Constable, and more generally in regard to waste management in Franklin County. These alternatives include:

- Waste exportation;
- The no-action alternative;
- Alternative landfill sites;
- Alternative expansion scenarios;
- Alternative waste disposal technologies. These waste disposal technologies would not eliminate the need for landfill disposal, since process residues and bypass wastes would still require landfilling;
- Sale or lease of the County landfill and/or transfer stations during their useful life; and
- Rail haul of waste.

8.1 Capabilities and Objectives of Franklin County and The Authority

8.1.1 1991 Solid Waste Management Plan Implementation

The current waste management and recycling facilities in place in Franklin County reflect implementation of recommendations contained in the Authority's original 1991 County Solid Waste Management Plan. In

general, the original plan called for the establishment of an integrated solid waste management system consisting of a regional landfill, central and intermediate solid waste transfer stations, and recyclables collection facilities. In accordance with the original plan, these facilities have been established and continue to be in operation today.

The Authority's regional landfill opened in 1994 in response to a pressing and imminent need for new waste disposal capacity in Franklin County. The landfill currently accepts mixed solid waste and C&D debris. Alternate daily cover (ADC) materials, in the form of materials which have been assigned a "beneficial use determination" by the New York State Department of Conservation (NYSDEC), are used at the landfill as a cost-saving and revenue-generating measure.

Wastes are transported to the landfill directly by private individuals or haulers, or they are transported from one of the Authority's three transfer stations located in the villages of Tupper Lake and Malone, and the hamlet of Lake Clear. Waste is also dropped off at a fourth, satellite site on Saturdays (St. Regis Falls, the town of Waverly). The transfer stations consolidate waste from the population centers of Franklin County and provide economical transport of County wastes to the regional landfill site for disposal.

The Authority's recycling system consists of collection facilities at its three transfer stations and at a fourth collection site located in St. Regis Falls. The transfer station located in the Village of Malone also serves as a small Materials Recovery Facility (MRF) and functions as the main processing center and warehouse for the County's recyclable materials.

The Tupper Lake and Malone facilities have small balers for densifying corrugated cardboard and plastics into bales for shipment to the appropriate recycling markets.

8.1.2 2006 Solid Waste Plan Modification and Implementation

The Authority's 2006 Modification to the Final Solid Waste Management Plan (2006 Plan) calls for the development of an expansion to the current landfill, to provide needed disposal capacity through the year 2020 and beyond. By proceeding with plans for the proposed regional landfill expansion, Franklin County will continue to provide a local, reliable, environmentally sound, long-term disposal site to County residents and other waste generators in the County.

The 2006 Plan also expressly allows for acceptance of waste from out-of-county sources. For example, nearby Essex County is located entirely within the Adirondack Park, and State policy prohibits the siting or operation of a landfill within the Park. Wastes from Essex County are brought to the Authority's landfill as an economical option that is consistent with the ban on landfilling inside the Adirondack Park. Other out-of-county waste generators also benefit from the use of the Authority's regional landfill, including various generators that arrange for the delivery of petroleum-contaminated soil for use as alternate daily cover material at the landfill.

The Authority has in place the capability to manage and operate the proposed regional landfill expansion. The Authority has already invested in the facilities and equipment necessary for landfill operation and would

have to make negligible changes, if any, to the existing operation to operate the landfill expansion**.** For example, the Authority has invested in the heavy equipment, access roads, scale and scale house, administrative office, and other infrastructure on the existing regional landfill site. The Authority has also allocated budget and staffing resources to the regional landfill facility, and has a long-term (minimum of 30 years) environmental monitoring responsibility at the existing regional landfill site. The Authority is capable of borrowing money to finance the expansion construction.

The 2006 Plan contains strategies that the Authority can implement to help make the landfill operation more cost-efficient and competitive in the marketplace. Although the Authority has been able to successfully manage the financial aspects of owning and operating a landfill, the Authority does not have unlimited resources. There are cost limitations to what the Authority can reasonably spend for waste disposal, landfill operation, or waste exportation (if there was no long-term available landfill space within the County system). Even though the current landfill operation is entirely financed by tipping fees (a user fee), landfill users would be reluctant to pay tipping fees if they were to be substantially above market prices. Eventually, users may seek out other lower cost disposal options. Franklin County needs to be aware that market forces, therefore, provide a limit to what the Authority is capable of paying to construct and operate the proposed regional landfill expansion.

In August 2007, the Franklin County Legislature adopted Local Law No. 3 of 2007. This local law requires that all solid waste and construction and demolition debris generated within the county be disposed at the Authority's landfill. The enactment and enforcement of Local Law No. 3 of

2007 should help secure waste tonnage deliveries to the landfill and stabilize the economic support for Authority waste management activities, thereby helping to ensure that the Authority's recycling and other environmentally beneficial programs can continue and, to the extent allowed by the Authority's fiscal conditions, can be enhanced.

8.1.3 Recycling Requirements and Impacts on Disposal Needs

Section 120-aa of the NYS General Municipal Law requires every municipality in NYS to adopt a local law or ordinance that mandates the source separation of recyclable materials. Section 120-aa mandates that all municipalities in the state adopt ordinances to require source separation and segregation of recyclable or reusable materials from solid waste, if the separation and recycling can be conducted economically on a "full avoided cost" basis that includes consideration of the avoided cost to collect, transport, and dispose of materials.

Also, by State solid waste regulation (Part 360 regulations), landfills in NYS are not allowed to accept wastes that are generated in a municipality that does not have a currently approved comprehensive recycling analysis (CRA) in place. This regulation is used by the State to help ensure compliance with the local source separation mandate found in Section 120-aa of the General Municipal Law. The development of a CRA is a requirement contained in the Authority's current landfill permit (DEC #5-1699-00003/00001).

A CRA report contains an analysis of recycling options and opportunities in a community, and must include an assessment of the waste stream's characteristics, proposed recycling facilities and programs, markets for recyclable materials, and an implementation plan that shows an increasing diversion/ recycling percentage over time. The ultimate or "final" long-term goal of a CRA is the maintenance and improvement of a cost-efficient and comprehensive recycling program that provides an economical alternative to disposal of recyclable materials.

The most recent Franklin County Comprehensive Recycling Analysis, 2007 Update, was published by the Authority in January 2008. This update is intended to be used as a planning tool to focus the recycling efforts of the Authority during the period 2007 through 2010. The 2007 CRA Update documents the history of recycling activities in Franklin County since 1991, and reports tonnages of materials recycled between 1990 and 2007. Over the last decade, recyclables diversion and collection in Franklin County has doubled. The Authority's three transfer stations plus the satellite waste collection site in St. Regis Falls all accept recyclables. Materials are consolidated and shipped to/ stored at the Malone Transfer Station, until they can be shipped to market in sufficient quantities to generate a reasonable market return. Materials collected include:

- Corrugated containers (OCC)
- Commingled newspaper (ONP), magazines (OMG), boxboard, junk mail, office paper, and telephone books

- Clear glass containers
- Natural and colored high density polyethylene (HDPE) and polyethylene terephthalate (PET) plastic bottles
- Commingled scrap metal and steel cans, aluminum cans and foil products
- Waste tires
- Lead-acid batteries
- Yard waste

The 2007 CRA Update contains a material-by-material assessment of recyclables in the County, and discusses material quantities diverted, opportunities to increase recyclables diversion, and available markets. Franklin County's recycling goals through 2010 are to stabilize its revenue sources that support recycling activities, encourage the increased volume of collected recyclables, and to give consideration to establishing a dedicated recycling facility at the regional landfill site. All recyclable materials currently collected in the County will continue to be collected, and may be expanded to include additional items as marketing opportunities allow. The Authority will continue to take steps to improve the existing program by purchasing more collection containers, searching for new outlets for recyclable materials, and reviewing the possibility of adding a materials handling facility at the landfill. The Authority should continue to accept and compost yard wastes at its three transfer station sites.

The recent enactment and implementation of Local Law No. 3 of 2007 should help encourage the delivery of recyclable materials to Authority facilities and stabilize the overall economics of the Authority's waste management system. Still, due to the relatively rural and spread-out nature of Franklin County's population centers, it will be difficult to increase future recycling to the point that there is a significant reduction in the need for landfill disposal space for County wastes, even if County recycling rates increase by year 2020 as projected in the 2006 Plan. The proposed Authority regional landfill expansion project will be needed to meet the County's waste management needs for many generations to come.

The combination of constructing an expansion to the Authority's regional landfill and continuing to improve the County's waste reduction efforts (Franklin County recycled an average of 12.5% of its total waste stream in 2004-2007 [not including ADC recycling/reuse], and this is projected to grow to 30% by year 2020 in the 2006 Plan) will allow the County to continue to comply with its integrated solid waste management plan mandate as stated in the 2006 Plan.

The acceptance of out-of-county waste and beneficial use materials (such as ADC materials) at the Authority Landfill, as expressly authorized in the 2006 Plan, not only benefits the out-of-county waste generators, but also brings in additional revenue that helps the Authority provide a more economical and affordable waste management system for Franklin County businesses and residents. The Authority's continuing efforts to cooperate with other out-of-county solid waste management planning units will help it continue to implement measures to ensure that such waste importation is

done in compliance with Section 120-aa of the NYS General Municipal Law, and that such importation will not adversely impact other planning units' DEC-approved solid waste management plans.

8.2 Alternatives to the Development of a Landfill Expansion

8.2.1 Waste Exportation

The waste exportation alternative would require that wastes generated within Franklin County be disposed of at a facility outside of the County. Waste would be received at the Authority transfer stations and be hauled by Authority transfer trucks to another disposal facility. The Authority would have to pay for the transportation and the tipping fees charged by the out-of-county disposal facility. Although the Authority could conceivably choose the disposal location, and, by default, the most economical disposal location, it would have no control over the long-term price for waste disposal and would be subject to market fluctuations.

Currently, County residents can transport their own trash to the Authority's regional Landfill or to one of the Authority operated transfer stations. County residents may also contract with a private hauler for curbside collection.

If the Authority does not expand the regional Landfill and thus exports wastes, County residents could still drop off waste at the transfer stations. Residents that contract with private haulers for curbside collection would still have the option of doing so. However, the private haulers that use the Authority's regional landfill would have to find another

facility to accept their waste. In both cases, residents of Franklin County would likely have to pay more for waste disposal. The Authority would likely be forced to charge more for waste received at the transfer stations in order to help cover the costs of higher transportation costs and tipping fees. Private haulers might also charge residents more for curbside service because of increased transport costs. The Authority, through the County Legislature, might also be forced to explore an increase in taxes on County residents to help defray the costs of waste exportation.

Waste exportation would require shipping waste to another facility. Although the Authority would not have the costs of operating a landfill, they would be incurring increased transportation costs and tipping fees. These increases would be passed onto the County residents and other County waste producers.

Waste exportation was considered in the 2006 Plan. It was determined to be the option of last resort; waste should be exported only if no other solution could be found or if it was an emergency or contingency measure, if needed temporarily once the last permitted landfill cell at the regional landfill is filled (Cell 4), and if the expanded regional landfill cell (Cell 5) is not yet constructed and placed in service.

The projected costs of exporting waste to out-of-county disposal sites are more expensive to Franklin County residents and businesses than disposal at the current in-county regional landfill, or the continued disposal at an expanded in-county regional landfill site. The details of this

cost comparison, conducted as part of the 2006 Plan preparation, are presented in the following section that discusses the "no-action alternative"; exportation of waste is a key component of that alternative.

8.2.2 The No-Action Alternative

The Authority's current landfill permit allows for the disposal of a maximum of 125,000 tons of municipal solid waste per year. At current landfill usage projections, it is estimated that the currently permitted landfill will be out of disposal capacity by the year 2014. At that time, no additional waste could be accepted at the Authority's landfill site. County wastes would have to be disposed elsewhere. In this respect, the "No-Action" alternative is essentially identical to the "Waste Exportation" alternative described above.

The Authority could receive wastes at the transfer station facilities, transport the wastes to another landfill, and pay tipping fees to dispose of the wastes. The County could also choose to provide no disposal services of any kind, thereby leaving it up to local municipalities and/or the private sector to provide such disposal services. The 2006 Plan conducted a detailed analysis of the costs of continuing to landfill wastes in Franklin County versus the cost to transport waste to an out-of-county site, once the Authority's regional landfill is full.

To implement this "No-Action" alternative requires the long-distance hauling of wastes to existing out-of-county disposal sites. Regional sites that could potentially accept Franklin County wastes include 1) the Schuyler Falls Landfill, located in the Town of Schuyler Falls, Clinton

County NY (50-70 miles from the population centers of Franklin County); 2) the Adirondack Resource Recovery Facility (MSW waste-to-energy incinerator) located in Hudson Falls, Washington County NY (110-180 miles from Franklin County's population centers); 3) the Fulton County Landfill, located about the same distance from Franklin County as the Hudson Falls facility (110-180 miles); and the Development Authority of the North Country (DANC) Landfill located in Rodman, Jefferson County NY (about 105-125 miles from Franklin County). The 2006 Plan computed the estimated costs to transport wastes from Franklin County's three transfer stations (located near population centers in the County) to the Schuyler Falls, Hudson Falls, and DANC disposal facilities.

At a disposal rate of 43,500 tons per year, which is an estimate of the amount of solid waste generated annually within Franklin County, under the "no-action" alternative, wastes would then be transported out-of-county to one of the named sites. Based on cost estimates delineated in Appendix B of the 2006 Plan for a hypothetical first year of waste exportation (which had been assumed to be the year 2017), when compared to the costs for expanding the Authority's landfill, waste exportation would cost between: (a) $26 to $43 per ton **more**, if the expanded landfill were to only accept 43,500 tons per year of waste or (b) $87 to $104 per ton **more**, if the expanded landfill were to accept all 125,000 tons per year of waste that the current landfill is permitted to accept for disposal.

The cost comparison is dramatic; it is projected to cost significantly more to transport wastes to out-of-county sites than it is to develop and dispose of wastes at an expanded regional landfill in Franklin County.

This higher cost for waste exportation will become more pronounced as the costs for truck fuel continue to increase. Furthermore, the waste exportation option has its own set of adverse environmental impacts, including increased fuel consumption and truck exhaust emissions, and is further complicated by the considerable uncertainty regarding the future availability and long-term costs of transportation and disposal at out-of-County disposal facilities. In addition, if any of the potential out-of-County disposal facilities could only accept a portion of the solid waste currently disposed of at the Authority's landfill (due to permit tonnage limitations, for example), and/or if these facilities would only accept such waste for a varying number of years (due to different permit durations, for example), then the Authority would have to deal with the management, legal, cost, and liability issues stemming from the use of multiple disposal sites for varying durations of time.

In either tonnage scenario studied, therefore, it is significantly less costly to Franklin County residents and businesses to have an in-county landfill site available for disposal of County wastes for the long term. There is an element of inherent unreliability and unpredictability in a waste exportation arrangement. Tipping fees charged at landfills are subject to market fluctuations and the Authority, and County residents and businesses, would be subject to the variability of the market. Waste exportation costs will also be more sensitive to changes in diesel fuel prices which, in the past year, have risen substantially. Again, since waste exportation was found to be the option of last resort in the 2006 Plan, all other options should be considered and discounted before waste exportation, or the no action alternative, were to be pursued.

The “no action” alternative may be necessary on a limited contingency basis, should the existing Authority landfill be filled before the new landfill expansion has been designed, permitted and constructed.

8.2.3 Alternative Landfill Sites

In accordance with consent orders with the NY Department of Environmental Conservation, which were entered into in the 1980’s, 17 municipal landfills in Franklin County were ordered to close by 1992. Development of multiple new municipal landfills throughout Franklin County, designed to state and federal standards, were determined by the municipalities to be unacceptable and cost-prohibitive. The municipalities approached Franklin County to help address solid waste management on a County level. In response to this request, a Solid Waste Commission was formed in April of 1986 at the county level to address waste disposal and management issues, and to develop a preliminary framework for a county-wide solid waste management system in Franklin County. The Commission recommended the formation of a solid waste authority in Franklin County, which was organized in November of 1988 and fully established in January 1989. Recognizing the need to provide for waste disposal from its citizens, the Commission, and later the Authority, spearheaded a detailed site screening search for a new regional landfill site.

8.2.3.1 Historical Site Screening Studies

Extensive site screening and evaluation studies were conducted as part of the original site selection process for the

current Franklin County Regional Landfill. This siting process, conducted from 1987 through 1991, identified the current regional landfill site as the top preferred site in the County to provide long-term, local and reliable solid waste disposal services to the residents and businesses of Franklin County, based on environmental, geographic, socioeconomic, and other factors. The factors that originally were used to identify the current regional landfill site as the preferred landfill site continue to have direct relevance to the current landfill expansion plans that are the subject of this Draft Environmental Impact Statement; these earlier studies provide justification for locating the proposed landfill expansion adjacent to the current site. This section of the DEIS summarizes the original landfill site screening efforts conducted in the late 1980s.

Stearns and Wheler Engineers was hired to conduct the original landfill siting study for the County. Stearns and Wheler produced an initial site screening study report in July of 1987, looking for large tracts of land that had low-permeability soils, and considering proximity to wetlands, major aquifers, and airports. Over the next two years, this initial screening study was then greatly expanded to incorporate a comprehensive set of site screening steps and parameters, as well as field reconnaissance and investigations on multiple sites. These screening steps resulted in the Authority's selection of the current regional landfill site. The site selection process was conducted in accordance with the requirements of 6 NYCRR Part 360, Solid Waste Management Facilities.

The key steps in the Authority's regional landfill site screening process, conducted from 1987 through 1991, are summarized as follows:

1. Plots of land within Franklin County were identified, based on available mapping and literature, which contain soils advantageous to siting a landfill. The preferred soils include homogeneous, clay and silt-rich, low-permeability soils, preferably with significant thickness and depth to serve as a barrier to potential contamination migration into bedrock. Sites with a predominance of preferred soils on tracts of at least 100 acres in size (allowing sufficient space for landfill development and buffer area) were identified.

   A total of 32 sites were identified from this initial screening step. Essentially all of these sites are located in the northern third of Franklin County, where soils meeting the target criteria exist. The southern two-thirds of Franklin County, where no potential landfill sites were identified, is located within the Adirondack Park. In an effort to provide special protections to the Adirondack Park, New York State set forth a policy in 1998 that essentially prohibits solid waste landfills from being located within the Park. This State restriction went into effect subsequent to the recommendations of the original siting study, but it serves to further rule out the southern two-thirds of the County for the development of a new landfill.

In addition to the 32 sites preliminarily identified, ten more willing seller sites were presented for consideration by owners of large parcels of land. These ten additional sites are also located in the northern third of Franklin County. As a willing landowner was felt to be one important factor in the site selection process, these willing seller sites were included in the screening evaluation, and were subjected to the same subsequent exclusionary screenings and evaluations as the other sites. In total, 42 sites (32 + 10) were identified for further evaluation.

2. Sites that did not meet the specific 6 NYCRR Part 360 exclusionary criteria for landfill siting were eliminated from further consideration. These exclusionary criteria included 1) existence of agricultural districts and a predominance of important agricultural soils; 2) location within the floodplain, using National Flood Insurance Rate Maps; 3) the existence of endangered species (a determination was made that none were known to exist on any site under consideration, but this finding was subject to further site-specific screening as part of the environmental permitting process for a project); 4) the existence of wetlands (not necessarily an exclusionary criteria, but a factor in site screening); 5) location over primary water supply and principal aquifers; 6) proximity to airports (within 10,000 feet of the Malone-Dufort Airport and the Adirondack Airport, or within 5,000 feet of smaller airports, and; 7) other factors.

A total of 13 sites were eliminated from consideration due to exclusionary factors.

3. Four (4) additional sites were dropped from consideration for the following reasons: 1) two of the willing seller sites had unacceptable soils; 2) one site was landlocked, and the economic impact of providing access was seen as unacceptable; 3) one site was located in a densely populated area, and the socioeconomic and cultural impacts of developing this site were seen as unacceptable.

4. Two pairs of additional sites (four sites total) were consolidated into two larger sites, for screening purposes, due to their proximities to each other.

5. In total, 20 of the 42 sites were either eliminated from consideration or consolidated. At this point, the remaining 22 sites under consideration were ranked based upon criteria developed by the Authority in accordance with 6 NYCRR Part 360. Eight criteria were established that the Authority believed were appropriate for site screening in Franklin County. Relative weights were assigned to each criterion, based on the relative importance of each criterion to the others, all consistent with Part 360. These criteria included: 1) actively farmed sites, or sites with unwilling sellers; 2) incompatibility of proposed landfilling operations with adjacent land uses; 3) consideration of groundwater sources (other than principal aquifers) and groundwater users in the vicinity of the prospective sites; 4) consideration of the distance that waste would need to be hauled from the

waste generation centers to the sites, and consideration of the required flow of waste-hauling traffic through villages in route to the prospective sites; 5) the availability of the property for sale and the willingness of the landowners to sell, without the Authority's need to use eminent domain powers; 6) the prospects for mitigating potential visual and noise impacts of landfill operations from the surrounding landowners; 7) the potential for contaminating surface waters from operations at a landfill site, and; 8) suitability of bedrock geology beneath each of the sites for landfill development.

To conduct this step and develop rankings for each criterion, site reconnaissance of each of the remaining 22 sites was conducted and ratings were assigned at each site for each of the eight criteria. The ratings were weighted as to importance and a numerical score was then tallied for each site.

6. The top seven (7) sites identified from this ranking step were then further evaluated, and the top two or three sites selected for conducting further field investigations. This finalist site identification step was conducted in the form of additional field reconnaissance by engineering and Authority staff, and included: 1) a limited visual characterization of surface soil types; 2) an assessment of topography of the site; 3) surface water considerations; 4) visual screening factors; 5) accessibility; 6) condition of local roads, and; 7) location of utilities.

7. The Authority presented and reviewed the results of the final seven sites and finalist selection steps at multiple public meetings, and solicited public comment and feedback on the selection of two finalist sites. Based upon the results of all evaluations and the comments received from the public, two sites were chosen for more detailed investigation.

8. The two selected finalist sites were the Raymond Farm site (the top-ranked site and, eventually, the selected landfill site) and the Town Line Road site. Site and subsurface conditions were investigated at the two finalist sites in 1989, and site development costs were estimated for each site. From these evaluations, the Raymond Farm site was selected due to: 1) better soils for the intended use; 2) good rural/ isolated setting of the site from other land uses; 3) good visual screening capabilities; 4) lower site development costs than the Town Line Road site, and; 5) some public comment which appeared to favor the Raymond Farm site over the other finalist site. The final reports that presented the details and results of the site screening process were prepared in 1989 and 1990 (revised 1991).

Detailed hydrogeological investigations and environmental studies were subsequently conducted on behalf of the Authority, as required for the detailed design and environmental permitting of the regional landfill. The current landfill site was ultimately permitted by the NYSDEC following an extensive permit review process, and the current landfill site commenced operations in 1994.

8.2.3.2 Alternative Expansion Site Considerations

The majority, if not all, of the findings of the original site screening and selection studies conducted between 1987 and 1991 are still valid. The geologic conditions in the County, for example, have not changed and favorable geologic conditions were and remain critical factors in determining a suitable location for a landfill site. These factors, in great extent, are relevant to the Authority's currently proposed landfill expansion site which is located immediately adjacent to the existing site. On a broad level, many of the factors that were used to identify the current site as the best location in Franklin County for a landfill now offer a confirmation for the selection of adjacent property for the proposed expansion site.

Barton & Loguidice was retained to conduct an evaluation and identification of potential landfill expansion areas for the Authority's regional landfill. In conducting this analysis, wetlands and hydrogeologic factors were given detailed consideration. Existing documents were reviewed to identify potentially suitable locations for landfill expansion. Published wetland maps, soil surveys and other documents containing hydrogeologic information for the area were reviewed, and were examined in conjunction with the wetlands and hydrogeologic information that was developed over ten years ago as part of the original permit application for the current landfill site.

Potentially suitable locations were targeted that avoid or minimize potential impacts to regulated wetlands, but that appear to be underlain by relatively thick (greater than ten feet) low permeability soils. It is noted that it can be difficult, however, to find a location that fully satisfies both of these landfill siting criteria because locations with low permeability soils tend to retain water at or near the soil surface for long periods of time – which favors the growth of wetlands vegetation.

Preference was given to locations that are in close proximity to the existing landfill, since such locations are likely to improve the opportunity to make use of existing landfill infrastructure (such as the leachate storage tank, maintenance facility, site perimeter road, truck scale and office) and also result in fewer changes to existing environmental conditions (similar traffic patterns, minimal change in the sources of landfill noise and odors, etc.).

Potentially suitable locations for landfill expansion were identified and reviewed with the Authority to determine which location or locations should be investigated further. This level of discussion included preliminary analysis of permitting and landfill development considerations, including an initial estimate of disposal capacity that could potentially be developed at each location under consideration. The sequencing and scope of further investigations were reviewed with the Authority staff.

Although other environmental investigations and analyses are ultimately needed for the candidate expansion site that is selected as the preferred site for development of the expansion, including but not limited to endangered and threatened species surveys, a wetlands field delineation and preliminary hydrogeologic field investigation were the initial focus of field investigations undertaken. The results of these environmental studies and investigations are presented throughout this DEIS.

Expansion adjacent to the current Authority landfill site would consolidate the Authority's 30-year landfill post-closure maintenance and monitoring obligations at one site and would make use of millions of dollars already invested in existing infrastructure (site access road, scale, maintenance and office buildings, leachate storage facilities, and environmental monitoring network).

The alternative of selecting a new site for the landfill expansion, and obtaining the necessary permits and approvals to build a new landfill at another location, is an option worthy of discussion. This would be an enormous undertaking involving the expenditure of millions of dollars over the course of many years. Developing an alternative site at this time would necessitate a series of expensive and time intensive studies. Site suitability investigations, environmental assessments, impact analysis, geologic investigation and engineering investigation would all be required to try to locate and develop an alternative landfill site.

Developing a new site would also cost Franklin County the additional costs of developing new infrastructure that already exist at the current regional landfill site.

Local opposition to candidate landfill sites could surface throughout the County, and real estate sales could slow down as tensions mount and fears circulate among concerned citizens who delay selling/buying real estate near locations under consideration as a new Authority landfill site. Potential local opposition to a new landfill site location could translate into an extensive and expensive Department of Environmental Conservation (DEC) permit review process, including a DEC adjudicatory permit hearing, and would likely involve legal challenges to the landfill siting process. The amount of controversy and disruption of peoples' lives that could be created if the Authority were to search for a new landfill site cannot be overestimated. Moreover, there can be no assurances that such an endeavor would result in the successful permitting and construction of a new Authority landfill site.

Based on recent experience with efforts to find and develop new landfills in New York State, it now takes more than a decade for a new landfill site to be properly sited and permitted at a new location. The present Franklin County Regional Landfill is projected to be filled to capacity by as early as year 2014. This time frame does not provide enough time to properly complete the siting, design, permitting and construction process at an entirely new landfill site.

For these cost, logistical, timing, and environmental reasons, it would be impracticable for the Authority to build a new landfill at another location.

8.2.4 Alternative Expansion Scenarios

Conceptual Design Considerations

The configuration of the proposed landfill expansion area depicted in this DEIS is, at this point in time, preliminary and conceptual in nature. Detailed design of the landfill cells, stormwater management facilities, leachate storage and conveyance facilities, leachate pump stations, on-site access and perimeter roads, on-site power distribution, auxiliary equipment storage facilities, and other ancillary support facilities has not yet been undertaken. The general locations and configurations of the landfill cells and related facilities have been identified in this DEIS on a preliminary basis only, and are subject to change in the future as additional environmental permit reviews are undertaken and as more detailed design information is developed for the proposed landfill expansion area.

The preliminary full build-out site plan and layout of the proposed landfill cells has been determined through a conceptual design process that inherently examines alternatives based on factors such as hydrogeologic conditions (e.g., areas with at least ten feet of low permeability soils above bedrock), drainage patterns, avoiding and minimizing potential impacts on wetlands, topography, cost and operational considerations.

Similarly, the initial phase of the proposed landfill expansion area, which will involve the preparation and submittal of more detailed permit design drawings and engineering reports to the NYSDEC requesting Part 360 permit approval to build cells 5, 6 and 7, has been configured to: (a) avoid and minimize wetland impacts, (b) gain economical air space (i.e., disposal capacity) by building cell 5 immediately adjacent to the south west side of the existing landfill's cell 1, which will allow for a waste overlay area to be developed in between cells 1 and 5, and (c) provide a substantial buffer distance between these first three cells of the proposed expansion area and County Route 20.

Alternative Scale or Magnitude

The preliminary footprint identified for the proposed landfill expansion area could, if it is ultimately permitted and built in stages in general conformance with the conceptual cell configuration presented in this DEIS, provide approximately 95 years of waste disposal capacity for the Authority's customers. An expansion area site life of 95 years would help ensure that the Authority and its customers will have cost effective, environmentally sound waste disposal for several future generations.

The conceptual cell configuration presented in this DEIS represents what is currently considered to be a full build-out plan for the proposed landfill expansion area, and it is examined in this DEIS under the presumption that it will ultimately be implemented.

This approach allows for a full consideration of potential environmental impacts associated with the proposed landfill expansion at the earliest possible stage of the project, as required by SEQRA, even though there is no certainty that any or every stage of the proposed landfill expansion project will be permitted for construction by the NYSDEC.

Smaller footprint configurations could have been presented for consideration in this DEIS. For example, a landfill footprint that is 50% smaller than the proposed landfill expansion footprint could have been identified for consideration. It would have involved impacts to roughly half of the acreage that is currently proposed to be impacted over time, and it would likely have resulted in disposal capacities in the range of 30 to 40 years (the disposal capacity could be reduced by more than 50% if the smaller footprint has a narrower footprint configuration, which would limit not just the areal extent of the landfill but the height of the landfill's waste mass would also be limited). On an acreage basis, impacts to vegetation and other terrestrial resources disturbed by landfill development would be approximately cut in half for such a smaller footprint. Visual impacts of the proposed landfill expansion would also be reduced to some extent, due to the smaller shape and potentially lower final height of the landfill.

This approach, although it would have presented an expansion plan with a 50% smaller footprint and associated impacts/characteristics as noted in the preceding paragraph, would have resulted in a segmented environmental review of the

Authority's proposed landfill expansion plan. Furthermore, following completion of this DEIS and the SEQRA review process, the Authority will be pursuing the development of the proposed landfill expansion area in phases. Each phase of the landfill expansion's development will be the subject of permit design drawings, engineering reports and additional environmental reports as necessary to further ensure that the landfill expansion area will be built and operated in compliance with all applicable environmental regulations that serve to protect natural resources and public health.

The primary disadvantage of smaller footprint configurations is that they will ultimately not provide as much disposal capacity as a larger footprint, such as what is proposed in this DEIS. This, in turn, means that the costs and environmental impacts associated with development of a new landfill site -- or with the long distance transportation of waste to an out-of-County disposal site -- will occur sooner.

The phased approach that is proposed for the future permitting and construction of the proposed landfill expansion will not only provide further assurances that all environmental requirements will be met, but it will also mean that the amount of landfill disposal capacity built and made available at any point in time can be adjusted to match what the projected waste disposal needs are at that point in time. In other words, if major changes in the economy or waste reduction and recycling activities should drastically reduce the amount of waste requiring disposal in the Authority's landfill, then fewer acres of double composite liner

system could be built (or the liner acreages already built could last longer, thereby postponing the dates in which additional acres of liner system would need to be built).

The timing for construction of future stages of the proposed landfill expansion is also expected to be different than what is currently envisioned since the amount of waste to be disposed at the Authority's landfill is likely to change from year to year based on economic conditions and continuing efforts by the Authority, NYSDEC, and others to enhance waste reduction measures, recycling activities, and organics composting. For example, the initial phase of the proposed landfill cell expansion, consisting of the construction and use of cells 5, 6 and 7, could last for an extra four years (e.g., 23 year useful life instead of 19 years) if future waste reduction and recycling efforts further reduce the amount of waste requiring disposal by 20%.

Similarly, if the proposed landfill expansion were to only accept wastes generated within Franklin County but allowed for the acceptance of alternate daily cover materials from outside the County, as needed, then the useful life of the proposed landfill expansion would nearly triple and the amount of landfill related traffic using the Authority's landfill could roughly be cut in half (assuming in-county truck traffic consists of a mix of small and large capacity trucks, whereas waste originating from outside the County typically is delivered in higher capacity trucks due to the longer haul distances). Other impacts associated with the proposed landfill

expansion would ultimately occur under this scenario, but they would take place over a longer period of time due to the slower pace of landfill development and usage.

8.2.5 Alternative Waste Disposal Technologies

8.2.5.1 Introduction

A series of alternative waste disposal technologies are available for consideration by the Authority. Some of these were considered by Franklin County in its solid waste planning activities in the late 1980's and early 1990's. The Authority's 1991 Solid Waste management Plan set forth an integrated solid waste management system consisting of a regional landfill, waste transfer stations, and recycling facilities. The 2006 Modification to this Plan reinforced Franklin County's course of action to secure long-term landfill capacity in the future. Alternative waste technology options for Franklin County were considered, with landfilling selected as the preferred technology many years ago. The Authority has since invested heavily in the development of infrastructure and facilities to support this technology selection.

However, it is worth reviewing available technology alternatives as part of this EIS process. Note that the byproducts or end products of any of these alternative technologies still require a landfill for disposal.

8.2.5.2 Pyrolysis

Pyrolysis involves the heating of waste without sufficient oxygen for combustion, causing its decomposition into combustible gases, liquids, and a solid residue (char) which resembles coal. This technology was traditionally used to produce methanol, acetic acids, and turpentine from wood. The most promising aspects of its application to municipal solid waste are low air emissions and the flexibility to produce a broad range of energy forms, which would enable the facility to respond to changes in local energy demands.

The pyrolysis technology has not been commercially developed in the United States for application to the municipal solid waste stream. An attempt to develop a large-scale pyrolysis project to process municipal waste was attempted unsuccessfully by Monsanto for the City of Baltimore in the 1970's. Thus, it is still considered to be an experimental waste processing technology. Obstacles which have hindered the commercialization of pyrolysis as a municipal solid waste processing technology include: the interference of inorganic materials with the pyrolysis process; inconsistencies in the quality of the liquid and char end products of pyrolysis; the low combustion value of the char end product; and the lack of energy markets for end products. The unproven reliability of this waste processing technology is the overriding reason why pyrolysis does not warrant further consideration.

8.2.5.3 Biogasification

Biogasification involves the conversion of the organic fraction of municipal solid waste into methane gas by the activities of anaerobic bacteria in an enclosed digester. The methane gas can be used as a fuel for steam production, for subsequent sale to nearby utilities or industries, or it can be sold as a stand-alone fuel.

The biogasification technology has been traditionally used to process highly liquid, easily biodegradable wastes such as animal manure and organic sludge. In order to use this technology to process municipal solid waste, extensive preprocessing of the waste must be done to separate out the organic fraction and process it into small, uniform particle sizes which are essential for proper anaerobic digestion. The temperature, carbon-nitrogen ratio, and pH of the waste mixture must be carefully monitored and controlled to achieve proper digestion of the waste. A by-product of the decomposition process is a solid residue (i.e., waste which has not been converted to methane gas) which must either be disposed of elsewhere, or further processed for use as fuel or compost.

The application of the biogasification technology has received a recent resurgence in interest as a renewable energy source due to the high cost of oil. Projects being developed usually involve the use of a clean organic feedstock, and this technology is still in the developmental stages. Use of municipal solid waste as a biogas process feedstock has also received some renewed interest recently, but no commercial-scale facilities are known to have been

successfully developed in the United States that use this technology. Therefore, this is still in its developmental stages, and is not considered to be a proven technology at this time.

8.2.5.4 Combustion Waste-To-Energy

Combustion waste-to-energy (WTE) technologies involve incinerating municipal solid waste and using the heat generated during incineration to produce steam. The steam can then be sold to nearby industries or it can be converted to electricity and sold to a local utility.

Several alternative combustion WTE systems are available for managing mixed municipal solid waste. The major differences among these systems are the degree of front-end waste processing, the method of system construction (i.e., systems constructed on-site vs. prefabricated units assembled on-site), the type of furnace used to incinerate the waste (e.g., stoker fired waterwall or refractory systems, rotary combustors, and controlled/ starved air systems), and the method of feeding wastes through the incinerator.

The alternative combustion WTE systems can be broken down into two broad categories - mass burn systems and refuse derived fuel (RDF) systems. The primary distinction between these two categories is the extent of processing which the incoming waste is subject to prior to incineration. At mass burn facilities, little sorting or preprocessing is typically employed prior to waste

incineration. At RDF facilities, extensive sorting and preprocessing is used to make the waste more homogenous and increase its heating value. Processing raw solid waste into RDF is technology-intensive. Because of this, mass burn WTE systems tend to be more popular for application to the municipal solid waste stream.

Combustion waste-to-energy systems require the use of sophisticated operating equipment and pollution controls to ensure efficient operation and compliance with stringent air quality requirements. The ash generated as a by-product of waste combustion must be disposed of in a landfill, or alternative uses must be developed. In New York State, ash generated from these facilities is subject to periodic testing to determine if it is hazardous. Non-hazardous incinerator ash may be disposed of at a municipal solid waste landfill. Hazardous incinerator ash must be disposed of in a landfill specially designed to accommodate hazardous waste. The latter method of disposal is extremely costly. The non-burnable, non-recycled wastes received at these facilities must also be landfilled. The implementation of the waste-to-energy technology, therefore, does not eliminate the need for a landfill; it simply reduces the size of the landfill needed.

Modular Controlled Air Incineration units are small-scale combustion units of mass burning mixed municipal solid wastes. These types of incinerators have been in use since the 1960s and are often considered technically viable for an application such as managing waste streams comparable to that of the Authority's, in terms of annual tonnages. However, more stringent air pollution

requirements over the past two decades (higher incineration temperatures, longer detention times, scrubbers, and electrostatic precipitators or bag houses for air pollution control) have substantially increased the costs to build and operate small modular incineration units. These cost increases have been largely responsible for the absence of any new waste-to-energy facilities in New York State, in the size range potentially applicable to the Authority, during the last 20 years. The other types of incineration facilities typically include waterwall incineration, refractory-lined incineration, and rotary kiln incineration.

Mass burn waste-to-energy technologies have been used to successfully manage the solid waste stream in many communities. Because of this proven track record, mass burn waste-to-energy is, in general, identified as a technically viable waste management option. However, these facilities are very capital-intensive and usually require a very large tonnage throughput (over 1,000 tons per day, up to several thousand tons per day) to make the tipping fees affordable and competitive. Barton & Loguidice has been involved with clients in New York that evaluated waste-to-energy and found the technology to be cost-prohibitive. In a recent analysis in Upstate New York, an economic feasibility comparison of a 750 ton-per-day landfill versus a 750 ton-per-day waterwall incinerator waste-to-energy facility was conducted. The projected annual costs of a WTE facility were found to be significantly higher (two to three times the cost) than landfilling, even at the 750 ton-per-day throughput rate. With the much lower waste tonnages

generated in Franklin County than in the example given, it is expected that the poor economics of WTE would be even worse in Franklin County, in comparison to landfilling.

Also, as noted above, development of a waste-to-energy facility would not eliminate the need for a landfill. Process residues (i.e., incinerator ash residue), which typically amount for about 10% by volume and 25-35% by weight of the incoming waste stream as well as bypass wastes, would still need to be disposed of in a landfill. Therefore, mass burn technology does not offer the County a practical alternative to the proposed landfill expansion.

8.2.5.5 Composting/Co-Composting

Composting is a biochemical process that converts biodegradable organic material in waste into simpler, more stable compounds plus carbon dioxide. The end-product of the composting process is a humus that contains nutrients and minerals that can be used as a soil amendment or supplement. Compost has a lower nutrient value than fertilizer or sewage sludge. However, compost provides numerous benefits to soil: it improves soil structure for root development; it increases water retention in sandy soils; it improves drainage in clayey soils; it increases the cation exchange capacity of soils. A quality compost product is visually similar to peat, and has similar applications. A typical municipal waste composting operation consists of the following basic steps:

- Pre-processing – Initial processing consists of sorting, shredding, and preparation of a feedstock mixture suitable for composting. Some of the recyclable materials in the waste, such as ferrous and non-ferrous metals and glass, may be removed at this stage. The mixture of biodegradable materials, or feedstock, is adjusted to optimum moisture and nutrient levels, and particle size of the materials may be reduced. A “dirty MRF” type of pre-processing line is sometimes used to prepare a waste stream for composting.
- Municipal waste is sometimes co-composted with wastewater biosolids (sewage sludge). This mixture of two waste streams provides nutrients and moisture that are needed for the proper composting of municipal solid waste. Water can be added to the mix to attain optimal moisture levels. The solid waste acts as a bulking agent for the composting of the biosolids.
- Biological and chemical decomposition - This composting stage makes use of naturally occurring bacteria and other microorganisms to break down the organic portion of the waste, in the presence of oxygen, into stabile by-products.
- Curing - Curing is required to stabilize the compost mix and to assure that the biochemical breakdown process is complete. Curing helps assure that the compost product will not be toxic as a growing medium. After a 1-2 month curing phase, the material is usually considered stabilized.

- Product Screening - The compost product is prepared for use through screening, removal of contaminants (such as glass), packaging (if needed), and marketing.

Solid waste composting stabilizes only the organic fraction of the waste stream. Contaminants such as glass, plastic, metal, rubber, and textiles should be screened out, and either recycled or landfilled as appropriate.

A composting facility can divert and reclaim approximately 60-70 percent of the municipal solid waste stream prior to landfilling. The quality of the final product benefits from the presorting/ removal of glass, household hazardous waste, household batteries and used motor oil. Building corrosion, odor control, and fire suppression needs at mixed waste composting sites, as well as the quality of the final product, are critical issues that need to be addressed for proper development of a composting project. The residue sent to the landfill after separation from the compost feedstock is largely inorganic in nature, and most of the soluble components of the waste stream have been removed.

The number of municipal waste composting facilities in the US has held constant at about 15-20 facilities over the past decade or more; some have closed, and a few new facilities have opened. Few new mixed waste composting projects are currently being developed. Delaware County, NY recently opened a mixed waste composting facility for its residents since expansion of its landfill is restricted by watershed rules of the New York City water supply

reservoirs. The economic feasibility of MSW composting is highly dependent on the cost of other disposal alternatives (e.g. landfilling) that are available for a region and also upon the quality and local markets of the compost end-product produced. Where landfilling is available at a relatively economical price, and where there are no other critical environmental issues ruling out continued landfilling, composting is not typically cost-competitive with landfills in most areas. Larger facilities (several hundred tons per day or more) can help improve compost system economics. Mixed waste composting is a technology option that may be evaluated further by the Authority in future years, as a way to minimize the amount of organic wastes landfilled. However, relatively high costs, marketing uncertainties, and the uneven track record fir such facilities do not currently make mixed solid waste composting a viable alternative to the proposed landfill expansion project.

8.2.6 Sale or Lease of the CFSWMA Landfill and/or Transfer Stations During Their Useful Life

The sale or lease of the CFSWMA Landfill, and/or the sale or lease of the three Authority transfer stations in Tupper Lake, Lake Clear, and Malone, plus a fourth collection site in St. Regis Falls, are not currently contemplated or proposed by the Authority. In the event that such sales or leases become a serious consideration, then the Authority would undertake appropriate environmental reviews and analyses in accordance with SEQRA.

Under a sale or lease scenario, it is assumed that basic services currently provided by the Authority's landfill and transfer station operations would continue to be provided to the residents of Franklin County, whether the facilities are owned or operated publicly or privately. However, public ownership and operation of the Authority's landfill and transfer stations offer distinct benefits to the citizens of Franklin County.

Public ownership and operation of these facilities provides direct control of the facilities and their operation by the County's Authority, and provides a direct responsibility to the County's citizens for operations, that would not necessarily be in place with private ownership or operation. Public ownership/operation can be tailored to serve all of the public goals and needs of integrated waste management (such as recycling, economical waste transportation and disposal, educational services, etc.). Alternately, a privatized system would typically incorporate an economic factor in all system components and business decisions, whether or not all public needs are met. Long-term security and preservation of waste management disposal capacity would typically not be a prime consideration of a private entity.

The continued public ownership and operation of the Authority's waste management facilities provides direct accountability and control of the Authority's waste management activities, versus a contractual arrangement for services with a private entity (or perhaps no contract at all, in a straight facility sale scenario to a private entity and a private market and profit-driven operation).

8.2.7 Rail Haul of Waste

Rail haul has been considered for the potential transportation of waste to the Authority's landfill. A major impediment to rail haul is the distance from the landfill site to the nearest rail line, and the substantial investments that would be needed to build the rail facilities that would be required to receive waste via railroad cars at the Authority's landfill. Even with the recent increases in trucking costs, related to rising fuel prices, in the Authority's circumstances, rail haul cannot compete economically with the trucking of wastes. Other factors that make rail haul an unattractive option at this point in time for the Authority include: (a) the relatively low amount of waste accepted by the landfill, (b) most of the waste currently received at the Authority's landfill is from with Franklin County and nearby counties, (c) the construction of new railroad tracks/siding and the construction of a rail yard/facility for unloading rail cars filled with solid waste would involve environmental impacts associated with the construction and operation of any such rail facilities, and (d) there are currently no traffic congestion or other issues associated with trucking waste to the landfill that would lead the Authority to give further consideration to rail haul as a waste transportation option.

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