SECTION 2.0
PROJECT DESCRIPTION

The proposed project involves the expansion of the existing City of Albany Rapp Road Landfill onto City-owned lands located east of the existing landfill (Eastern Expansion) in order to continue to meet the solid waste disposal needs of City residents and businesses as well as the communities that make up the Albany New York Solid Waste Energy Recovery System (ANSWERS) Solid Waste Management Planning Unit, and the Capital Region as a whole. ANSWERS is comprised of a consortium of communities that include the cities of Albany, Rensselaer and Watervliet, the towns of Berne, Bethlehem, Guilderland, Knox, New Scotland, Rensselaerville, and Westerlo, and the Villages of Green Island and Altamont (Figure 2-1, Regional Location Map).

The Eastern Expansion of the landfill involves an overfill of approximately 23 acres of the existing landfill and a lateral expansion of approximately 15 acres that includes 2 acres within the existing landfill operations area (disturbed/developed lands) and 13 acres within undeveloped City-owned property directly to the northeast. Existing landfill infrastructure including offices, the recycling building, and other accessory uses will be relocated to three parcels totaling approximately 3.5 acres located directly east of the landfill entrance road off of Rapp Road. Figure 2-2 illustrates the general layout of the expansion.

An integral part of the Eastern Expansion proposal is the Habitat Plan. There is a significant opportunity to re-establish linkages from west to east in the Albany Pine Bush Preserve through the existing mobile home park property and over portions of the closed landfill. Implementation of the plan would be an ongoing process, beginning with wetland mitigation and stream restoration on the mobile home park property and demonstration plots on the existing landfill; and continuing with habitat restoration efforts on closed portions the existing landfill as well as surrounding areas of currently degraded habitat. It is envisioned that the landfill can be blended into the Albany Pine Bush Preserve landscape, providing critical habitat for rare ecological communities and threatened and endangered species.

The Habitat Plan is also designed to address other influences on the natural communities within the Pine Bush. These influences include the mobile home park and the grading and sand mining that removed Pine Bush habitat and changed the landscape, the relocation and ditching of natural streams that are tributary to Lake Rensselaer, and the draining and ditching of large wetland

Rapp Road Landfill Eastern Expansion

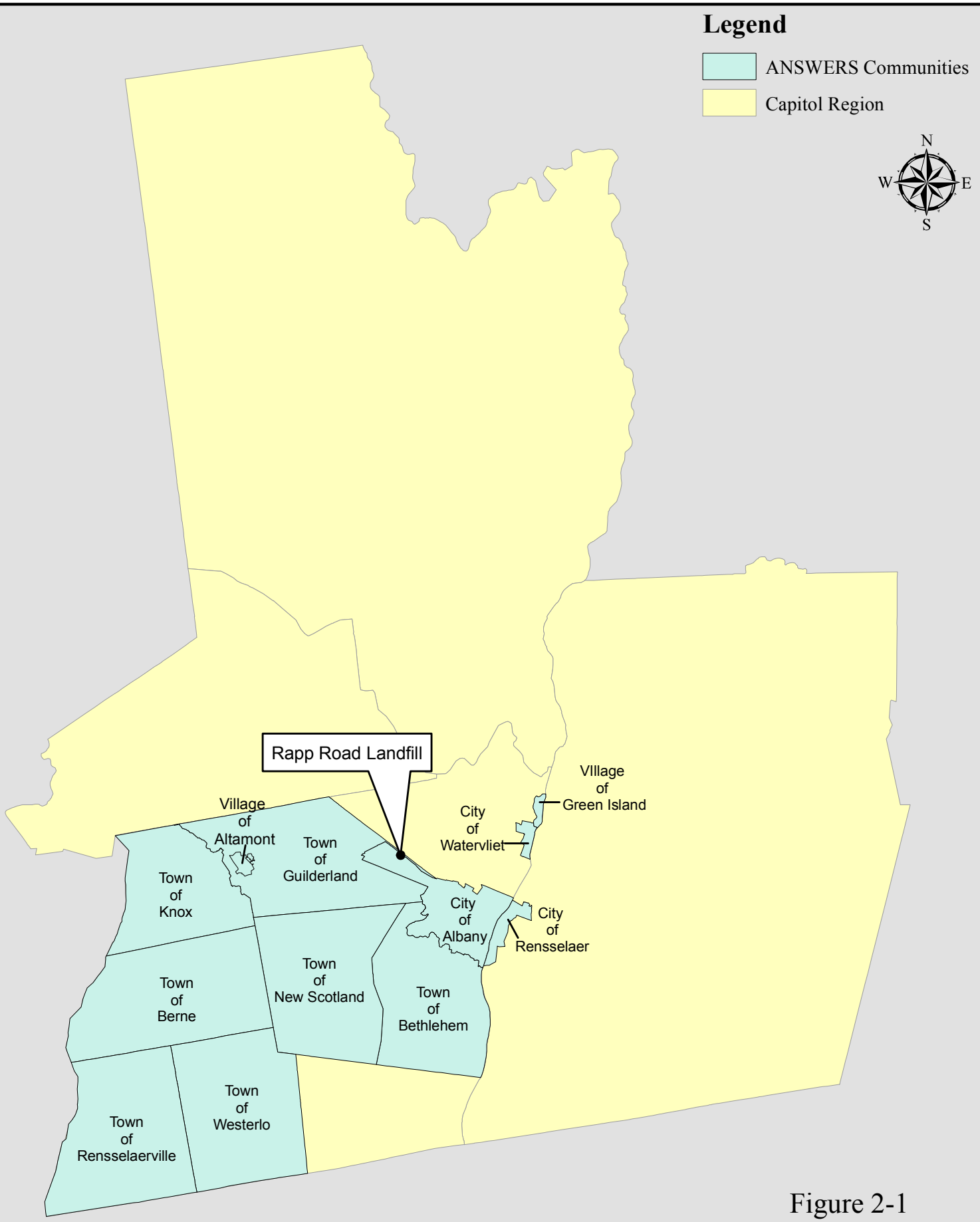

Figure 2-1
Regional Location Map

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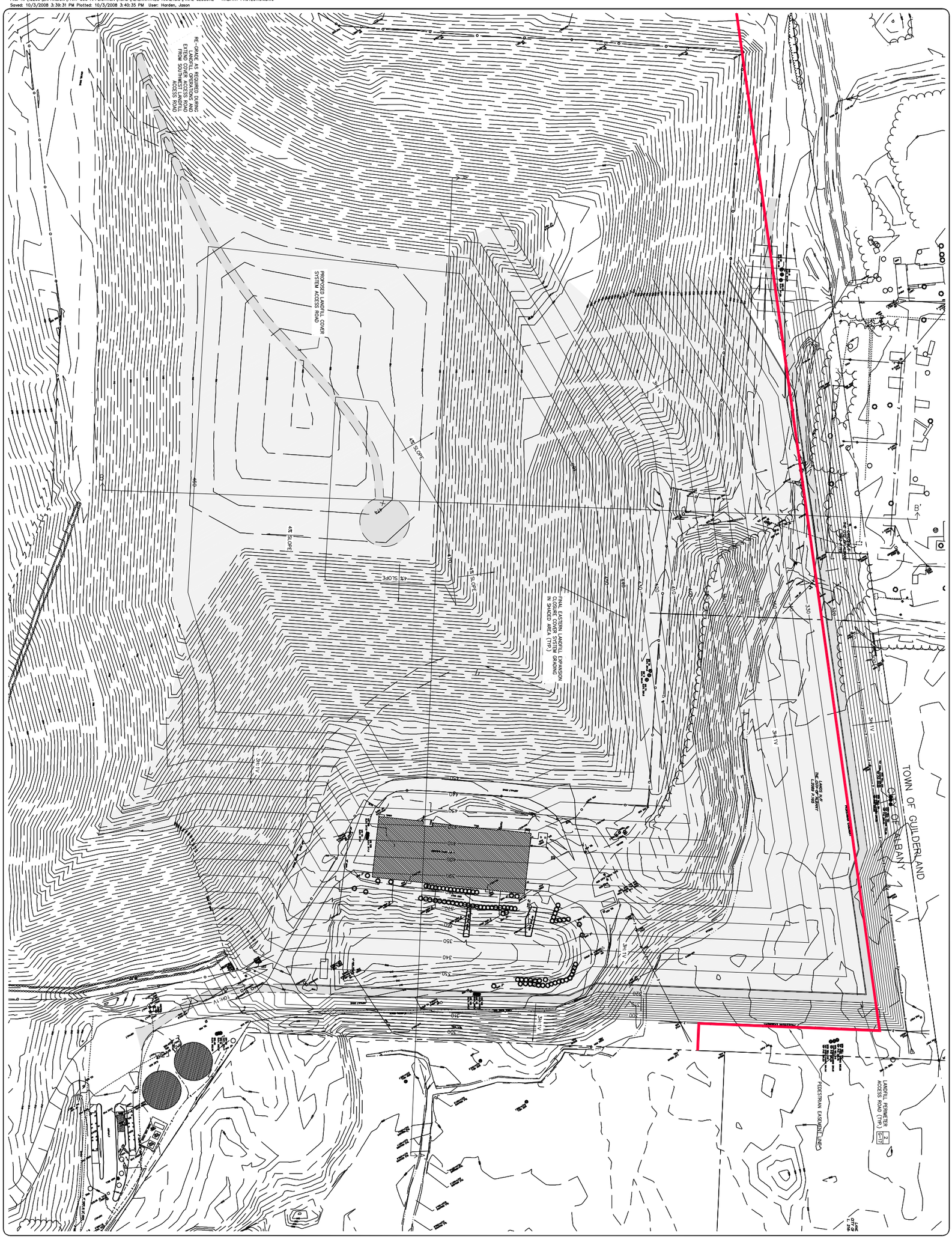

FIG. 2-2

RAPP ROAD LANDFILL
EASTERN EXPANSION

HABITAT PROTECTION SCENARIO

Issue Date: 7/07 | Project No.: 12206 | Scale: 1"=60'

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No.	Submittal / Revision	Appd	By	Date

areas for past agricultural purposes, all of which contribute to poor water quality and the loss of natural/native Pine Bush communities.

The Habitat Plan is discussed in greater detail in Section 2.8. The Habitat Plan and the Eastern Expansion are intertwined in terms of construction phasing, financing, and closure. Restoration, mitigation, and enhancement projects will begin during the first year of the landfill expansion and will be phased over the anticipated 6.5-year life of the project, with the final phase a component of the closure plan. The end result converts the entire Rapp Road Landfill complex and surrounding lands, with the exception of landfill operations structures that will be needed to continue to address gas and leachate collection, odor abatement, and possible transfer station operations, into Pine Bush habitat. This expansion project provides the financial means to restore and enhance approximately 250 acres of land. With limited State and local funding sources, the ability of the Pine Bush Preserve Commission to achieve the goals of the Habitat Plan is significantly diminished if not impossible. The intent of the City is to make this win-win scenario a reality.

2.1 PURPOSE AND NEED

The Rapp Road Landfill is an important public facility providing an essential waste disposal service to residents, businesses and institutions throughout the Capital Region. The additional capacity that will be realized by the proposed Eastern Expansion will provide the time needed to plan, site and develop the next generation of waste management facilities for the Capital Region. The landfill is also an important and essential revenue source that supports numerous City services. Current revenue is approximately $13 million per year. Therefore, the purposes of the proposed expansion include the following:

- Maintain essential, uninterrupted waste disposal services to the City and Capital Region;
- Maximize landfill space to continue the revenue stream to support City services;
- Maximize landfill life to provide sufficient time to allow for budgetary adjustments and to find alternative revenue sources to prevent an abrupt end to certain services;
- Maximize landfill life to provide time to prepare for and begin implementation of alternative waste disposal options, understanding that no further expansions can occur, including no further overfill options (City will cease acceptance of solid waste for landfilling at the Rapp Road facility).

The City, as well as all the ANSWERS communities, would like as much time as possible to address their fiscal situation and achieve a budgetary solution that will not cause significant impact on services provided to residents. Currently, the operation of the landfill provides revenues sufficient to pay for the City's solid waste and recyclables collection services ($3,069,000) and annual debt service for bonds issued for solid waste related projects ($2,376,100), for a total of $5,445,100. To the extent revenue from the operation of the landfill exceeds this amount, the revenue is paid into the general fund to reduce the total tax burden on the residents of the City of Albany. In the event the Eastern Expansion were not approved, the City would not only have to find an alternative source of revenues for these costs, it would incur an additional $4,705,000 per year in transfer and hauling costs and the operation of a transfer station (see SDEIS Section 5.5.7 - p. 5-32). Other beneficiaries would also suffer. The portion of the tipping fee that currently goes to the Albany Pine Bush Preserve would be eliminated and funding would not be available for the Habitat Plan discussed in SDEIS Section 2.8.

The tool to define the future solid waste disposal solutions for the City and Capital Region is the Solid Waste Management Plan (SWMP). The City is currently undertaking a SWMP Modification (see below in this section for further details) and upon completion of that document will be moving forward with the Update. It is estimated that the New SWMP will not be fully approved until 2011, at which time the City would begin implementation efforts and funding, which may include the construction of new infrastructure such as a transfer station. With the budgetary implications of the final closure of the Rapp Road Landfill and the long range planning and implementation efforts to address solid waste management, a reasonable goal of 7-10 years of landfill life was set.

The public need for the proposed expansion is best explained by review of the history of solid waste disposal in the region and at the Rapp Road site. The City of Albany currently operates the Rapp Road Landfill on behalf of the Albany New York Solid Waste Energy Recovery System (ANSWERS) Solid Waste Management Planning Unit. Prior to development of the ANSWERS system, the region was served by approximately 12 separate solid waste landfills.

Beginning in the mid-1970's, however, state environmental requirements applicable to such landfills began to be strengthened significantly, a trend which intensified in the 1980's and continues to date. As a result, by the early 1990s the only solid waste disposal facilities remaining within the municipalities forming the Wasteshed were the facilities located within the City of Albany. From 1981 to 1994, these facilities consisted of the City's landfill located on Rapp Road, the ANSWERS Refuse Derived Fuel processing facility (owned by the City), which

processed solid waste into a "refuse-derived fuel," and boiler facilities owned by the New York State Office of General Services, (OGS), in which the refuse-derived fuel was burned to produce steam utilized to meet the thermal energy needs of the Empire State Plaza.

Although the OGS boiler facilities closed in early 1994, the City of Albany continues to serve the Wasteshed through its Rapp Road landfill. Currently, all of the solid waste requiring municipal management within the municipalities which comprise the Wasteshed and a significant portion of the waste stream from those communities that is collected by private haulers, is accepted by the City of Albany at the landfill. A waste stream analysis is provided in Section 2.3.

As previously noted, the City began accepting wastes at the Rapp Road site in the 1970's. This initial landfill covers approximately 80 acres and is referred to as the Greater Albany Landfill (GAL), which operated until 1991. It was closed and capped in 1991-92. Landfill operations continued in 1991 with the Albany Interim Landfill (AIL) located north of the GAL. This was an approximately 14-acre expansion. In 1997, the "Wedge" was constructed. This was the third phase of the landfill complex at Rapp Road and was a "piggyback" landfill on the GAL, tying into the AIL. This expansion provided landfill space until 2000.

As a condition of the approval of the AIL in 1990, the City embarked on a study to identify a long term solution for waste disposal in the ANSWERS Wasteshed. The result was a Generic Environmental Impact Statement/Solid Waste Management Plan ("SWMP") for the Wasteshed. The SWMP included the creation of, and consultation with, an Advisory Committee consisting of representatives of each participating municipality, extensive opportunities for public comment, and numerous stages of review by NYSDEC. The process of creating the SWMP included the preparation of a Draft and Final Generic Environmental Impact Statement ("GEIS") to evaluate the impacts associated with the proposed SWMP. The SWMP, which was approved and adopted in 1992, committed the City of Albany, on behalf of the Wasteshed, to implement plans, projects and programs identified in the SWMP.

After thoroughly reviewing the existing regional solid waste system, solid waste needs for the future, the available options for meeting those needs, the associated environmental impacts, and economics, the SWMP concluded that a new long-term landfill should be developed to serve the Wasteshed. The SWMP determined that roughly 100 to 130 acres of landfill area would be needed to serve the planning unit for a twenty-year period and that approximately 250 acres

should be acquired to provide a site size sufficient to support administrative activities and to provide an appropriate buffer area.

The SWMP delineated the process that the Wasteshed would use in identifying a site for its new long-term landfill. The chosen process was an extensive, multi-phased, criteria-based siting study. The criteria were established in the SWMP, after public review, and were largely driven by requirements in the 6 NYCRR Part 360 regulations (Part 360), as well as by environmental and planning guidelines.

In May 1991, the City of Albany, on behalf of the Wasteshed, issued the first phase siting report. The report applied the initial screening criteria and identified 15 potential sites that satisfied those criteria. Of those sites, 3 were located in Guilderland, 9 in Bethlehem, and 3 in Coeymans. The second phase report, which was issued in 1992, recommended 3 of the 15 initial sites for further study (Figure 3). Following a detailed investigation of the 3 sites in accordance with the criteria established in the SWMP, Part 360 and environmental and planning guidelines, a third report was prepared in August, 1994, selecting Site C-2 in the Town of Coeymans as the preferred site for the landfill. Following extensive negotiations, the City of Albany secured options for the purchase of the property with the landowners of Site C-2.

On September 2, 1994 the City of Albany applied to NYSDEC for a Part 360 permit for the C-2 Site. In November 1994 the NYSDEC issued their intent to have NYSDEC Region 4 act as Lead Agency for the SEQR process. Lead Agency status was challenged by the Town of Coeymans. This dispute and other litigation over process resulted in significant delays. Meanwhile, landfill capacity in the "Wedge" portion of the AIL was diminishing. By 1999, with no solution for Site C-2 available, an expansion option was necessary to allow the City to continue to serve the ANSWERS Wasteshed.

In 2000, the P-4 Expansion was constructed. This phase provided both horizontal and vertical expansion to the AIL in the northeastern portion of the landfill as an overfill of the GAL and AIL. For specific details of the P-4 Expansion, please refer to the "Third Supplemental Draft & Final Environmental Impact Statement P-4 Project Landfill Expansion" (C.T. Male Associates, P.C., 1999).

The P-4 expansion provided the opportunity to continue efforts to permit Site C-2. Site investigations at C-2 resumed in 2004. Wetland delineation of the site revealed that the project could impact over 80 acres of wetland. Preliminary pre-application meetings were held with

NYSDEC and the U.S. Army Corps of Engineers (USACE). Based on these initial discussions, it became clear approvals for development of the entire facility could take in the range of 10-20 years since USACE indicated it would be necessary to implement and prove the success of mitigation prior to the issuance of approval for impacts, assuming other regulatory tests and standards could be met. NYSDEC has rendered no judgment if the site can meet all regulatory standards and be granted permits. Therefore, it would not be possible to permit C-2 prior to landfill space running out. It is estimated that the P-4 Expansion has capacity until November 2009, based on the current rate of disposal (approximately 1,050 tons per day).

Alternatives to expansion of the Rapp Road site are discussed in SDEIS Section 5.0. With Site C-2 mired in permitting issues and dwindling space in the P-4 Expansion combined with an obligation to provide solid waste disposal needs for the Wasteshed, the public need for a new solid waste management solution is well established. Considerable effort has been expended on Site C-2 as the long term solution. However, this is clearly not the solution to address the shorter term need to provide landfill space. Likewise, embarking on a renewed search for a landfill site would be an equally time-consuming task. This leaves the expansion of the existing landfill or the shipping of wastes to a large out-of-Wasteshed landfill as the two potential solutions. The latter may be a valid alternative but will require considerable investigation and reconsideration of costs and revenue streams. Revenue associated with tipping fees at the landfill support many services provided by the City and are also the source of considerable funding (currently approximately $250,000 per year) for the operation and management of the Albany Pine Bush Preserve. A sudden elimination of this funding source would create other areas of public need. Additionally, the City and the ANSWERS communities would be faced with greater costs for solid waste disposal (see SDEIS Section 5.5.4 for further details).

Waste reduction through recycling is also an important consideration for the extension of existing landfill life. The City and most of the ANSWERS communities have recycling programs, as do most other communities in the State. The original approved SWMP set a recycling goal of 40%, but explicitly noted that these specific numerical goals are not intended to be used as regulatory requirements (See Insert to Volume III, Section 7.1 after page 7-1). Since the approval of the original SWMP, the City and other members of the Planning Unit have undertaken most of the waste reduction and recycling measures called for by the original SWMP. A draft SWMP Modification has been prepared and is undergoing review. New recycling goals have been proposed as part of the SWMP Modification, with the overall recycling goal increasing from 34% in 2008 to 45% by the end of 2011. As with the original SWMP, these revised recycling goals are not intended to be used as regulatory requirements or permit

conditions. Among other things, the SWMP Modification outlines certain program improvements that will be made, particularly with respect to education and enforcement of mandatory recycling among commercial, industrial and institutional waste generators. These are:

- As a condition of continued use of the Landfill facility; participant municipalities will be required to upgrade ordinances as required so that they include source separation from the commercial industrial and institutional (CII) sectors. Ordinance amendments, if necessary, should be effective no later than January 1, 2009.
- The City of Albany has established new permit requirements for commercial haulers using the landfill, requiring these haulers to provide recycling services to their commercial customers and provide data and reports regarding these programs. These new permit requirements will go into effect on January 1, 2009
- Increased education and enforcement efforts, particularly with respect to commercial, industrial and institutional recycling programs may also be required to ensure that the requirements of local ordinances are being met. These increased efforts will include the following approaches:
  - Oversight in the form of waste audits at City solid waste facilities can be effective in identifying non-participation in recycling programs. Haulers (and the waste generators they service) discovered to be delivering recyclable materials for disposal at the landfill will be subject to follow-up education and enforcement efforts. Failure to comply and repeated delivery of contaminated loads could result in loss of disposal privileges and imposition of fines.

  - While City staff may discover these deliveries at the landfill, follow-up contact with non-participating waste generators will be undertaken by the Planning Unit Recycling Coordinator, who will initiate education efforts intended at bringing these generators into compliance. It will be the responsibility of the municipality in which the waste originates to follow up with any enforcement effort, if that becomes necessary.

  - The City has recently renewed efforts to educate generators (landowners) through a letter campaign reminding these landowners that they are required to have a recycling program in place. Currently, this campaign targets owners of multi-residential complexes. Although, this type of action has typically been complaint driven, the City plans to take a more active role in identifying and correcting problems in the separation and collection of recyclables in the non-residential sector.
- Participant municipalities will be expected to execute an Inter-Municipal Agreement (IMA) with the City of Albany, which will provide for a Planning Unit-wide Recycling Coordinator who will be an area-wide resource to promote waste reduction and recycling, monitor compliance with the municipal recycling ordinance, provide assistance in applying for available grant funding, and compile annual information about recycling program achievement in each municipality, including commercial, industrial and institutional recycling program. Pursuant to the IMA, the cost of this

position will be allocated among the member municipalities, in proportion to their population. The enforcement of local ordinances will remain the responsibilities of each municipality. The Recycling Coordinator will be appointed in the Fall of 2008.

- Multi-municipal recycling promotional materials can be considered for program components that are common across the planning unit. These might include brochures on topics like backyard composting and mulching grass clippings.
- The Planning Unit Recycling coordinator will compile information and instructions from each municipality regarding their waste reduction and recycling programs. This information will be made conveniently accessible to residents and businesses of the Planning Unit by posting it to the website established by the City to make information about the Eastern Expansion publicly available (www.capitalregionlandfill.com).

Implementation of these and other waste reduction and recycling measures identified in the SWMP modification may reduce the quantity of waste requiring land disposal and as a result, may extend the useful life of both the existing landfill operations and the proposed Eastern Expansion. For 2007, nearly 34,000 tons of MSW were recovered for recycling from residential and commercial sources. Assuming that this recycled tonnage can be progressively increased to 50,000 tons per year by the end of 2012, a total reduction of land disposal requirement through the projected life of the proposed Eastern Expansion (approximately 6.5 years or by year 2016) would be about 372,200 tons, which is equivalent to 1.14 years of additional landfill capacity. Based on this analysis and the goals of the SWMP Modification, the recycling efforts could have a beneficial impact on the planning unit by providing additional time to properly identify and implement a future remedy for solid waste management. Again, this assumes that all parties in the planning unit achieve the goals in the anticipated time frames.

It should be noted, however, that the existing landfill (P-4) will not benefit significantly from the recycling efforts. The potential increase in recycling by 2009 is only about 18,000 tons, which could add a month to the life of the existing landfill. Therefore, the landfill is still projected to close in 2009. Therefore, the only valid short term solution to meet public need is the expansion of the existing landfill, specifically the proposed Eastern Expansion. However, unlike previous expansion efforts, the option for an additional future expansion will be foreclosed by virtue of the fact that 1) all surrounding lands are dedicated to the APBPC, 2) the proposed Habitat Plan that will be phased in during construction and operation of this expansion with the last phase of the Habitat Plan encompassing the Eastern Expansion after closure, which precludes any future vertical expansion and 3) the City's agreement to deed the lands to the north and west of the landfill to either the State or the Nature Conservancy. The result would be a landfill transformed into Pine Bush habitat with some remaining landfill infrastructure such as landfill offices, a possible future transfer station, and gas to energy facilities. Therefore, the majority of the

landfill, as well as the surrounding lands, will be committed to habitat, leaving no room for further expansion. The City will not expand horizontally or vertically and will cease the acceptance of solid waste for landfilling at the Rapp Road facility upon reaching the capacity of the proposed Eastern Expansion. The City may accept waste at Rapp Road in the future as a transfer station.

Under this proposed scenario, the long term options could involve the pursuit of permits for Site C-2, which remains dubious based on permitting requirements, reopening of the site selection process and pursuit of permits for a site yet to be identified, or the exportation of solid waste to a landfill outside the Wasteshed. The latter may be the most costly solution to the ANSWERS communities but the additional time provided by the proposed Eastern Expansion will provide communities with the opportunity to adjust their budgets and services accordingly (see SDEIS Section 5.5.4 for further details).

2.2 HISTORY OF ALTERNATIVE EXPANSION OPTIONS

The selection of the initial alternatives to be evaluated for an expansion of the existing landfill was based on operational needs (maximum space), available land, cost, and environmental impact. These alternatives are illustrated on Figure 2-3. Each alternative was reviewed by and discussed with local conservation groups and regulatory agencies. The decision to move forward or reject an alternative was heavily influenced by these discussions.

Alternative 1 (Fox Run Estates) - The first alternative considered was an approximately 24-acre expansion into a City-owned parcel that was formerly Fox Run Estates, a mobile home park that is being closed. From a cost and environmental perspective, this seemed to be the best scenario. Use of this previously disturbed land would preclude the need to impact natural communities as the site has been significantly disturbed by the development of the trailer park. However, this land was previously intended to be dedicated to the Albany Pine Bush Preserve Commission (APBPC) as part of the mitigation for the P-4 expansion. This piece of land is considered a critical habitat link between viable Pine Bush communities to the east and west. The mobile home park has created a habitat barrier, especially for more sensitive species such as the Karner blue butterfly that requires natural corridors for dispersal and cannot traverse significant distances that do not provide their habitat requirements.

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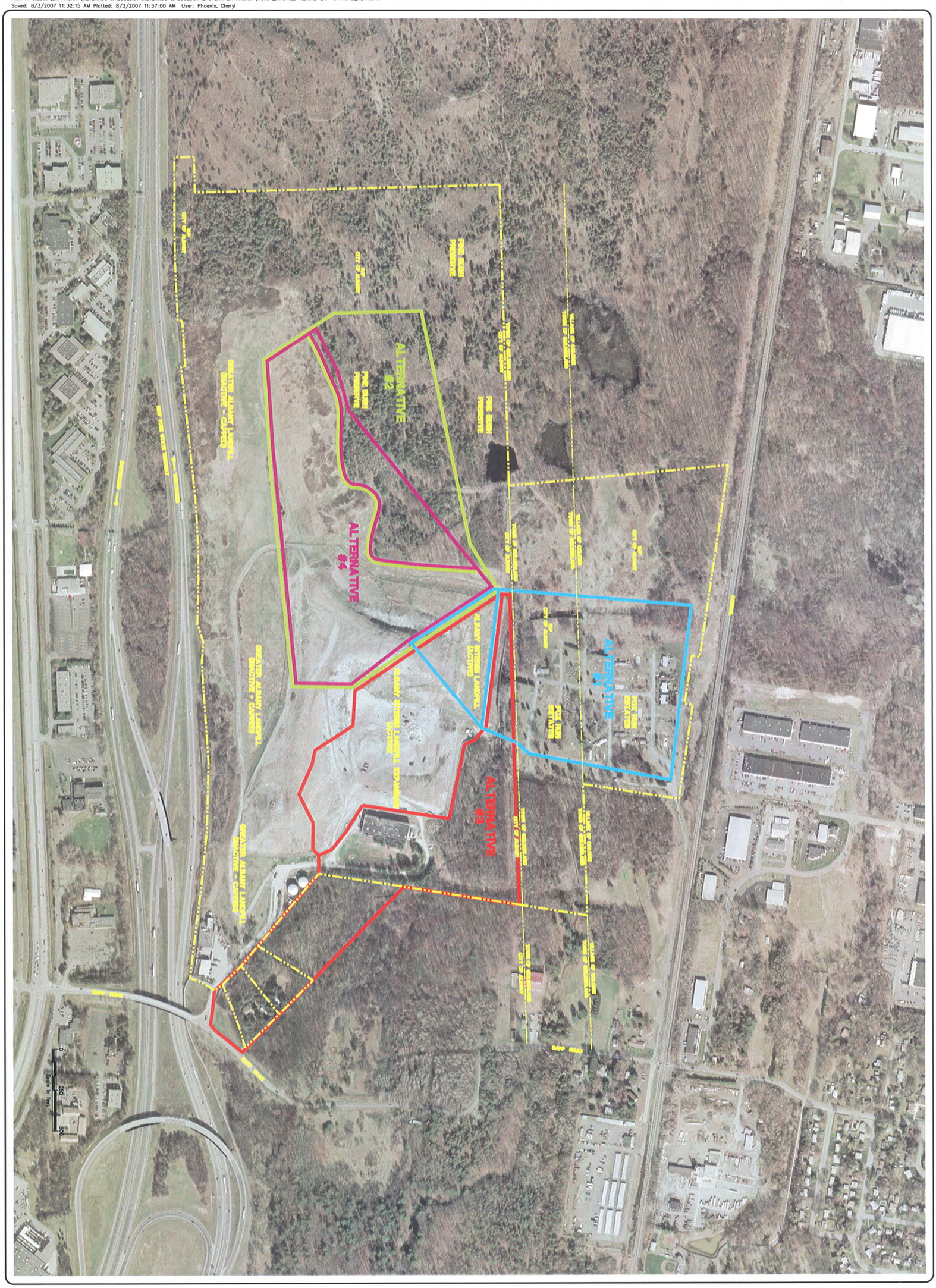

Figure 2 - 3

RAPP ROAD LANDFILL
EASTERN EXPANSION

EXPANSION ALTERNATIVES

Issue Date: 7/07 | Project No.: 12206 | Scale: AS SHOWN

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As a result of the importance of this land for habitat linkage, it was rejected as a viable alternative for expansion. The land was also dedicated to APBPC in accordance with the P-4 mitigation plan and Part 360 Permit.

Alternative 2 (Western Expansion – 24 acres) - From a cost and land availability perspective, the next best solution was a western expansion onto City-owned but APBPC dedicated preserve lands. The extent of this expansion was based on obtaining the same landfill space that could be achieved at Fox Run Estates. This alternative was presented to conservation groups for feedback, which was very unfavorable due to the extent of pine bush habitat loss and the need to have the State Legislature un-dedicate the preserve land. As a result, this alternative was rejected by the City.

Alternative 3 (Eastern Expansion) - The initial review of the Eastern Expansion identified considerable cost associated with relocating infrastructure and facilities necessary for the operation of the landfill such as the recycling building, gas collection/distribution infrastructure, and the stormwater detention pond. It was determined that such costs would not be warranted if there was another viable solution.

Alternative 4 (Revised Western Expansion) - Alternative 4 was a less intrusive version of Alternative 2 that would impact less Pine Bush habitat (approximately 8 acres) with the balance as an overfill of the GAL. Like Alternative 2, this was met with strong opposition from conservation groups for the same reasons identified in Alternative 2.

Preferred Alternative - As a result of this analysis, the City revisited Alternative 3. Feedback from various conservation groups suggested that Alternative 3 was the less damaging solution. Key to this is the fact that the land proposed for the landfill expansion is City-owned and not dedicated to the Pine Bush Preserve. Additionally, the lands are not viable pine barrens and would not be easily restored as such. The plan was also adjusted to preserve additional wetland and higher quality uplands to the east of the expansion area.

This alternative will be more costly to the City to construct but not insurmountable. Therefore, the City determined that the Eastern Expansion would be the most viable alternative with the least damage to the environment. Other alternatives have been considered both early on in the process and later as part of the evaluation of impacts associated with the Preferred Alternative. They are discussed in SDEIS Section 5.0.

2.3 WASTE STREAM ANALYSIS

The Rapp Road Landfill serves the ANSWERS consortium that consists of the cities of Albany, Rensselaer and Watervliet, the towns of Berne, Bethlehem, Guilderland, Knox, New Scotland, Rensselaerville, and Westerlo, and the Villages of Green Island and Altamont (Figure 2-1). Each community is responsible for determining how waste is collected. Only the City of Albany has municipal residential garbage pick-up and as such brings its wastes directly to the Rapp Road facility. The other communities within the consortium do not have municipal service and therefore individuals and businesses must contract with private waste haulers for service. In some municipalities, residents can self-haul their waste to a municipal drop-off station and the waste is then hauled to the Rapp Road Landfill.

Private haulers are not obligated to bring wastes they collect to any designated landfill. Their choice typically depends on the least costly alternative available. Costs are dictated by "tipping fees" or the cost to drop off a load of waste along with the cost for operating hauling vehicles. In like manner, the City may accept waste brought in by a private hauler that may include wastes from outside the ANSWERS communities. An example of this would be a waste hauler who begins his route in the Town of Colonie but ends in the Town of Guilderland and goes to the Rapp Road Landfill to tip the load.

This situation makes it difficult to determine exactly where waste is originating. However, by comparing the daily amount of waste accepted by the landfill with average waste generation by population and adjusting for recycling, it is possible to determine if the Rapp Road landfill is receiving more waste than what is expected to be produced within the ANSWERS consortium.

2.3.1 WASTE GENERATION

In order to identify a reasonable waste generation rate that takes into account residential, commercial, industrial (non-hazardous) and institutional sources, the total solid waste produced in the State was divided by the total population. The NYSDEC solid waste website (www.dec.ny.gov/chemical/8495.html) indicates that in 2004 (latest figures) State residents, institutions, commercial businesses, and industries generated approximately 37.2 million tons of solid waste. The population of the State is approximately 19,254,630 (U.S. Census Bureau 2005 estimate). Therefore, the average daily waste generation rate per person is approximately 10.6 lbs per person per day. This figure is consistent with some of the more highly developed

neighboring states such as Massachusetts (11.9 lbs/person/day) and New Jersey (12.44 lbs/person/day). California, the state with the largest population, produces an average of 13.3 lbs/person/day. It is important to note that these per person rates include waste generated from commercial, industrial (non-hazardous) and institutional facilities. Relying solely on residentially generated waste figures does not account for all the waste generated within the wasteshed that could potentially be brought to the Rapp Road Landfill.

The next step in the process is to apply the daily waste generation rate to the population within the ANSWERS communities. Table 2.1 identifies each of the communities and their estimated population for 2005.

Table 2.1
Population by ANSWERS Municipality[1]

Municipality	Estimated Population (2006)[2]
Cities:	
Albany	**93,963**
Rensselaer	**7,859**
Watervliet	**9,802**
Towns:	
Berne	**2,850**
Bethlehem	**32,844**
Guilderland (Includes Village of Altamont)	**34,630**
Knox	**2,722**
New Scotland	**8,711**
Rensselaerville	**1,899**
Westerlo	**3,497**
Green Island	**2,546**
TOTALS:	***201,323 residents***

Based on the total ANSWERS population, the Rapp Road Landfill could be expected to receive approximately 1,067 tons per day. This total includes recyclables and other materials such as construction and demolition debris.

[1] Town of East Greenbush joined ANSWERS in 2008 and is not included in this table.
[2] United States Census Bureau. Retrieved online at http://factfinder.census.gov/home/saff/main.html?_lang=en

The City of Albany has been collecting municipal waste generation data through yearly survey of ANSWERS communities. The various municipalities provide the City with data on total waste generation and recycling associated with municipal programs and waste collection at transfer stations. Data for 2005 is provided in SDEIS Appendix C. This information indicates that the communities produced 109,853 tons of solid waste from their municipal drop-off stations. This waste is approximately a third of what can be expected to be produced by the ANSWERS wasteshed. Commercial and industrial solid waste, as well as residential waste not taken to drop-off stations, is not included because those wastes are picked up by private waste haulers.

Recent scale house records (from January 1, 2007 through June 30, 2007) provided by the City show that the majority of waste delivered to the landfill is from local sources. Table 2-2 shows that municipal solid waste (MSW) accounts for 97% of the waste deliveries, with C&D contributing about 3%, and sewage sludge contributing less than 1 percent. Petroleum contaminated soils are beneficially reused as an alternate daily cover material (ADCM) as are other approved ADCM. The tonnage of these material deliveries is included in Table 2-2, but they are not counted towards the facility's approved design capacity of 1,050 tons per day (TPD), as allowed by the existing permit. On average, the landfill receives 200 tons/day of ADCM.

Table 2-2

2007 Waste Acceptance (January 1 - June 30, 2007)

Type of Material	Tons (1)	% of total (2)
Mixed MSW	123,813	97%
C&D	3,376	3%
Sewage Treatment Plant Sludge	655	1%
Petroleum Contaminated Soil (PCS)	28,976	
Other Approved ADCM	4,537	
Total	161,356	
Total w/o PCS and ADCM	127,844	

Notes
(1) From DGS data report, unless otherwise noted.
(2) Calculated by CHA based on total w/o PCS and ADCM

Table 2-3 shows that about 12 percent of the MSW deliveries in 2007 are from the City of Albany Department of General Services (DGS), which collects MSW from residential structures consisting of four housing units or less. This means that residential solid waste generated by the apartment buildings, condominiums and other structures containing 5 or more units are not collected by the DGS and are collected by private hauler. According to the 2000 U.S. Census, nearly 24% of housing units in Albany are in structures containing 5 or more units. In addition, a significant proportion (10.4% based on 2000 Census data) of the City's population resides in group quarters, such as dormitories, which are not subject to waste collection by DGS. Waste from these residential facilities is transported to the landfill by private collection services and, while generated within the City, is not included in the 12% identified in Table 2-3.

Table 2-3
Municipal Solid Waste Acceptance by Source
(January 1 - June 30, 2007)

Waste Source	Tons Delivered (1)	% of total MSW
Albany DGS	15,409.42	12%
MSW estimated from ANSWERS municipal drop-off stations(2)	21,048.27	17%
Other Local MSW(3)	87,355.67	71%
Total MSW	123,813.36	

Notes:
(1) From DGS data report, unless otherwise noted.
(2) Assumes 17% based on percentage of 2005 MSW deliveries.
(3) Calculated based on total MSW, less MSW from DGS, and other ANSWERS.

While no information was provided on the direct MSW deliveries in 2007 from the ANSWERS municipal drop-off stations, based upon the 2005 ratio of waste from these communities (See Appendix C), they represent 17% of the total MSW, or over 21,000 tons of waste during the first 6 months of 2007. It is important to keep in mind, however, that most of the MSW generated in the ANSWERS communities is collected and delivered by private haulers so that waste may be reflected in the "other local MSW" tonnage noted in Table 2-3.

The two sources noted above are estimated to account for nearly 30% of the MSW delivered to Rapp Road Landfill. The balance of the MSW is delivered from other local sources, including residential and non-residential waste generated in Albany and other ANSWERS communities that are collected and delivered by private haulers. This could include other residential waste from inside the City of Albany that is not collected by DGS, residential waste from the other ANSWERS communities that is not delivered to their local drop off centers, as well as MSW collected from commercial and institutional sources. There may also be other MSW deliveries from local communities that are not part of the ANSWERS communities, but which find the facility conveniently situated and competitively priced.

CHA also examined data on the average weight of waste deliveries to evaluate if the waste delivered to the facility is likely from local sources. Table 2-4 presents data on MSW deliveries

for the 6 month period ending June 30, 2007. As noted previously, MSW deliveries from DGS amounted to 15,409 tons during this period, and as shown in Table 2-4 accounted for 1,600 trucks. This amounts to an average of 9.6 tons per waste delivery and is indicative of efficient collection by packer truck.

Table 2-4
Average Weight of Waste Deliveries

Waste Type and Source	Tons Delivered (1)	Number of Trucks (1)	Average Tons per Truck (3)
Total MSW delivered	123,813	11,776	10.5
MSW from DGS	15,409	1,600	9.6
Remainder of MSW (2)	108,404	10,176	10.6

Notes:
(1) From DGS data report, unless otherwise noted.
(2) Tons delivered and number of trucks were calculated based on total MSW, less MSW from DGS
(3) Average calculated by CHA

The remainder of the MSW deliveries arrived in an average load of 10.6 tons per truck. This average weight per truck suggests that the majority of this other MSW being accepted at the Rapp Road landfill is arriving either in packer trucks or in roll-off containers from local resident drop off transfer stations, including those from the ANSWERS communities. Due to the cost of transportation, it is unlikely that waste from outside the region would be transported by packer trucks or roll-offs. As a result, this data demonstrates a very high likelihood that the majority of the waste accepted at the Rapp Road landfill is collected locally, *i.e.*, from within the Capital Region.

The City has no enforceable mechanism to determine the generation location of waste deposited at the Rapp Road landfill, but based on the information presented above, it is clear that the vast majority of waste is from local sources.

Every two years, on behalf of the ANSWERS Planning Unit, the City of Albany prepares a SWMP Compliance Report, the most recent of which was submitted in 2007 and covers the calendar years 2005 and 2006. As part of the SWMP Modification, CHA reviewed the data, made follow-up contacts with appropriate municipal officials, as necessary, and based upon an evaluation of each, made some modifications to the recycling summary tables for 2005 and 2006.

Based upon that analysis, the total municipal residential waste diversion rate for the Planning unit was over 32 % in both 2005 and 2006. These diversion rates vary significantly between municipalities, in large measure due to varying quantities of yard waste recovered for recycling. All of the urban and suburban communities have fully implemented yard waste collection and recycling programs, but there is wide variation between municipalities in the amount of yard waste recovered for composting or recycling. Because of their denser land use patterns, urban municipalities like the City of Albany will generate less yard waste than more suburban municipalities like Bethlehem and Guilderland. In communities that are more rural, less yard waste is generated for off-site management because more residents manage their yard waste on their own property.

While these rates might appear to fall short of the original State-designated goal of 40-42% recovery, that is not necessarily the case because they do not include most residential and commercial, industrial and institutional (CII) sector recycling serviced by commercial haulers and they do not include the recycling and/or re-use of C&D debris.

From the responses to the commercial waste generator survey conducted as part of the SWMP Modification, significant commercial waste recycling program elements were being implemented among the largest employers in the Planning Unit. Waste diversion or recycling rates calculated from those respondents reporting numerical data ranged from a low of 11 % at St. Peter's to a high of 59 % for the NYS Office of General Services (OGS). The weighted average diversion rate calculated for the private sector commercial generators is 20%. An overall weighted average commercial waste diversion rate of 46% results when the OGS recycling and waste disposal tonnage is included. While we do not assume that this average diversion rate would be applicable across the entire commercial, industrial and institutional waste sector, the results do show significant implementation efforts are presently on-going with respect to waste reduction and recycling programs in the Planning Unit. As part of the SWMP Modification, measures were proposed to enhance the implementation of commercial recycling and waste reduction. These efforts were previously presented in Section 2.1 of this SDEIS.

It is clear from this analysis that the ANSWERS wasteshed contributes the majority of wastes occupying space within the landfill. This is logical given that Albany is not a long-haul destination for wastes outside of the State or from the larger cities within the State such as New York, Syracuse, Rochester and Buffalo. The landfill is currently permitted to receive 1,050 tons per day plus cover soils.

2.4 PROJECT COMPONENTS

The main components of the Rapp Road Landfill Eastern Expansion include a landfill liner system, a leachate collection and removal system, and a landfill gas control system. These components are discussed in the following sections.

2.4.1 LANDFILL LINER SYSTEM

The liner system for the Eastern Expansion will consist of a double composite liner. Each of the two liners that make up this system (secondary and primary liners) includes a lower soil component and an upper geomembrane component.

Secondary Soil Liner - The secondary soil liner will consist of a two foot thick low permeability soil layer. This soil layer will be placed, graded and compacted to achieve a maximum hydraulic permeability of $1x10^{-7}$ cm/sec.

Secondary Geomembrane Liner - The secondary geomembrane liner will be installed above and in indirect contact with the secondary soil liner. This component will consist of an HDPE geomembrane with a minimum thickness of 60 mils and a maximum hydraulic permeability of $1x10^{-12}$ cm/sec.

Primary Soil Liner - The primary soil liner will consist of a one foot thick soil layer and an overlying geosynthetic clay liner (GCL). The chief purpose of the soil layer is to provide support of the GCL. The GCL consists of a layer of powdered bentonite clay contained between two geotextile fabrics. The GCL serves as the low permeability element of the primary soil liner.

Primary Geomembrane Liner - The primary geomembrane liner will be installed above and in indirect contact with the primary soil liner. This component will consist of an HDPE geomembrane with a minimum thickness of 60 mils and a maximum hydraulic permeability of $1x10^{-12}$ cm/sec.

2.4.2 LEACHATE COLLECTION AND REMOVAL SYSTEM

The leachate collection and removal system will consist of two individual collection and removal systems. The primary leachate collection and removal system will be constructed above the

primary liner to facilitate collection and removal of leachate from the landfill waste mass. The secondary leachate collection and removal system will be located between the primary and secondary liners and will serve as both a leak detection system for the primary liner and as an additional collection system for the landfill.

The collection system will consist of a perforated collection pipe network embedded within a one foot thick layer of free draining soil. Stone will be placed around the collection pipes to prevent clogging and facilitate rapid collection of liquids. The soil layer will maintain a minimum hydraulic permeability of $1x10^{-2}$ cm/sec. after placement and compaction.

Removal of the leachate will occur by grading two low areas, or sumps. The primary and secondary leachate collection systems will convey the leachate to the sumps where it will be further conveyed through double contained pipe to two pump stations. The leachate is then pumped into the sanitary sewer system where it is conveyed for treatment at the County wastewater treatment plant. Two on-site leachate storage tanks provide temporary storage of the leachate in the event of a failure in the sanitary sewer service.

2.4.3 LANDFILL GAS CONTROL SYSTEM

The existing landfill gas control system will be expanded to encompass the eastern landfill expansion. The system will include both horizontal gas collection lateral pipes and vertical gas collection wells installed at regular intervals within the solid waste as it is placed. The horizontal and vertical collectors will connect to a main header pipe that will be installed around the new landfill area and run to a new blower system. The blowers will provide the suction required to extract gas from the landfill and convey it to destination points including a flare and a gas-to-energy plant at the landfill site.

Odor associated with the release of gases into the atmosphere is discussed in detail in Section 3.8.

2.5 CONSTRUCTION PHASING

Phasing of the Rapp Road Landfill Eastern Expansion will be necessary to allow continued landfilling operations and continued operation of vital landfill systems including the leachate collection system and the landfill gas control system.

Demolition of existing infrastructure and modification and new construction associated with the leachate collection and gas control systems will take place at the front end of construction to allow continued use of these systems during construction. New landfill cell construction will follow; and will likely occur in two phases divided with respect to the drainage areas for the proposed leachate sumps.

Construction activities, equipment, and materials will be staged to allow for continuous access for waste haulers to the existing landfill area.

2.6 OPERATION

All waste haulers will enter the landfill site using the existing site access road. Trucks will proceed to the scales where incoming loads will be weighed before entering the landfill area.

The expansion area will be initially accessed by waste haulers from the southeast corner. Haulers will enter the landfill cell, deposit solid waste near the working face, and exit the landfill. Deposited waste will be loaded into a waste shredder which will shred and deposit waste into a stockpile. Shredded and stockpiled waste will then be moved to the working face within the landfill where it will be spread, compacted, and covered in layers.

The solid waste at the working face within the landfill will be covered on a daily basis with several different types of materials, including petroleum contaminated soils and alternative daily cover materials such as Posi-Shell. Posi-Shell is currently used at the Rapp Road Landfill and consists of a spray-on material that dries and hardens into a shell over the waste. This is a commercially generated product that is used at a wide range of landfill facilities. Aesthetically, the Posi-Shell creates a dark gray coating. When PCS or other soils are used as daily cover, the working face will resemble bare ground at the end of each day.

As the waste mass elevation increases within the eastern expansion, the area will be accessed from the southwest corner over the top of the existing landfill.

Portable litter control fencing will be used around the working face within the landfill to contain blowing materials. Permanent litter control fencing will also be installed around the perimeter of the eastern landfill expansion as another line of defense against blowing solid waste.

2.7 CLOSURE PLAN

When the Eastern Expansion reaches capacity, the landfill will be closed with the construction of a multi-layered cover system including a cushion layer, a barrier layer, a drainage layer, a barrier protection layer, and a topsoil layer. A vegetation plan as well as stormwater controls will also be included in the closure construction. The closure cover system components are summarized in the following sections.

2.7.1 CUSHION LAYER

The cushion soil layer will consist of a six inch layer of soil containing no particles larger than one inch in diameter. The purpose of this layer is to provide a uniform surface for support of the barrier layer.

2.7.2 BARRIER LAYER

The barrier layer will consist of a 40 mil textured LLDPE geomembrane. The main function of the geomembrane is to prevent percolation of water into the waste mass and prevent the generation of leachate.

2.7.3 DRAINAGE LAYER

The drainage layer constructed above the barrier layer will consist of a geocomposite drainage net. The geocomposite will consist of an HDPE core net with a non-woven geotextile fabric bonded to each side. The function of the geocomposite is to promote rapid horizontal drainage of water that percolates to the geomembrane barrier surface in order to prevent saturation of the overlying cover soil and maintain stability of the cover system.

2.7.4 BARRIER PROTECTION LAYER

The barrier protection layer will consist of a two foot thick layer of soil containing no particles larger than one inch in diameter. The purpose of this layer is to provide protection of the barrier layer from frost action, root penetration, and physical impact.

2.7.5 TOPSOIL LAYER

The topsoil layer will consist of sands capable of supporting Pine Bush communities as discussed in SDEIS Section 2.8.

2.7.6 VEGETATION AND EROSION CONTROLS

Grasses and other vegetation native to the Albany Pine Bush Preserve, as identified in SDEIS Section 2.8, will be used to establish the vegetation on the landfill cover system. Temporary erosion controls such as straw mulch, silt fence, diversion swales and other measures discussed in SDEIS Section 3.2 will provide stabilization of the landfill slopes.

2.8 HABITAT RESTORATION

An integral part of the landfill expansion proposal is a Habitat Mitigation, Restoration & Enhancement Plan (Habitat Plan). There is a significant opportunity to re-establish linkages from west to east in the Albany Pine Bush Preserve through the mobile home park property and over portions of the closed landfill. Several previous attempts to establish some types of Pine Bush communities at the landfill have met with mixed success. For example, vegetative test plots were located on the landfill clay cap but did not establish well as the soil types were not the more recently understood necessary sand soils found in the Pine Bush. The mobile home park to the north of the landfill was dedicated to the APBPC but there never was, nor is there now, a comprehensive plan for how that parcel would be restored.

The current Eastern Expansion proposal presented a unique opportunity to look at the landfill, the mobile home park, and the Pine Bush Preserve as a whole. As a result, the City of Albany retained Applied Ecological Services, Inc. (AES), a nationally recognized ecological restoration firm with specific expertise in pine barren communities. After an initial field visit, AES identified issues and concerns within the landfill and surroundings and developed some restoration concepts that were used to begin dialog with the APBPC technical staff. Next, the

project team began detailed investigations of the vegetation, soils and hydrology within project impact areas, degraded areas, and high quality reference areas and used this data to refine concepts and to further engage the APBPC technical staff. This resulted in the Habitat Restoration, Enhancement and Mitigation Plan presented herein.

The sections to follow provide an overview of the Plan elements. A concept plan is also provided to illustrate these elements. Detailed restoration plans and report are provided in SDEIS Appendix D.

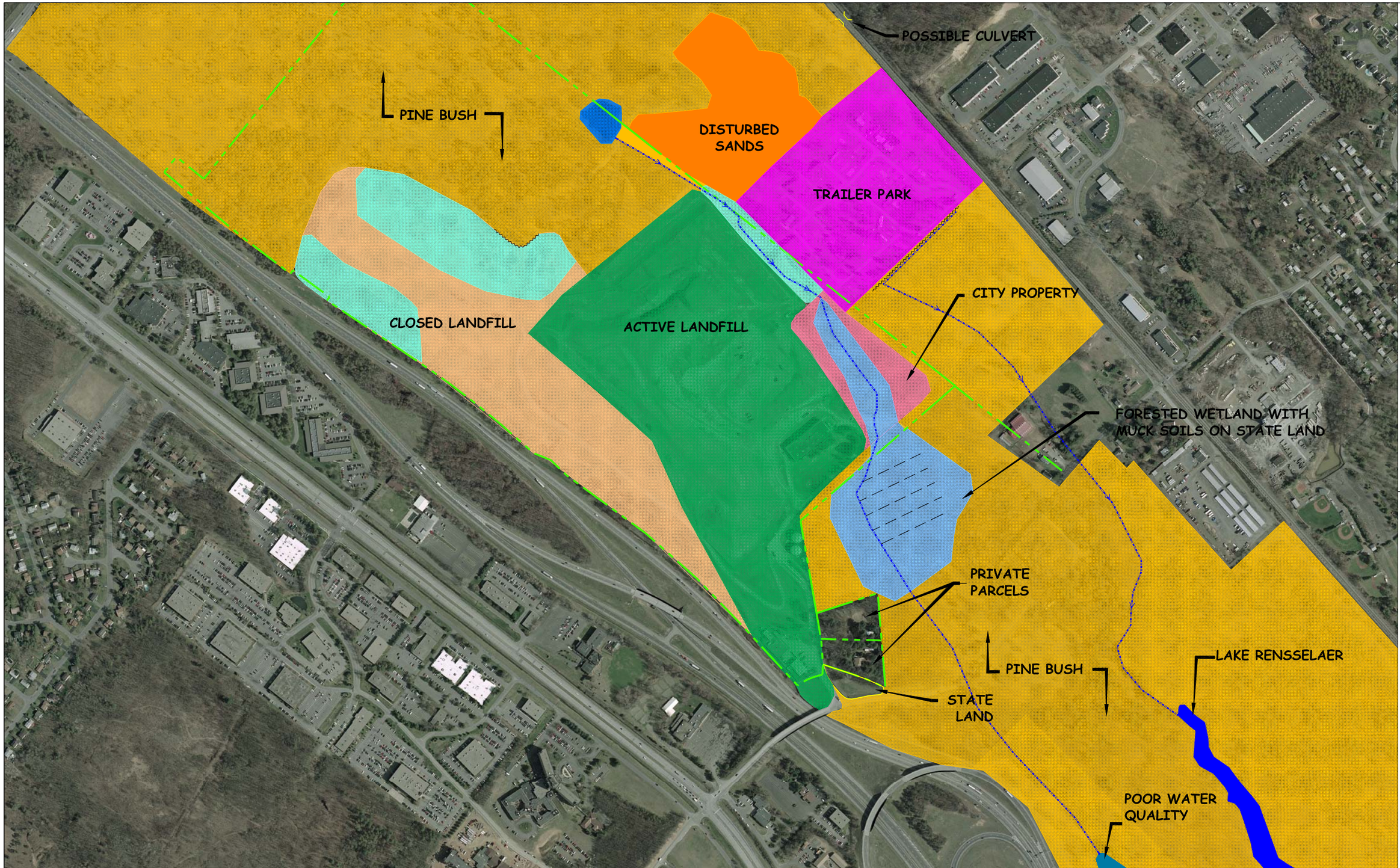
2.8.1 EXISTING CONDITIONS

The first step in restoring habitat is to understand the opportunities and constraints that exist within the project area. In this instance, the project area is defined as the Albany Landfill property, the mobile home park to the north, and the surrounding Pine Bush Preserve and State-owned lands generally extending from New Karner Road and the APBPC Discovery Center east to Lake Rensselaer. As a result, several important issues were identified, which became restoration goals. These issues are illustrated on Figure 2-4 and described in the sections to follow.

2.8.1.1 Disturbed Pine Bush

In late 1960's or early 1970's, prior to the creation of the Albany Pine Bush Preserve Commission, the City began landfilling at the Greater Albany Landfill (GAL). About this time, Fox Run Estates (formerly known as Whitestone) mobile home park was constructed. Prior to that, lands north of the landfill were mined for the sand. These activities had a direct impact on Pine Bush habitat but also contributed to a suite of currently present habitat barriers now found on the land between Pine Bush habitat to the east and west as a result of other development in the area.

Overall, the landfill is but one use within the Pine Bush landscape that has directly impacted or fragmented Pine Bush habitat. Long before the landfill was constructed, other development consumed large areas of the Pine Bush. The fact that the Pine Bush was not officially recognized as important habitat until the mid-1970's when the State, City of Albany and other municipalities purchased lands for preservation and that the Albany Pine Bush Preserve Commission was not established until 1988 led to the current fragmentation of the remaining habitat.



Legend

- High Clarity Lake Water
- Deteriorated Lake Water
- Stream/Ditch
- Deteriorated Ditch
- Tile Drainage Hydric (Muck) Soil
- Former (Sand Mine) Trailer Park
- Pinebush Ecosystem
- Disturbed Sand Remaining
- Landfill
- Phragmites
- Steep Slope Cut
- Culvert

0 150' 300' 600'

SCALE: 1"= 300'

NORTH

Revisions:

No.	By	Date	Description
1			
2			
3			
4			
5			
6			
7			
8			
9			

RESTORATION OPPORTUNITIES

Drawn By: w.e.y.	AES Project No.: 06-0590
Checked:	File Name: rst090506.dwg
Approved:	Date: 09-05-2006

Rapp Road Landfill

Albany, New York

Clough Harbour & Associates, LLP

III Winners Circle, P.O. Box 5269

Albany, New York 12205-0269

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17521 Emlen Road, P.O. Box 256
Brodhead, Wisconsin 53520
Phone: 608-897-8641 Fax: 608-897-8486
Email: info@appliedeco.com

Figure 2-4

File: K:\12206\EXPANSION\WETLANDS & ECOLOGY\WETLANDS & ECOLOGY EASTERN EXPANSION\ACAD\12206_RESTORATION OPPORTUNITIES.DWG
Saved: 7/30/2007 11:02:57 AM Plotted: 7/30/2007 5:57:20 PM User: Phoenix, Cheryl

Additionally, the detailed evaluations of habitat adjacent to the Rapp Road landfill and archeological investigations revealed the historic uses in this area that created east-west habitat fragmentation long before the landfill and mobile home park were created. Historic photos, the ditched drainage, and remnant drain tiles revealed the agricultural activities that occurred in the large wetland area located east of the landfill.

There is a long history of disturbance and fragmentation within the current Pine Bush boundaries as defined by APBPC and beyond. The Habitat Plan provides an opportunity to begin to erase a century or more of separation between east and west.

Other secondary impacts have included edge effects where the Pine Bush habitat has degraded due to lack of fire maintenance and the migration of imported landfill soils from the landfill slopes into the Pine Bush-landfill interface, changing chemistry and promoting more invasive species.

Other properties to the east of the mobile home park and the landfill were originally in private ownership and were not maintained as Pine Bush communities. In particular, the State-owned land to the east of the landfill was farmed at one time and later considered for commercial office development. It was this development project that spurred the State to propose a land swap, preserving the parcel. During the period of time the land was farmed, the large wetland area was tiled and drained to the southern, unnamed tributary of Lake Rensselaer that flows directly through the property. The stream was ditched (widened and deepened) to promote drainage, which has degraded the wetland.

2.8.1.2 Degraded Water Quality

Two streams once originated in the Pine Bush and were tributary to Lake Rensselaer. The remnants of these tributaries exist today and are generally in their natural state east of Rapp Road. However, agriculture and development activities to the west of Rapp Road have significantly changed the character of the streams.

As noted above, the southern tributary of Lake Rensselaer flows through the wetland on State land to the east of the landfill. This stream has been relocated and ditched as a result of agriculture and development and is currently connected to a pond located on Pine Bush Preserve lands west of the landfill. The result of the ditching and draining of this stream within the wetland east of the landfill is a quicker decay of the organic soils that comprise the majority of

the wetland. This releases nutrients to the surface water and contributes to nutrient loading down-stream, which may well be a major cause of eutrophication within Lake Rensselaer.

Evidence of the draining effect of the ditching is visible in the orange colored flocculants of iron present in the ditch. It is likely that the flocculated iron are relic from the high-iron content of the soil weathered under oxygen-rich conditions, forming free iron oxide (Fe_2O_3) that is only weakly bound to the sandy soil. Water moving through the sands can displace the flocculated iron and leach it in solid form into the stream. As long as the stream retains high dissolved oxygen content, the iron flocs will be notable in the stream. This process is naturally-occurring in areas with high-iron soils and iron rich ground water and a high level of reducing and oxidizing conditions that will affect the solubility, mobility, and reformation of iron compounds.

In many locations, iron loving bacteria participate in precipitating the iron flocculent material, creating gelatinous masses of this orange iron rich material along the shorelines of lakes, wetlands and streams where ground water seeps and springs are found. On the project site, the dredged and channelized former agricultural ditch was previously excavated (by farmers estimated as occurring over 50 years ago) deep into the underlying soils and this has intercepted the iron rich ground water, precipitating the flocculent behavior in the dredged channel locations.

The northern tributary once passed through the area that is now the mobile home park. The stream was ditched west of the mobile home park and redirected to the southern tributary. It originates in a wetland located near the northwest corner of the mobile home park. There is no evidence that the ditch is receiving drainage from the lands to the north of the railroad tracks. No culvert was found. East of the mobile home park, the stream was ditched and collects drainage from the northeast corner of the mobile home park and possibly from areas on the north side of the railroad. The drainage is conveyed east and south to a man-made pond, through a culvert and back to an open ditch out to Rapp Road.

The manipulation of drainage through construction of the mobile home park, access road, and the railroad have significantly changed the natural characteristics of the streams and have decreased water quality by providing sources of pollutants.

2.8.2 FUTURE IMPACTS

The impacts of the proposed landfill expansion are thoroughly discussed in Section 3.0 of the SDEIS. However, the Habitat Plan addresses the ecological impacts of the expansion and therefore these impacts are mentioned briefly here. Most of the proposed expansion will be located on previously disturbed landfill and related landfill uses. This is referred to as the overfill but also includes lands now used for the detention pond and the recycling facility. The project will also involve a lateral expansion onto approximately 13 acres of undeveloped land that includes mostly degraded and modified upland and wetland forest. In addition, residential property to the east of the landfill will be used to provide adequate space for the landfill operations and infrastructure.

The expansion area north of the existing landfill includes two community types, a forested wetland and a forested upland. The forested wetland is dominated by red maple (*Acer rubrum*) with an understory of green ash (*Fraxinus pennsylvanica*), black cherry (*Prunus serotina*) and Japanese barberry (*Berberis thunbergii*). The upland forest consists of black cherry, northern red oak (*Quercus rubra*), and black locust (*Robinia pseudoacacia*).

With the exception of the developed portions of the residential properties located east of the landfill, both the lots and the State land proposed for facility relocation are forested with a mix of oaks, black cherry, black locust, and remnant pitch pine (*Pinus rigida*).

The project will eliminate the natural community types within the project area resulting in approximately 5 acres of wetland impact and the loss of approximately 7.4 acres of black cherry-red oak forest.

2.8.3 PLAN RECOMMENDATIONS

The overriding purpose of the Habitat Plan (Figure 2-5) is to reclaim the landfill and the mobile home park as a part of the Pine Bush ecology and improve upon the water quality of the Lake Rensselaer watershed. Therefore, with the exception of the obvious topographic difference, the intent is to blend the landfill and vicinity back into Pine Bush habitat, and restore and enhance surrounding lands to create viable Pine Bush and re-establish the habitat connection between viable Pine Bush to the east and west.

The goals of the Plan are as follows:

Conceptual Habitat Mitigation, Restoration & Enhancement Plan

Drawn By: t.e.g.
Checked:
Approved:
AES Project No.: 06-0590
File Name: nri_1_24_07.dwg
Date: 1-24-2007

Revisions:

No.	By	Date	Description
1	ss	1/22/06	Restoration Additions/Revisions
2			
3			
4			
5			
6			
7			
8			
9			

Rapp Road Landfill

Albany, New York

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Albany, New York 12205-0269

Applied Ecological Services, Inc.
17921 Smith Road, P.O. Box 256
Brodhead, Wisconsin 53520
Phone: 608-897-8641 Fax: 608-897-8486
Email: info@appliedeco.com

Figure
2 - 5

Legend

- © Potential Weirs for Surcharging Soils
- Trail System — 7555.6 Lin. Ft.
- 1A (66.6), 1B (7.7), 1C (10.3), 1D (14.0), 1E (4.8): Dry Prairie Restoration Sand Flat Restoration* — 103.4 Acres
- 2 Dense Forest (Pitch Pine) — 15.8 Acres
- 4A (45.4), 4C (8.4), 4D (1.9): Forest Restoration (Pitch Pine-Scrub Oak)* — 55.7 Acres
- 4B: Upland Forested Buffer Enhancement (Appalachian Oak Pine Forest)* — 37.4 Acres
- 5: Biofilter Wetland (Subsurface Treatment) — 3.0 Acres
- 6A: Forested Wetland Enhancement (Red Maple Hardwood Swamp)* — 25.1 Acres
- 7A (2.5), 7C (7.5), 7D (4.9): Restored Forested Riparian Wetland — 14.9 Acres
- 7B: Restored/Reconfigured Stream Courses — 2560 Lin. Ft.
- 8A: Bog — 0.7 Acres
- 8B: Sedge Meadow — 0.2 Acres
- 9: Forested Wetland Restoration (Red Maple Hardwood Swamp)* — 2.4 Acres
- 10: Upland Forest Recreation* — 3.1 Acres

NOTE: * cover type found in barrens

0 100' 200' 400'

SCALE: 1"= 200'

NORTH

- Eliminate habitat fragmentation by restoring Pine Bush habitat across both the mobile home park and the closed landfill and enhancing adjacent lands that have not been maintained due to the proximity of development and past private land ownership.
- Restore degraded aquatic resources by reconnecting natural drainage courses and restoring wetland functions.
- Reduce the Landfill "edge effect" by collecting, treating and diverting landfill stormwater runoff and improving landfill operations to address odors and blowing trash.
- Mitigate for wetland impacts associated with the proposed Eastern Expansion of the Landfill by creating new riparian wetlands and bogs.

The following sections provide details on the Habitat Plan elements.

2.8.3.1 Habitat Restoration and Enhancement

To begin this discussion, it is important to define the terminology. Restoration refers to the process of re-establishing an ecological community type that once existed in a given area but was previously eliminated in favor of other uses. By this definition, restoration is planned to take place on the landfill and within the mobile home park. Both areas are developed, and successful reestablishment of Pine Bush ecology will require the establishment of the appropriate soils, hydrology, and vegetation.

Enhancement is the process of improving upon the ecological elements already present and involves far less construction and site manipulation than restoration. For degraded Pine Bush, enhancement will involve the removal of invasive and other non-fire tolerant species to reestablish pine barrens. Within the wetland located on State land east of the landfill, enhancement will include the reestablishment of hydrology that was manipulated many years ago through ditching and the installation of drain tiles.

The components of the restoration and enhancement effort are illustrated on Figure 2-5. To restore the landfill cap, approximately 2 feet of sand will be placed over the existing surface and roughly graded to provide microtopography as is found in natural conditions. Soils are a critical element for the success of the restoration project. The simplest way to ensure proper soil conditions is to use the existing Pine Bush soils. Some of the soils are expected to come from the expansion area but more soil will be needed. Since the project will be phased over the 6-7 year life of the landfill expansion, it is anticipated that soils can be "collected" from other areas

within the Pine Bush Preserve study area as projects occur. These soils would be stockpiled and used as each phase progresses.

The overall intent is to create pine barrens across the landfill cap to provide Karner blue butterfly (*Lycaeides melissa samuelis*) habitat for this federally and State listed endangered species, as well as habitat for other State listed species unique to the pine barrens community. This community type includes dry grasslands punctuated by occasional pitch pine trees and scrub oak (*Quercus ilicifolia* and Q. *prinoides*)

An important challenge for the restoration project is to eliminate the invasive vegetation. Of particular concern is the common reed (*Phragmites australis*) that dominates the landfill slopes. Two primary characteristics of these slopes are the reason for the presence of this highly aggressive species: wet and disturbed soils. Common reed prefers wet soils and is a well-known wetland invasive. Runoff from the landfill has created seeps along the slopes that create the hydrology for this species to survive. The soils consist of fill material and are therefore ideal for the plant to colonize.

The Habitat Plan will first eliminate the common reed by excavating the area and implementing a stormwater management plan that will capture, redirect, and treat runoff. Details of this design are presented in Section 2.8.3.3. Sufficient sand will be placed on the affected areas to the extent that the hydrology that supports the common reed is eliminated and replaced by xeric (dry) conditions that are more conducive to pine barrens habitat.

2.8.3.2 Repair of Degraded Aquatic Resources

Natural drainage in the project area has been impacted by construction of the landfill and mobile home park, old agricultural activities, and the railroad and other development to the north and south. Specific to the project area, there are two stream corridors, tributary to Lake Rensselaer, that have been significantly manipulated over the years. The causes for this disturbance and the subsequent water quality impacts are discussed in Section 2.8.1.2. It is the intent of the Habitat Plan to reconnect the streams in a manner that will improve upon water quality.

Referring to Figure 2-5, both streams will be reconnected across the mobile home park through riparian wetland corridors. This will be part of the overall integration of the mobile home park back into the Pine Bush Preserve. The southern stream currently originates from the mitigation pond located on Preserve lands to the west. Its new channel will meander through a riparian

floodplain, relocated to the north of the proposed landfill expansion area. The stream will eventually reconnect to its existing channel within the wetland located on State lands to the east of the landfill. From its reconnection to the culvert at Rapp Road, the stream bed will be partially filled to eliminate the draining effect it is having on the wetland. Weirs will also be installed in selected locations along the stream to further promote and extended hydroperiod. The purpose of this effort is to re-saturate the organic soils comprising the wetland and reduce the accelerated decay of this material that is a primary suspect for nutrient loading and a potential cause of eutrophication in Lake Rensselaer.

The northern stream will reconnect to the forested wetland located on the west side of the mobile home park. Drainage from the wetland area southward to the southern stream will be eliminated in order to separate these two streams. The northern stream will pass through a forested riparian corridor that will improve water quality over the current road and mobile home park runoff.

2.8.3.3 Reducing the "Edge Effect"

The primary issues associated with the interface between the landfill and the Pine Bush Preserve from an ecological perspective are stormwater runoff and lack of fire maintenance. Other issues such as blowing trash (primarily plastic bags) and odors have an impact on the Preserve as a recreational resource. These issues are addressed separately in this SDEIS but recognized as part of the "edge effect."

Stormwater runoff will be addressed by the design and installation of a stormwater management system that will collect runoff from the landfill slopes and redirect it to a biofilter that will treat the runoff before it enters the Pine Bush Preserve. The current issues with stormwater runoff are associated with earlier phases of the landfill when stormwater and landfill regulations did not require the capture and treatment of runoff.

Lack of management along the landfill edge, particularly to the west of the landfill has resulted in the spread of poplar (*Populus spp.*) and black locust. Fire management has not been used in this area on the belief that methane was migrating from the landfill. This belief has since been shown to be unfounded. Recent conversations between APBPC staff and landfill personnel suggest that controlled burning is possible in the area. Therefore, between the elimination of stormwater runoff impacts and the renewed potential for maintenance by APBPC staff, the "edge effect" could be significantly reduced. Restoration efforts on the landfill cap will further contribute to a blending of existing pine barrens with the created habitat.

Through the development of the Habitat Plan, a more specific analysis of the "edge effect" will be conducted. The protocols for sampling have been established and will use the same methods used in establishing the baseline study of reference natural areas and other areas included in the Habitat Plans. These methods include sampling of soils, hydrology, topography, vegetation, and the development of criteria for minimizing impacts to the Pine Bush with future mitigation plans. The following specific evaluations will be provided by the methods that have been established with the protocols:

- Soil chemistry impact evaluation
- Vegetation and invasive plant impact evaluation
- Fire suppression impact evaluation
- Buffer effectiveness evaluation
- Establish criteria for minimizing impacts

2.8.3.4 Mitigating Direct Expansion Impacts

Mitigation is an essential component of the Plan. The project will impact approximately 5.05 acres of forested riparian wetland. This loss can be compensated through the creation of forested riparian corridors associated with the reconnected streams. By integrating new restored wetlands with proposed stream reconnections there will be reduced erosion of stream banks, providing the opportunity to beneficially improve water quality.

Other opportunities for wetland creation and enhancement include the creation of bogs on the disturbed sands located to the west of the mobile home park. Bogs were once a part of the Pine Bush ecosystem but most, if not all, are gone. Additional opportunity to create forested wetland exists within an old field located east of the State wetland (No. 9 on Figure 2-5).

In total, it is estimated that approximately 10-15 acres of wetland communities can be created with an additional 25 acres of wetland enhancement. An important point is that all this mitigation is tied into a restoration and enhancement plan addressing the larger issue of large scale habitat connectivity within the Pine Bush Preserve. At the end of 6-7 years, when the landfill is closed, there will be a total of approximately 250 acres of restoration, mitigation and enhancement, all of which will be permanently protected.

2.8.3.5 Demonstration Plots

The demonstration plots will be the early testing grounds for the larger restoration, enhancement and mitigation efforts. Appendix E provides examples of former restoration and demonstration programs for testing invasive species management and restoration strategies. A specific demonstration and testing program plan will be further developed after the SEQR process, following the general program layout in the appendix.

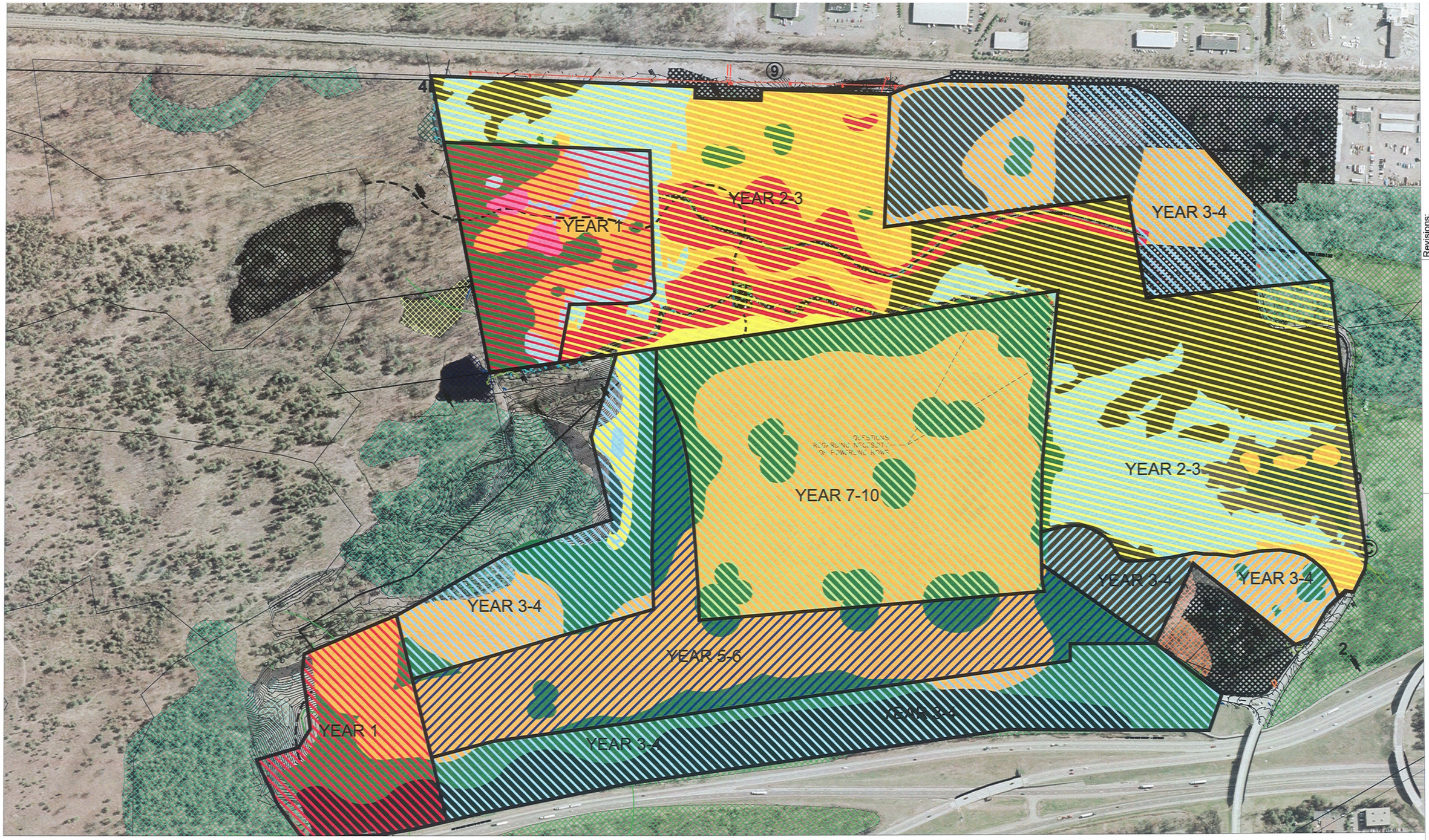
2.8.4 IMPLEMENTATION

Details of the Habitat Plan will be developed following the SEQR process when the best alternative has been identified and the layout finalized. Design standards for the Habitat Plan have been developed and are provided in Appendix D. These are a result of the fall 2006 detailed field sampling of soils, hydrology, topography and vegetation in reference natural areas in the Pine Bush. These data have been analyzed and summarized in simple technical memoranda that are the design standards for use in design of all restoration and mitigation elements in this project. The design standards created by this analysis include technical specifications and standards for:

- soil chemistry, stratigraphy and texture;
- shallow ground water and surface water dynamics;
- topography data providing water entry grades for wetland restorations, stream profiles, and correlated soils, hydrology and vegetation along cross sections; and
- vegetation structure, composition and diversity by woody and herbaceous strata.

The Habitat Plan requires a significant effort and commitment of money and resources to implement and is contemplated by the City only as a component of the landfill expansion project. The expansion will provide the financial capability to undertake this massive effort over time. Since a portion of the landfill would remain active for 6-7 years as a result of the proposed expansion, the restoration will occur in phases over this time period. Detailed cost estimates will be prepared as the plan becomes refined towards construction drawings. Much of the cost will depend on the availability and location of suitable sand.

Figure 2-6 illustrates the anticipated phasing of the project. The first phase will occur in Year 1 and will be concurrent with construction of the first landfill cell that will include overfill and expansion onto other currently disturbed lands. Wetland impact will be avoided or minimal in



LEGEND

- YEAR 1
- YEARS 2-3
- YEARS 3-4
- YEARS 5-6
- YEARS 7-10

NOTE: * cover type found in barrens

0 100' 200' 400'

SCALE: 1"= 200'

NORTH

PHASING PLAN

Revisions:

No.	By	Date	Description
1	JS	1/22/06	Restoration Additions/Revisions
2			
3			
4			
5			
6			
7			
8			
9			

Drawn By: t.e.g.
Checked:
Approved:

AES Project No.: 06-0590
File Name: nri_1_24_07.dwg
Date: 1-24-2007

Rapp Road Landfill
Albany, New York

Clough Harbour & Associates, LLP
III Winners Circle, P.O. Box 5269
Albany, New York 12205-0269

Applied Ecological Services, Inc.
17921 Smith Road, P.O. Box 256
Brodhead, Wisconsin 53520
Phone: 608-897-8641 Fax: 608-897-8486
Email: info@appliedeco.com

Figure
2 - 6

this phase and therefore wetland mitigation will not be the primary focus. However, this phase will provide the opportunity to prepare for wetland mitigation and the rescue of desirable species from the Expansion Area. During this phase, ecologists will begin the process of identifying and preparing species for transfer. A nursery will be established on the mobile home park site where some species will be transferred. For those trees that will stump sprout, roots will be cut and the trees will be allowed to adjust before it is transplanted.

Restoration during Phase 1 will focus on the establishment of pine barrens test plots on portions of the closed landfill with the intent of demonstrating the viability of these natural communities on a capped landfill.

Phase 2 is identified as years 2 and 3 and will provide some very substantive results by restoring the mobile home park to pine barrens and riparian wetland, reconnecting streams, restoring wetland hydrology, enhancing degraded wetlands, and improving water quality. Most of the wetland and stream mitigation work will occur in this phase.

Phase 3 (years 3 and 4) will again take on some significant restoration and enhancement efforts, particularly on the landfill, creating the pitch pine buffer along the Thruway, addressing stormwater and invasive species issues on the western edge of the landfill, and completing the east-west habitat connection with the restoration of pine barrens in the northeast portion of the project area.

Phases 4 & 5 (years 5-6 and 7-10) will focus on the landfill cap, restoring pine barrens to currently closed portions in Phase 4. Phase 5 will be part of the final closure of the landfill.

Actual phasing will be dictated by the availability of suitable sand. In order to support the unique ecological communities of the Pine Bush, the sands should come from the Pine Bush or possibly from other areas within the region with similar soils. The results of the detailed soils analysis performed as part of this SDEIS may also allow for the chemical modification of sands taken from other sources should there be no other options. Sands will be stockpiled and used as needed.

The success of this undertaking will depend partly on continued cooperation between the City and various stakeholders such as the APBPC, The Nature Conservancy, and regulatory agencies, as well as on the input received from the public during the SEQR and permit processes.

2.9 LONG TERM SOLID WASTE DISPOSAL

The long term solution to solid waste management for Albany and the ANSWERS communities will be the subject of an update to the Solid Waste Management Plan (SWMP) that was initially prepared in 1990-91. This plan laid the framework (criteria) for a new landfill siting study that would address the long term needs of ANSWERS. The study was completed in 1991 and recommended pursuing Site C-2 in the Town of Coeymans. As noted in Section 2.1 and elsewhere in this SDEIS, Site C-2 would involve some extensive permitting and wetland mitigation efforts that preclude its consideration for the short term needs and may prove not to be feasible in the long term.

The New SWMP will evaluate all possible options for long term solid waste management. Each option will be evaluated with regard to economic feasibility, treatment feasibility, and ability to be sited and permitted, among others. Some of these options, including long haul of wastes, are discussed in greater detail in Section 5.0. At present, it appears that the most likely solution will involve a combination of several options including more aggressive waste reduction methods/enforcement and the transport of waste to a large regional facility. Section 5.5 provides discussion of the costs of the long haul option and the feasibility as a short term solution.

2.10 PERMITS, APPROVALS & SEQR PROCESS

The following permits and approvals are anticipated for the landfill expansion.

Table 2-5
Anticipated Permits and Approvals

Permit or Approval	Agency
State Environmental Quality Review	NYS Department of Environmental Conservation (NYSDEC) – Lead Agency
SPDES- Multi-Sector General Permit (GP-0-06-002) and Stormwater Pollution Prevention Plan	NYSDEC
Part 360 Permit	NYSDEC
Section 401 Water Quality Certification	NYSDEC
Title V Air Permit Modification	NYSDEC
Section 404 Individual Permit	U.S. Army Corps of Engineers
Article 24 Freshwater Wetlands Permit	NYSDEC

The process for obtaining the permits identified above and the thresholds that trigger each are discussed in Section 3.0 of this SDEIS. The SEQR process is discussed below.

The State Environmental Quality Review Act (SEQR) is the process by which the environmental implications of projects that are directly undertaken, permitted, approved or funded by a State, county or local agency are assessed. Based on the need for various permits and approvals cited in Table 2-5 and the extent of land disturbance, the SEQR process was initiated with the preparation of a Full Environmental Assessment Form (FEAF). Part 1 of the FEAF was prepared and submitted to NYSDEC as the likely agency to assume Lead Agency status and run the SEQR process. NYSDEC undertook coordinated review with Involved Agencies and was declared Lead Agency without dispute.

A Positive Declaration stating there is a potential for significant impacts from the proposed project was filed on January 22, 2007, which required the preparation of this Fourth Supplemental Draft Environmental Impact Statement (SDEIS).

A supplemental EIS is prepared when there is a modification of a project that was previously subject to the preparation of an EIS. In 1988, the first EIS for the landfill was prepared in support of a Part 360 permit application. Expansion of the landfill over the years required permit modifications and supplements to the original EIS. The first supplemental EIS was prepared in 1994 and was the subject of a permit renewal. In 1996, a second supplemental EIS was prepared for the "wedge" expansion (see Section 2.1 for the history of landfill expansion), followed by the third supplemental EIS associated with the P-4 Expansion in 1999.

A public scoping session on the fourth SDEIS was held on February 21, 2007 to solicit public comment on the Draft Scope. The comment period for the Draft Scope was originally scheduled to close on February 23, 2007 but was extended by NYSDEC to March 10, 2007. Based on the results of the scoping session, the Final Scope was prepared and filed by the Lead Agency on February 4, 2008 and amended by the Lead Agency on April 18, 2008. A copy of the Final Scope is provided in Appendix A for reference. The Final Scope is the framework for the studies and other documentation provided in this SDEIS.