Hudson River PCBs Superfund Site: Energy Park/Longe/NYSCC Dewatering Facility Site
Town of Fort Edward, New York

Adaptive Reuse Analysis Final Report

October 2005

EPA Region 2
Superfund Redevelopment Initiative

funded by
United States Environmental Protection Agency

prepared for
The Town of Fort Edward
The Fort Edward Citizens' Committee

prepared by
E^2 Inc.

TABLE OF CONTENTS

I. Introduction: Adaptive Reuse Analysis Overview

The *Adaptive Reuse Analysis* report is the result of a community-based planning process designed to analyze potential future use opportunities, challenges, and key considerations presented by the Energy Park/Longe/NYSCC Dewatering Facility Site (the Energy Park site) in Fort Edward, New York. This project has combined the research and analysis conducted by environmental consultants E^2 Inc. with community discussions to help inform the Town of Fort Edward, EPA, the General Electric Company, and the site's owners' planning and decision-making as the facility's design and construction moves forward.

This project report focuses in particular on the General Electric Company's *Phase 1 Intermediate Design Report* for the Energy Park site, which was released in August 2005. The project report is designed to provide feedback to the Town of Fort Edward, the General Electric Company, and EPA so that such future land use considerations can be incorporated as part of revisions to the *Phase 1 Intermediate Design Report* and the development of the *Phase 1 Final Design Report*. The end result: a facility that can be adaptively reused to meet community needs and priorities following completion of sediment dewatering and transfer activities at the site, which is projected for 2013. The General Electric Company will be required to remove all facility components that are not requested to be retained by the site's owners and the local community, following completion of sediment dewatering and transfer activities.

This report primarily addresses Section 3 of the *Phase 1 Intermediate Design Report*, highlighting adaptive reuse opportunities and challenges for each portion of the facility. Other sections of the report provide additional information on:

- The Energy Park site's characteristics and surroundings;
- Key future use considerations;
- Land use trends and market conditions;
- Community-scaled economic development alternatives; and
- Adaptive reuse precedent case studies.

For reference, this report is also a companion document to the *Overlay Analysis* report produced by the project's consultant team in October 2005. The *Overlay Analysis* report overlays and analyzes existing community planning documents in Fort Edward, including the Town's economic development plan, corridor study plan, and watershed revitalization plan, with EPA's remedial plans for the Hudson River PCBs Superfund site. The report highlights the potential impacts and implications of EPA's remedial activities for the Town of Fort Edward's existing and future planning initiatives.

II. Energy Park Site Status

In order to process the 2.65 million yards of contaminated sediment dredged from the Hudson River bottom between Hudson Falls and Troy, NY, the General Electric Company (GE) will construct a sediment dewatering and transfer facility at a site selected by EPA. In June 2005, EPA announced the final location of the facility, indicating that the Energy Park site in Fort Edward met multiple selection criteria, with 106.2 acres of usable land, rail access, proximity to the primary dredge area, protection from the 100-year flood plain, and access to utilities, and a waterfront berthing area.

Also in June 2005, EPA announced that dredging operations will begin during the 2007 construction season, one year later than previously anticipated. Construction of the Energy Park site facility will begin in 2006 and will be completed in time to begin operations during the 2007 dredging season. Facility operations are projected to continue for six years, with completion expected in 2013 and site demobilization by 2014. The design of the facility is ongoing, with GE's *Phase 1 Intermediate Design Report* (IDR) delivered in August 2005. To date, planning documents have included the *Hudson River PCBs Superfund Site Facility Siting Report*, released by EPA in December 2004, and the *Preliminary Design Report for the Hudson River PCBs Site*, completed by GE in April 2004.

Above: Active Delaware & Hudson and Amtrak rail lines adjacent to the site's western edge

Right: Energy Park site, currently used for agricultural purposes

Above: View of the Canalway Recreational Trail along the western bank of the Champlain Canal, also the proposed location of the site's barge turning basin (all photographs by E² Inc., April 2005)

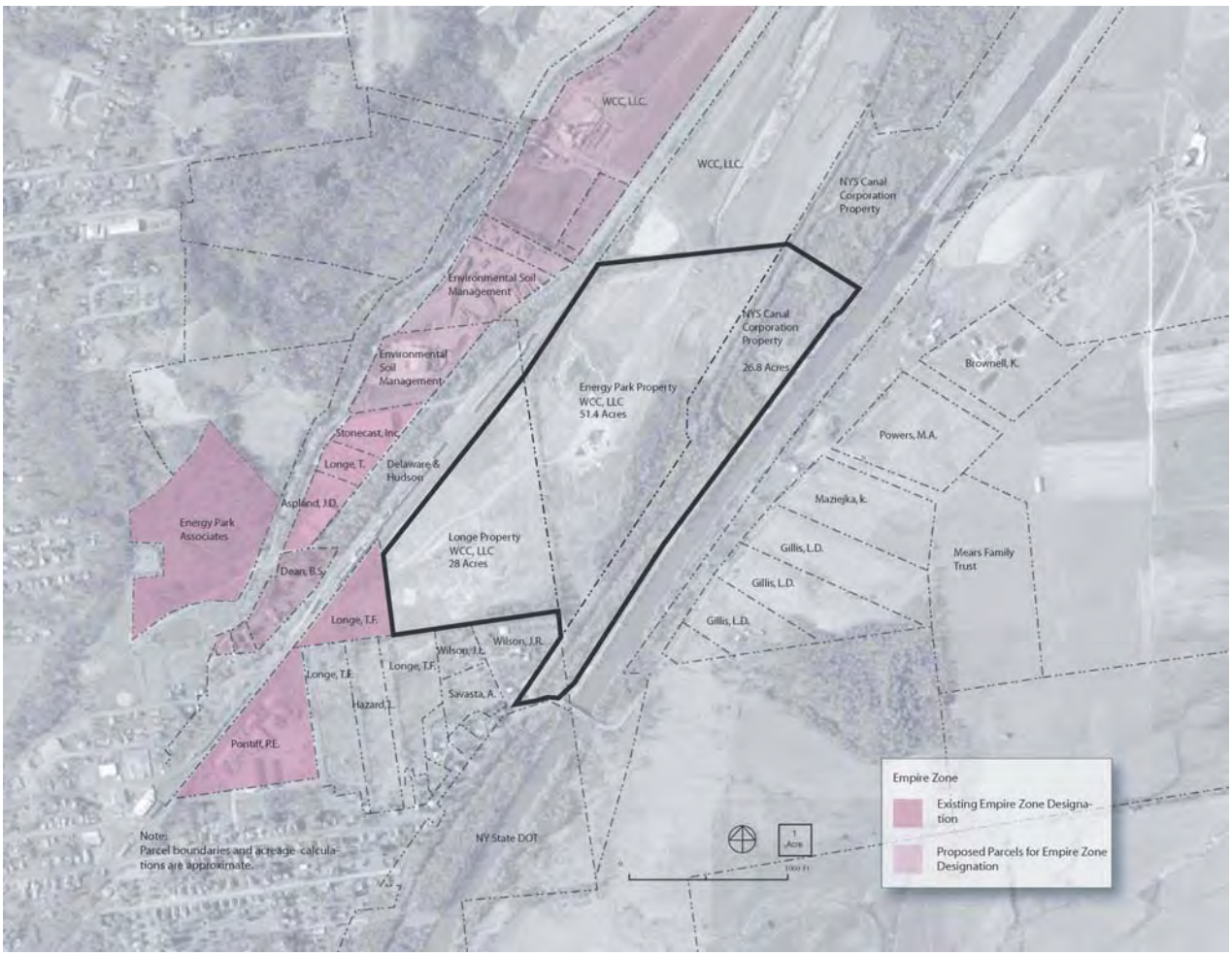
III. Energy Park Site Overview

Site Location

The Energy Park site is located on the eastern side of the Village of Fort Edward, along the western shore of the Champlain Canal. The site is located in both the town and village of Fort Edward, Washington County, New York. The 106.2-acre site is zoned for industrial land uses and consists of three properties – the Longe property and Energy Park property, both owned by WCC, LLC, a real estate holding and development company, and a parcel adjacent to the Champlain Canal, which is owned by the New York State Canal Corporation (NYSCC). The Energy Park and Longe parcels have both been used previously as a topsoil mine and for crop production.

The Energy Park site is located in the southeast corner of the 404-acre Fort Edward Industrial Park, which is owned by WCC, LLC. The industrial park currently has four active tenants, which are all located in its southwest corner. These tenants include: Adirondack Plastic & Recycling, a plastic recycling firm; Stonecast, a maker of architectural retaining walls; ESMI, a company specializing in soil remediation; and Real Bark, LLC, a large mulch facility. The southwest and western portions of the industrial park are currently designated as an Empire Zone, which provides state and local tax abatements to businesses relocating or expanding into these designated areas. Additional portions of the Fort Edward Industrial Park are likely to be added to the Empire Zone in the future, though this will not include the Energy Park site while dewatering activities are ongoing.

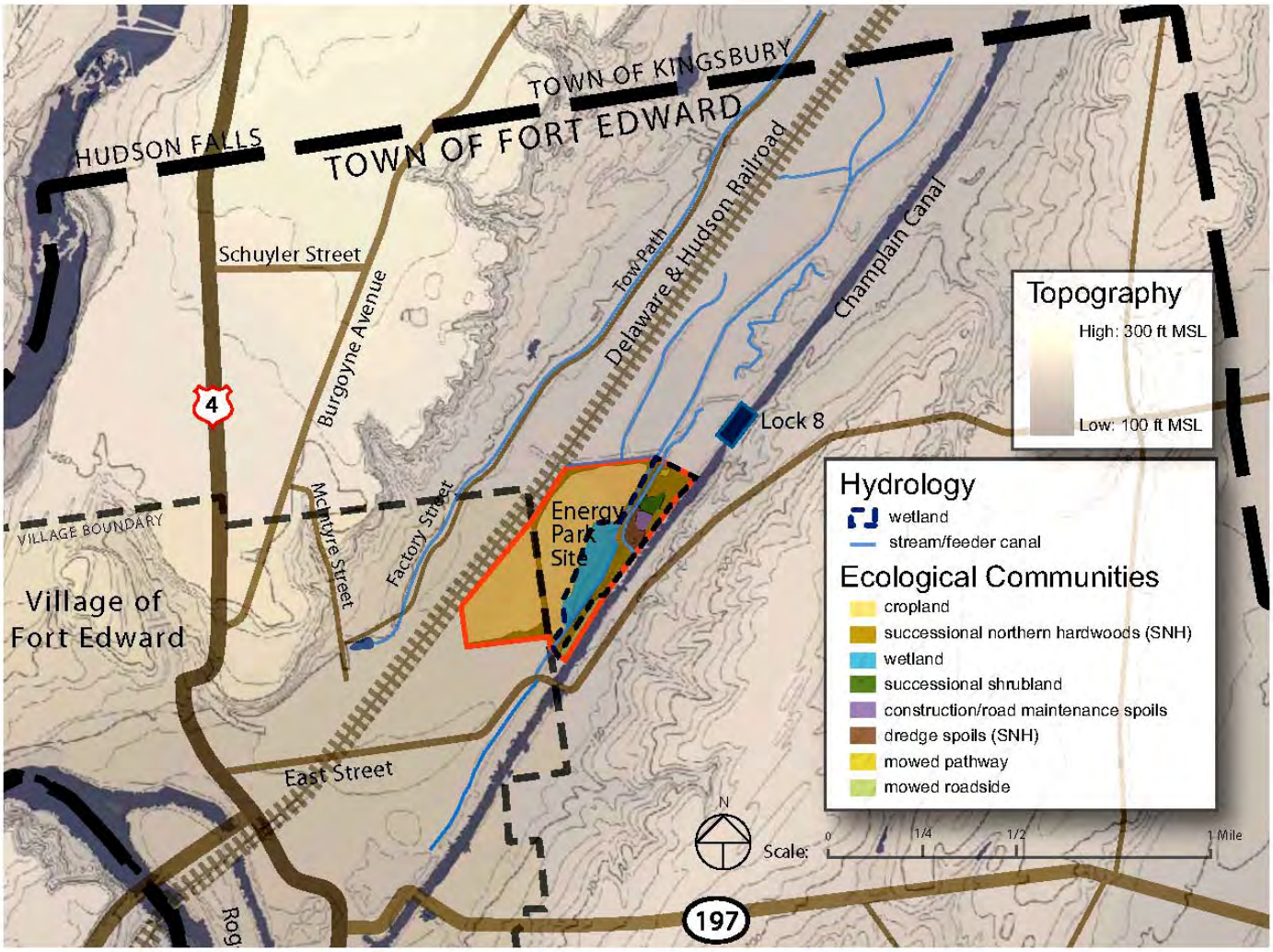
Energy Park/Longe/NYSCC Dewatering Facility Site Location Map



Site Characteristics: Topography and Natural Resources

The Energy Park site, situated in the Champlain Canal floodplain, currently consists of flat agricultural land that is subdivided by vegetated feeder canal corridors. The eastern side of the site, abutting the Champlain Canal, consists of a vegetated wetland buffer, largely composed of northern hardwood forest tree species and wetland plants. The site's wetlands and canal corridors are significant natural amenities, serving as wildlife habitat and potential recreation areas for on-site employees or area visitors in the future.

Energy Park Site: Topography and Natural Resources

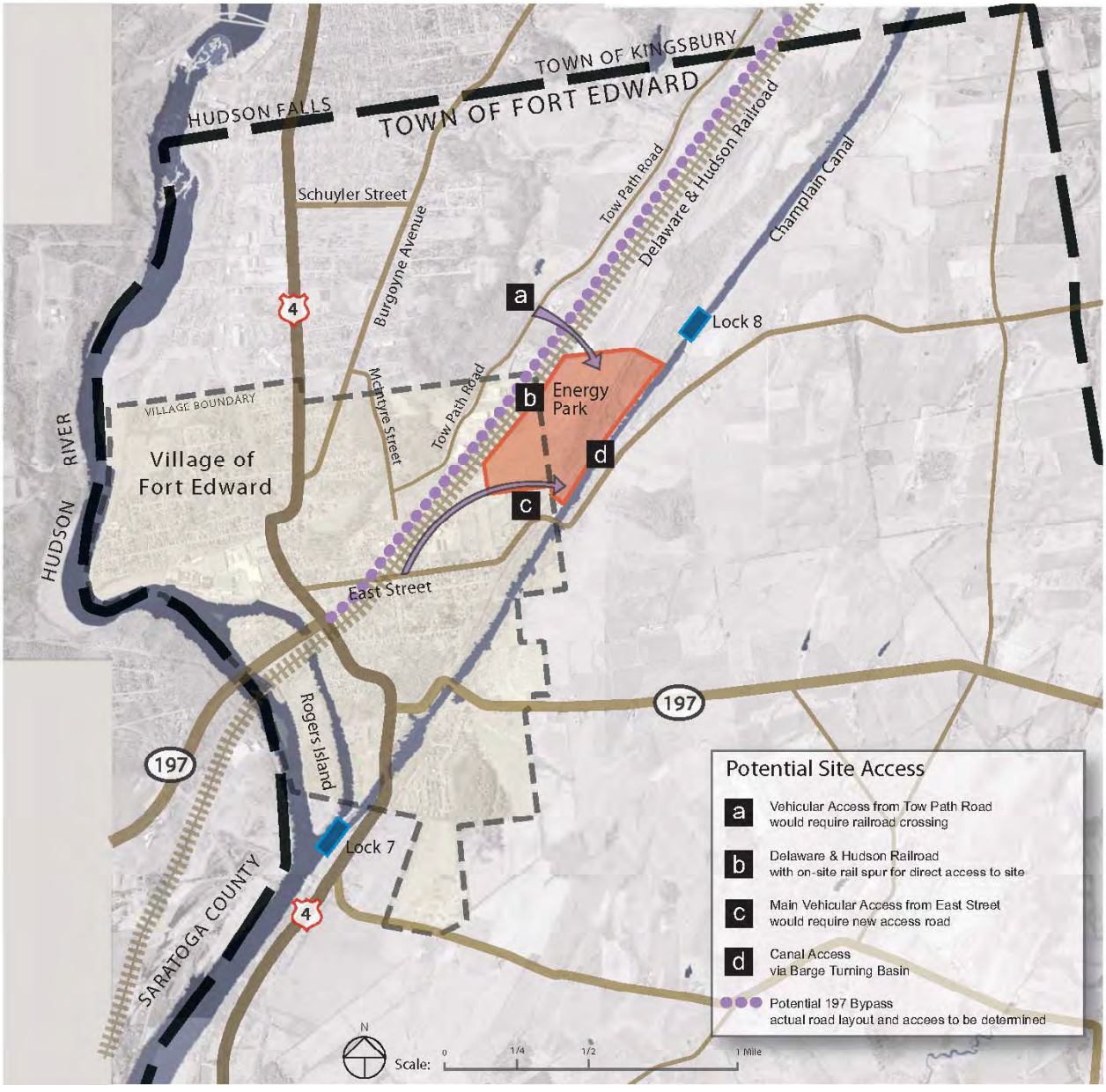


Site Infrastructure and Access

Available infrastructure at the Energy Park site includes active rail lines, operated by the Delaware and Hudson railroad and Amtrak, that extend along the western edge of the site and extend northeast to Montreal and southwest to Albany and New York City. Utility lines, including water, sewer, electric, and telecom lines, also extend along the rail line and will be extended across the site as part of the construction of the sediment dewatering and transfer facility.

Primary vehicular access to the Energy Park site is provided by neighborhood roads: East Street to the south of the site and McIntyre Street to the west of the site. During the construction phase, truck traffic is anticipated to enter the western side of the site from Towpath or Factory Road. A proposed driveway that would begin across from the Fort Edward rail station on East Street and extend along the railroad right-of-way to the southwest portion of the Energy Park site would serve as the main access road while facility operations are ongoing. To further improve site access, the Town of Fort Edward is currently undertaking a Route 197 bypass feasibility study. During the site dewatering and sediment transfer activities, boat and barge traffic will travel to and from the Hudson River, docking and unloading sediment at the site's Canal Basin turnaround facility.

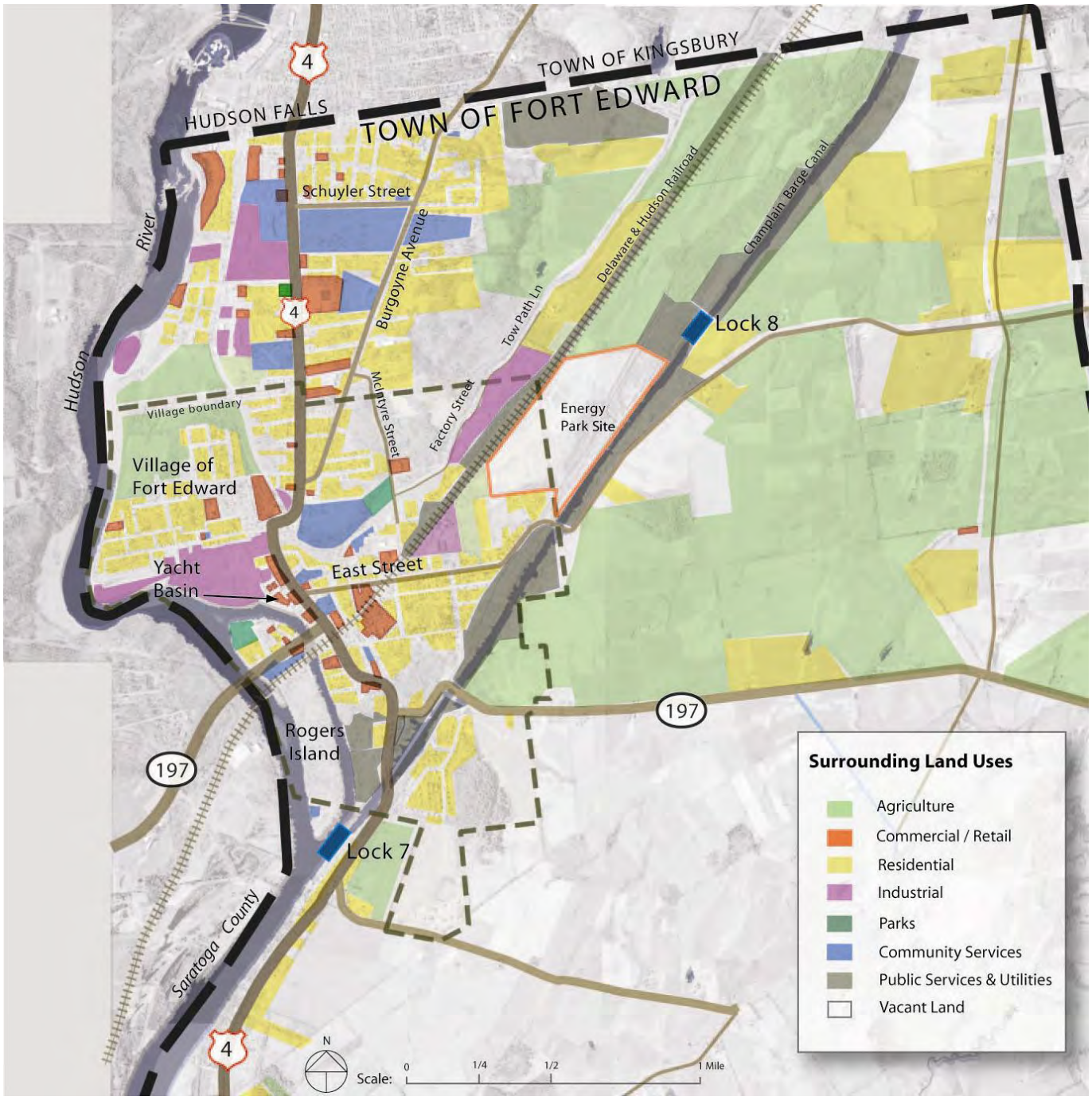
Energy Park Site: Site Access



Surrounding Land Uses

The Energy Park Site and adjacent properties to the north, west, and south are zoned for industrial land uses. The site is currently used for agricultural purposes. While the Champlain Canal is not zoned for a particular use, the canal can accommodate commercial and industrial boat traffic as well as recreational boating. The Energy Park site is also located in close proximity to, but is not directly connected with, neighborhood and regional parks. Residential neighborhoods are situated south of the site along East Street and west of the site along McIntyre Road. The center of the village and town of Fort Edward and the Route 4 commercial corridor are located within a mile southwest and west of the site.

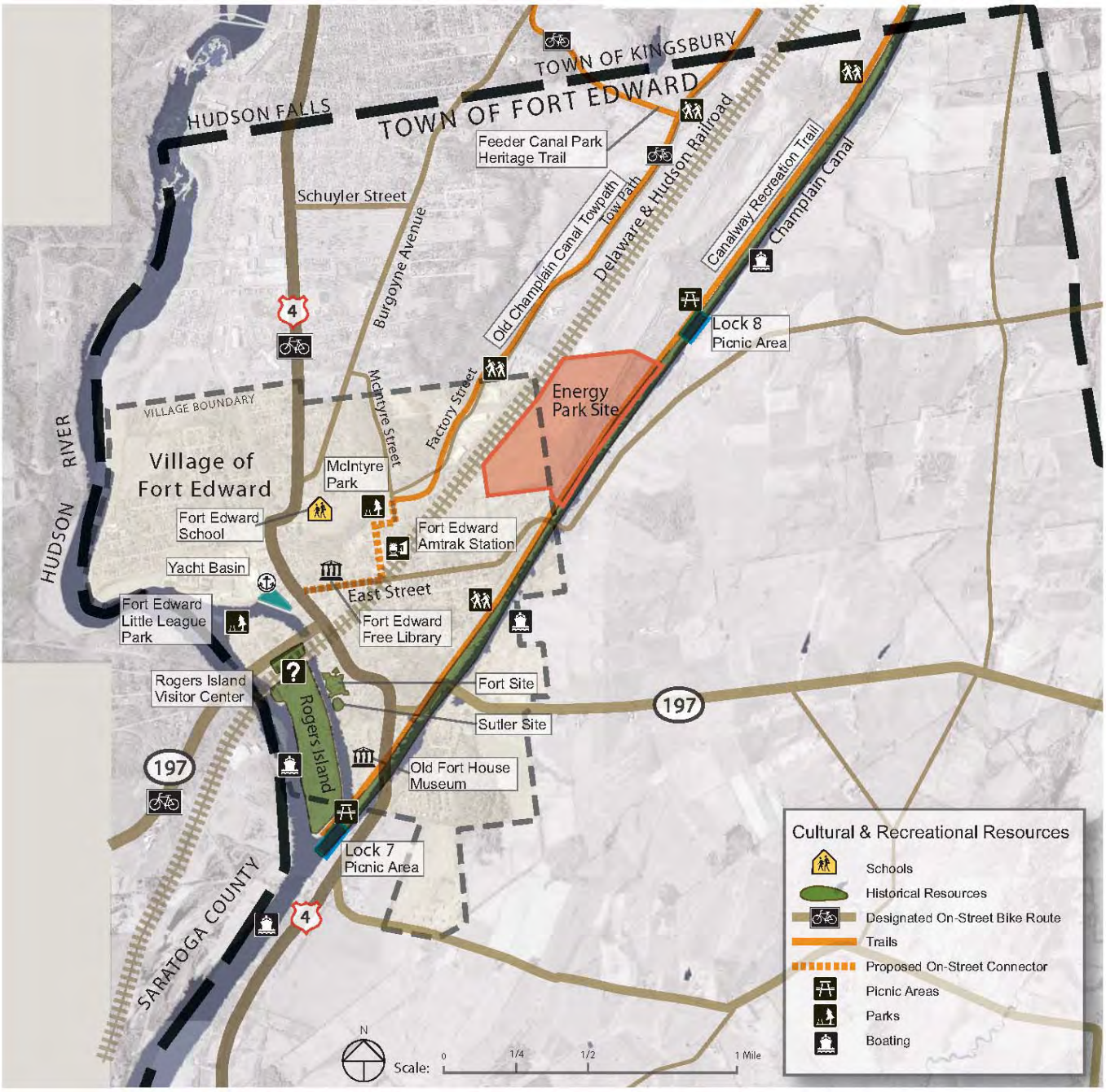
Energy Park Site: Site Surrounding Land Uses



Recreational and Historical Resources

The Energy Park site is situated in an area with multiple recreational and historical resources located within a mile of the site. Activities on and along the historic Champlain Canal, listed on the National Register for Historic Places, consist primarily of leisure boating, fishing, picnicking, and fitness exercising. The Feeder Canal Park, along the old canal route, is used as a cross-country course as well as a space for biking and walking. Several of the primary historic buildings and landscapes include the Old Fort House Museum, Rogers Island and its Visitors Center, the Jane McCrae house, and the site of historic Fort Edward.

Energy Park Site: Site Recreational Resources and Historic Preservation Opportunities



IV. Key Future Use Considerations

Most of the Energy Park site is part of a larger land area – the Fort Edward Industrial Park – that is privately owned by WCC, LLC, a real estate holding and development company, and zoned for industrial land uses. As the project's research findings indicate on pages 10-25, the site offers significant advantages – contiguous boundaries and large size, geographic location, direct rail and Champlain Canal access, and existing and planned future infrastructure – that are well-suited to a range of potential future economic development opportunities. These opportunities could include existing manufacturing and processing sectors already found in Washington County and the Capital Region, the Capital Region's emerging high-tech manufacturing or related support businesses, warehousing, transloading, and regional distribution facilities, and commercial shipping operation facilities.

The Energy Park site is also located in close proximity to downtown Fort Edward and the Route 4 commercial corridor, and is surrounded by neighborhoods and agricultural areas as well as industrial land uses. Multiple recreational and historical resources are located within a mile of the site, and the adjacent Champlain Canal serves as a recreational, historical, and commercial resource.

Accordingly, community representatives at project meetings have emphasized that, following dewatering operations, future uses at the site should recognize and be scaled appropriately to fit with surrounding land uses, should not create negative environmental impacts, and should include opportunities for innovative economic development alternatives, like business incubators, community forestry and agriculture programs, and eco-industrial parks, that are sustainable, provide jobs and build the community's workforce capacities over the long-term. Section VII of the report describes some of these potential economic development alternatives in greater detail.

Based on the project's research findings and feedback from Fort Edwards Citizens' Committee meetings, the project's consultant team developed criteria to evaluate the sediment dewatering and transfer facility plans outlined in GE's *Phase 1 Intermediate Design Report* in light of future use considerations at the Energy Park site:

- The facility's design should recognize, scale, and integrate the facility with the site's surrounding land uses, including neighborhoods, recreational, and historical resources, to provide an aesthetic amenity and address economic, social, and environmental impacts on the local community.

- The facility's design should take into account the long-term durability and adaptive reuse capacity of all facility structures, including the rail yard, buildings, roads, utilities, storage areas, stormwater management and water treatment systems, and canal waterfront facilities.

- The facility's design should integrate future use considerations that will enable portions of the site to be returned to reuse for larger-scale manufacturing and processing land uses like warehousing, distribution, and commercial shipping operations.

- The facility's design should integrate future use considerations that will enable portions of the site to be returned to alternative, smaller-scale economic development uses, like business incubators and community forestry programs, that are sustainable, provide jobs, and build the community's workforce capacities over the long-term.

- The facility's design should allow for passage of recreational and commercial boat traffic between Lock 7 and Lock 8 of the Champlain Canal during and after facility operations.

- The facility's design should protect the Energy Park site's existing natural resources, including wetland areas.

- The integration of future use considerations as part of the design of the facility should not pose a significant cost burden for the General Electric Company.

V. *Phase I Intermediate Design Report* Review

The *Phase 1 Intermediate Design Report* (IDR) discusses twelve components of the sediment dewatering and transfer facility planned for the Energy Park site. This section of the report discusses each of these components in turn, evaluating the extent to which future use considerations have already been taken into account or could be taken into account in the forthcoming *Phase 1 Final Design Report*. Specific recommendations are highlighted in boldface type.

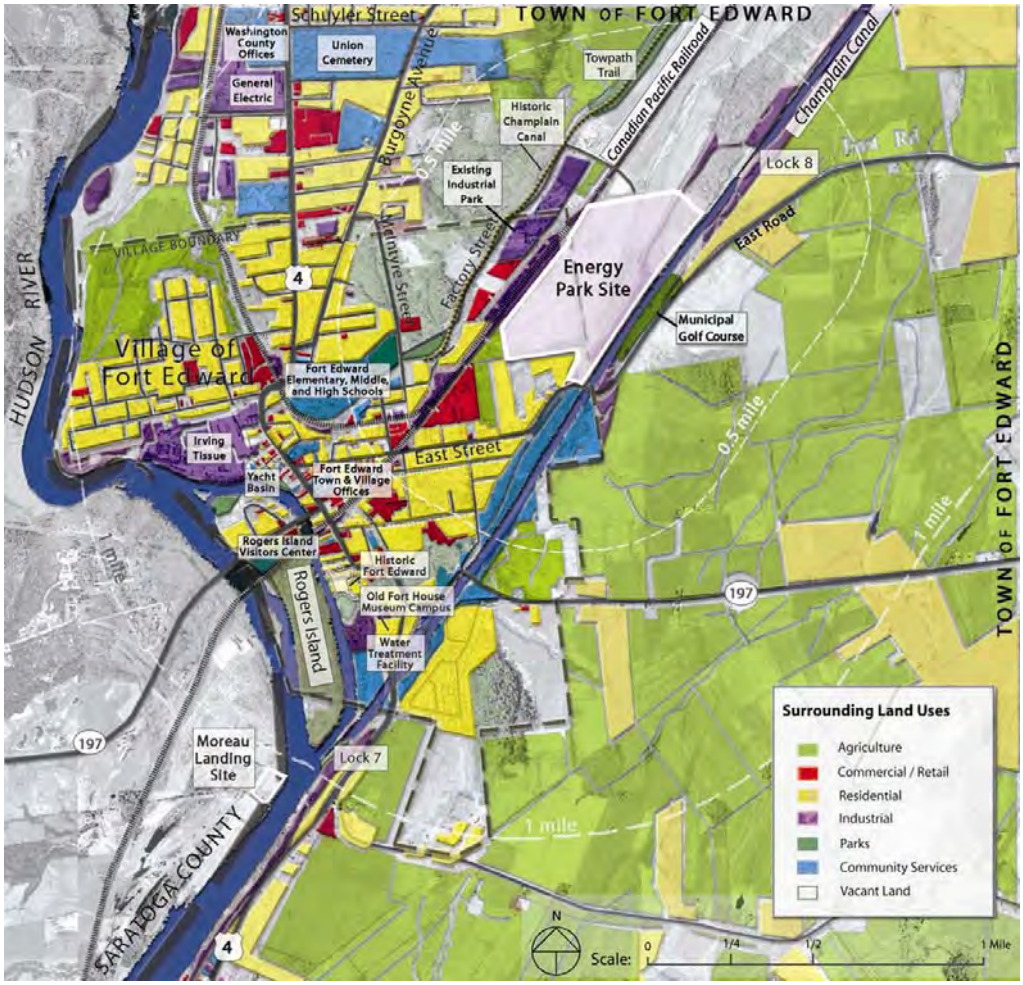
Site Surroundings

Background

The Energy Park site is bordered on the west by the Canadian Pacific Railroad, and by four active tenants at the Fort Edward Industrial Park. Factory Street provides access to industrial park tenants and will also provide access to the Energy Park site during construction of the dewatering facility. The historic Towpath Trail runs along Factory Street, and is currently used for recreational purposes. The site's northern border includes vacant land that is also part of the Fort Edward Industrial Park. The site's southern boundary is adjacent to residential areas and vacant and agricultural land. The Champlain Canal extends along the site's eastern boundary. Land east of the canal is vacant or agricultural land; the Town of Fort Edward anticipates future residential growth in these areas.

Future Use Considerations and Recommendations

The IDR does not show the Energy Park site within its surrounding context. The map below highlights that the Energy Park site is surrounded by multiple land uses. **Maps and text in the *Phase 1 Final Design Report* should reference the site's surroundings and discuss how the facility's design will address social, economic, and environmental impacts in the community.**



Site Work: Land Clearing and Grading

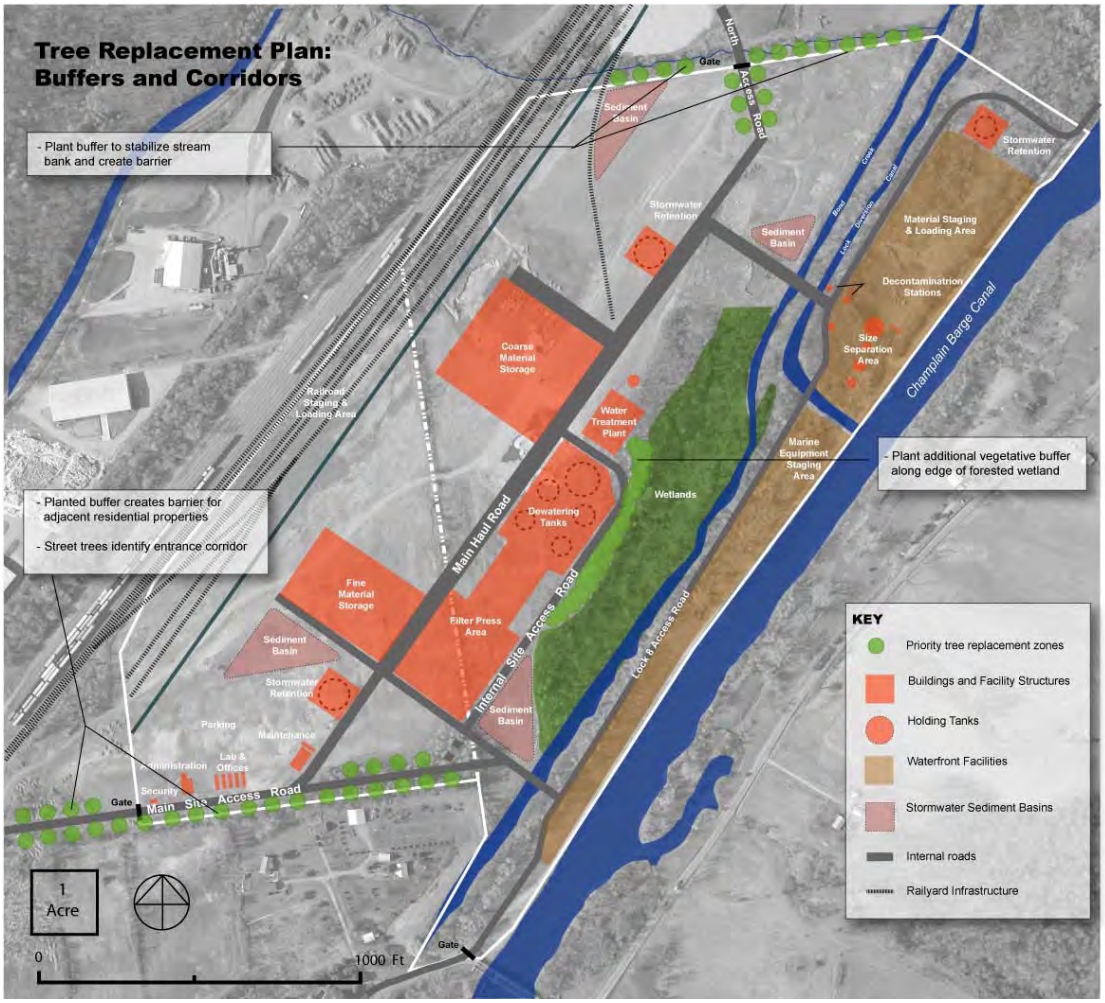
Background

In terms of land clearing, most of the site is already cleared. The IDR indicates that five additional acres will be cleared along the rail tracks and along the western side of Bond Creek to accommodate operations at the Energy Park site. In terms of site grading, the IDR indicates that site will be graded to accommodate construction of facility components. Grading will require import of 100,000 cubic yards of backfill to achieve required elevations. Prior to grading, topsoil will be removed and stockpiled for future use on the site.

Future Use Considerations and Recommendations

From a future use perspective, land clearing and grading will provide additional acreage for future land uses at the site. However, removal of site tree cover and vegetation can also deplete the site's natural resources and limit the site's integration with surrounding land uses. **A tree replacement and vegetative planting program could both maintain the site's natural resources and help integrate the site with surrounding neighborhoods.**

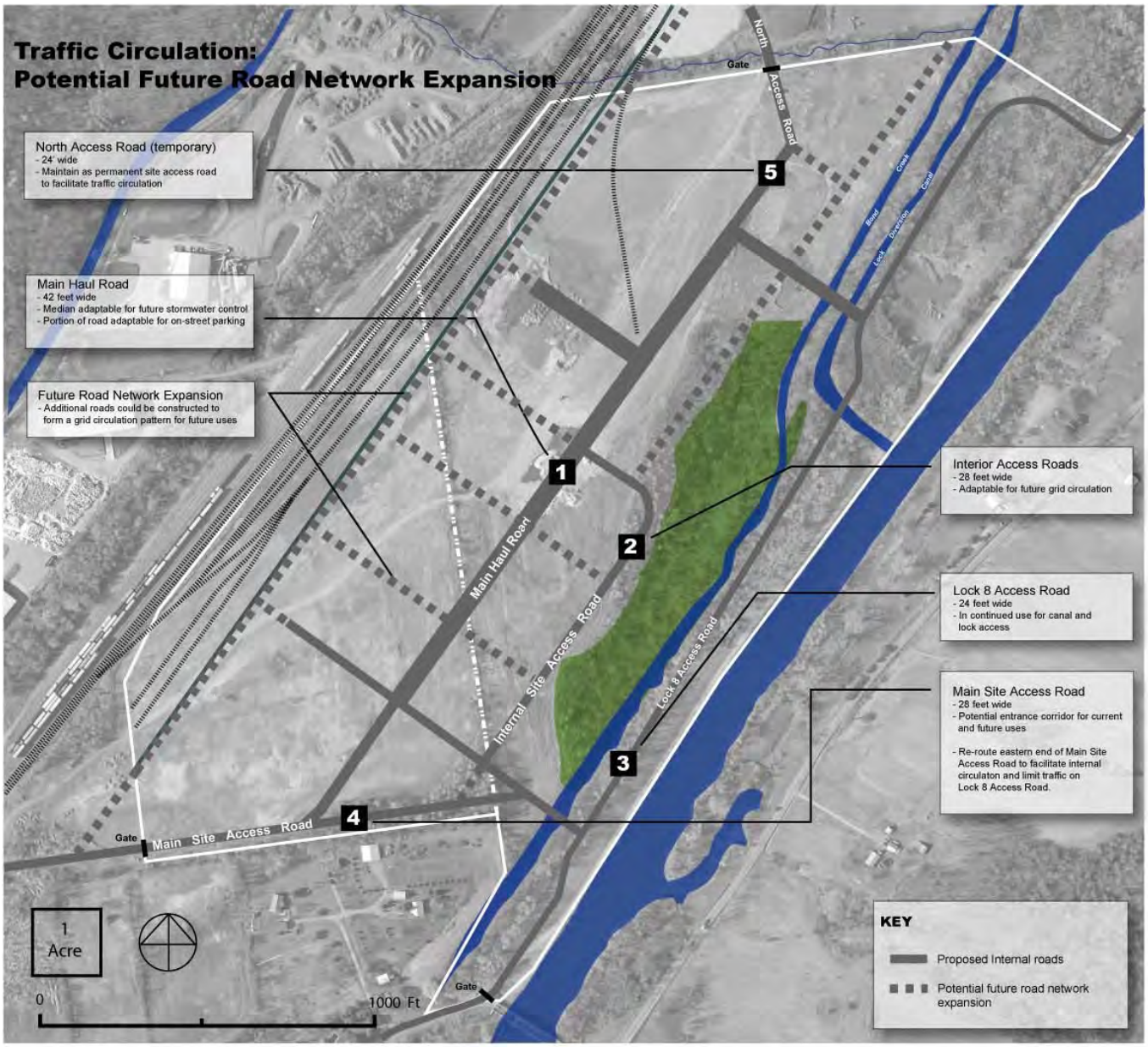
In particular, new trees could be planted in two areas: along the proposed Main Access Road and North Access Road as depicted in the map below. Trees in these areas would provide attractive buffer areas between the site and its surroundings; these trees, in conjunction with vegetative plantings, could create appropriate and attractive entrance corridors. Trees and vegetative plantings in both locations could also help address soil and streambank erosion at the site. Finally, stockpiled topsoil at the site could be a valuable asset for future site uses. In particular, **topsoil could be an integral component of "green" stormwater infrastructure at the site** – see pages 19-20 for more information.



Road Infrastructure

The IDR proposes 9,700 feet of internal roadways that will support facility operations at the Energy Park site. The site's road infrastructure is critically important both to facility operations and to future land use opportunities at the site. The site's road infrastructure will provide the access and connection points that will determine the type and amount of vehicular traffic at the site; more generally, the site's road infrastructure will help determine the location, size, and number of different land uses that will be located at the site following completion of the site's dewatering and sediment transfer activities.

Each element of the site's proposed road system is evaluated from a future use perspective in this section. The map below outlines the road network proposed for the site during dewatering operations, and a conceptual expansion of the road infrastructure that could support future uses on the site. **In general, proposed road infrastructure should be designed in a grid system that provides multiple points of access and allows for the grid's future expansion.**



Main Haul Road

Background

The Main Haul Road will extend north-south along the site, and will be designed to handle all truck and heavy equipment traffic transporting debris between the waterfront area and the materials storage areas adjacent to the rail yard. The IDR proposes two 12-foot-wide travel lanes, two six-foot-wide shoulders, and a six-foot-wide roadway median – a total road width of 42 feet. Concrete safety barriers will be placed in the median between the two 12-foot travel lanes. The road will be paved primarily with asphalt, with concrete designated for use in high-traffic areas.

Future Use Considerations and Recommendations

The proposed design of the Main Haul Road will support multiple future use opportunities at the site. The road as designed will be able to support large trucks and vehicles, as needed. Alternatively, the road's width will also allow for several conversion possibilities following completion of dewatering and sediment transfer activities at the site. **The road's six-foot median could be converted into a vegetative swale that would capture and filter site surface water runoff as part of the site's "green" infrastructure. The planting of trees and vegetation both along the median and on either side of the road could also create a welcoming, tree-lined boulevard for future site users. The road could also be adapted to provide for on-street parking as well as travel lanes for on-site businesses. Lastly, the road could be lined with sidewalks that would link together on-site pedestrian routes.**

Interior Access Roads

Background

These lighter-duty roads will serve as connectors between off-site roads and portions of the site outside of the main materials handling area. They will be used primarily by light vehicles (personal movement, deliveries, security, maintenance). The roads' proposed design includes two 12-foot wide travel lanes with two-foot shoulders – a total road width of 28 feet. The proposed road material is asphalt.

Future Use Considerations and Recommendations

The layout and widths of the site's proposed Interior Access Roads are well-suited to support future land uses at the site. **Future site uses will likely require the extension of these roads to provide for additional access points, connections, parking lots, and other needs, so the roads should be built with future extension opportunities in mind.**

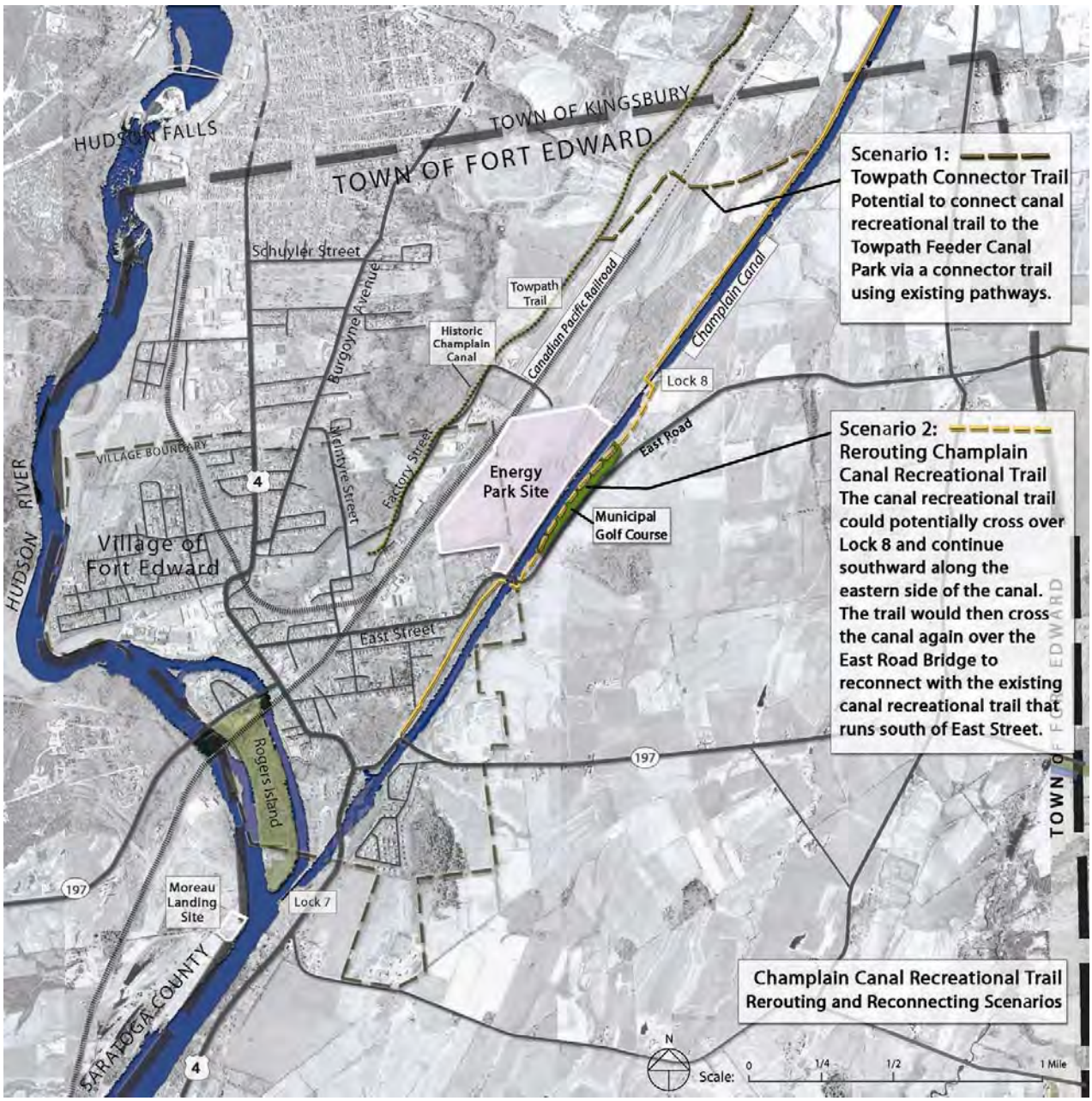
Lock 8 Access Road

Background

The Lock 8 Access Road will be relocated west, closer to Bond Creek, in order to accommodate the site's waterfront processing facilities. The asphalt road will include two 10-foot travel lanes with two-foot shoulders – a total width of 24 feet. The intersection of the Lock 8 Access Road with the Main Haul Road is designed with steel grating over a concrete sump to capture the area's stormwater and divert it for Type I treatment, which is further described on page 19. The entrance to the Lock 8 Access Road from East Street will be gated, with access limited to NYSCC vehicles. The intersection of the Lock 8 Access Road with the Main Haul Road on the site will be controlled with flashing lights during hours of site operation, and the Main Haul Road will be gated during non-working hours to prevent site access.

The Lock 8 Access Road relocation and access limitations will restrict recreational access along the canal for community residents and visitors. Community residents have emphasized that recreational access to the Champlain Canal is a top priority, both for residents and as part of the community's broader approaches to tourism and historic preservation. **The General Electric Company should work with surrounding property owners and the Town of Fort Edward to create alternative recreational trail locations that would maintain public access along the Champlain Canal.** The existing recreational trail could be rerouted across the Champlain Canal at Lock 8, extended through the public golf course along the canal's eastern border to the East Street Bridge intersection, extended over the bridge, and reconnected with the existing trail on the west side of the canal as it travels south to Lock 7.

A second option would be to shift the trail toward the western boundary of the Energy Park site near Lock 8. Under this scenario, the trail would join the existing Towpath Trail north of Lock 8, travel southward along the western boundary of the Energy Park site, and then reconnect with the existing trail via East Street.



Main Site Access Road

Background

The IDR proposes the extension of a Main Site Access Road from East Street, across from the Fort Edward rail station, along the railroad right-of-way to the southwest portion of the Energy Park site. The access road would support site personnel and delivery vehicles and a security station would be posted at the site entrance.

Future Use Considerations and Recommendations

Future use considerations for the Main Site Access Road relate primarily to the appropriate integration of the road with the neighborhoods adjacent to the southern portion of the Energy Park site. **Due to the prominent location of the new facility entrance/access road in the community, special attention should be given to designing a facility entrance that complements the scale of the surrounding neighborhood, paying particular attention to lighting, signage, traffic management, and landscaping.** The planting of trees and vegetation along the Main Site Access Road would also provide an increased buffer area between the site and adjacent residential areas, and could enhance the site's entrance corridor.

The Town of Fort Edward is currently developing a Route 197 Industrial Corridor Access Study to evaluate opportunities to divert site-related traffic from downtown Fort Edward. As additional design work is undertaken for the Main Access Road, consideration should be given to how this road would link to the potential Route 197 corridor to enhance future site access.

A second key consideration in terms of the Main Site Access Road's compatibility with surrounding land uses is the road's proposed extension beyond the Main Haul Road, which would provide vehicular access to the site's interior access roads. This section of the road should be reconfigured for several reasons. Road construction through this area would require clearing additional trees along the site's southern boundary; the preexisting buffer area that these trees provide between site activities and adjacent residential areas should be preserved. The road extension should also be designed to support a grided street network that will facilitate future land uses at the site. The Traffic Circulation Map on page 12 highlights alternative road configuration options that connect the Main Site Access Road with the site's interior access roads.

Finally, the design of the Main Street Access Road should take long-term site access considerations into account. Community members have raised safety and congestion concerns related to the increased traffic volumes anticipated at the intersection of East Street and the proposed Main Site Access Road. Particular attention should be given to safety, congestion, and timing issues related to increases in both rail and vehicular traffic through this area. Traffic studies should also be undertaken to determine acceptable vehicular traffic volumes in light of potential future site use opportunities.

North Access Road (Temporary Site Construction Access)

Background

The IDR proposes that this existing road will be used only during the construction phase of the site's sediment dewatering and transfer facility.

Future Use Considerations and Recommendations

Most of the Energy Park site is part of the larger Fort Edward Industrial Park. **Following completion of dewatering and sediment transfer activities at the site, the North Access Road could serve as a secondary site access road for future site users that would link directly with the site's planned road infrastructure, defining an established road network across the site.**

Site Security Fencing

Background

The IDR proposes the placement of security fencing around the perimeter of the site's processing facility. Additional fencing would control access to dredged material handling, haul roads, and processing areas. Approximately 16,000 linear feet of security fencing would be used to ensure the community's safety and the security of the site's facilities.

Future Use Considerations and Recommendations

Potential future site use opportunities outlined in this report may also require security fencing. **To the extent possible, security fencing installed at the site should be modular and able to be adaptively reused in multiple locations.**

Utilities

The design and construction of sediment and dewatering facilities at the Energy Park site will also require the installation of site utilities, including water, electric, gas, telephone, and sanitary sewer. The appropriate design and installation of this infrastructure will support the facility's effective operation, but can also ensure that future site uses are not unnecessarily restricted by the limited availability of utilities. Across each particular utility, it is critically important that systems are designed with additional capacity either built-in or easily expanded, with multiple access points extended across the site.

Water

Background

The IDR states that three potable water supply options are under consideration for the site, contingent upon proper approvals and agreements: a Village of Fort Edward water distribution system with six-inch and eight-inch water mains on East Street, located approximately 500 feet from the site's southern boundary; a privately owned, four-inch water main service located approximately 1,000 feet from the site's southwest boundary; and the development of a new potable water supply, either by drilling a well or extracting water from the canal.

Future Use Considerations and Recommendations

In terms of future use considerations, the potable water distribution system with the largest available capacity *and* capacity for future expansion should be selected from among existing water distribution systems. However, two of the options – canal water extraction and well drilling – would require construction of new water distribution systems, as well as construction of an on-site potable water treatment plant (distinct from the processed water treatment plant that will be built to treat contaminated waters generated from site stormwater runoff and dewatering activities). The Town of Fort Edward has indicated that it will likely need additional water treatment capacity in the future, based on projected residential growth in coming decades. The construction of an on-site water treatment facility could provide adequate potable water capacity for both future site users and the Town of Fort Edward, and would likely be the option that would most benefit both site users and the surrounding community.

Electric

Background

The IDR indicates that three electric supply options are available near the Energy Park site, each with three-phase power serviced by Niagara Mohawk. The first option, located adjacent to the western portion of the Fort Edward Industrial Park, near Towpath Road, would require a rail crossing. The second option, located at the entrance of the Fort Edward Rail Yard, would also require a rail crossing, and is located a considerable distance from the site. The

third option is located at the western end of the East Street Bridge, adjacent to the southern edge of the site. This option is the power source located closest to the site.

Future Use Considerations and Recommendations

The extension of electric lines across the site should be comprehensive and provide as much capacity for sediment dewatering and transfer activities and expansion capacity for future operations as possible. The installation of multiple utilities, including electric, should be coordinated with the installation of the site's road infrastructure to maximize efficiency, save time, and ensure comprehensive coverage.

Gas

Background

The IDR indicates that natural gas lines are located on the west side of the Delaware & Hudson rail line and could be extended across the site. Alternatively, liquefied natural gas could also be used at the site.

Future Use Considerations and Recommendations

The extension of natural gas lines across the site should be comprehensive and provide as much capacity for sediment dewatering and transfer activities and expansion capacity for future operations as possible. The installation of multiple utilities, including natural gas, should be coordinated with the installation of the site's road infrastructure to maximize efficiency, save time, and ensure comprehensive coverage.

Telephone

Background

The IDR does not discuss the location and availability of telephone lines or fiber-optic cable.

Future Use Considerations and Recommendations

The extension of telephone lines and fiber-optic cable across the site should be comprehensive and provide as much capacity for sediment dewatering and transfer activities and expansion capacity for future operations as possible. The installation of multiple utilities, including telephone lines and fiber-optic cable, should be coordinated with the installation of the site's road infrastructure to maximize efficiency, save time, and ensure comprehensive coverage.

Sanitary Sewer

Background

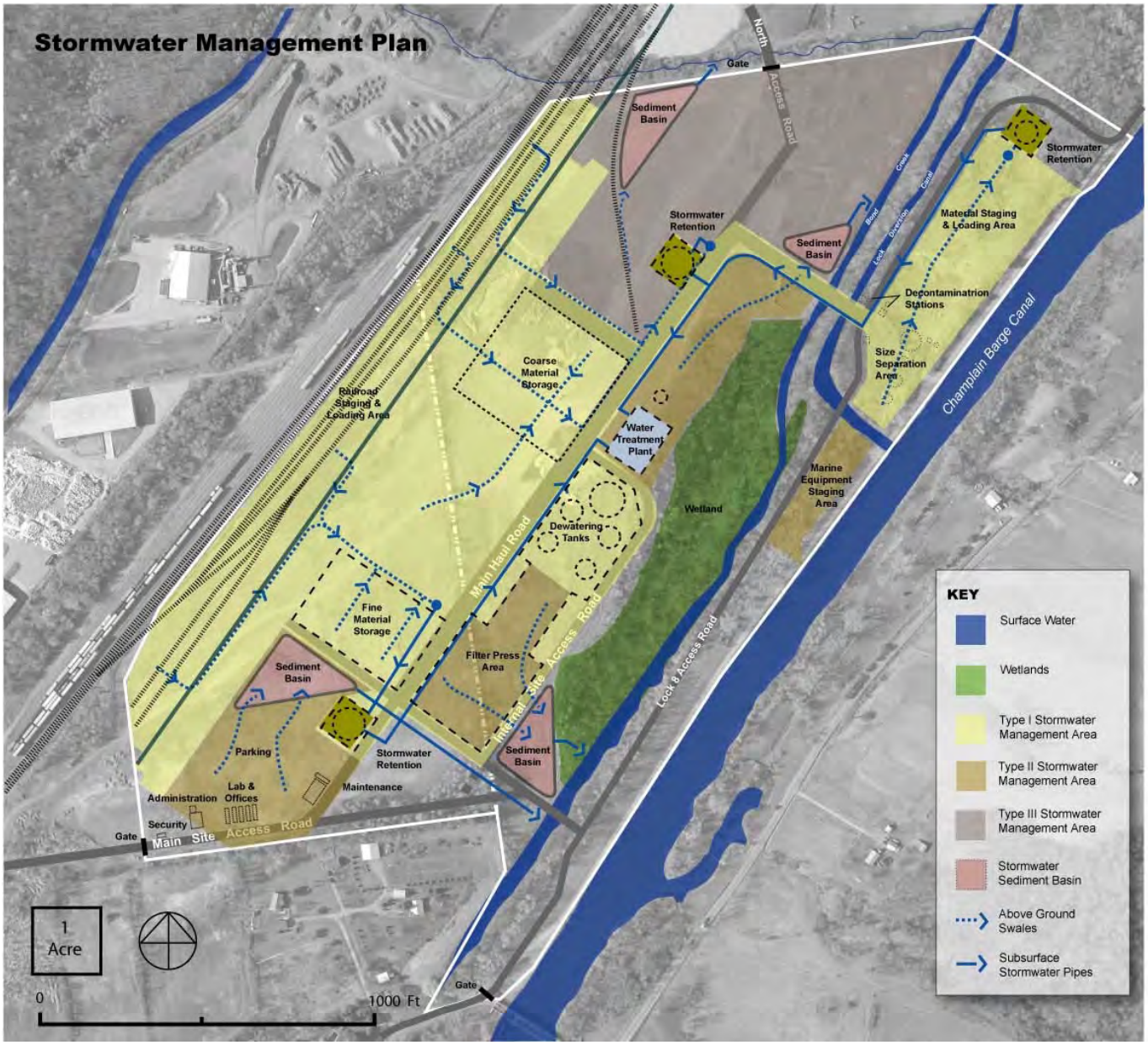
The IDR indicates that the location and availability of existing sanitary sewers near the site remains to be determined. The IDR also states that the development of an on-site sanitary wastewater treatment and discharge/recharge system is under consideration.

Future Use Considerations and Recommendations

The development of an on-site sanitary wastewater treatment and discharge/recharge system would provide a significant additional capacity to meet the needs of future site users, following completion of sediment dewatering and transfer activities at the site.

Stormwater Management

In addition to roads and utilities, stormwater management systems are a third form of on-site infrastructure built for sediment dewatering and transfer activities that can also be adaptively reused to help support future land uses at the Energy Park site. The future use capacity of these systems depends upon the location and characteristics of the three stormwater categories identified in the IDR, and discussed in greater detail in this section. The map below highlights areas on the Energy Park site designated for Types I, II, and III stormwater management, and outlines anticipated flow patterns for each. The map on page 20 highlights future use considerations for the stormwater treatment systems.



Type I Stormwater

Background

The IDR indicates that Type I stormwater will come into contact with potentially contaminated surfaces. Type I stormwater infrastructure will manage drainage on 37 acres of the Energy Park site, and will include curbed areas, catch basins and conveyance piping, storage tanks, and water treatment systems. Areas affected include the barge offloading and size separation area, the main haul road and portions of the site's interior access roads, processed sediment staging areas, rail car loading aprons, and secondary containment areas for sediment slurry tanks. Captured Type I stormwater will be pumped into above-ground storage tanks before being transferred to the on-site water treatment plant that will be constructed to treat contaminated waters generated from both stormwater runoff and dewatering activities. Treated stormwater will be released into the Champlain Canal.

Future Use Considerations and Recommendations

All Type I stormwater system infrastructure will likely be removed following completion of the dewatering operations at the site, due to the infrastructure's contact with contaminants and the six-year duration of site operations. **However, surrounding structural systems, like foundations, concrete casings, and support walls, should remain in place; future users of the site will be able to install replacement stormwater infrastructure within these systems, building on the site's original stormwater management approach**.

Type II Stormwater

Background

The IDR defines Type II stormwater as runoff from noncontact impervious surfaces at the site (paved areas where contaminated material is not transported, including building rooftops, railroad track ballast areas, and gravel-covered areas). Type II stormwater infrastructure will manage drainage on 24 acres of the site and will divert stormwater to sediment basins before releasing water to Bond Creek, the Champlain Canal, or the Lock Diversion Channel.

Future Use Considerations and Recommendations

The IDR outlines a traditional approach – the use of sediment basins – to manage Type II stormwater. **Given the size, safety concerns, and environmental impacts associated with these structures, bioretention basins could provide an effective alternative that would also help extend "green" infrastructure across the site.** These basins could filter Type II stormwater effectively with a smaller footprint and beneficial environmental outcomes.

Bioretention treatment systems are designed to capture and treat stormwater from impervious surfaces. Through systems that include landscaped pretreatment areas, treatment areas, and water conveyance features, bioretention treatment systems treat stormwater contaminants, attenuate peak flows, and provide a net reduction in flow volumes through evapotranspiration and infiltration. The six major components of a bioretention basin include a grass buffer strip, ponding area, planting soil, sand bed, organic layer, and plant material.

Each bioretention basin can serve a drainage area of up to five acres. Maintenance demands are minimally more intensive than those required for bioswales, and include periodic mowing and replacement of vegetation as needed. While the cost of constructing bioretention treatment systems can be higher than the cost of constructing standard stormwater infrastructure, these systems are more effective at removing contaminants and reducing the velocity of stormwater flows into channels including Bond Creek, the Champlain Canal, or the Lock Diversion Channel, reducing soil and streambank erosion.

Type III Stormwater

Background

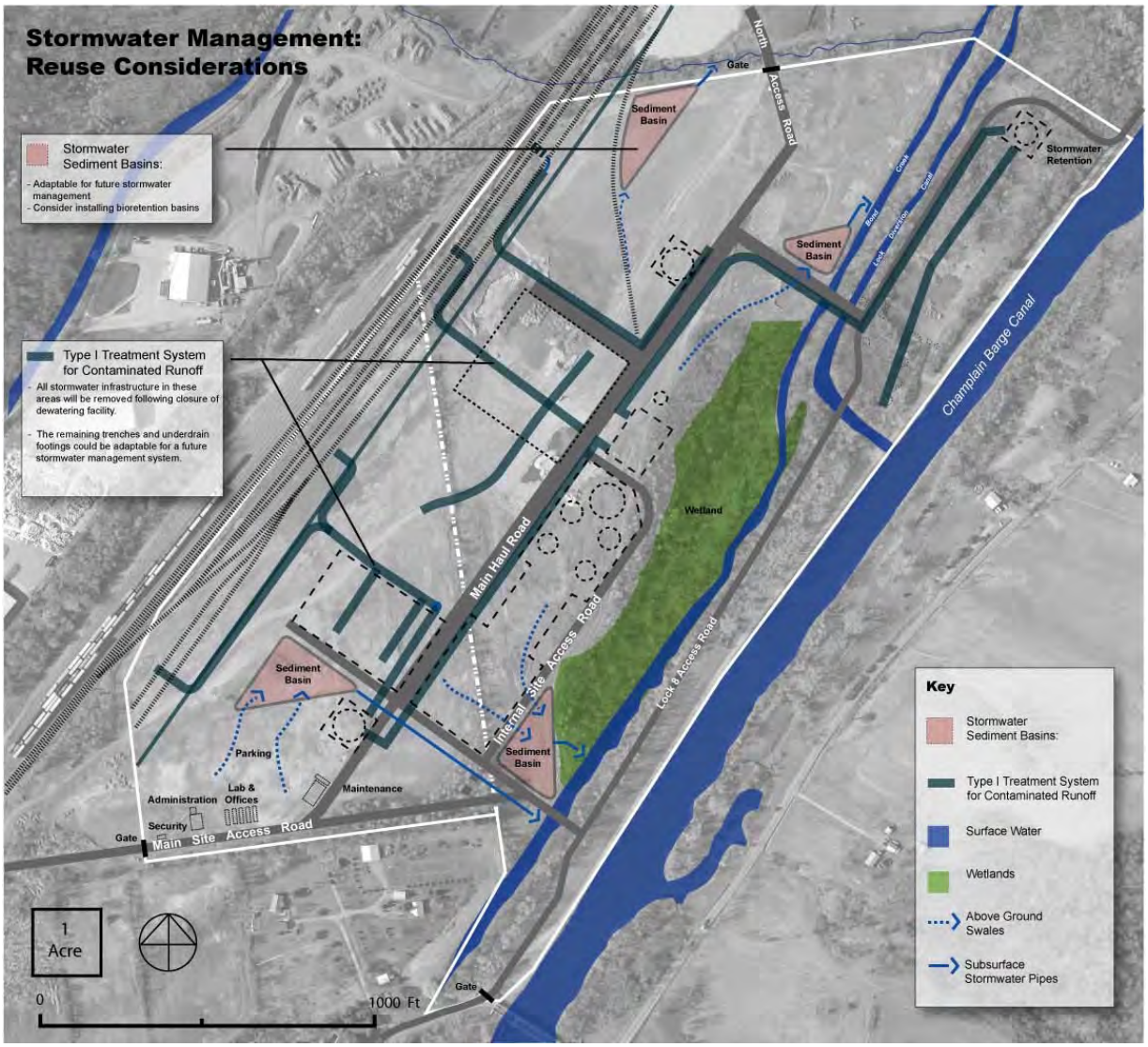
The IDR defines Type III stormwater as surface water runoff from pervious noncontact surfaces as well as undisturbed portions of the site. The IDR proposes that runoff from these areas would be diverted through existing drainage features directly into Bond Creek, the Champlain Canal, or the Lock Diversion Channel.

Future Use Considerations and Recommendations

Existing drainage features in these areas could be enhanced with drainage swales to reduce the velocity of stormwater flows, helping to reduce local soil and streambank erosion.

Additional Stormwater Management Techniques: Extending Green Infrastructure across the Site

The "green" stormwater infrastructure suggestions above represent only a starting point. Additional "green" infrastructure features that could be installed on-site include permeable paving, bioswales, and rain gardens. Green roofs represent another innovative possibility, and could be particularly well-suited to the site's material storage warehouse area. A partnership with a nearby college or university could support these projects and help provide the expertise and labor needed for their implementation.

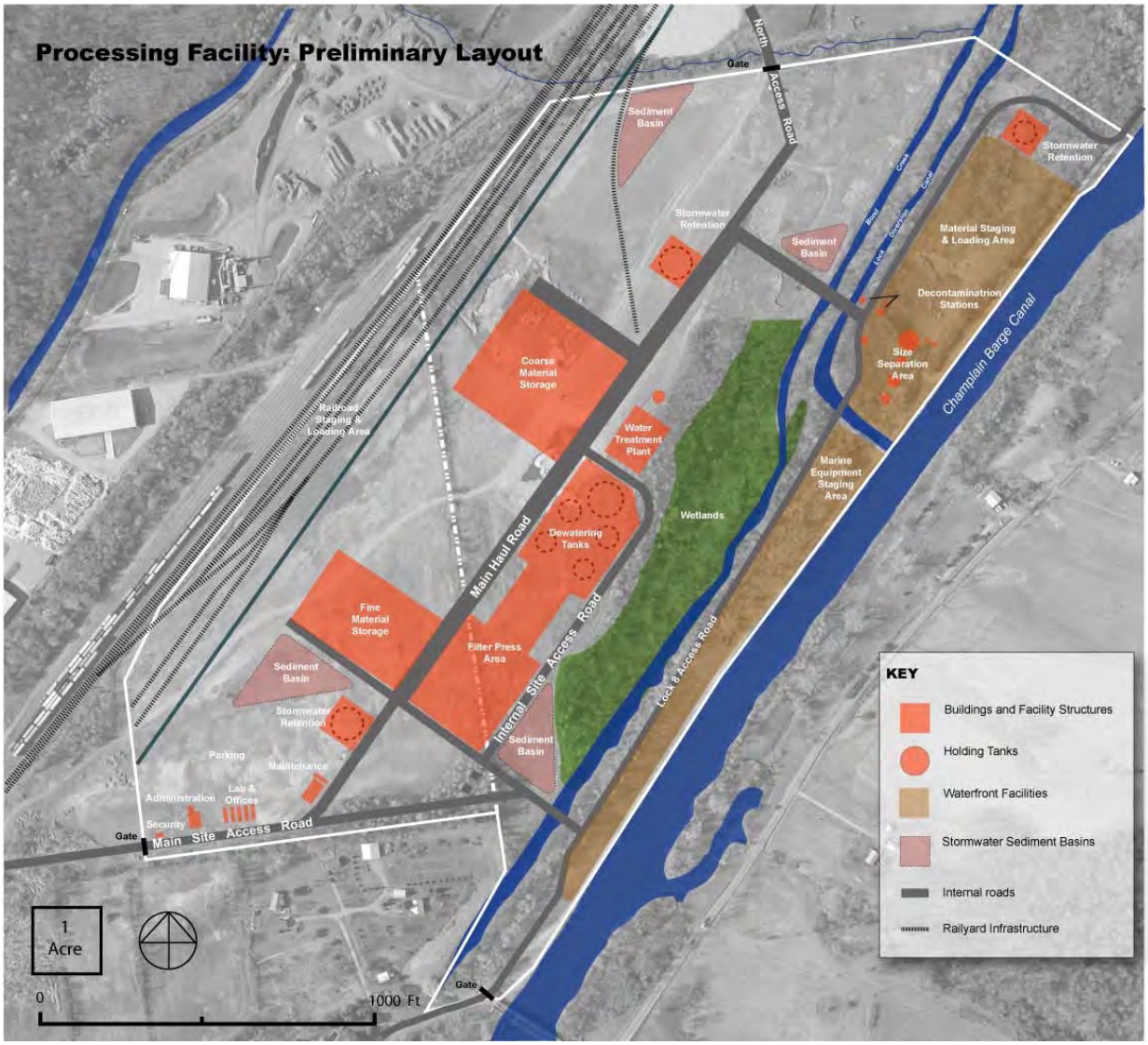


Buildings and Coverings

The buildings that will be built at the Energy Park site are among the most direct reminders of the site's future use. While the site's buildings will have many different functions and characteristics, *all* of the buildings can be designed to ensure their appropriate placement, long-term durability, and adaptive reuse capacity. The IDR describes proposed site buildings only in general terms, and states that buildings will be sited in order to reduce stormwater contact in Type I stormwater areas, to reduce freezing concerns, and to provide buffers that address quality of life concerns. The IDR also states that most buildings placed on-site will be prefabricated trailers or temporary facilities. Buildings in several areas may have air handling systems to meet emission requirements. The map below outlines buildings as described in the IDR.

Structures identified in the IDR include:

- One building to house dewatering equipment;
- One building to enclose water treatment facilities;
- Two structures to store fine particles near the rail line;
- An unspecified number of structures to house railside materials staging; and
- An unspecified number of temporary structures to house administration, contractor offices, and maintenance operations.



Administrative/Contractor Offices and Maintenance Facilities

Background

The IDR indicates that an unspecified number of trailers or modular buildings will be used to house offices for contractors and administration, as well as maintenance facilities. These buildings will be located in the southwest corner of the site, along the Main Access Road. These buildings will be outfitted with heating, ventilation, air conditioning, and/or humidity controls.

Future Use Considerations and Recommendations

The IDR describes these offices and facilities as temporary buildings or pre-fabricated trailers. **To maximize future use opportunities at the site, these buildings should be redesigned as permanent, durable structures that can be adaptively reused following completion of sediment dewatering and transfer activities at the Energy Park site.** For example, multiple buildings could be consolidated and built with open floor plans, that could allow for the space needs of both initial occupants and future tenants/operators.

Warehouses/Large Shell Structures

Background

The IDR indicates that several large warehouse buildings will house dewatering operations, water treatment facilities, processed materials storage, and railside storage equipment on the site. Some of these structures will be pre-engineered buildings that will be brought to the site for installation, and will only require construction of foundations at the site. These buildings will have limited air handling infrastructure.

Future Use Considerations and Recommendations

The processed material storage buildings will be situated adjacent to the site's rail tracks. Accordingly, these buildings offer significant future use opportunities for warehousing, distribution, transload facilities, or other large-scale, rail-based operations. Structures built on this portion of the site should be designed for long-term durability, should have retrofit capacity to support infrastructure additions and upgrades, and should be sized and oriented to the rail yard to support future large-scale uses.

Buildings housing dewatering and water treatment facilities on-site will be located further away from the rail system, and could provide areas to support the alternative, smaller-scale economic development opportunities suggested by community stakeholders, like business incubators or community forestry operations. Like the larger warehouse buildings next to the site's rail yard, the design of these structures should incorporate durability, flexibility, and adaptability for future use as key considerations.

Several of these buildings will also likely be exposed to contaminated materials during the dewatering facility's operations. These buildings, and areas with the greatest likelihood of exposure (like building floors) in particular, should be designed to ensure that they can be efficiently and easily cleaned up in preparation for reuse. At the New Bedford Harbor Superfund site in New Bedford, Massachusetts, for example, EPA paid special attention to the permanence and long-term usability of major building components constructed for the New Bedford Harbor dewatering facility. The facility's warehouse building was designed to withstand the long-term wear-and-tear of dewatering activities, and to be available for future port operations. This included treating the facility's porous concrete floors with a specialized coating to ensure that the floor would not be contaminated during the facility's operation. Refer to page 38 of this report to read the full case study.

Unloading and Waterfront Facilities

The unloading and waterfront facilities to be built along the Champlain Canal to support sediment dewatering and transfer activities at the Energy Park site will result in the development of a significant, unique regional economic development resource. The New York State Canal Corporation, which owns this portion of the Energy Park site, is currently studying opportunities to adapt the site's planned facilities to expand the commercial use of the Champlain Canal.

Background

According to the IDR, the barge docking area will encompass approximately 1,450 feet of the total 3,400 linear feet of shoreline at the Energy Park site, providing space enough for up to three barges. The unloading area will be excavated to ensure that barge beams are completely out of the navigable portion of the Champlain Canal channel when docked at the unloading wharf. The navigation portion of the canal, which has a width of 75 feet, will also be dredged to ensure reasonable movement of canal traffic during implementation.

Future Use Considerations and Recommendations

The IDR's proposed plans for the Energy Park site's unloading and waterfront facilities appear to establish a strong foundation for this area's future use. **The facility, which will include a 750-foot long unloading wharf with staging areas and a work wharf, appears well-designed to support new canal-dependent manufacturing and/or distribution businesses at the Energy Park site following the completion of remedial activities.** The canal is currently used two or three times annually for commercial purposes to ship oversized industrial equipment such as power plant turbines and dryers for paper plants. **With new economic development opportunities at the Energy Park site, the canal may also be used to ship oversized items that are manufactured or fabricated by businesses located at the Energy Park site.** For example, construction of large, pre-cast concrete components at the Energy Park site, such as those used in bridges or buildings, would be feasible if those components could then be delivered to their final destinations via barge on the Champlain Canal.

Processing and Water Treatment Facilities

Project research indicates that the site's processing and water treatment facilities will comprise equipment that will likely be removed following completion of sediment dewatering operations at the Energy Park site. Project research also indicated that the specialized water treatment facility planned to handle contaminated waters generated from both stormwater runoff and dewatering activities at the site could not be easily converted into a municipal wastewater treatment facility, although the Town of Fort Edward had expressed interest in opportunities to increase local potable water and wastewater treatment capacity. Accordingly, this report does not address the potential future use of these components; future use considerations tied to the buildings that will house these facilities are described earlier in this section.

Rail Yard Area and Processed Material Storage/Loadout Facilities

Sediment dewatering and transfer activities at the Energy Park site will require the installation of a large rail yard. In addition to addressing site activity needs, this rail yard offers significant future use opportunities, providing a large-scale transportation resource that links together markets in New York, New England, and Canada via both rail and the Champlain Canal.

Rail Yard

Background

The IDR indicates that the site's rail yard area will include as much as 38,000 feet of new rail, including two 2,400-foot-long tracks, each of which will have the capacity to stage up to 41 rail cars at a time. Additional tracks will be available for car inspection and repair, and for an engine house. A rail spur for deliveries will also be located on-site. The rail lines located adjacent to the site are owned by the Delaware and Hudson Railroad, a subsidiary of the Canadian Pacific Railway.

Future Use Considerations and Recommendations

The scale of sediment transfer operations at the Energy Park site likely extends considerably beyond the rail transportation needs of potential future land uses at the site. **Accordingly, plans will need to be developed for the partial removal of rail yard facilities following completion of site operations. The removal of a portion of the tracks adjacent to the site's eastern boundary would provide additional land area for future use opportunities, which would also be located adjacent to the site's rail yard.**

Material Storage/Loadout Facilities

Background

The proposed material storage and loadout component of the processing facility includes warehouses for storing processed sediment before loading the materials into rail cars for transportation to selected disposal facilities. The IDR outlines five storage areas designated to stockpile processed materials.

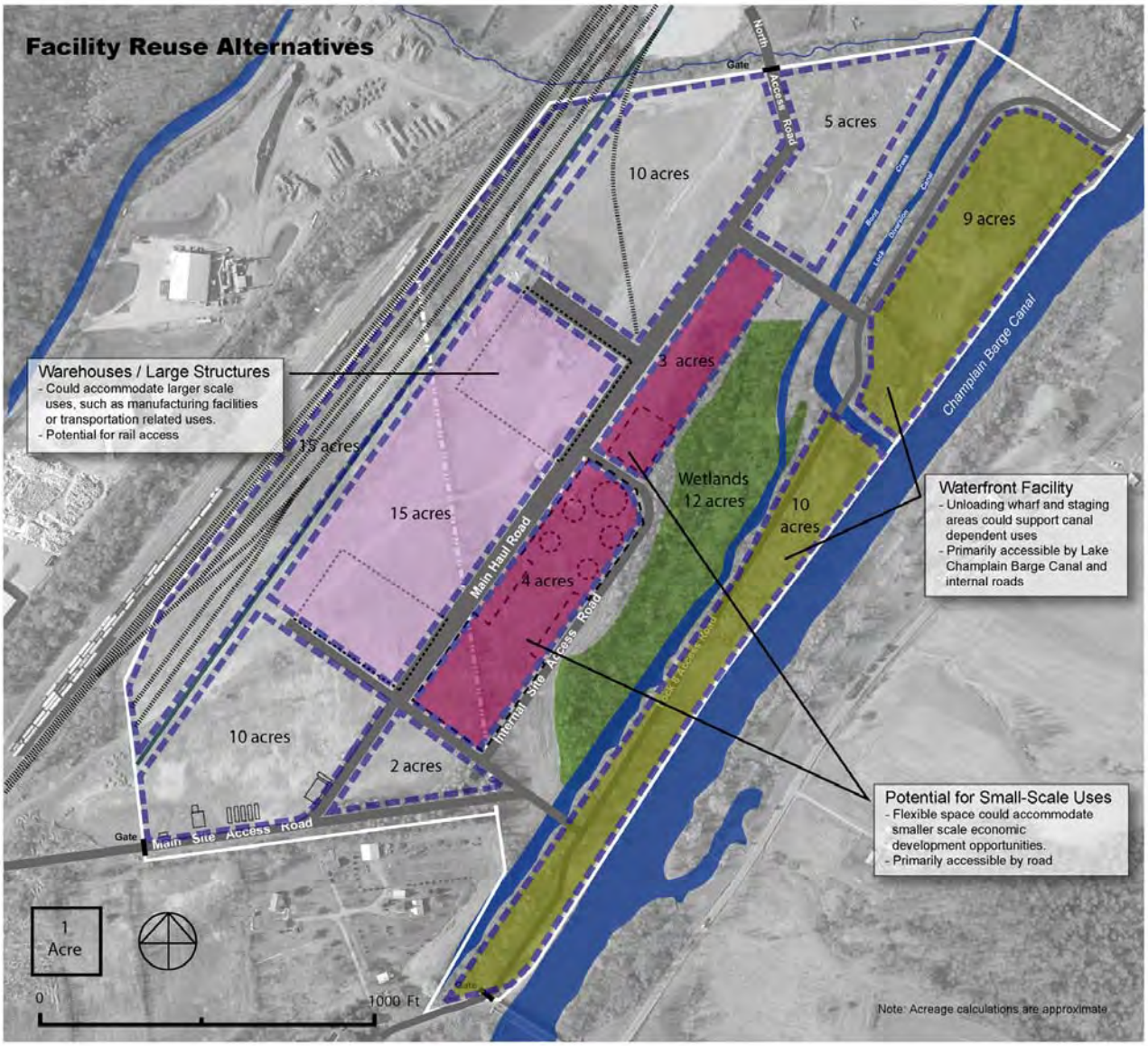
Future Use Considerations and Recommendations

Please refer to the Buildings and Coverings section of this report for discussion of the site's material storage and loadout facilities.

Facility Reuse Summary

As discussed in this section, the design of the sediment dewatering and transfer facility at the Energy Park site should incorporate future land use considerations. Based on the preceding analysis, the map below provides a conceptual overview of key future use considerations at the Energy Park site, and highlights the approximate size of different site parcels, based on the IDR's planned road network.

Road infrastructure, stormwater management systems, and utilities are primary infrastructure elements that will determine the location, size, and number of different land uses that will be located at the site following completion of the site's dewatering and sediment transfer activities. These systems should be designed with the capacity to expand to accommodate future uses. Buildings and coverings constructed for the sediment transfer and dewatering facility should be designed as durable structures that can be reconfigured to meet future uses. Examples highlighted in the map below include the potential to convert the site's processed materials storage warehouses to accommodate larger-scale operations, such as manufacturing facilities, on the site. Buildings that will house dewatering and water treatment facilities could be designed to accommodate the alternative smaller-scale economic development opportunities suggested by community stakeholders. Finally, the rail yard will occupy up to 15 acres on the site during facility operations. These facilities, in addition to 19 acres of waterfront facilities along the Champlain Canal, will be available for future use, following completion of sediment dewatering and transfer activities at the site.



VI. Land Use and Market Conditions

The following section provides an overview of relevant national, state, and local land use and market factors that can help inform the long-term reuse of the Energy Park/Longe/NYSCC site. These trends can inform potential reuse opportunities for the site once remedial activities are completed, as well as inform the ongoing design of the site's sediment dewatering and transfer facility.

The Big Picture: National & State Economic Trends[1]

Over the past 25 years, the United States' economy has changed significantly. These changes have included broad declines in industrial and manufacturing employment, with corresponding increases in service-sector employment, particularly amongst consumer- and information-oriented businesses. This shift from an industrial and manufacturing economy to a service-sector economy has been driven by two main factors: increases in productivity, driven by new technologies, and national and global shifts in the location of manufacturing businesses to areas with lower labor, resource, and regulatory costs. U.S. businesses particularly impacted by these changes include traditionally labor- and resource-intensive industries, as well as manufacturers of commodities that can be readily produced elsewhere. The Northeastern and Midwestern portions of the United States have been particularly affected by these economic changes.

Industrial and manufacturing sectors remain an important part of the U.S. economy. However, many businesses today are focused on more specialized markets and are increasingly reliant on high-skilled workers. These businesses may even be part of a cluster of regional industries based around a specific resource, product, or set of manufacturing expertise (i.e., computer chip research and development). In addition, a growing segment of new industrial development is now geared towards supporting the logistics needs of the expanding service economy, as well as the demand from manufacturers for efficient or "just-in-time" delivery of materials and components. These logistics operations include increasingly large and sophisticated warehouse facilities, as well as transload and intermodal facilities that can rapidly move products and materials between different modes of transit (i.e., from ship to truck or from train to truck).

The northeastern portion of the United States, including New York, was particularly affected by recent changes in the American economy. Research by the Federal Reserve Bank of New York's Buffalo Branch indicates that between 1983 and 2002 the Northeast, the historic center of U.S. industrial and manufacturing operations, lost manufacturing employment at more than three times the rate of the nation as a whole. In New York, this translated into a nearly 40 percent decline in manufacturing employment during the same time period. Much of this decline in manufacturing employment resulted from the shrinking of large employers, as well as the closing of older, less efficient industrial businesses.

Today, New York's economy continues to adapt to these changes and is home to several vital business clusters. According to research conducted by Empire State Development (ESD), these important industry clusters include:

- **Distribution Industry** – The distribution industry cluster consists of trucking and warehousing, water transportation, air courier services, pipelines (excluding natural gas), freight transportation, and wholesale durable and non-durable goods. New York's distribution-related employment is substantial, accounting for almost five percent of the nation's total.

- **Biotechnology & Pharmaceuticals** – The biotechnology and pharmaceuticals industry cluster consists of medicinal and botanical manufacturing, pharmaceutical manufacturing, biological product manufacturing, dental and testing laboratories, and research and development related to the physical, engineering, and life sciences.

[1] Sources of information on national and state economic trends include the Urban Land Institute, the Federal Reserve Bank of New York, Empire State Development, and SEMI-NY (Semiconductor Manufacturing Initiative-New York).

- **Medical Technology** – The medical technology cluster comprises two main sectors: medical technology products and conventional hospital supply. Industries within these sectors include surgical and medical instrument/apparatus; orthopedic, prosthetic, and surgical appliances; dental equipment and supplies; and x-ray and related irradiation apparatus.

- **Industrial Machinery** – The industrial machinery cluster includes the manufacturing of heavy production equipment, as well as the process and controls involved in creating automated products for factory, energy, automotive, and construction end uses. Industries within this cluster include fabricated metalworking, machinery manufacturing, instruments manufacturing, and electrical equipment manufacturing.

- **Materials Process** – The materials processing cluster is comprised of "enabling technologies" or inputs that support other industrial processes. Industries within this cluster include petroleum products; chemicals; plastics and rubber; stone, clay, glass, and concrete; and primary metals.

- **Electronics & Imaging** – The electronics and imaging cluster consists of two major sub-clusters: (1) components, computer hardware, communications and broadcasting apparatus, and audio and video equipment; and (2) companies involved in the production of photographic film, optical instruments and lenses, and photographic and photocopying equipment.

- **Transportation Equipment** – The transportation industry cluster includes manufacturers of equipment for transporting people and goods. Vehicles produced by firms in this cluster include automobiles and light trucks; medium and heavy trucks; buses; railroad equipment; and aircraft and aerospace equipment.

Thinking Regionally & Locally: The Capital Region

The Energy Park site is located in the Empire State Development's Capital Region, which comprises Albany, Columbia, Greene, Rensselaer, Saratoga, Schenectady, Warren, and Washington counties. Of the seven industry clusters described above, three clusters have a major presence in the Capital Region: the distribution industry, biotechnology & pharmaceuticals, and medical technology. In 2001, the distribution industry employed 15,227 people at 2,119 establishments. This represents a 13 percent increase in employment between 1994 and 2001, a rate of increase almost double that of other industries. The biotechnology & pharmaceuticals industries employed 4,203 workers at 122 establishments in 2001, which represents the third greatest regional specialization in the sector in the state. Lastly, the medical technology industry employed more than 2,200 employees at 23 establishments, which represents the third greatest regional specialization in medical technology in the state. Much of this employment is currently concentrated in Albany, Schenectady, and Rensselaer counties.

In addition to these industry clusters, the Capital Region is becoming one of New York's premier high-technology centers. New York is making a concerted effort to attract nanotechnology and other high-tech industries to the state, with a particular emphasis on semiconductor research, development, and manufacturing. Through such programs as SEMI-NY (Semiconductor Manufacturing Initiative-New York), this effort includes tax and financial incentives, regulatory changes, and a $1-billion-dollar investment in high-tech industries, university research centers (including SUNY-Albany and Rensselaer Polytechnic Institute), and workforce development. The state's efforts also include supporting the development of several high-tech research and development parks, three of which are located in Albany and Saratoga. Altogether, these efforts have recently helped attract several large semiconductor manufacturers to the Capital Region.

Building on the preceding discussion of national and state industrial development trends, the following section focuses on more localized patterns of economic development within the Capital Region.

Regional Economic Trends[2]

The counties that comprise the Capital Region can be split into two distinct regional planning areas: the Capital District and the Lake Champlain-Lake George area.

Capital District Regional Planning Area

The Capital District, comprised of Albany, Rensselaer, Saratoga, and Schenectady Counties, is the socioeconomic heart of the east-central New York, containing a significant portion of the area's population. Key population centers within the Capital District include the cities of Albany, Schenectady, Troy, and Saratoga Springs. The Capital District's economy is dominated by government, retail, and service-related jobs. Important employment sectors include state and local government, healthcare, education, and business services (i.e., insurance). Manufacturing and industrial businesses continue to play a shrinking, but important role in the Capital District's economy. Important industrial sectors in the planning area include industrial machinery and components, plastics, paper products, and printing and publishing. As noted above in the discussion of the Capital Region, the Capital District is also home to significant concentrations of distribution, biotechnology/pharmaceuticals, and medical technology businesses, as well as the state's emerging nanotechnology industry cluster.

Lake Champlain-Lake George Regional Planning Area

In contrast, the Lake Champlain-Lake George regional planning area is one of the most rural and least populated areas in New York. Extending north to Canada, the planning area comprises Clinton, Essex, Hamilton, Warren and Washington Counties. In addition to the Capital Region, the Lake Champlain-Lake George planning area also overlaps with Empire State Development's North Country Region. Key urban centers within the Lake Champlain-Lake George area include the small cities of Glens Falls (located in Warren County) and Plattsburgh. Compared with the Capital District, the economy of the Lake Champlain-Lake George planning area is dominated by a mix of manufacturing, retail trade, and services (especially travel/tourism, business services, and real estate). Agriculture also continues to be an important component of the economy. Similar to the Capital District, the Lake Champlain-Lake George planning area has experienced broad declines in manufacturing, especially in its northern counties. However, industrial operations continue to provide significant local employment, especially in Washington County. Important industrial sectors include paper and paper products, medical instruments, chemicals, stone, lumber/wood products, rubber and plastics, and furniture.

Although located within the Lake Champlain-Lake George regional planning area, development in Washington and Warren counties appears to be more closely linked to recent growth in the nearby Capital District. Throughout the 1990s, both Warren and Washington counties experienced significant population growth due to residential expansion out of the Capital District. In fact, during this time period, Warren County was one of the fastest growing counties in the greater Capital Region and the Glens Falls Metropolitan Area, which includes Washington County, was the only MSA in New York to actually gain population. Discussions with local officials indicate that new residential development will likely continue in these counties, with workers commuting to jobs in Glens Falls or the Capital District (especially if there is an expansion of the region's nascent high-tech industry.)

Washington County, New York

Washington County is one of the largest and least populated counties in the Capital Region. Major population centers within Washington County include the towns of Whitehall, Hudson Falls, Fort Edward, and Salem. The economy of Washington County is comparable to that of the larger Lake Champlain-Lake George regional planning area, with private-sector employment concentrated in manufacturing, services, and retail trade. (The public sector—especially prisons—is the largest employer in the County). Washington County continues to have one of the highest concentrations of manufacturing and industrial employment in east-central New York. According to the U.S. Census

[2] Sources of information on regional economic trends include Empire State Development, the Capital District Regional Planning Commission, the Lake Champlain-Lake George Regional Planning Board, the Washington County Local Development Corporation, the Town of Fort Edward's *Economic Revitalization Plan*, and the New York State Canal System.

Bureau, manufacturing employment accounted for almost 19 percent of non-farm employment in Washington County in 2000, compared with between eight and 12 percent in Albany, Rensselaer, Saratoga, Schenectady, and Warren Counties. A mix of traditional manufacturing and processing businesses currently dominate Washington's County industrial sector. These industries include paper and paper products, furniture, electrical components, wood products, concrete products, medical devices, industrial components, and mining/stone.

The largest industry sector in Washington County is currently paper and paper-related products. Three of the County's largest employers are paper-related manufacturers, including Irving Tissue (located just northeast of the Fort Edward Industrial Park), Hollingsworth & Vose Company, and SCA Tissue. As of April 2004, these companies employed more than 700 people. According to local economic development officials, when various support businesses are included, the paper industry in Washington County employs around 1,000 people. Other major industrial employers include General Electric (electrical components), Telescope (furniture), Fort Miller Company (concrete/metal products), Saint-Gobain (plastics/sealants), and Commonwealth Plywood (wood products). Many of the County's largest industries are concentrated in Fort Edward (Irving Tissue, General Electric, Fort Miller Company), Granville (Telescope, Saint-Gobain), and Greenwich (Hollingsworth & Vose, SCA Tissue).

To the north and west of Washington County, both Warren and Saratoga County have smaller, yet substantial concentrations (between 11 and 12 percent of total employment) of industrial development. There appears to be some industry overlap between Washington County and its two neighbors—both have large paper and cement companies that are major employers—but, in general, both counties have their own particular mix of manufacturing and industrial businesses. Warren County's industrial sector is dominated by medical device manufacturers, including Boston Scientific and C.R. Bard, which together employ more than 1,500 people. Major industrial employers in Saratoga County, which has a substantially larger population than Washington County, include General Electric's Silicone Division, Quad Graphics (a commercial printing company), Lockheed Martin/Knoll Atomic Power Lab, and Ball Corporation (metal and plastic packaging). There are also two large high-tech industrial parks under development in Saratoga County. In addition to these industrial employers, there are two large distribution centers, one owned by Target and one by Ace Hardware, that employ a total of 1,400 people, many of whom commute from Washington County.

Discussions with local economic development officials indicate that industrial investment in Washington County is likely to continue in the long term, with continued focus on the expansion of existing types of manufacturing and processing businesses. The reasons for this are fourfold:

- Washington County has a large amount of relatively inexpensive, developable industrial land.
- There is widespread availability of tax abatements (i.e., the 485-e Real Property Tax Abatement) for construction on and improvements to Empire Zone-designated property in Washington County.
- Washington County has sufficient slate, stone, and timber resources to drive new business development.
- Washington County is likely to get some "spillover" development from adjacent counties with high-tech manufacturing and distribution clusters (i.e., Saratoga County), as well as from Vermont.

Given the Fort Edward Industrial Park's location, size, and existing Empire Zone designated-parcels, the park could be the primary destination for most future industrial development in Washington County.

The Champlain Canal

A key feature of the Energy Park site following on-site remedial activities will be the new barge facilities located on the Champlain Canal. These barge facilities will include a bulkhead, offloading area, and turnaround area built on land owned by the New York State Canal Corporation, which will retain ownership of this land area once dewatering activities are completed. While the canal improvements will allow for easier barge maneuvering and offloading of PCB-contaminated sediments for processing, they could also present an opportunity to develop new canal-dependent manufacturing and/or distribution businesses following the completion of remedial activities. Commercially, the canal is currently used two or three times a year for the shipment of oversized industrial equipment such as power plant turbines and dryers for paper plants. The last regular (weekly) commercial use of the canal was for the delivery of fuel oil to Plattsburgh Air Force Base; these shipments ended in the early 1990s.

Existing Industrial Land Resources[3]

The long-term reuse of the Energy Park site must also be considered within the context of available industrial land and facilities. An initial survey of state and local economic development websites identified at least 7,500 acres of available industrial land and more than 3.9 million square feet of available industrial building space in the eight-county Capital Region. Table 1 (below) presents the results of this survey. Approximately 70 percent of available industrial land and 90 percent of available industrial facilities are located in the greater Albany area, including Albany, Rensselaer, Schenectady Counties, and the southern portion of Saratoga County. This includes more than 1,300 acres dedicated to the development of New York's nascent high-tech industry cluster, particularly semiconductor manufacturing. Discussions with local economic development officials indicate that there may be additional land available for industrial development in the area.

Table 1: Available Capital Region Industrial Land & Facilities

County	**Total Acreage Available**	**Percent**	**Total Square Footage Available**	**Percent**
Albany	1,757	23%	2,282,362	57%
Columbia	357	4%	27,500	1%
Greene	1,090	15%	109,200	3%
Rensselaer	1,034	14%	451,000	11%
Saratoga	2,466	33%	100,000	3%
Schenectady*	0	0%	761,522	19%
Warren	390	5%	38,000	1%
Washington	419	4%	183,000	5%
Total	**7,513**	**100%**	**3,952,584**	**100%**

It is important to note that near-term usability of this industrial land and facility space may vary significantly. For example, while much of the industrial land identified appears to have access to major utilities—that is, utilities can be extended to the property—most of it is not "shovel ready" for new development. Similarly, the available industrial space varies significantly in terms of age, size, infrastructure, amenities, and target development (i.e., high-tech). The development of the Energy Park dewatering facility has the potential to significantly improve the future development potential of the Fort Edward Industrial Park. Depending on the long-term usability/adaptability of the facilities' infrastructure, rail yard, buildings, canal berth area, and other features, the industrial park could represent an attractive location for development, especially in comparison to other unimproved sites in the region.

In Washington County, which includes the Town and Village of Fort Edward, there are at least 419 acres of industrial land available for development. Much of this land is located in three planned or existing industrial parks. These industrial parks include:

Fort Edward Industrial Park – 404-acre industrial park that includes the Energy Park site. Approximately 94 acres of land are currently available for development, excluding 106 acres designated for the dewatering facility. The industrial park currently has four active tenants, which are located in its southwest corner. These tenants include: Adirondack Plastic & Recycling, a plastic recycling firm; Stonecast, a maker of architectural retaining walls; ESMI, a company specializing in soil remediation; and Real Bark, LLC, a large mulch facility. Discussions with local economic development officials indicate that the Fort Edward Industrial Park is likely to be the principal location for the future development of similar manufacturing and processing industries due to its large size, affordable land, and Empire Zone-designated areas.

[3] Sources of information on existing industrial land resources include Empire State Development, the Washington County Local Development Corporation, the Warren County Economic Development Corporation, and Saratoga Economic Development Corporation.

Hampton Holdings – Planned, privately owned 200-acre industrial park located near the Town of Hampton, approximately 30 miles northeast of Fort Edward. The master plan for the facility includes manufacturing, office, and warehouse facilities, as well as a multi-modal rail yard. Efforts are being made to orient the industrial park towards serving the needs of slate and granite industries located around the Town of Hampton and in neighboring portions of Vermont. Depending on the final mix of development, there is a chance that Hampton Holdings could compete with the Fort Edward Industrial Park for future industrial land users.

Warren County/Washington County Industrial Park – Also known as the Airport Industrial Park, the 144-acre development is located adjacent to Warren County's Floyd Bennett Airport. Approximately 76 acres of land are currently available for development in the industrial park; most parcels are two acres in size and are geared towards serving the needs of small-scale, post-startup manufacturing firms with 5-25 employees. There are currently 13 businesses in the park, including a metal fabricator for mechanical systems, a warehouse loading dock equipment manufacturer, a vacuum bag manufacturer, a custom home manufacturer, and landscape maintenance business and plant nursery. Discussions with local economic development officials indicated that the Warren County/Washington County Industrial Park is unlikely to compete with the Fort Edward Industrial Park, though growing manufacturers could ultimately move to the Fort Edward Industrial Park if they require more space.

Conclusions and Opportunities

Given local and regional economic conditions and the Energy Park site's significant advantages, there may be several long-term reuse opportunities for the site following the completion of dewatering activities. These reuse opportunities are likely be closely linked to existing patterns of commercial and industrial development in Washington County (i.e., manufacturing and processing), but may also extend to emerging and expanding state and regional economic sectors, including distribution operations and high-tech manufacturing. Reuse of the Energy Park site—including potential opportunities for large-scale manufacturers and regional distribution operations—may also be linked to an expansion of commercial shipping on the Champlain Canal.

Given both the Energy Park site's regional context and its siting within the larger Fort Edward Industrial Park, it may serve as a prime location for existing manufacturing and processing sectors already found in Washington County and the Capital Region. Under this scenario, reuse of the site could involve the relocation and expansion of existing businesses to take advantage of the site's size and its amenities (perhaps moving from the Warren County/Washington County Industrial Park) and/or the emergence of wholly new business enterprises. Based on existing patterns of industrial development in Washington County and the Capital Region, potential users of the Energy Park site could include paper and paper product manufacturers (Washington County's largest industry sector), or furniture and other wood-related industries (continuing to build on the area's timber resources), and material processing companies.

The Energy Park site may also be able to attract or absorb some of the Capital Region's emerging high-tech manufacturing or related support businesses. These businesses would likely be "spillover" from Saratoga County's two new high-tech industrial parks in search of more affordable industrial land or facilities. However, the needs of these high-tech businesses, which often have very specific infrastructure, location, and site design requirements, may be very different from and incompatible with those of existing manufacturing/processing businesses in the Fort Edward Industrial Park.

The long-term reuse of the Energy Park site may also be linked with the two major transportation improvements being incorporated into the sediment dewatering and transfer facility: the rail transport area and the barge docking, unloading, and turnaround areas on the Champlain Canal. These reuse opportunities could build upon the growing importance of logistics and distributions operations both nationally and in New York—a high concentration of which are located in the Capital Region. In terms of the rail transport area, its rail yard and other facilities could be adapted for use as a regional distribution facility. Located on the Delaware & Hudson Railroad, a subsidiary of the Canadian Pacific Railway (CPR), such a facility would have access to key CPR rail facilities in Albany, New York City, and Montreal, as well as easy rail access to much of Canada and the United States. An Energy Park rail operation could also incorporate a transload facility that would transfer cargo from trains to trucks for delivery to key markets in northeastern New York and Vermont. Warehousing operations—as well as rail-dependent manufacturing or processing operations—could be located adjacent to the rail yard and/or served by spur lines extended into the Fort Edward Industrial Park.

Reuse of the Energy Park site could also be linked to an expansion of commercial shipping activity on the Champlain Canal. For example, the site's bulkhead, offloading, and barge turnaround areas could support the development of a new intermodal distribution facility. Under this scenario, cargo containers could be shipped via barge down the Hudson River/Champlain Canal to the Energy Park site from the Port of Albany or the Port of New York/New Jersey, then transferred to trucks or trains for further distribution to major New England and Canadian markets. Returning barges could then deliver aggregates and other materials from the region back to Albany or New York.

Known as container-barge service, this multimodal shipping activity currently runs between Albany and New York City, and was recently expanded to twice per week due to increased demand from General Electric. Further expansion of container-barge service may become more commercially viable as rising fuel prices continue to increase the cost of shipping products and materials via truck. The New York State Canal Corporation (NYSCC), working with the Army Corp of Engineers, is currently conducting a feasibility study for increased commercial use of the Champlain Canal, and is working to identify potential markets for expanded container-barge service. According to the NYSCC, expanded container-barge service would be unlikely to begin for at least three or four years and could be coordinated with the return of the Energy Park site to post-remedial uses.

Another canal-related reuse scenario could include using the Champlain Canal and Hudson River to deliver oversized items that are manufactured or fabricated by businesses located at the Energy Park site. By using the canal system, interested businesses could potentially access markets in Albany, New York City, and parts of the eastern seaboard that may otherwise be inaccessible or too expensive to serve with conventional truck or rail transport. Such an approach may be particularly useful to large-scale construction or engineering firms. One hypothetical example of this reuse scenario would be the construction of large, pre-cast concrete components, such as those used in bridges or buildings, at the Energy Park site prior to transport down the canal system.

The final design and construction of the Energy Park sediment dewatering and transfer facility can directly influence the viability of these potential reuse options. If the major permanent components (i.e., rail yard, barge areas, buildings, supportive infrastructure) of the dewatering facility are readily adaptable to future development, they could potentially spur reuse of the site following the completion of remedial activities.

VII: Community-Scaled Economic Development

The previous section of the report discussed the potential implications of local and regional land use and market trends for the future use of the Energy Park site. While the site's size and infrastructure, among other factors, suggest that portions of the site may be well-suited for larger scale manufacturing, processing, and warehouse operations, other portions of the site may be well-suited for smaller-scale niche businesses as well. These economic development alternatives could help address local community concerns that future uses at the site be scaled appropriately and fit with surrounding land uses, not create negative environmental impacts, and be sustainable and provide jobs that build the community's workforce capacities over the long-term. This section of the report describes some of these potential economic development alternatives in greater detail, summarizing their characteristics and providing examples and links to additional information.

Business Incubator

Business incubators generally provide management guidance, technical assistance, and consulting to assist young and growing companies in becoming successful firms. As organizations learn and mature they graduate from the program as financially viable and freestanding businesses. Incubator graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies. Historically, incubators have targeted the technology industry and mixed-uses of light industry, technology, and service firms. More recently, incubators have supported food processing, medical technology, space and ceramics technologies, arts and crafts, and software development.

Consulting session at the Cincinnati Business Incubator, Inc.

Resources

Center for Emerging Technologies, St. Louis, Missouri
www.ermergingtech.org
National Business Incubator Association
www.nbia.org/resource_center/bus_inc_facts/index.php

Rural Training Center

Communities in rural America often struggle to attract high wage jobs, and one of the contributing factors has traditionally been a lack of high-skill laborers in the local and regional workforce. Industrial re-training or workforce training programs provide a community-based mechanism for increasing local development capacity.

Training centers typically coordinate with new or existing business to generate employment opportunities and on-the-job training for local workers, increasing community capacity to attract higher wage jobs in the future. Training centers require a cooperating business to provide job opportunities and wages, while additional programming (job matching, career skills training) can be handled through a community development organization or other non-governmental organization.

The Alabama Federation of Southern Cooperatives operates a rural training center in northeastern Alabama offers adult basic education, a welfare-to-work program and industrial retraining. An apprentice program coordinated by the Arkansas Wood Manufacturer's Association and the Arkansas Rural Enterprise Center trains young people and mid-career professionals to become skilled wood workers, simultaneously helping workers obtain new job skills and generating a skilled workforce to drive the regional wood products economy.

Experienced teachers mentor young people and mid-career professionals in the Arkansas Rural Enterprise Center's workforce training program.

Resources

Alabama Federation of Southern Cooperatives
www.sustainable.doe.gov/success/champion.shtml#FSC
Arkansas Rural Enterprise Center
www.winrock.org

Community Forestry

Historically, forestry communities in the U.S. have experienced large-scale destruction of forest resource bases, while also struggling with high rates of poverty and unemployment. Community forestry operations aim to bring forest ownership, management and timber production into local ownership, giving communities more control over both the forest resources and the local economy.

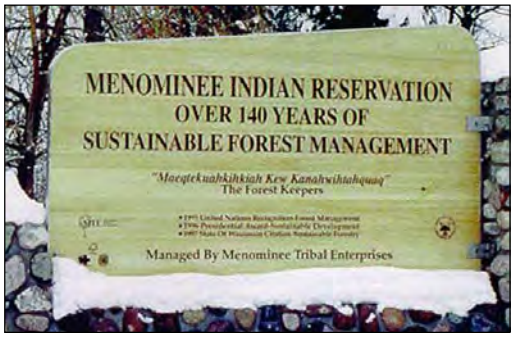
Community forestry activities range from sustainable forest management practices to value-added timber processing. Community-oriented forestry operations are flexible in scale and can be tailored to the resource and economic needs of individual places. The Menominee Tribal Forest in northern Wisconsin is an excellent example of a community forestry initiative that integrates sustainable resource management and value-added wood processing.

The aerial photograph above shows the Menominee Tribal forest in northeastern Wisconsin. The dark area denotes the managed forest surrounded by farms, pastures and developed land.

Resources

Menominee Tribal Enterprises, Menominee County WI
www.menominee.edu/sdi/csstdy.htm#land
www.ncfcnfr.net/resources.html

EPA's Sustainable Forest management Case Study on Menominee Forest
www.epa.gov/glnpo/ecopage/upland/menominee/
www.ncfcnfr.net/resources.html



Source: Menominee Tribal Enterprises.

Biomass Generator / Combined Heat & Power Plant

Biomass is an innovative renewable energy technology that harvests energy by burning recycled wood and organic wastes. When biomass (wood, organic wastes) are burned, heat is produced. This heat is typically captured in water and converted to steam, which is then used to spin turbine generators, converting heat energy into electricity. A typical commercial-scale biomass generator (25 MW) can produce enough electricity to power roughly 25,000 homes.

Increasingly, biomass generators are being installed in facilities called combined heat and power plants (CHPs), which use a process called district heating to distribute any excess heat energy to a small group of buildings or users. Biomass-CHP systems have been successfully used to provide electricity and thermal needs for industrial or business parks, representing a critical step in the development of community-scaled energy production. In Richford, Vermont, a community-scaled biomass plant burns wood chips from local sustainable forestry operations to generate electricity and heat for local businesses.

The McNeil biomass-fired power plant, located in Burlington, Vermont's Intervale eco-industrial park, is operated by the city-owned utility Burlington Electric Company.

Resources

Richford Wood Initiative, Richford VT
http://www.ncfcnfr.net/richford.html

Eco-Industrial Parks

An eco-industrial park is a group of businesses clustered in a single location working collectively to reduce or eliminate some form of waste associated with their industrial processes (e.g., heat, steam, carbon dioxide, and various chemical and material byproducts). By exchanging services between businesses in the park or community, tenants are able to generate savings by improving efficiency and reducing operating costs. Often, one core industrial business, such as a power plant or processing company, serves as an anchor tenant that attracts other businesses interested in utilizing/sharing their waste products. Combined heat and power plants commonly sell or distribute excess heat energy in to other business to supplement heating needs.

The Intervale is an 800-acre tract of land within the City of Burlington, Vermont. Farms, community gardens and a compost facility share the land with several light industrial enterprises.

The Intervale, Burlington VT

The Intervale in Burlington, Vermont is a unique and highly successful eco-industrial park. Located on a 700-acre parcel of land within the Burlington city limits, the Intervale hosts a combination of community oriented enterprises. The Burlington Electric Company operates a biomass generator. An organic resource recovery operation collects yard clippings and household compost and sells the processed wastes as a sterilized garden compost soil amendment. The Center for Farm Innovation works with local farmers to identify new market niches and revenue streams. And the rich flood plains of the Winooski River support a handful of farms and community gardens.

Resources

The Intervale, Burlington VT
www.intervale.org/Overview.htm#ventures

Ecological Industrial Park, Londonderry NH

The town of Londonderry, New Hampshire is also using the principles of industrial ecology to orchestrate economic development and limit commercial sprawl in the southern part of the state. Organic yogurt producer Stonyfield Farms operates a facility and functions as the primary industrial tenant in the park. A plastic recycling company purchases plastic waste products from Stonyfield Farms for reproduction. And the park is expanding to include a 720-megawatt natural gas-powered generating plant, which will provide power to Stonyfield Farms and the plastic recycling facility. Londonderry's efforts illustrate how industrial ecology's principles can be applied to help cooperating industries develop a competitive advantage.

Energy generation, manufacturing and recycling enterprises are integrated at the Ecological Industrial Park in Londonderry, New Hampshire.

Resources

Ecological Industrial Park, Londonderry NH
www.smartgrowth.org/casestudies/ecoin_stonyfield.html

Community Sponsored Agriculture

Local farms and small-scale produce growers often struggle to find a viable market for their crops. Commercial grocers typically buy produce from regional or national distributors, eliminating the opportunity for local farmers to sell produce in their own community. However, Community Sponsored Agriculture initiatives (CSAs) provide farmers and customers with an alternative to commercial-scale farming.

Customers participate in a CSA program by purchasing shares in the winter or prior to the growing season. Farmers typically deliver or distribute whichever crops are currently available at regular intervals throughout the season. Lettuces and greens may be available in early summer, while potatoes, squashes and root vegetables are plentiful later in the fall. CSA farmers receive payment for farm shares in advance of the growing season, generating up-front capital and securing a market for their product. CSAs provide an incentive for farmers to grow a small volume of diverse crops and for customers to buy local produce and support local farmers. Ranchers have used the CSA model to generate secure livestock markets as well.

Intervale Community Farm, Burlington, VT

Value-added Corn Processing

Traditionally, corn growers throughout the Midwest have sold their unprocessed crops to larger corporations. Increasingly, growers are pooling their resources, working together and processing their crops in small-scale cooperatively owned plants. The 1200-member Minnesota Corn Processors operates a wet-milling plant that produces cornstarch, syrup, high-fructose syrup and ethanol. The plant employs 100 people, processes 11 million bushels of corn and generates $50 million each year.

Corn-based Ethanol Production

Ethanol fuels are a rapidly expanding sector of the economy. Production of ethanol fuels has quadrupled in the last twenty years, and energy economists argue that ethanol gasoline additives are a viable transitional strategy for renewable fuels. In the upper mid western United States, cooperatively owned ethanol production plants are emerging as community-based development alternatives for agricultural economies. Most successful cooperatives rely on corn for an ethanol source. The average production capacity for a corn-based ethanol plant is between 15-30 million gallons per year, and cooperative membership can range anywhere from 100-1000 members. The Southwest Minnesota Agrifuels Cooperative generates local market demand for corn growers by purchasing bushels and then paying out annual dividends.

Ethanol cooperative in Bingham Lake, MN

Resources

Minnesota Corn Processors, Marshall MN
www.sustainable.doe.gov/success/champion.shtml#FSC
Southwest Minnesota Agrifuels Cooperative
www.farmprofitability.org/research/agrifuels/agrifuels.htm
Alternative Farming Systems Information Center, Beltsville MD
www.nal.usda.gov/afsic/csa
Intervale Farms, Burlington VT
www.intervale.org/Farms.htm#Community

Industrial Manufacturing

Cellular Phone and Consumer Electronics Remanufacturing

Communication technology is built on a culture of innovation and change, and today's cellular phone industry is no exception. The typical cellular phone has a relatively short life and companies are beginning to analyze the product life-cycle for consumer electronics and discovering a demand for remanufactured or recycled products. Entronix, an information technology and remanufacturing company, purchases used cell phones, global positioning system receivers and wireless routers and converts them into reconditioned products.

Entronix, LLC works to extend the life of cellular phones, employing 180 skilled laborers in Minnesota's Iron Range region.

Entronix International, Inc. recently located a 30,000 s.f. remanufacturing facility in the former taconite and iron mining town of Eveleth, Minnesota. The enterprise employs 180 workers and integrates several local technical and community colleges in an industrial retraining program.

Resources
Iron Range Rehabilitation and Resources Board, Eveleth MN
www.irrrb.org/business/viewsuccess.php?&storyid=14

Wind Tower Manufacturing Plant

Wind energy is the nation's fastest growing energy technology. Energy companies are planning and developing commercial wind farms throughout the Upper Midwest, Appalachia and Rocky Mountains. Wind tower manufacturing is emerging as a regional niche market. Aerisyn Energy, LLC recently established a wind tower manufacturing plant in Chattanooga, Tennessee. The 150,000 s.f. manufacturing operation will produce 200 towers annually and supports 75 employees.

Wind energy is the nation's fastest growing energy technology.

Resources
Chamber of Commerce, Chattanooga TN
www.chattanoogachamber.com/newsandvideo/aerisyn_locates.asp

VIII. Adaptive Reuse Precedent Case Study: New Bedford Harbor Superfund Site

Planning for the reuse of sediment dewatering and transfer facilities is occurring at other Superfund sites. The following case study illustrates that careful coordination between EPA, local officials, and other interested parties can ensure that these facilities are designed and built to both meet the requirements of EPA's remedial activities and enable future, post-remedial uses of these facilities for a range of other applications.[4]

Site Background

Acushnet River Estuary & New Bedford Harbor

Located in New Bedford, MA, the 18,000-acre New Bedford Harbor Superfund site is an urban tidal estuary consisting of sediments, wetlands, and shoreline areas contaminated with polychlorinated biphenyls (PCBs) and heavy metals. Contamination at the site extends for approximately six miles, from the upper Acushnet River estuary through a working port area and into Buzzards Bay. EPA's long-term remediation plans for the New Bedford Harbor site call for the dredging, dewatering, and disposal of approximately 1 million cubic yards of PCB-contaminated sediments over a 15-year period. (In comparison, approximately 2.65 million cubic yards of sediment will be removed from the Hudson River PCB Superfund site over a six-year period). To support the removal of contaminated sediments from the site, EPA constructed a sediment dewatering and transfer facility in the City of New Bedford's port area. Completed in 2004, the $25 million facility includes a 55,000-square-foot warehouse (housing dewatering and water treatment equipment), a marine bulkhead with 350 feet of deep draft dockage, and a rail spur connecting to an adjacent, City-owned rail yard.

Planning and Design of the Dewatering Facility

Construction of the Marine Bulkhead

From the outset of EPA's remedial planning activities for the dewatering facility, the City of New Bedford and the Harbor Development Commission (HDC) were interested in opportunities to reintegrate the property as a functioning part of the City's port. EPA met regularly with the City and the HDC during the planning process for the dewatering facility. EPA's discussions with the City and HDC focused on ensuring that the major components of the dewatering facility—buildings, marine bulkhead, rail spur—could be used to support future port development.

Throughout the design of the dewatering facility, EPA carefully considered the City and HDC's desire to reuse the property for future port development. In particular, EPA paid special attention to the permanence or long-term usability of the facility's major built components. For example, the facility's marine bulkhead (dock) was engineered to support the use of heavy equipment, as well as allow for later improvement dredging by the City or HDC to support the docking of larger ships. EPA also designed the facility's warehouse building to withstand the long-term wear-and-tear of dewatering activities. This included treating the facility's porous concrete floors with a specialized coating to prevent the floors' contamination during the facility's operations.

[4] Sources of information on the New Bedford Harbor Superfund site include David Dickerson, EPA's Remedial Project Manager for the site, and site-related documents available on EPA Region 1' s New Bedford Harbor site website (www.epa.gov/region01/nbh/index.html).

Following the completion of remedial activities at the New Bedford Harbor Superfund site, all permanent components of the dewatering facility will be turned over to the City & HDC. In particular, the facility's warehouse building will be cleaned to a standard consistent with use for port commercial and industrial activities. The facility's dewatering and water treatment equipment is owned and maintained by a private contractor and will ultimately be removed for reuse or disposal.

Complete Marine Bulkhead & Dewatering Equipment Warehouse

For more information, please contact:

E^2 Inc.
2417 Northfield Road
Charlottesville, VA 22901
T: 434-975-6700
F: 434-975-6701
www.e2inc.com