Miami-Dade County

Department of Solid Waste Management

Preliminary Siting Alternatives Report

June 2022

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Executive Summary

Purpose and Scope

The Miami-Dade County (County) Department of Solid Waste Management (DSWM or Department), in accordance with the Mayor's letter dated April 13, 2022, has been tasked with identifying and analyzing potential sites within the County that would be suitable for the development of a future Waste-to-Energy (WTE) facility, and to report findings within 60 days. Arcadis U.S., Inc., (Arcadis), as the Bond Engineer for DSWM, assisted the County with this preliminary analysis. Arcadis is a global engineering consulting firm with extensive experience assisting clients in the development and oversight of modern WTE facilities for over 40 years. Most recently, Arcadis served as the owner's representative and design criteria professional for the development of the Solid Waste Authority of Palm Beach County's new WTE facility, the only new facility to be built in the United States in the last 20 years, in operation since 2015.

Arcadis commenced the preliminary siting evaluations on May 9, 2022, which were performed in two stages, an initial screening stage and a detailed screening stage, as summarized below.

1. Initial Screening Stage: The initial screening stage identified parcels located in Miami-Dade County that met initial siting criteria and compared them to agreed-upon Pass/Fail criteria.
2. Detailed Screening Stage: Parcels that passed the initial screening stage were further analyzed in the detailed screening stage, which included the evaluation of additional, more extensive siting parameters.

Due to the expedited nature of the assignment, it should be noted that Arcadis' services were preliminary in nature and were conducted consistent with prudent industry practice under similar circumstances and timelines to provide a screening-level analysis of the availability of potential sites within the County. A more detailed review and investigation (including onsite visits, surveys, geotechnical testing, etc.) of the factors which may affect the potential development of a WTE facility at any proposed location is required and is assumed would be conducted in a future phase of the County's planning and implementation process.

Initial Screening Evaluation

Arcadis conducted a kick-off meeting with DSWM staff on May 13, 2022, in order to present and confirm the minimum screening criteria to be used in the Initial Screening evaluation process. The site criteria below were generated out of a collaborative effort between Arcadis and Department staff.

Initial Screening Criteria

- WTE Facility Capacity – Minimum site area sufficient for a mass-burn WTE facility with capacity of 4,000 tons per day (tpd), expandable to 5,000 tpd, if possible.
- Site Area and Ownership – Minimum 40-acre site comprised of no more than two contiguous parcels and two site owners.
- Zoning Considerations – Have the following zoning designations: Vacant, Industrial, Commercial, or Agricultural.
- Residential Zoning – Distance to residential zoning was determined using Geographic Information System (GIS) tools and those sites that were within 1,500-feet of residential zoning were eliminated. This criterion was not applied to Site 1, which was submitted by the County for detailed screening consideration.
- Transportation/Travel Time – Maximum travel time of 10 minutes to major (arterial) or collector roads.

- Canal or Major Roadways – Sites with a canal or major roadway located on the site parcel were precluded from further evaluation because they could not be abandoned and developed.
- Lake/Borrow Pit – Sites that included a lake or borrow pit were included as they could be filled.
- Other Site Considerations – Any properties recommended directly by the County to be evaluated as well as sites within and outside of the Urban Development Boundary were considered.

A GIS database was developed using layers provided by the County and acquired from external sources. The Initial Screening criteria were entered into a GIS-based screening tool, which resulted in approximately 235 parcels being identified from the GIS database. Additional analyses were conducted including the following:

- Site Area and Ownership – Sites that were less than 40 acres were analyzed to confirm if any two adjacent parcels, with no more than two owners, could be combined into one site, meeting the minimum 40-acre size criteria.
- Site Geometry – Sites with parcel boundaries with shapes or dimensions incompatible with a 4,000 tpd WTE facility were eliminated.
- Zoning Considerations – Properties with existing abandoned building structures and Conservation, Environmentally Endangered Lands (EEL) Program, or Other Protected Lands not screened by the GIS tool were excluded.
- Proximity to Airport – Sites within 4.0 miles of an existing airport were eliminated.
- Lake/Borrow Pit – Sites that were mostly or entirely excavated as a lake or borrow pit were eliminated due to the significant additional time and expense associated with backfilling to create the developable area of the site.
- County parks and other County properties (i.e., wellfields, etc.) that were not screened by the GIS tool were manually identified and eliminated.

At the end of the Initial Screening process, 24 sites remained and were presented to DSWM staff for discussion at a meeting on May 20, 2022. After discussion, the decision was made to increase the minimum offset from residential zoning to one-half mile (2,640 ft), which eliminated an additional two sites. The remaining 22 sites were approved to proceed to the Detailed Screening process.

Detailed Screening Evaluation

The approved 22 sites were then evaluated against Detailed Screening criteria, which are briefly summarized below.

Detailed Screening Criteria

- Location – physical location of the site relative to existing Solid Waste System (System) facilities, transportation routes, and expected impacts to the System if a proposed WTE facility were sited there.
- Wetlands and Surface Waters – Arcadis utilized GIS in order to identify sites with existing wetlands and surface waters.
- Threatened and Endangered (T&E) Species – Arcadis utilized existing T&E data from federal, regional, and local agencies to identify critical habitat for protected species, where development may be difficult.

- Air Emissions – The United States (US) Environmental Protection Agency (USEPA) Prevention of Significant Deterioration (PSD) permitting program determines the amount of air quality deterioration allowed for a proposed project. Current National Ambient Air Quality Standards (NAAQS) and PSD increments were reviewed and other nearby large emitters of air pollution and proximity to nearby Class I area (Everglades National Park) and sensitive Class II area (Biscayne Bay National Park) were also identified.
- Comprehensive Everglades Restoration Plan (CERP) Projects – CERP is a framework for restoring, protecting and preserving the greater Everglades ecosystem. The plan is a 50-50 partnership between the State of Florida and the federal government. The CERP project boundaries layer was used to identify conservation lands, including Everglades National Park, to determine if any parcel was adjacent to any known or existing CERP project.
- Miami-Dade County (MDC) Wellfield Protection Areas (WPA) – WPA boundaries were reviewed in order to identify whether any parcel was within or contained protected areas.
- Comprehensive Development Master Plan (CDMP) Conservation Aquifer Recharge and Drainage Element – The intent of this Element is to identify, conserve, appropriately use, protect and restore as necessary the biological, geological and hydrological resources of Miami-Dade County. CDMP Element policies were reviewed in order to identify whether the parcels were consistent and/or compliant.
- Utility Availability – Proximity and availability of water, wastewater, natural gas and electric utilities were reviewed and identified.
- Soils/Geology – United States Department of Agriculture (USDA) soil survey was reviewed to confirm the type and potential suitability of soils.
- Floodplain – The Federal Emergency Management Agency (FEMA) Flood Zone map was reviewed to determine flood zone designation and flood hazard probability.

For each site, a site package was developed to document the analysis of the site relative to the Initial and Detailed Screening criteria. The criteria were then separated into six general categories, as follows:

- Location – Site location within the County relative to the existing Miami Dade Resources Recovery Facility (RRF), proximity to residential zoning, and expected effects on the County's Solid Waste System if selected for a future WTE facility.
- Utilities – Availability of potable water, sanitary sewer, natural gas and electric utilities, as well as any stormwater and groundwater issues at the site.
- Soils – Identification of soil types at the site and potential effects on site development.
- Environment – Consideration of a range of environmental factors.
- Transportation – Proximity to major roads, available road access to the site and improvements needed, if any.
- Community – Estimate of public response to potential construction of a WTE facility.

Two additional criteria were applied only to the sites that were remaining after the Detailed Screening criteria were applied:

- Cost – Arcadis developed the capital cost and first year operations and maintenance (O&M) cost associated with developing a new WTE facility at the existing RRF site as part of a previous effort. Utilizing this cost as the base case, evaluated the three sites remaining after the detailed analysis criteria were applied.

- Schedule – Arcadis developed a preliminary high-level implementation schedule in evaluating the three sites remaining after the detailed analysis criteria were applied.

A simple stoplight rating was employed to illustrate the relative difficulty for each category (i.e., green/slight difficulty, yellow/moderate difficulty, red/significant difficulty) at each site.

Summary Findings

A meeting was held on June 7, 2022, to review the Detailed Screening process findings. Ultimately, 19 sites were eliminated due to several factors, such as roadway access and utility availability, site development and availability, permitting considerations, and conflicts with existing County policies.

DSWM staff then requested that a comparison be conducted of the existing RRF facility site to the three remaining potential sites found as part of this preliminary analysis. For comparison purposes, Arcadis conducted an analysis of the existing WTE Facility site, the RRF, using the same methodology for the other sites.

The four remaining sites are: the Existing RRF Facility Site – Doral; Site 1 – Medley; Site 16 – Ingraham Highway Site 1; and Site 17 - Ingraham Highway Site 2 as illustrated in the map provided below.

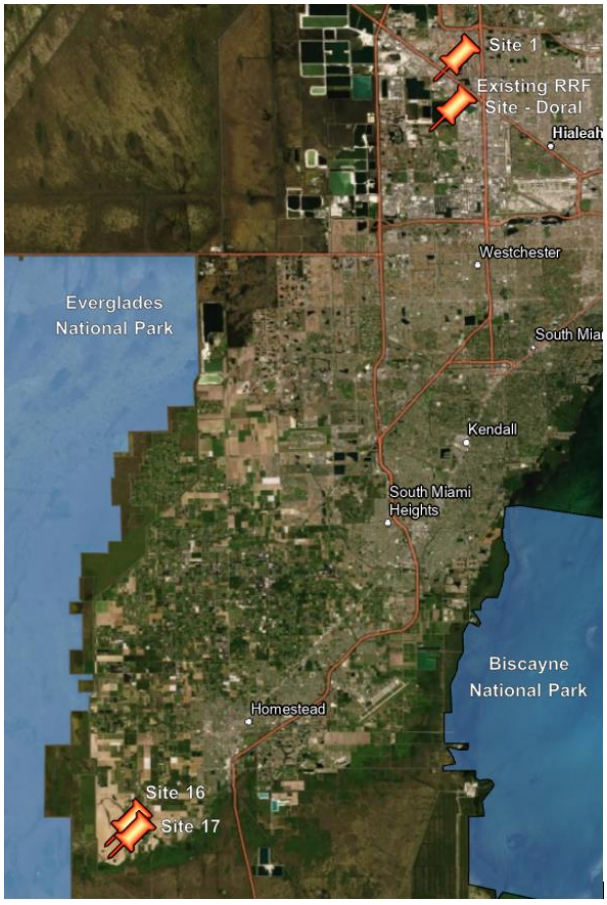


Figure ES-1 Potential Sites Location Map

The matrix below summarizes the findings associated with the Preliminary Siting Alternatives Analysis.

Table ES-1 – Preliminary Siting Alternatives Analysis Findings

Siting Parameter	Existing RRF Site	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Location	157.16-acre site, single parcel inside the UDB. Minimal impact to System if selected, however, construction phasing will need to be considered in order to limit impact to existing RRF operations. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of additional ash monofill capacity or other County facilities in consideration of future sustainable campus concept (after demolition of Existing RRF).	320.31-acre site, directly adjacent to residential zoning, inside the UDB, two-miles north of the existing RRF facility, and adjacent to the Medley Landfill. Overall effects on the System would be relatively minimal if selected. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of ash monofill or other County facilities in consideration of future sustainable campus concept.	159.71-acre site consisting of two parcels outside the UDB. Considerable System effects if selected. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of ash monofill or other County facilities in consideration of future sustainable campus concept.	81.11-acre site located outside the UDB. Considerable System effects if selected. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of ash monofill or other County facilities in consideration of future sustainable campus concept.
Utilities	All required utilities infrastructure available.	Potable water and sanitary sewer utilities appear to be available, electric and natural gas utilities would have to be extended to the site.	All required utilities would have to be extended to the site.	All required utilities would have to be extended to the site.

Siting Parameter	Existing RRF Site	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Soils	Site has been used for WTE facility operations previously, no known site soils issues exist.	The USDA Soil Survey data for the site and historical aerial photos (c. 1985) indicate the site area was previously excavated and subsequently backfilled which could present geotechnical engineering challenges for foundation designs and result in additional site preparation costs.	Site soils are not ideally suited for building foundations because of water content and shallow depth to bedrock.	Site soils are not ideally suited for building foundations because of water content and shallow depth to bedrock.
Environment	Air Permitting – May be challenging, due to other nearby large emitters that were not present when the RRF was originally permitted. Possible habitat issues for Bonneted Bat.	Air Permitting – May be challenging, due to nearby large emitters. Possible habitat issues for Bonneted Bat.	Floodplain – FEMA Zone A Air permitting expected to be extremely difficult due to proximity to Everglades National Park Additional permitting required because of wetlands on site, possible Bonneted Bat habitat issues.	Floodplain – FEMA Zone A Air permitting expected to be extremely difficult due to proximity to Everglades National Park Additional permitting required because of wetlands on site, possible Bonneted Bat habitat issues.
Transportation	Existing access to arterial and collector roads	Good access to Florida Turnpike and US27 via Beacon Station Blvd., local traffic impacts will need to be considered due to road orientations and close proximity of intersections.	Good access to arterial and collector roads.	Existing access to site is via Ingraham Hwy. and SW 222nd Ave., however proper site access will need to be constructed. Additional ROW may be needed.

Siting Parameter	Existing RRF Site	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Community	Residential developments have encroached around the site in the years since the existing RRF went into operation. The site is now less than a tenth of a mile from the nearest residential zoning and the local population. Community political leaders and environmental groups have indicated opposition to continued use of the site for WTE facility operations.	The site is directly adjacent to residential zoning. The west edge of the site borders one trailer park owned by the Town of Medley, and another that is leased by the town. Siting of a WTE facility may face community opposition at this location.	The site is approximately half a mile from the nearest residential zoning and is approximately one mile from the boundary of Everglades National Park, which suggests that the siting of a WTE facility may face community opposition at this location.	The site is approximately half a mile from the nearest residential zoning and is 1.28 miles from the boundary of Everglades National Park, which suggests that the siting of a WTE facility may face community opposition at this location.
Schedule (Preliminary Planning to Construction Completion)	Shortest schedule duration because of existing environmental permits and minimal site work. Coordination of construction to maintain continued existing RRF operation required. Estimated Project Duration: 7-years 9-months Possible Commercial Operations (CO) by April 2030	Second shortest schedule duration. Land acquisition, environmental permitting required, and site work increase schedule duration. Estimated Project Duration: 9-years 9-months Possible CO by April 2032	Longest estimated schedule duration. Land acquisition, significant environmental permitting required, and significant site work increase schedule duration. Estimated Project Duration: 11-years 3-months Possible CO by October 2033	Longest estimated schedule duration. Land acquisition, PPSA permitting, wetland, floodplain, and wildlife mitigation, and significant site work increase schedule duration. Estimated Project Duration: 11 years 3 months Possible CO by October 2033

Siting Parameter	Existing RRF Site	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Cost	For comparative purposes, the existing RRF site is considered the base condition and the base capital cost includes estimated stormwater detention pond fill costs and environmental considerations and the ash hauling costs as noted in Appendix C. Total Estimated Capital Cost of $1,450,000,000 Total annual net operational cost is $11.22 per ton of waste processed (estimated for Year 1). This does not include debt service payment for capital costs.	Additional costs anticipated for land acquisition*, on-site utility facilities, stormwater considerations and addition of fill for soil fortification, zoning and potential additional permitting efforts for new PPSA. Purchase of potable water may increase anticipated operational costs. It is also assumed that there may be impact fees or improvements required to local roads that have not yet been factored into the capital cost for this site because the extent of roadway modifications is currently not known. It is anticipated that these would be negotiated and further evaluated during the land acquisition process. Additional Capital Cost of $48.3M (4.2% increase) Additional 19% annual operational cost for potable water purchase and ash hauling.	Significant additional costs anticipated for land acquisition*, on and off-site utility facilities, flood plain, wetland, and wildlife mitigation, and additional permitting efforts. Significant impact on hauling system due to distance from other System facilities would increase capital and operational cost. Purchase of potable water and significant distance to haul ash for disposal will increase anticipated operational costs. Additional Capital Cost of $80.4M (6.4% increase) Additional 119% annual operational cost for potable water purchase, significant ash hauling, and additional System hauling costs.	Significant additional costs anticipated for land acquisition*, on and off-site utility facilities, flood plain, wetland, and wildlife mitigation, and additional permitting efforts. Significant impact on hauling system due to distance from other System facilities would increase capital and operational cost. Purchase of potable water and significant distance to haul ash for disposal will increase anticipated operational costs. Additional Capital Cost of $84.7M (6.7% increase) Additional 119% annual operational cost for potable water purchase, significant ash hauling, and additional System hauling costs.

** Land acquisition cost estimated based upon current Miami-Dade Property Appraiser Market Value plus 10%.*

1 Introduction

The Miami-Dade County (County) Department of Solid Waste Management (Department or DSWM) provides waste collection and recycling services for residents in the unincorporated areas of the County as well as several cities that have signed Interlocal Agreements (ILAs) with the Department. The Department owns and operates 13 Neighborhood Trash and Recycling Centers, three Regional Transfer Stations, two Home Chemical Collection Centers, three landfills and one Resource Recovery Facility (RRF). Chapter 15 of the County Code of Ordinances (Code) defines the sum of these facilities as the Solid Waste System (System).

A major component of the System is the existing RRF, which can accept up to 3,000 tons per day (tpd) of solid waste, processes approximately 1,000,000 tons of solid waste annually and produces approximately 77 megawatts of electricity annually. The existing RRF was constructed in the early 1980's, became operational in 1982 and is reaching the end of its useful life without significant additional investment in retrofits and improvements, which is driving the Department, Miami-Dade County Board of County Commissioners (Commission) and the Miami-Dade County Mayor (Mayor) to consider the development of a new waste-to-energy (WTE) facility to replace the existing RRF.

In accordance with the County Mayor's letter, dated April 13, 2022, the Department was tasked with identifying and analyzing potential sites within the County that would be suitable for the development of a future WTE Facility, and to report findings within 60 days. Arcadis U.S., Inc., (Arcadis), as the Bond Engineer for DSWM, assisted the County with this preliminary analysis. Arcadis is a global engineering consulting firm with extensive experience assisting clients in the development and oversight of modern WTE facilities for over 40 years. Most recently, Arcadis served as the owner's representative and design criteria professional for the development of the Solid Waste Authority of Palm Beach County's new WTE facility, the only new facility to be built in the United States in the last 20 years, in operation since 2015.

Due to the expedited nature of the assignment, it should be noted that Arcadis' services were preliminary in nature and were conducted consistent with prudent industry practice under similar circumstances and timelines to provide a screening-level analysis of the availability of potential sites within the County. A more detailed review and investigation (including onsite visits, surveys, geotechnical testing, etc.) of the factors which may affect the potential development of a new WTE facility at any proposed location is required and is assumed would be conducted in a future phase of the County's planning and implementation process. Additionally, Arcadis relied on readily available data and/or reports that were provided by DSWM. The preliminary analysis was desktop in nature and did not include site visits or on-site surveys.

2 Preliminary Siting Evaluation Process

Arcadis commenced the preliminary siting evaluation on May 9, 2022, which was performed in two stages, an initial screening stage and a detailed screening stage, as summarized below.

1. Initial Screening Stage – The initial screening stage identified parcels located in the County that met initial siting criteria and compared them to agreed-upon Pass/Fail criteria.
2. Detailed Screening Stage – Parcels that passed the initial screening stage were further analyzed in the detailed screening stage, which included the evaluation of additional, more extensive siting parameters.

2.1 Initial Screening Stage Methodology

Arcadis conducted a kick-off meeting with DSWM staff on May 13, 2022 to present and confirm the minimum screening criteria to be used in the Initial Screening evaluation process. The site criteria below were generated out of a collaborative effort between Arcadis and Department staff and were applied during the Initial Screening analysis.

Initial Screening Criteria

- WTE Facility Capacity – Minimum site area sufficient for a mass-burn WTE facility with a throughput capacity of 4,000 tons per day (tpd), expandable to 5,000 tpd, if possible.
- Site Area and Ownership – Minimum 40-acre site comprised of no more than two contiguous parcels and two owners, no limit on the maximum acreage of any site.
- Zoning Considerations – Site(s) must have the following zoning designations: Vacant, Industrial, Commercial, or Agricultural.
- Residential Zoning – Distance to residential zoning was determined using Geographic Information System (GIS) tools and those sites that were within 1,500 feet of residential zoning were eliminated. This requirement was not applied to Site 1, which was submitted by the County for detailed screening consideration.
- Transportation/Travel Time – Maximum travel time of 10 minutes to major (arterial) or collector roads as shown on the 2010 Florida Department of Transportation (FDOT) Federal Functional Classification map was calculated using posted speed limits and online mapping tools.
- Canal or Major Roadways – Sites with a canal or major roadway located on the site parcel were precluded from further evaluation because they could not be abandoned and developed.
- Lake/Borrow Pit – Sites that included a lake or borrow pit were included as they could be filled.
- Other Site Considerations – Any properties recommended directly by the County to be evaluated as well as sites within and outside of the Urban Development Boundary were considered.

2.1.1 Initial Screening Analysis

A GIS database was developed using layers provided by the County and acquired from external sources (i.e., National Wetlands Inventory; South Florida Water Management District; etc.). The Initial Screening criteria were entered into a GIS-based screening tool, which resulted in approximately 235 parcels being identified from the GIS database. Additional analyses were then conducted to address additional site considerations, including the following:

- Site Area and Ownership – Sites that were less than 40-acres were analyzed to confirm if any two adjacent parcels, with no more than two owners, could be combined into one site meeting the minimum 40-acre size criteria.
- Site Geometry – Sites with parcel boundaries with shapes or dimensions incompatible with a 4,000 ton per day WTE facility were eliminated. In general, WTE facilities for this targeted throughput capacity plus expansion capabilities, if possible, due to the size of the buildings and components, truck queueing lengths, and the minimum radii for the access roads, require a parcel area that is at least 1,200 feet wide and approximately 1,500 feet long.

- Zoning Considerations – Properties with existing abandoned building structures and Conservation, Environmentally Endangered Lands (EEL) Program properties, or Other Protected Lands not screened by the GIS tool were excluded.
- Proximity to Airport – Arcadis reviewed County Code Chapter 33 Zoning, Article XXXVII – Airport Zoning, adopted November 19, 2019 (Airport Zoning Article) and Federal Aviation Administration (FAA) regulations pertinent to land use and height restrictions in the proximity of airports and heliports. Sites less than four (4) miles from an airport were excluded from consideration.
- Lake/Borrow Pit – Sites that were mostly or entirely excavated as a lake or borrow pit were eliminated due to the significant additional time and expense associated with backfilling to create the developable area of the site.
- County Parks and other County properties – (i.e., wellfields, etc.) that were not screened by the GIS tool were manually identified and eliminated.

At the end of the Initial Screening process, 24 sites remained and were presented to DSWM staff for discussion at a meeting on May 20, 2022. After discussion, the decision was made to increase the minimum offset from residential zoning to one-half mile (2,640 ft), which eliminated two sites. The remaining 22 sites were approved to proceed to the Detailed Screening process.

2.2 Detailed Screening Stage Methodology

2.2.1 Detailed Screening Analysis

The approved 22 sites were then evaluated against Detailed Screening criteria, which considered many additional Federal, State, and County programs, policies, and legislation that can affect the siting of a future WTE facility. For each site, a site package was developed to document the analysis of the site relative to the Initial and Detailed Screening criteria. The criteria were then separated into six general categories, as follows:

- **Location** – Site location within the County relative to the existing RRF, proximity to residential zoning, and expected effects on the County's Solid Waste System if selected for a future WTE facility.
- **Utilities** – Availability of potable water, sanitary sewer, natural gas and electric utilities, and any stormwater and groundwater considerations at the site.
- **Soils** – Identification of soil types at the site and potential effects on site development.
- **Environment** – Consideration of a range of environmental factors, including floodplains, wetlands, threatened and endangered species, and permitting issues.
- **Transportation** – Proximity to major roads, available road access to the site and improvements needed, if any.
- **Community** – Estimate of public response to potential construction of a WTE Facility at the site considering proximity to residential zoning, environmentally sensitive areas, and environmental justice concerns.

Two additional criteria were applied only to the sites that were remaining after the Detailed Screening criteria were applied:

- **Cost** – Arcadis developed the capital cost and first year O&M cost associated with developing a new WTE facility at the existing RRF site as part of a previous effort. Utilizing this cost as the base case, evaluated differential cost associated with development of a new WTE facility on each of the three sites remaining after the detailed analysis criteria were applied.

- **Schedule** – Arcadis developed a preliminary high-level implementation schedule in order to compare the implementation timeline associated with development of a new WTE facility on each of the three sites remaining after the detailed analysis criteria were applied.

To assist decision makers, such as the County Commission, Mayor and Department leaders in determining the results of the screening analysis, the Site Packages employed a simple stoplight rating to identify the relative difficulty for each category (i.e., green/slight difficulty, yellow/moderate difficulty, red/significant difficulty) at each site. The Site Packages are provided in Appendix A.

The Detailed Screening criteria and the background information related to their application in this process are presented in the sections below.

2.2.2 Detailed Screening Criteria

2.2.2.1 Location

The Location criteria includes the physical location of the site relative to existing Solid Waste System facilities, large air emissions sources, transportation routes, and expected impacts to the System if a proposed WTE facility were sited there. Distance to known large emitters, such as the Titan Pennsuco Complex, WM Medley Landfill, CEMEX Miami Concrete Plant, FPL Turkey Point Power Plant, etc., were calculated for purposes of determining the potential effects on air permitting. Transportation routes were further evaluated for potential traffic conditions, physical and operational condition of roadways, truck queueing areas, and other features that may affect the routing or traffic patterns of vehicles entering and leaving the proposed site. Finally, an evaluation of the effects on the County's Solid Waste System was conducted to determine potential changes to System operations and costs resulting from the assumption of WTE operations at the site.

2.2.2.2 Utilities

WTE facilities have high demand requirements on several utilities. This screening criteria evaluated the availability of potable water, sanitary sewer, natural gas, electric utility substations, stormwater, and groundwater at each site. If a utility was not available, the closest available service location was determined by a combination of on-line tools and information, service area maps, inspection of aerial and street-level photography, and discussions with County staff and utility services providers. The additional work needed to extend utilities to the site was then included in the site evaluation. Brief discussions of the evaluation of needs and demands for the various utility types are as follows:

- Potable water is needed not only for normal human consumption and fire protection but may also be needed (if other sources are not available) for supply water for the boiler feedwater systems, lime slurry production in the Air Pollution Control (APC) system, and many other uses at the facility. For a 4,000 ton per day WTE facility, a site would need a minimum 12" water main with sufficient service pressure to provide an 8" fire line and a 4" potable supply line to the proposed facility. If service pressure is inadequate, a booster station must be added. If potable water utilities are unavailable, the construction of a typical 12" water main from the nearest service location (including valves and appurtenances) is needed, and depending on the site, additional easement or right-of-way area may be needed.
- Wastewater (Sanitary Sewer) is needed for toilet facilities, boiler blowdown water, and several other facility processes. The proposed WTE facility would need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered

depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation and comparative purposes all wastewater was assumed to be discharged to sanitary sewer. If gravity sewer is not available, a lift station and 6" force main would have to be constructed to connect to the nearest sanitary sewer manhole or lift station wetwell, and depending on the site, additional easement or right-of-way area may be needed.

- Natural Gas is the most economical fuel for the boiler auxiliary burners, which ignite the solid waste fuel fed to the boiler grates and allow for controlled startup and shutdown of the proposed facility. The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility. Online maps and other resources were used to determine the approximate location of gas service pipelines within the County. If gas service is unavailable, the construction of a typical 6" gas main from the nearest pipeline location (including valves and appurtenances) is needed, and depending on the site, additional easement or right-of-way area may be needed.
- Electricity is used at WTE facilities to operate the various mechanical components. Once a WTE facility becomes operational, the steam generated from the boilers is typically used to drive a steam turbine connected to a generator to provide both the internal electricity required to operate the facility as well as produce excess electricity that is sold to the local electric utility. For this evaluation, the nearest electrical substation was located and the shortest route for the transmission line along existing or proposed access road right-of-way or FPL easements was determined. Additional analysis would need to be performed to verify substation/switchyard spare capacity, voltage, and available terminations.
- Stormwater management and controls in accordance with Florida Department of Environmental Protection (FDEP) rules are required for the proposed WTE site. For this evaluation, the site soils, groundwater elevations, presence of floodplains and other information were analyzed to determine what effects the site conditions may have on the proposed WTE facility layout, construction issues, and if any connections to existing stormwater collection systems was available. If the site is located in a floodplain, typically the stormwater system must include additional floodplain compensating storage, which increase both the cost and the site area used for the stormwater system.
- Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average 552,000 gallons per day. Other innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

2.2.2.3 Soils

United States Department of Agriculture (USDA) soil survey information was reviewed to confirm the type and potential suitability of soils located at each site. Soils information for all sites was obtained from the USDA's Web Soil Survey (WSS), which provides soil data and information produced by the National Cooperative Soil Survey. The soils data provides a wealth of information on the physical conditions at a site that can affect development, including previous site disturbance, groundwater levels, soil bearing capacities and foundation design requirements, depth to bedrock, presence of muck, and many others. If muck and other unsuitable soils were found on a site, they would need to be removed and structural fill imported and placed under affected building foundations. Additional site preparation, such as additional fill for elevation of structures, vibro-compaction, or other work may also be

needed. Additional geotechnical investigations and structural design work may also be needed to address poor soil conditions.

2.2.2.4 Environment

Extensive environmental permitting is required to construct a WTE Facility, in any location. A summary of the Federal, State and regional environmental permitting requirements, policies and jurisdictional interfaces required to site, construct and operate a new WTE facility in Miami-Dade County are provided in the below subsections and were used to provide an estimated degree of permitting difficulty summary for each site.

2.2.2.4.1 Environmental Resource Permit (ERP)

The FDEP's Environmental Resource Permit (ERP) Program regulates activities involving the alteration of surface water flows. This includes new activities in uplands that generate stormwater runoff from upland construction, as well as dredging and filling in wetlands and other surface waters. Wetlands and Surface Waters were analyzed using the National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 GIS layers in order to identify existing wetlands and surface waters including streams, canals, ponds, lakes, impoundments, rivers, sloughs, and other watercourses that are present on the sites being evaluated.

2.2.2.4.2 Threatened & Endangered Species

In order to determine if any known Threatened and Endangered (T&E) species or critical habitat for endangered species were present on the sites being evaluated, Arcadis utilized the following resources:

- United States Fish and Wildlife Information for Planning and Consultation tool and designated and proposed critical habitat
- Florida bonneted bat consultation area for the South Florida Urban Bat Area in Miami-Dade County
- Florida Panther consultation areas, Florida wood stork colonies, and Florida Natural Areas Inventory datasets

2.2.2.4.3 Floodplain

Flood maps serve as critical decision-making tools in flood mitigation, land use planning, emergency management and general public awareness. Arcadis conducted a review of the FEMA Flood Zone map to determine flood zone designation and flood hazard probability for each site being evaluated.

2.2.2.4.4 Comprehensive Everglades Restoration Plan (CERP) Considerations

CERP is a framework for restoring, protecting and preserving the greater Everglades ecosystem. The plan is a 50-50 partnership between the State of Florida and the federal government. The State of Florida and the South Florida Water Management District have so far invested approximately $2.3 billion in CERP-related land acquisition, project design and construction. The CERP project boundaries layer was used to identify conservation lands, including the Everglades National Park, to determine if any parcel was adjacent to any known or existing CERP project.

2.2.2.4.5 Code and Policy Considerations

Miami-Dade County Wellfield Protection Areas

In Miami-Dade County, drinking water is drawn from the Biscayne Aquifer, which is a porous limestone rock formation that gives the aquifer excellent capacity. However, the rapid movement of water in the aquifer and the high-water table within many areas of the County make it vulnerable to pollution. Pollutants that are discharged onto the ground or in surface waters can contaminate the groundwater and be drawn into wells that supply drinking water.

For these reasons, Miami-Dade County has policies and programs in place to protect the Biscayne Aquifer from potential sources of contamination, especially in specific areas around the network of drinking water wellfields designated as wellfield protection areas (WPA). The WPAs were designated based on geological characteristics of the aquifer and the flow of water through it. New activities that use or store hazardous materials or generate hazardous waste are prohibited within certain parts of the wellfield protection areas. WPA requirements are included in Sec. 24-43 of the County Code. Arcadis reviewed the WPA boundaries in order to identify whether any parcel was within or contained protected areas.

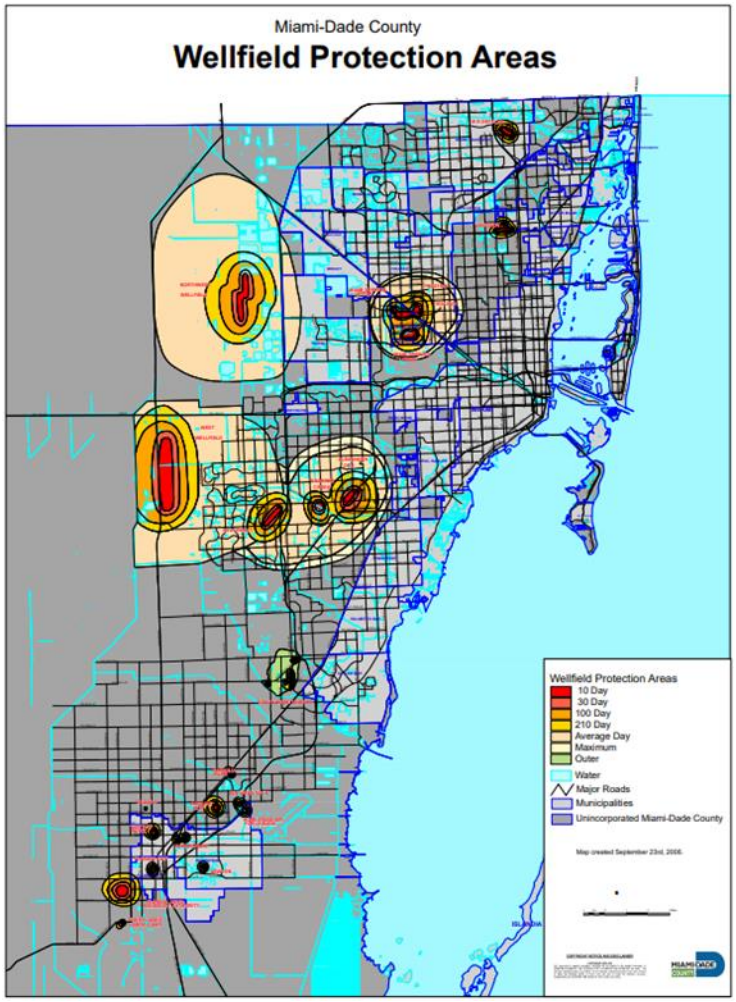


Figure 2.1 Wellfield Protection Areas

Comprehensive Development Master Plan (CDMP) Conservation Aquifer Recharge and Drainage Element (Element)

The intent of this Element is to identify, conserve, appropriately use, protect and restore as necessary the biological, geological and hydrological resources of Miami-Dade County. The following policies were considered when conducting the Detailed Screening analysis.

- Policy CON-7J of this Element States - In evaluating applications that will result in alterations or adverse impacts to wetlands, Miami-Dade County shall consider the applications' consistency with CERP objectives. Applications that are found to be inconsistent with CERP objectives, projects or features shall be denied.
- Policy CON-9A of this Element States - All activities that adversely affect habitat that is critical to federal or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

- Policy CON-9B of this Element States - All nesting, roosting, and feeding habitats used by Federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

Miami-Dade County Airport Zoning Code

The Airport Zoning Code describes the regulations to provide both airspace protection and land uses compatible with airport operations. The Airport Zoning Code requirements provide the regulations that describe such items as Critical Approach Zones and height restrictions that could impact the ability to develop a WTE facility. The areas governed by this Code include airports owned by the County and managed by the Miami-Dade Aviation Department (MDAD) or its successor agency, and the incorporated and unincorporated areas that surround the following airports:

- Miami International Airport (MIA);
- Miami Executive Airport (TMB);
- Miami-Opa Locka Executive Airport (OPF);
- Miami Homestead General Aviation Airport (X51); and
- Any other County-owned or operated airports that may be hereafter established.

Note that the regulations in the Airport Zoning Code do not apply to, or govern, Dade-Collier Training and Transition Airport (TNT).

The Critical Approach Zone (CAZ) is a trapezoidal area extending outward from the Runway Protection Zone to a point that is 10,200 feet from the runway end. One of the uses prohibited within this zone is “establishments or uses that emit smoke, gases, or dust in quantities or densities sufficient to jeopardize the safe use of the airport. In no event shall these prohibitions be varied”. The Airport Zoning Article may be open to some interpretation about whether the stack emissions from a new WTE facility located within the CAZ are in sufficient quantities or densities to jeopardize the safe use of the airport. However, additional analysis and discussions with MDAD and the FAA would be required to determine if parcels within the CAZ may require more detailed analysis such as a thermal exhaust plume analysis. Therefore, for the purpose of this preliminary siting analysis, parcels located within the CAZ of any of the airports governed by the Airport Zoning Code were not considered.

The Airport Zoning Code also describes Airport Height Variance Eligible Areas (HVEAs) that are areas surrounding airports where variances of the applicable height restrictions may be applied for in accordance with the Airport Zoning Article. For the purposes of this siting analysis, parcels located within the HVEAs of any of the airports governed by the Airport Zoning Code were not considered.

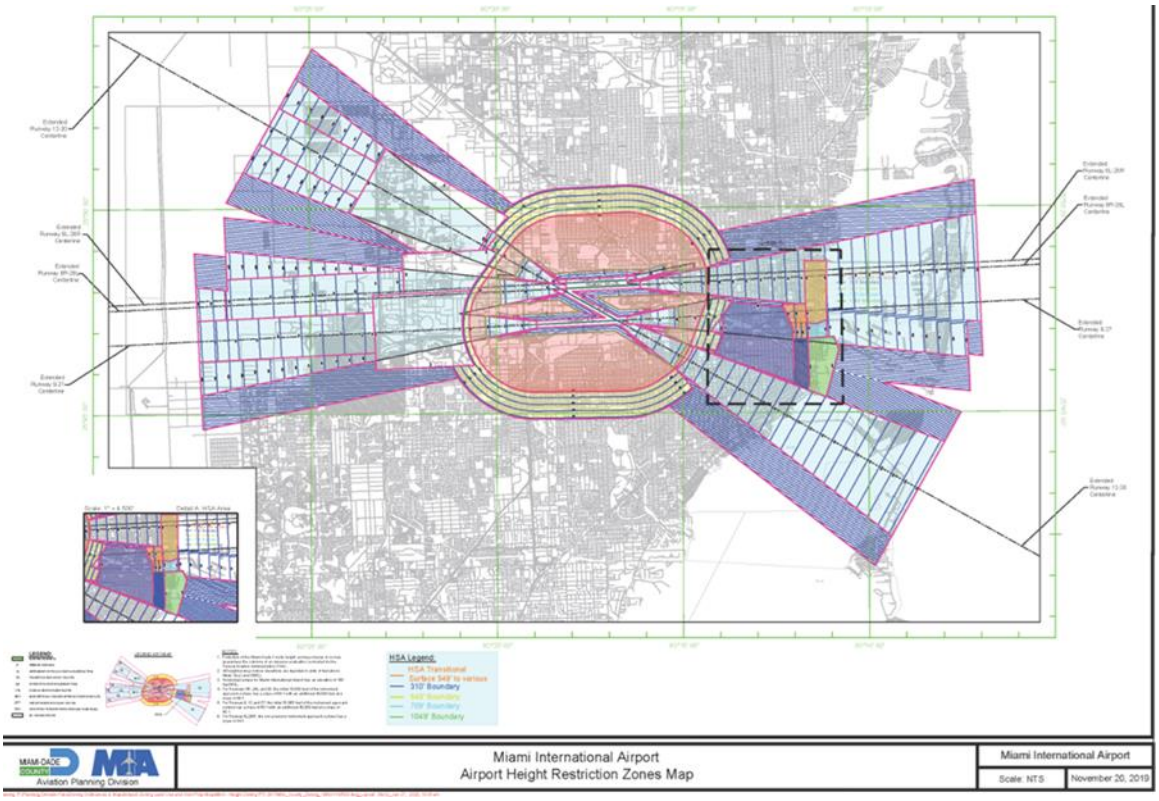


Figure 2.2 Miami International Airport - Airport Height Restriction Zone Map

Federal Aviation Administration (FAA) Requirements

The FAA governing regulation is 14 CFR Part 77. In accordance with this regulation and the Miami-Dade County Airport Zoning System Checklist, revised August 5, 2015 (Microsoft PowerPoint - Airport System Zoning Checklist 8-5-15 (white background) [Compatibility Mode] (miami-airport.com)) (County Airport Zoning Checklist) and the Airport Zoning Code (ARTICLE XXXVII. - AIRPORT ZONING | Code of Ordinances | Miami - Dade County, FL | Municode Library), the following approach areas to governed airports are used to determine height restrictions:

- 10,000 feet at a slope of 34 to 1 for all non-precision instrument runways other than utility; and
- 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways
- For MIA Runways 8R, 26L and 30 only, the initial 10,000 feet at a slope of 65 to 1 with an additional 40,000 feet at a slope of 40 to 1

The stack heights for modern U.S.-based WTE facilities ranges from 200-350 feet above grade. Using a conservatively tall 400 ft height stack, the distance for the FAA approach surface height restriction is approximately 18,000 feet from the RPZ or 3.4 miles. Note that the existing RRF eastern-most stack is approximately four miles away from MIA along the centerline of the Runways 12-30. Therefore, for the purposes of this siting analysis, parcels located within four miles of any of the airports governed by the Airport Zoning Code, including the Homestead Air Reserve Base, were not considered.

2.2.2.4.6 Florida Electrical Power Plant Siting Act Certification

The Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501-.518, Florida Statute (F.S.), is the State of Florida centralized process for licensing large electrical power plants and is administered by the FDEP Siting Coordination Office. Section 403.503 (14) F.S., defines an electrical power plant, for the purpose of PPSA certification, as any steam or solar electrical generating facility using any process or fuel, that produces 75 megawatts or more of electrical capacity. PPSA certification may also be used to obtain approval for smaller capacity electrical power plants, if the applicant elects to use the PPSA process. A WTE facility utilizes solid waste as the process fuel to generate steam and produce electricity, therefore the environmental permitting associated with siting, constructing, and operating a WTE facility falls under the PPSA.

One license — a certification — replaces all local and state permits and is issued by the Siting Board (Florida Governor and their Cabinet Members). Since certification is a life-of-the facility authorization, the considerations involved in the PPSA application review are extensive. Local governments and state agencies within whose jurisdiction the WTE facility is to be constructed participate in the process. Certification addresses permitting, land use and zoning, and property interests. A certification grants approval for the location of the WTE facility and its associated facilities such as roadways and electrical transmission lines carrying power to the electrical grid, among others which are collectively referred to as a PPSA Certified Site.

PPSA certification covers almost every aspect of the facility as an all-in-one license for construction and operation. The PPSA creates a procedure that allows the local, regional, and state agencies to review a proposed electrical power plant within a single, coordinated process. State and local government permit requirements are typically included within the Conditions of Certification (COC) issued under the PPSA. As such, the state pre-empts the issuance of any other type of permit for the facility, except for local zoning and building.

Power Plant Site Certification - Existing and New Site

A PPSA Application was submitted for the existing RRF, and the COC PA 77-08, approving siting, construction and operation was issued by the FDEP on January 9, 1978. PPSA COCs can be modified during the life cycle of the facility through either an Amendment or Modification, which are defined below.

1. PPSA Amendment - a material change to the application for site certification that does not require a change in the final order or Conditions of Certification. Amendments can be authorized by the FDEP Siting Coordination Office.
2. PPSA Modification - a substantive change in the certification order including any substantive change in the Conditions of Certification. Proposed modifications are reviewed by all affected agencies and are issued by DEP or the Siting Board after public notice.

Construction of a new WTE facility at the existing RRF site would likely be considered a Modification to the COC. However, a pre-application meeting with the FDEP would be required in order to confirm this assumption. Construction of a new WTE Facility at a new site, would require the development of a new PPSA Application for approval.

Other Permits Included in PPSA Application

A Modification to an existing PPSA COC or development of a new PPSA Application also requires the development of applicable Federal, State and regional permit applications, that are ultimately provided in the appendices of the Modification or new Application submittal. Filing federal permit applications concurrently with the PPSA Application is advantageous because it helps ensure that the Federal permits and the PPSA certification are issued at or about

the same time. A summary of the other permit applications to be submitted as part of the PPSA Modification or Application are noted below.

- National Pollution Discharge Elimination System (NPDES) Application/Permit
- Hazardous Waste Disposal Application/Permit
- 404 Application/Permit
- Prevention of Significant Deterioration (PSD) Application/Permit
- Air Operation Application/Permit
- Coastal Zone Management Certification (as applicable)
- Zoning Descriptions and Concurrence
- Environmental Resource Permit Application
- Monitoring Programs

The PSD, NPDES, and other permits that the FDEP issues pursuant to federal programs are issued separately from, and in addition to, the issuance of the PPSA certification. Permits issued by the USACE also are issued separately from the PPSA certification.

2.2.2.4.7 Florida Transmission Line Act Certification

The Florida Transmission Line Siting Act (TLSA), Sections 403.52-.5365, Florida Statutes (F.S.), is the State of Florida centralized process for licensing electrical transmission lines that are 230 kilovolts (kV) or larger; Cross a county line; and are 15 miles or longer. The TLSA can also be used for transmission lines that are less than 15 miles long or if within one county. The TLSA is also administered by the FDEP and one license — a certification — replaces all local and state permits, and provides for construction, operation, and maintenance of electric transmission lines for the life of the transmission line. State and local government permit requirements are typically included within the COC issued under the TLSA.

The TLSA is similar to the PPSA in that both require Siting Board certification and the FDEP acts as lead agency as well as addresses its own jurisdictional interests. In both laws, certification covers all state and local permits and is for the life-of-the-facility. Public involvement opportunities are also provided in both laws. The two main differences between the TLSA and PPSA are that there is no Land Use and Zoning hearing for transmission line siting certification and alternative transmission line corridor locations can be proposed.

Florida Transmission Line Act Certification - Existing and New Site

The transmission line infrastructure was developed as part of the initial permitting and construction of the existing RRF, however, if reconfiguration is required, an amendment or modification to the COC would be required. Site specific transmission line infrastructure associated with the other parcels being considered would need to be evaluated as part of a future effort to determine if the County or the utility would be responsible for the permitting of the needed transmission lines.

2.2.2.4.8 Air Permitting

Air Quality Permitting Requirements

The Clean Air Act Amendments (CAAA) required the United States Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for common pollutants emitted from numerous and diverse sources considered harmful to public health and the environment. There are currently NAAQS designated for six

pollutants: sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter (PM_{10} and $PM_{2.5}$). The CAAA also established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, young children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings. Florida has incorporated the NAAQS by reference into the state's air quality regulations.

The USEPA tracks compliance with the NAAQS (not to exceed ambient air concentration) for each criteria pollutant by designating each area of the country as either "attainment" if the area meets the NAAQS or "nonattainment" if the area does not meet the NAAQS. A separate determination of attainment status is made for each criteria pollutant. Miami-Dade County is currently classified as an attainment area for all criteria pollutants.

Based on preliminary estimates of potential emission levels, a new 4,000 tpd WTE Facility would constitute a new major emission source. As a proposed new major source, a 4,000 tpd WTE Facility would be subject to federal New Source Review (NSR) requirements. NSR refers to the pre-construction review process that applies to new and modified major sources for the purpose of protecting air quality through a permitting framework that supports compliance with the NAAQS. NSR includes two permitting programs: Prevention of Significant Deterioration (PSD) permitting and Nonattainment NSR (NNSR) permitting. Under NSR, a new 4,000 tpd WTE facility proposed for a location in Miami-Dade County would be subject to PSD permitting requirements in recognition that PSD review applies to new major sources in NAAQS attainment areas.

PSD Permitting Program

PSD permitting provides for carefully managed economic growth in a manner consistent with preserving clean air resources. The primary objectives of the PSD permitting program are to protect public health and welfare and to limit degradation of air quality in surrounding areas and within designated areas of special recreational, scenic, or historic value. The PSD permitting regulation specifies that the following analyses be completed to address air pollution control technology requirements and to demonstrate that proposed projects will not adversely impact air quality:

- Air pollution control technology analyses are required on a pollutant-specific basis to define Best Available Control Technology (BACT) for project related emission units. BACT is an emission limitation or standard established on a case-by-case basis and reflects the maximum degree of emissions control that can be achieved considering energy, environmental, and economic impacts. If establishing an emissions limitation or standard is not feasible, BACT may be a design, equipment, work practice, or operational standard.
- An evaluation of ambient air impacts resulting from project related emissions is required with respect to PSD increments and the NAAQS. PSD increments represent increases in pollution allowed in an area and they prevent air quality in clean areas (i.e., attainment areas) from deteriorating to the level set by the NAAQS for a pollutant. The NAAQS is a maximum allowable concentration "ceiling." In contrast, a PSD increment is the maximum increase in concentration that is allowed to occur above a baseline concentration for a pollutant. PSD increments are established for three land use classifications: Class I, Class II, and Class III.
    - Class I areas are areas of special national or regional value, such as national parks, and are afforded the greatest degree of air quality protection.
    - Class II areas are areas where normal, well-managed growth is allowed. The Miami-Dade County area is designated as a Class II area.

- Class III areas industrialized attainment areas with limited restrictions on emissions. No area of the country has been designated as a Class III area.

To evaluate ambient air quality impacts for proposed projects subject to PSD permitting, dispersion modeling analyses must be completed. For each pollutant subject to PSD review, an initial dispersion modeling analysis referred to as a "significance analysis" is completed considering emissions from only the proposed project. If results from the "significance analysis" demonstrates that a proposed facility's impacts are below established PSD significant impact levels (SILs), then "full impact" (multi-source) dispersion modeling analyses including emissions from other offsite sources in the vicinity of the project site are not required. Results from dispersion modeling analyses for emissions associated with a new 4,000 tpd WTE facility are expected to exceed PSD significant impact levels (for one or more pollutants). Therefore, extensive, multi-source modeling analyses would likely be required as part of the PSD permitting process for a proposed 4,000 tpd WTE facility.

- An evaluation of project related impacts with respect to PSD increments and Air Quality Related Values (AQRVs) at any Class I area within close proximity to the site is required. Class I areas, such as Everglades National Park, are federally designated areas of special national or regional value which receive distinct protections under the PSD regulations. For each Class I area, the Federal Land Manager (FLM) is responsible for defining and protecting specific AQRVs and for establishing criteria to determine an adverse impact on the AQRVs. The AQRVs are resources that have the potential to be affected by air pollution and may include visibility, scenic, cultural, physical, or ecological resources for sensitive areas.
- The specific analyses and recommended air dispersion model(s) that may be required are dependent on the distance a proposed project is from protected Class I and/or sensitive Class II areas. For proposed facilities located within 10 kilometers (6.2 miles) of a Class I area and based on an assessment of 24-hour ambient impacts, PSD review may even be required for certain pollutants with emissions at minor levels (i.e., levels below PSD emission thresholds). In order to obtain a construction permit for these proposed sources, a vigorous evaluation would need to be completed to show its proposed operation would not degrade air quality and AQRVs. Given the proximity of the Everglades National Park (Class I area) and Biscayne Bay National Park (sensitive Class II area) to prospective sites in Miami-Dade County, demonstrating no adverse impacts to these protected areas from the operation of a new WTE facility presents uniquely difficult challenges.
- An assessment of project impacts on soils, vegetation, and visibility and an evaluation of air quality impacts relative to general growth (industrial, commercial, and residential) associated with the proposed project are also required.

In Florida, the permitting authority for issuance of air construction permits is the Florida Department of Environmental Protection (FDEP). Construction permits for projects subject to PSD permitting requirements are processed by FDEP's Division of Air Resource Management office in Tallahassee. The PSD permitting regulation provides for public participation and input from the USEPA and designated FLMs for Class I areas and sensitive Class II areas in the vicinity of the project site. Input from these entities is given special consideration and concerns are typically required to be addressed by an applicant during the permit review process. As the permitting authority, FDEP makes the final decision on whether to issue or deny issuance of an air construction permit.

Air Permitting Summary

Siting a new 4,000 tpd WTE facility in Miami-Dade County presents unique challenges considering the complex pre-construction permitting requirements that apply under the PSD permitting regulation. In particular, the proximity of nearby sensitive areas (Everglades National Park, which is a federally protected Class I area, and the Biscayne Bay sensitive Class II area) and the presence of existing facilities with high emission levels in the county, impart

uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE Facility and make securing an air construction permit very challenging at the prospective sites. Extensive air dispersion modeling, additional analyses and correspondence with regulatory agencies is required in order to definitively evaluate the feasibility and degree of difficulty of air permitting at any proposed site.

2.2.2.5 Transportation

A proposed 4,000 ton per day WTE facility would be expected to receive approximately 300-400 inbound vehicles per day and provide for a typical queueing length suitable for between 50 and 100 vehicles during peak delivery periods. This transportation demand requires, at a minimum, an FDOT standard two-lane road with paved shoulders and stormwater controls and sufficient area on site for vehicle queueing. Also, per the Initial Siting requirements, the travel time to an Arterial or Collector Road must be less than 10 minutes.

For this analysis, the Arterial and Collector Roads were identified from the *2010 Federal Functional Classification Map* published by the FDOT District Six Intermodal Systems Office. Travel time from each site to an identified Arterial or Collector Road was then determined using online mapping tools and calculated travel times based on data in the *2020 Miami-Dade County Mobility Profile* published by the FDOT Forecasting and Trends Office. For each site, the existing access road size, capacity, and physical condition were evaluated to determine its suitability for the demands of a proposed WTE facility, along with expected traffic impacts on area roads and intersections. If an access road is either inadequate or unavailable at a site, then a new two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional easement/ROW may have to be acquired. Local area traffic impacts were evaluated based on published FDOT Level of Service data and known traffic conditions.

2.2.2.6 Community

According to the USEPA, the term environmental justice is defined as: “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” The USEPA EJScreen Tool was used to provide an initial estimate of environmental justice concerns at each site. According to the USEPA website, EJScreen is an environmental justice mapping and screening tool that provides the EPA with a nationally consistent dataset and approach for combining environmental and demographic indicators. EJScreen users choose a geographic area; the tool then provides demographic and environmental information for that area. All of the EJScreen indicators are publicly available data. EJScreen simply provides a way to display this information and includes a method for combining environmental and demographic indicators into EJ indexes.

It is important to note that EJScreen is not a detailed risk analysis. It is a screening tool that examines some of the relevant issues related to environmental justice, and there is uncertainty in the data included. EJScreen cannot provide data on every environmental impact and demographic factor that may be important to any location. Therefore, its initial results should be supplemented with additional information and local knowledge whenever appropriate, for a more complete picture of a location.

Based on the information provided by the EJScreen Standard Report, proximity of the site to residential zoning and populations, and proximity to sensitive environmental areas (i.e., Everglades National Park, wetland and wildlife areas, etc.) a relative rating of expected community opposition to the siting of a new WTE facility was applied. Results of the EJScreen Standard Report, developed for each site, are included in the Site Packages found in Appendix A.

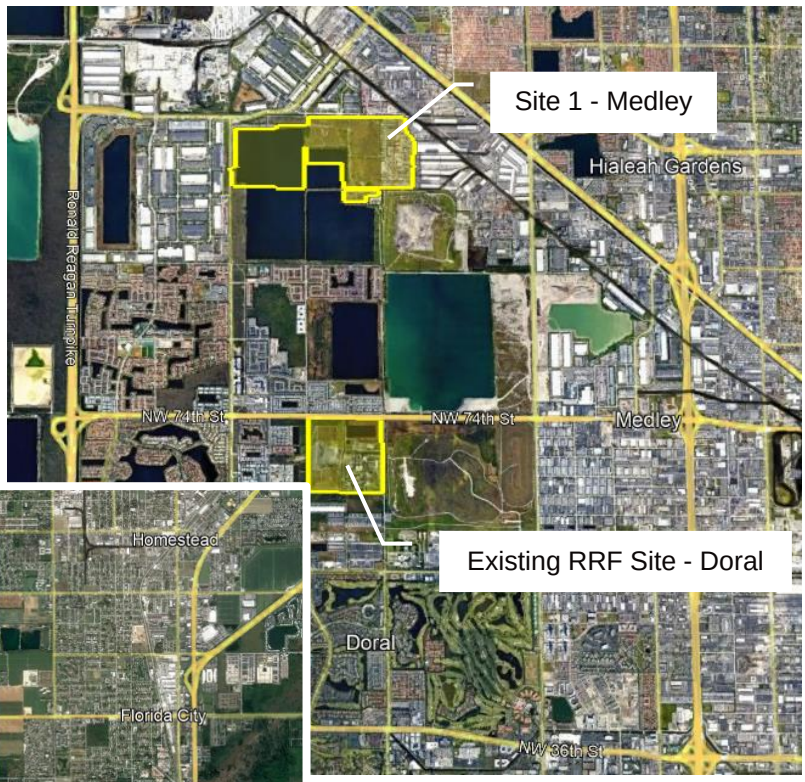
2.2.3 Detailed Screening Findings

A meeting was held on June 7, 2022, to review the findings of the Detailed Screening process. After discussion and agreement by DSWM and Arcadis, 19 sites were eliminated from consideration due to several factors, such as roadway access and utility availability, parcel development and availability, permitting considerations, and conflicts with existing County policies (i.e., located in WPA or CERP site, wetland/wildlife habitat issues, etc.).

DSWM staff then requested that a comparison be conducted of the existing RRF site to the three remaining potential sites found as part of this preliminary analysis, using the same methodology as the other sites.

The four remaining sites are listed below and are illustrated in the map at right.

- Site 1 – Medley
- Site 16 – Ingraham Hwy. Site #1
- Site 17 – Ingraham Hwy. Site #2
- Existing RRF Site – Doral



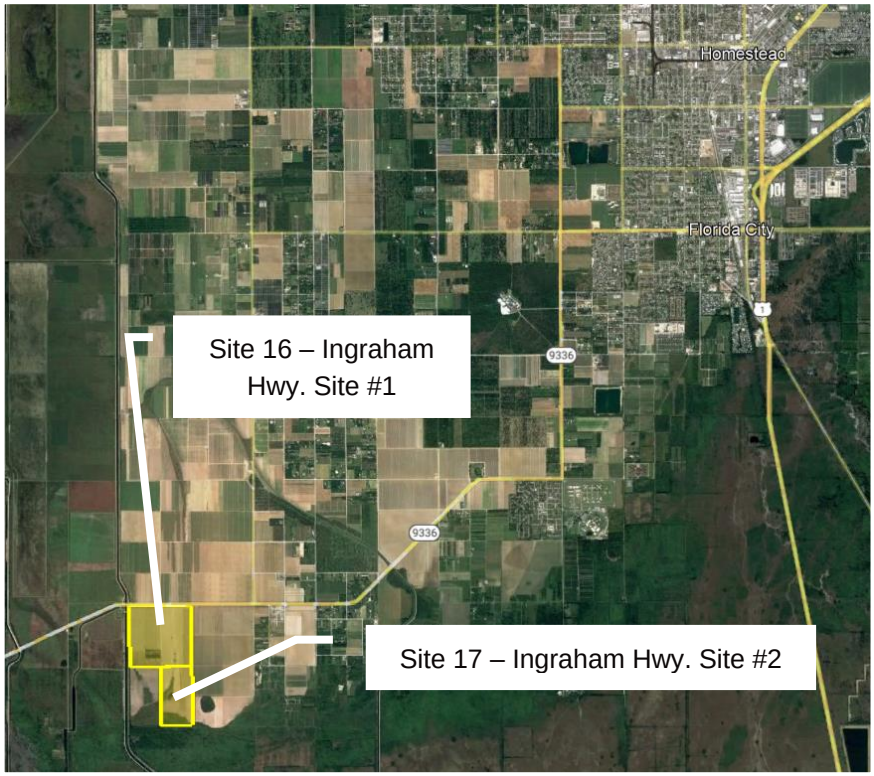


Figure 2.3 Potential Sites Location Maps

The full site packages for each of the 22 sites that were evaluated in the Detailed Screening process are included in Attachment B. A brief comparison of the four remaining sites is presented below and on the following pages for quick reference. For these four final sites, an estimate of the schedule and cost differentiators was also developed to provide the County with additional comparative analysis for consideration.

2.2.3.1 Schedule Considerations

The development of a WTE facility typically takes seven (7) to ten (10) years to complete. This time frame, which includes the preliminary planning stage, siting, permitting, financing, procurement, design, and construction, varies depending upon the complexity of the project and extent of the regulatory and public concerns. Arcadis has developed a preliminary high-level implementation schedule, included as Appendix B, for the four selected sites for use in evaluating different project development schedule impacts related to each site: the Existing RRF site, the Medley site, Ingraham Highway Site 1 and Ingraham Highway Site 2. Each potential site has unique schedule impact considerations, which are discussed in the subsections below. Task durations are estimates and may change once activities begin, which could extend or compress the schedule duration. Future phases of the County's planning and implementation process will include more detailed review of the factors which may affect the potential development of a new WTE facility at any proposed location and as such, the anticipated timelines and schedule impacts will be further refined as the process proceeds.

2.2.3.1.1 Assumptions

Several common assumptions were used in developing the new WTE facility preliminary implementation schedule. There are also many assumptions specific to an individual site option that differentiate their respective implementation timeframe from one another. The assumptions used for the purposes of this Report are identified in the following table:

Table 2.1 Schedule Assumptions

Assumptions	Applicable Site Option
The durations used for design and construction are generally based on the schedule for construction of the most-recently developed facility in the United States, referred to as reference facility (Palm Beach County's Renewable Energy Facility No. 2, completed in 2015).	All Site Options
To avoid waste diversion, the existing RRF would continue operations during construction of the new WTE facility, with shutdown and decommissioning occurring after construction completion.	Existing RRF Site
Development of the existing RRF site includes time for permitting and filling the onsite stormwater lake, planning and construction of temporary stormwater retainage during construction, and logistical planning for construction during operation of the existing RRF.	Existing RRF Site
The Medley site includes time for land acquisition, zoning and permitting of a greenfield site as well as additional site preparation work.	Medley Site
Ingraham Highway Site 1 and Ingraham Highway Site 2 include additional time for land acquisition, zoning permitting of a greenfield site, and extended environmental permitting due to proximity of Class I area. There will also be additional site preparation work required including wetland mitigation, flood plain mitigation (elevating finished floor elevation of structures one foot above grade and additional stormwater requirements), and wildlife mitigation.	Ingraham Highway Site 1 Ingraham Highway Site 2

2.2.3.1.2 Siting/Planning

Several activities are identified for the siting of a new WTE facility that are required to support the regulatory, permitting, design, and construction phases. Siting/Planning includes the following activities:

- Siting selection and land acquisition, if applicable
- Power purchase and interconnect agreement negotiations
- Public outreach activities

The Medley site, Ingraham Highway Site 1, and Ingraham Highway Site 2 require land acquisition to commence prior to the other activities listed above. It has been assumed that land acquisition may take approximately 18 months to 2 years.

2.2.3.1.3 Financing

Construction of a large capital project, such as a WTE facility, is most often financed, as most entities do not have the available funds to pay for the capital costs when constructed. A number of financing options exist for funding large capital projects, with the most common being municipal bond financing. It is anticipated that the County would most likely use a form of long-term revenue bond financing. Bond financing terms can vary and are determined during agreement development. For the purposes of this Report, it is assumed that a 30-year revenue bond would be used.

First, a financial plan for bond issue would be developed to determine the bond issue method and schedule. This would include bond issue support and a cash flow analysis at the commencement of the project and possibly a phased financing strategy, with interim and final financing. The interim financing could correspond with initial planning, permitting and procurement activities required prior to contractor notice to proceed. The final financing would likely correspond with the contractor notice to proceed and/or receipt of all regulatory approvals for construction.

Note that the financing tasks are not consecutive, and do not occur directly one after the other. There is time allotted in the schedule between these tasks when no financing activities occur. Therefore, the total duration for the financing tasks, commencing with the bond issue support and cash flow analysis and ending with the final financing, is estimated to be between four and six years. The financing tasks typically take place concurrently with the permitting and procurement tasks.

2.2.3.1.4 Regulatory/Permitting

The preliminary schedule reflects the permitting process including application preparation, submission, clarification, and issuance of permits and approvals required for the construction and start-up of a new WTE facility. These activities are discussed in more detail in Section 2.2.4 Environment. The critical path includes preparation of the dredge and fill permit, PSD, and PPSA permitting processes. It is also assumed that the PPSA and other permitting efforts would be accelerated, through the concurrent development of permit application packages. It is anticipated that the overall permitting duration will range from approximately three and a half years to four and a half years from preliminary application development through issuance of all required permits. It is assumed that permitting activities would occur concurrently with financing and procurement efforts, in order to accelerate the schedule.

There are many variables associated with the permitting process that could affect the duration of the permitting effort. The schedule presents what would be considered a typical scenario and assumes that significant regulatory

delays such as multiple requests for information (RFIs), significant public opposition and protest, or change in law would not occur.

2.2.3.1.5 Procurement

The procurement process outlined in the preliminary schedule consists of the following main tasks:

- Design criteria development
- Procurement strategy development
- RFI development, response, and response evaluation (it should be noted that DSWM has already initiated development of a RFI to be issued to the vendor community in the near future)
- Request for Qualifications (RFQ) development, response, and response evaluation
- Request for Proposals (RFP) development, response, and response evaluation
- Legal activities associated with development of the draft and final Construction and Operating Agreements.

The design criteria development is required prior to RFQ/RFP procurement process and is estimated to take approximately 6 months to one year. The RFQ/RFP procurement process is estimated to take approximately two to three years and would occur concurrently with the permitting and financing activities.

2.2.3.1.6 Design and Construction

The construction period outlined in the preliminary schedule is a general overview of the construction process. As the project moves forward, detailed construction schedules will be developed as part of the planning and procurement process by DSWM's consultants and/or the successful contractor. Typical construction-related activities would include:

- Preliminary construction activities, such as initial site work and preparation
- Detailed design
- Preliminary site and utilities work
- Procurement of major equipment
- Procurement of long lead time items
- Construction
- Start-up and commissioning
- Acceptance testing
- Final inspection and contract close-out

Preliminary Construction Activities

Considerations are made in the preliminary schedule based on specific activities associated with each site. For the Existing RRF site, it is assumed that shutdown of the existing RRF will not occur until after construction of a new WTE facility to avoid waste diversion. Planning activities will be required in consideration of specific site constraints associated with construction equipment laydown area, temporary stormwater storage, and stormwater pond fill activities.

The Medley site is assumed to require additional time prior to construction for placement of fill and site preparation work to fortify the site soils for construction. The Ingraham sites may require additional time prior to construction for wetland mitigation, removal of muck soils, replacement with fill, and fill placement for elevation to meet floodplain requirements. The duration of these additional efforts is estimated to be approximately 9 months to one and a half years, to be completed before other site and utility work can commence for a new WTE facility.

New WTE Facility Design and Construction Activities

It is currently anticipated that the design and construction duration for a new WTE facility is approximately four to five years from the contractor NTP through acceptance testing and Commercial Operations.

2.2.3.1.7 Summary

In summary, the duration for new WTE facility implementation activities is estimated to be between 7 years 9 months to 11 and a half years depending upon the ultimate site selected. For the purposes of this Report, it is assumed that work would commence in January 2023 for any of the site options. For the Existing RRF site, design and construction is estimated to start in October 2026 with Commercial Operations beginning in April 2030. For the Medley site, design and construction is estimated to start in January 2028 with Commercial Operations approximately in April 2032. For the Ingraham Highway Sites, design and construction is estimated to start in April 2029 with Commercial Operations in approximately October 2033.

The estimated project durations for the Medley site and Ingraham Highway sites are longer than the Existing RRF site because they include additional time for land acquisition as well as additional permitting time required as non-PPSA certified sites, additional air permitting considerations, and preliminary site work needed including soils stabilization or removal and wetland and wildlife mitigation. In contrast, the Existing RRF site does not require time to acquire new land, is currently a site certified under the PPSA, and would only require minimal preparatory site work.

Table 2-2 provides a summary of major tasks and the estimated durations for each of the selected site options. A graphical summary schedule showing the concurrent activities is provided in Appendix B.

Table 2.2 Summary of Schedule Tasks with Estimated Durations

Task	Estimated Duration of Activity		
	Existing RRF Site	Medley Site	Ingraham Hwy Sites
Total Project Duration	**7 years 9 months**	**9 years 9 months**	**11 years 3 months**
Estimated Commercial Operation	April 2030	April 2032	October 2033
Siting/Planning *	**1.5 years**	**2.5 years**	**2.5 years**
Siting Analysis and Land Acquisition	N/A	1.5 years	2 years
Financing *	**1.5 years**		
Permitting *	**3.5 years**	**3 years 9 months**	**4.5 years**

Task	Estimated Duration of Activity		
	Existing RRF Site	Medley Site	Ingraham Hwy Sites
Army Corps of Engineers Dredge and Fill Permit	1 year	N/A	1 year
Environmental Resource Permit	1 year	1 year 3 months	2 years
PSD Air Construction Permit	2 years	2 years 3 months	3 years
PPSA Process Activities	2.5 years	2 years 9 months	4 years
Procurement *	**2 - 3 years**		
Design Criteria Development	6 months – 1 year		
RFQ / RFP Process	1.5 - 2 years		
Design and Construction	**4 years**	**4 years 9 months**	**5 years**
Design	3 years		
Procurement of Major Equipment	3 years		
Preliminary Site and Utilities Work	9 months	1 year 3 months	1.5 years
Construction	2.5 years		
Start-up and Commissioning	6 months		
Acceptance Testing to Commercial Operations	2 months		
Final Inspection and Contract Closeout	6 months		
Shutdown and Demolition of RRF	**1 – 1.5 years**		

* These tasks occur concurrently.

2.2.3.2 Cost Considerations

Arcadis developed a cost considerations table to approximate the difference in cost of the various components required to site, construct and operate a new WTE facility at the four remaining sites. This cost comparison includes planning level estimates for additional costs associated with the facility construction, annual Operations and Maintenance (O&M), as well as the potential system impacts specific to each site option. The additional costs are compared to the costs of developing a new WTE facility on the existing site, which is considered the base case and reflects estimated stormwater lake fill costs and environmental considerations noted in Appendix C. The capital costs and first year O&M cost associated with a new WTE facility located on the Existing RRF site were developed previously by Arcadis as part of a separate effort and represents the base case for comparative purposes.

The cost considerations table provided in Appendix C identifies the item, unit cost, units for the unit cost, if the additional site condition applies to each site, the unit quantity needed for each site option, the cost, and the cost percentage increase compared to the base capital or annual O&M costs.

2.2.3.2.1 Identification of Costs

Many of the siting evaluation criteria and associated site conditions will require additional costs to address or mitigate the unique site conditions of each site. Arcadis conducted a preliminary analysis to identify the potential additional costs associated with the various site conditions that would likely apply to the selected sites, subsequently developed unit costs for those site conditions, and quantified the amount of work or units required for the individual sites reviewed. These conditions and costs were identified only for the four sites remaining after the Detailed Screening criteria were applied:

- Existing RRF Site
- Site 1 Medley Site
- Site 16 Ingraham Highway Site 1
- Site 17 Ingraham Highway Site 2

These different site conditions may impact both facility capital cost and ongoing annual O&M cost. Appendix C provides the cost differential comparison table and the Basis of Cost summary, which identifies information used to determine unit costs and calculate required quantities associated with each site.

2.2.3.2.2 Capital Costs

The following additional capital costs and associated assumptions were considered for the selected sites, when applicable:

- Land acquisition utilizing the current Miami Dade Property Appraiser value plus 10%
- Off-site road development when an access road to the site is not yet available
- Off-site utilities construction for interconnection to the nearest pipeline including:
  - 12-inch ductile iron pipeline for potable water
  - Potable water booster pump station
  - 6-inch PVC force main for wastewater
  - Natural gas pipeline
  - Electrical transmission mains
  - An industrial water supply well, where permittable, or rehabilitation of existing wells
  - Additional right of ways or easements required for off-site utilities or access, assumed to be 60-feet wide
- Additional stormwater requirements for high groundwater levels or floodplain mitigation, assumed a four-foot-tall site perimeter berm
- Additional stormwater requirements for temporary retainage during construction
- Geotechnical site preparation work including:
  - Lake fill costs
  - Removal of muck soils

  - Replacement with select fill
  - Additional geotechnical requirements, such as vibrocompaction of fill or other structural requirements
- Floodplain mitigation by elevating structures, assuming one foot above grade for Zone A.
- Wildlife mitigation including wood stork, bonneted bat, and Florida panther
- Permanent wetland mitigation
- Additional zoning and permitting cost possibly required for greenfield sites
- Additional permitting cost associated with difficulty due to site location or constraints
- Waste hauling and transfer system impacts including construction of a transfer station and additional transfer trailers if collection and hauling system significantly changes compared to current System

Existing RRF Site

The identified site conditions requiring capital cost for the existing RRF include industrial supply well rehabilitation, temporary stormwater retainage during construction, potential filling of the site stormwater detention pond and some additional geotechnical work, such as vibrocompaction of the detention pond fill area, as well as potential bonneted bat mitigation.

Medley Site

For the Medley site, the identified site conditions requiring potential capital costs include land acquisition, water booster pump station, wastewater lift station, natural gas pipeline, electrical transmission mains, right-of-way and/or easements for those utilities, additional stormwater management due to high groundwater levels, placing select fill and additional geotechnical requirements required to help stabilize existing soils, such as vibrocompaction or other method as selected by contractor, additional zoning and permitting for a greenfield site, and moderate environmental permitting difficulties due to location and proximity to existing industrial facilities. It is assumed that there may be impact fees or improvements required to local roads that have not yet been factored into the capital cost for this site because the extent of roadway modifications is currently not known. It is anticipated that these would be negotiated and further evaluated during the land acquisition process.

Ingraham Highway Sites 1 and 2

For the Ingraham Highway sites, the identified site conditions requiring potential capital costs include the land acquisition, potable water pipeline, water booster pump station, wastewater force main, wastewater lift station, natural gas pipeline, electrical transmission mains, right-of-way and/or easements for utilities or access, additional stormwater management due to floodplain mitigation, removal of muck soils, placing select fill and additional geotechnical requirements required to help stabilize existing soils, such as vibrocompaction, embankment fill required for floodplain mitigation elevation, bonneted bat mitigation, wetland mitigation, additional zoning and permitting for a greenfield site, extremely challenging environmental permitting due to location and proximity to Class I areas, and System impact due to increased hauling distance, which will likely include construction of a new transfer station and purchase of additional tractor trailers. Ingraham Highway Site 2 will also require development of an offsite access road and Florida panther mitigation in addition to the items listed above.

2.2.3.2.3 Operations and Maintenance Costs

The following additional annual O&M costs and associated assumptions were considered for the selected sites, when applicable:

Medley Site

- Purchase of potable water as industrial supply well development is likely not permittable, will result in additional costs.
- Cost for ash hauling to a landfill assumed to be near the existing RRF.

Ingraham Highway Sites

- Purchase of potable water would be an additional operations cost
- Cost for ash hauling to a landfill assumed to be near the existing RRF would be significant as the distance is much longer than the other sites.
- Transfer system O&M cost required for the additional hauling of waste to these locations.

2.2.3.2.4 Cost Considerations Summary

The following table summarizes the estimated additional capital cost associated with each site option and the additional annual operations and maintenance cost impact.

Table 2.3 Estimated Additional Costs for Each Site Option

	Estimated Total Additional Cost	Percentage of Base Cost
Existing RRF Site (Base Cost for Comparison)		
Capital	$1,450,000,000	N/A
Annual Net O&M (cost per ton *)	$11.22	N/A
Medley Site		
Additional Capital	$48,300,000	4.2%
Additional Annual Net O&M (cost per ton*)	$2.10	19%
Ingraham Highway Site 1		
Additional Capital	$80,400,000	6.4%
Additional Annual Net O&M (cost per ton*)	$13.40	119%
Ingraham Highway Site 2		
Additional Capital	$84,700,000	6.7%
Additional Annual Net O&M (cost per ton*)	$13.40	119%

* Does not include debt service payment for capital costs

The site option with the lowest anticipated impact on capital cost and annual operations and maintenance cost is the Existing RRF site (base case). This is much less than the highest anticipated impact, Ingraham Highway Site 2,

which is anticipated to have a 6.7% increase in capital costs and 119% increase in annual operational costs due to the significant waste hauling distance required.

3 Preliminary WTE Facility Site Analysis Summary

This preliminary siting analysis was prepared to support the County in determining availability of sites within the County for development of a new WTE facility to replace the existing RRF. Based upon the results of this preliminary analysis, development of a new WTE facility within the County is feasible, based on the criteria investigated for each site. Following completion of this preliminary siting analysis, it is recommended that the County consider pursuing a comprehensive siting evaluation, inclusive of site-visits, geotechnical investigations, preliminary air modeling, informal discussions with FDEP staff, as well as other efforts necessary to move forward with the selection of a site and implementation of a new WTE Facility.

Table 3-1 below provides an overall comparative summary of the four sites evaluated in the detailed screening analyses.

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Table 3.1 Site Comparison Summary

Siting Parameter	Existing RRF	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Location	157.16-acre site, single parcel inside the UDB. Minimal impact to System if selected, however, construction phasing will need to be considered in order to limit impact to existing RRF operations. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of additional ash monofill capacity or other County facilities in consideration of future sustainable campus concept (after demolition of Existing RRF).	320.31-acre site, directly adjacent to residential zoning, inside the UDB, approximately two miles north of the existing RRF facility, and adjacent to the Medley Landfill. If this site were selected, the overall effects on the County's Solid Waste System would be relatively minimal. However, the Medley Landfill has a history of odor complaints, and the WTE, if sited here, could be the subject of future odor complaints. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of ash monofill or other County facilities in consideration of future sustainable campus concept.	159.71-acre site consisting of two parcels outside the UDB. Considerable System effects if this site were selected. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of ash monofill or other County facilities in consideration of future sustainable campus concept.	81.11-acre site is located outside the UDB. Considerable System effects if this site were selected. Parcel size suitable for development of WTE facility footprint as well as additional acreage to accommodate co-location of ash monofill or other County facilities in consideration of future sustainable campus concept.
Utilities	All required utilities infrastructure available	Potable water and sanitary sewer utilities appear to be available at the site, electric and natural gas utilities would have to be extended to the site.	All required utilities would have to be extended to the site.	All required utilities would have to be extended to the site.

Siting Parameter	Existing RRF	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Soils	Site has been used for WTE facility operations previously, no known site soils issues exist.	The USDA Soil Survey data for the site and historical aerial photos (c. 1985) indicate the site area was previously excavated and subsequently backfilled. In order for a WTE facility to be located at this site, the facility buildings and ancillary components would have to be constructed on backfill material, which could present significant geotechnical engineering challenges for foundation designs and additional site preparation costs.	Site soils are not ideally suited for building foundations because of water content and shallow depth to bedrock.	Site soils are not ideally suited for building foundations because of water content and shallow depth to bedrock.
Environment	Air Permitting - May be challenging, other large emitters (Medley Class I Landfill and Titan Pennsuco Complex) exist nearby that were not present when RRF was initially modeled and permitted. Possible habitat issues (Bonneted Bat)	Air Permitting – May be challenging, as site is located between two other large existing emitters, the Medley Class I Landfill and Titan Pennsuco Complex. In addition, the adjacent elevated (200 ft +) Medley Landfill may result in exhaust plume impaction during air emissions dispersion modeling. Possible habitat issues (Bonneted Bat)	Floodplain – FEMA Zone A Air permitting expected to be extremely difficult due to proximity to Everglades National Park. ERP required because of minor wetlands on site, possible habitat issues (Bonneted Bat)	Floodplain – FEMA Zone A Air permitting expected to be extremely difficult due to proximity to Everglades National Park. ERP required because of minor wetlands on site, possible habitat issues (Bonneted Bat)

Siting Parameter	Existing RRF	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Transportation	Existing access to arterial and collector roads	Good access to Florida Turnpike and US27 via Beacon Station Blvd., however traffic impacts to local area may be significant due to road orientations and close proximity of intersections.	Good access to arterial and collector roads	Existing access to site is via Ingraham Hwy. and SW 222nd Ave., however approximately 0.75 miles of two-lane road with paved shoulders will need to be constructed for proper site access. Additional ROW may have to be acquired.
Community	Residential developments have encroached around the site in the years since the Existing RRF went into operation. The site is now less than a tenth of a mile from the nearest residential zoning and the local population. Community political leaders and environmental groups have indicated opposition to continued use of the site for WTE facility operations.	The site is adjacent to residential zoning. The west edge of the site borders one trailer park owned by the Town of Medley, and another that is leased by the town. Siting of a WTE facility may face community opposition at this location.	The site is approximately half a mile from the nearest residential zoning and is approximately one mile from the boundary of Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.	The site is approximately half a mile from the nearest residential zoning and is 1.28 miles from the boundary of Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.

Siting Parameter	Existing RRF	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Schedule (Preliminary Planning to Construction Completion)	Shortest schedule duration because of existing PPSA, potentially reducing PPSA permitting effort and minimal site preparation work required. Coordination of construction during MDRRF operation required. Estimated Project Duration: 7-years 9-months Possible Commercial Operations by April 2030	Second shortest schedule duration. Land acquisition, PPSA permitting, and some minor site work increase schedule duration. Estimated Project Duration: 9-years 9-months Possible Commercial Operations by April 2032	Longest estimated schedule duration. Land acquisition, PPSA permitting, wetland, floodplain, and wildlife mitigation, and significant site work increase schedule duration. Estimated Project Duration: 11-years 3-months Possible Commercial Operations by October 2033	Longest estimated schedule duration. Land acquisition, PPSA permitting, wetland, floodplain, and wildlife mitigation, and significant site work increase schedule duration. Estimated Project Duration: 11-years 3-months Possible Commercial Operations by October 2033

Siting Parameter	Existing RRF	Site 1 Medley	Site 16 Ingraham Hwy. Site #1	Site 17 Ingraham Hwy. Site #2
Cost	For comparative purposes, the existing RRF site is considered the base cost condition and the base capital cost includes estimated stormwater detention pond fill costs and environmental considerations and the ash hauling costs as noted in Appendix C. Total Estimated Capital Cost of $1,450,000,000. Total annual net operational cost is $11.22 per ton of waste processed (estimated for Year 1). Does not include debt service payment for capital costs.	Additional costs anticipated for land acquisition*, on-site utility facilities, stormwater considerations and addition of fill for soil fortification, zoning and potential additional permitting efforts for new PPSA. Purchase of potable water may increase anticipated operational costs. It is also assumed that there may be impact fees or improvements required to local roads that have not yet been factored into the capital cost for this site because the extent of roadway modifications is currently not known. It is anticipated that these would be negotiated and further evaluated during the land acquisition process. Additional Capital $48.3M (4.2% increase) Additional 19% annual operational cost for potable water purchase and ash hauling.	Significant additional costs anticipated for land acquisition*, on and off-site utility facilities, flood plain, wetland, and wildlife mitigation, and additional permitting efforts. Significant impact on hauling system due to distance from other System facilities would increase capital and operational cost. Purchase of potable water and significant distance to haul ash for disposal will increase anticipated operational costs. Additional Capital $80.4M (6.4% increase) Additional 119% annual operational cost for potable water purchase, significant ash hauling, and additional System hauling costs.	Significant additional costs anticipated for land acquisition*, on and off-site utility facilities, flood plain, wetland, and wildlife mitigation, and additional permitting efforts. Significant impact on hauling system due to distance from other System facilities would increase capital and operational cost. Purchase of potable water and significant distance to haul ash for disposal will increase anticipated operational costs. Additional Capital $84.7M (6.7% increase) Additional 119% annual operational cost for potable water purchase, significant ash hauling, and additional System hauling costs.

* Land acquisition cost estimated based upon current Miami-Dade Property Appraiser Market Value plus 10%.

Appendix A

Site Packages

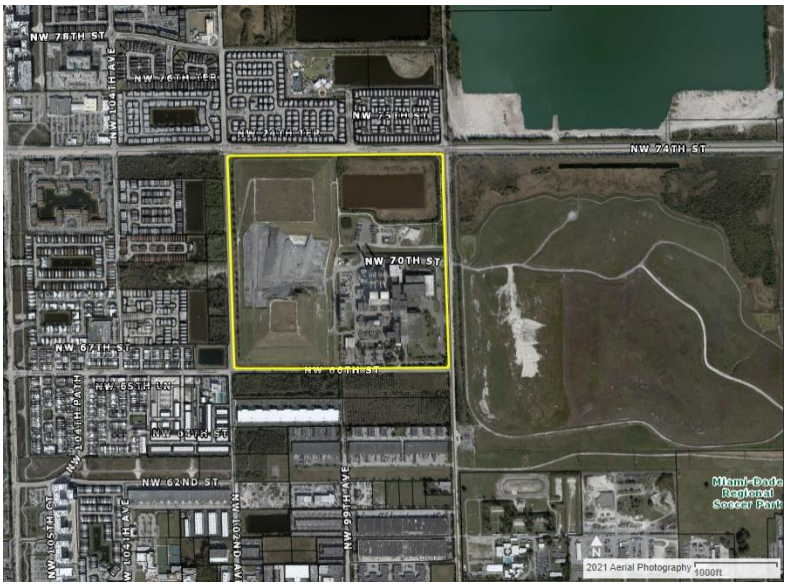
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Existing RRF Site - Doral

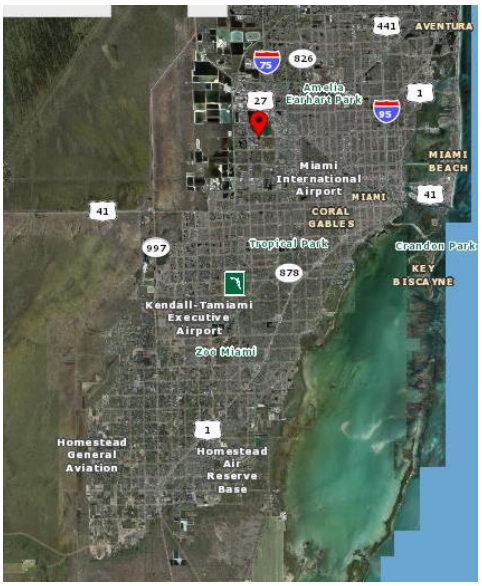
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
–	✓	✓	–	✓	✗	✓	✓

MDPA Parcel Map



Location Map



Site Information

This 157.16-acre site is a single parcel inside the UDB, located in the City of Doral. The site area is sufficient to support the proposed 4,000 tpd WTE facility and is co-located with an active 80-acre Ash Monofil. The property is less than a 10-minute travel time to major roads, is less than 0.1 miles from the nearest residential zoning, and 9.87 miles (15.88 km) from the Class I boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 35-3017-001-0120

Owner: Miami Dade County DSWM

2021 MDPA Market Value: $176,631,573

Zoning District: GU

Operational, Engineering, and Regulatory Considerations

Location

The site is located at 6990 NW 97th Avenue, Miami, FL 33178, less than 0.1 miles from the nearest residential zoning, and 9.87 miles from the boundary of Everglades National Park. If this site were selected, the short-term effects on the County's Solid Waste System would be minimal. Over the short term, redeveloping this site with a new WTE facility while maintaining the existing RRF operations could be challenging and would require close coordination between the contractor and operator. Construction phasing will need to be considered and planned in order to limit impact to the existing RRF operations, which if impacted, could result in additional costs and extend the duration of the project schedule.

In the long term, the number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility, but their travel patterns and travel times would be unaltered. Although additional transfer fleet vehicles and drivers would be routed to the site in order to maximize WTE processing capacity, they may be rerouted from deliveries to non-DSWM disposal sites and the acquisition of additional fleet vehicles and driver staffing may not be needed. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar collection fleet costs would be virtually unchanged. Additionally, the existing RRF site is in close proximity to route power to the 58th Street Fleet Facility and could provide for charging stations for electric fleet vehicles, which are currently being procured.

Ash from the new WTE facility may be disposed of at the existing Ash Monofill, if capacity is available, or may be disposed either at the adjacent WM Medley landfill or hauled out of County. Either off-site option will significantly increase ash disposal costs from current levels.

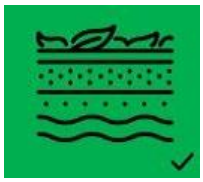
Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. According to WASD data, there is a 4" potable supply line at the property, and a 16" water main available on NW 97th Ave.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. Available at the site on NW 97th Ave., on-site lift station and leachate storage tank. WASD data indicates there is a 16" gravity sewer available on NW 97th Ave.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. An 8" gas service line is available at the site, and the transmission main is available on 97th Ave.
- **Electric** – Substation available approximately 0.15 miles SE of the site on NW 97th Ave. Need to verify substation/ switchyard spare capacity, voltage, and available terminations.

Analysis Summary – Existing RRF Site - Doral

- **Stormwater** – An existing stormwater system is on site serving both the existing RRF and the Ash Monofill. If a new WTE facility is constructed over the stormwater detention pond on the northeast quadrant of the site, allowing the existing RRF to maintain operations during construction, providing required stormwater quantity and quality controls for the site may be challenging.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. Three industrial supply wells are currently used at the RRF for source water for boiler feedwater, cooling tower/condenser feedwater, truck wheel wash, and irrigation water. If reused for a new WTE facility on site, the wells would need to be redeveloped.

Soil



The USDA Soil Survey data for the site classifies the predominant site soils as Udorthents-Water-Urban land complex, 0 to 60 percent slopes and Cooper Town muck, ponded-Urban land complex, 0 to 1 percent slopes. Udorthents soils consist of unconsolidated or heterogeneous geologic material removed during the excavation of ditches, canals, lakes, ponds, and quarries. This is consistent with the development of the RRF and Ash Monofill at the site.

The presence of muck soils in the northeast quadrant of the site indicates the seasonal high groundwater elevation is typically 0-6 inches below existing grade but would have to be confirmed by geotechnical investigations. The high groundwater makes stormwater control more challenging and will result in the need for elevating the tipping floor pit, similar to the existing tipping floor.

Environment

- **Floodplains** – Most of the site is in FEMA Flood Zone X (Minimal Flood Hazard), portions of the NE area (stormwater ponds) are in FEMA Flood Zone AE (El. 5).
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** The existing RRF is currently permitted under the Power Plant Siting Act (PPSA) Conditions of Certification PA 77-08. In order to construct a new WTE facility on the site, a complete PPSA Modification Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.). The PSC “need determination” filing process is also required.
- **New Source Review (NSR) - Prevention of Significant Deterioration (PSD) Permitting** – The site is located 9.87 miles (15.88 km) NE of the Everglades Class I Area, 14.77 miles (23.8 km) NW of the Biscayne Class II Area, one mile south of the Medley Landfill, 4.7 miles NE of the CEMEX Miami Cement Plant and about 2.2 miles SE of the Titan Pennsuco Complex, which are all large sources of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the

Analysis Summary – Existing RRF Site - Doral

PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

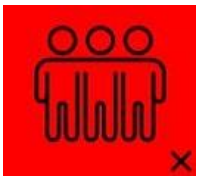
The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay National Park (sensitive Class II area) located on the eastern side border having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility, and thus will make air permitting challenging. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive areas.

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory indicates the site contains minor wetlands surrounding a large treatment pond and four surface waters. The National Hydrography Dataset shows three surface waters. The South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains one stormwater treatment pond. The site appears completely disturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is not within 18.6 miles of an active wood stork colony and does not appear to contain suitable foraging habitat; therefore, wood stork mitigation is not anticipated. Impacts to wetlands and surface waters designed and permitted as stormwater treatment areas are generally not regulated by the State of Florida, however, additional studies and analysis are required to determine if wetland permitting such as a State 404 Permit would be required.

Transportation

Travel time north to major roads (i.e., 58th Street, 74th Street) is less than 10 minutes. Existing access to site is via NW 97th Ave., which appears to be in relatively good physical condition and has sufficient capacity for the expected traffic loadings of the proposed WTE facility. Traffic impacts on local roads would be unchanged from existing conditions. The site has sufficient area to accommodate truck queueing.

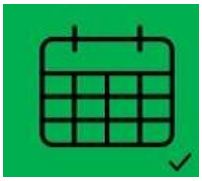
Community



The USEPA EJScreen Standard Report indicated elevated values for Particulate Matter 2.5 ($\mu g/m^3$) and several other pollutants. The site is less than a tenth of a mile from the nearest residential zoning, and the local population, community political leaders and environmental groups have indicated opposition to continued use of the site for WTE facility operations.

Analysis Summary – Existing RRF Site - Doral

Schedule



The existing RRF site is currently permitted under the PPSA Certification as well as PSD and Title V Air Operating Permits, which reduce the duration of the environmental permitting effort. Additionally, the site work required as compared to other sites is minimal because of existing RRF facility operations and infrastructure. However, there are existing conditions that affect the duration of the new WTE facility implementation including the following:

- **PSD Permitting** – The nearby Everglades National Park's (sensitive Class I area) location along the western border of the County and the Biscayne Bay National Park (sensitive Class II area) located on the eastern border of the County, both having more stringent AQRVs provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and will make air permitting challenging at this site.
- **PPSA Permitting** – This site was previously permitted and under the PPSA Certification and potentially reduces the duration needed for environmental permitting as a PPSA Certification modification and not a new application will be developed.
- **Community** –Opposition from the community is expected which could increase the duration of the new WTE facility implementation schedule.
- **Construction** – Additional planning and coordination is required in order to construct the new WTE facility at the existing RRF site, while the existing RRF continues to operate.

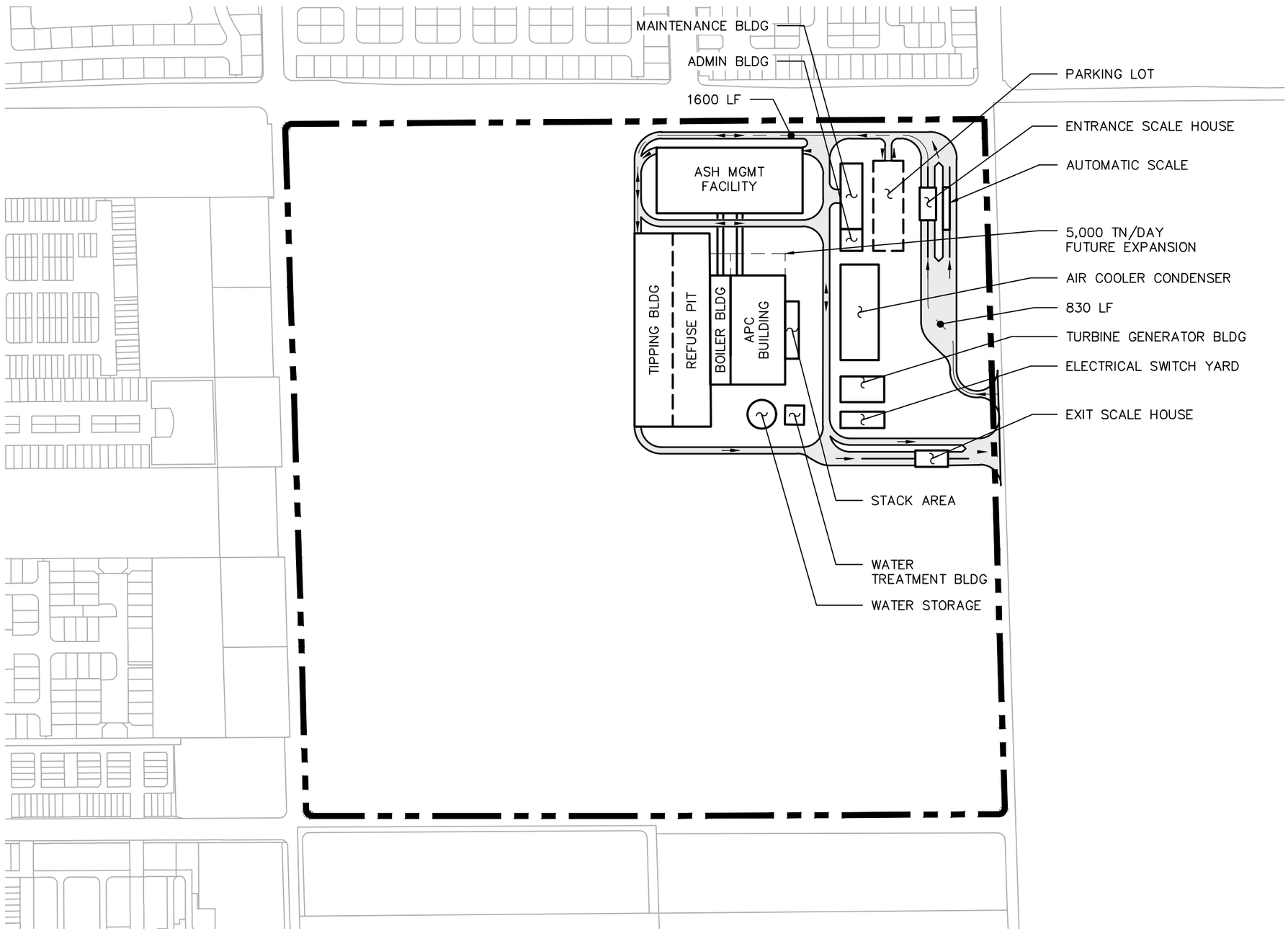
Cost

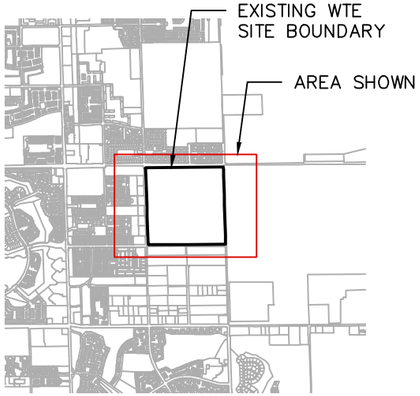
For comparative purposes, the existing RRF site was considered the base case, which includes the following costs:

- **Site Preparation** – Stormwater detention pond fill costs, environmental permitting costs and ash hauling.
- **System Effects** – If this site were selected, the effects on the County's Solid Waste System would be minimal, however, construction phasing will need to be considered in order to limit impact to existing RRF operations.

Site Differentiators Overview

- The existing RRF facility and site is currently permitted under the PPSA and is operating under an existing Conditions of Certification PA 77-08, which can be modified to provide for the construction and operation of a new WTE facility. A Modification to an existing Conditions of Certification is typically faster than developing an entirely new PPSA Application for an unpermitted site.
- Existing utilities suitable for a WTE facility are readily available and the site could route power to nearby System facilities.
- Construction phasing will need to be considered in order to limit impact to existing RRF operations, which could result in additional costs and extend project schedule.
- Expected significant opposition from the community could affect the project schedule.





KEY PLAN
N.T.S.

0 400' 800'

ARCADIS

MIAMI-DADE COUNTY

MIAMI-DADE DEPT OF SOLID WASTE MANAGEMENT

FUTURE WTE FACILITY SITING ALTERNATIVES ANALYSIS

WASTE-TO-ENERGY FACILTY

CONCEPTUAL 4,000 TPD SITE LAYOUT
FOLIO No. 35-3017-001-0120

JUNE 2022

User:KKASPEREK Spec:AUS-NCSMOD File:C:\USERS\KKASPEREK\ARCADIS\PF-64706604 - MIAMI DADE COUNTY DSWM PWWM - SITING EVALUATIONS\CAD\FIGURES\FIGURE 2.DWG Scale:1:1 SavedDate:6/9/2022 Time:14:14
Plot Date: Kasperek, Katie; 6/22/2022; 08:39 ; Layout:2

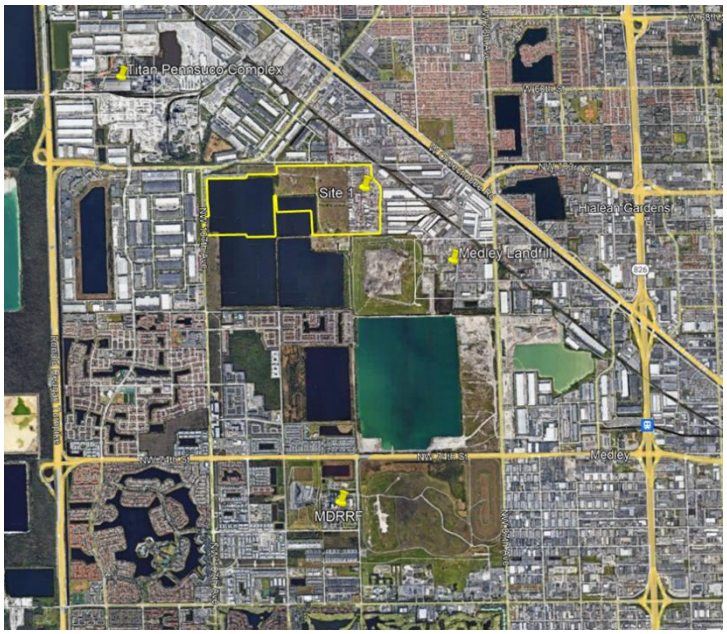
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 1 - Medley

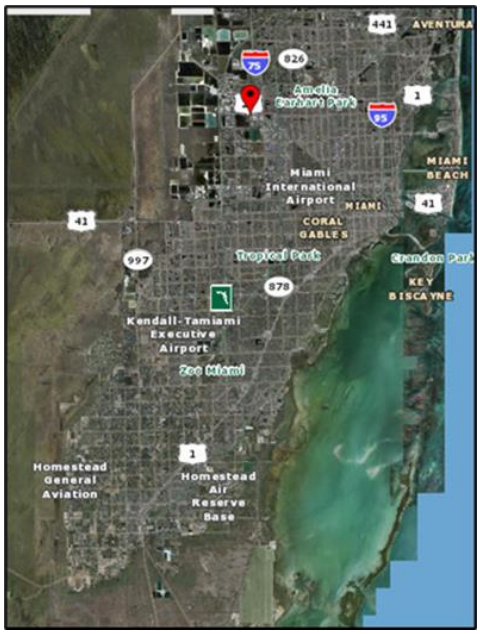
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
–	–	✗	–	✓	✗	–	–

MDPA Parcel Map



Location Map



Site Information

This 320.31-acre site is inside the UDB, located in the Town of Medley. The site is composed of several parcel areas and is large enough to support the proposed 4,000 ton per day (tpd) Waste-to-Energy (WTE) facility, expansion to 5,000 tpd capacity, and other co-located solid waste facilities such as an ash monofill, recycling center or an education center. The property is less than a 10-minute travel time to US-27 or the Turnpike, is located adjacent to residential zoning and 11.38 (18.31 km) miles from the boundary of the Everglades Class I area.

MDPA Parcel Data

Owner: F77 1 F77 2 & F77 3 LLC, F00 1 LLC

2021 MDPA Market Value: $38,621,504

Zoning District: M-1

PA Zone: Industrial – Light

Folio No: 22-3004-001-0470, others.

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 2.0 miles north of the existing RRF, more than four miles from any active airport, adjacent to residential zoning, and more than 11 miles from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be minimal. Direct hauls from some of the collection routes in the vicinity of the existing RRF would divert to the West transfer station for disposal due to shorter travel times. Incoming waste at that station would increase and may result in capacity issues, as it is currently operating at approximately 80% of design capacity.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Additional transfer fleet vehicles and drivers may be needed. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF, and options for limiting ash hauling distances could be considered. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available at the site on NW 95th Ave. and NW 106th Street, but additional analysis will be needed to determine pipe size, service pressure, and available system capacity. A booster station may be needed to increase system pressure. Soils data indicates shallow depth to bedrock in some locations, rock removal may be required for pipe trench excavation for new lines in those areas.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer.

  Sanitary sewer appears to be available at the site on NW 95th Ave. and NW 106th Street, but additional analysis will be needed to determine pipe size and available system capacity. A lift station and force main to gravity sewer may be required. Soils data indicates shallow depth to bedrock in some locations, rock removal may be required for pipe trench excavation for new lines in those areas.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. There is a gas transmission main on Krome Ave/US-

1. Additional ROW/easement may be needed. Soils data indicates shallow depth to bedrock, rock removal may be required for pipe trench excavation.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 1.9 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements.
- **Stormwater** – High groundwater elevations may result in slightly larger stormwater ponds on site, but there appears to be sufficient area for a stormwater system that meets regulatory requirements.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soils

The USDA Soil Survey data for the site and historical aerial photos (c. 1985) indicate the site area was previously excavated as a quarry and subsequently backfilled. This is consistent with the USDA Soil Survey data for the site, which classifies the site soils as 9—Udorthents-Water-Urban land complex, 0 to 60 percent slopes. Udorthents soils consist of unconsolidated or heterogeneous geologic material removed during the excavation of ditches, canals, lakes, ponds, and quarries.

In order for the facility to be located at this site, the facility buildings and ancillary components would have to be constructed on fill material, which could present geotechnical engineering challenges for foundation designs and additional site preparation costs.

Environment

- **Floodplains** – The site is not in a floodplain, it is within FEMA Flood Zone X (Minimal Flood Hazard).
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC “need determination” filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 11.38 mi (18.31 km) NE of the Everglades Class I Area, 16.19 mi (26.05 km) NW of the Biscayne Class II Area, and between two large existing emitters, the Medley Class I Landfill and Titan Pennsuco Complex. The adjacent Medley Landfill may result in elevated receptors (200ft+) and exhaust plume impaction during air emissions modeling.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

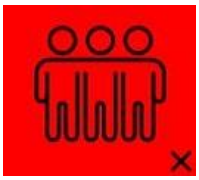
The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates no wetlands are present. The site appears disturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required but is assumed to be minimal as there is no roosting or foraging habitat remaining. The site is also within 18.6 miles of an active wood stork colony; however, the lack of apparent suitable foraging habitat precludes wood stork mitigation. No permit triggers exist for wetlands.

Transportation

The site has good access to Florida Turnpike and US-27 via Beacon Station Blvd., but some road areas need to be improved and the Town of Medley may want the County to assume maintenance of some or all of the access roads, which would increase the County's costs. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Community



The USEPA EJScreen Standard Report indicated elevated values for Particulate Matter 2.5 (µg/m3 and several other pollutants. The site is adjacent to residential zoning, which suggests that the siting of a WTE facility may be opposed by the community at this location.

Analysis Summary – Alternative Site No. 1 - Medley

Schedule

There are a few site issues that could affect the schedule of the project, including:

- **Land Acquisition –** siting analysis and land acquisition will increase schedule duration.
- **Utilities** – Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- **Soils** – Additional geotechnical testing will be needed to determine the full extent of soil preparation needed (i.e., vibro-compaction, consolidation, etc.) and additional requirements for building foundations at the site, which may increase design and construction time.
- **Permitting** – Prevention of Significant Deterioration (PSD) Permitting – The site is located 11.38 mi (18.31 km) NE of the Everglades Class I Area, 16.19 mi (26.05 km) NW of the Biscayne Class II Area, and between two large existing emitters, the Medley Class I Landfill and Titan Pennsuco Complex. The adjacent Medley Landfill may result in elevated receptors (200ft+) and exhaust plume impaction during air emissions modeling. The nearby Everglades National Park's location along the western border of the County and the Biscayne Bay NP (sensitive Class II area) located on the eastern border of the County both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting challenging at this prospective site.
- **Community** – The site is adjacent to residential zoning. Therefore, siting of a new WTE facility may face community opposition at this location, which could affect the project schedule.

Cost

Overall, the cost of developing a WTE Facility on this site is expected to be higher than at the base alternative site, the Existing RRF. There are several site issues and additional Solid Waste System changes that could affect the total cost to the Department, including:

- **Land Acquisition –** siting analysis and land acquisition will increase project costs.
- **Utilities**
  - Construction of a potable water booster station may be required.
  - Construction of an on-site wastewater lift station will likely be required.
  - Construction of approximately 2.2 miles of 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
  - Soils data indicates shallow depth to bedrock, rock removal may be required in some areas for utility pipe trench excavation.
  - Construction of approximately 1.9 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
  - Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.

  - On-site water wells are likely not permittable, therefore potable water will need to be purchased, increasing anticipated operations and maintenance costs.

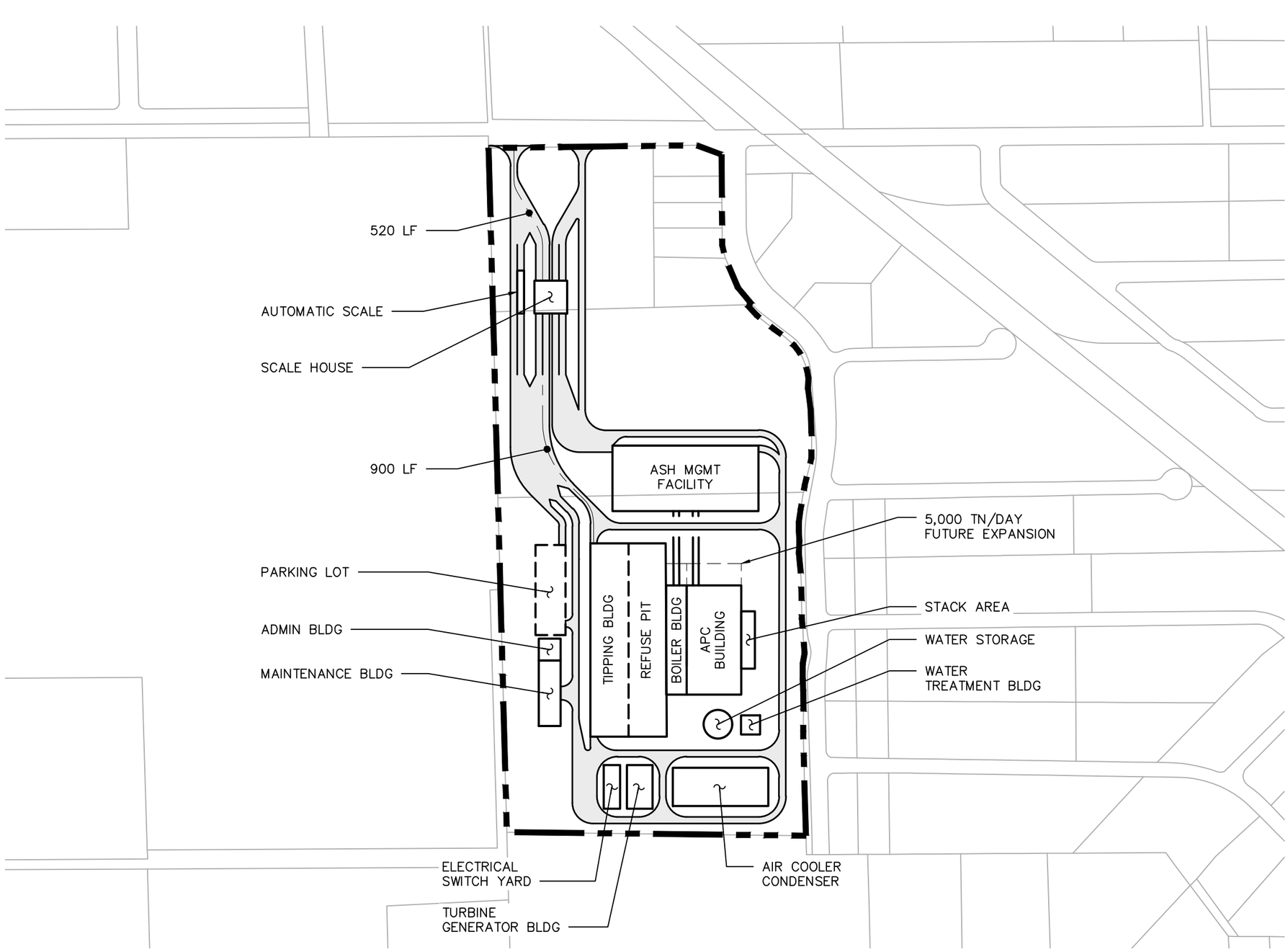
- **Soils** – Additional geotechnical testing will be needed to determine the full extent of soil preparation needed (i.e., vibro-compaction, consolidation, etc.) and additional requirements for building foundations at the site, which may increase design and construction costs.
- **Stormwater** – due to high groundwater levels, additional stormwater considerations or facilities may be required.
- **Zoning and Permitting** – because this is a greenfield site, additional zoning and permitting efforts may be required which could impact cost and schedule.
- **Solid Waste System**
  - Some collection routes that currently direct haul to the existing RRF would likely reroute to dispose at the West or Northeast Transfer Station to minimize travel times, which may increase traffic at those stations.
  - Collection and Transfer vehicles routed to this site would have slightly increased costs for fuel consumption, driver time, and vehicle wear related to the additional travel distance from the existing RRF.
  - Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF, however, options for limiting ash hauling distances could be considered. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.
  - It is also assumed that there may be impact fees or improvements required to local roads that have not yet been factored into the capital cost for this site because the extent of roadway modifications is currently not known. It is anticipated that these would be negotiated and further evaluated during the land acquisition process.

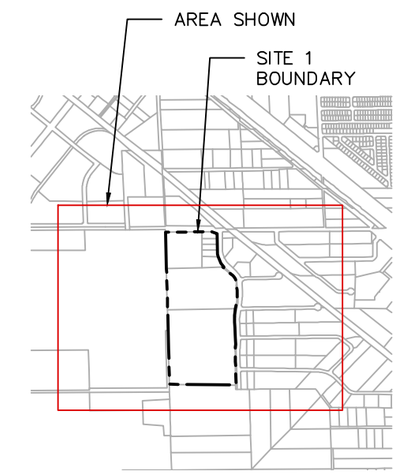
Site Differentiators Overview

- Construction of a potable water booster station may be required.
- Construction of an on-site wastewater lift station and 6” force main may be required.
- Construction of approximately 2.2 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Soils data indicates shallow depth to bedrock, rock removal may be required for utility pipe trench excavation.
- Additional geotechnical testing will be needed to determine the full extent of soil preparation needed (i.e., vibro-compaction, consolidation, etc.) and additional requirements for building foundations at the site, which may increase design and construction costs and extend the project schedule.
- Construction of approximately 1.9 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.

Analysis Summary – Alternative Site No. 1 - Medley

- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Due to potential adverse effects to wetlands on site, groundwater may not be available for use as source water for boiler feedwater, cooling tower/condenser feedwater, truck wheel wash, and irrigation water.





KEY PLAN
N.T.S.

0 400' 800'

ARCADIS

MIAMI-DADE COUNTY

MIAMI-DADE DEPT OF SOLID WASTE MANAGEMENT

FUTURE WTE FACILITY SITING ALTERNATIVES ANALYSIS

WASTE-TO-ENERGY FACILTY

CONCEPTUAL 4,000 TPD SITE LAYOUT FOLIO MEDLEY

JUNE 2022

SITE 1

User: KKASPEREK Spec: AUS-NCSMOD File: C:\USERS\KKASPEREK\ARCADIS\PF-64706604 - MIAMI DADE COUNTY DSWM PWWM - SITING EVALUATIONS\CAD\FIGURES\SITE 1.DWG Scale: 1:1 SavedDate: 6/3/2022 Time: 10:33
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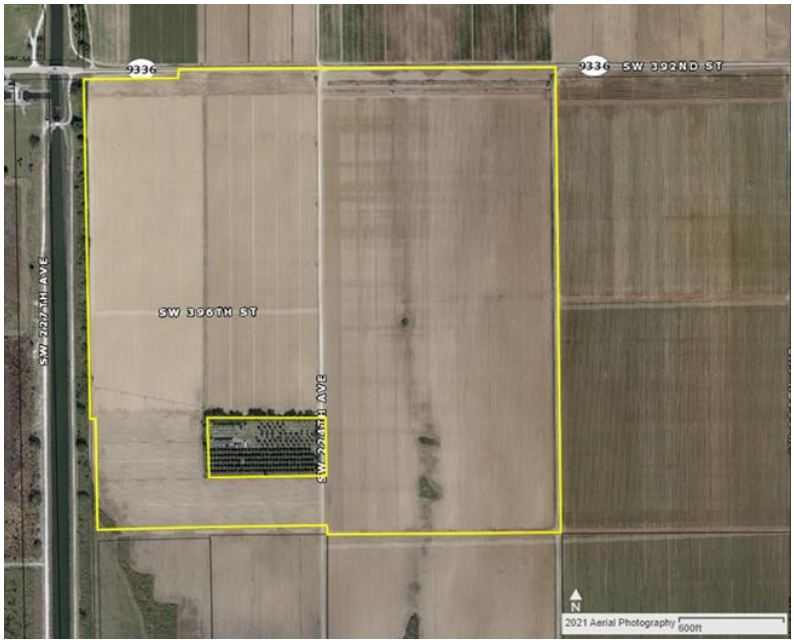
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 16 – Ingraham Hwy. Site #1

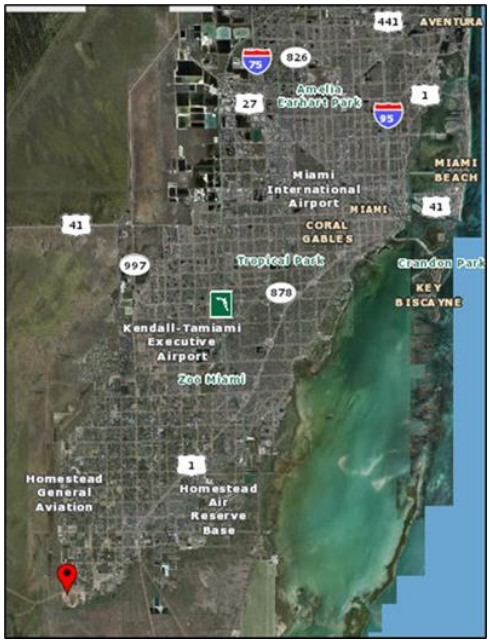
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✗	✗	✗	✗	✓	✗	✗	✗

MDPA Parcel Map



Location Map



Site Information

This 159.71-acre site consists of two parcels outside the UDB, located in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofill, recycling center or an education center. The property is less than a 10-minute travel time to W Palm Drive, is 0.51 miles from the nearest residential zoning, and 1.02 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 30-8808-000-0030
Owner: P Acursio Partnership LTD
2021 MDPA Market Value: $2,160,760
Zoning District: AU
PA Zone: Interim - Agricultural

Folio No: 30-8808-000-0020
Owner: Everglades Fruit, Inc.
2021 MDPA Market Value: $133,720
Zoning District: AU
PA Zone: Interim - Agricultural

Analysis Summary – Alternative Site No. 16 – Ingraham Hwy. Site #1

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 32.5 miles SW of the existing RRF, slightly more than half a mile from the nearest residential zoning, and approximately one mile from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 3.3 miles NE of the site on Ingraham Hwy., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. Appears to be available approximately 3.3 miles NE of the site on Ingraham Hwy., on-site lift station and about 3.3 miles of force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 5.5 miles NE of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

Analysis Summary – Alternative Site No. 16 – Ingraham Hwy. Site #1

- **Electric** – Nearest substation/switchyard is Florida City Substation located 6.5 miles away at 33800 SW 202nd Avenue. Need to verify substation/switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/FPL Easements is assumed. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Krome very gravelly marly loam, 1 to 2 percent slopes, Biscayne marly silt loam, drained, 0 to 1 percent slopes, and Chekika very gravelly marly loam, 1 to 2 percent slopes. Generally, these soils are not well suited for building foundations because of water content and shallow depth to bedrock (typically 5-7 inches).

The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface, but would have to be confirmed by geotechnical investigations. These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.). The PSC “need determination” filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 1.02 mi (1.7 km) E of the Everglades Class I Area, 13.00 mi (21.0 km) W of the Biscayne Class II Area, and about 13.0 miles WSW of the FPL Turkey Point Power Plant, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the

PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

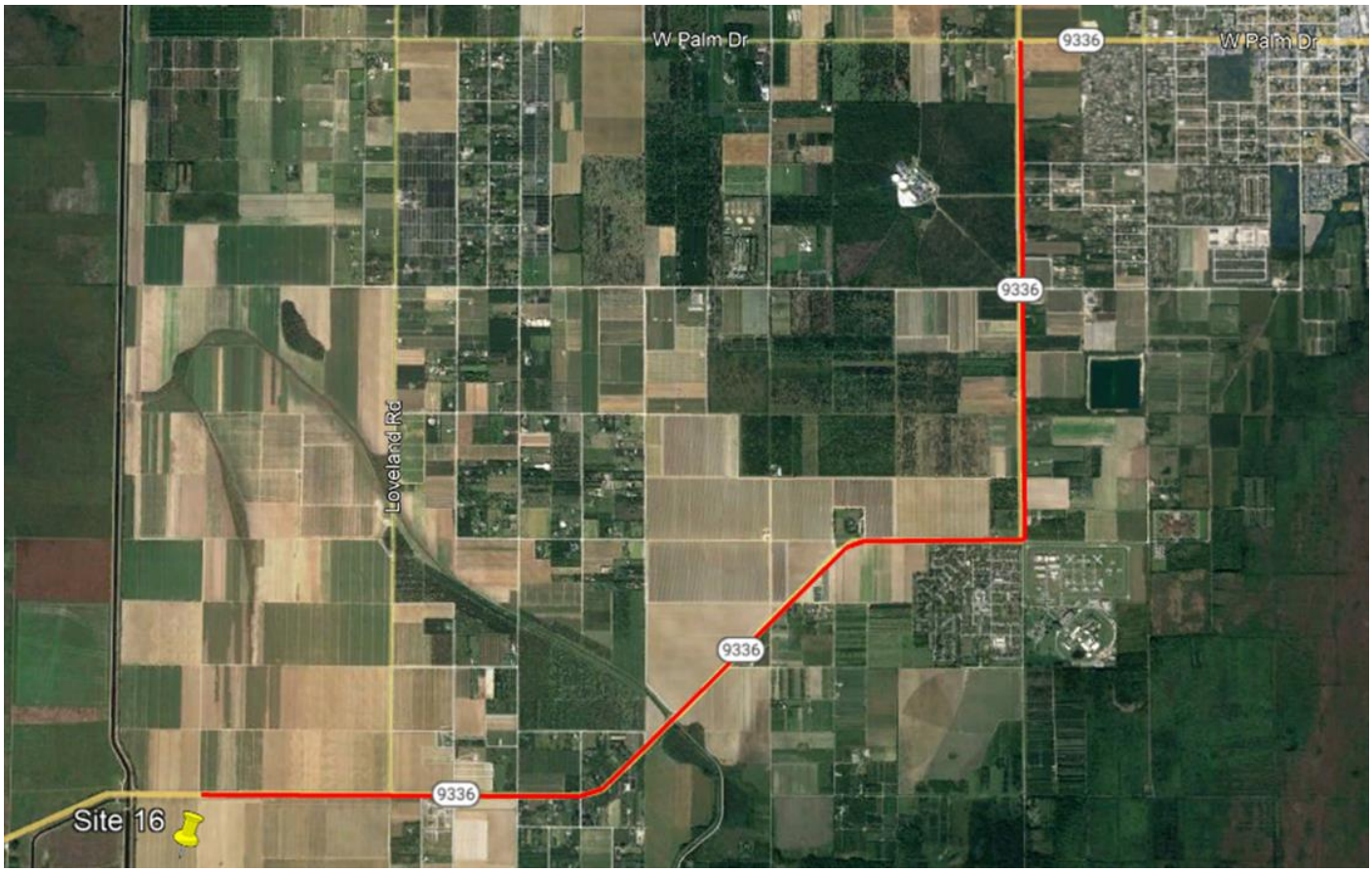
The nearby Everglades National Park's location along the western border of the County and the Biscayne Bay National Park (sensitive Class II area) located on the eastern border of the County both having more stringent Air Quality Related Values (AQRVs) and provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s). Based on projected emissions for a 4,000 tpd facility, preliminary evaluation indicates that this parcel may be too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains minor wetlands. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required.

Transportation

Travel time north to W Palm Drive is less than 10 minutes. Existing access to the site is via Ingraham Hwy. (see map below), and no additional offsite road improvements are needed. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Ingraham Hwy., W Palm Drive, and other local roads may be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Analysis Summary – Alternative Site No. 16 – Ingraham Hwy. Site #1



Community

The USEPA EJScreen Standard Report indicated no existing environmental justice issues for this site. However, the site is about half a mile from the nearest residential zoning and is approximately a mile from the boundary of Everglades National Park, which suggests that siting of a WTE facility may be strongly opposed by environmental groups and community organizations.

Schedule

Development of this site has the longest duration and is the same as Site 17. The main issues affecting the duration of the new WTE facility implementation schedule include:

- **Land Acquisition –** siting analysis and land acquisition will increase schedule duration.
- **Soils** – The removal and replacement of site muck soils with structural fill and/or rock removal in development areas. Additional structural fill will be needed to elevate the tipping floor and pit due to the high groundwater table and floodplain mitigation.

Analysis Summary – Alternative Site No. 16 – Ingraham Hwy. Site #1

- **Permitting** – Based on projected emissions for a 4,000 tpd facility, preliminary evaluation indicates that this parcel may be too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.
- **Mitigation** – Wetland, floodplain, and wildlife mitigation will likely increase the duration of the implementation schedule.
- **Community** – The close proximity of the site to Everglades National Park may result in significant opposition from environmental groups and community organization, which could impact the duration of the implementation schedule.

Cost

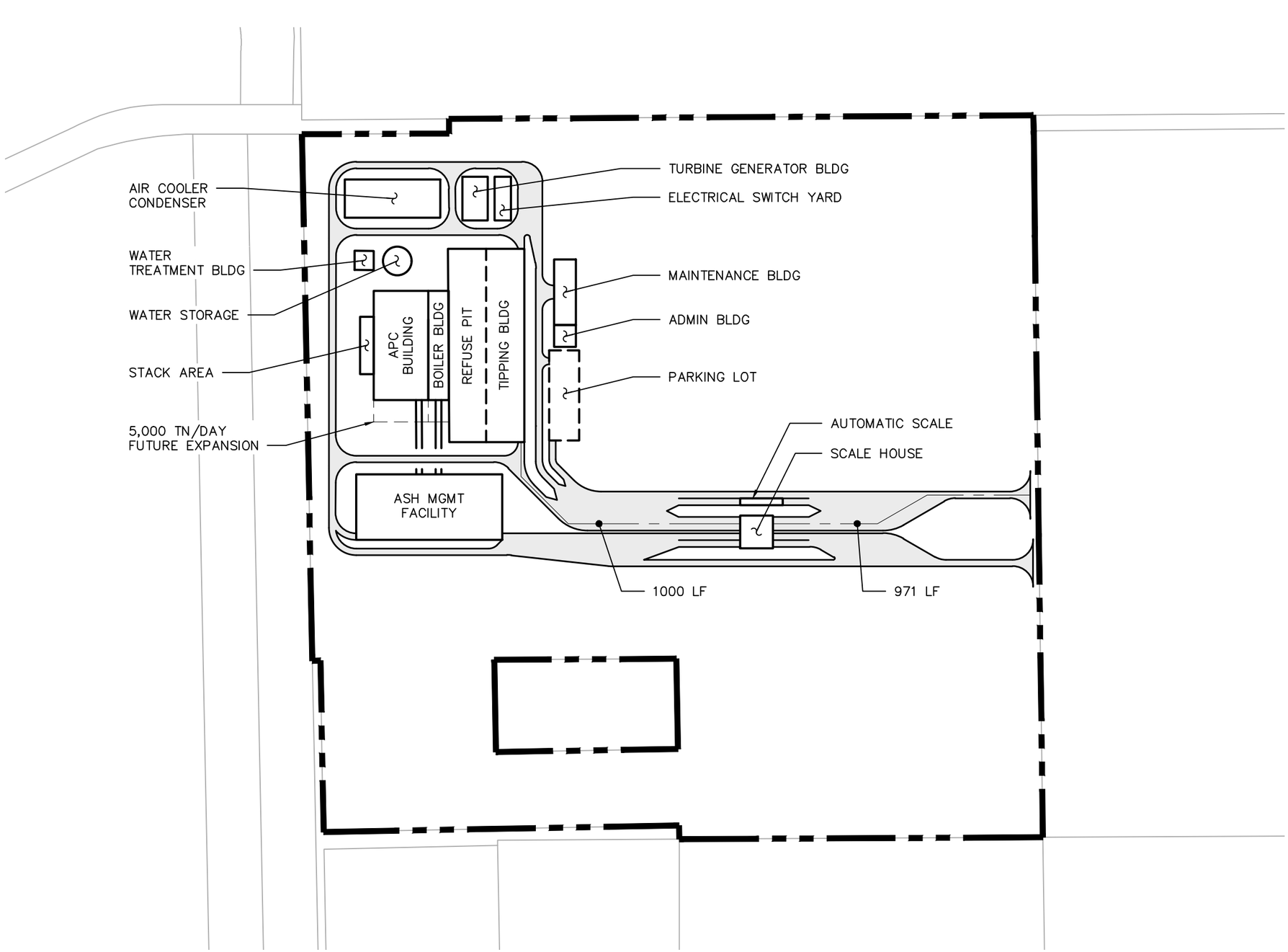
Overall, the cost of developing a WTE facility on this site is expected to be higher than at the existing RRF site, which was used as the base case in comparing the cost of developing a new WTE facility. Issues that could affect the cost include:

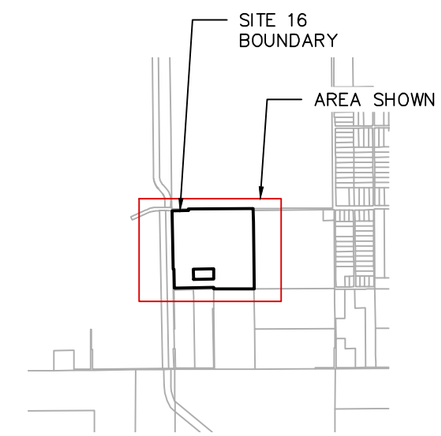
- **Land Acquisition –** siting analysis and land acquisition will increase costs.
- **Soils** – The removal and replacement of site soils with structural fill and/or rock removal in development areas. Additional structural fill will be needed to elevate the tipping floor and pit due to high groundwater.
- **Utilities**
  - Construction of a potable water booster station and 3.3 miles of water main will likely be required.
  - Construction of an on-site wastewater lift station and 3.3 miles of force main will likely be required.
  - Construction of approximately 5.5 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
  - Soils data indicates shallow depth to bedrock, rock removal may be required in some areas for utility pipe trench excavation.
  - Construction of approximately 6.5 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
  - Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
  - On-site water wells are likely not permittable, therefore potable water will need to be purchased, increasing anticipated operations and maintenance costs.
- **Permitting –** Based on projected emissions for a 4,000 tpd facility, preliminary evaluation indicates that this parcel may be too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.
- **Stormwater** – High groundwater table and required floodplain compensating storage will significantly increase both the cost and site area required for stormwater retention.

- **Solid Waste System**
  - Collection and Transfer vehicles routed to this site would have significantly increased costs for fuel consumption, driver time, and vehicle wear related to the additional travel distance from the existing RRF.
  - Ash hauling costs for a new WTE facility located at this site are expected to be much higher than the existing RRF. An option to keep ash hauling distances short - there appears to be sufficient area on site to co-locate a new ash monofil, if permittable. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Site Differentiators Overview

- Removal of soils and replacement with structural fill
- Additional structural fill for tipping floor pit due to high groundwater
- Floodplain compensating storage
- Extremely difficult PSD permitting
- Long extensions of utilities
- Close proximity to Everglades National Park – anticipated environmental group and community organization opposition





KEY PLAN
N.T.S.

0 400' 800'

User: KKASPEREK Spec: AUS-NCSMOD File: C:\USERS\KKASPEREK\ARCADIS\PF-64706604 - MIAMI DADE COUNTY DSWM PWWM - SITING EVALUATIONS\CAD\FIGURES\SITE 16.DWG Scale: 1:1 SavedDate: 6/6/2022 Time: 14:38
Plot Date: Kasperek, Katie: 6/6/2022; 14:39 ; Layout: 16

ARCADIS

MIAMI-DADE COUNTY

MIAMI-DADE DEPT OF SOLID WASTE MANAGEMENT

FUTURE WTE FACILITY SITING ALTERNATIVES ANALYSIS

WASTE-TO-ENERGY FACILTY

CONCEPTUAL 4,000 TPD SITE LAYOUT
FOLIO No. 30-8808-000-0020/0030

JUNE 2022

SITE 16

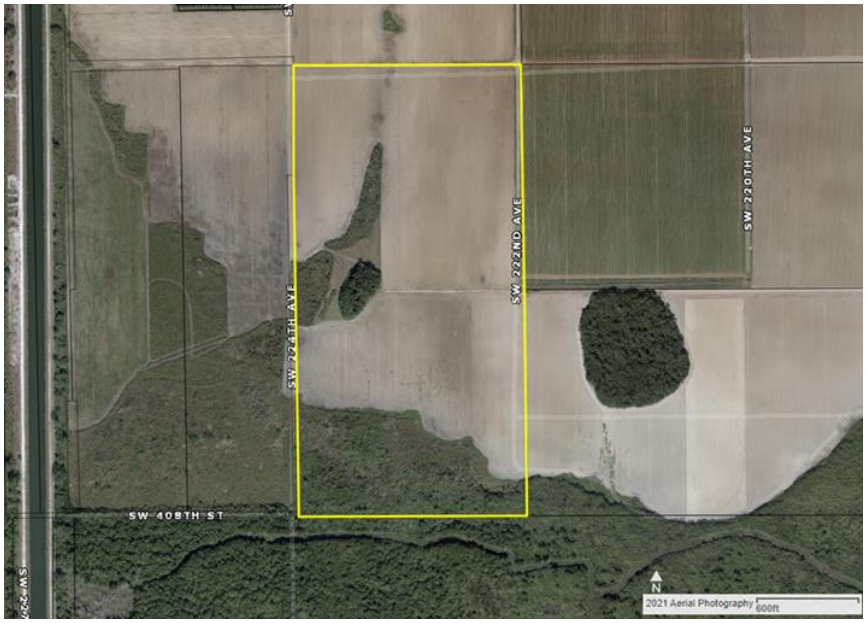
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 17

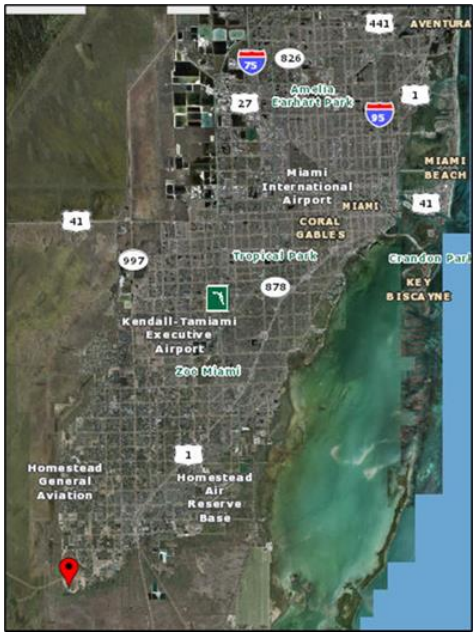
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	–	✕	✕	✕

MDPA Parcel Map



Location Map



Site Information

This 81.11-acre site is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (tpd) Waste-to-Energy (WTE) facility and expansion to 5,000 tpd capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to W Palm Drive, is 0.53 miles from the nearest residential zoning, and is 1.28 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 30-8808-000-0040

Owner: EIP IV FL Round Hammock Land Co., LLC

2021 MDPA Market Value: $924,826

Zoning District: AU

PA Zone: Interim - Agricultural

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 33.0 miles SW of the existing RRF site, slightly more than half a mile from the nearest residential zoning, and approximately one mile from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 4.0 miles NE of the site on Ingraham Hwy., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. Appears to be available approximately 4.0 miles NE of the site on Ingraham Hwy., on-site lift station and about 4.0 miles of force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 6.0 miles NE of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

Analysis Summary – Alternative Site No. 17

- **Electric** – Nearest substation/ switchyard is Florida City Substation located 6.5 miles away at 33800 SW 202nd Avenue. Need to verify substation/switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Krome very gravelly marly loam, 1 to 2 percent slopes, Biscayne marly silt loam, drained, 0 to 1 percent slopes, and Chekika very gravelly marly loam, 1 to 2 percent slopes. Generally, these soils are not well suited for building foundations because of water content and shallow depth to bedrock (typically 5-7 inches).

The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface, but would need to be confirmed by geotechnical investigations. These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification** – A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.). The PSC “need determination” filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 1.28 mi (2.1 km) E of the Everglades Class I Area, 13.12 mi (21.2 km) W of the Biscayne Class II Area, and about 12.8 miles WSW of the FPL Turkey Point Power Plant, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the

PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the County and the Biscayne Bay National Park (sensitive Class II area) located on the eastern border of the County both have more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s). Based on projected emissions for a 4,000 tpd facility, preliminary evaluation indicates that this parcel may be too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.

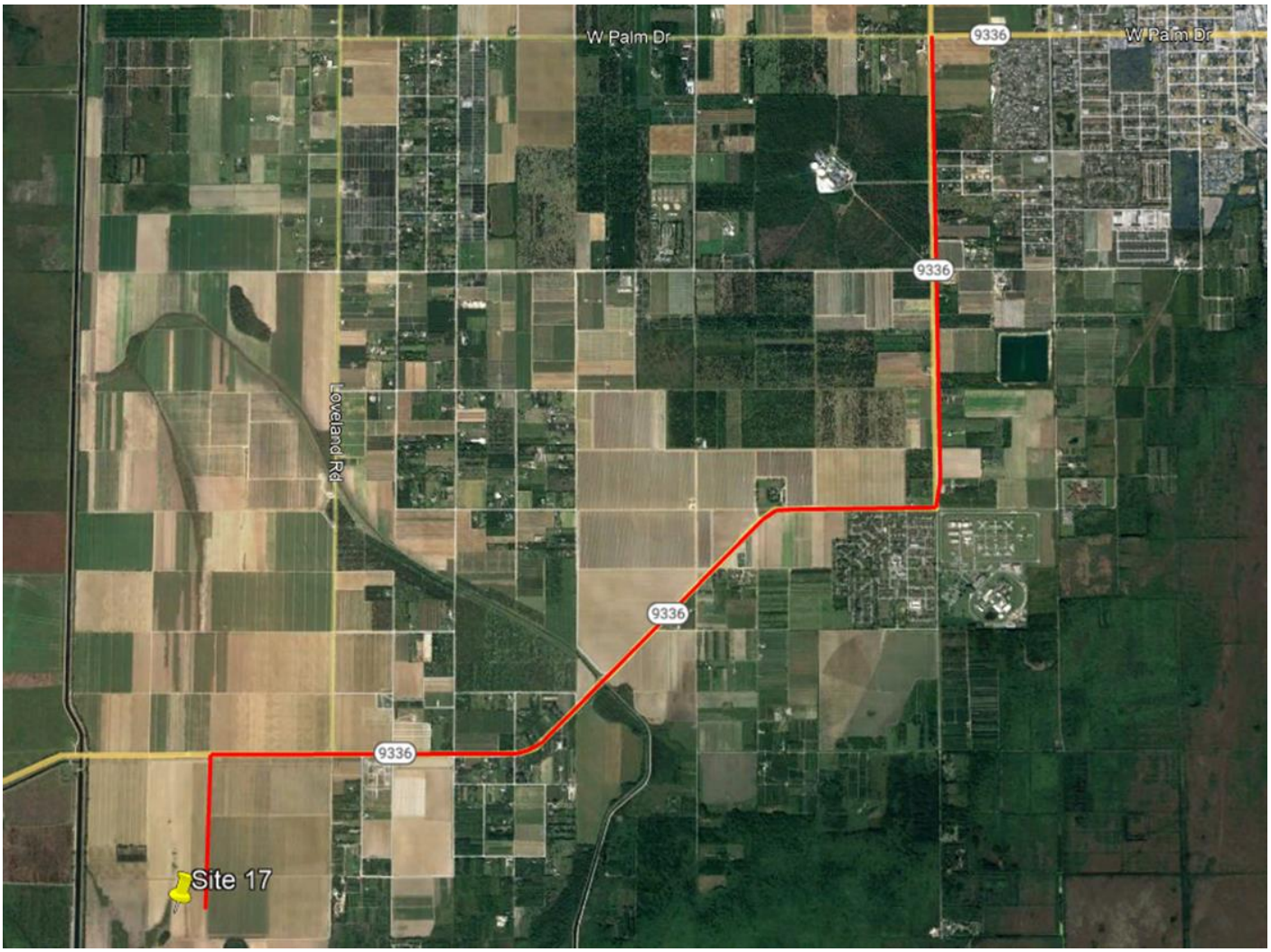
- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains wetlands. The site is within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required.

Transportation

Travel time north to W Palm Drive is less than 10 minutes. Existing access to site is via Ingraham Hwy. and SW 222nd Ave. (see map below), but approximately 0.75 miles of two-lane road with paved shoulders will need to be constructed for proper site access. Additional ROW may have to be acquired.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Ingraham Hwy., W Palm Drive, and other local roads may be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Analysis Summary – Alternative Site No. 17



Community

The USEPA EJScreen Standard Report indicated no existing environmental justice issues for this site. However, the site is about half a mile from the nearest residential zoning and is approximately 1.28 miles from the boundary of Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by environmental groups and community organizations at this location.

Schedule

There are a few site issues that could affect the schedule of the project, including:

- **Soils** – The removal and replacement of site soils with structural fill and/or rock removal in development areas. Additional structural fill will be needed to elevate the tipping floor and pit due to high groundwater.

Analysis Summary – Alternative Site No. 17

- **Permitting** – Based on projected emissions for a 4,000 tpd facility, preliminary evaluation indicates that this parcel may be too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.
- **Community** – The close proximity of the site to Everglades National Park may result in significant opposition from the community and could significantly affect the project schedule.
- **Mitigation** – Wetland, floodplain, and wildlife mitigation will likely increase project schedule.

Cost

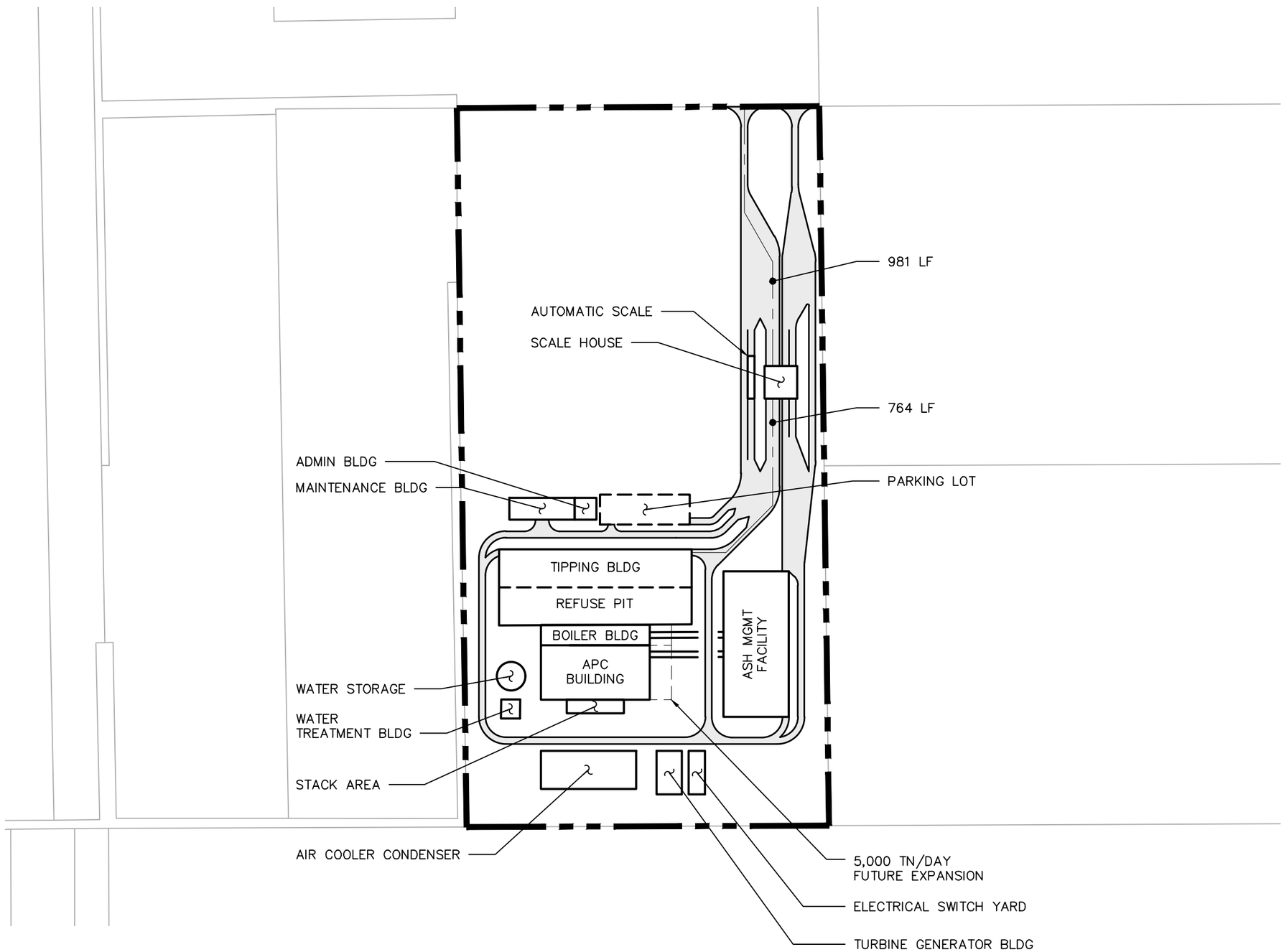
Overall, the cost of developing a WTE facility on this site is expected to be higher than at the existing RRF site, which was used as the base case in comparing the cost of developing a new WTE facility. Issues that could affect the cost include:

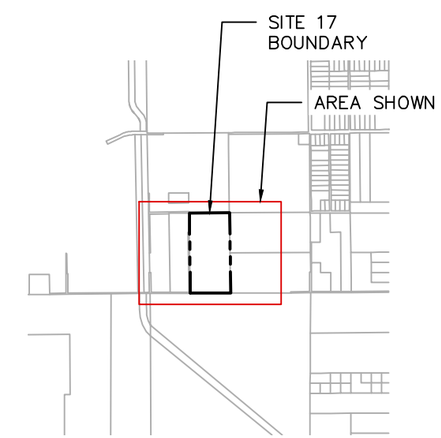
- **Land Acquisition –** siting analysis and land acquisition will increase costs.
- **Soils** – The removal and replacement of site soils with structural fill and/or rock removal in development areas. Additional structural fill will be needed to elevate the tipping floor and pit due to high groundwater.
- **Utilities**
  - Construction of a potable water booster station and 4.0 miles of water main will likely be required.
  - Construction of an on-site wastewater lift station and 4.0 miles of force main will likely be required.
  - Construction of approximately 6.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
  - Soils data indicates shallow depth to bedrock, rock removal may be required in some areas for utility pipe trench excavation.
  - Construction of approximately 6.0 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
  - Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
  - On-site water wells are likely not permittable, therefore potable water will need to be purchased, increasing anticipated operations and maintenance costs.
- **Permitting –** Based on projected emissions for a 4,000 tpd facility, preliminary evaluation indicates that this parcel may be too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.
- **Stormwater** – High groundwater table and required floodplain compensating storage will significantly increase both the cost and site area required for stormwater retention.
- **Solid Waste System**

- Collection and Transfer vehicles routed to this site would have significantly increased costs for fuel consumption, driver time, and vehicle wear related to the additional travel distance from the existing RRF.
- Ash hauling costs for a new WTE facility located at this site are expected to be much higher than the existing RRF. An option to keep ash hauling distances short - there appears to be sufficient area on site to co-locate a new ash monofil, if permittable. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels

Site Differentiators Overview

- Removal of muck soils and replacement with structural fill
- Additional structural fill for tipping floor pit due to high groundwater
- Floodplain compensating storage
- Construction of 0.75 mile of access road
- Extremely difficult PSD permitting
- Long extensions of utilities
- Close proximity to Everglades National Park – anticipated environmental group and community organization opposition





KEY PLAN
N.T.S.

0 400' 800'

ARCADIS

MIAMI-DADE COUNTY

MIAMI-DADE DEPT OF SOLID WASTE MANAGEMENT

FUTURE WTE FACILITY SITING ALTERNATIVES ANALYSIS

WASTE-TO-ENERGY FACILTY

CONCEPTUAL 4,000 TPD SITE LAYOUT
FOLIO No. 30-8808-000-0040

JUNE 2022

SITE 17

User:KKASPEREK Spec:AUS-NCSMOD File:C:\USERS\KKASPEREK\ARCADIS\PF-64706604 - MIAMI DADE COUNTY DSWM PWWM - SITING EVALUATIONS\CAD\FIGURES\SITE 17.DWG Scale:1:1 SavedDate:6/6/2022 Time:15:15
Plot Date: Kasperek, Katie; 6/22/2022; 08:33 ; Layout:17

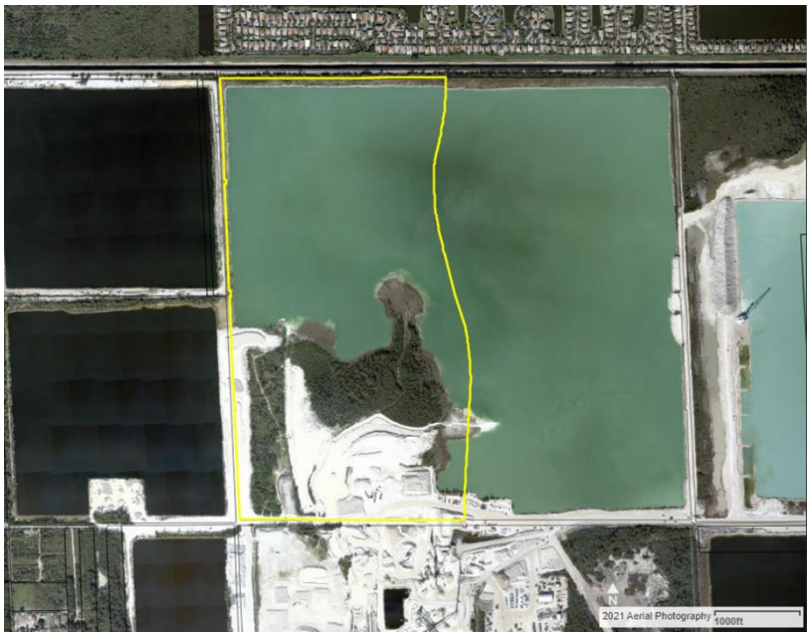
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 2

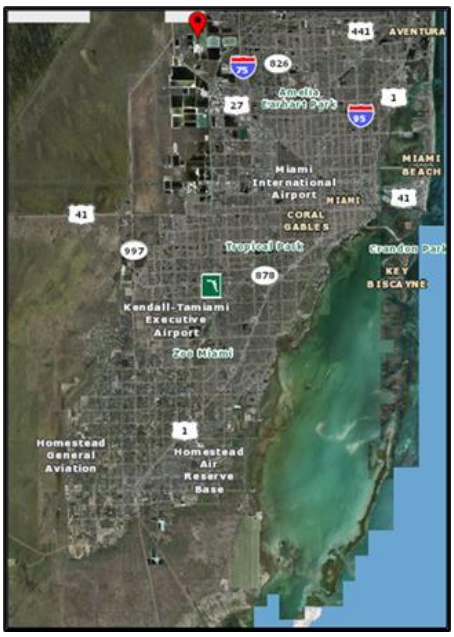
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 302.52-acre site is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27, is 0.57 miles from the nearest residential zoning, and 13.78 mi (22.2 km) from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 30-2901-001-0040

Owner: Vecellio and Grogan, Inc.

2021 MDPA Market Value: $1,383,917

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 8.0 miles NW of the existing RRF, more than four miles from any active airport, 0.57 miles from the nearest residential zoning, and 13.8 miles from the boundary of Everglades National Park. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as some collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. Transfer deliveries from those facilities would increase. A new transfer station may need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The deliveries by transfer trucks from the landfills, transfer stations, and TRCs that are currently routed to the RRF would adjust to rebalance loadings at the transfer stations. The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would likely increase, their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. As a result, additional transfer fleet vehicles and drivers may be needed to maintain waste delivery volumes. Also, collection and transfer fleet fuel consumption and costs would increase.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 4.0 miles east of the site on NW 186th St., but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site. Soils data indicates shallow depth to bedrock, rock removal may be required for pipe trench excavation.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 4.0 miles east of the site on NW 186th St., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 4.0 miles of 6" force main will likely be required. Soils data indicates shallow depth to bedrock, rock removal may be required for pipe trench excavation.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 6.0 miles southeast of the site on SR 826. Additional ROW/easement may be needed. Soils data indicates shallow depth to bedrock, rock removal may be required for pipe trench excavation.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 6.7 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soils

The USDA Soil Survey data for the site and historical aerial photos indicate all but approximately 24 acres of the site area was previously excavated as a quarry and subsequently backfilled. This is consistent with the USDA Soil Survey data for the site, which classifies the predominant site soils as 9—Udorthents-Water-Urban land complex, 0 to 60 percent slopes. Udorthents soils consist of unconsolidated or heterogeneous geologic material removed during the excavation of ditches, canals, lakes, ponds, and quarries.

In order for the facility to be located at this site, the facility buildings and ancillary components would have to be constructed on fill material, which would present significant geotechnical engineering challenges for foundation designs and additional site preparation costs.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC “need determination” filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 7.13 mi (11.5 km) E of the Everglades Class I Area, 6.68 mi (10.8 km) W of the Biscayne Class II Area, and about 6.5 miles WSW of the FPL Turkey Point Power Plant, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control

Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

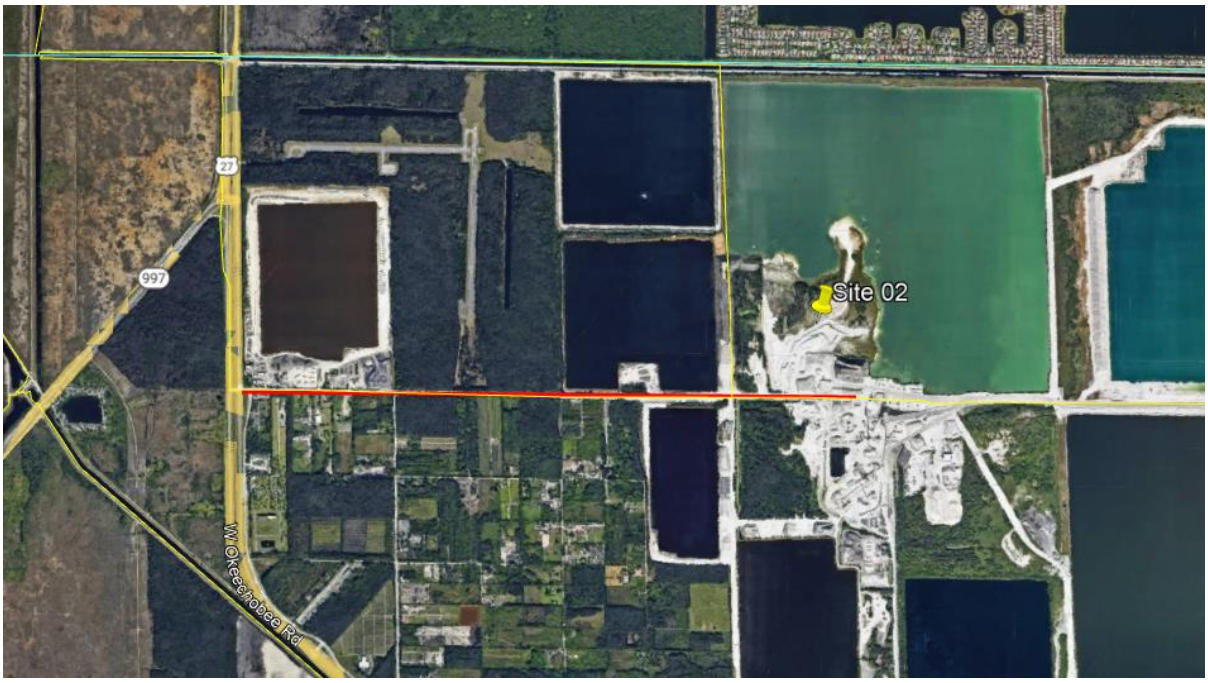
The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory and National Hydrography Dataset indicate surface waters are present and no wetlands are present. The South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is comprised of rock quarry and upland shrub and brushland. The site appears disturbed with minimal vegetation cover. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required but is assumed to be minimal as there is minimal to no roosting or foraging habitat remaining. The site is also within 18.6 miles of an active wood stork colony; however, the lack of apparent suitable foraging habitat precludes wood stork mitigation. An Environmental Resource Permit and State 404 Permit is likely required.
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

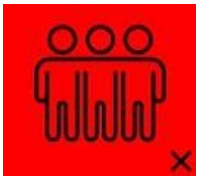
Transportation

Travel time to US-27 from the site is less than 10 minutes. Existing access to site is via unpaved single-lane road, as shown at right. Approximately 1.5 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional easement/ROW will have to be acquired. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to US-27 and the local area will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Analysis Summary – Alternative Site No. 2



Community



The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is 0.58 miles from the nearest residential zoning and is a SFWMD CERP site, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Analysis Summary – Alternative Site No. 2

Site Differentiators Overview

- New transfer station in the vicinity of the existing RRF to maintain current collection patterns and loadings on the existing transfer stations, with associated O&M and staffing costs
- Additional transfer fleet and staff, additional fuel and fleet maintenance costs
- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Construction of approximately 1.5 miles of two-lane road with paved shoulder and stormwater controls for proper site access.
- Construction of approximately 4.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 4.0 miles of 6” force main will likely be required.
- Construction of approximately 6.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Soils data indicates shallow depth to bedrock, rock removal may be required for utility pipe trench excavation.
- Construction of approximately 6.7 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

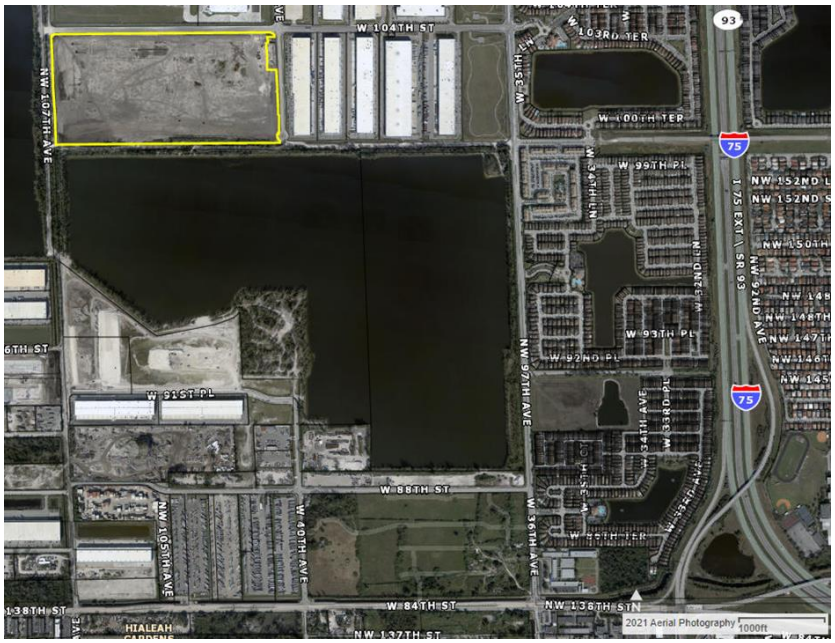
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 3

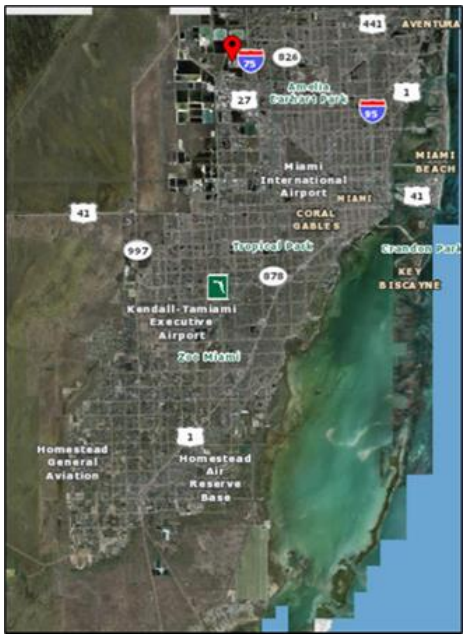
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✓	–	✗	–	✓	✗	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 73.31-acre site is located inside the UDB, in the City of Hialeah, 0.52 miles from residential zoning and 13.11 miles from the Everglades Class I Area. The site measures approximately 1,300 feet x 2,650 feet, large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of smaller facilities such as a recycling center or an education center. The property is less than a 10-minute travel time to I-75 or the Turnpike and is located 0.52 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 04-2017-003-0010

Owner: Countyline 2, LLC

2021 MDPA Market Value: $76,651,656

Zoning District: A

PA Zone: Agriculture

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 5.2 miles north of the existing RRF, more than four miles from any active airport, and 0.52 miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be less than other sites. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as some collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Although additional transfer fleet vehicles and drivers would be routed to the site to maximize WTE processing capacity, they would be rerouting from deliveries to non-DSWM disposal sites and the acquisition of additional fleet vehicles and driver staffing may not be needed. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are multiple options to keep ash hauling distances short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the adjacent Medley Landfill, or there appears to be sufficient area on site to co-locate a new ash monofill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available at the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. Sanitary sewer appears to be available at the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 3.5 miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.
- **Electric** – Nearest substation/ switchyard is FPL Substation located 4.9 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available

terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New easements may need to be established to complete this routing.

- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Cooper Town muck and Shark Valley muck. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 6 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC “need determination” filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 13.11 miles (21.1 km) NE of the Everglades Class I Area, 19.56 miles (31.5 km) NW of the Biscayne Class II Area, and about 2.5 miles NNE of the Titan Pennsuco Complex, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate

vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

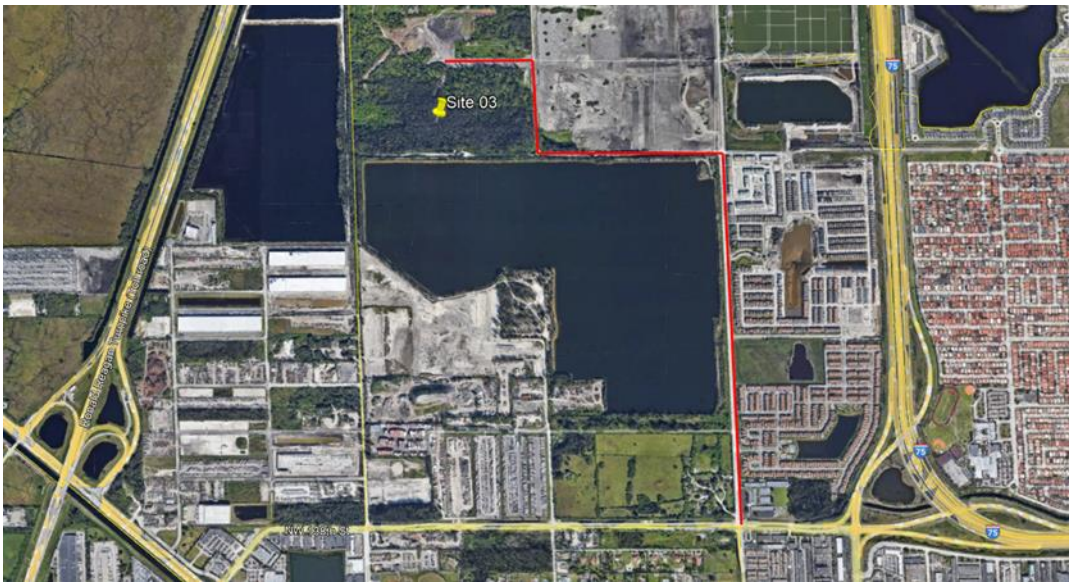
The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains no wetlands. Apparent previous clearing and grubbing was done, could still be considered wetland if no previous permit to impact. Cooper town muck is hydric soil. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is not within the urban development boundary in Miami-Dade County for the Florida bonneted bat. **Site development underway - site was recently cleared, permit review indicated Class I well under construction.**

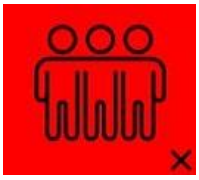
Transportation

Travel time to the Florida Turnpike and I-75 is less than 10 minutes. Existing access to site is via NW 136th St./97th Ave., roads are well developed, as shown at right. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion. Traffic impacts to local area may be significant due to single point of access on 97th Ave. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.

Analysis Summary – Alternative Site No. 3



Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. However, the site is just over half a mile from the nearest residential zoning, which suggests that the siting of a WTE facility may face community opposition at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Existing access to site is via NW 136th St./97th Ave., roads are well developed.

Analysis Summary – Alternative Site No. 3

- Potable water and sanitary sewer appear to available at the site.
- Construction of approximately 3.5 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 4.9 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of natural gas and electric utility infrastructure.
- **Site development underway - site was recently cleared, permit review indicated Class I well under construction.**

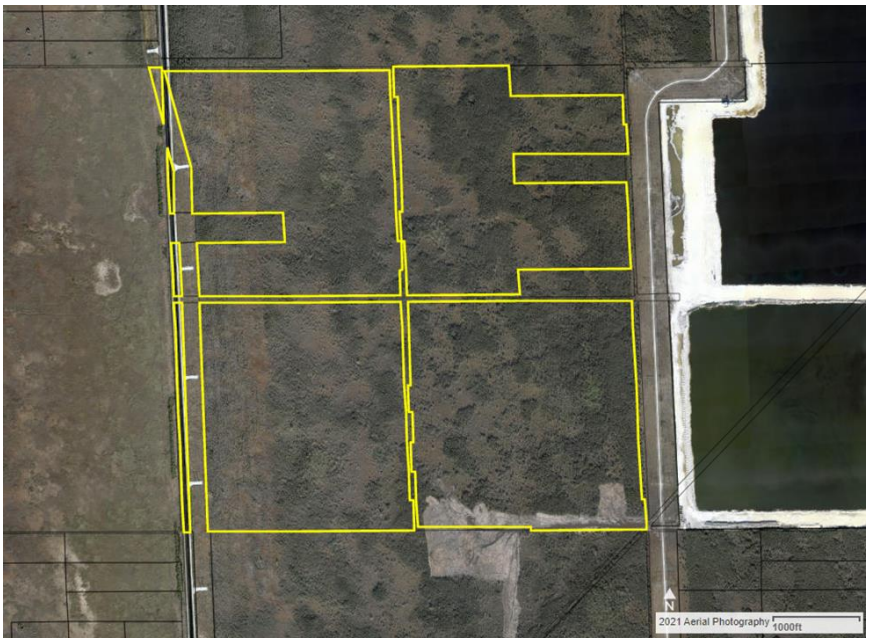
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 4

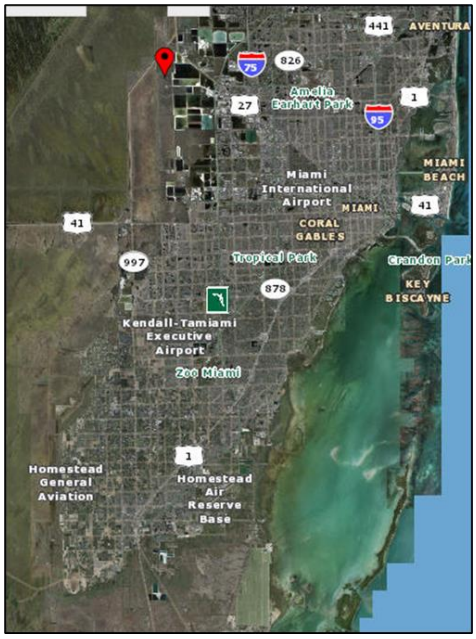
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 559.05-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is composed of several parcel areas and measures approximately one mile square, large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27 or the Florida Turnpike and is located 1.93 miles from the nearest residential zoning. The north boundary of the site borders ME Thompson Park.

MDPA Parcel Data

Folio No: 30-2921-001-0020

Owner: CEMEX Construction Materials Florida, LLC

2021 MDPA Market Value: $10,664,225

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 7.0 miles northeast of the existing RRF, almost two miles from the nearest residential zoning, and 9.94 miles northeast of the boundary of Everglades National Park. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 3.0 miles east of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 3.0 miles east of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 3.0 miles of force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 7.0

miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 7.4 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs. **USDA aerial photo (right) indicated that an active quarry operation is present at the site.**

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Modification Application would need to be developed, inclusive of the associated individual permitting processes (Air

Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.

- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 9.94 miles (15 km) NE of the Everglades Class I Area, 21.56 miles (35 km) NW of the Biscayne Class II Area, and about 4.1 miles NW of the Titan Pennsuco Complex, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

  The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is entirely wetlands. The site appears predominantly undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation. Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9A states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

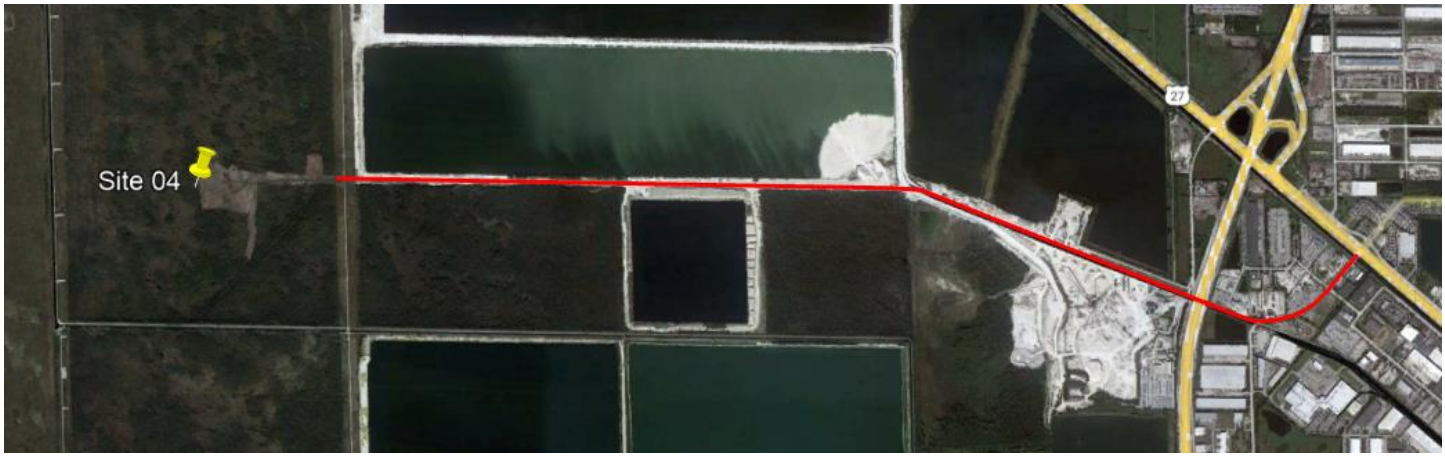
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

Analysis Summary – Alternative Site No. 4

- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:
  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

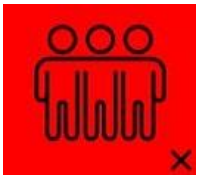
Transportation

Travel time to the Florida Turnpike and US-27 is less than 10 minutes. Existing access to site is via unpaved single-lane road (see picture at right), approximately 3.3 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). Additional easement/ROW will have to be aquired for almost 1.5 miles of the access road from FPL and other property owners. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day) will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on US-27 and to local area may result due to single point of access at NW 112th Ct/NW 136th St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.



Analysis Summary – Alternative Site No. 4

Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is almost two miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Construction of approximately 3.3 miles of two-lane road with paved shoulder and stormwater controls for proper site access
- Construction of approximately three miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about three miles of 4” force main will likely be required.
- Construction of approximately 7 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 7.4 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

Analysis Summary – Alternative Site No. 4

- **Species Habitat – Conflict with MDC Policy CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

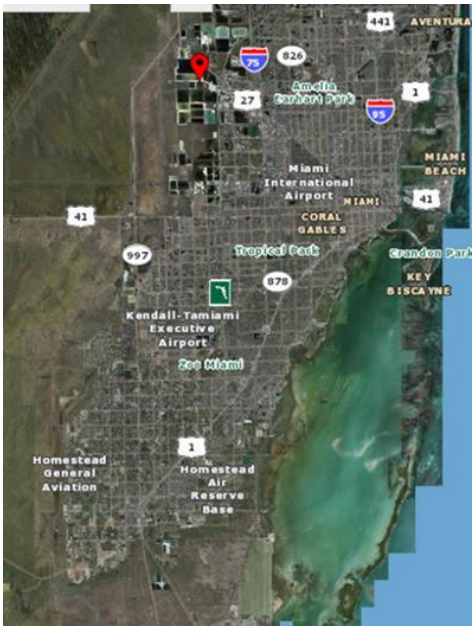
Analysis Summary – Alternative Site No. 5

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 156.97-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site measures approximately one mile square, large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27 or the Turnpike and is located 1.07 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-2926-000-0010

Owner: CEMEX Construction Materials Florida, LLC

2021 MDPA Market Value: $2,843,062

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 5.2 miles northwest of the existing RRF, more than a mile from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately one mile east of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately one mile east of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about one mile of 6" force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 5.0 miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

Analysis Summary – Alternative Site No. 5

- **Electric** – Nearest substation/ switchyard is FPL Substation located 4.5 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention. An existing inactive quarry borders the site to the west, could be purchased and used as stormwater retention for the site.
- **Groundwater** – Groundwater may not be usable as source water for boiler feedwater, cooling tower/condenser feedwater, truck wheel wash, and irrigation water.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Modification Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC “need determination” filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 10.48 miles (17 km) NE of the Everglades Class I Area, 19.93 miles (32 km) NW of the Biscayne Class II Area, and about 1.7 miles NW of the Titan Pennsuco Complex, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

Analysis Summary – Alternative Site No. 5

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory and National Hydrography Dataset indicate no wetlands or surface waters are present; however, the South Florida Water Management District Land Cover and Land Use 2017-2019 shows wetlands hardwood forest are present. The site appears undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9A states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

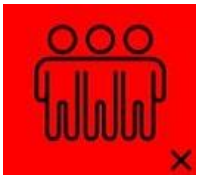
Analysis Summary – Alternative Site No. 5

Transportation

Travel time to Turnpike and US 27 is less than 10 minutes. Existing access to site is via unpaved single-lane road (see picture at right), approximately 1.8 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day) will greatly increase the loads on local roads and the single point of access at NW 112th Ct/NW 136th St. will likely result in significant traffic impacts to the local area. Truck queuing will have to be accomplished on site to prevent further congestion of local roads. .

Analysis Summary – Alternative Site No. 5

Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is 1.07 miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Construction of approximately 1.8 miles of two-lane road with paved shoulder and stormwater controls for proper site access
- Construction of approximately one mile of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about one mile of 6” force main will likely be required.
- Construction of approximately 5.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 4.5 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

Analysis Summary – Alternative Site No. 5

- **Species Habitat – Conflict with MDC Policy CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

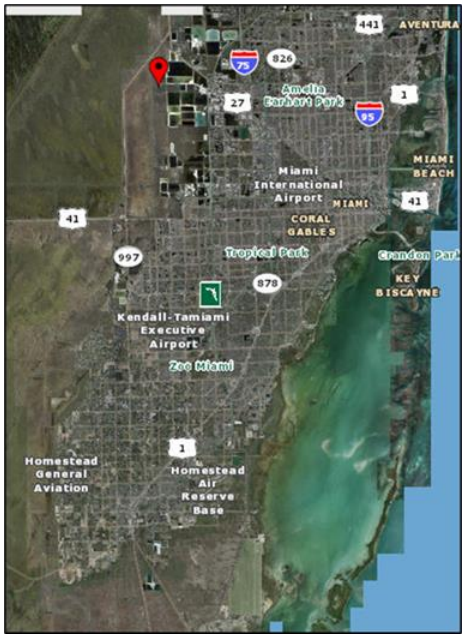
Analysis Summary – Alternative Site No. 6

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 628.69-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27 and is located 2.32 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-2928-000-0010

Owner: Southeastern Materials, Inc.

2021 MDPA Market Value: $5,805,800

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 6.5 miles northeast of the existing RRF, and more than two miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 3.0 miles east of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 3.0 miles east of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 3.0 miles of force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 7.0

miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 6.7 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 9.48 miles (15.26 km) NE of the Everglades Class I Area, 21.08 miles (33.92 km) NW of the Biscayne Class II Area, and about 4.0 miles W of the Titan Pennsuco Complex, a large source of emissions.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is entirely wetlands. The site appears predominantly undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9A states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:
  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include

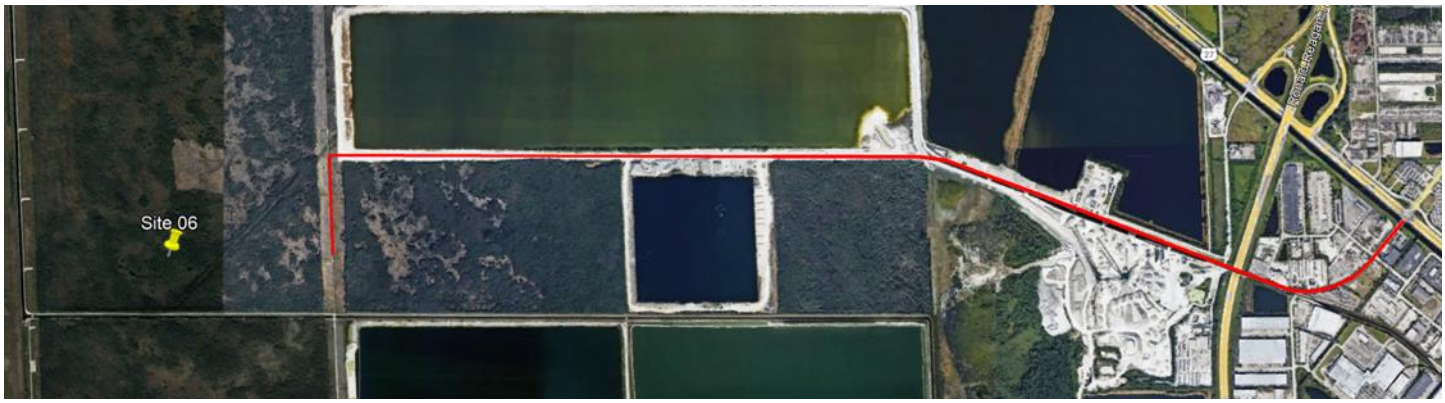
Analysis Summary – Alternative Site No. 6

wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time to US-27 is less than 10 minutes. Existing access to site is via unpaved single-lane road (see picture at right). Approximately 3.6 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 1.8 miles of easement/ROW will have to be acquired.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on US-27 and to local area may result due to single point of access at NW 112th Ct/NW 136th St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.



Community

The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is more than two miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Analysis Summary – Alternative Site No. 6

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 3.6 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 1.8 miles of easement/ROW will have to be acquired.
- Construction of approximately 3.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 3.0 miles of 6” force main will likely be required.
- Construction of approximately 7.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 6.7 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

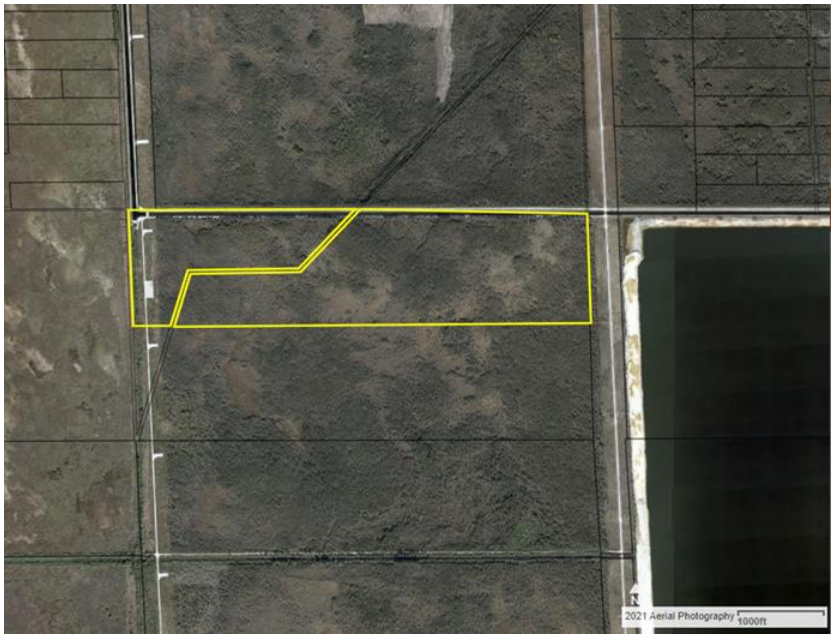
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 7

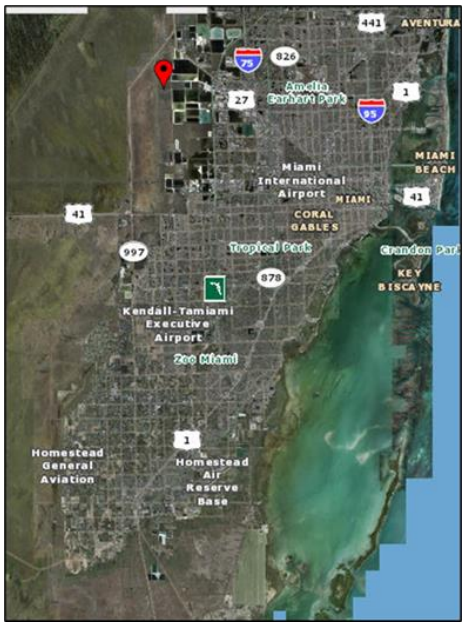
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 144.24-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27 and is located 2.59 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-2928-000-0020

Owner: TARMAC Florida, Inc.

2021 MDPA Market Value: $2,534,330

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 6.6 miles northwest of the existing RRF, and more than 2.5 miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 3.6 miles east of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 3.6 miles east of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 3.6 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 7.7

miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 7.1 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 9.22 miles (14.9 km) NE of the Everglades Class I Area, 20.86 miles (33.7 km) NW of the Biscayne Class II Area, and about 3.5 miles NNW of the Titan Pennsuco Complex, a large source of emissions.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is entirely wetlands. The site appears predominantly undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9A states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

Analysis Summary – Alternative Site No. 7

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time to US-27 is less than 10 minutes. Existing access to site is via unpaved single-lane road (see picture at right), approximately 4.1 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). Additional easement/ROW will have to be aquired for almost 2.3 miles of the access road from FPL and other property owners. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on US-27 and to local area may result due to single point of access at NW 112th Ct/NW 136th St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.

Community

The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is more than two miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Analysis Summary – Alternative Site No. 7

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 4.1 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 2.3 miles of easement/ROW will have to be acquired.
- Construction of approximately 3.6 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 3.6 miles of 6” force main will likely be required.
- Construction of approximately 7.7 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 7.1 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

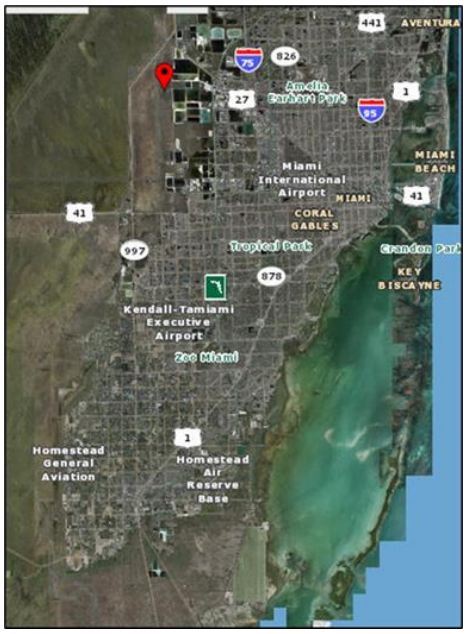
Analysis Summary – Alternative Site No. 8

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 150.75-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27 and is located 2.74 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-2928-000-0030

Owner: TARMAC Florida, Inc.

2021 MDPA Market Value: $2,908,000

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 6.0 miles northwest of the existing RRF, and more than 2.7 miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 4.0 miles east of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 4.0 miles east of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 4.0 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 8.0

miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 7.4 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 8.99 miles (14.5 km) NE of the Everglades Class I Area, 20.62 miles (33.2 km) NW of the Biscayne Class II Area, and about 3.5 miles NNW of the Titan Pennsuco Complex, a large source of emissions.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is entirely wetlands. The site appears predominantly undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9A states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

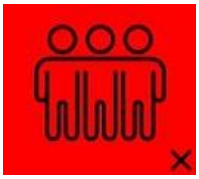
Analysis Summary – Alternative Site No. 8

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time to US-27 is less than 10 minutes. Existing access to site is via unpaved single-lane road (see picture at right). Approximately 4.25 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 2.5 miles of easement/ROW will have to be acquired. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on US-27 and to local area may result due to single point of access at NW 112th Ct/NW 136th St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.

Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is more than 2.7 miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Analysis Summary – Alternative Site No. 8

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 4.25 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 2.5 miles of easement/ROW will have to be acquired.
- Construction of approximately 4.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 4.0 miles of 6” force main will likely be required.
- Construction of approximately 8.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 7.4 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

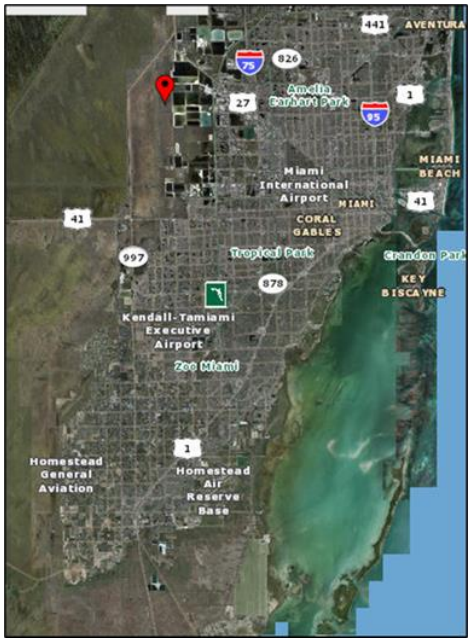
Analysis Summary – Alternative Site No. 9

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 628.69-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-27 and is located 2.93 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-2933-000-0010

Owner: TARMAC Florida, Inc.

2021 MDPA Market Value: $11,579,000

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 5.5 miles northwest of the existing RRF, and more than 2.9 miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 5.0 miles east of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 5.0 miles east of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 5.0 miles of 6" force main may be required.

- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 9.0 miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.
- **Electric** – Nearest substation/ switchyard is FPL Substation located 8.3 miles away at 10800 NW 107th Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AH (El. 7 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP,

Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.

- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 8.08 miles (13 km) NE of the Everglades Class I Area, 19.69 miles (31.7 km) NW of the Biscayne Class II Area, and about 3.4 miles W of the Titan Pennsuco Complex, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

  The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is entirely wetlands. The site appears predominantly undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9a states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

Analysis Summary – Alternative Site No. 9

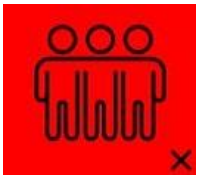
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:
  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time to US-27 is less than 10 minutes. Existing access to site is via unpaved single-lane road (see picture at right). Approximately 5.25 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 3.5 miles of easement/ROW will have to be acquired. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on US-27 and to local area may result due to single point of access at NW 112th Ct/NW 136th St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.

Analysis Summary – Alternative Site No. 9

Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is more than 2.9 miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 5.25 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 3.5 miles of easement/ROW will have to be acquired.
- Construction of approximately 5.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 5.0 miles of 6” force main will likely be required.
- Construction of approximately 9.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 8.3 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

Analysis Summary – Alternative Site No. 9

- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policies CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

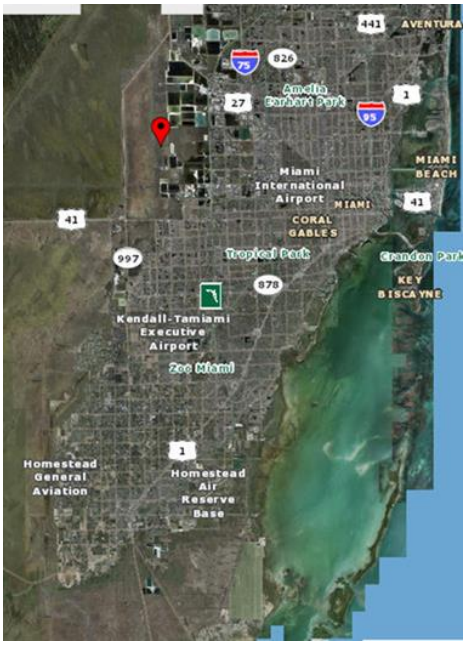
Analysis Summary – Alternative Site No. 10

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 590.71-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to the Turnpike via 41st Street and is located 2.84 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-3916-000-0010

Owner: APAC Southeast, Inc.

2021 MDPA Market Value: $10,560,268

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 5.4 miles W of the existing RRF, and more than 2.8 miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 2.0 miles southeast of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 2.0 miles southeast of the site, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 2.0 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 4.0

miles southeast of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Substation located 2.1 miles away at 52444-139954 NW 41st Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AH (El. 7 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 5.44 miles (8.75 km) NE of the Everglades Class I Area, 16.95 miles (27.28 km) NW of the Biscayne Class II Area, and about 3 mi NNW of the CEMEX Miami facility, a large source of emissions.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is entirely wetlands. Minor disturbances include prior excavation and ditching, but most of the site appears undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9B states that **a**ll activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

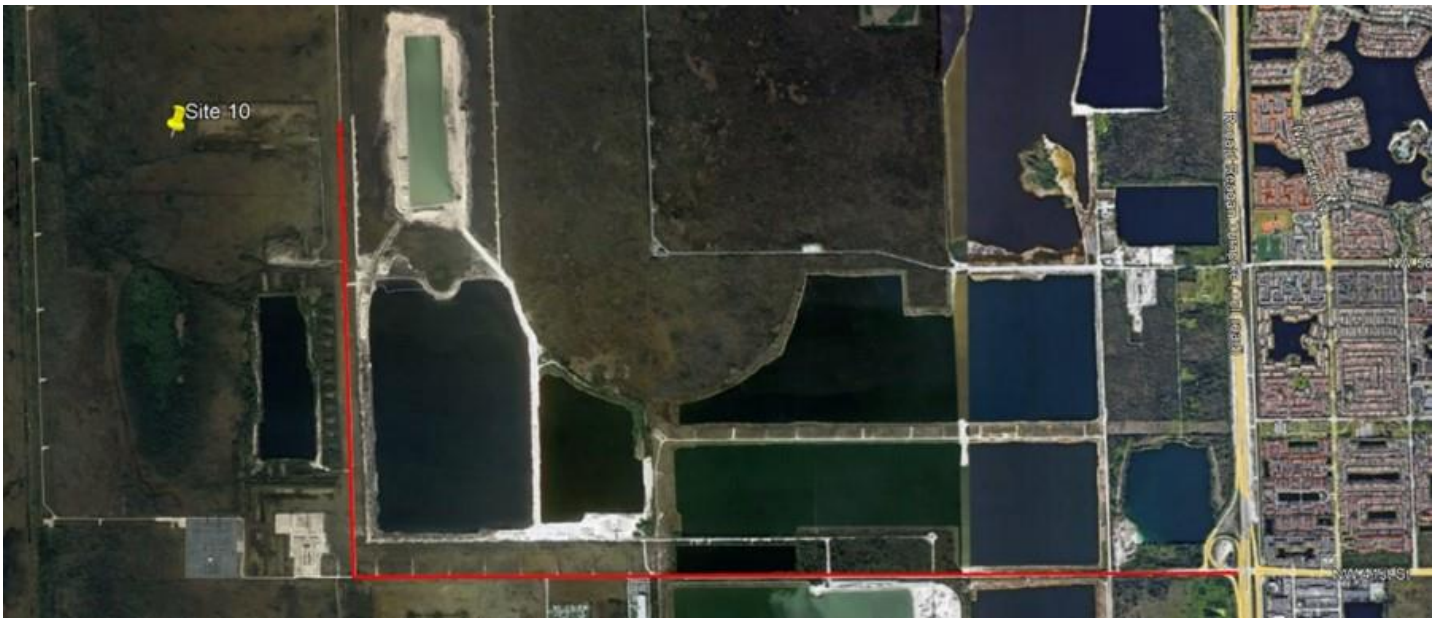
  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

Analysis Summary – Alternative Site No. 10

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

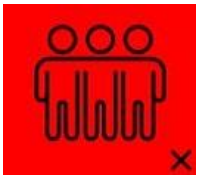
Transportation

Travel time to the Turnpike is less than 10 minutes. Existing access to site is via 41st Street, then 1.5 miles of unpaved single-lane road. Approximately 1.5 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional easement/ROW will have to be aquired for almost 1.5 miles of the access road from FPL and/or other property owners. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts due to single point of access at Turnpike/41st St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.



Analysis Summary – Alternative Site No. 10

Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. The site is more than 2.8 miles from the nearest residential zoning and adjacent to industrial mining operations, but the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 1.5 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 1.5 miles of easement/ROW will have to be acquired.
- Construction of approximately 2.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 2.0 miles of 6” force main will likely be required.
- Construction of approximately 4.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 2.1 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

Analysis Summary – Alternative Site No. 10

- **Species Habitat – Conflict with MDC Policy CON-9A and CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

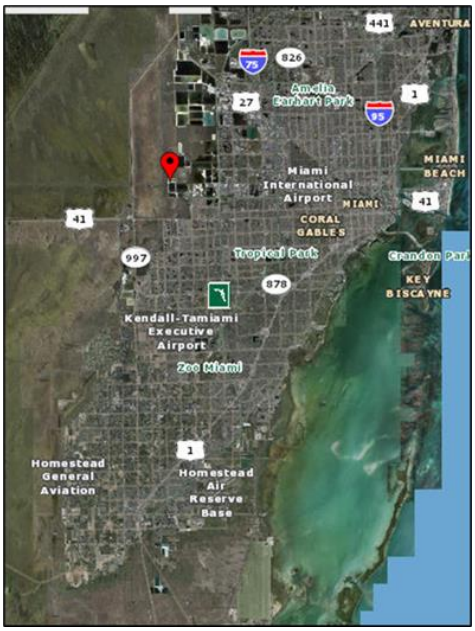
Analysis Summary – Alternative Site No. 11

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	–	✕	–	–	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 1,425.59-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to the Turnpike via 41st Street and is located 0.52 miles from the nearest residential zoning.

MDPA Parcel Data

Folio No: 30-3920-000-0020

Owner: CEMEX Construction Materials

2021 MDPA Market Value: $18,710,559

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 4.8 miles SW of the existing RRF but is 0.52 miles from the nearest residential zoning. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 0.75 miles east of the site on 41st Street, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 0.75 miles east of the site on 41st Street, but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 0.75 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 2.9

miles east of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is the Levee Substation located 1.1 miles away at 52444-139954 NW 41st Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the site soils as Shark Valley muck, 0 to 1 percent slopes. These soils are high in organics content and may extend 20-40 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AH (El. 7 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 3.45 miles (5.55 km) NE of the Everglades Class I Area, 14.24 miles (22.92 km) NW of the Biscayne Class II Area, and about 1.5 miles NNW of the CEMEX Miami facility, a large source of emissions.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is comprised of wetlands and excavated ponds. Minor disturbances include prior excavation and ditching, but portions of the site appear undisturbed. The site is not within a Florida panther focus area for consultation. The site is within the proposed critical habitat and within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

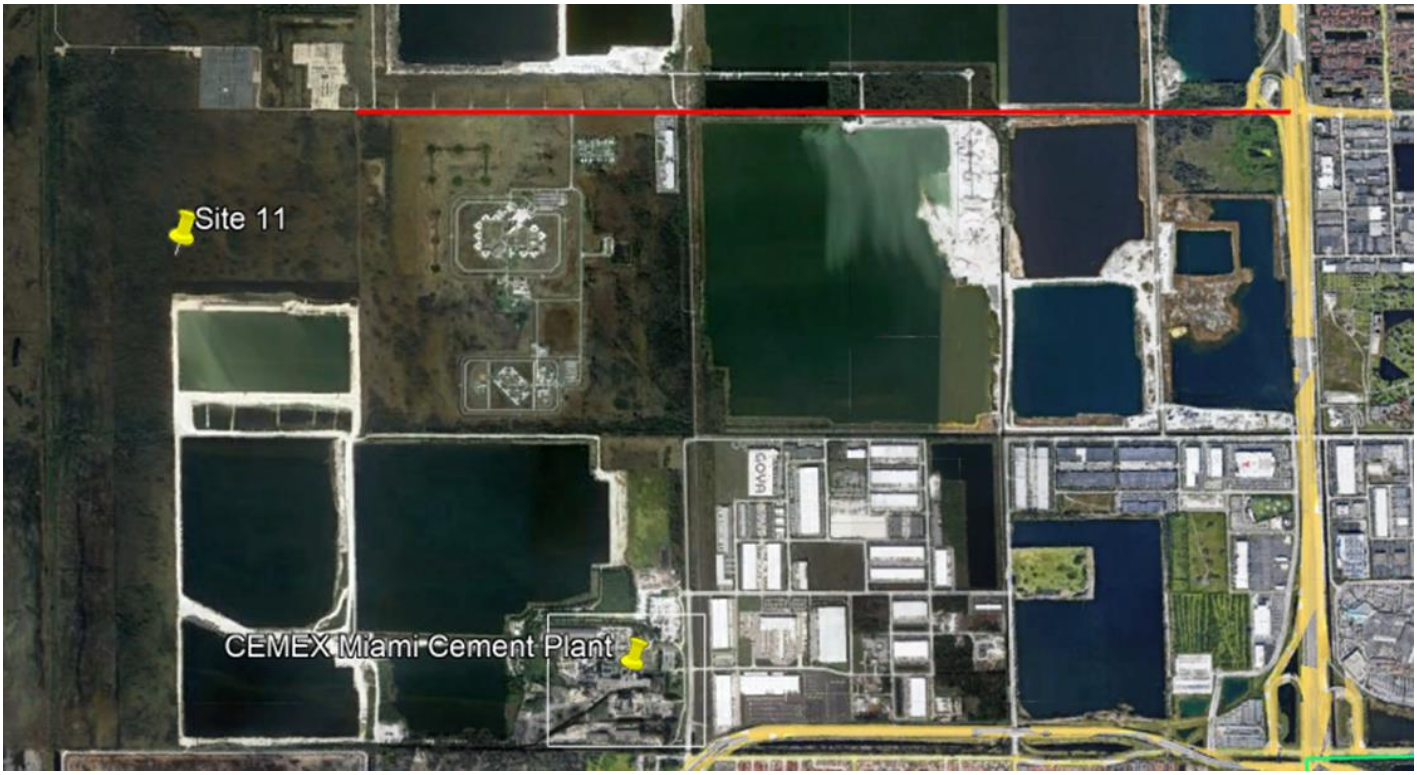
- **Species Habitat – Conflict with Policy CON-9A.** All activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:
  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

Analysis Summary – Alternative Site No. 11

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

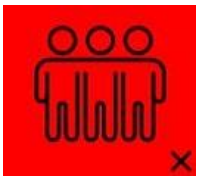
Transportation

Travel time to the Turnpike is less than 10 minutes. Existing access to site is via 41st Street, then 1.5 miles of unpaved single-lane road (see picture at right) . Approximately 1.5 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional easement/ROW will have to be aquired for almost 1.5 miles of the access road from FPL and/or other property owners. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day) will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on 41st Street and to the local area may be significant due to single point of access at Turnpike/41st St. Truck queuing will have to be accomplished on site to prevent further congestion of local roads.



Analysis Summary – Alternative Site No. 11

Community



The USEPA EJScreen Standard Report indicated no community impacts for this site. However, the site is 0.52 miles from the nearest residential zoning. Even though it is adjacent to an industrial cement manufacturing operation, the close proximity of the site to a residential area and the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 1.5 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access (see the access route below). An additional 1.5 miles of easement/ROW will have to be acquired.
- Construction of approximately 0.75 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 0.75 miles of 6” force main will likely be required.
- Construction of approximately 2.9 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 1.1 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9A.**

Analysis Summary – Alternative Site No. 11

- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **Within the Northwest Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

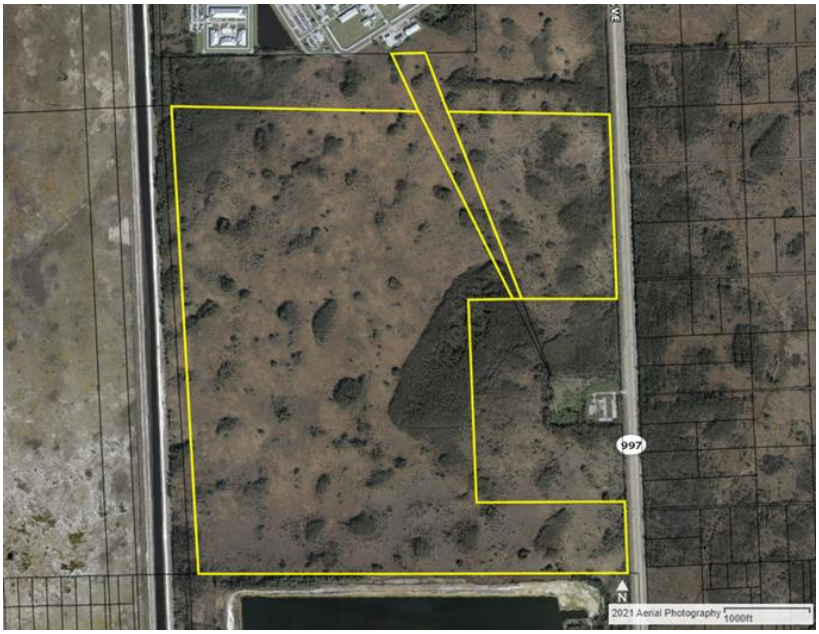
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 12

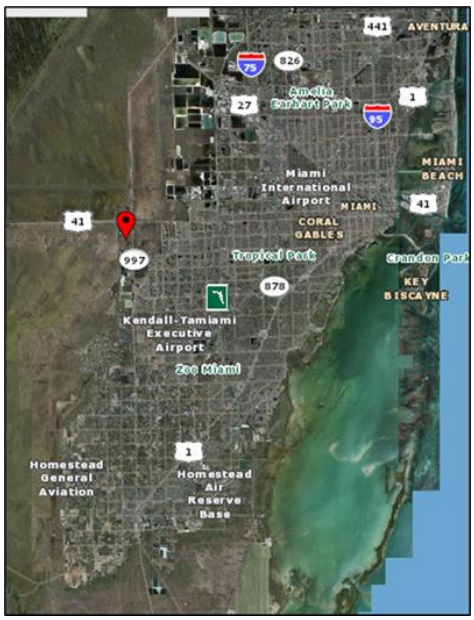
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✗	✗	✗	✗	✓	✗	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 561.18-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to Krome Ave. and US 41 and is located 1.03 miles from the nearest residential zoning and approximately 0.1 mile from the boundary of the Everglades National Park.

MDPA Parcel Data

Folio No: 30-4813-000-0010

Owner: ALA NV
% LA PRIMERA INTN'L CORP

2021 MDPA Market Value: $1,251,057

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 10.5 miles SW of the existing RRF and is more than a mile from the nearest residential zoning, but is approximately 0.1 mile from the boundary of the Everglades National Park. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the three transfer stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 0.4 miles north of the site, but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. There is a 30" sanitary sewer along Krome Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 4.0

miles northeast of the site on US41. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/switchyard is FPL Substation located 4.7 miles away at 8905 Krome Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Perrine marly silt loam, 0 to 1 percent slopes and Tamiami muck, 0 to 1 percent slopes. These hydric soils are high in organics content and may extend 31-41 inches below grade, even to the bedrock layer. They are not suitable for foundations and would need to be removed and replaced with structural fill for foundation areas, which will increase project costs.

In these soils the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AH (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 0.1 miles (0.16 km) E of the Everglades Class I Area, 13.72 miles (22.08 km) W of

the Biscayne Class II Area, and about 5.0 miles SW of the CEMEX Miami Cement Plant, a large source of emissions.

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s). **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**

Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is comprised of wetlands. The site appears predominantly undisturbed`. The site is not within a Florida panther focus area for consultation. The site is within the proposed critical habitat and within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** All activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.
- **Within the West Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

Analysis Summary – Alternative Site No. 12

- The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time to US 41 (SW 8th Street) is less than 10 minutes. Existing access to site is via Krome Ave. (see map below), and no additional offsite access roadway is required. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Krome Ave., US 41 (SW 8th Street), and to local area may be significant. Truck queuing will have to be accomplished on site to prevent further congestion on Krome Ave.

Community

The USEPA EJScreen Standard Report indicated elevated values for Particulate Matter 2.5 (µg/m3), 2017 Air Toxics Cancer Risk, and 2017 Air Toxics Respiratory HI for this site. Although the site is more than a mile from the nearest residential zoning, it is approximately 0.1 mile from the boundary of the Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.

Analysis Summary – Alternative Site No. 12

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Construction of approximately 0.4 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and 6” force main may be required.
- Construction of approximately 4.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 4.7 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, natural gas, and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**
- **Species Habitat – Conflict with MDC Policy CON-9A.**
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **Within the West Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

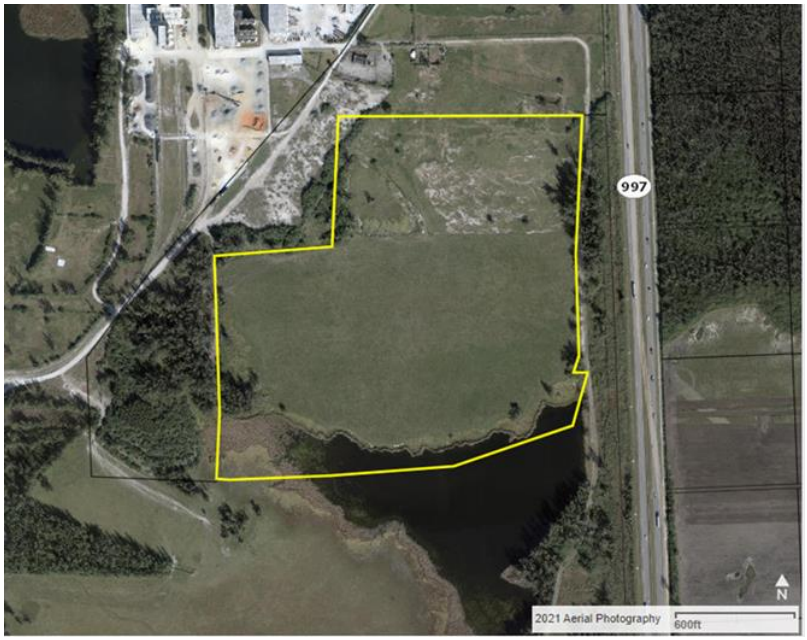
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 13

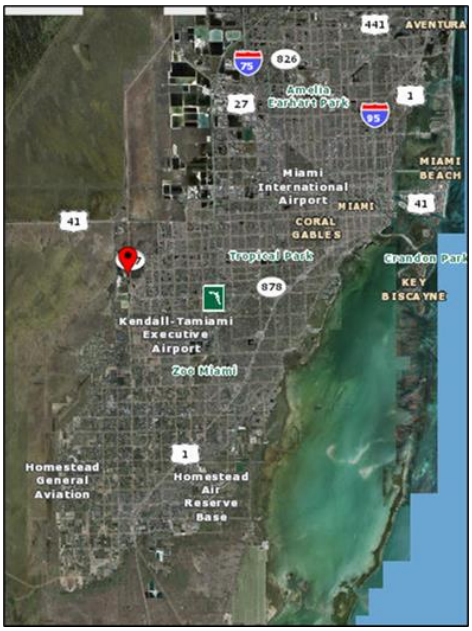
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	–	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 63.07-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site is large enough to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to US-41 and is located 1.08 miles from the nearest residential zoning and approximately 0.7 miles from the boundary of the Everglades National Park.

MDPA Parcel Data

Folio No: 30-4835-000-0010

Owner: Kendall Properties and Investments

2021 MDPA Market Value: $1,576,700

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 11.8 miles SW of the existing RRF and is more than a mile from the nearest residential zoning, but is less than a mile from the boundary of the Everglades National Park. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion on US-41 and SW 88th Street. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main appears to be available at the site on Krome Ave., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. There is a 30" sanitary sewer on Krome Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 7.0

miles northeast of the site on US-41. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/switchyard is FPL Substation located 1.8 miles away at 8905 Krome Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Udorthents-Water-Urban land complex, 0 to 60 percent slopes and Cooper Town muck. Udorthents soils consist of unconsolidated or heterogeneous geologic material removed during the excavation of ditches, canals, lakes, ponds, and quarries. This suggests that the site was previously excavated as a borrow pit and backfilled to its present land area. If this is confirmed, the site soils may present significant geotechnical engineering challenges for foundation designs.

The presence of muck soils indicates the seasonal high groundwater elevation is typically 0-6 inches below existing grade, but would have to be confirmed by geotechnical investigations. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AH (El. 8 ft). The remainder of the site is in FEMA Flood Zone X (Minimal Flood Hazard).
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.

Analysis Summary – Alternative Site No. 13

- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 0.68 miles (1.09 km) E of the Everglades Class I Area, 12.52 miles (20.15 km) W of the Biscayne Class II Area, and about 6.3 miles SW of the CEMEX Miami Cement Plant, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

  The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s). **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory and National Hydrography Dataset indicate a surface water is present and no wetlands are present. The South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is comprised of upland mixed forests, improved pasture, and holding ponds. The site appears developed with minimal trees and maintained lawn. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required but is assumed to be minimal as there is minimal to no roosting or foraging habitat remaining. The site is also within 18.6 miles of an active wood stork colony and minor wood stork mitigation may be required.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **Within the West Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

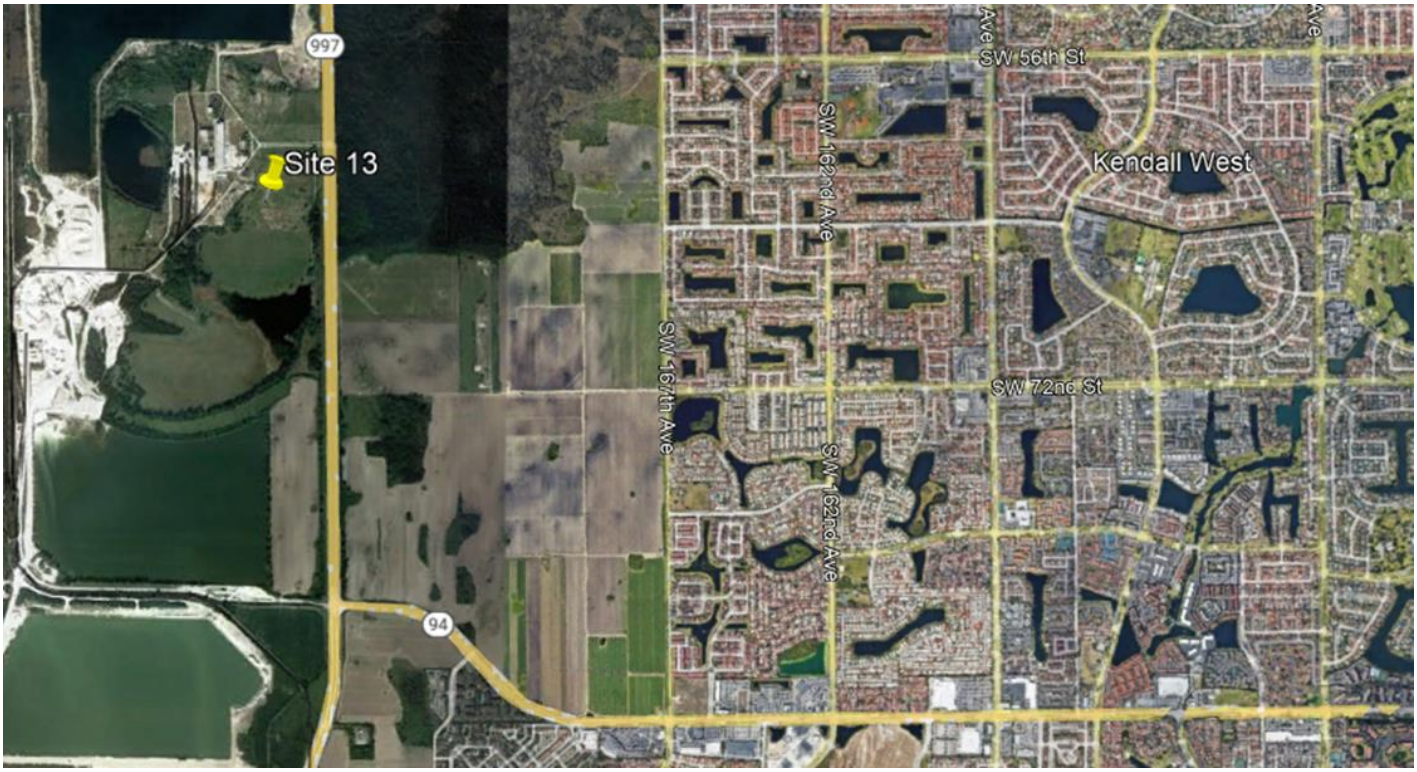
  - The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

Analysis Summary – Alternative Site No. 13

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time north to US 41 (SW 8th Street) and south to SW 88th Street is less than 10 minutes. Existing access to site is via Krome Ave. (see map below), and no additional offsite access roadway is required. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads. Traffic impacts on Krome Ave., US 41 (SW 8th Street), SW 88th Street, and to local area may be significant due to only two points of access on Krome Ave. Truck queuing will have to be accomplished on site to prevent further congestion on Krome Ave.



Community

The USEPA EJScreen Standard Report indicated elevated values for Particulate Matter 2.5 (µg/m3), 2017 Air Toxics Cancer Risk, and 2017 Air Toxics Respiratory HI for this site. Although the site is more than a mile from the nearest residential zoning, it is less than a mile from the boundary of the Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.

Analysis Summary – Alternative Site No. 13

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Construction of a water booster station may be required.
- Construction of an on-site wastewater lift station and 6” force main may be required.
- Construction of approximately 7.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 1.8 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of natural gas and electric utility infrastructure.
- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **Within the West Wellfield Protection Area – Conflict with MDC Policy LU-8G.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

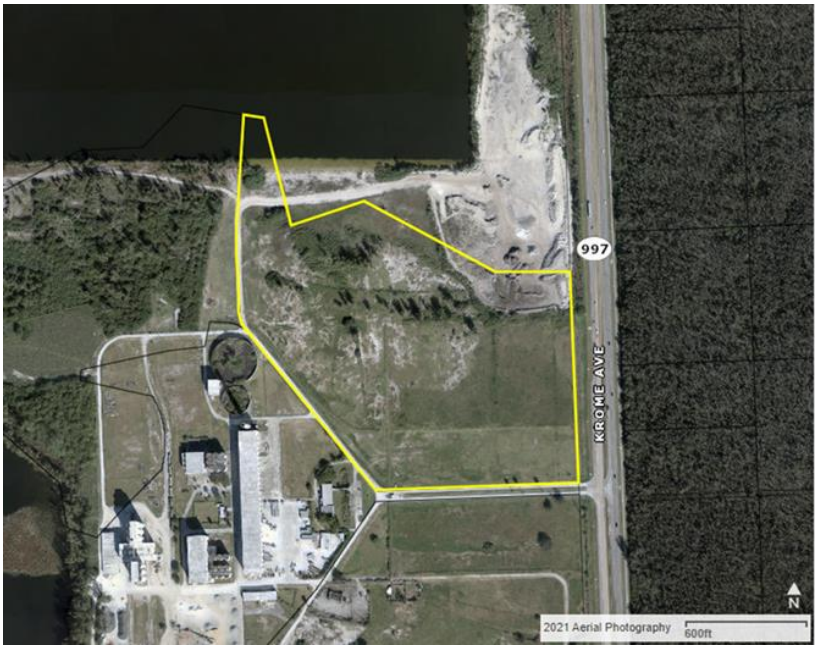
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 14

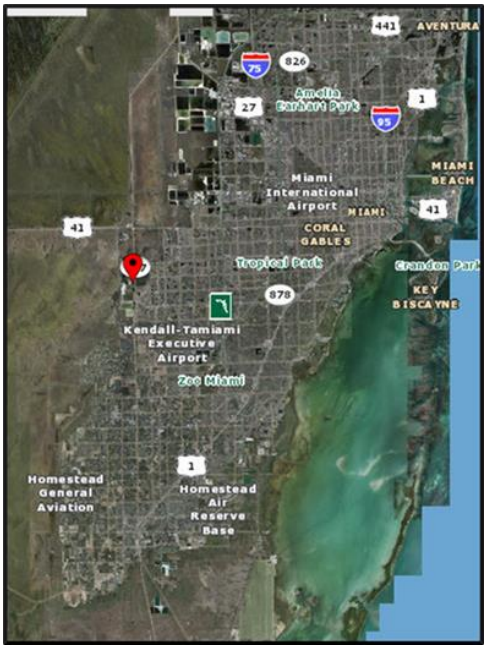
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	–	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 42.68-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site area is minimal but appears sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility, but no additional expansion capacity or other facilities. The property is less than a 10-minute travel time north to US-41 and south to SW 88th Street, is 1.05 miles from the nearest residential zoning, and approximately 0.75 miles from the boundary of the Everglades National Park.

MDPA Parcel Data

Folio No: 30-4835-000-0013

Owner: Kendall Properties and Investments

2021 MDPA Market Value: $1,072,500

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 11.8 miles SW of the existing RRF and is more than a mile from the nearest residential zoning but is less than a mile from the boundary of the Everglades National Park. If this site were selected, the expected effects on the County's Solid Waste System may be significant. Direct hauls from the collection routes in the vicinity of the existing RRF would likely decline, as many collection trucks would reroute to the Northeast and West Transfer Stations for disposal to reduce travel times. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station in the vicinity of the existing RRF facility would likely be needed to maintain current collection and transfer flow patterns.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would increase due to longer travel distances and expected traffic congestion on US-41 and SW 88th Street. Transfer fleet round trip times would increase and may result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would increase due to the additional deliveries, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be higher than at the existing RRF. There are options to keep ash hauling distances relatively short - the existing RRF site could be converted to an ash monofill, or ash generated at this location may be landfilled at the Medley Landfill. If disposed at a non-County facility, costs for ash disposal would significantly increase from current levels.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main appears to be available at the site on Krome Ave., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. There is a 30" sanitary sewer on Krome Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately 7.0

miles northeast of the site on US-41. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/switchyard is FPL Substation located 2.1 miles away at 8905 Krome Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Udorthents-Water-Urban land complex, 0 to 60 percent slopes and Biscayne marly silt loam, ponded-Urban land complex, 0 to 1 percent slopes. Udorthents soils consist of unconsolidated or heterogeneous geologic material removed during the excavation of ditches, canals, lakes, ponds, and quarries. This suggests that the site was previously excavated as a borrow pit and backfilled to its present land area. If this is confirmed, the site soils may present significant geotechnical engineering challenges for foundation designs. Removal and replacement of these soils with structural fill and/or additional compactive effort on existing soils in development areas may be required.

The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface, but would have to be confirmed by geotechnical investigations. These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater will result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AH (El. 8 ft). The remainder of the site is in FEMA Flood Zone X (Minimal Flood Hazard).
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP,

Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.

- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 0.75 miles (1.2 km) E of the Everglades Class I Area, 12.74 miles (20.5 km) W of the Biscayne Class II Area, and about 6.0 miles SW of the CEMEX Miami Cement Plant, a large source of emissions.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

  The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s). **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory and National Hydrography Dataset indicate a surface water is present and no wetlands are present. The South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is comprised of a holding pond, spoil area, and improved pasture. The site appears to be disturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required but is assumed to be minimal as there is minimal to no roosting or foraging habitat remaining. The site is also within 18.6 miles of an active wood stork colony and minor wood stork mitigation may be required.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **Within the West Wellfield Protection Area – Conflict with MDC Policy LU-8G.** MDC Policy LU-8G states that when considering land areas to add to the UDB, after demonstrating that a need exists, the following areas shall not be considered:

Analysis Summary – Alternative Site No. 14

- The Northwest Wellfield Protection Area and the West Wellfield Protection Area west of SW 157 Avenue between SW 8 Street and SW 42 Street

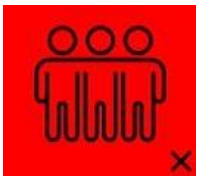
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Transportation

Travel time north to US 41 (SW 8th Street) and south to SW 88th Street is less than 10 minutes. Existing access to site is via Krome Ave. (see map below), and no additional offsite access roadway is required. The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads. Traffic impacts on Krome Ave., US 41 (SW 8th Street), SW 88th Street, and to local area may be significant due to only two points of access on Krome Ave. Truck queuing will have to be accomplished on site to prevent further congestion on Krome Ave.

Analysis Summary – Alternative Site No. 14

Community



The USEPA EJScreen Standard Report indicated elevated values for Particulate Matter 2.5 (µg/m3), 2017 Air Toxics Cancer Risk, and 2017 Air Toxics Respiratory HI for this site. Although the site is more than a mile from the nearest residential zoning, it is less than a mile from the boundary of the Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Construction of a water booster station may be required.
- Construction of an on-site wastewater lift station and 6” force main may be required.
- Construction of approximately 7.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 2.1 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of natural gas and electric utility infrastructure.
- The site is within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **Within the West Wellfield Protection Area – Conflict with MDC Policy LU-8G.**

Analysis Summary – Alternative Site No. 14

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

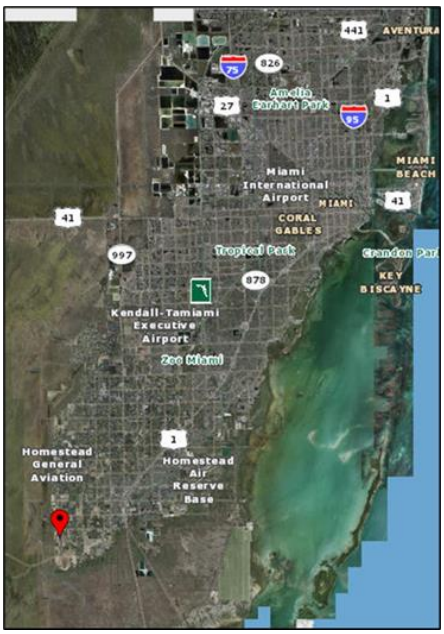
Analysis Summary – Alternative Site No. 15

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 164.83-acre property is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time north to W Palm Drive, is 0.58 miles from the nearest residential zoning, and 1.02 miles from the boundary of Everglades National Park. **This parcel is under contract with several adjacent parcels in a pending development.**

MDPA Parcel Data

Folio No: 30-7832-000-0030

Owner: Krupalu, Inc.

2021 MDPA Market Value: $2,097,000

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 31.0 miles SW of the existing RRF, slightly more than half a mile from the nearest residential zoning, and approximately one mile from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF even if the existing RRF site could be converted to an ash monofill, or ash generated at this location was landfilled at the Medley Landfill. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. Potable water mains appear to be available approximately 5.0 miles east of the site on SW 360th Street., but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be approximately 5.0 miles east of the site on SW 360th Street., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 5.0 miles of 6" force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest gas transmission main is approximately

5.0 miles NE of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is Florida City Substation located 5 miles away at 33800 SW 202nd Avenue. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements. New legal easements may need to be established to complete this routing.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.
- Due to expected shallow depth to bedrock, rock excavation may be required to install utility pipelines, which will significantly increase utility construction costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Krome very gravelly marly loam, 1 to 2 percent slopes, Biscayne marly silt loam, drained, 0 to 1 percent slopes, and Chekika very gravelly marly loam, 1 to 2 percent slopes. Generally, these soils are not well suited for building foundations because of water content and shallow depth to bedrock (typically 5-7 inches).

The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface, but would have to be confirmed by geotechnical investigations. These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A. High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.

Analysis Summary – Alternative Site No. 15

- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 1.02 miles (1.64 km) E of the Everglades Class I Area, 12.75 miles (20.51 km) W of the Biscayne Class II Area, and about 12.7 miles WSW of the FPL Turkey Point Power Plant, a large Title V emitter.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

  The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s). **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains wetlands and stream with riparian habitat. The site appears predominantly undisturbed. The site is not within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.

  Permanent impacts to wetlands and streams would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

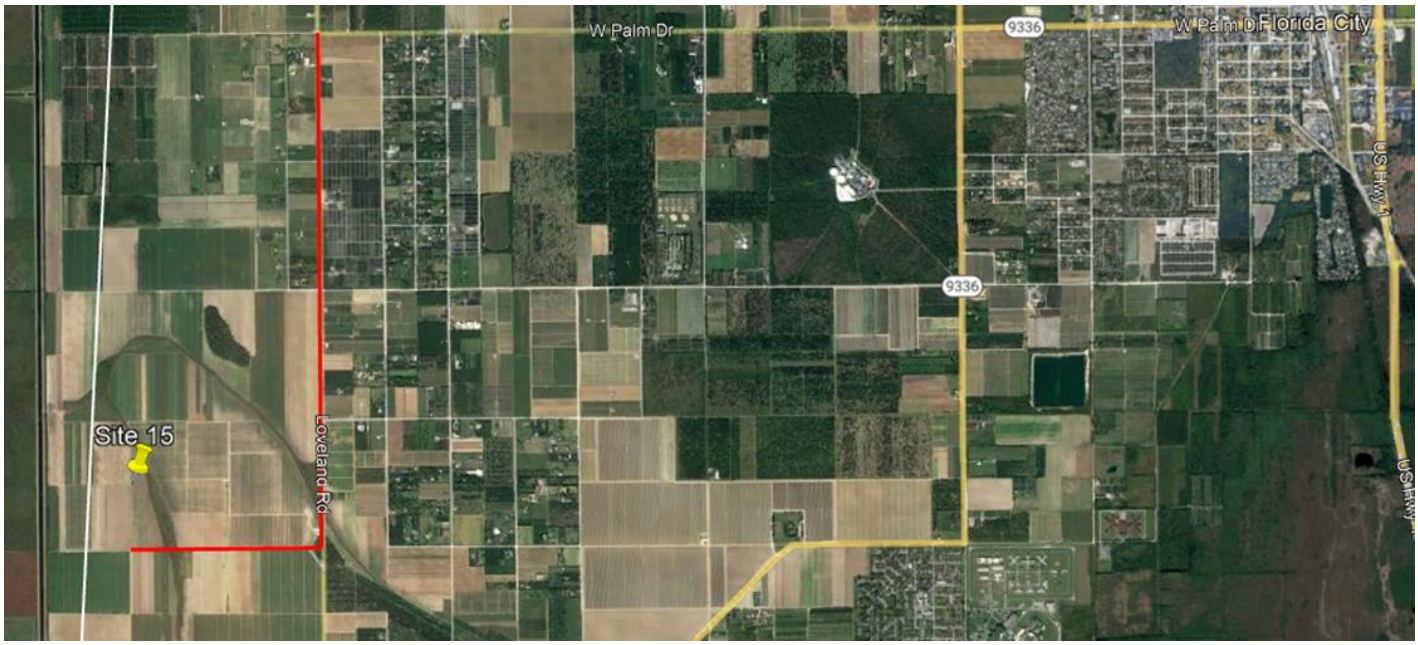
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

Analysis Summary – Alternative Site No. 15

Transportation

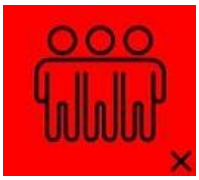
Travel time north to W Palm Drive is less than 10 minutes. Existing access to site is via SW 367th Street and Loveland Road (see map below), but as shown in the picture of Loveland Road at right, construction of approximately 2.75 miles of two-lane roadway with paved shoulders will be required for proper site access. Additional ROW may have to be acquired for access roads.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts to local area will likely be significant. Additional traffic impacts on Loveland Road, W Palm Drive, and other local roads may be significant due to only two points of access and limited road capacity. Truck queuing will have to be accomplished on site to prevent further congestion.



Analysis Summary – Alternative Site No. 15

Community



The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is about half a mile from the nearest residential zoning and is approximately a mile from the boundary of Everglades National Park, which suggests that the siting of a WTE facility may be strongly opposed by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- **This parcel is under contract with several adjacent parcels in a pending development.**
- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 2.75 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional easement/ROW may have to be acquired.
- Construction of approximately 5.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 5.0 miles of 6” force main will likely be required.
- Construction of approximately 5.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 5.0 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Due to expected shallow depth to bedrock, rock excavation may be required to install utility pipelines, which will significantly increase utility construction costs.

Analysis Summary – Alternative Site No. 15

- The site is also within 18.6 miles of an active wood stork colony and will potentially disturb greater than one-half acre of suitable foraging habitat; therefore, would potentially require wood stork mitigation.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Based on projected emissions for a 4000 tpd facility, preliminary evaluation indicates that this parcel is too close to sensitive receptors in the nearby Class I area thus making it extremely difficult to demonstrate acceptable impacts for PSD permit issuance.**
- **Species Habitat – Conflict with MDC Policy CON-9B.**

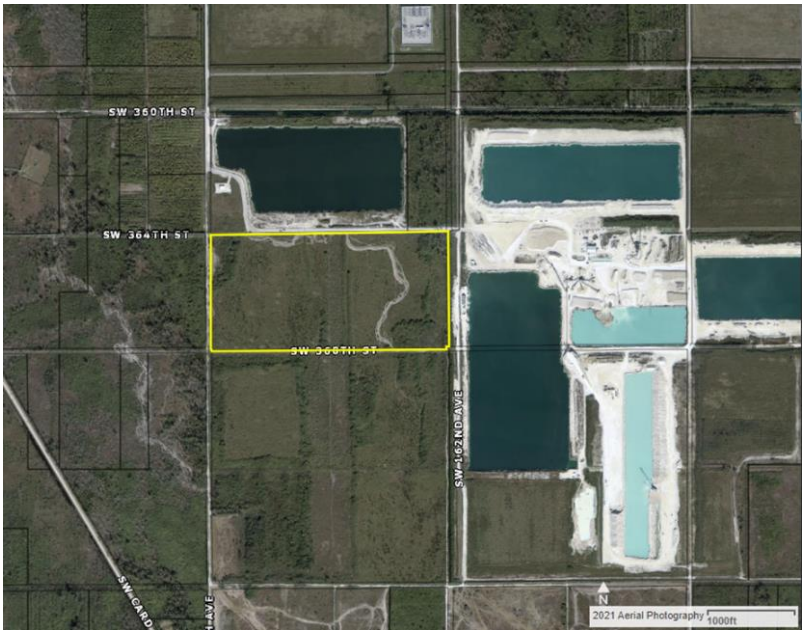
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 18

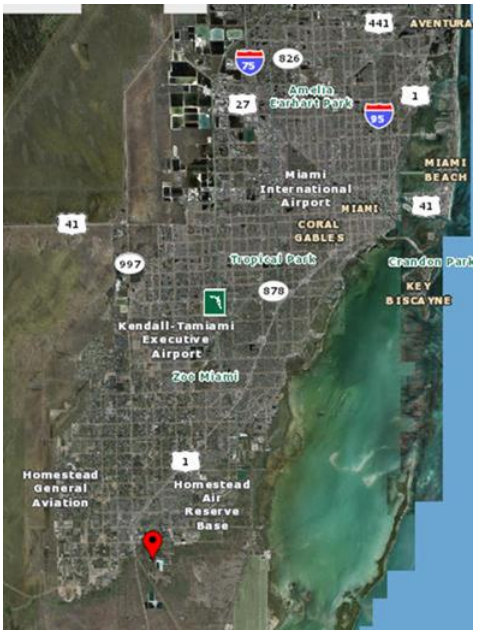
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 81.44-acre site is a single parcel outside the UDB, located in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to Card Sound Road, is 0.77 miles from the nearest residential zoning, and 7.13 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 16-7932-001-0025

Owner: CEMEX Construction Materials Florida, LLC

2021 MDPA Market Value: $1,581,860

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 33.0 miles SW of the existing RRF, 0.77 miles from the nearest residential zoning, and more than seven miles from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF even if the existing RRF site could be converted to an ash monofill, or ash generated at this location was landfilled at the Medley Landfill. If disposed at a non-County facility, expected costs for ash disposal would increase even further. .

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main is available approximately 0.25 miles N of the site on SW 167th Ave., but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be available approximately 0.75 miles N of the site on SW 167th Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 0.75 miles of 6" force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 2.0

miles NW of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Farmlife Substation located 0.93 miles away at 35600 SW 162nd Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater may not be used as source water for boiler feedwater, cooling tower/condenser feedwater, truck wheel wash, and irrigation water.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Biscayne marly silt loam, drained, 0 to 1 percent slopes. The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface but would have to be confirmed by geotechnical investigations.

These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone AE (El. 8 ft). High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 7.13 mi (11.5 km) E of the Everglades Class I Area, 6.68 mi (10.8 km) W of the Biscayne Class II Area, and about 6.5 miles WSW of the FPL Turkey Point Power Plant, a large Title V emitter.

  As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

Analysis Summary – Alternative Site No. 18

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains minor wetlands. The site appears predominantly undisturbed. The site is within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Analysis Summary – Alternative Site No. 18

Transportation

Travel time north to Card Sound Road and US-1 is less than 10 minutes. Existing access to site is via SW 360th Street and SW 167th Ave. (see map below), but approximately 1.2 miles of two-lane road with paved shoulders will need to be constructed for proper site access (see existing SW 360th Street picture at right). Additional ROW may have to be acquired.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Card Sound Road, SW 360th Street and SW 167th Ave., and other local roads will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Community

The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is less than a mile from the nearest residential zoning and the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Analysis Summary – Alternative Site No. 18

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 1.2 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional ROW may have to be acquired.
- Construction of approximately 0.25 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 0.75 miles of 6” force main will likely be required.
- Construction of approximately 2.0 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 0.93 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Due to shallow depth to bedrock, rock excavation may be required to install utility pipelines, which could significantly increase utility construction costs.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

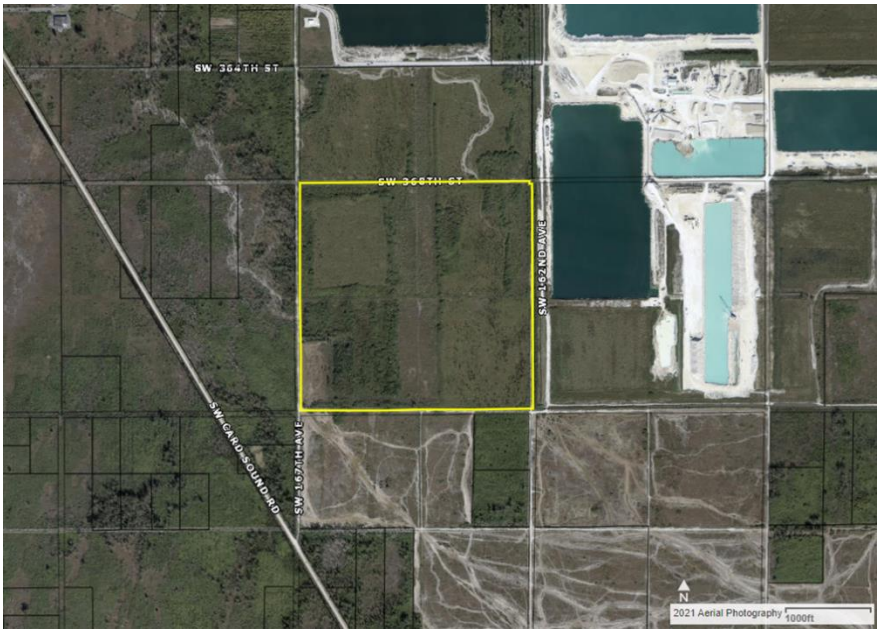
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 19

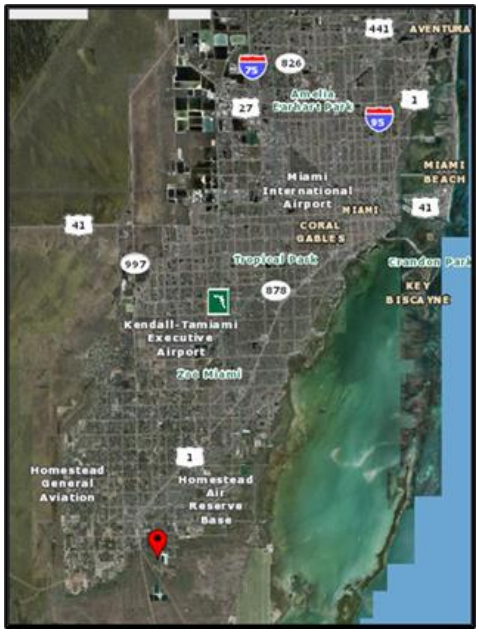
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 161.81-acre site is located outside the UDB, in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to Card Sound Road, 1.02 miles from residential zoning and 7.11 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 16-7932-001-0030

Owner: CEMEX Construction Materials Florida, LLC

2021 MDPA Market Value: $3,127,500

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 29.0 miles southwest of the existing RRF, 1.02 miles from residential zoning and 7.11 miles from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF even if the existing RRF site could be converted to an ash monofill, or ash generated at this location was landfilled at the Medley Landfill. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main is available approximately 0.5 miles N of the site on SW 167th Ave., but further analysis is needed to verify pipe size, service pressure, and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be available approximately 1.1 miles N of the site on SW 167th Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 1.1 miles of 6" force main will likely be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 2.3

miles NW of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Farmlife Substation located 1.4 miles away at 35600 SW 162nd Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Biscayne marly silt loam, drained, 0 to 1 percent slopes. The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface but would have to be confirmed by geotechnical investigations.

These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A. High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 7.11 mi (11.5 km) E of the Everglades Class I Area, 6.68 mi (10.8 km) W of the Biscayne Class II Area, and about 6.8 miles WSW of the FPL Turkey Point Power Plant, a large Title V emitter.

Analysis Summary – Alternative Site No. 19

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains minor wetlands. The site appears predominantly undisturbed. The site is within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

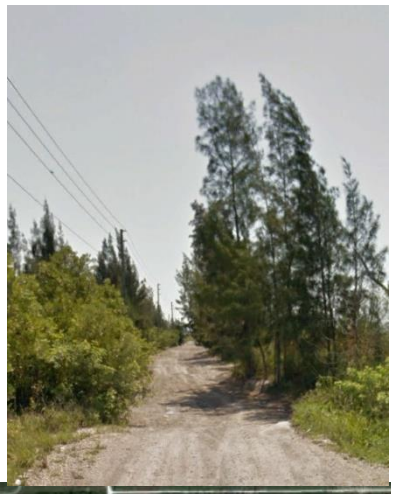
- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Analysis Summary – Alternative Site No. 19

Transportation

Travel time north to Card Sound Road and US-1 is less than 10 minutes. Existing access to site is via SW 360th Street and SW 167th Ave. (see map below), but approximately 1.4 miles of two-lane road with paved shoulders will need to be constructed for proper site access (see existing SW 360th Street picture at right). Additional ROW may have to be acquired.



The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Card Sound Road, SW 360th Street and SW 167th Ave., and other local roads will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Community

The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is less than a mile from the nearest residential zoning and the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Analysis Summary – Alternative Site No. 19

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 1.2 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional ROW may have to be acquired.
- Construction of approximately 0.5 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 1.1 miles of 6” force main will likely be required.
- Construction of approximately 2.3 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 1.4 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Due to shallow depth to bedrock, rock excavation may be required to install utility pipelines, which could significantly increase utility construction costs.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

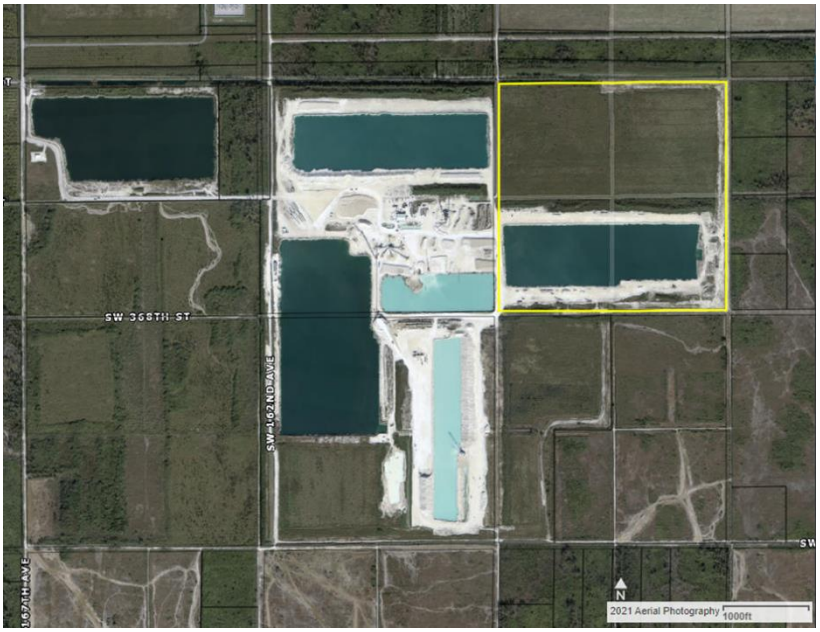
Future Waste-To-Energy Facility Siting Alternatives Analysis

Analysis Summary – Alternative Site No. 20

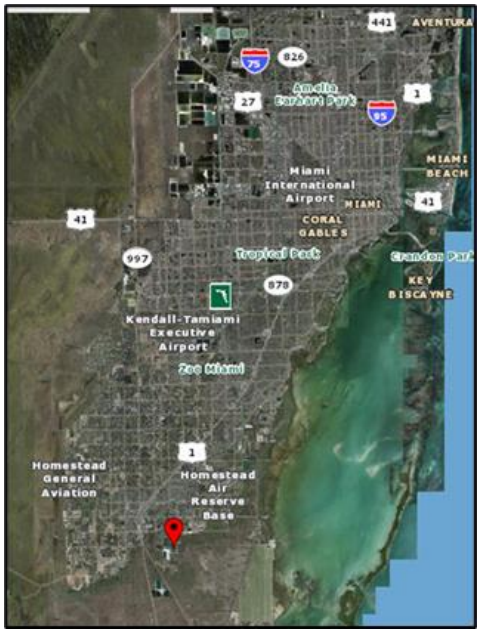
Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map



Location Map



Site Information

This 156.56-acre site is located outside the UDB, in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as an ash monofil, recycling center or an education center. The property is less than a 10-minute travel time to Card Sound Road, 0.61 miles from residential zoning and 8.16 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 16-7933-001-0020

Owner: SDI Aggregates, LLC

2021 MDPA Market Value: $3,375,575

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 28.2 miles southwest of the existing RRF, 0.61 miles from residential zoning and 8.16 miles from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF even if the existing RRF site could be converted to an ash monofill, or ash generated at this location was landfilled at the Medley Landfill. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main is available approximately 1.25 miles NW of the site on SW 167th Ave., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be available approximately 1.5 miles NW of the site on SW 167th Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 1.5 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 3.2

miles NW of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Farmlife Substation located 1.6 miles away at 35600 SW 162nd Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Biscayne marly silt loam, drained, 0 to 1 percent slopes. The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface but would have to be confirmed by geotechnical investigations.

These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A. High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 8.16 miles (13.1 km) E of the Everglades Class I Area, 5.63 mi (9.1 km) W of the Biscayne Class II Area, and about 5.5 miles WSW of the FPL Turkey Point Power Plant, a large Title V emitter.

Analysis Summary – Alternative Site No. 20

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains no wetlands. The site appears predominantly undisturbed. The site is within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Analysis Summary – Alternative Site No. 20

Transportation

Travel time north to Card Sound Road and US-1 is less than 10 minutes. Existing access to site is via SW 360th Street, SW 167th Ave., and SW 356th St. (see map below), but approximately 2.4 miles of two-lane road with paved shoulders will need to be constructed for proper site access (see existing SW 360th Street picture at right). Additional ROW may have to be acquired.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Card Sound Road, SW 360th Street and SW 167th Ave., and other local roads will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Community

The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is less than a mile from the nearest residential zoning and the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Analysis Summary – Alternative Site No. 20

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 2.4 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional ROW may have to be acquired.
- Construction of approximately 1.25 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 1.5 miles of 6” force main may be required.
- Construction of approximately 3.2 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 1.6 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Due to shallow depth to bedrock, rock excavation may be required to install utility pipelines, which could significantly increase utility construction costs.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

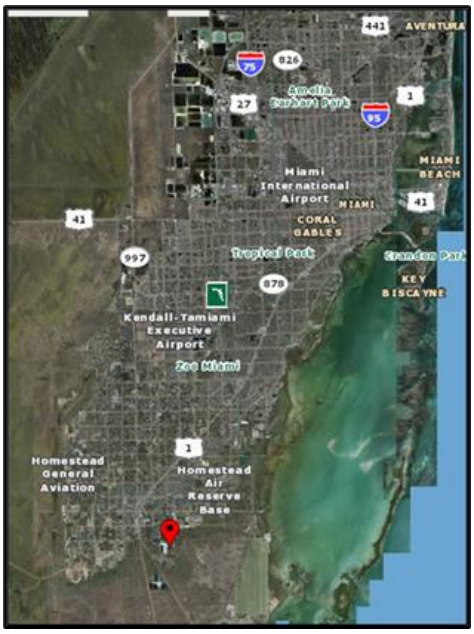
Analysis Summary – Alternative Site No. 21

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 57.85-acre site is located outside the UDB, in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as a recycling center or an education center. The property is less than a 10-minute travel time to Card Sound Road, 1.09 miles from residential zoning and 8.14 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 16-7933-001-0031

Owner: SDI Aggregates, LLC

2021 MDPA Market Value: $1,421,500

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 28.6 miles southwest of the existing RRF, 1.09 miles from residential zoning and 8.14 miles from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF even if the existing RRF site could be converted to an ash monofill, or ash generated at this location was landfilled at the Medley Landfill. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main is available approximately 2.0 miles NW of the site on SW 167th Ave., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be available approximately 2.7 miles NW of the site on SW 167th Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 2.7 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 5.1

miles NW of the site on Krome Ave/US-1. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Farmlife Substation located 2.3 miles away at 35600 SW 162nd Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Biscayne marly silt loam, drained, 0 to 1 percent slopes. The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface but would have to be confirmed by geotechnical investigations.

These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A. High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 8.14 miles (13.1 km) E of the Everglades Class I Area, 5.98 mi (9.6 km) W of the Biscayne Class II Area, and about 5.8 miles WSW of the FPL Turkey Point Power Plant, a large Title V emitter.

Analysis Summary – Alternative Site No. 21

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory, National Hydrography Dataset, and South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site contains minor wetlands. The site appears predominantly undisturbed. The site is within a Florida panther focus area for consultation or critical habitat for endangered or threatened species under the Endangered Species Act. The site is within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with MDC Policy CON-9B.** MDC Policy CON-9B states that all nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities and further degradation or destruction of such habitat shall not be authorized.

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Analysis Summary – Alternative Site No. 21

Transportation

Travel time north to Card Sound Road and US-1 is less than 10 minutes. Existing access to site is via SW 167th Ave. and SW 376th Street (see map below), but approximately 1.4 miles of two-lane road with paved shoulders will need to be constructed for proper site access. Additional ROW may have to be acquired.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Card Sound Road, SW 376th Street and SW 167th Ave. will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Community

The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is less than a mile from the nearest residential zoning and the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Analysis Summary – Alternative Site No. 21

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 1.4 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional ROW may have to be acquired.
- Construction of approximately 2.0 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 2.7 miles of 6” force main may be required.
- Construction of approximately 5.1 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 2.3 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Due to shallow depth to bedrock, rock excavation may be required to install utility pipelines, which could significantly increase utility construction costs.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.
- **Species Habitat – Conflict with MDC Policy CON-9B.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Future Waste-To-Energy Facility Siting Alternatives Analysis

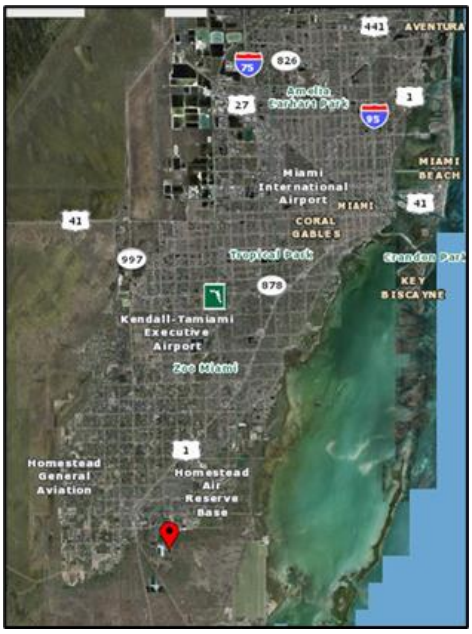
Analysis Summary – Alternative Site No. 22

Site Scorecard

Location	Utilities	Soils	Environment	Transportation	Community	Schedule	Cost
✕	✕	✕	✕	✕	✕	N/A	N/A

MDPA Parcel Map

Location Map



Site Information

This 98.43-acre site is located outside the UDB, in unincorporated Miami-Dade County. The combined site area is sufficient to support the proposed 4,000 ton per day (TPD) Waste-to-Energy (WTE) facility and expansion to 5,000 TPD capacity or the addition of other facilities such as a recycling center or an education center. The property is less than a 10-minute travel time to Card Sound Road, 1.17 miles from residential zoning and 8.26 miles from the boundary of Everglades National Park.

MDPA Parcel Data

Folio No: 16-7933-001-0031

Owner: SDI Aggregates, LLC

2021 MDPA Market Value: $335,825

Zoning District: GU

PA Zone: Interim - Awaiting Specific Zoning

Operational, Engineering, and Regulatory Considerations

Location

The site is located approximately 29.0 miles southwest of the existing RRF, 1.17 miles from residential zoning and 8.26 miles from the boundary of Everglades National Park. If this site were selected, the effects on the County's Solid Waste System would be considerable. Direct hauls from the collection routes in the vicinity of the existing RRF would divert to the three transfer stations for disposal. Incoming waste at those stations would increase and may result in capacity issues, especially at the West Transfer Station, which is currently operating at approximately 80% of design capacity. A new transfer station would need to be constructed at or near the site of the existing RRF to maintain the current collection patterns and transfer station loadings.

The number of deliveries by transfer trucks from the County's landfills, transfer stations, and Trash & Recycling Centers (TRCs) would increase to meet the increased capacity of the new WTE facility. Their travel patterns would be altered, and travel times would significantly increase due to longer travel distances and expected traffic congestion. Transfer fleet round trip times would increase and would likely result in the need for additional vehicles and drivers to manage transfer volumes. Transfer fleet fuel consumption and maintenance costs would significantly increase due to the additional deliveries and travel times and distances, while similar Collection fleet costs would also increase due to longer travel distances and traffic congestion.

Ash hauling costs for a new WTE facility located at this site are expected to be significantly higher than at the existing RRF even if the existing RRF site could be converted to an ash monofill, or ash generated at this location was landfilled at the Medley Landfill. If disposed at a non-County facility, expected costs for ash disposal would increase even further.

Utilities

- **Potable water** – The site would need a minimum 12" water main to provide an 8" fire line and a 4" potable supply line to the proposed facility. A 12" potable water main is available approximately 2.2 miles NW of the site on SW 167th Ave., but further analysis is needed to verify service pressure and system capacity. A booster station may be needed to provide adequate service pressure at the site.
- **Wastewater** – The proposed facility will need a minimum wastewater reuse or discharge capacity of approximately 96,000 gallons per day. Wastewater reuse or discharge options will need to be considered depending upon sewer system capacity and injection well permitting alternatives. Reuse of process wastewater is commonly used to minimize sanitary sewer usage at WTE facilities, but for site evaluation purposes all wastewater was assumed to be discharged to sanitary sewer. The closest sanitary sewer collection system appears to be available approximately 2.7 miles NW of the site on SW 167th Ave., but further analysis is needed to verify capacity and system impacts. An on-site lift station and about 2.7 miles of 6" force main may be required.
- **Natural gas** – The site would need a minimum 6" gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners. The closest transmission main is approximately 5.7

miles NW of the site. Construction of the 6" service line to the site is assumed to be within existing ROW and easements.

- **Electric** – Nearest substation/ switchyard is FPL Farmlife Substation located 2.3 miles away at 35600 SW 162nd Street. Need to verify substation/ switchyard spare capacity, voltage, and available terminations. Proposed transmission line routing through existing ROW/ FPL Easements.
- **Stormwater** – High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Groundwater** – Groundwater is typically used at WTE facilities to supplement the potable water service and provide industrial supply water for cooling towers, condensers, and other high-volume water uses. The proposed 4,000 tpd WTE facility is expected to consume an average of 552,000 gallons per day. Other more innovative and sustainable solutions, such as reuse and rainwater harvesting, are also available to reduce potable water consumption requirements. A consumptive use permit from the South Florida Water Management District (SFWMD) would be required to withdraw any groundwater from the aquifer or from a canal, lake or river. If groundwater is not available at a site, or a consumptive use permit cannot be obtained, then potable water service will have to provide for WTE facility water consumption needs, which will increase operating costs.

Soil

The USDA Soil Survey data for the site classifies the predominant site soils as Biscayne marly silt loam, drained, 0 to 1 percent slopes. The presence of Biscayne marl soils indicates the seasonal high groundwater elevation is typically within 10 inches of the ground surface but would have to be confirmed by geotechnical investigations.

These soils are severely limited for building foundations because of water content and shallow depth to bedrock, and areas under building foundations would need to be removed and replaced with structural fill. The high groundwater may result in the need for elevating the tipping floor pit, which will also increase project costs due to the need for additional structural fill.

Environment

- **Floodplains** – The site is in a 100-year floodplain, within FEMA Flood Zone A. High groundwater elevations and required floodplain compensating storage will significantly increase both the cost and site area used for stormwater retention.
- **Environmental Assessments** – No known existing Environmental Assessments for this site.
- **Power Plant Siting Act (PPSA) Certification –** A complete PPSA Application would need to be developed, inclusive of the associated individual permitting processes (Air Construction/PSD, ERP, Stormwater Permitting, UIC Permitting (if needed), etc.) The PSC "need determination" filing process is also required.
- **New Source Review (NSR) / Prevention of Significant Deterioration (PSD) Permitting** – The site is located 8.26 miles (13.3 km) E of the Everglades Class I Area, 5.74 mi (9.2 km) W of the Biscayne Class II Area, and about 5.7 miles WSW of the FPL Turkey Point Power Plant, a large Title V emitter.

Analysis Summary – Alternative Site No. 22

As a proposed major source of air pollutant emissions, a new WTE facility would be subject to PSD permitting requirements under the NSR permitting program. Pre-construction approval under the PSD permitting program is primarily contingent upon application of Best Available Control Technology (BACT) and completion of dispersion modeling analyses to demonstrate compliance with ambient air quality standards and PSD increments at both receptors located in the immediate vicinity of the site (Class II areas) and stricter air quality related criteria at sensitive receptors located within nearby federally protected Class I areas (or sensitive Class II areas).

The nearby Everglades National Park's location along the western border of the county and the Biscayne Bay NP (sensitive Class II area) located on the eastern side both having more stringent air quality related values (AQRVs) provide uncertainties associated with demonstrating acceptable impacts from the operation of a new WTE facility and thus will make air permitting very challenging at this prospective site. The AQRVs are resources, identified by the Class I area land manager agencies (i.e., National Parks Service), that have the potential to be affected by air pollution. These resources may include visibility, scenic, cultural, physical, or ecological resources for sensitive area(s).

- **Environmental Resources Permitting and United States Army Corps of Engineers (USACE) Dredge & Fill Permitting** – The National Wetlands Inventory and National Hydrography Dataset indicates wetlands are present. The South Florida Water Management District Land Cover and Land Use 2017-2019 indicates the site is comprised wet prairie wetlands. The site appears to be partially disturbed. The site is within the Florida panther primary focus area for consultation and will potentially require panther mitigation. The site is within the proposed critical habitat and within the urban development boundary in Miami-Dade County for the Florida bonneted bat and individual consultation with the U.S. Fish and Wildlife Service is required. The site is not within the 18.6 miles buffer of an active wood stork colony and does not appear to require wood stork mitigation.

  Permanent impacts to wetlands would potentially require an Individual Environmental Resource Permit, State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

- **Species Habitat – Conflict with Policy CON-9A.** MDC Policy CON-9A states that all activities that adversely affect habitat that is critical to Federal, or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur.

- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.** The site is within the Comprehensive Everglades Restoration Plan (CERP) area and development at this location will have wetland impacts. MDC Policy CON-7J states the County is to review development applications that include wetland impacts for consistency with CERP objectives. Applications inconsistent with CERP objectives, projects or features shall be denied.

Analysis Summary – Alternative Site No. 22

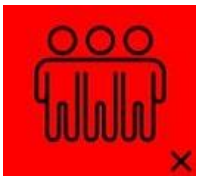
Transportation

Travel time north to Card Sound Road and US-1 is less than 10 minutes. Existing access to site is via SW 167th Ave. and SW 376th Street (see map below), but approximately 1.4 miles of two-lane road with paved shoulders will need to be constructed for proper site access. Additional ROW may have to be acquired.

The volume of traffic that is expected at the proposed WTE facility (400-500 trucks per day), will greatly increase the loads on local roads so the traffic impacts on Card Sound Road, SW 376th Street and SW 167th Ave. will likely be significant. Truck queuing will have to be accomplished on site to prevent further congestion.

Analysis Summary – Alternative Site No. 22

Community



The USEPA EJScreen Standard Report indicated no existing issues for this site. However, the site is less than a mile from the nearest residential zoning and the presence of wetlands, wildlife habitat and other environmental issues suggests that the siting of a WTE facility may be met with opposition by the community at this location.

Schedule

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of schedule effects resulting from site conditions was performed.

Cost

This site was eliminated from consideration during the Detailed Screening stage. No evaluation of differential costs resulting from site conditions was performed.

Site Differentiators Overview

- Larger site area for stormwater control due to high groundwater
- Floodplain compensating storage required
- Removal of muck soils and replacement with structural fill required in development areas
- Additional structural fill for tipping floor pit due to high groundwater
- Approximately 1.4 miles of two-lane road with paved shoulder and stormwater controls will need to be constructed for proper site access. Additional ROW may have to be acquired.
- Construction of approximately 2.2 miles of 12” water main and possibly a booster station will be required.
- Construction of an on-site wastewater lift station and about 2.7 miles of 6” force main may be required.
- Construction of approximately 5.2 miles of 6” gas service piping to provide natural gas to the proposed facility for boiler auxiliary burners.
- Construction of approximately 2.3 miles of electrical transmission line routing through existing ROW/ FPL easements. Also, upgrades to the existing substation may be needed.
- Due to shallow depth to bedrock, rock excavation may be required to install utility pipelines, which could significantly increase utility construction costs.
- Additional ROW/easements may be needed to complete routing of potable water, sanitary sewer, natural gas, and electric utility infrastructure.
- Permanent impacts to wetlands would potentially require an Individual Environmental Permit, a State 404 Permit from the Florida Department of Environmental Protection, and wetland mitigation.

Analysis Summary – Alternative Site No. 22

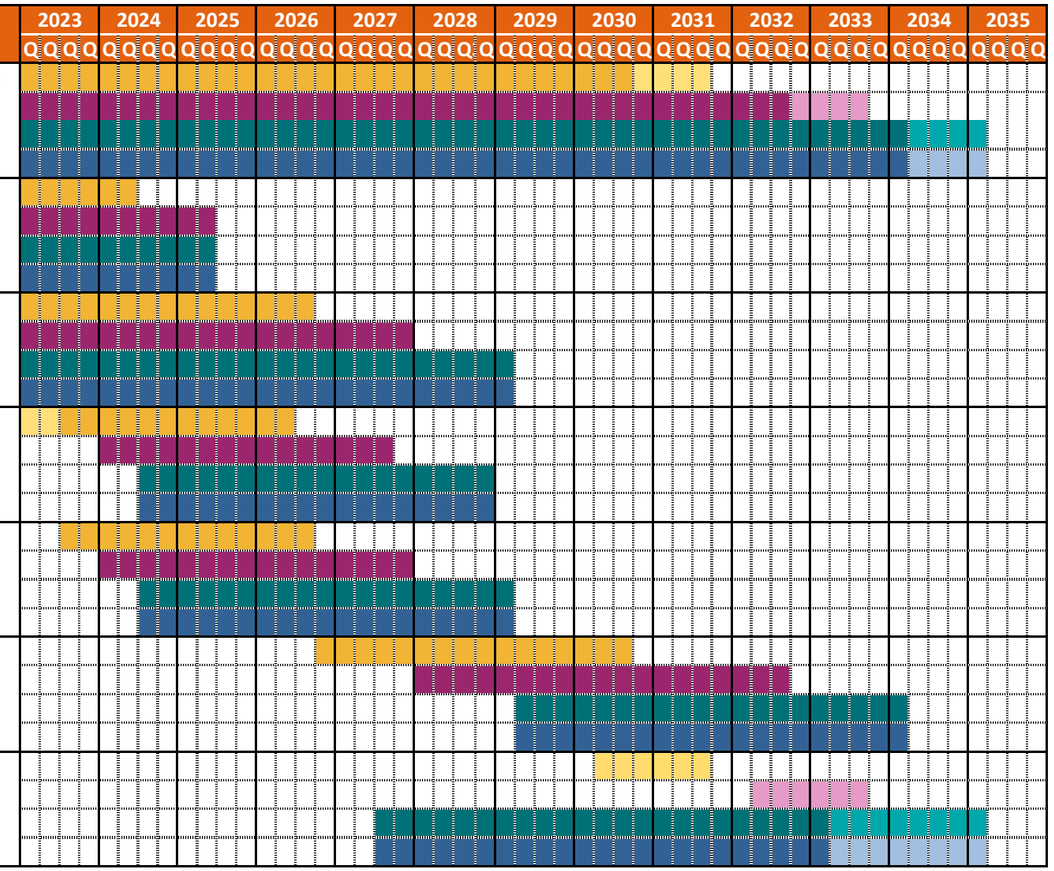
- **Species Habitat – Conflict with MDC Policy CON-9A.**
- **SFWMD CERP Site – Conflict with MDC Policy CON-7J.**

Appendix B

Preliminary Implementation Schedule

Miami-Dade Department of Solid Waste Management
Future WTE Facility Siting Evaluation
Appendix B - Preliminary Implementation Schedule

Task	Activity	Duration of Activity	Total Task Duration (Start Date to Finish Date)
	Summary	7 years 9 months - 11 years 3 months *demo not included in duration	7 years 9 months - 11 years 3 months *demo not included in duration
1	**Siting / Planning**	1.5 - 2.5 years	1.5 - 2.5 years
2	**Financing**	1.5 years	3 years 9 months - 6 years 3 months
3	**Regulatory / Permitting**	3.5 - 4.5 years	3.5 - 4.5 years
4	**Procurement**	2 - 3 years	3 years - 4 years 9 months
5	**Notice to Proceed / Design and Construction**	4 - 5 years	4 - 5 years
6	**System Operational Impacts and Demolition**	1 - 1.5 years for Shutdown and Demo	1.5 years - 7 years 9 months



Legend
- Existing Site
- Site 1: Medley
- Site 16: Ingraham Hwy Site 1
- Site 17: Ingraham Hwy Site 2

Note:
-Tasks identified in this high-level implementation schedule represent the Early Start Date, the earliest date a scheduled activity can be started. Certain tasks may be started earlier or later or extend or compressed to shorten or extend the schedule.
-Duration of Activity indicates the time that activity is occurring for the task and is included in report Table 2-2 Summary of Schedule Tasks with Estimated Durations
-Total Task Duration (Start Date to Finish Date) indicates the total time from the beginning of the first task or subtask to the end of the last task or subtask.
-Task durations provided are preliminary best estimates based on our professional judgement and experience with other facilities and processes.
-Demolition of the existing RRF included as lighter-colored durations.

Appendix C

Cost Considerations Table

Site	Costs (Unit Costs, when available)	Units for Unit Cost	Existing MDRRF Site (Doral)				Site 1 - Medley				Site 16 - Ingraham Hwy. Site #1				Site 17 - Ingraham Hwy. Site #2			
			Checklist	Unit Quantity	Cost	% of BASE	Checklist	Unit Quantity	Cost	% of BASE	Checklist	Unit Quantity	Cost	% of BASE	Checklist	Unit Quantity	Cost	% of BASE
Additional Site Estimates																		
Parcel Area		acres	157.16				320.31				159.71				81.11			
WTE Site Area		acres	50				50				50				50			
Building areas for vibrocompaction		square feet	871,200				871,200				871,200				871,200			
Soils Removal/Replace with Select Fill		depth (feet)					0.25				0.58				0.58			
		volume (CY)					8,067				18,822				18,822			
Embankment Fill (for elevation)		volume (CY) for one foot elevation required					32,267				32,267				32,267			
Estimated Cost Differentials																		
Location																		
Land Acquisition - MDPA Market Value Plus[1]	10%	percentage above market value	N		$0	0.0%	Y		$42,483,287	2.9%	Y	1	$2,523,928	0.2%	Y		$1,017,309	0.1%
Offsite Access Road development	$2,546,993	per mile	N			0.0%	N			0.0%	N				Y	0.75	$1,910,245	0.1%
Utilities																		
Off-Site Utilities Construction																		
Water																		
12-inch DIP pipeline	$475,200	per mile	N			0.0%	N			0.0%	Y	3.3	$1,568,160	0.1%	Y	4.0	$1,900,800	0.1%
Booster Pump Station, MGD (if no ISW)	$200,644	per booster static	N			0.0%	Y	1	$200,644	0.0%	Y	1	$200,644	0.0%	Y	1	$200,644	0.0%
Wastewater																		
6-inch PVC force main	$386,338	per mile	N			0.0%	N			0.0%	Y	3.3	$1,274,914	0.1%	Y	4.0	$1,545,350	0.1%
Lift station	$45,936	per station	N				Y	1	$45,936	0.0%	Y	1	$45,936	0.0%	Y	1	$45,936	0.0%
Natural Gas																		
Distance	$500,000	per mile	N			0.0%	Y	2.2	$1,100,000	0.1%	Y	5.5	$2,750,000	0.2%	Y	6.0	$3,000,000	0.2%
Electric																		
Distance	$1,000,000	per mile	N			0.0%	Y	1.9	$1,900,000	0.1%	Y	6.5	$6,500,000	0.4%	Y	6.5	$6,500,000	0.4%
Industrial Supply Well Development	$1,200,000	per well	N			0.0%	N			0.0%	N			0.0%	N			0.0%
Industrial Supply Well Rehabilitation - 25% of well d	$300,000	per well	Y	3	$900,000	0.1%	N				N				N			
Additional ROW/Easement for Utilities - 60 foot wid	Market Value		N			0.0%	Y	2.2	$2,122,109	0.1%	Y	6.5	$747,060	0.1%	Y	6.5	$592,910	0.0%
Stormwater[2]																		
Additional for site, above typical, 4 foot perimet	$30.13	per CY	N			0.0%	Y	16,800	$506,184	0.0%	Y	16,800	$506,184	0.0%	Y	16,800	$506,184	0.0%
Additional for temporary stormwater retainage c	$500,000	per site	Y	1	$500,000	0.0%	N			0.0%	N			0.0%	N			0.0%
Special Construction (i.e., Elevate Pit)																		
Additional Elevation of Pit due to high ground water elevation (5 foot included in re			N			0.0%	N			0.0%	N			0.0%	N			0.0%
Lake fill costs	$56.43	per CY	Y	114,060	$6,436,201	0.4%	N			0.0%	N			0.0%	N			0.0%
Soil																		
Removal of Muck Soils	$14.43	CY	N	0		0.0%	N			0.0%	Y	18,822	$271,605	0.0%	Y	18,822	$271,605	0.0%
Replace with Select Fill	$25.00	CY	N	0		0.0%	Y	8,067	$201,667	0.0%	Y	18,822	$470,556	0.0%	Y	18,822	$470,556	0.0%
Geotechnical Issues (Vibrocompaction)	$7.83	per square foot	Y	500,000	$3,915,000	0.3%	Y	871,200	$6,821,496	0.5%	Y	871,200	$6,821,496	0.5%	Y	871,200	$6,821,496	0.5%
Environment																		
Flood plain mitigation	if required	feet of elevation	N				N				Y	1			Y	1		
Embankment Fill	$30.13	per CY	N			0.0%	N			0.0%	Y	32,267	$972,195	0.1%	Y	32,267	$972,195	0.1%
Wildlife Mitigation / Relocation																		
Wood Stork	$65,000	per acre	N			0.0%	N			0.0%	N			0.0%	N			0.0%
Bonneted Bat - developed	$5,000	per acre	Y	50	$250,000	0.0%	N			0.0%	N			0.0%	N			0.0%
Bonneted Bat - undeveloped	$200,000	per acre	N			0.0%	N			0.0%	Y	50	$10,000,000	0.7%	Y	50	$10,000,000	0.7%
Florida Panthers	$65,000	per acre	N			0.0%	N			0.0%	N			0.0%	Y	50	$3,250,000	0.2%
Environmental Mitigation						0.0%												
Permanent Wetlands Mitigation - low	$65,000	per acre	N			0.0%	N			0.0%	Y	50	$3,250,000	0.2%	Y	50	$3,250,000	0.2%
Permanent Wetlands Mitigation - high	$120,000	per acre	N			0.0%	N			0.0%	N			0.0%	N			0.0%
Zoning and Permitting Cost Differential	$3,074,668	per site	N			0.0%	Y	1	$3,074,668	0.2%	Y	1	$3,074,668	0.2%	Y	1	$3,074,668	0.2%
Permitting Difficulty (percentage of)[3]	$3,074,668	per site	N		$0	0.0%	Moderate		$1,844,801	0.1%	Severe	1	$3,382,135	0.2%	Severe		$3,382,135	0.2%
State 404			N								Y				Y			
Environmental Resources Permit											Y				Y			
Air PSD/NSR Permitting			Y				Y				Y				Y			
PPSA							Y											
Consumptive Use Permit																		
System																		
Ash Disposal																		
Monofill Development (if feasible and space av	$1,000,000	per acre	N			0.0%	N			0.0%	N			0.0%	N			0.0%
System Effects - Capital[4]																		
Transfer Station Construction	$45,000,000	per station	N			0.0%	N			0.0%	Y	1	$45,000,000	3.1%	Y	1	$45,000,000	3.1%
Fleet vehicles - Transfer Trailers	$300,000	per trailer	N			0.0%	N			0.0%	Y	10	$3,000,000	0.2%	Y	10	$3,000,000	0.2%
Waste Diversion for Construction[5]	see Basis of Cos	total cost	N			0.0%	N			0.0%	N			0.0%	N			0.0%
TOTAL SITE COST DIFFERENTIATORS - Capital					$12,001,201	0.8%			$60,300,792	4.2%			$92,359,480	6.4%			$96,712,032	6.7%
ESTIMATED TOTAL CAPITAL COST					$1,445,520,543				$1,493,820,134				$1,525,878,822				$1,530,231,374	
ESTIMATED TOTAL CAPITAL COST DIFFERENTIAL WITH BASE COST					Base - Least Cost Alt				$48,300,000				$80,400,000				$84,700,000	

Site	Costs (Unit Costs, when available)	Units for Unit Cost	Existing MDRRF Site (Doral)				Site 1 - Medley				Site 16 - Ingraham Hwy. Site #1				Site 17 - Ingraham Hwy. Site #2			
			Checklist	Unit Quantity	Cost	% of BASE	Checklist	Unit Quantity	Cost	% of BASE	Checklist	Unit Quantity	Cost	% of BASE	Checklist	Unit Quantity	Cost	% of BASE
Operational Impacts[6]	$10.83	per ton, Year 1																
Utilities - Water																		
Purchase of Potable	$1.72	cost per ton wast	N				Y	1	$1.72	15%	Y	1	$1.72	15%	Y	1	$1.72	15%
System Effects - Operational																		
Ash Disposal[7,8]																		
Ash Hauling - landfill near RRF site	see Basis of Cos	cost per ton wast	Y	1	$0.39		Y	1	$0.39	3%	Y	1	$3.08	27%	Y	1	$3.08	27%
O&M Cost Impacts[9]																		
Transfer O&M (staffing, utilities, maintenance f	$8.61	cost per ton wast	N				N				Y	1	$8.61	77%	Y	1	$8.61	77%
TOTAL SITE COST DIFFERENTIATORS - Operational, cost per ton waste processed Year 1					$0.39				$2.10	19%			$13.40	119%			$13.40	119%
ESTIMATED TOTAL ANNUAL O&M COST per ton waste processed - Year 1					$11.22				$12.93				$24.23				$24.23	

Notes:

1 *Property acquisition based on 2021 MDPA Market Value plus markup identified on same row*
2 *Stormwater above typical assumes construction of berm around perimeter of WTE site for stormwater containment.*
3 *Permitting Difficulty - Rated as minor (25%), moderate (60%), and severe difficulty (110%) with percentage of Zoning and permitting cost differential to account for additional consultant cost.*
4 *System Effects - Capital Cost Impacts estimated to be transfer station development and additional transfer trailers*
5 *Waste Diversion for Construction on existing site - estimated cost differential between hauling and disposal at Okeechobee and disposal at MDRRF.*
6 *Operational Impacts are estimated on a per ton of waste processed basis and compared to base operational costs per ton waste processed, per the estimates developed for the WTE Facility Cost Estimate Project*
7 *Ash Hauling - assuming ash would be hauled off-site for disposal at a Landfill near RRF site. Cost differential is in hauling distance/cost.*
8 *Regular MSW that may be sent to nearby landfill would have to be diverted to allow ash to be disposed at nearby landfill.*
9 *System Effect - O&M Cost Impacts estimated to be additional drivers, equipment replacement, additional consumables for waste hauling*

Basis of Costs

CAPITAL

Water and Wastewater Utility Costs				
12" DIP	$83.99	per lineal foot	2022	*FDOT summary cost data*
12" DIP rounded up to include fittings, valves, etc. (water supply)	$90.00	per lineal foot	2022	*FDOT summary cost data*
6" PVC pipe (wastewater force main)	$73.17	per lineal foot	2022	*FDOT summary cost data*
wastewater lift station	$500,000	per MGD flow	2022	*recent project cost estimate*
assumed wastewater flow	0.09	MGD		*see Water, WW, and NG Needs sheet*
wastewater lift station cost per lift station	$45,936	per lift station		
water booster pump station	$500,000	per MGD flow	2022	*recent project cost estimate*
water booster pump station cost per pump station	$200,644	per pump station		*without ISW*
Industrial Supply Well development, 6-inch	$1,200,000	per well	2022	*recent project cost estimate, to be verified*
Industrial Supply Well rehabilitation (25% of development)	$300,000	per well		*existing site has 3 wells on-site. Would need review and repair*
Road Development Costs				
Undivided 2-lane rural road, 5' shoulders, new construction	$2,546,993	per mile	2022	*FDOT summary cost data, includes required stormwater for road*
Site Development Costs				
Regular excavation (removal of soils)	$14.43	per cubic yard	2022	*FDOT summary cost data*
Embankment fill (for elevating site)	$30.13	per cubic yard	2022	*FDOT summary cost data*
Regular fill	$25.00	per cubic yard	2022	*recent project cost estimate*
Vibrocompaction, 450 probes per acre at 40ft depth	$5.52	per square foot	2010	*PBREF 2 change order 5 (see separate sheet for breakdown)*
Vibrocompaction, 450 probes per acre at 40ft depth	$7.83	per square foot	2022	*PBREF 2 change order 5, escalated per ENR cost index*

Stormwater

Assumes construction of 4 foot berm around site perimeter, 3:1 side slope, 2 feet top width

Perimeter (linear feet)	8100	on average, can update based on si	Perimeter			
Foot print (square feet)	26	per linear foot	Existing Site	5713	linear feet	
Total foot print, on average	4.83	acres	Site 16	8218.54	linear feet	
Volume of soils for berm (cubic feet)	56	per linear foot	Site 17	8055.11	linear feet	
Volume of soils for berm (cubic yards)	6.22	per linear yard	Average	8136.825		
Volume of soils for berm (cubic yards)	16800	CY per site				
Cost for berm construction	$30.13	per cubic yard	similar to embankment fill cost			
Cost per site	$506,184	per site				

Lake Fill

Reference Facility Lake Fill Cost Estimate (2020)	$13,000,000	2020
Lake Fill Cost Estimate (CY) - South Lake	338,323	
Estimated Cost Per CY	$38.42	2020
Estimated Cost Per CY	$56.43	2033

Ash Monofill	Unit Cost	unit	Date of Cost Estimate	*Source:*
Ash Monofill Expansion cost per acre	$800,000	per acre	Sep-18	*recent project cost estimate*
Ash Monofill Expansion cost per acre	$1,000,000	per acre	May-22	*recent project cost estimate*
Ash disposal per acre		ton per acre		*data from existing ash monofill?*
				existing ash monofill disposal capacity until 2028. Expansion may be possible

System Effects - Capital

Capital Cost					
Transfer Station Construction	$45,000,000	Tampa ($34M, 2021, 50K sq ft), SWA (2013), DSWM CIP $45M			
Fleet vehicles - Transfer Trailers	$300,000	per trailer	10	units needed	based on recent 2021/2022 quote
Fleet vehicles - Collection Vehicles	$350,000	per vehicle	0	units needed	

OPERATIONAL

Waste Processed per year	1,333,333	tons per year		
Ash disposal per year	120,051	tons per year		
Year 1 Net O&M Cost	$14,439,872			
Year 1 Net O&M Cost per Ton (Base)	$10.83	per ton	2033	
Potable Water Purchased				
Potable water cost	$8.20	per ccf	2021	*MD DSWM WTE cost estimate*
Potable water cost	$11.69	per ccf	2033	
Potable water cost	$10,962.57	per million gallons	2021	
Potable water cost	$15,630.00	per million gallons	2033	
assumed potable water usage without ISW	0.40	MGD		*see Water, WW, and NG Needs sheet*
assumed potable water usage without ISW	146.47	MG per year		*see Water, WW, and NG Needs sheet*
Total assumed potable water cost without ISW - Year 1	$2,289,332	per year	2033	
Total potable water cost without ISW per ton waste processed	$1.72	per ton of waste processed		

Assumptions

Site Information		
Overall WTE site area - 4,000 TPD	50	acres
	2,178,000	square feet
Percent of site for buildings (area of	40%	
CPI	3%	

Unit Conversion		
1	cubic yards	
27	cubic feet	
1	mile	
5280	feet	
1	acre	0
43560	square feet	
1	square miles	
640	acre	
1	ccf	
748	gallons	

Ash hauling and disposal costs:

Medley Landfill (Waste Management)	**9350 NW 89th Ave, Medley, FL**			will need to verify capacity for past 2033
Tipping Fee ($/ton)	$34.17	per ton	2021	*MD DSWM WTE cost estimate, Medley Landfill*
	$48.72	per ton	2033	
Distance from existing site	3	miles		
Haul Cost ($/ton) - near existing site	$3.00	per ton ash	2021	
Haul Cost ($/ton) - near existing site - Year 1	$4.28	per ton ash	2033	
Total ash haul cost -near existing site - Year 1	$513,491	per year		
Ash Haul Cost per ton processed waste - Year 1 (near existing)	$0.39	cost per ton waste processed		
Distance to Site 16 and 17	43	miles		
Haul Cost ($/ton) - Sites 16 and 17	$9.36	per ton ash	2021	
Haul Cost ($/ton) - Sites 16 and 17 - Year 1	$13.35	per ton ash	2033	
Total ash haul cost - Year 1	$4,102,133	per year		
Ash Haul Cost per ton processed waste - Year 1 (Site 16 and 17)	$3.08	cost per ton waste processed		

Okeechobee Landfill (Waste Management)	**10800 NE 128th Ave, Okeechobee, FL**			
Tipping Fee ($/ton)	$30.00	per ton	2021	*MD DSWM WTE cost estimate, Okeechobee Landfill*
	$42.77	per ton	2033	
Estimated tipping fee percent increase due to demand	17.00%			*assume renegotiate with Okeechobee at a higher rate because of need and higher waste disposal tonnage contract*
Renegotiated Tipping Fee ($/ton)	$50.04	per ton	2033	not used
Distance from existing site	135	miles		
Haul Cost ($/ton) - near existing site	$17.80	per ton	2021	
Haul Cost ($/ton) - near existing site - Year 1	$25.38	per ton	2033	
Total ash haul cost -near existing site - Year 1	$3,046,712	per year		
Ash Haul Cost per ton processed waste - Year 1 (near existing)	$2.29	cost per ton waste processed		
Distance to Site 16 and 17	160	miles		
Haul Cost ($/ton) - Sites 16 and 17	$21.18	per ton	2021	estimated 19% more because distance is 19% greater than from existing
Haul Cost ($/ton) - Sites 16 and 17 - Year 1	$30.20	per ton	2033	
Total ash haul cost - Year 1	$3,601,522	per year		
Ash Haul Cost per ton processed waste - Year 1 (Site 16 and 17)	$2.70	cost per ton waste processed		

SWA Diverted Waste Basis of Cost for reference

Diverted Waste Disposal Location	Okeechobee Landfi	N/A	N/A		Current Agreements
Waste Disposal Location Distance fr	56	N/A	N/A		miles
Hauling Cost per mile	$ 4.15	N/A	$	4.15	$/mile
Haul Cost per ton	$ 7.27	N/A	$	7.27	$/ton
Year of Hauling Cost Estimate	2018	N/A		2018	year
Tipping Fee - Solid Waste (per ton)	$ 39.75	N/A	N/A		$/ton
Tipping Fee - C&D (per ton)	$ 31.25	N/A	N/A		$/ton
Tipping Fee - Vegetation (per ton)	$ 31.25	N/A	N/A		$/ton
Year of Tipping Fee Used	2019	N/A	N/A		year
Tons per Load - Garbage	$ 21.70	N/A	$	21.70	tons/load
Tons per Load - Ash	N/A	N/A	$	21.70	tons/load
PBREF 3 Distance from PBREP (mi	N/A	N/A		30	miles

System Effects - Operational

Operational costs are compared to projected O&M base cost

O&M Costs

Transfer Station O&M (staffing, utilities, maintenance)	$7,000,000	per year	2021	based on SWAPBC and Hillsborough data
Drivers	$75,000	per driver per year	2021	estimates
Transfer Trailer O&M - Fuel, Maintenance, Equipment Replaceme	$30,000	per unit per year	2021	estimates
Transfer trailer units needed	10	units needed		
Cost per year	$8,050,000	per year	2021	similar to SWAPBC and Hillsborough data
	$11,477,375.14	per year	2033	
Cost per year per ton waste processed	$8.61	cost per ton waste processed		

SWAPBC Component Cost Summ	Avg TS Cost Per T	Transportation Cost per ton		Annual Tonnage	Total Expenses	
Belle Glade TS	$67.29	$23.40	2012	31,285	$2,097,110	
Delray TS	$28.49	$8.13	2012	194,213	$5,413,202	
Lantana TS	$26.44	$11.35	2012	176,938	$8,883,190	
Jupiter TS	$20.87	$8.68	2012	376,658	$9,910,933	
Royal Palm Beach TS	$22.36	$6.70	2012	211,726	$4,382,320	
Southwest TS	$51.24	$7.61	2012	273,305	$6,098,259	
Overall	$29.38	$8.77	2012	1,264,125	$6,130,836	average
	$39.48	$11.79	2022		**$8,239,330**	
	$54.66	**$16.31**	**2033**		**$11,405,160**	

Miami-Dade System Costs

Transfer Station Operations Expenses	$28,801,000		FY 2020 Actua
Transfer Fee Tonnage	647,655	tons per year	FY 2022 Proje
Transfer Station Operations Cost per Ton (Estimate)	$44.47	per ton	2020
Transfer Station Operations Cost per Ton (Estimate)	$47.18		2022
Transfer Station Operations Cost per Ton (Estimate)	$65.31		2033

Hillsborough County - Transfer Station Costs

NWTS and CCC FY23 Total Budget	$6,622,909	
NWTS and CCC FY21 Tonnage	246,807.54	
Estimated cost per ton	$26.83	
SCTS and 3CCC FY23 Total Budget	$5,546,013	
SCTS and 3CCC FY21 Tonnage	173,314.75	
Estimated cost per ton (2023)	$32.00	
Estimated cost per ton (2033)	**$43.00**	

ATRI Study (2019) - Hauling costs	https://truckingresearch.org/wp-content/uploads/2019/11/ATRI-Operational-Costs-of-Trucking-2019-1.pdf		
Average Marginal Cost per Mile	$1.82	2018	includes fuel, R&M, insurance, driver wages and benefits, permits and tolls
Average Marginal Cost per Hour	$71.78	2018	includes fuel, R&M, insurance, driver wages and benefits, permits and tolls

Waste Diversion for Construction (additional cost compared to MDRRF disposal) — not used

Months of waste diversion	0	months	
Years of waste diversion	0	years	2028-2032 assumes MDRRF will continue operations during construction of new WTE Facility
Waste processed per year	1,000,000	tons	MDRRF capacity
Total waste diverted	-	tons	

Medley Landfill (Waste Management)	Medley cannot take all of diverted waste		
Existing Site			
Diverted waste hauling	$4,277,283	per year	2033
Diverted waste hauling	$0	total for construction period	
Diverted waste disposal	$34,170,000	per year	2033
Diverted waste disposal	$0	total for construction period	
Total waste hauling and disposal	$0		

Okeechobee Landfill (Waste Management)			
Existing Site			
Diverted waste hauling	$25,378,544	per year	2033
Diverted waste hauling	$0	total for construction period	
Diverted waste disposal	$50,044,207	per year	2033
Diverted waste disposal	$0	total for construction period	
Total waste hauling and disposal	$0		2033
Total waste hauling and disposal	#DIV/0!	per ton	2033

	miles from RRF	Year capacity reached (Current Capacity, No Expansion, With RRF)	Year capacity reached (Current Capacity, With Expansion, With RRF)	Draft Arcadis Estimates as of Sept 2021
North Dade LF	15.00	2024	2048	2030
South Dade LF	25.00	2033	2042	2030
RRF LF	0.00	2031	N/A	2030

County Landfill

Existing Site		
Diverted waste hauling	per year	2033
Diverted waste hauling	total for construction period	
Diverted waste disposal	per year	2033
Diverted waste disposal	total for construction period	
Total waste hauling and disposal		

RRF 2021 Operating Cost per Ton Processed (Gross)	$61.34	per ton	2021	does not include electrical revenues. Rates and Charges Report
RRF Operating Cost per Ton Processed (Gross)	$87.46	per ton	2033	
RRF 2021 Operating Cost	$62,203,174		2021	Rates and Charges Report — likely $79M once 5th amendment approved
Electrical Revenues 2021	$8,640,000		2021	Rates and Charges Report
RRF Tonnage FY 2021	1,014,050	tons	2021	Rates and Charges Report
RRF 2021 Operating Cost per Ton Processed (Net)	$52.82	per ton	2021	including electrical revenues
RRF Operating Cost per Ton Processed (Net)	$75.31	per ton	2033	

Waste Diversion for Construction - Cost Difference to send to Okeechobee vs MDRRF	#DIV/0!	per ton
Total Waste Diversion Cost Difference	#DIV/0!	

Easement/ROW Access

use market value per acre

60 foot wide easement	0.011363636	miles

Demolition Cost applies to all not used

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