

Supplemental Application for Power Plant Site Certification

Pasco County Resource Recovery Facility Expansion Volume I

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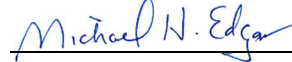


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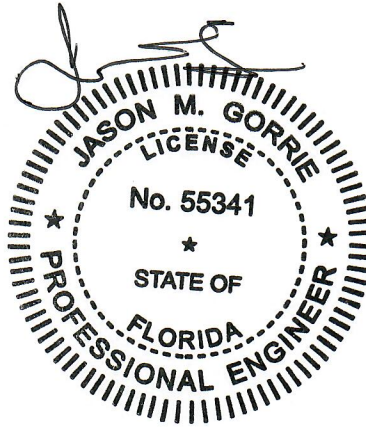
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A. Acronyms, Abbreviations, and Definitions

List of Acronyms and Abbreviations

°F	degrees Fahrenheit
ACI	Activated Carbon Injection
ACS	American Community Survey
AECOM	AECOM Technical Services, Inc.
APC	air pollution control
AQRV	Air Quality Related Values
BACT	Best Available Control Technology
BGEPA	Bald and Golden Eagle Protection Act
BOD	biological oxygen demand
Btu/lb	British thermal units per pound
CAAA	Clean Air Act Amendments
C&D	Construction and demolition
CDS	Circulating Dry Scrubber
CEM	Continuous Emissions Monitoring
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
COD	chemical oxygen demand
CRAS	Cultural Resources Assessment Survey
dBA	decibel A-weighted
DCS	distributed control system
DHR	Division of Historical Research
ESA	Endangered Species Act of 1973
FAC	Florida Administrative Code
FAS	Floridan Aquifer System
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FF	Fabric Filter
FGDL	Florida Geographic Data Library
FGT	Florida Gas Transmission
FLAG	Federal Land Managers' Air Quality Related Values Work Group
FLM	Federal Land Manager
FLUCCS	Florida Land Use and Cover Classification System
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
F.S.	Florida Statutes
FWC	Florida Fish and Wildlife Conservation Commission
GAQM	Global Association for Quality Management
GCP	good combustion practices

GEP	Good Engineering Practice
GIS	geographic information system
gpd	gallons per day
gpm	gallons per minute
GPR	Ground Penetrating Radar
HCl	hydrogen chloride
HHV	higher heat value
HHW	Household Hazardous Waste
I&C	Instrumentation and Control
IFC	International Finance Corporation
ISO	International Organization for Standardization
KBKV	Brooksville-Tampa Bay Regional Airport
km	kilometer
KTPA	Tampa International Airport
kV	kilovolt
kWh	kilowatt hour
LF	Landfill
LP	Liquid Propane
m	meter
MBTA	Migratory Bird Treaty Act
MCC	motor control center
mg/L	milligrams per liter
MPH	miles per hour
MSL	Mean Sea Level
MSW	Municipal Solid Waste
MUID	Map Unit Identifier
MW	Megawatt
MWC	Municipal Waste Combustion
NAAQS	National Ambient Air Quality Standard
NCDC	National Climatic Data Center
NED	National Elevation Data
NEI	National Emissions Inventory
NOAA	National Oceanographic and Atmospheric Administration
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides (inclusive)
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	new source review
NWS	National Weather Service
O&M	Operations and Maintenance
OGC	(Florida) Office of the General Counsel
OGP	Oil and Gas Producers
PM _{2.5}	Particulate Matter less than 2.5 microns diameter
PM ₁₀	Particulate Matter less than 10 microns diameter
PPSA	Power Plant Siting Act

PSC	Public Service Commission
PSD	Prevention of Significant Deterioration
PURPA	Public Utility Regulatory Policy Act (of 1978)
RCRA	Resource Conservation and Recovery Act
RO	Reverse Osmosis
ROW	right-of-way
RRF	Resource Recovery Facility
SAM	sulfuric acid mist
SER	significant emission rate
SIL	significant impact level
SNCR	selective non-catalytic reduction
SO ₂	sulfur dioxide
SPT	Standard Penetration Test
SR	State Route
SWFWMD	Southwest Florida Water Management District
SWT	Sanitary Water Treatment
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
T-G	turbine generators
tpd	tons per day
µg/m ³	micrograms of gaseous pollutant per cubic meter of ambient air
US	United States
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTM	Universal Transverse Mercator (projection)
VFD	variable frequency drive
WWTP	Wastewater Treatment Plant
WTE	Waste to Energy

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Definitions

Application is this application for the certification and approval of Pasco County's proposed Project.

Certified Facilities means all facilities on the Certified Site approved pursuant to the Power Plant Siting Act (PPSA) and the Conditions of Certification for the Pasco County Resource Recovery Facility. Certified Facilities include but are not limited to: 3 municipal waste combustors (Units 1-3); a steam turbine electrical generator; a Class I landfill; an ash monofill; an ash storage building; cooling towers; a scale house and truck scale; an electrical switchyard; storm water retention ponds; and maintenance facilities. Some of these Certified Facilities are shown on Figure B-1 in the Application.

Certified Site is the 751-acre site where the Certified Facilities are situated. The Certified Site is located at 14230 Hays Road in Spring Hill, Pasco County, Florida. The boundaries of the Certified Site are shown on Figure B-1 in the Application.

Conditions of Certification means the Conditions of Certification that have been adopted for the Pasco County Resource Recovery Facility pursuant to the PPSA (Florida Department of Environmental Protection [FDEP] Case No. PA 87-23).

County is, depending on the context, either: (a) the governing body for unincorporated Pasco County, acting through the Board of County Commissioners and the Board's designees; or (b) the geographic area that comprises unincorporated Pasco County, Florida.

Municipal Waste Combustor (MWC) shall have the meaning set forth in 40 Code of Federal Regulations (CFR) 60, Subpart Eb, § 60.51b. In general, a municipal waste combustor is a municipal solid waste (MSW) processing system that includes a fuel feed system, boiler, ash management system, and water supply and wastewater disposal systems.

Project means the construction, operation, and maintenance of the Proposed MWC Unit (Unit 4), plus the other improvements and modifications to the Certified Facilities that are needed to accommodate the construction, operation, and maintenance of the Proposed MWC Unit. The Project is described in more detail in Section 3 of the Application.

Project Site is the area on the Certified Site where the Proposed MWC Unit will be constructed. The Project Site is approximately 0.55 acres. The outline of the Project Site is shown on Figure B-2 and Figure B-3 in the Application.

Proposed MWC Unit is the new MWC Unit (Unit 4) that Pasco County intends to add to the Resource Recovery Facility.

Resource Recovery is "the process of recovering materials or energy from solid waste." Section 403.703(32), Florida Statutes (F.S.).

Resource Recovery Facility means the three MWC units, turbine generator, and related equipment that comprise the Pasco County Resource Recovery Facility. The footprint of the Resource Recovery Facility is shown on Figure B-1 in the Application.

When used generically in this Application, the terms "resource recovery facility," "waste-to-energy facility" (as defined in Section 403.7061(4), F.S., provided in Volume II, Appendix A), and "municipal waste combustor" (as defined in 40 CFR 60, Subpart Eb) all refer to facilities where MSW is burned under controlled conditions and energy from combustion is used to generate electricity, steam, or other beneficial products. These three terms are used interchangeably in the solid waste industry and in this Application.

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B. Executive Summary

This application (“Application”) is for the certification of an expansion to the Pasco County Resource Recovery Facility (“RRF”) pursuant to the Florida Electrical Power Plant Siting Act (“PPSA”), Sections 403.501-.518, Florida Statutes (“F.S.”). In this PPSA Application, the County is requesting approval to construct and operate a new municipal waste combustor (“MWC”) unit and thereby expand the RRF from three MWC units to a total of four MWC units.

In 1987 the Florida Public Service Commission (“PSC”) issued an affirmative determination of need pursuant to Section 403.519, F.S., for the RRF and the electricity that it would produce with four MWC units and a total site capacity of 1,200 tons per day (“tpd”). In 1988 the Governor and Cabinet, sitting as the Siting Board, approved Pasco County’s PPSA application to construct and operate the RRF, a Class I landfill, and other associated facilities (collectively, the “Certified Facilities”), subject to various conditions and limitations (“Conditions of Certification”). The RRF was built and has been operating successfully since 1991. The RRF includes three MWC units that burn the County’s municipal solid waste (“MSW”) under controlled conditions to generate electricity.

Pasco County’s 2025 Comprehensive Plan specifies that the County will “plan for expansion of the resource recovery plant when the disposal volume reaches 80% of [the RRF’s] daily [processing] capacity.” Pursuant to that plan, the Pasco County Solid Waste Department has determined that the County needs to expand the combustion capacity of its existing RRF to meet current and future municipal solid waste (“MSW”) generation rates within Pasco County. The proposed MWC unit (“Proposed MWC Unit”) will be installed immediately adjacent to the existing RRF, integrated with the existing RRF, and contained entirely within the footprint of the existing RRF. The Proposed MWC Unit (Unit 4) will increase the RRF’s MSW processing capacity by 475 tpd, from 1,050 tpd currently to approximately 1,447 tpd (with 5,200 Btu/lb waste) once Unit 4 is operational.

The County’s Project will create approximately 750 new construction jobs and operation of the Proposed MWC Unit will create approximately 10 new permanent jobs. These jobs will produce approximately \$33 million in annual payroll during the construction phase of the Project, and approximately \$15 million in additional payroll over the 30-year lifespan of the Proposed MWC Unit.

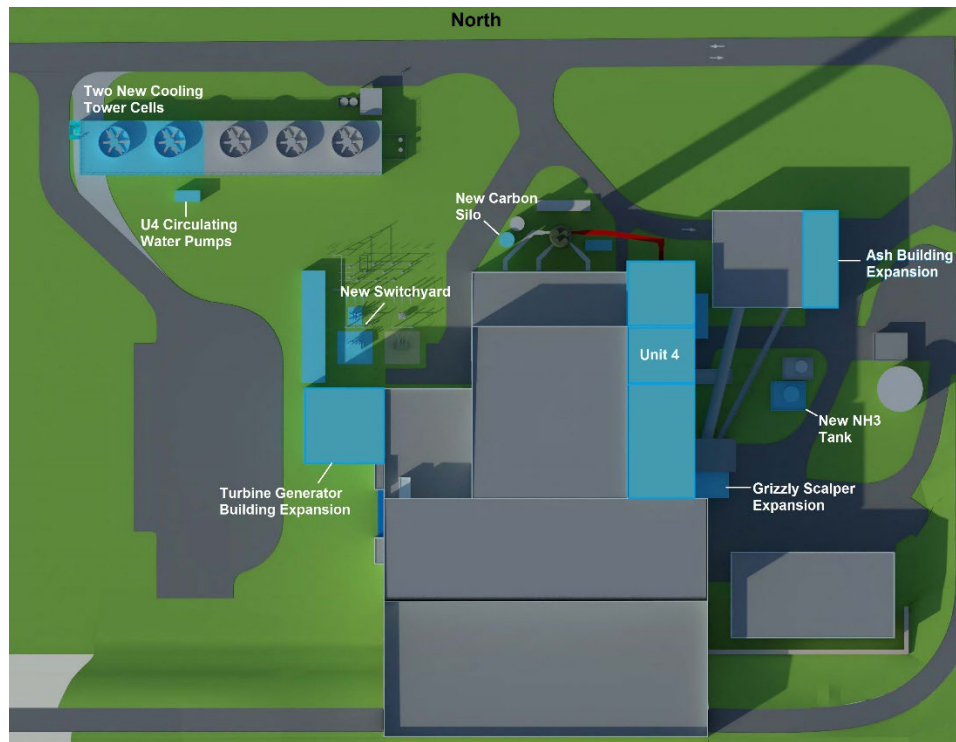
The Project will provide significant environmental benefits, including: (a) safe disposal of the County’s MSW; (b) a reduction in the amount of land required for landfilling the County’s MSW; (c) generation of clean renewable energy; and (d) a reduction of the state’s reliance on electricity generated with oil and gas. Unlike solar energy projects, the County’s Project will generate baseload power (i.e., the Proposed MWC Unit will generate electricity on a 24/7 basis, throughout the day and night, regardless of weather conditions).

B.1 Federal Energy Regulatory Commission and Florida Public Service Commission Orders

The Project complies with existing regulatory orders at both the federal and the state level. On December 4, 1986, the Federal Energy Regulatory Commission (FERC) approved certification of the RRF as a small power production facility pursuant to Section 292.207 of the Commission’s regulations and Section 201 of the Public Utility Regulatory Policies Act of 1978 (PURPA). As noted above, on June 26, 1987, the PSC granted Pasco County’s petition for a determination of need for the RRF, pursuant to Section 403.519, F.S.

Figure B-2. Plan View of the Existing RRF and Project Facilities

Project Facilities are highlighted in blue and labelled; these accrue to 0.55 acres ("Project Site")



Source: Enercon 2021

Figure B-3. Footprint Reserved for the Proposed MWC Unit (Unit 4)



Source: Covanta Pasco 2020

B.3 Pasco County RRF with the Proposed MWC Unit

The Pasco County RRF currently contains three existing MWC units, and the County plans to add a fourth MWC unit through the Project. The Title V permit for the three existing units is a nominal 350 tons per day (tpd) with MSW having a higher heating value (HHV) of 4,800 Btu/lb. Current operating information indicates a typical HHV above 5,000 Btu/lb, therefore the reference capacity of the proposed Unit #4 is 475 tpd with a HHV of 5,200 Btu/lb. The MSW in the refuse storage pit will be the same for each of the four combustion units, therefore the RRF capacity is referenced herein as nominal 1,600 tpd with MSW having a HHV of 5,200 Btu/lb. The design values for Unit #4 presented in this document and in other applications including the Prevention of Significant Deterioration permit application (Volume III) are based on 475 tpd with MSW HHV of 5,200 Btu/lb.

Each MWC unit will operate independently; therefore, it is possible to shut down each unit individually for maintenance and inspection. The RRF currently includes a tipping floor, MSW storage pit, air pollution control systems, cooling tower, ash handling/storage systems, maintenance building, spare parts storage, administration offices, firewater pump and tank, ancillary equipment and structures, and interior roadways. As indicated in Figure B-2 above, the proposed Project will include installation of the fourth MWC unit, an additional turbine generator (T-G), a lime silo, a carbon silo, two new cells in the cooling tower, an expansion of the ash building, and other related equipment and systems. The air pollution control system for the new MWC unit will consist of an advanced selective non-catalytic reduction (SNCR) system; a dry recirculation-type quench reactor using hydrated lime; a fabric filter baghouse; and a carbon injection system. A new distributed control system (DCS) will be provided for the Project and integrated with the RRF's existing DCS system.

Basic operations of the RRF will remain the same after the new MWC unit becomes operational. Recyclables will continue to be separated from the solid waste before the solid waste is delivered to the RRF. MSW will be delivered and unloaded directly into the refuse pit by transfer trailers and packer trucks. Metal will be recovered from the ash post-combustion and processed (i.e. separating ferrous from nonferrous metals) on site for subsequent sale. Ash will be used for beneficial purposes or taken to the landfill for disposal.

B.4 PPSA Approval for the Project

Based on the information provided in this Application, the County's Project should be approved under the PPSA.

Introduction

Pasco County is responsible for providing an environmentally sound, cost-effective, integrated solid waste management and recycling program for County residents and businesses. Studies commissioned by Pasco County during the 1980s concluded that a mass-burn resource recovery system is the most prudent long-term primary solid waste disposal method for the County. Accordingly, in 1987 the County filed an application under the Florida Electrical Power Plant Siting Act (“PPSA”) to construct and operate a resource recovery facility and associated facilities (Appendix B). On August 23, 1988, the Governor and Cabinet, sitting as the Siting Board, approved the County’s application, subject to certain conditions and limitations (“Conditions of Certification”).

The Pasco County Resource Recovery Facility (Figure 1) has been operating successfully since 1991. The RRF uses three municipal waste combustor (“MWC”) units to burn the County municipal solid waste (“MSW”) under controlled conditions to (a) reduce the volume of the County’s solid waste and (b) generate electricity. The three existing MWC units are designed to process 1,050 tpd of MSW.

Figure 1. Pasco County Resource Recovery Facility

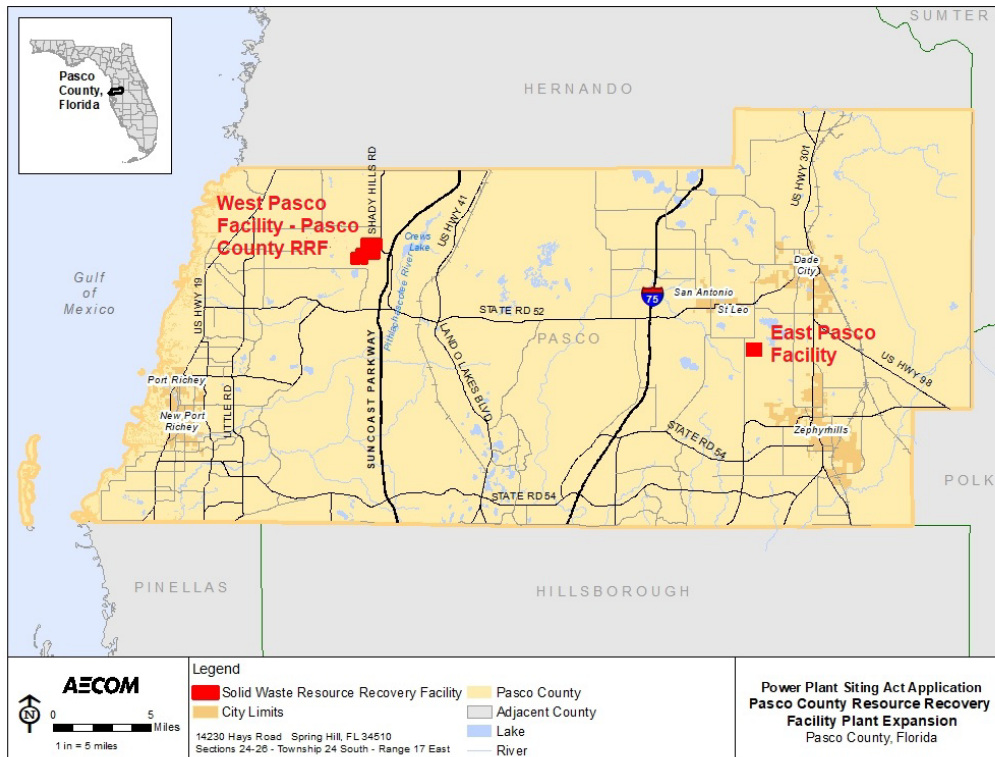
(as seen from the west, by the main entrance to the building)



Source: Covanta Pasco 2020

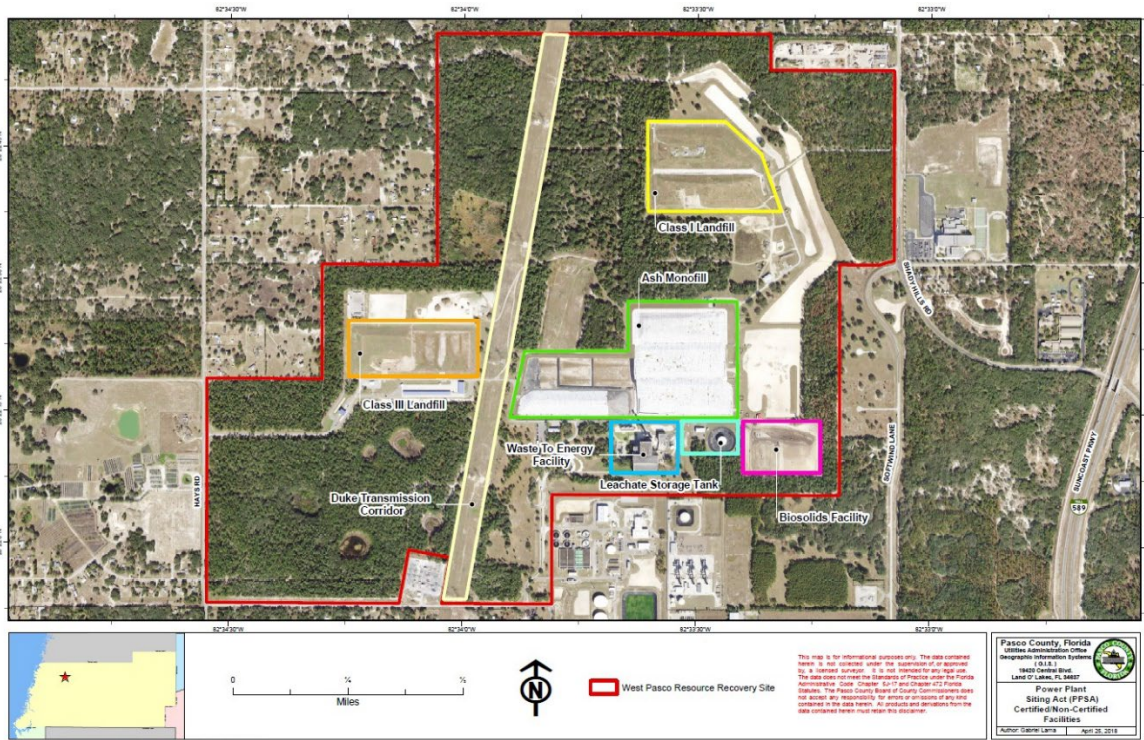
Current Pasco County Solid Waste facilities are clustered together on the east and west sides of the County (Figure 2). The East Pasco Facility is located near Dade City. It includes a solid waste transfer station and a closed landfill that no longer accepts waste. The West Pasco Facility is located on Hays Road. It includes the Resource Recovery Facility (Figure 3), a Class I landfill, a Class III Landfill, and public drop-off facilities.

Figure 2. Pasco County Solid Waste Management Facilities



Source: Data from Pasco County 2020

Figure 3. Certified Site: Pasco County RRF and Surrounding Area



Source: Pasco County 2018

As noted above, the Governor and Cabinet approved the construction of the Pasco County Resource Recovery Facility and certain associated facilities, subject to the Conditions of Certification. The Conditions of Certification are provided in Volume II, Appendix C, of this Application. The Conditions of Certification state that the “Certified Facility” includes but is not limited to the following components:

- Three municipal waste combustors (Units 1-3)
- A steam turbine electric generator
- A Class I landfill
- An ash storage building and ash handling system
- Cooling towers
- A scale house and truck scales
- An electrical switchyard
- Stormwater retention ponds
- A maintenance facility

The Certified Facility was approved for development on a 751 acre site (“Certified Site”) that is owned by Pasco County. Figure C-3 shows the boundary of the Certified Site and the locations of some of the key features of the Certified Facility, including the Resource Recovery (Waste To Energy) Facility, the Ash Monofill, and the Class I Landfill.

General Information

Format

The format and content of this Application are organized in accordance with the specific guidelines prescribed in the FDEP Application Instruction Guide, Electrical Power Plant Sites and Associated Facilities, Form 62-17.900, draft dated September 1, 2009 (“FDEP Instruction Guide”).

Review

This Application will be reviewed and processed in accordance with the requirements in the PPSA, Sections 403.501-.518, F.S., and Chapter 62-17, FAC, for reviewing and processing applications for electrical power plants.

State Owned Lands

The County’s Project does not involve the use or crossing of any land that is owned by the state or any governmental agency.

Appendices

Existing permits, and pending applications for permits, associated with the Pasco County Resource Recovery Facility are provided in Volume II (Appendices) of this Application. The Conditions of Certification for the Resource Recovery Facility, along with existing permits, are provided in Appendix C.

Information Sources

Information obtained from state, federal, local, and regional governmental agencies; educational institutions; publications; and qualified consultants was used in the preparation of this Application. These sources include those provided in Table 1:

Table 1. Sources of Information Included in this PPSA Application

Dataset/Information	Data Source/Custodian
Existing Land Use	Pasco County Property Appraiser Parcel Data (9/18/2020)
100-Year Flood Zone and 500-Year Flood Zone	FEMA Flood Hazard Areas Data (3/5/2020)
Future Land Use 2025	Pasco County GIS Data Download Site: 2025 Future Land Use Data (3/26/2020)
Geology/Lithology	FDEP Spatial Download Site: Geological State Map (1995-2018)
Hospitals	Pasco County GIS Data Download Site: Hospitals (1/22/2020)
Land Cover	SWFWMD Data Download Site: SWFWMD 2017 Land Cover; and AECOM
County Park	Pasco County GIS Data Download Site: County Parks (2/24/2020)
Preserve	Florida Natural Areas Inventory - FNAI (2019)
Conservation	Pasco County GIS Data Download Site: 2025 Future Land Use "Conservation" Data (3/26/2020)
Fire Stations and Police Stations	Pasco County GIS Data Download Site: Fire Stations (1/22/2020) and Police Stations (1/27/2020)
Schools	Pasco County GIS Data Download Site: Schools (3/26/2020)
Zoning	Pasco County GIS Data Download Site: Zoning Area (3/26/2020)
City Limits	Pasco County GIS Data Download Site: City Limits (2/27/2020)

Notes:

AECOM = AECOM Technical Services, Inc.
FDEP = Florida Department of Environmental Protection
FEMA = Federal Emergency Management Agency
FNAI = Florida Natural Areas Inventory
GIS = geographic information system
PPSA = Power Plant Siting Act
SWFWMD = Southwest Florida Water Management District

Data Gathering and Monitoring

Professional protocols and procedures were used, as applicable, for gathering monitoring data regarding air and water quality, solid wastes, and other environmental impacts. The methods used for gathering monitoring data, as applicable, were those duly adopted, published, or otherwise approved by the FDEP.

Maps and Technical Drawings

Maps and drawings are provided in accordance with the FDEP guidelines outlined in the FDEP Instruction Guide (Form 62-17.900). Data contained in the maps, drawings, or aerials photographs are representative of the area within 6 months of filing this Application.

Variances

The construction and operation of the Project will comply with all applicable nonprocedural requirements of the local, regional, and state agencies with jurisdiction over the Project. No variances from applicable state, regional, or local standards are needed for the construction and operation of the Project.

Information Requirements

Applicant Identification

Official identification information for the Pasco County Resource Recovery Facility is provided in Table 2.

Table 2. Applicant Identification Information

Applicant's Official Name	Pasco County Florida, Public Infrastructure Branch
Address of Applicant	Pasco County Florida Solid Waste & Resource Recovery Department 14230 Hays Rd Spring Hill, FL 34610
Address of Official Headquarters	14230 Hays Rd Spring Hill, FL 34610
Business Entity	Not Applicable
Owner	Pasco County Florida Solid Waste & Resource Recovery Department
Name and Title of Chief Executive Officer	Not Applicable
Name, Address, and Phone Number of Owner's Official Representative for Obtaining Certification	Justin Roessler; Solid Waste Director Solid Waste & Resource Recovery Department 14230 Hays Road Spring Hill, Florida 34610 (727) 861-3053
Site Location	14230 Hays Rd Spring Hill, FL 34610 UTM Coordinates (Zone 17): 347.11 km East; 3139.21 km North Latitude/Longitude: 28°22'12" North; 82°33'36" West
Location of Transmission Lines	Not Applicable
Proposed Associated Facilities	Not Applicable
Site Capacity	Current Nominal Rating: 31 MW Nominal Rating of Proposed Project: 18 MW
Additional Information on Plant-Associated Facility	Solid Waste & Resource Recovery (Landfill) Pasco County, FL - Official Website (pascocountyfl.net)
Facility Operator	Covanta Pasco

Ultimate Capacity Certification

On August 23, 1988, the Governor and Cabinet issued a Final Order (Certification No. PA 87-23) approving the certification of the Pasco County Resource Recovery Facility with an ultimate site capacity of 29 megawatts ("MW"). The ultimate site capacity was based on the use of four MWC units with a total MSW processing capacity of 1,200 tpd. The FDEP subsequently revised the Conditions of Certification (Modification C) to increase the ultimate site capacity to 31 MW, based on the actual generating capacity (gross nominal) achieved by the RRF. The generating capacity of the Resource Recovery Facility will be increased approximately 18 MW (nominal) to a total of 49 MW once the Proposed MWC Unit (Unit 4) becomes operational. The Conditions of Certification should be revised to reflect this increase in the total generating capacity of the Resource Recovery Facility. However, the County is not currently seeking an ultimate site capacity based on the development of additional facilities in the future, other than Unit 4.

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Section 1. Need for the Proposed Project

Pasco County Public Infrastructure has concluded that expansion of the Pasco County Resource Recovery Facility (RRF) is needed to maintain the desired level of service for solid waste disposal within the county. Steady population growth has resulted in a solid waste generation rate that now exceeds the processing capacity of the Facility. Policy No. SWT 4.2.1 of Pasco County's 2025 Comprehensive Plan specifies that the County will "plan for expansion of the resource recovery plant when the disposal volume reaches 80 % [the RRF's] of daily [processing] capacity" (Appendix D). Pasco County Public Infrastructure intends the Project to directly address Policy No. SWT 4.2.1. Pasco County Solid Waste has determined that the County needs to expand the combustion capacity of its existing mass burn renewable energy facility to meet current and future Municipal Solid Waste (MSW) generation rates within Pasco County. The expansion will be within the existing RRF boundary, integrated with the existing Pasco County RRF, and contained entirely within the existing RRF footprint.

The Project will increase the County's ability to process MSW generated by the residents and businesses in Pasco County, by expanding the RRF's combustion capacity from 1,050 tpd using three existing MWC units, to approximately 1,600 tpd using four MWC units. The original design and construction of the RRF included three combustion units, and incorporated certain design elements to facilitate future expansion, such as space for a fourth combustion unit, an over-sized refuse storage pit, and an additional exhaust flue within the emission stack. These existing design elements will be relied on to expand the RRF and to reduce overall Project costs.

1.1 Internal Benefits to the County

The County's Project, including the addition of the Proposed MWC Unit, will provide the following benefits to Pasco County:

- Provides necessary and timely MSW disposal capacity, while using a technology that is environmentally preferred as a matter of Florida legislative policy. See Sections 377.709(1) and 403.70611, F.S.
- Extends the lifespan of valuable and scarce Class I landfill capacity, thus delaying the need to construct a new landfill.
- Enables Pasco County to meet its legal obligation under Section 403.706(1), F.S. to provide facilities and capacity for the disposal of MSW generated within the County.
- Provides a reliable, low-cost source of electricity.
- Generates revenue from the sale of excess electricity, which reduces costs paid by County residents and businesses for MSW disposal services.

1.2 Benefits to the Region and State

The Project will provide the following benefits beyond Pasco County's boundaries, and to the state of Florida:

- Improves electric system reliability and integrity, and provides adequate electricity at a reasonable cost.
- Increases fuel diversity and supply reliability, by lessening dependence on natural gas, coal, and other fossil fuels for production of electricity.
- Uses efficient and cost-effective renewable energy systems, consistent with state policy, thus protecting the health, prosperity, and general welfare of the state and its citizens.
- Increases the total available energy supply for the state's electric grid.
- Provides a base-load renewable energy resource located in Florida and fueled by Florida indigenous renewable fuel (MSW).
- Reduces the amount of money exported out of the Florida economy for the purchase of coal, oil, and natural gas.

Displaces electricity produced with fossil fuels, thereby maintaining the supply of adequate electricity at a reasonable cost while lessening the state's dependence on imported and fossil fuels.

Adds more renewable energy to the fuel mix used in the generation of electricity in Florida, thereby reducing volatility of fuel costs, improving environmental conditions, and minimizing the costs of power supply to electric utilities and their customers.

Provides a cost-effective conservation measure because the electrical energy generated by the Project will be purchased by utilities at no more than avoided cost.

Reduces the amount of greenhouse gas associated with the generation of electricity in Florida using fossil fuels.

Reduces the amount of greenhouse gas associated with the disposal of MSW by landfilling.

Reduces the amount of greenhouse gas associated with the disposal of MSW because the location of the RRF is close to MSW generators, thus eliminating the need to haul the MSW long distances to out-of-county landfills.

Reduces the potential for surface water and groundwater impacts associated with the landfilling of MSW.

Conserves water resources by reusing process wastewater from the existing and proposed MWC units.

Supports the State of Florida's policy of resource recovery as a long-term solid waste disposal solution.

1.3 Benefits to Power Reliability, Planning, and Generation Costs

The Project will provide the following benefits related to power reliability, planning, and generation costs:

There is a need for electric generation capacity in the time frame of the Project, based on the April 2020 10-year site plans of Investor-owned utilities in Florida (Appendix E). The 10-Year Site Plan forecasts that the Summer Peak Demand will grow from 27,088 megawatts (MW) in 2020 to 30,195 MW in 2029—an increase of over 3,000 MW or about 11%.

To maintain the “target” reserve margin of 20%, Florida will require an additional 1,261 MW by 2025, 1,687 MW by 2026, over 2,500 MW by 2028, and over 3,100 MW by 2029.

The County's fourth MWC unit will be a base-load type generator that will run at high levels of capacity factor and availability. Its renewable energy characteristics will allow it to displace or offset the combustion of fossil fuels that would otherwise be used by the utilities for the production of electricity. It will not be “dispatchable,” nor should it be. Dispatching would reduce the substantial renewable energy production and fossil fuel displacement benefits offered by the Project.

Duke Energy Florida LLC is the utility currently purchasing electricity generated by the RRF. Duke Energy's 10-year site plan (Appendix F) indicates that in 2020 it will be generating 79% of its energy using natural gas and that percentage will decrease to 77% in 2029. Renewable energy resources such as the Project will help diversify Duke Energy's fuel sources, decreasing dependence on natural gas.

The renewable energy produced by the Project will help to diversify the types of fuel used to generate electricity in Florida.

The electricity output of the Project will reduce use of coal, oil, and natural gas annually.

1.4 Federal Energy Regulatory Commission Order

On September 26, 1986, the Pasco County Board of County Commissioners filed an application with the Federal Energy Regulatory Commission (FERC) for certification of its proposed resource recovery facility as a small power production facility pursuant to Section 292.207 of FERC regulations and Section 201 of the Public Utility Regulatory Policies Act of 1978 (PURPA). Notice

of the application was published in the Federal Register on October 16, 1986. On December 4, 1986, FERC granted the County's application for certification of its resource recovery project as a qualifying small power production facility. A copy of FERC's order is included in Appendix G.

1.5 Public Service Commission Order

On June 26, 1987, the Florida Public Service Commission ("PSC") issued an Order Granting Determination of Need (PSC Order No. 17752) for Pasco County's Resource Recovery Facility. A copy of the PSC's order is included in Appendix G.

A new determination of need from the PSC is not required for the County's Project. Section 377.709(6), F.S., provides that the expansion of a resource recovery facility "shall be exempt from the need determination process" conducted by the PSC pursuant to Section 403.519, F.S., if the expansion project will not increase the facility's steam electrical generating capacity by more than 50 MW. The PSC applied this statutory exemption in a case involving the expansion of the Lee County Resource Recovery Facility with a new 600 tpd boiler (MWC unit). On December 11, 2001, the PSC issued a declaratory statement (Order No. PSC-01-2390-DS-EQ) confirming that a PSC determination of need was not required in the Lee County case because the new MWC unit would only generate 20 to 25 MW of electricity. The PSC's order concerning Lee County is provided in Volume II, Appendix H, of this Application. In the instant case, Pasco County's Project will include the installation and operation of a new steam turbine generator, which will generate approximately 18 MW (nominal) of additional electricity. Since the County's Project will not result in an increase of steam electrical generating capacity greater than 50 MW, a PSC determination of need is not required in this case.

1.6 Need for Additional WTE Capacity

Before the FDEP issues a construction permit or PPSA certification for the expansion of a waste-to-energy facility (e.g., resource recovery facility or MWC unit), the applicant must provide reasonable assurance to the FDEP that the proposed facility will comply with eight criteria that are set forth in Section 403.7061(3), F.S. (Volume II, Appendix A). Each numbered criterion from Section 403.7061(3), F.S. is listed below and followed by Pasco's County's demonstration that the criterion has been satisfied in this case.

1.9.1. "The facility is a necessary part of the local government's integrated solid waste management program in the jurisdiction where the facility is located and cannot be avoided through feasible and practical efforts to use recycling or waste reduction." § 403.7061(3)(a), F.S.

The Pasco County Resource Recovery Facility is the cornerstone of an integrated solid waste management system that is designed to serve the County's solid waste management needs through source reduction, recycling, resource recovery, and landfilling. To maximize source reduction and recycling efforts, the County utilizes public outreach efforts and requires licensed waste haulers to provide curbside recycling collection services. The current growth rate of the County, coupled with limited markets available for recycled materials, make it infeasible to avoid the expansion of the County's Resource Recovery Facility through recycling and waste reduction alone.

1.9.2 "The use of capacity at existing waste-to-energy facilities within reasonable transportation distance of the proposed facility must have been evaluated and found not to be economically feasible when compared to the use of the proposed facility for the expected life of the proposed facility." § 403.7061(3)(b), F.S.

The following three waste-to-energy facilities are within a reasonable transportation distance of the Pasco County Resource Recovery Facility:

- a) The Pinellas County Resource Recovery Facility;

- b) The Hillsborough County Resource Recovery Facility; and
- c) The City of Tampa's McKay Bay Refuse to Energy Facility

All three of these facilities are currently operating at full capacity and cannot accept additional waste for processing. Thus, it is not economically feasible for Pasco County to use these facilities.

1.9.3 "The local government in which the facility is located has implemented a mulching, composting, or other waste reduction program for yard trash." § 403.7061(3)(c), F.S.

Pasco County currently provides free mulching and composting for yard trash generated within the County.

1.9.4 "The local governments served by the facility will have implemented or participated in a separation program designed to remove small-quantity generator and household hazardous waste, mercury containing devices, and mercuric-oxide batteries from the waste stream prior to incineration, by the time the facility begins operation." § 403.7061(3)(d), F.S.

The County operates a small-quantity generator and household hazardous waste collection center that accepts household hazardous wastes, mercury containing devices, and mercuric-oxide batteries. The County's collection center serves all of the local governments that are served by the County's Resource Recovery Facility.

1.9.5 "The local government in which the facility is located has implemented a program to procure products or materials with recycled content, pursuant to s. 403.7065." § 403.7061(3)(e), F.S.

Pasco County, as well as the Pasco County School Board, comply with Section 403.7065, F.S., by maintaining a program to purchase products or materials with recycled content.

1.9.6 "A program will exist in the local government in which the facility is located for collecting and recycling recovered material from the institutional, commercial, and industrial sectors by the time the facility begins operation." § 403.7061(3)(f), F.S.

Section 90-47(11) of the Pasco County Ordinances requires licensed waste haulers to provide recycling collection services to institutional, commercial, and industrial sectors when recycling services are requested by such customers, provided the customer and licensed hauler mutually agree upon the fee for such services.

1.9.7 "The facility will be in compliance with applicable local ordinances and with the approved state and local comprehensive plans required by chapter 163." § 403.7061(3)(g), F.S.

Pasco County's Resource Recovery Facility is in compliance with all applicable local ordinances, as well as the state and local comprehensive plans, which encourage the use of resource recovery facilities. Indeed, Pasco County's 2025 Comprehensive Plan *requires* that the Facility be expanded upon reaching 80% of its processing capacity.

1.9.8 "The facility is in substantial compliance with its permit, conditions of certification, and any agreements or orders resulting from environmental enforcement actions by state agencies." § 403.7061(3)(h), F.S.

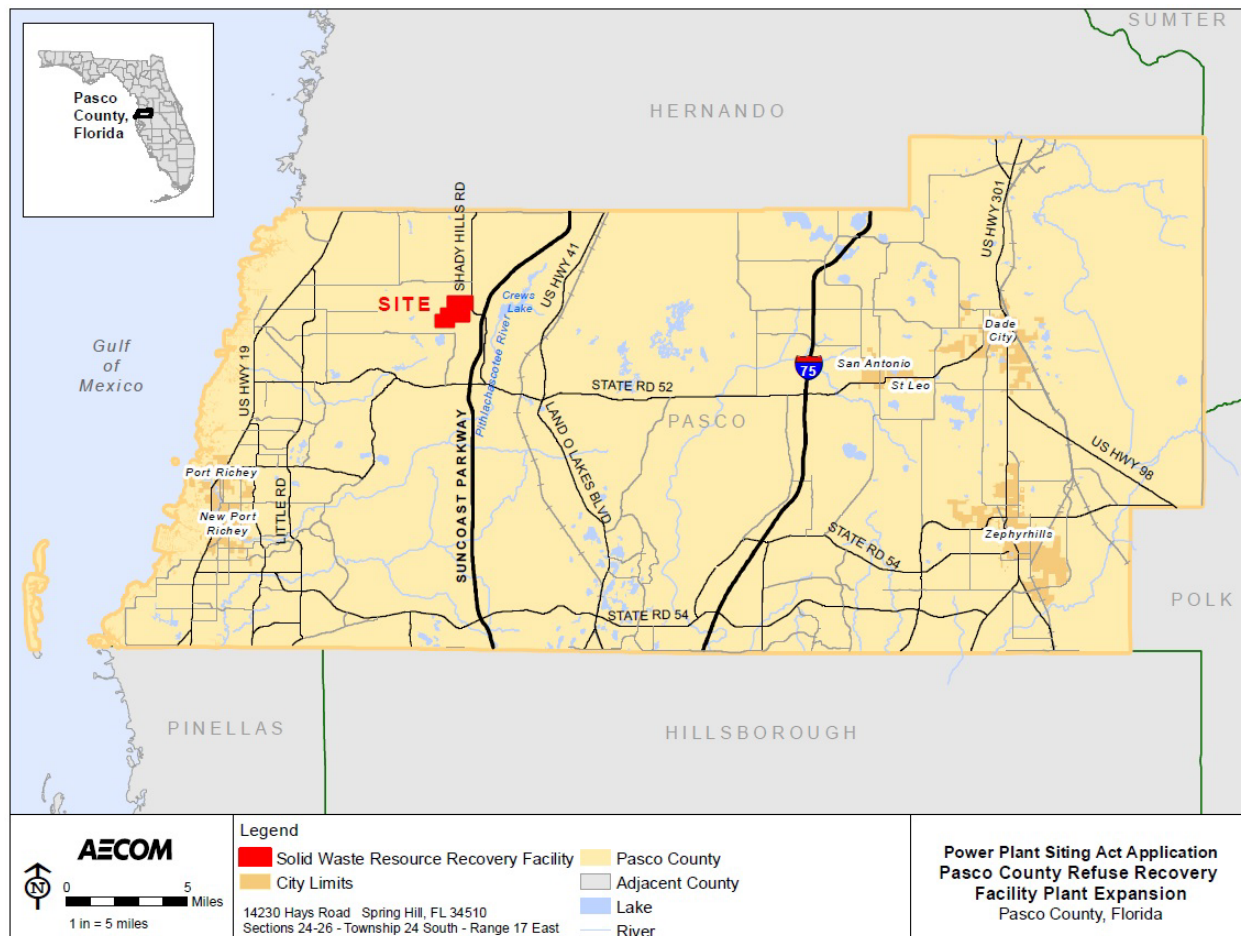
The Resource Recovery Facility is in compliance with its permits, the Conditions of Certification, and any agreements or orders resulting from environmental enforcement actions by state agencies.

Section 2. Site and Vicinity Characterization

2.1 Site and Associated Facilities Delineation

The Pasco County Resource Recovery Facility is in Pasco County, Florida, as shown on Figure 2-1. The County's facility currently has three Municipal Waste Combustion (MWC) units that are each designed to process 350 tpd of MSW; the three MWC units collectively process 1,050 tpd of MSW. Each MWC unit has a boiler that sends steam to a single turbine generator with a forced draft cooling tower. The County now wishes to add a fourth MWC unit to the Resource Recovery Facility. The fourth MWC unit ("Proposed MWC Unit") will be integrated with the three existing units as part of the County's Project. The "Project" refers to (a) the new equipment and systems that comprise the fourth MWC unit and MSW processing train and (b) the equipment and systems in the existing Resource Recovery Facility that need to be refurbished, modified, or replaced to accommodate the installation and operation of the fourth MWC unit. The specific components of the Project are described in more detail in the following sections of this Application.

Figure 2-1. Location of the Pasco County Resource Recovery Facility



Source: AECOM 2020

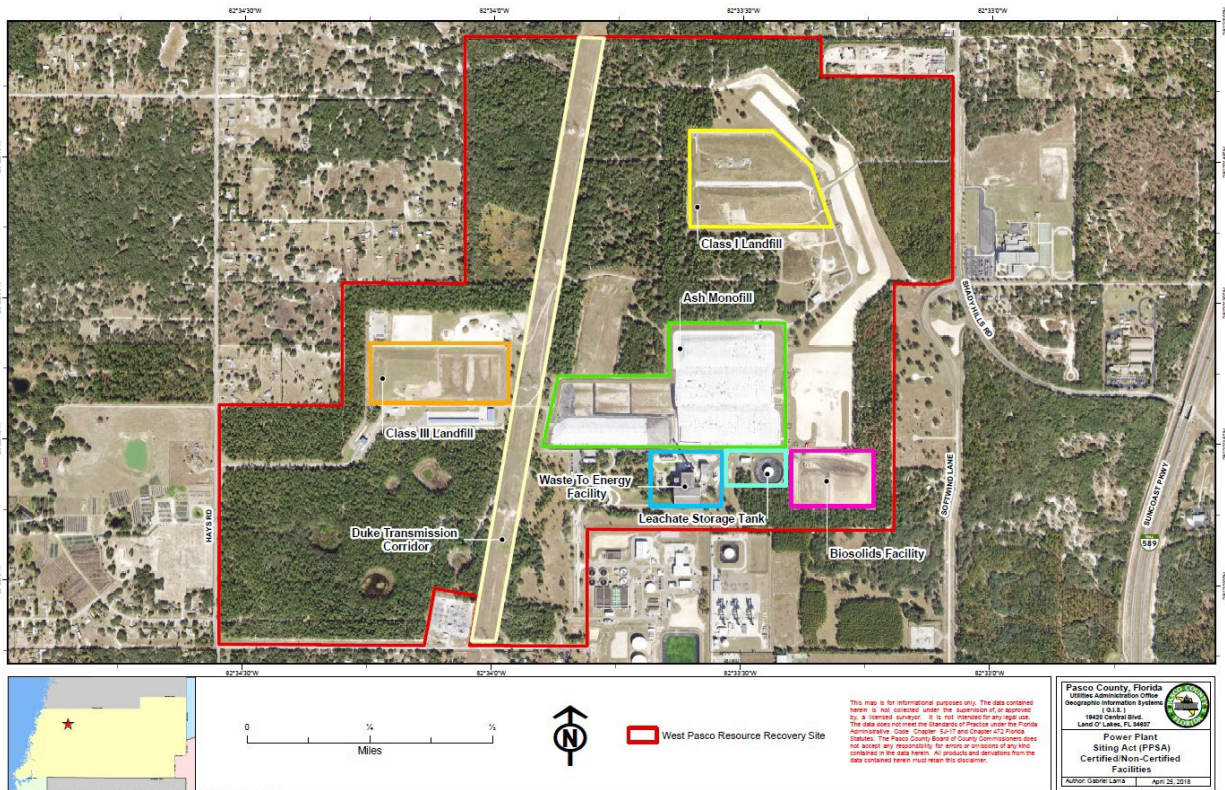
2.1.1 Site Delineation and Ownership

The County's Certified Site is a 751-acre tract that is owned by Pasco County in the northwestern portion of the county (Figure 2-1) at 14230 Hays Road, Spring Hill, FL 34610 (UTM Coordinates are Zone 17, 347.11 kilometers East, and 3,139.21 kilometers North; 28° 22' 12" North, 82° 33' 36" West). The Certified Site is bounded on the west and south by Hays Road, on the east by

Shady Hills Road, and on the north by Bluebird Lane. As shown on Figure 2-2, the property is bisected by a transmission line easement and right-of-way that runs roughly north/south through the site. The transmission line easement is approximately 295-foot-wide and owned by Duke Energy Florida ("Duke").

Figure 2-2. Pasco County RRF and Surrounding West Pasco Facility

(PPSA Certified Site Boundary in red)

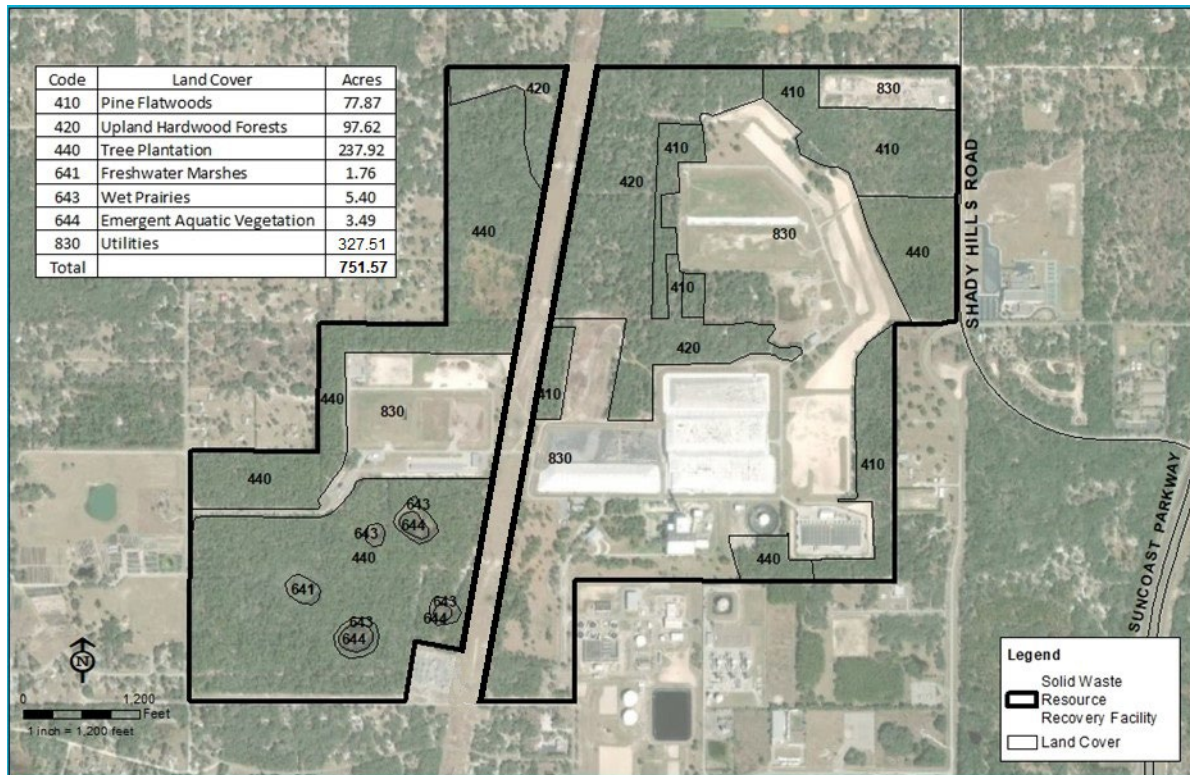


Source: Pasco County 2018

2.1.2 Existing and Proposed Site Uses

Most land abutting the Certified Site is under private ownership, with the exception of the eastern boundary, which is adjacent to a parcel owned by the Pasco County School Board (Appendix I). Abutting properties east and west of the Certified Site consist primarily of vacant grassland and small cattle farms. To the north and south, abutting properties are rural areas containing pockets of low-density, residential areas (Figure 2-3). Properties abutting to the southeast were once tree farms but are no longer managed. Duke Energy's Hudson substation occupies 6.24 acres of land abutting the south property line of the Certified Site and a Duke Energy easement. The Certified Site encompasses unimproved grassland, planted pine areas, and isolated ponds. Wooded areas are scattered throughout the Certified Site. The only wetland areas are found in the southwest section of the property (Table 2-1). Of the acreage within the Certified Site, roughly 327 of the 751 total acres (44%) is used for the Resource Recovery Facility, landfills, borrow pits, and other associated operations, with the remaining acreage in an undeveloped state.

Figure 2-3. Land Uses Within the Pasco County Certified Site Boundary



Source: AECOM 2020

Table 2-1. Land Uses Within the Certified Site

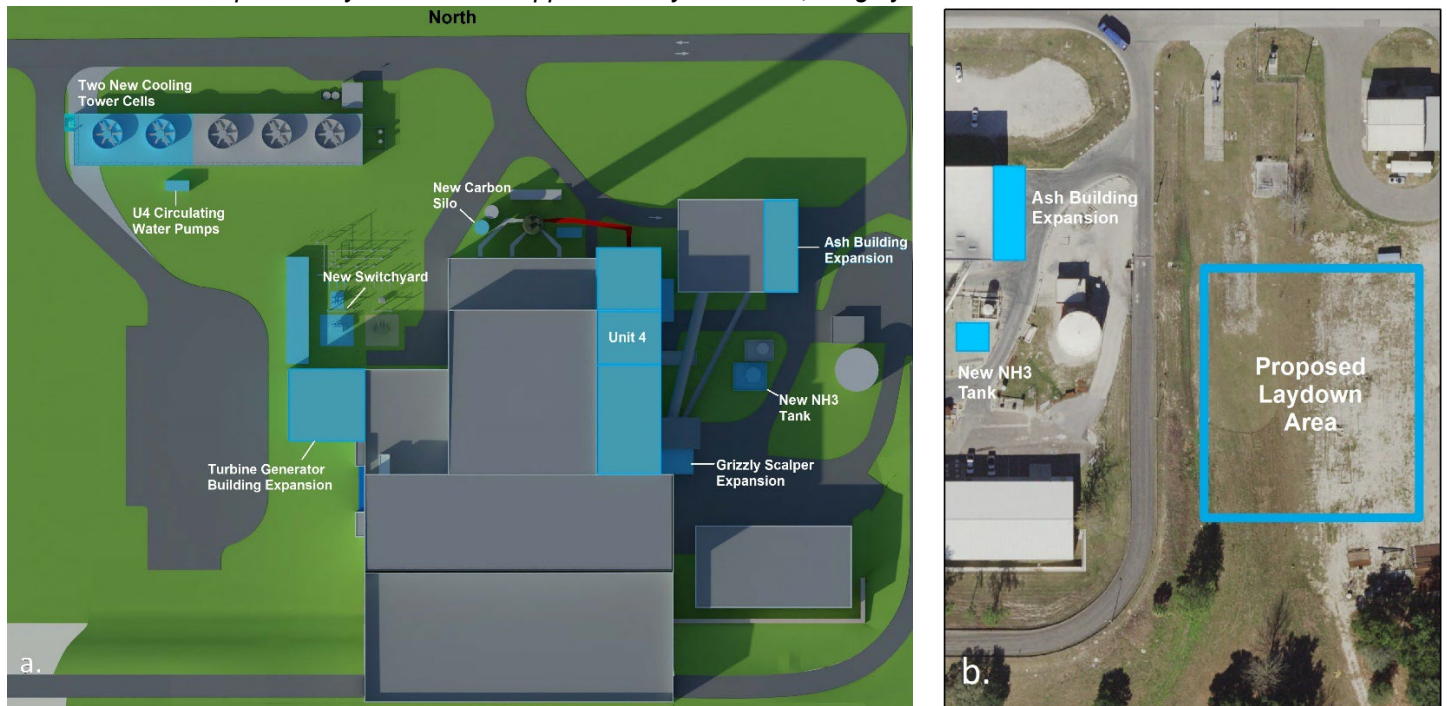
Land Cover	Acreage
Pine Flatwoods	77.87
Upland Hardwood Forest	97.62
Tree Plantation	237.92
Freshwater Marshes	1.76
Wet Prairies	5.40
Emergent Aquatic Vegetation	3.49
Utilities	327.51
TOTAL	751

2.1.3 Site Modification

The County's Proposed MWC Unit will be situated in the area that was reserved for the fourth MWC unit in the County's original plans from 1988. This area ("Project Site") is shown on Figure 2-4 and Figure 2-5. A plan view of the Certified Site is shown on Figure 2-4a, with a view of the Project Site from ground level shown on Figure 2-5. The Project Site is a small, contained, and previously disturbed area where constituent Project facilities accrue to approximately 0.55 acre, with a separate laydown area of up to 0.7 acre located approximately 350 feet east of the RRF (Figure 2-4b) on ground cleared during original construction. The development of this area will not materially affect the remainder of the Certified Site.

Figure 2-4. Plan View of the Existing RRF and Project Facilities

- a. Project Facilities are highlighted in blue and labelled; these accrue to 0.55 acres ("Project Site")
- b. Proposed Laydown Area is approximately 0.7 acres, roughly 350 feet east of the RRF



Source: Enercon 2021

Figure 2-5. Footprint Reserved for the Proposed MWC Unit (Unit 4)

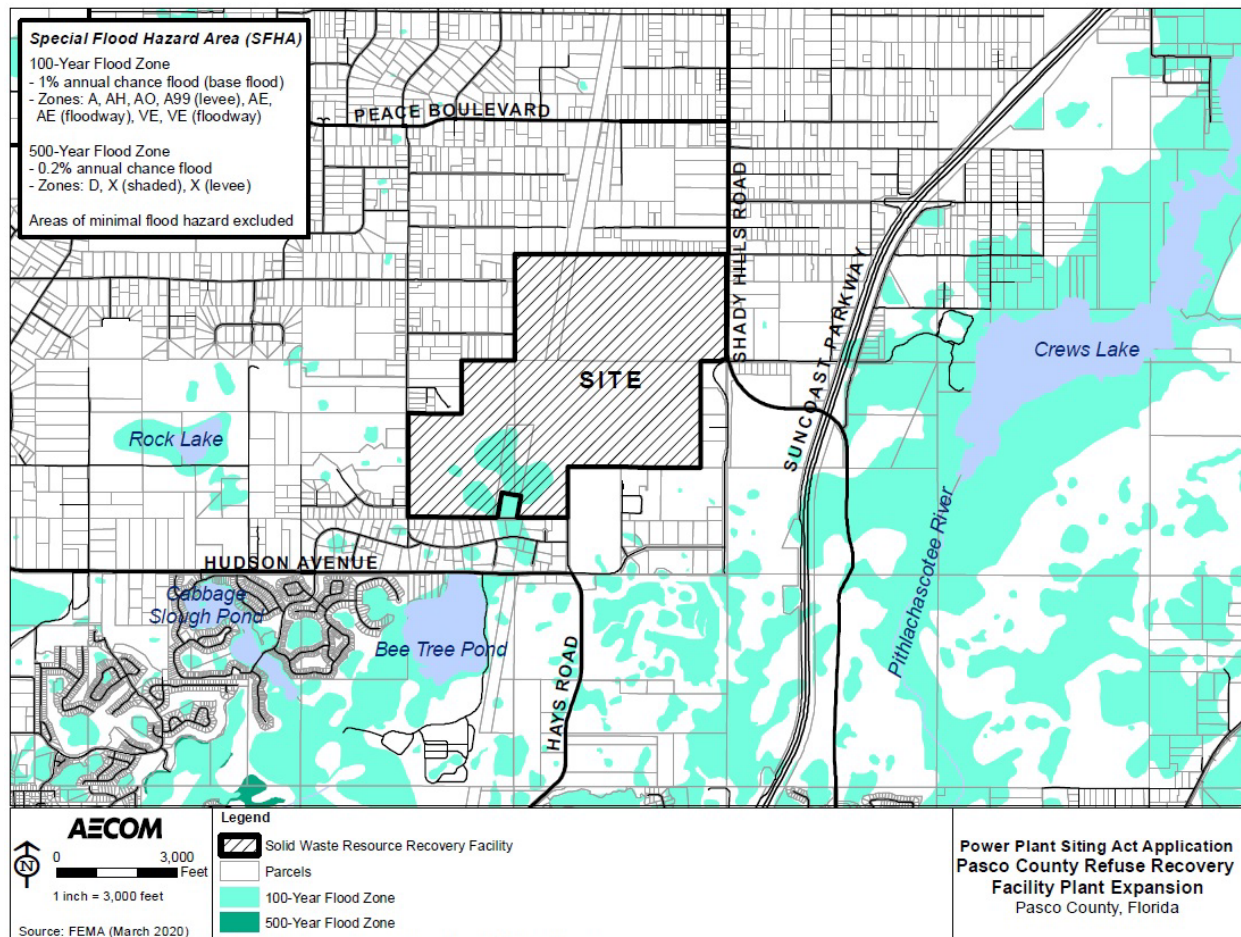


Source: Covanta Pasco 2020

2.1.4 100-Year Flood Zone

A very small part of the southwest portion of the Certified Site is within the 100-year flood zone, as defined by the Federal Emergency Management Agency (FEMA). The location of the 100-year flood zone is shown on Figure 2-6. No portion of the existing Resource Recovery Facility or the Proposed MWC Unit is within the 100-year flood zone.

Figure 2-6. Pasco County RRF in Relation to FEMA Flood Zones



Source: Data from FEMA 2020

2.2 Sociopolitical Environment

2.2.1 Governmental Jurisdictions

Pasco County is on the west-central coast of Florida and the County seat is in Dade City (21 miles from the Project Site). Pasco County is included in the Tampa-St. Petersburg-Clearwater Tampa Bay Area and is considered a popular commuter residential area¹ for residents who work in Tampa. The County's largest city is New Port Richey, which is located 12 miles from the Project Site (Figure 2-1). There are no major towns or cities within 5 miles of the Project Site.

¹ It is a populated area that is primarily residential, rather than commercial or industrial in nature.

2.2.2 Zoning and Land Use Plans

2.2.2.1 Land Use Plans

Pasco County's Comprehensive Plan has been developed in compliance with requirements of Chapter 163, F.S., the Local Government Comprehensive Planning and Land Development Regulation Act of 1985, as amended, and the requirements of Chapter 9J-5, FAC. At least once every 7 years, local governments are required to review their Comprehensive Plans to determine if amendments are needed to reflect changes in state requirements. In May 2020, it was determined that Pasco County's Comprehensive Plan was compliant with state requirements.

The existing Comprehensive Plan for Pasco County sets a vision for the County up to 2025, with a key focus on protecting rural neighborhoods and effectively limiting urban sprawl; instituting a land acquisition program that is designed to preserve key ecosystems and protect wildlife, water resources, and natural areas; developing an economic incentives program to attract target businesses and create new high-paying jobs; and a solid infrastructure support system (Appendix J).

2.2.2.2 Consistency with the Comprehensive Plan

The County's Project is consistent with Pasco County's Comprehensive Plan and future vision for 2025, specifically to:

Promote **economic development**² in the County:

- Provide public infrastructure needed to support economic development (infrastructure)
- Create a local economic development environment that is conducive to the creation and growth of new businesses and the expansion of existing businesses
- Forge partnerships to identify and develop needed workforce skills and innovations (workforce development)

Provide for relevant **capital improvements**³ in the County;

- Maintain existing infrastructure, including renewal/replacement of worn-out public facilities and rehabilitation/reuse of existing public facilities.

In 1988, the Siting Board concluded that development of the Resource Recovery Facility on the Certified Site was consistent and in compliance with the comprehensive land use plan that was in effect at that time. However, the County's comprehensive land use plan in 1988 did not include a future land use map. The County subsequently adopted a future land use map, which identified the Certified Site as the location of Public/Semipublic Facilities. The County's current future land use map also identifies the Certified Site as the location of Public/Semipublic Facilities. In the County's 2025 land use plan, the Future Land Use Element (Section FLU A-6) explains that the Public/Semipublic category recognizes "major existing and programmed public/semipublic facilities, primarily those facilities associated with public or private utilities..." The Future Land Use Element notes that the "General Range of Potential Uses" in the Public/Semipublic category includes sanitary landfills and solid waste management facilities. Similarly, the Glossary in the comprehensive plan states that Major Public/Semipublic Facilities include power plants and sanitary landfills. Thus, the development of the County's Project is consistent and in compliance with the County's current comprehensive plan and future land use map. The County's choice of the Public/Semipublic land use designation for the Certified Site reflects the County's intent to expressly recognize that the Certified Site will be used for the County's Resource Recovery Facility and other solid waste management facilities.

² Source: https://www.pascocountyfl.net/DocumentCenter/View/11374/CP-ch13_economicdevelopmentelement-7_25_13?bidId=

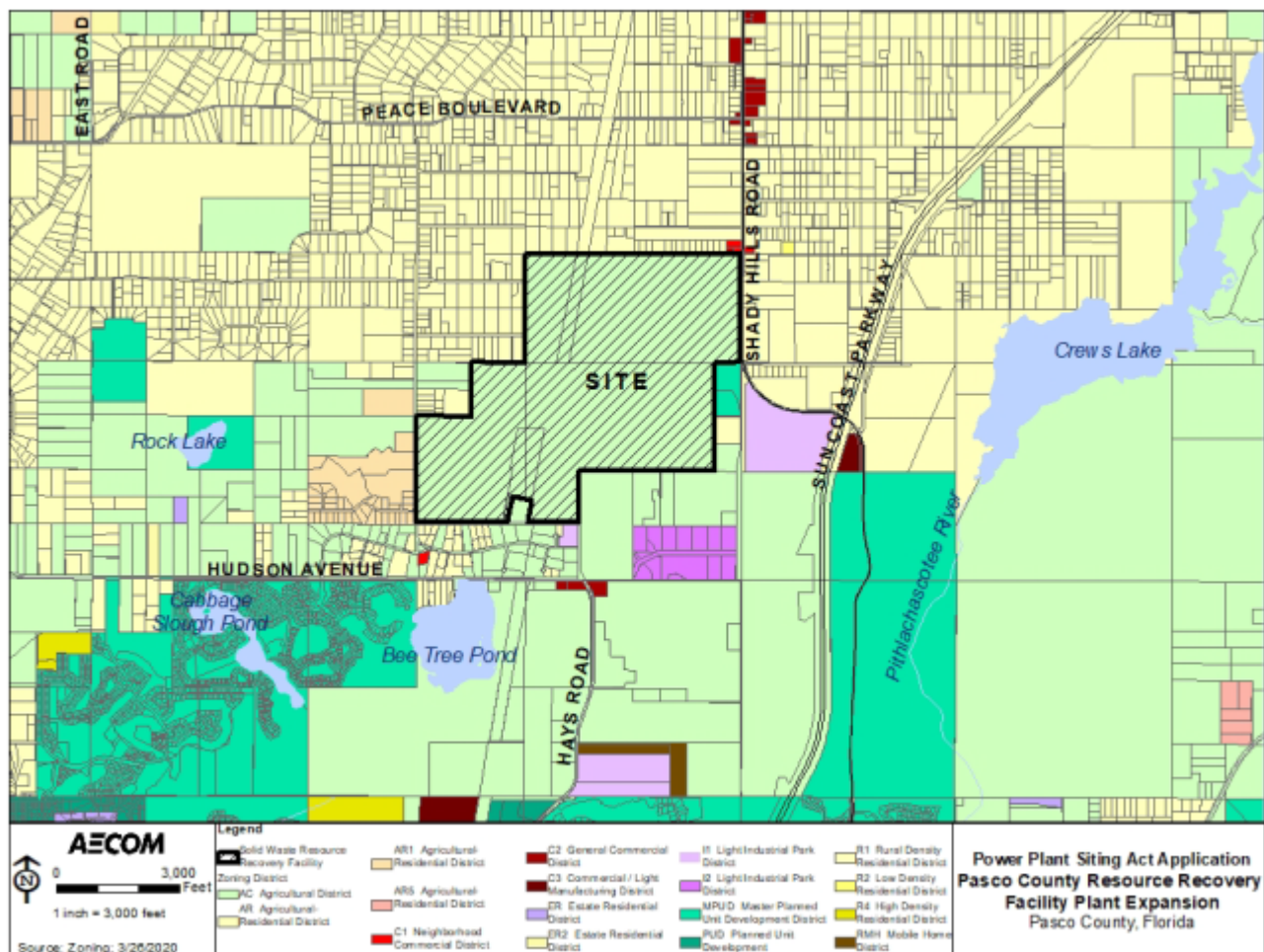
³ Source: https://www.pascocountyfl.net/DocumentCenter/View/11372/CP-ch11_capitalimprovementelement-02_15_14?bidId=

2.2.2.3 Zoning Regulations

In 1988 the Siting Board concluded that development of the Resource Recovery Facility on the Certified Site was consistent and in compliance with the zoning code that was in effect at that time. In 1988 the Certified Site was in the “A-C Agricultural District” and it continues to be in the A-C Agricultural District. Under the County’s current zoning code, the permitted uses in the A-C Agricultural District include “public and semipublic buildings and facilities,” which include “County ... structures and uses” (Appendix K, Section 503.2.A.7). Thus, it is clear that the public/semipublic facilities and land uses on the Certified Site are authorized under the County’s zoning code.

The most prevalent zoning classifications within 5 miles of the Project Site include residential and agricultural, as shown on Figure 2-7. There are also light industrial areas directly south and west of the Project Site.

Figure 2-7. Pasco County Zoning for Area Near Pasco RRF



Source: Data from Pasco County, 2020

2.2.3 Demography and Ongoing Land Use

2.2.3.1 Existing Populations

Pasco County is Florida's 12th most populous county⁴. In 2019, the total population of Pasco County was estimated at 553,947⁵, comprising 2.5% of Florida's population. The County's population has experienced exponential growth, growing by 186% since 1980 and 19.2% since 2010^{6,7}. Pasco County has a predominantly White population (72.7%), with approximately one-quarter of its population consisting of communities of color, including Hispanic (17.2%), Black (6.7%), Asian (2.8%), and American Indian and Native Hawaiian (0.6%) residents⁸. In 2019, there were 706 people per square mile in Pasco County, almost double that of Florida (399.7)⁹. The median age in the County was 44.2 years in 2019¹⁰, similar to the median average of Florida (41.7 years).

2.2.3.2 Environmental Justice Populations

According to the United States Environmental Protection Agency (USEPA), environmental justice is 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"¹¹. This means no group of people should bear a disproportionate burden of harmful environmental consequences due to policies, programs, activities, or standards; and that the voice of every community should be considered in environmental decision making.

The US Census Bureau identifies a "poverty area" as one where 20% or more of the residents have incomes below the poverty threshold, and an "extreme poverty area" as one where 40% or more of residents are below the poverty level. There are low-income populations present near the Project Site, as shown on Figure 2-8 (e.g., in certain blocks, 80 or 90% of households are considered low-income, in comparison to state poverty levels).

The USEPA identifies a "people of color population" as the percentage of individuals within a block group who list their racial status as a race other than White alone and/or list their ethnicity as Hispanic or Latino. This includes people other than non-Hispanic White individuals that are of a single race, not multiracial¹². There are people of color communities present near the Project Site; however they largely fall under the 50th percentile (Figure 2-9) and therefore are not considered significant, for the purposes of an environmental justice analysis. There are also no tribal areas near the Project Site, as determined by the USEPA¹³.

The area of interest contains low income and minority populations subject to consideration as potential environmental justice communities of concern. Based on the analyses of impacts for all resource areas (see Section 4 and Section 5), it is determined that environmental, health, and occupational safety impacts would be minimal, temporary, and confined to the immediate Project site. Thus, there would be no significant adverse health impacts on members of the public or significant adverse environmental impacts on the physical environment (water, air, aquatic, and terrestrial resources) and socioeconomic conditions. Therefore, there would be no disproportionately high and adverse environmental or economic effects on minority or low-income populations.

⁴ Source: <http://edr.state.fl.us/content/area-profiles/county/pasco.pdf>

⁵ Source: US Census – <https://www.census.gov/quickfacts/pascocountyflorida>

⁶ Source: US Census – <https://www.census.gov/quickfacts/pascocountyflorida>

⁷ 1980 population – 193,661; 2010 population – 464,697.

⁸ Source: US Census – <https://www.census.gov/quickfacts/pascocountyflorida>

⁹ Source: <http://edr.state.fl.us/content/area-profiles/county/pasco.pdf>

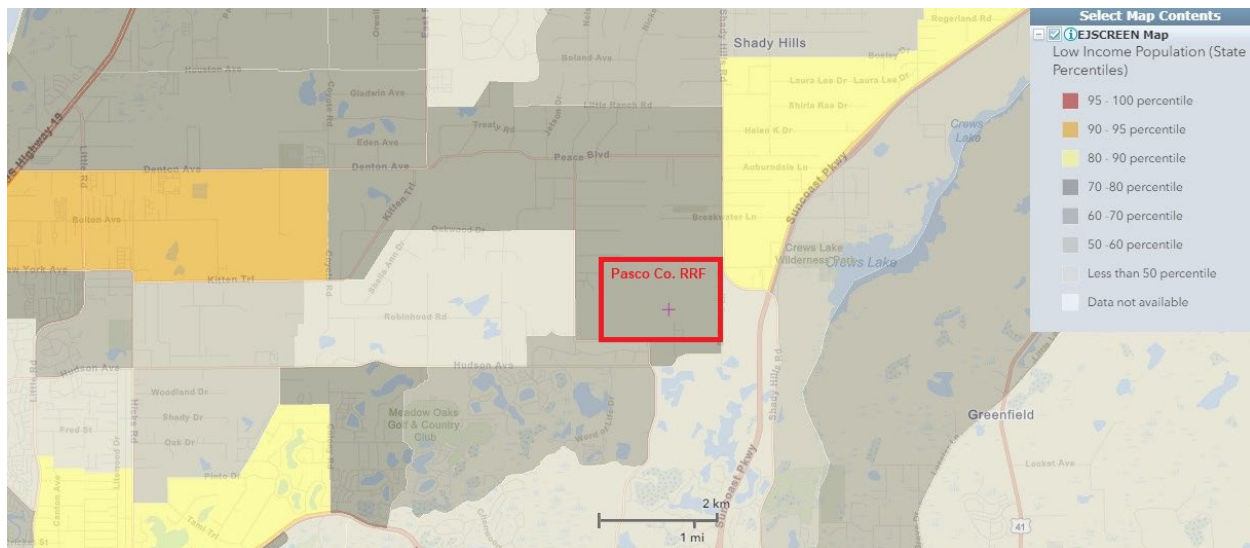
¹⁰ Source: <http://edr.state.fl.us/content/area-profiles/county/pasco.pdf>

¹¹ Source: <https://www.epa.gov/environmentaljustice>

¹² Source: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf

¹³ Source: <https://ejscreen.epa.gov/mapper/>

Figure 2-8. Low Income Populations near the Project Site



Source: <https://ejscreen.epa.gov/mapper/>

Figure 2-9. People of Color Populations near the Project Site

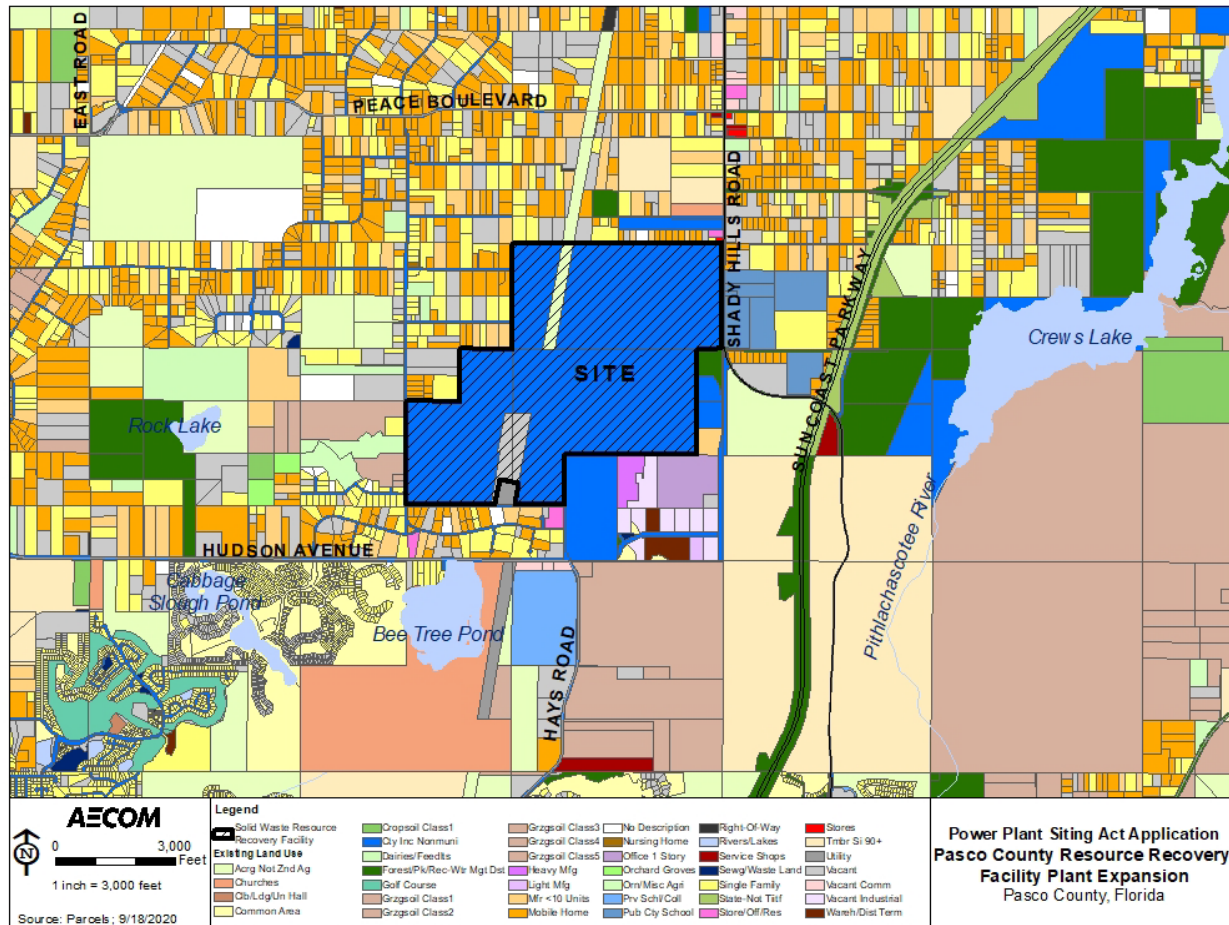


Source: <https://ejscreen.epa.gov/mapper/>

2.2.3.3 Existing Land and Future Use

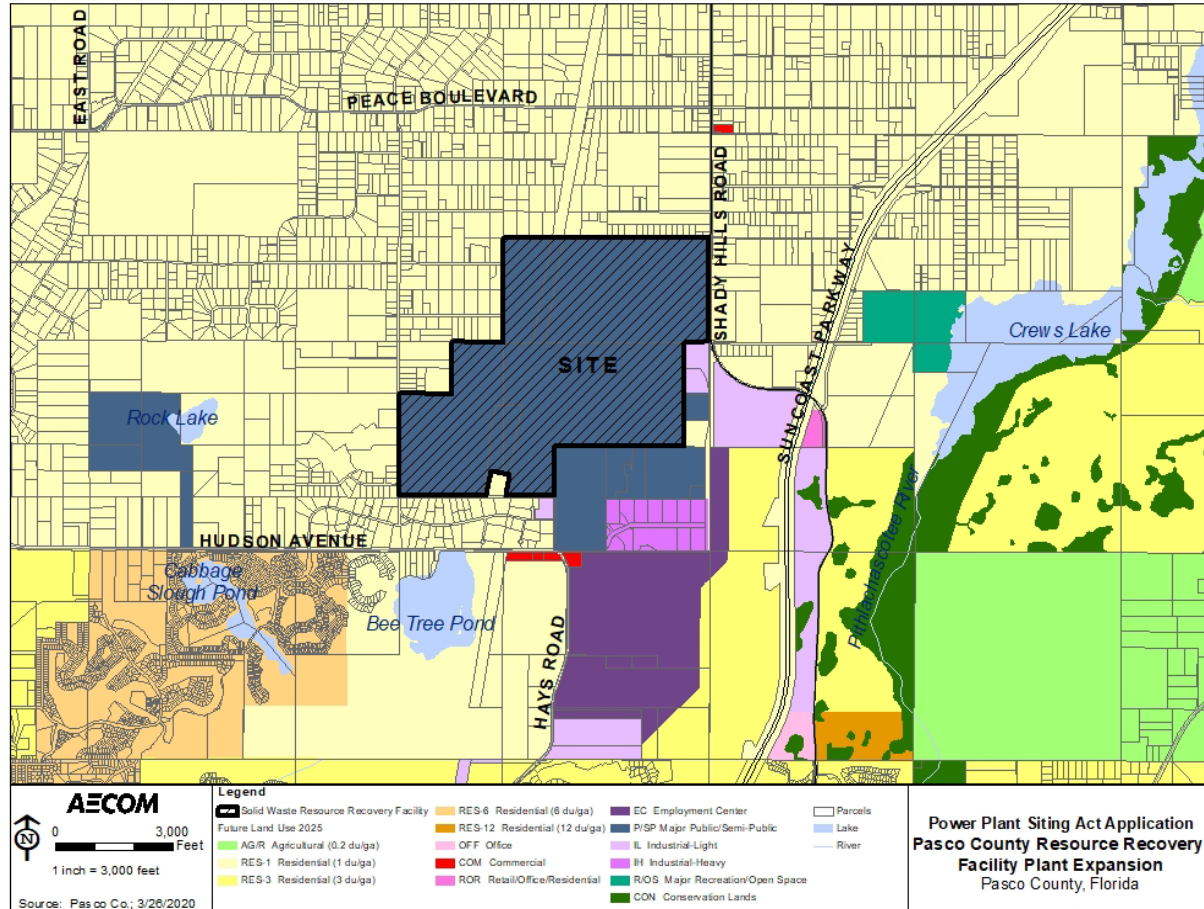
As noted above, the Project Site is designated in the County's future land use plan map as Major Public/Semipublic. This land use designation allows the development of the RRF and landfill facilities. Adjacent to the Project Site there are warehouse and distribution centers and some residential units. Within 5 miles of the Project Site, existing land uses include residential land including single-family and mobile homes and vacant plots that are designated for residential use, a number of areas for heavy and light manufacturing, forest and park areas including Meadow Oaks Golf and Country Club, and several religious institutions (e.g., Word of Life Bible Institute). Existing land uses near the Project Site are shown in more detail on Figure 2-10. In this figure, current land use for the County's Certified Site is identified as "County Incorporated/ Nonmunicipal". Future land uses near the Project Site is shown on Figure 2-11.

Figure 2-10. Pasco County Existing Land Use for Area Near Pasco RRF



Source: Data from Pasco County 2020

Figure 2-11. Pasco County Future Land Use for Area Near Pasco RRF



Source: Data from Pasco County 2020

The area where the Project Site is located is identified in the County's 2025 Future Land Use Map as a Major Public/Semi-Public area. Much of the rest of the area around the Project Site will remain residential in nature, including the expansion of residential areas around Crews Lake, as well as new employment centers south of the Project Site.

2.2.4 Easements, Title, Agency Works

The County's Project will not require additional easements or titles from the State of Florida or any other government agencies.

2.2.5 Regional, Scenic, Cultural, and Natural Landmarks

The following regional scenic and natural landmark areas are located within a 5-mile radius of the Site:

- Jumping Gulley Preserve – Pasco County Government
- Crews Wilderness Park – Pasco County Government
- Upper Pithlachascotee River Preserve – Pasco County Government
- Lone Star Ranch Conservation Easement
- Starkey Wilderness Preserve
- Old Florida Mitigation Bank
- Cross Bar Ranch Wellfield

There are no State Archaeological Landmarks within State Archaeological Landmark Zones within 5 miles of the Project Site.

2.2.6 Archaeological and Historic Sites

As part of this review for the County's Project, the Florida Division of Historical Research (DHR) records on file at the Florida Master Site File (FMSF) were consulted to assess a 0.5-mile (0.8 kilometer) buffer zone surrounding the Certified Site boundary. DHR records indicate that there are no known archaeological sites located within the Certified Site, though it also appears no formal archaeological survey of the Certified Site was conducted prior to construction of the Resource Recovery Facility. There were 10 archaeological sites recorded in the 0.5-mile buffer zone (Table 2-2). There have also been eight cultural resource management studies conducted within the 0.5-mile buffer zone, four of which have occurred on a portion of the current Certified Site (751 acres) footprint (Table 2-3). There are no historic standing structures, National Register of Historic Places (NRHP) districts or sites, bridges, or cemeteries listed within the 0.5-mile (0.8 kilometer) buffer zone. Given proximity of the Project to documented archaeological sites, there is a possibility of archaeological resources within the 0.55 acre Project Site.

Table 2-2. Archaeological Sites Recorded Within 0.5 mile (0.8 kilometer) of the Certified Site

Site #	Site Name	Culture	NRHP Eligibility	Location from Site
PA00033	Hays Road	Prehistoric	Ineligible	380 m S
PA00319	Vineyard	Prehistoric	Ineligible	800 m S
PA00320	Bell Pond	Prehistoric	Ineligible	680 m SE
PA00321	Bell Pond W	Prehistoric	Ineligible	450 m SE
PA00322	Bell Pond N	Prehistoric	Ineligible	750 m E
PA00324	Mathis	Prehistoric	Ineligible	180 m E
PA00515	Bell Pond S	Prehistoric	Ineligible	1000 m S
PA00612	BMCHS #1	Other	Ineligible	510 m S
PA00613	BMCHS #2	Prehistoric	Ineligible	500 m S
PA03049	Softwind-1	Prehistoric	Ineligible	50 m S

Source: <http://dos.myflorida.com/historical/preservation/master-site-file/>

Notes:

BMCHS = Bishop McLaughlin Catholic High School

m = meters

NRHP = National Register of Historic Places

Table 2-3. Cultural Resource Management Studies within 0.5 mile (0.8 kilometer) of the Certified Site

Survey #	Title	Year
2684	An Archaeological and Historical Resource Assessment of the Proposed North Suncoast Expressway	1990
4387	Phase I Cultural Resources Investigation of Florida Gas Transmission Phase III Expansion	1994
4889	A Cultural Resource Assessment Survey of Suncoast Parkway Reevaluation Areas	1995
6658	Cultural Resource Assessment Survey of the Bishop McLaughlin Catholic High School	2001
16609	Phase I Cultural Resources Survey of Florida Gas Transmission Loops 7, 8, and 9 and Greenfield 2	2008
16938	Florida Gas Transmission Phase VIII Report	2010
17575	Final Impact Statement: Volume 1: Zone 2: State Rd 52 to US 98	1994
24987	A Phase I Cultural Resource Assessment of the Softwind BUCC Facility Parcel	2018

Source: <http://dos.myflorida.com/historical/preservation/master-site-file/>

2.2.7 Socioeconomics and Public Service

2.2.7.1 Labor Force

In 2019 (the most current available data), the labor force for Pasco County was estimated at 218,061 (Table 2-4). Pasco County has a high percentage of its population not in the labor force, which can be attributed to a high number of retirees in the area.

Table 2-4. Pasco County Labor Force (2019)

	Estimate	Percent (%)
Employed	218,061	50.6
Unemployed	13,282	3.1
Armed Forces	635	0.1
Not in Labor Force	198,711	46.1

Source: ACS 5-Year Estimates Data Profiles (2019)

2.2.7.2 Employment by Industrial Sector

A list of the key industries in which Pasco County residents were employed in 2018 is provided in Table 2-5. The most prominent industries include educational, health care and social assistance services (23.2%), followed by transportation and warehousing, and utilities (14.1%), and then professional, scientific, management, administrative, and waste management services (12.8%).

Table 2-5. Civilian Employed Population by Industry in Pasco County (2018)

Industry	Estimate	Percent (%)
Agriculture, forestry, fishing and hunting, and mining	1,267	0.6
Construction	16,144	7.7
Manufacturing	10,888	5.2
Wholesale trade	5,918	2.8
Retail trade	29,391	14.1
Transportation and warehousing, and utilities	9,694	4.6
Information	4,264	2.0
Finance and insurance, and real estate and rental and leasing	17,531	8.4
Professional, scientific, and management, and administrative and waste management services	26,771	12.8
Educational services, and health care and social assistance	48,414	23.2
Arts, entertainment, and recreation, and accommodation and food services	20,232	9.7
Other services, except public administration	10,552	5.1
Public administration	7,805	3.7

Source: ACS 5-Year Estimates Data Profiles (2018)

2.2.7.3 Employment Projections

Estimates of the projected number of new jobs in Pasco and Hernando Counties in 2027 in comparison to 2019 are provided in Table 2-6. Overall, there is an estimated 10.3% increase in the number of new jobs by 2027, with the biggest percentages of growth estimated for leisure and hospitality (16.4%) and education and health services (13.1%), while agriculture (-13%) and mining (-21%) are expected to experience declines.

Table 2-6. Number of Jobs by Industry (Pasco and Hernando Counties) 2019 – 2027

Industries	2019	2027	Percent Growth
Agriculture, Forestry, Fishing and Hunting	851	740	-13.0
Mining	100	79	-21.0
Construction	13,569	14,934	10.1
Manufacturing	5,938	6,290	5.9
<i>Durable Goods Manufacturing (e.g., machinery, furniture, computer and electronic manufacturing)</i>	4,756	5,046	6.1
<i>Nondurable Goods Manufacturing (e.g., food, beverages, and chemical manufacturing)</i>	1,182	1,244	5.3
Trade, Transportation, and Utilities	38,509	41,805	8.6
<i>Utilities</i>	1,147	1,196	4.3
<i>Wholesale Trade</i>	3,748	3,956	5.5
<i>Retail Trade</i>	30,234	33,076	9.4
<i>Transportation and Warehousing</i>	3,380	3,577	5.8
Information	1,224	1,166	-4.7
Financial Activities	5,696	5,872	3.1
<i>Finance and Insurance</i>	3,443	3,478	1.0
<i>Real Estate and Rental and Leasing</i>	2,253	2,394	6.3
Professional and Business Services	18,796	20,653	9.9
<i>Professional, Scientific, and Technical Services</i>	7,405	8,133	9.8
<i>Management of Companies and Enterprises</i>	1,184	1,293	9.2
<i>Administrative and Support and Waste Management and Remediation Services</i>	10,207	11,227	10.0
Education and Health Services	34,658	39,205	13.1
<i>Educational Services</i>	2,994	3,266	9.1
<i>Health Care and Social Assistance</i>	31,664	35,939	13.5
Leisure and Hospitality	22,801	26,537	16.4
<i>Arts, Entertainment, and Recreation</i>	2,023	2,122	4.9
<i>Accommodation and Food Services</i>	20,778	24,415	17.5
Government (Federal, State, and Local)	24,284	26,592	9.5
Other Services (except Government)	6,899	7,571	9.7
Self Employed and Unpaid Family Workers, All Jobs	12,228	13,243	8.3
All Industries (Total)	185,553	204,687	10.3

Source: <https://floridajobs.org/workforce-statistics/data-center/statistical-programs/employment-projections>

2.2.7.4 Average Wages and Salaries

According to the US Census, the median household income in Pasco County in 2018 was \$50,417¹⁴, 5.4% below the median household income for Florida (\$53,267) and 26.6% below the national median household income (\$68,703)¹⁵.

Income distribution for households in Pasco County in 2018, including from under \$10,000 to over \$200,000, is provided in Table 2-7. The highest number of households fall within the \$75,000 to \$99,000 range, while almost 38% fall between \$50,000 and \$124,000. Only 3.4% of households in Pasco County earn over \$200,000 or more.

In 2018, it was estimated that around 13% of the County's population lived below the US national poverty threshold¹⁶, which in 2020 was \$12,760 for a one-person household.

Table 2-7. Household Income Ranges by Block Group in Pasco County (Per Annum)

	Number of Households	Percentage of Households (%)
Household Incomes Less Than \$10,000	11,882	5.9
Household Incomes \$10,000 to \$14,000	10,887	5.5
Household Incomes \$15,000 to \$19,000	10,630	5.3
Household Incomes \$20,000 to \$24,000	12,244	6.2
Household Incomes \$25,000 to \$29,000	11,121	5.6
Household Incomes \$30,000 to \$34,000	11,315	5.7
Household Incomes \$35,000 to \$39,000	10,053	5.1
Household Incomes \$40,000 to \$44,000	10,561	5.3
Household Incomes \$45,000 to \$49,000	10,263	5.2
Household Incomes \$50,000 to \$59,000	16,426	8.2
Household Incomes \$60,000 to \$74,000	20,508	10.3
Household Incomes \$75,000 to \$99,000	24,214	12.1
Household Incomes \$100,000 to \$124,000	14,616	7.3
Household Incomes \$125,000 to \$149,000	9,079	4.6
Household Incomes \$150,000 to \$199,000	8,523	4.3
Household Incomes of \$200,000 or More	6,905	3.4
Number of Households (Total)	199,227	100

Source: ACS 5-Year Estimates Data Profiles (2018)

The average annual wages by industry in Pasco County in 2019 in comparison to the average in Florida are provided in Table 2-8. The most prominent differences between the county and state levels are noticeable in the financial activities and information sectors.

¹⁴ Source: US Census – <https://www.census.gov/quickfacts/pascocountyflorida>

¹⁵ Source: <http://edr.state.fl.us/content/area-profiles/county/pasco.pdf>

¹⁶ Source: ACS 5-Year Estimates Data Profiles (2018)

Table 2-8. Average Annual Wage by Industry in Pasco County (2019)

Industries	Pasco County	Florida
Natural Resource & Mining	\$34,371	\$35,649
Construction	\$44,048	\$52,926
Manufacturing	\$57,506	\$63,883
Trade, Transportation and Utilities	\$34,861	\$46,237
Information	\$60,738	\$86,109
Financial Activities	\$49,542	\$77,030
Professional & Business Services	\$51,156	\$63,747
Education & Health Services	\$50,601	\$52,050
Leisure and Hospitality	\$18,108	\$26,681
Government	\$45,762	\$55,897
Other Services (except Government)	\$30,674	\$37,972

Source: <http://edr.state.fl.us/content/area-profiles/county/pasco.pdf>

2.2.7.5 Existing Housing Stock

There were 240,220 housing units in Pasco County in 2018, of which 143,456 or 59.7% were owner-occupied¹⁷. The age of the housing stock in Pasco County in 2018 is provided in Table 2-9; the majority (85.2%) of housing units were built between 1970 and 2009, while only 2% were built in 2014 or later. Housing characteristics for Pasco County, including unit sizes and vacancy rates, are provided in Table 2-10.

Table 2-9. Age Range of Housing Units in Pasco County (2018)

	Number of Households	Percent of Households (%)
Housing Units Built Before 1939	1,664	0.7
Housing Units Built 1940 to 1949	1,757	0.7
Housing Units Built 1950 to 1959	5,649	2.4
Housing Units Built 1960 to 1969	14,895	6.2
Housing Units Built 1970 to 1979	63,154	26.3
Housing Units Built 1980 to 1989	48,080	20.0
Housing Units Built 1990 to 1999	37,105	15.4
Housing Units Built 2000 to 2009	56,354	23.5
Housing Units Built 2010 to 2013	6,814	2.8
Housing Units Built 2014 or Later	4,748	2.0
Total Number of Housing Units	240,220	100

Source: ACS 5-Year Estimates Data Profiles (2018)

¹⁷ Source: ACS 5-Year Estimates Data Profiles (2018)

Table 2-10. Selected Housing Characteristics in Pasco County (2019)

Selected Housing Characteristics	Number	Percent (%)
Housing Occupancy		
Occupied housing units	212,856	84.9
Vacant housing units	37,803	15.1
Homeowner vacancy rate (%)	N/A	2.4
Rental vacancy rate (%)	N/A	9.6
Units in Structure		
1 unit, detached	160,545	64.0
1 unit, attached	14,286	5.7
2 units	2,225	0.9
3 or 4 units	4,297	1.7
6 to 9 units	6,197	2.5
10 to 19 units	6,667	2.7
20 units or more	9,280	3.7
Mobile homes	46,518	18.6
Boat, RV, van, etc.	644	0.3
Housing Units (Total)	250,659	100

Source: <https://data.census.gov/cedsci/table?q=%20housing%20pasco%20county%20&tid=ACSDP1Y2019.DP04&hidePreview=false>

2.2.7.6 Housing Costs

The median value of households in Pasco County in 2018 was \$138,087¹⁸, 29.8% lower than the median single-family home price in the state of Florida (196,800)¹⁹.

¹⁸ Ibid

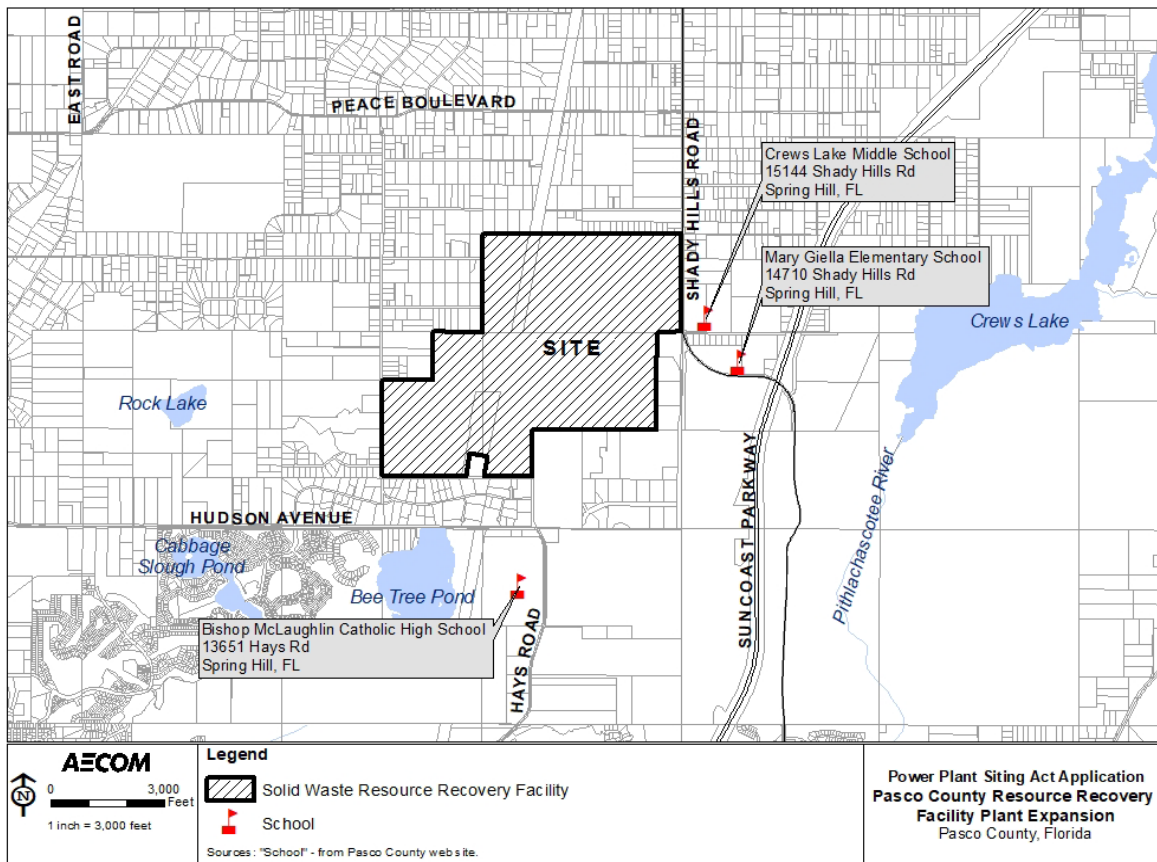
¹⁹ Source: <https://www.census.gov/quickfacts/fact/table/FL/RHI725219>

2.2.7.7 Area Public Services and Utilities

Education

There are three schools near the Project Site, including Crews Lake Middle School (across Shady Hill Road from the Certified Site), Mary Giella Elementary School (1/2 mile from the Certified Site), and Bishop McLaughlin Catholic High School (3/4 mile from the Project Site), as shown on Figure 2-12.

Figure 2-12. Pasco County Schools Near Pasco RRF

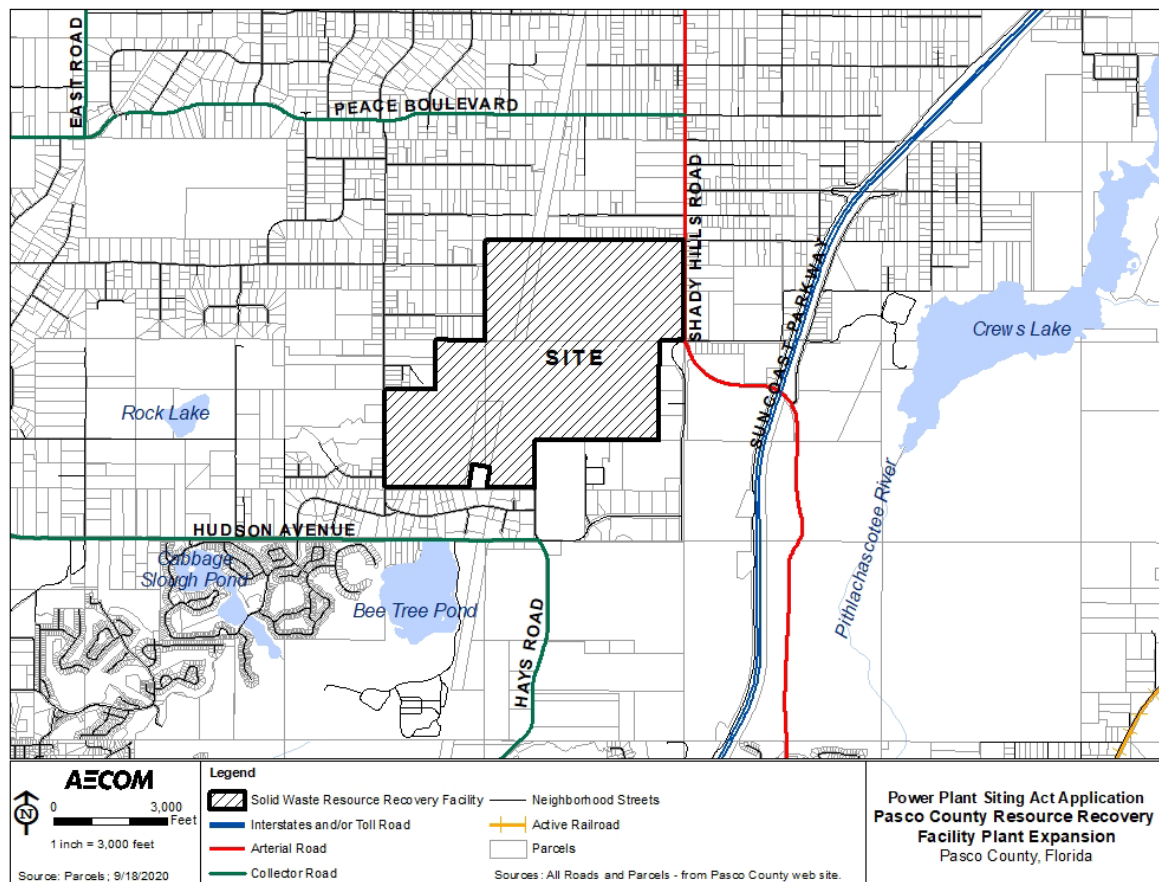


Source: Data from Pasco County 2020

Transportation

The Certified Site is near several major roads, including Shady Hills Road (an arterial road east of the Certified Site), Hudson Avenue and Hays Road (collector roads south of the Certified Site), and East Road and Peace Boulevard (collector roads north of the Certified Site) (Figure 2-13). In addition, Suncoast Parkway, a recently constructed Interstate/Toll Road that runs east of the Certified Site, connects Pasco County with Hillsborough County, where it becomes the Veterans Expressway and heads directly into Tampa International Airport before reaching Interstate 275.

Figure 2-13. Transportation Infrastructure Near the Pasco RRF

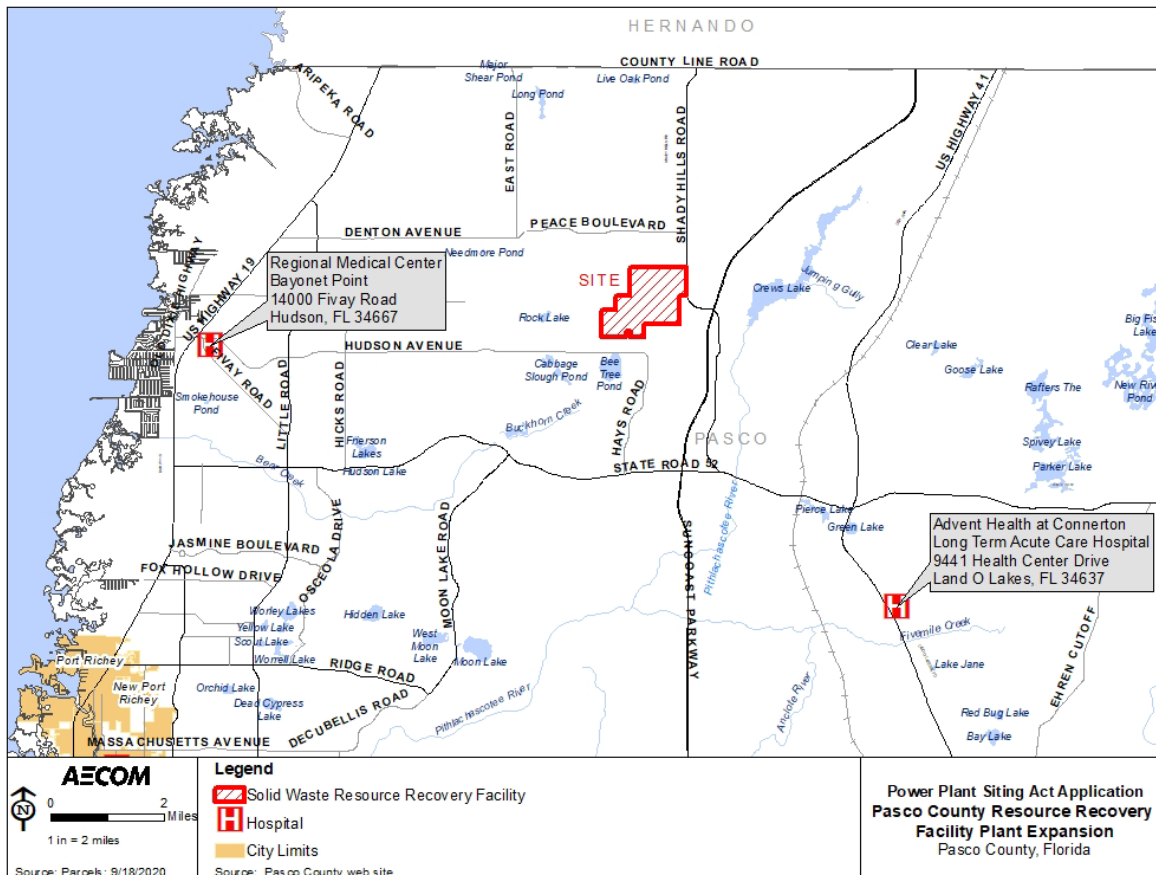


Source: Data from Pasco County 2020

Medical Facilities

There are two hospitals near the Project Site: Regional Medical Center Bayonet Point (8 miles west from the Certified Site) and Advent Health Center (7 miles southeast from the Certified Site), as shown on Figure 2-14.

Figure 2-14. Hospitals Near the Pasco RRF

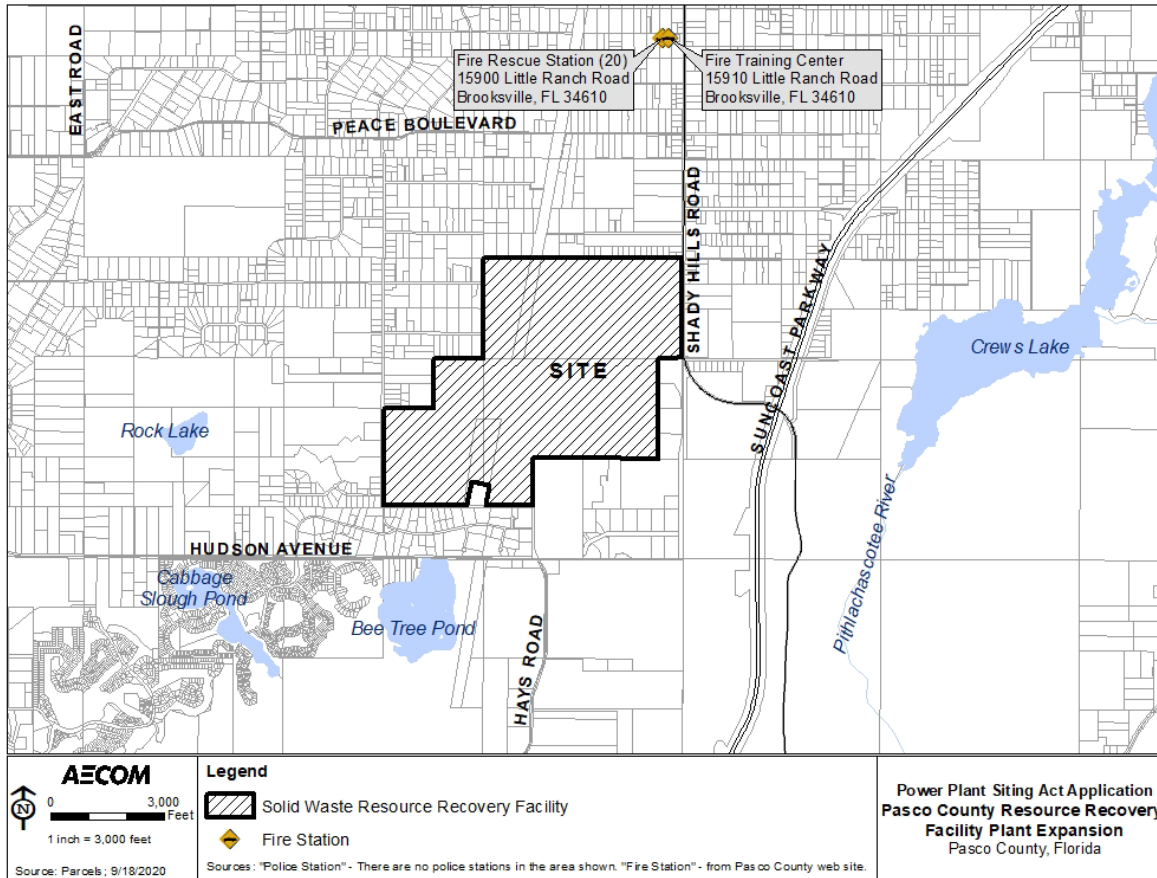


Source: Data from Pasco County 2020

Emergency Services

There is a Fire Rescue Station and Fire Training Center 2 miles north of the Certified Site (Figure 2-15). There are no other emergency services within 5 miles of the Certified Site.

Figure 2-15. Fire Stations Near the Pasco RRF

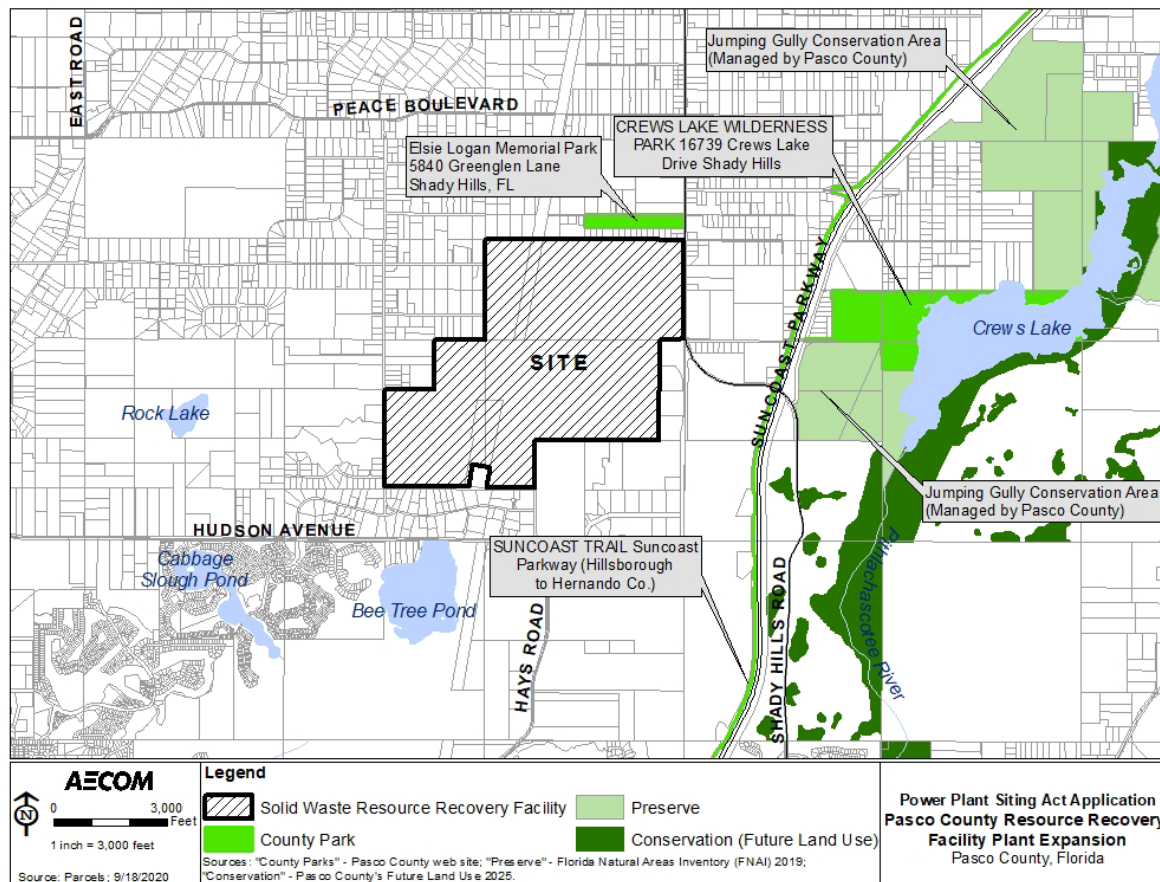


Source: Data from Pasco County 2020

Community and Recreational Facilities

There are several parks and conservation areas near the Certified Site (Figure 2-16), including Elsie Logan Memorial Park (1/2 mile north of the Certified Site), Jumping Gully Conservation Area (1 mile east and 2 miles northeast of the Certified Site), Crews Lake Wilderness (1 mile east of the Project Site), and Suncoast Trail (1/2 mile south of the Project Site).

Figure 2-16. Pasco County Parks and Conservation Areas Near the Pasco RRF



Source: Data from Pasco County 2020

Energy

There is a 295-foot Duke Energy Florida easement that bisects the Certified Site running north/south. Within the easement there is an active 30-inch Florida Gas Transmission (FGT) mainline, which provides natural gas to the Shady Hills-Mirant location for use within the market area through Duke Energy.

Water and Wastewater

Potable water service to the Resource Recovery Facility is provided by Pasco County. The County owns an industrial supply well on the Certified Site that is used primarily for the cooling tower. Reclaimed water is supplied by the adjacent Shady Hills Wastewater Treatment Plant, which is owned by Pasco County and is used to augment well water for the cooling tower.

The Shady Hills Wastewater Treatment Plant is currently receiving the sanitary wastewater from the Resource Recovery Facility as well as cooling tower blowdown. Based on the County's Landfill

Operations Plan dated July 2021, the primary disposal method for leachate generated from the Ash Monofill is the City of Tampa's Howard F. Curren Wastewater Treatment Facility. Leachate collected by the leachate collection systems serving the solid waste disposal cells at the Class I Landfill is pumped directly to the adjacent Shady Hills Wastewater Treatment Plant for disposal.

Solid Waste Management

MSW delivered to the Certified Site is either processed at the Resource Recovery Facility or disposed of in the County's landfill when the Resource Recovery Facility cannot process the MSW (e.g., during maintenance outages). Noncombustible materials also are taken to the County's landfill for disposal.

Ash residue is generated when the MSW is processed in the Resource Recovery Facility. The County removes ferrous and other metals from the ash residue, when it is cost-effective and practicable. The County also uses the ash residue for beneficial purposes (e.g., as a substitute for aggregate), when it is cost-effective and practicable. Any remaining ash residue is taken to the County's ash monofill or Class I landfill for disposal.

Metals are separated by type, and temporarily stored pending transportation off site. Bottom ash and other noncombustibles are comingled prior to landfill deposition and/or beneficial reuse.

Solid waste is currently disposed of at the following facilities on the Certified Site:

Class I Landfill for Municipal Solid Waste
Class III Landfill for Construction and Demolition Debris
Ash Monofill

In addition to the disposal facilities, the following waste processing facilities are located on the Certified Site:

Resource Recovery Facility
Waste Tire Processing Facility
Biosolids Processing Facility
Source-Separated Organics (Yard Waste) Processing Facility

2.3 Biophysical Environment

2.3.1 Geology and Hydrology

2.3.1.1 Geologic Description

Due to the long period needed for geologic conditions to change, the conditions in the vicinity of the Project Site have remained the same since the original PPSA application was submitted for approval in 1987. The following describes the geologic and subsurface conditions at the Project Site and surrounding area. This information is summarized from the PPSA application submitted in 1987 and is supplemented with more recent information.

The geologic units in the vicinity of the Resource Recovery facility are described in detail by the US Geological Survey (USGS; Fretwell 1988). According to the USGS, 41% of Pasco County is covered by Undifferentiated Sediments. The Project Site also sits on Undifferentiated Sediments that consist of varying sediments containing siliciclastics, organics, and freshwater carbonates. Siliciclastics are light grey, tan, brown to black, unconsolidated to poorly consolidated, clean to clayey, silty, unfossiliferous, variably organic-bearing sands to blue green to olive green, poorly to moderately consolidated, sandy, silty clays. Organics occur as plant debris, roots, disseminated organic matrix, and beds of peat. The other dominant geological unit in Pasco County is Hawthorn Group sediments, which cover 34% of the county and are light olive grey and blue grey in unweathered sections to reddish in deeply weathered sections, poorly to moderately

consolidated, clayey sands to silty sands and relatively pure clays. These sediments are part of the intermediate confining unit/aquifer system and provide an effective aquitard for the Floridan Aquifer System (FAS). Beneath the Hawthorn Formation in the Pasco County area lies the Tampa Limestone, a hard; dense; gray, white, or tan; sandy limestone that is fossiliferous, although some parts are crystalline and dolomitic. The depth to this formation within the vicinity of the Project is approximately 50 to 70 feet below ground level.

The Natural Resources Conservation Service (NRCS) Soil Survey of Pasco County, Florida defines two major surficial soil types on the site: (13) Candler fine sand and (6) Tavares sand. Three other soil types are found in limited distribution (Table 2-11). A delineation of soil types on site and adjacent to the site is shown on Figure 2-17.

Table 2-11. NRCS Soil Types Found Within the Pasco County RRF

MUID	Soil Type	Hydro Group
6	TAVARES SAND/0 TO 5 % SLOPES	A
7	SPARR FINE SAND/0 TO 5 % SLOPES	C
11	ADAMSVILLE FINE SAND	C
13	CANDLER FINE SAND/0 TO 5 % SLOPES	A
18	ELECTRA VARIANT FINE SAND/0 TO 5 % SLOPES	C

Source: NRCS 2020

Notes:

MUID = Map Unit Identifier

NRCS = Natural Resources Conservation Service

RRF = Resource Recovery Facility

Map Unit Identifier (MUID) refers to the pH class for each map unit while Hydro Group refers to the Hydrologic Soils Group to which the soil belongs. This is based on the soil's runoff potential.

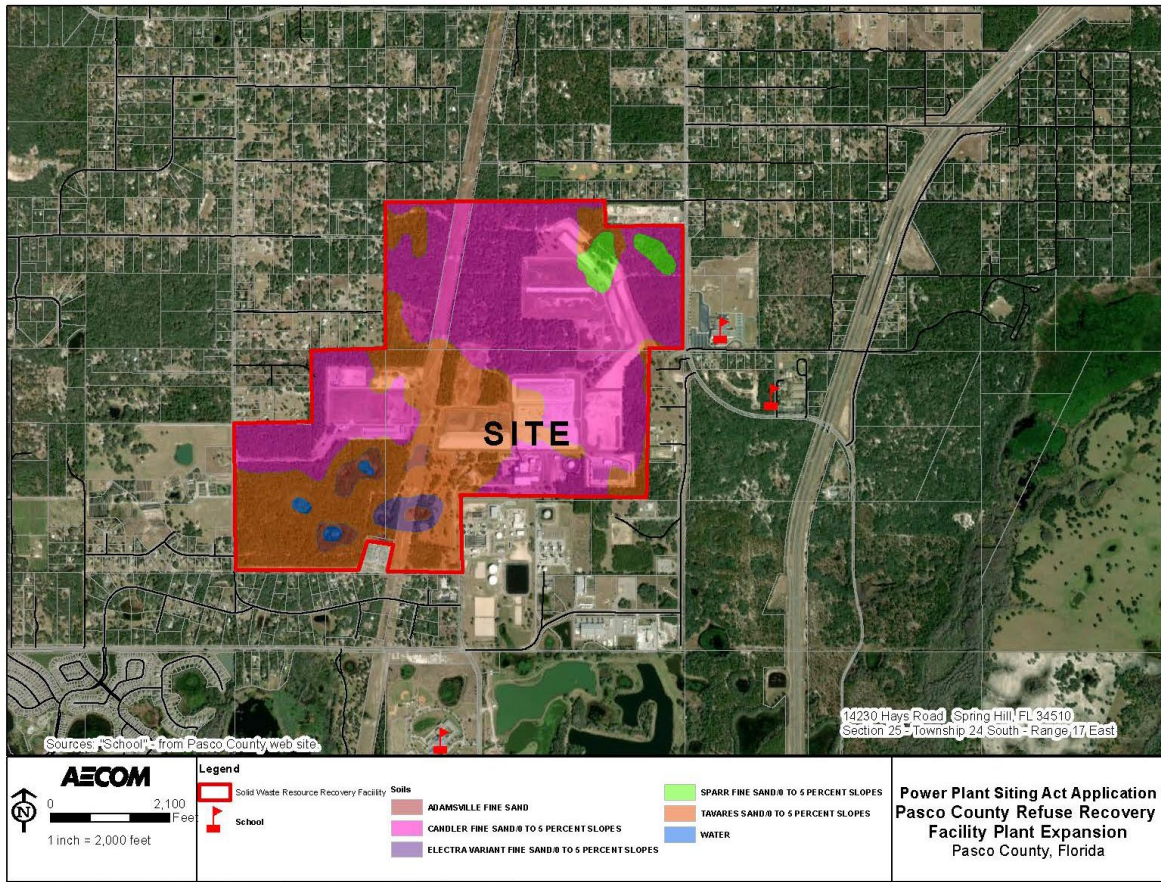
On-site soils are 58% Candler fine sand, nearly level to gently sloping, and excessively drained. Flooding in this soil is unlikely. Permeability in this area is very rapid in the upper 50 inches (vertical hydraulic conductivity $K_v = 20$ in/hr) and rapid below 50 inches ($K_v = 6-20$ in/hr). The water table is deeper than 6 feet below the surface throughout the year. The water table depth throughout the site is shown on Figure 2-18.

Soils in the central portion of the site are primarily Tavares sand. This soil is nearly level to gently sloping and moderately well drained. The soil is sand to a depth of 80 inches or more. Flooding in this soil is also unlikely. The water table is at a depth of 40 to 60 inches for 6 to 12 months of the year, and below 60 inches during very dry periods. Permeability is also very rapid throughout the depth of the soil ($K_v \geq 20$ in/hr).

Adamsville fine sand is found in the wetland areas on the site. This nearly level somewhat poorly drained soil is on low broad flats that are less than 2 feet higher in elevation than the adjacent sloughs. Under natural conditions, the water table is at a depth of 20 to 40 inches for 2 to 6 months of the year, but it may rise to within 20 inches of the surface for less than 2 weeks during very wet seasons. The water table recedes to a depth of more than 40 inches during dry periods. In this soil, available water capacity is low to very low. Permeability is rapid ($K_v = 6-20$ in/hr).

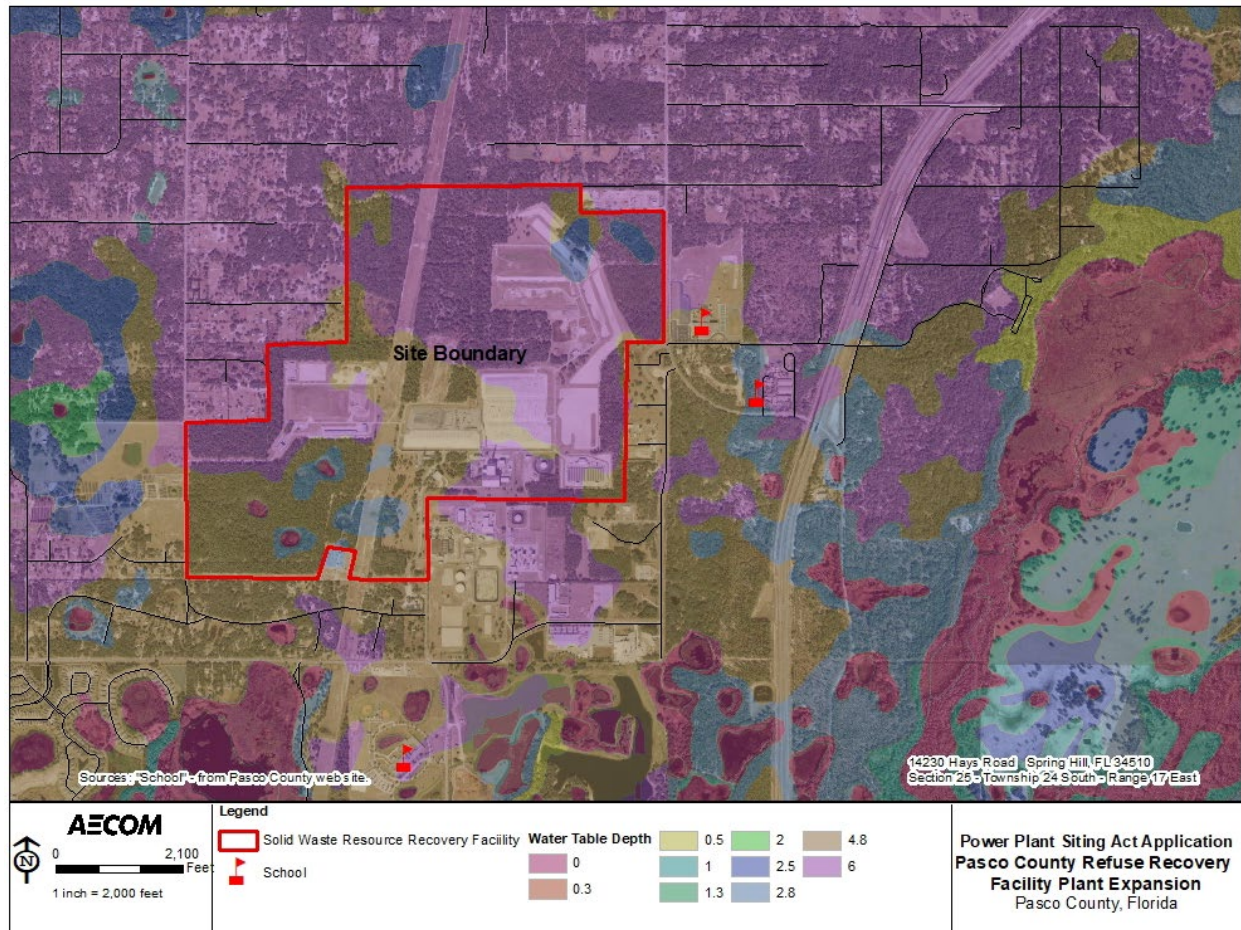
The Certified Site is situated in a relatively flat section of the Pamlico Terrace of the Gulf Coastal Lowlands physiographic province, with greater relief to the east and northeast. Numerous lakes and ponds are present south of the site, and the relatively large, linear Crews Lake is located about 1.5 miles east of the site. Additional description of the physiographic setting is provided in Section 2.1 of the Jammal & Associates summary report (1987), which is provided in Volume II, Appendix L.

Figure 2-17. NRCS Soils Types Found Within the Pasco County RRF



Data Source: NRCS 2020

Figure 2-18. Water Table Depth Within the Pasco County RRF and Surrounding Area



Source: NRCS 2020

2.3.1.2 Detailed Site Lithologic Description

The information in this section was developed primarily from borings completed on site as part of the geotechnical investigation for the Pasco County Landfill/Ashfill and Resource Recovery Program. The following geotechnical studies were commissioned by the County:

- Jammal & Associates, Inc. August 17, 1985. Results of Preliminary Site-Specific Evaluations, Four Potential Sanitary Landfill Sites, Pasco County, Florida.
- Jammal & Associates, Inc. August 22, 1986. Phase 1 Geotechnical/Hydrogeologic Summary Report, Proposed Pasco County Landfill—Hays Road Site, Pasco County, Florida.
- Jammal & Associates, Inc. April 17, 1987a. Summary Report, Geotechnical /Hydrogeological Study, Proposed Class I Sanitary/Ash Landfill Site—Hays Road, Pasco County, Florida.
- Jammal & Associates, Inc. May 29, 1987b. Preliminary Foundation and Soil Study, Proposed Resource Recovery Plant Facility—Hays Road Site, Pasco County, Florida.

The Jammal & Associates (1985) report contained general soil and hydrogeologic information and was used as support for the site selection study in 1987 (CDM 1985). The Jammal & Associates (1986) phase 1 report was a preliminary geotechnical investigation of the Project Site. The major purpose of the Phase 1 report was to identify the most suitable areas on the site for the location of the sanitary landfill/ashfill. The report also identified suitable on-site areas from which to acquire daily sand cover and final clay cover material, and it identified favorable areas for disposal of stormwater runoff.

2.3.1.3 Geologic Conditions

Phase 1 testing included 57 Standard Penetration Test (SPT) borings, which were performed in a grid pattern at a spacing of 800 feet, as recommended by Jammal & Associates—soil consulting engineers. Near the center of the site, intensified drilling decreased the spacing to 400 feet. The drilling pattern was selected to provide sufficient information to produce accurate subsurface cross sections and substrata models. Soil samples were obtained from each area of the site. Soil tests included:

Minus No. 200 sieve washes
Sieve analyses
Liquid and plastic limit tests
Natural moisture content analyses

To identify the favorable areas on site for the landfill, four parameters were used:

1. The boring sample showed at least 5 feet of continuous clayey semi-confining unit material.
2. The boring sample was in general conformity with the trend of neighboring soil stratigraphy.
3. The boring sample lacked significant evidence of internal soil erosion in the overburden soils.
4. The boring sample was free of significant subsurface irregularities. A typical sample was sand over clay over limestone.

In selecting the favorable area of the site, depressional areas were also avoided. Within the area designated as “favorable,” a smaller portion was designated as “most favorable.” The most favorable area has the same qualifications as the favorable area; however, it offers more consistency in the conditions listed above. For example, the clay semi-confining layer is substantially thicker than 5 feet, and fewer subsurface anomalies are present. Based on the data gathered, it was the opinion of Jammal & Associates that only minimal excavating should occur on the site. Construction of facilities should be primarily above present grades.

The Jammal & Associates (1987a) summary report describes field and laboratory testing that addresses the topographic, geologic, and hydrogeologic conditions at the site. The report includes descriptions of the drilling procedures, installation of monitoring wells, ground penetrating radar (GPR) survey, and consolidation and permeability tests.

As part of the Jammal & Associates summary report, GPR was used to study the geology. In areas where the GPR readings were ambiguous, SPT borings were drilled. Of the 18 borings, 7 showed typical soil stratigraphies (sand over clay over limestone) and no conditions that could be interpreted as anomalies. The remaining 11 borings revealed some small zones of loose clayey material or weathered limestone. These areas were interpreted by Jammal & Associates as minor anomalies that should not adversely impact the proposed expansion. At least 5 feet of intact clay was encountered over the limestone in each boring. The borings showed that the areas are not major anomalies. Four SPT borings were drilled to limestone to be used as monitoring wells. The subsurface data obtained during field exploration are presented in the logs that accompany the Jammal summary report. A cross section was developed using these logs and the logs contained in the Jammal & Associates 1986 phase 1 report.

Generally, the lithology and soils of the Project Site consist of varying thicknesses of sandy material overlaying clayey material of varying thicknesses and consistency (Figure 2-19). These layers overlie either significantly weathered upper limestone material with clay, or more intact weathered limestone materials.

The sand materials generally contain less than 10 % fines passing the No. 200 sieve, and color varies from tan to brown. The sandy materials vary considerably in thickness and in depth. The thickness varies from as little as 1 to 2 feet, to as deep as 70 to 90 feet. In general, the sands vary in relative density from loose to medium dense.

Beneath the sandy materials are plastic clayey materials. The clayey materials are the major components of the semi-confining unit that underlies the Project Site. The plasticity of these materials varies significantly from moderately to highly plastic. The consistency of the cohesive materials varies from stiff to very stiff. The thickness of the semi-confining unit varies over the construction area from 5 to 15 feet.

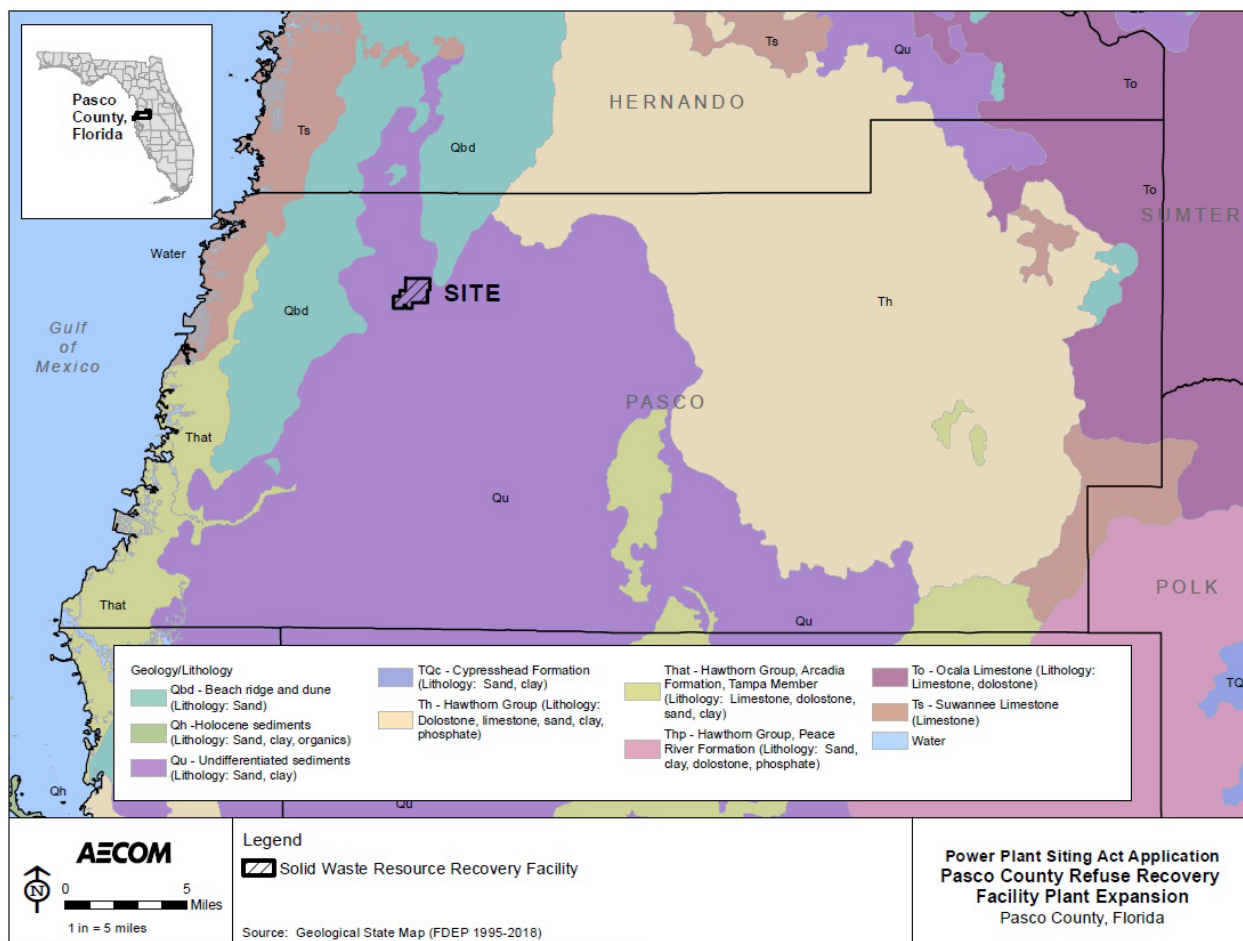
Beneath the clayey materials, weathered limestone with traces of clay is encountered. The material was classified as white to light brown calcareous silty clay over light gray weathered limestone. The consistency and integrity of the limestone material improved considerably with increasing depth of rock.

Projects undertaken at the site since the original geotechnical investigations of the late 1980s include construction of a Biosolids Treatment Facility, and a Class V Exploratory Well (Appendix M and Appendix N). Each of these projects included a site-specific geotechnical investigation and each verified the findings discussed above.

2.3.1.4 Geologic Maps

General lithology for Pasco County is shown on Figure 2-19. This provides interpretive context for the following sections on surficial and hydrological processes in the following sections.

Figure 2-19. General Lithology of Pasco County



Source: Data from FDEP 2020

2.3.1.5 Bearing Strength

The preliminary foundation study performed by Jammal & Associates (May, 1987b) recommends several types of foundations for the Resource Recovery Facility. A shallow foundation is recommended for areas of the facility that carry low loads or have a moderate sensitivity to settlement. Three types of foundations were suggested as suitable for the site. They are a mat system, a rigid strip system, and a shallow spread footing system. In conjunction with these foundations, suggested compaction techniques were given. To decrease initial settling, loose zones and soft clay areas would be compacted. Suggested techniques are vibro replacement (gravel) or dynamic compaction, followed by vibratory surface compaction. The maximum allowable bearing pressure is estimated at 3,000 to 4,000 pounds per square foot.

Jammal & Associates, Inc. (May 1987b) recommends a deep foundation for the portions of the facility that have high loads or strict settlement tolerances. To reduce subsidence risk, steel end bearing piles should be driven to varying depths until sufficient consolidation has occurred. No subsidence of the original structure has been identified following construction utilizing these techniques. The geotechnical investigation reports for the recently constructed Biosolids Treatment Facility and the Class V Exploratory Well include the same recommendations (Appendix M and Appendix N).

During the final design of the fourth MWC unit, additional geotechnical analyses of the 0.55 acre Project Site will be undertaken to determine bearing strength. Upon request, these analyses will be provided to the FDEP in a post-certification submittal.

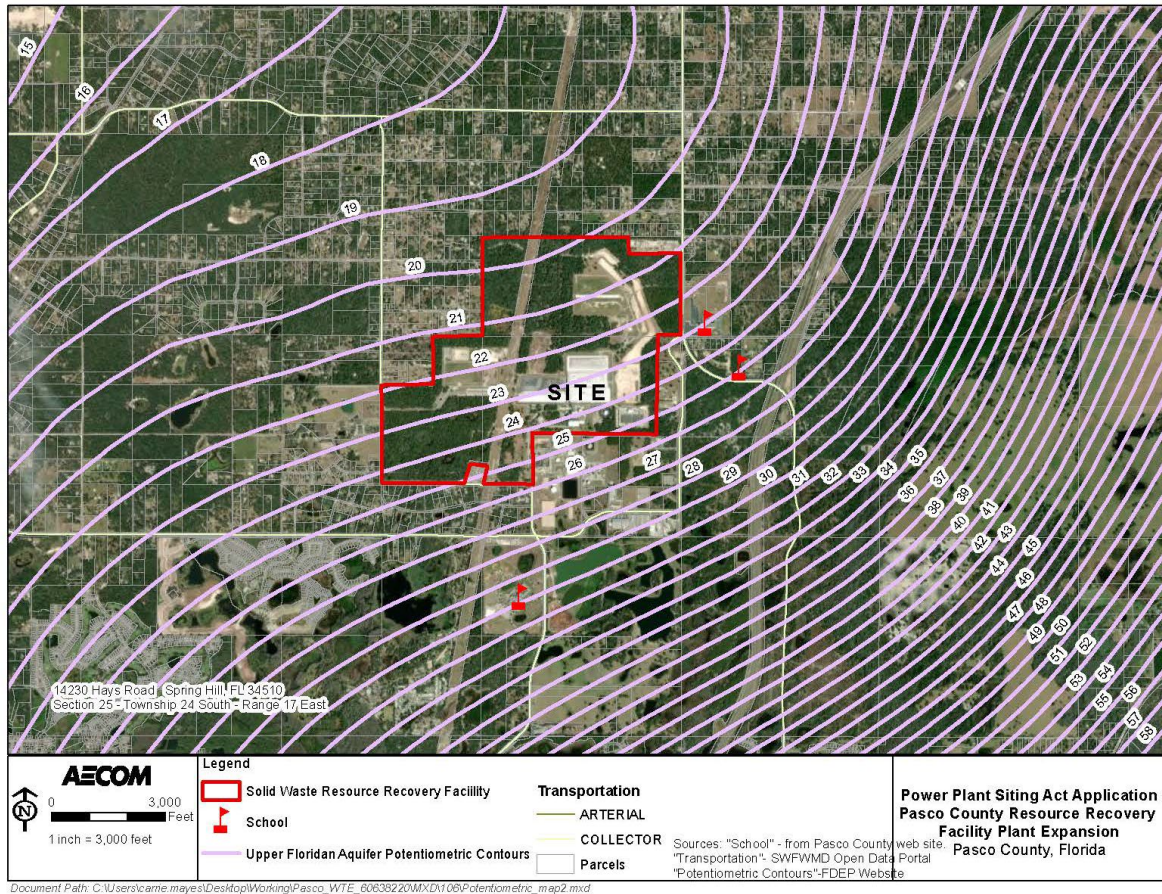
2.3.2 Subsurface Hydrology

The hydraulic characteristics of an aquifer system are described in terms of parameters referred to as the transmissivity, porosity, storage coefficient, and depending on the nature of the aquifer, the specific yield or leakance coefficient. These parameters are a measure of the ease of water flow through the aquifer. The transmissivity of an aquifer equals the horizontal permeability multiplied by aquifer thickness. Porosity is a measure of the open space within a volume of rock. The "effective" porosity refers to rock openings that are interconnected. The storage coefficient is the volume of water released from storage per unit surface area of the aquifer per unit change in head. The specific yield of an aquifer is the ratio of water volume that can be drained from a specific volume of aquifer, to the aquifer volume affected. The leakance coefficient is a property of the confining material; it is the vertical permeability of the confining unit divided by the vertical thickness of the confining unit. With known aquifer parameters, water levels and flow rates in the aquifer can be predicted in response to a stress on the aquifer such as pumping or recharge. In addition, the direction and rate of movement of groundwater solutes (dissolved substances) can be estimated.

The surficial sand aquifer intercepts and stores excess precipitation. It is relatively thin or nonexistent in portions of the Certified Site. With the top of the clay representing the base of the surficial aquifer, the surficial aquifer water table is generally nonexistent at the Certified Site based on quarterly sampling and measurement undertaken at the groundwater monitoring wells associated with the landfill.

Water level measurements taken from the Floridan aquifer indicate that elevations of the potentiometric surface of the Floridan aquifer ranged from +19 to +26 feet mean sea level (MSL). These measured values are consistent with recent potentiometric surface data published by the Southwest Florida Water Management District (SWFWMD). The site potentiometric map shown on Figure 2-20 indicates higher potentiometric surface elevations in the southeastern part of the Certified Site. The hydraulic gradient is toward lower elevations in the northwest and west.

Figure 2-20. Potentiometric Map of Pasco County RRF and Surrounding Area

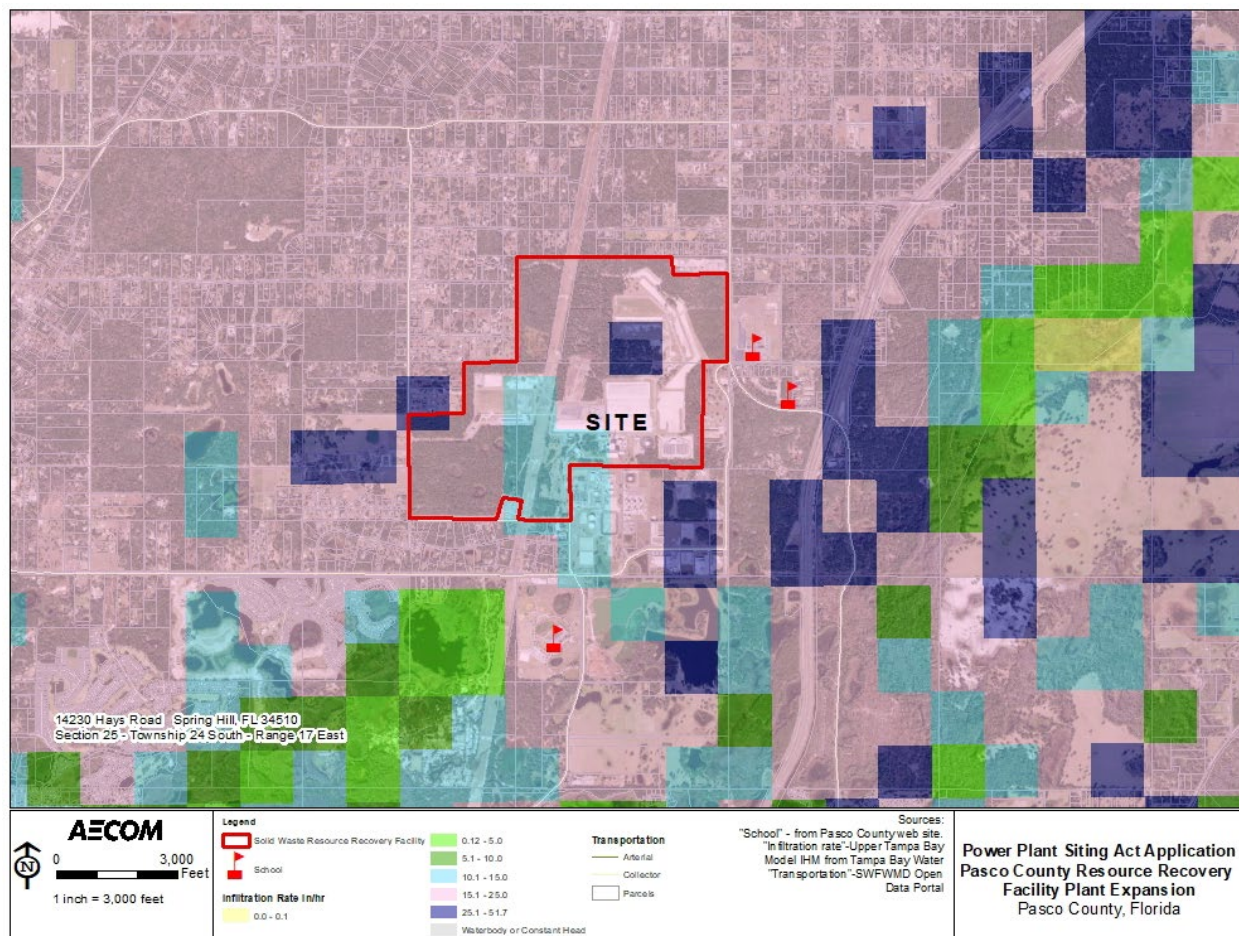


Source: Data from SWFWMD 2020

2.3.2.1 Subsurface Hydrologic Data for the Site

The Certified Site is a recharge area for the Floridan aquifer. The lack of a well-defined surface drainage network in an area of abundant rainfall is evidence of groundwater recharge potential. The primary surface drainage mechanism is internal to the groundwater system that conveys water to discharge areas along the Gulf Coast. Assuming uniform distribution of rainfall across the site, the most effective recharge areas to the Floridan aquifer within the Certified Site are identified by the depression in the water table surface as shown on Figure 2-21.

Figure 2-21. Recharge Map of Pasco County RRF and Surrounding Area



Source: Data from SWFWMD 2020

Although the semi-confining unit under the landfill/ashfill site is consistently present, it is leaky. This is based on the shallow groundwater conditions of the site, and the significant iron staining and small zones of secondary permeability discovered within intact, highly plastic, clayey samples. In most of the landfill/ashfill area, slow vertical movement through the semi-confining unit is occurring through the small inconsistencies and vertical, circuitous paths in the clay layers. The test borings from the Jammal & Associates, Inc. (May, 1987b) Geotechnical Investigation did not show significant signs of weathering of the semi-confining unit, or direct areas of recharge through breaches in the semi-confining unit over the landfill/ashfill area.

2.3.2.2 Karst Hydrogeology

An assessment of sinkhole potential within the Certified Site is provided in Sections 2.4, 5.5, and 5.9 of the Jammal & Associates summary report (1987a).

Although numerous sinkholes and other karst-related features exist within the Certified Site and vicinity, the SPT borings did not encounter significant voids in the underlying limestones.

The topographic map of the Certified Site indicates numerous, small surface depressions within the Certified Site. Two distinct types or forms of depressions were noted: small, rounded depressions with relatively steep slopes, mainly in the southwest corner of the site; and very shallow, gently sloping depressions occurring primarily in the interior portion of the site. Most of the land surface depressions within the Certified Site are of the shallow gently sloping type. These depressions are generally very shallow, perhaps an average of 2 to 3 feet deep, and relatively broad, ranging up to several acres in area.

Sinkholes formed by catastrophic collapse of caverns in the limestone are considered uncommon in the Hays Road area. Two factors indicate that the formation of surface depressions in the area is a slow, ongoing process that is directly related to solution activity at the limestone surface: the relatively thin overburden covering the limestone formations, and the apparent small head difference between the water table and potentiometric surface of the Floridan aquifer. Sinkholes of this type tend to develop slowly over long periods of time and are typically 1 to 3 feet deep near the center, and 10 to 20 feet or more in diameter. The potential is very low at the Certified Site for catastrophic, short-period failure sinkholes.

Within the proposed landfill/ashfill area, a linear relationship between land surface depressions and other geomorphic features was not indicated by Jammal & Associates (1987a) during review of aerial photographs and USGS 7-1/2 minute quadrangle maps. Other major lineament features were not observed in the immediate vicinity of the proposed landfill/ashfill as shown in the Jammal & Associates (1987a) summary report (Sheet 3 of Appendix D in the original report). The Jammal & Associates report is provided in Volume II, Appendix L.

2.3.3 Site Water Budget and Area Users

General hydrologic condition data for the Certified Site are provided in Table 2-12, which includes information on rainfall and temperature based on the climate normal 1981-2010 for data collected by the National Weather Service (NWS) at the forecasting office in Tampa (Tampa International Airport [KTPA]). Estimated evapotranspiration was extracted from Climatological Data for Florida published by the National Oceanographic and Atmospheric Administration (NOAA) for the year 2013. According to data extracted from the Integrated Tampa Bay Model, the rate of recharge to the Certified Site ranges from 10.1 inches/year to a maximum of 27 inches/year. The rate of recharge throughout the Certified Site is shown on Figure 2-21.

Table 2-12. Climate Normals for the Region Around Pasco County

Month	Monthly Mean Precipitation (in)	Monthly Mean Temperature (degrees ° F)	Monthly Evapotranspiration Potential (mm/day)
January	2.23	61.3	0.36
February	2.81	62.7	0.30
March	3.03	67.4	0.42
April	2.03	71.5	1.55
May	2.1	77.6	1.06
June	6.68	81.5	3.18
July	7.07	82.5	2.16
August	7.77	82.7	2.00
September	6.3	81.6	2.04
October	2.26	75.8	0.58
November	1.55	69.3	1.56
December	2.47	63.3	0.84

Source: NWS 1981-2010; NOAA 2013

Notes:

in = inches

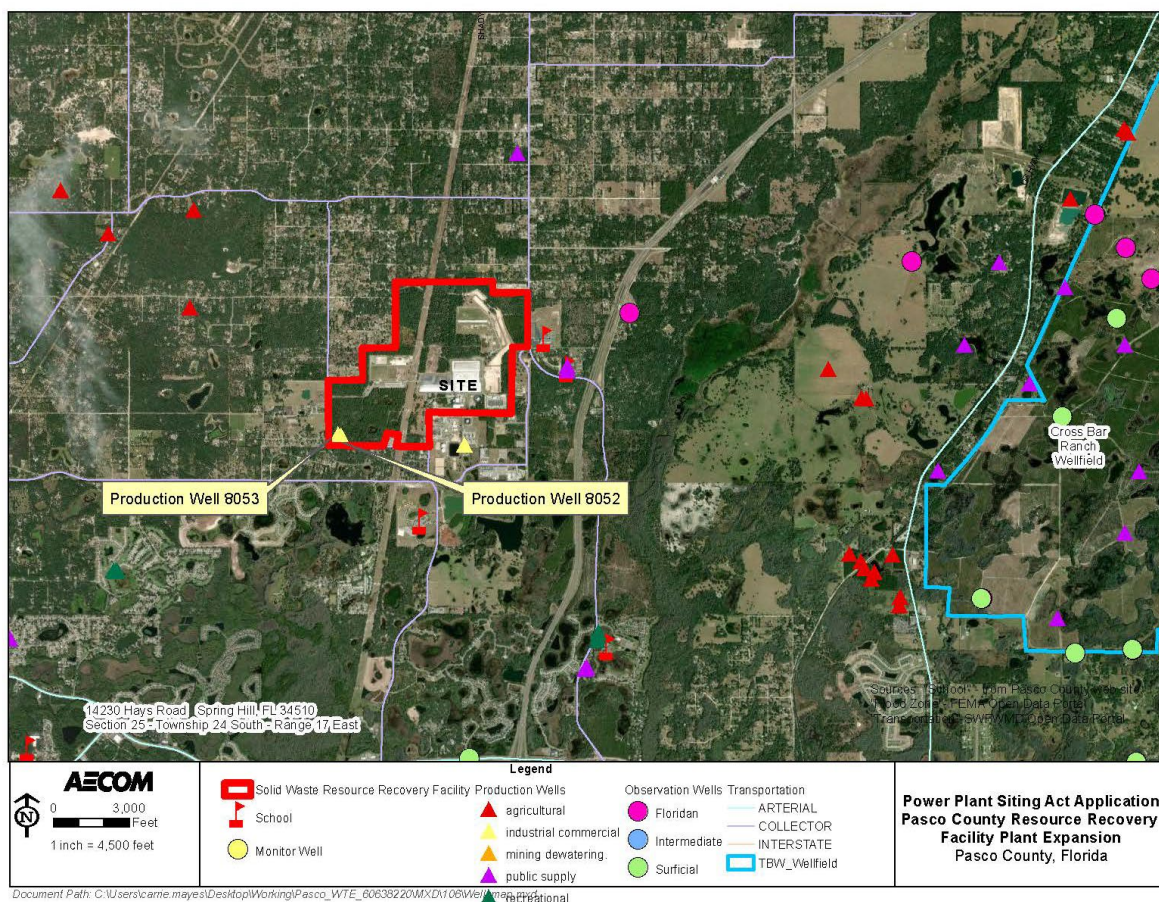
mm/day = millimeters per day

Under average conditions the maximum runoff will occur during the rainy season, which normally spans the summer months, peaking in July and August. Localized climatological conditions may provide additional opportunities for runoff to the site.

Major water uses in the area may be categorized as domestic, industrial, irrigation, and public water supply. SWFWMD has provided a well construction permit list for wells with diameters greater than 2 inches within a 5-mile radius of the project.

In Pasco County, water supply wells are categorized in major well fields operated by Tampa Bay Water. The well fields are Cypress Creek, Cross Bar, Starkey, Cypress Bridge, South Pasco, and North Pasco. In addition to these well fields, there are several public water supply wells of various capacities. The well field closest to the site is the Cross Bar Ranch Well Field, which is approximately 4 miles east and upgradient of the Certified Site. Various production and monitoring wells can be found within that well field. Wells surrounding the Certified Site is shown on Figure 2-21.

Figure 2-22. Wells in the Region Around Pasco County



Source: Data from Pasco County 2020; Tampa Bay Water 2020

Within the Certified Site, there are two industrial commercial wells used for the Facility's cooling tower. One well is capped and not currently in use²⁰. The wells are identified in the Integrated Tampa Bay model created by Tampa Bay Water as Production Wells 8052 and 8053. Outside of the Certified Site but within the same Integrated Tampa Bay Model sub basin, there are two public supply wells identified as Production Wells 6625 and 6626, both of which are upgradient of the Certified Site.

²⁰ A third well on the site was intended to be used as a Class V exploratory well. This well has been assigned a District ID Number by SWFWMD, but the well is capped, and the SFWMD has not approved this well for any consumptive use. This well may eventually be used as an industrial supply well in the future.

There are several observation wells near the Certified Site with the closest one being Floridan Observation Well 178. From the Integrated Tampa Model, the average observed levels of the Floridan aquifer at that location from July 1997 to March 2009 are provided in Table 2-13. Groundwater elevation values observed in Observation Well 178 are consistent with the values observed in the many on-site monitoring wells associated with the County's landfill.

Table 2-13. Observations from Floridan Observation Well 178, 1997-2009

Year Water Level (feet)													
Month	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
January		31.45	32.38	25.13	22.61	23.53	29.58	33.34	34.45	27.76	23.14	21.53	22.61
February		34.04	31.16	24.53	21.95	22.72	29.75	32.50	33.19	27.54	22.56	21.48	21.81
March		37.23	36.72	23.86	21.37	22.03	29.16	33.23	32.05	27.70	21.98	21.57	21.14
April		38.48	28.92	23.07	20.73	21.42	29.11	33.04	31.11	26.61	21.37	21.37	
May		36.72	27.88	22.24	20.26	20.26	28.92	32.10	30.38	25.83	20.76	21.24	
June		34.62	26.94	21.39	19.82	20.34	28.61	31.05	29.63	24.96	20.16	20.83	
July	22.55	32.94	26.29	20.86	19.94	21.45	31.54	30.42	29.73	24.16	19.62	35.59	
August	22.40	33.13	26.00	21.77	23.04	23.78	32.84	32.36	30.93	23.40	19.92	23.14	
September	23.10	35.08	25.88	23.35	24.36	25.96	37.25	35.88	30.81	23.36	20.85	23.14	
October	23.44	36.82	25.91	24.12	25.92	27.13	37.43	38.40	30.04	24.62	21.69	24.80	
November	23.94	35.59	25.89	24.07	25.45	27.26	36.00	37.38	29.28	24.55	22.14	22.14	
December	24.84	33.91	25.62	23.35	24.47	27.59	34.64	35.93	28.49	23.81	21.90	23.47	

Source: Tampa Bay Water 2020

2.3.4 Surficial Hydrology

2.3.4.1 Hydrologic Characterization

The proposed Project Site has no surface water bodies within the construction area. Several small limestone solution sinkhole-related depression areas are located west of the powerline easement that bisects the Certified Site. These are not in an area where construction is planned for the Project. None of these surface water bodies have been designated with a specific water classification under Section 62-302.400, FAC, but they presumably are Class III waters. The existing surface water runoff flows westerly, primarily to two of these depression areas. This flow occurs downgradient, generally via sheet flow. The existing stormwater management system retains this general flow regime, whenever possible.

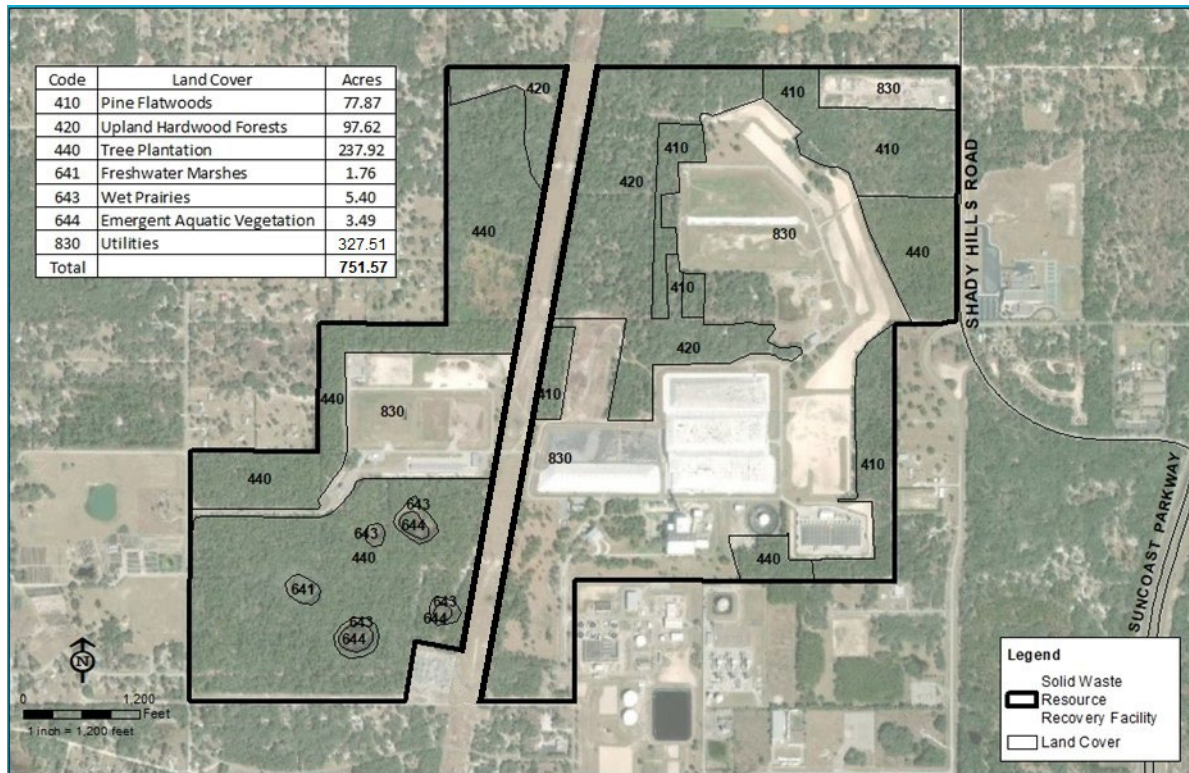
2.3.4.2 Measurement Programs

This section describes the programs and methods that are used to measure the background physical and chemical parameters of the surface water bodies that will be affected during construction and/or operation of the Proposed MWC Unit. As stated previously, the stormwater management system uses the natural drainage features of the site whenever possible. In accordance with Chapter 62-330, FAC, and the Applicants Handbook the first 0.5 inches of stormwater runoff is retained and treated using retention/detention ponds. The ponds allow for percolation of the captured runoff within 72 hours. SWFWMD has determined that the Certified Site exhibits volume sensitivity. This means increased volumes of runoff from this site are not permitted. In the initial site layout of the Resource Recovery Facility, four ponds known as Retention Ponds 1, 2, 3, and 4 were permitted to be constructed to account for on-site drainage. Although it has been determined that there is virtually no surface runoff from the Certified Site, the retention/detention ponds 1, 2, and 3 were sized to retain flow from the 25-year rainfall event. Pond 4 was sized to retain flow from the developed area on the Certified Site and the first 0.5 inches of runoff from the off-site drainage area that co-mingles with on-site flows. Ponds 1, 2, 3, and 4 are shown on Figure 2-3.

2.3.5 Vegetation/Land Use

Seven land use and vegetation types have been identified on the Certified Site, as shown on Figure 2-23. These types are classified to level III of the Florida Land Use and Cover Classification System (FLUCCS; Florida Department of Transportation, 1999) and are derived from the 2017 land use classifications produced by SWFWMD. These land use types are: Upland Coniferous Forest (410), Upland Hardwood Forest (420), Tree Plantation (440), Freshwater Marsh (641), Wet Prairie (643), Emergent Aquatic Vegetation (644), and Utilities (830). The Utilities land use includes the Resource Recovery Facility, Ash Monofill, Class I landfill, Class III landfill, biosolids processing facility, leachate storage tank, and associated infrastructure. A 295-foot-wide Duke Energy powerline right-of-way (ROW) bisects the Certified Site in a north/south direction. The powerline easement also is classified as Utilities. The powerline easement is not part of the Certified Site and has therefore been included from this analysis.

Figure 2-23. Land Uses Within the Pasco County Certified Site Boundary



Source: Data from Pasco County 2020

Aside from site development, there has been little change to the land uses identified during the certification of the site in August 1988. Prior to site certification, planted pine silviculture was an activity conducted on site. The harvesting of pines has not occurred on the site since the mid-1980s. The site has developed a mature canopy of slash pine (*Pinus elliottii*). The cessation of silviculture activities and the suppression of a natural fire regime have also resulted in the development of upland hardwood forest habitat. At certification, this habitat type was identified as rangeland that contained minimal tree canopy. Currently this habitat (FLUCCS 420) has a mixture of live oak (*Quercus virginiana*) and slash pine within the canopy.

The Project Site is within the Utilities land use and consists entirely of developed habitat. The Project Site occurs within the northwest portion of the existing Resource Recovery Facility and is 0.55 acres, which is 0.07% of the entire 751-acre site.

2.3.5.1 Pre-Existing Stresses

Pre-existing, cumulative environmental stresses derive from facility development and continuing operations within the Certified Site since 1987. While much of the landscape within the Certified Site remains as habitat in a condition consistent with undeveloped land in the surrounding area, the addition of borrow pits, landfills, processing facilities, roads, and outbuildings has reduced the acreage of natural habitat within the Certified Site, and impacted hydrology and biogeochemistry within the site through construction and normal operations (Section 2.1.2 Existing and Proposed Site Uses; Figure 2-3). These alterations have affected vegetation composition within the facility footprint, and have likely influenced wildlife use of the landscape in immediate proximity to facility infrastructure and roadways. Human activity, almost entirely associated with facility operations, also likely impacts distribution and behavior of wildlife species occurring on facility habitat.

2.3.5.2 Measurement Programs

Site surveys for characterization of habitat and species community composition are described in the following section.

2.3.6 Ecology

A literature and database review was conducted to identify documented listed species that have been identified near or on the Project Site. The following data sources were reviewed to identify listed species with the potential to occur on site:

ArcGIS Web Application, Florida Fish and Wildlife Conservation Commission (FWC) Eagle Nest Locator. (2017). Retrieved November 2020, from (<http://myfwc.maps.arcgis.com/apps/webappviewer/index.html?id=253604118279431984e8bc3ebf1cc8e9>);

FGDL Search/ Download Data/ Wood Stork. (2018). Retrieved November 2020, from (<https://www.fgdl.org/metadataexplorer/explorer.jsp>);

Federally Listed Species in Pasco County, Florida. United States Fish and Wildlife Service North Florida Ecological Services Office. Retrieved November 2020, from (<https://www.fws.gov/northflorida/CountyList/Pasco.htm>);

Florida Natural Areas Inventory (FNAI). Retrieved November 2020, from (<https://www.fnai.org/BiodiversityMatrix/index.html>).

The Project Site was evaluated for potential occurrences of federal and state-listed flora and fauna species. Federally listed species are protected by the federal government pursuant to the Endangered Species Act (ESA) of 1973, as amended, and are classified as endangered or threatened. State-listed species are those flora and fauna species managed by the State of Florida pursuant to Chapter 5B-40, FAC, and Chapter 68A-27 FAC, respectively. State-listed species are classified as endangered, threatened, species of special concern (fauna), or commercially exploited (flora).

For a listed species to be considered potentially occurring within the Project Site, appropriate habitat for reproduction, nesting, foraging, or resting has to be present within the Project area and the potential area has to be located within that species' geographical range. Based on the evaluation of collected data, the federal and state-listed species discussed below were identified as having the potential to occur within or adjacent to the Project Site. As noted previously, the Project Site is completely developed and occurs immediately adjacent to the existing Resource Recovery Facility. Therefore, the species identified could use habitats found on the Certified Site, but they are unlikely to occur within the footprint of the Project Site. In addition, protected plant species have been excluded from this analysis because no native vegetation occurs on the Project Site or laydown area.

The species identified as potentially occurring in the vicinity of the Project Site are provided in Table 2-14.

Table 2-14. Listed Species with Habitat in Pasco County RRF Certified Site

Species	Common Name	Federal Status	State Status	Habitat
Amphibians and Reptiles				
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	T	Various types of upland and wetland habitats, gopher tortoise burrows
<i>Gopherus polyphemus</i>	Gopher tortoise	C	T	Xeric habitats
Birds				

Species	Common Name	Federal Status	State Status	Habitat
<i>Egretta caerulea</i>	Little Blue Heron	NL	T	Herbaceous marshes
<i>Egretta tricolor</i>	Tricolor Heron	NL	T	Herbaceous marshes
<i>Falco sparverius</i> Paulus	Southeastern American kestrel	NL	T	Open habitats, dry prairies, pine flatwoods
<i>Grus canadensis</i> <i>pratensis</i>	Florida sandhill crane	NL	T	Dry prairies, freshwater marshes, and wet prairies
<i>Laterallus jamaicensis</i>	Eastern black rail	T	T	Herbaceous marshes
<i>Mycteria americana</i>	Wood stork	T	T	Forested wetlands, freshwater marshes, swamps, flooded pastures.

Notes:

F = Federally Listed

E = Endangered

T = Threatened

NL = Not Listed

C = Candidate

Additional species that are not listed federally or by the state but are known in the vicinity of the Project Site include the Florida black bear (*Ursus americanus floridanus*), bald eagle (*Haliaeetus leucocephalus*), and migratory birds. The Florida black bear is neither state nor federally listed; however, this species is protected by the State's Florida Black Bear Conservation Rule (FAC 68A-4.009). The entire Certified Site is fenced, which hinders black bears from using the site. The bald eagle has been delisted under the ESA but remains protected under the Bald and Golden Eagle Protection Act (BGEPA). The nearest documented bald eagle nest is approximately 2 miles northeast of the site.

Migratory birds are protected on the federal level by the Migratory Bird Treaty Act (MBTA). The MBTA protects migratory birds and their parts—including eggs, nests, and feathers. Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, directs federal agencies to take certain actions to further implement the MBTA and to conserve migratory birds. This Executive Order prohibits the take of migratory birds or their eggs, feathers, or nests. Many waterfowl, songbirds, raptors, and other species are migratory and are protected under the MBTA. No native vegetation or native habitats occur within the footprint of the Project Site; therefore, there is no native nesting habitat in this area. Migratory birds have the potential to use other areas of the site for nesting.

2.3.6.1 Ecological Relationships

As detailed in Section 2.3.5, there are a variety of undeveloped habitats on the Certified Site that could be used by wildlife species. In particular, wildlife have access to forested upland habitat and wetlands. As previously stated in Section 2.3.6, protected wildlife species have been documented as occurring on the Certified Site. Protected species could use habitats within the Certified Site, the entire site is fenced, which limits access for wildlife that could potentially use the site.

In addition, residential and commercial development has occurred since 1988 within the surrounding community, limiting habitat for wildlife. Prior to 1988, most of the Certified Site was a tree plantation managed for pine. These silviculture activities altered native habitat available for wildlife by activities such as clear cutting and ditching.

Approximately 170 acres of the Certified Site were set aside as a gopher tortoise preserve. This area was used as a gopher tortoise relocation area during construction of the Resource Recovery Facility. The gopher tortoise preserve occurs in an area of pine plantation in the southwest quadrant of the Certified Site.

No known threatened or endangered species occur on the 0.55 acre Project Site. The area is completely developed and does not provide habitat for threatened or endangered species. The immediate areas surrounding the Project Site provide support facilities (e.g., access road, monofill) for the Resource Recovery Facility. These areas do not provide habitat for threatened or endangered species or habitat that may attract these species.

2.3.6.2 Pre-Existing Stresses

Pre-existing environmental stresses include those occurring as a result of the operation of the Resource Recovery Facility. Land use has changed from those identified in 1988 as development of the Resource Recovery Facility and other facilities has continued. Areas formerly classified as Tree Plantation (FLUCCS 440) have been converted to Utilities (FLUCCS 830). The development has reduced the canopy cover of the site and increased the footprint of human-made habitats. Native vegetation, in areas, has been replaced by sod or structures.

Abiotic stressors that occur include those resulting from the daily operation of the Resource Recovery Facility and other facilities on the Certified Site. These include noise, traffic, and the movement of personnel. These stressors are largely limited to the developed portions of the Certified Site. The remaining canopy and native vegetation buffer other areas of the site from these stressors.

2.3.6.3 Measurement Programs

There are no measurement programs for the 0.55 acre Project Site. The area is entirely developed and does not provide native habitat. Therefore, there are no wildlife or habitat parameters to monitor.

2.3.7 Meteorology and Ambient Air Quality

2.3.7.1 Meteorology

The Project Site is located in Pasco County on the west coast of Florida (Figure 2-1). Pasco County, like most of Florida, has a subtropical climate. The NWS maintains a forecasting office in Tampa (KTPA). This station covers Pasco County. The monthly and annual average temperatures and extremes, based on long-term data at this station from the National Climatic Data Center (NCDC), are provided in Table 2-15. Data presented are the monthly annual normal temperatures from 1981 to 2010. The maximum and minimum temperatures are based on data collected from 1890 through 2019. The annual average temperature for this period is 73.1 degrees Fahrenheit (°F).

Table 2-15. Tampa Weather Office Monthly and Annual Average Daily Temperatures

Month	Temperature (°F)		
	Maximum	Minimum	Average
January	70.1	52.4	61.3
February	71.6	53.8	62.7
March	76.3	58.5	67.4
April	80.6	62.4	71.5
May	86.3	68.9	77.6
June	88.9	74.0	81.5
July	89.7	75.3	82.5

Month	Temperature (°F)		
	Maximum	Minimum	Average
August	90.0	75.4	82.7
September	89.0	74.3	81.6
October	84.1	67.6	75.8
November	78.0	60.7	69.3
December	72.0	54.7	63.3
Annual	81.4	64.8	73.1

Notes:

°F = degrees Fahrenheit

Monthly and annual average precipitation information is provided in Table 2-16. Showers and thunderstorms associated with moisture from the Gulf of Mexico account for portions of the annual precipitation. Based on the normal monthly annual precipitation from 1981 to 2010, the annual average precipitation is 46.30 inches. Maximum monthly precipitation recorded was more than 18 inches and the minimum precipitation recorded was trace measurements. Most rainfall occurs during the summer wet period from June through September. During the summer months of June through September, the tropical climate shifts north into west-central Florida and this event, combined with the marine waters surrounding the Florida peninsula and daily sea breezes, leads to typical daily occurrence of thunderstorms. The dry season is associated with the winter and late spring months, when minimal precipitation is observed.

Table 2-16. Tampa Weather Office Monthly and Annual Average Precipitation

Month	Precipitation (inches)		
	Maximum	Minimum	Average
January	8.02	trace	2.23
February	10.92	0.05	2.81
March	12.64	trace	3.03
April	10.71	trace	2.03
May	17.64	trace	2.10
June	18.66	1.26	6.68
July	20.59	1.65	7.07
August	18.59	0.78	7.77
September	18.93	0.79	6.30
October	10.33	trace	2.26
November	6.12	trace	1.55
December	15.57	0.07	2.47
Annual	76.57	28.89	46.30

The average wind speed, maximum wind speed, and direction from the Florida Climate Center are provided in Table 2-17. The Florida Climate Center uses data collected by the NWS. Average wind speed for the period from 1946-2012 is presented as miles per hour (MPH) and is based on the speed of the wind regardless of direction. Maximum wind speed for the period from 1952 to

2012 includes wind direction. Based on the data, the windier part of the year is from October to May, when average wind speed is above 8 mph. The prevailing wind direction is from the east-northeast.

Table 2-17. Florida Climate Center Monthly Average and Maximum Wind Speed

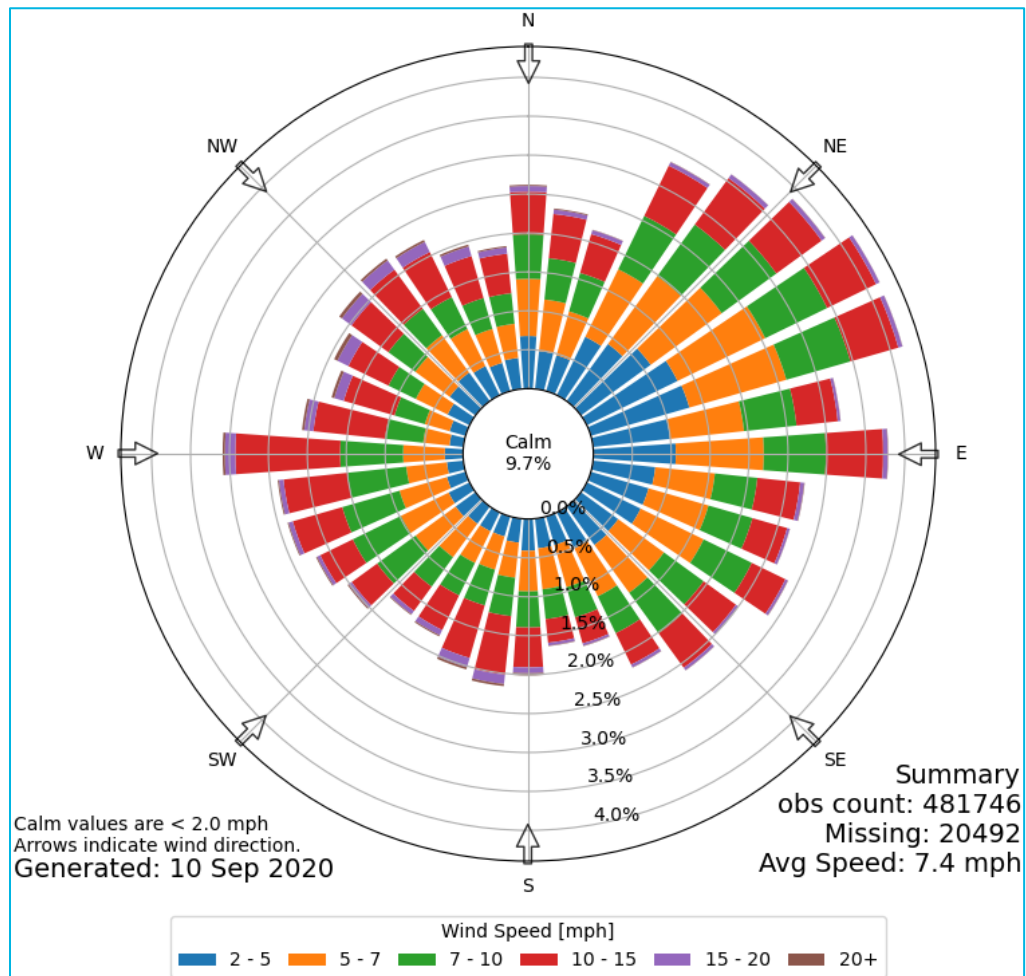
Month	Wind Speed (MPH)		Direction
	Average	Maximum	
January	8.5	44.0	NNE
February	9.1	50.0	NNE
March	9.4	43.0	NNE
April	9.2	44.0	NNE
May	8.6	46.0	NNE
June	7.9	67.0	NNE
July	7.1	58.0	NNE
August	6.9	38.0	NNE
September	7.5	56.0	NNE
October	8.3	40.0	NNE
November	8.2	40.0	NNE
December	8.3	45.0	NNE
Annual	8.3	67.0	NNE

Notes:

MPH = miles per hour

The Iowa Environmental Mesonet maintained by the University of Iowa provides wind roses of available national and state weather centers. The following wind rose plot shows the prevailing winds at KTPA from January 1970 to September 2020 (Figure 2-24).

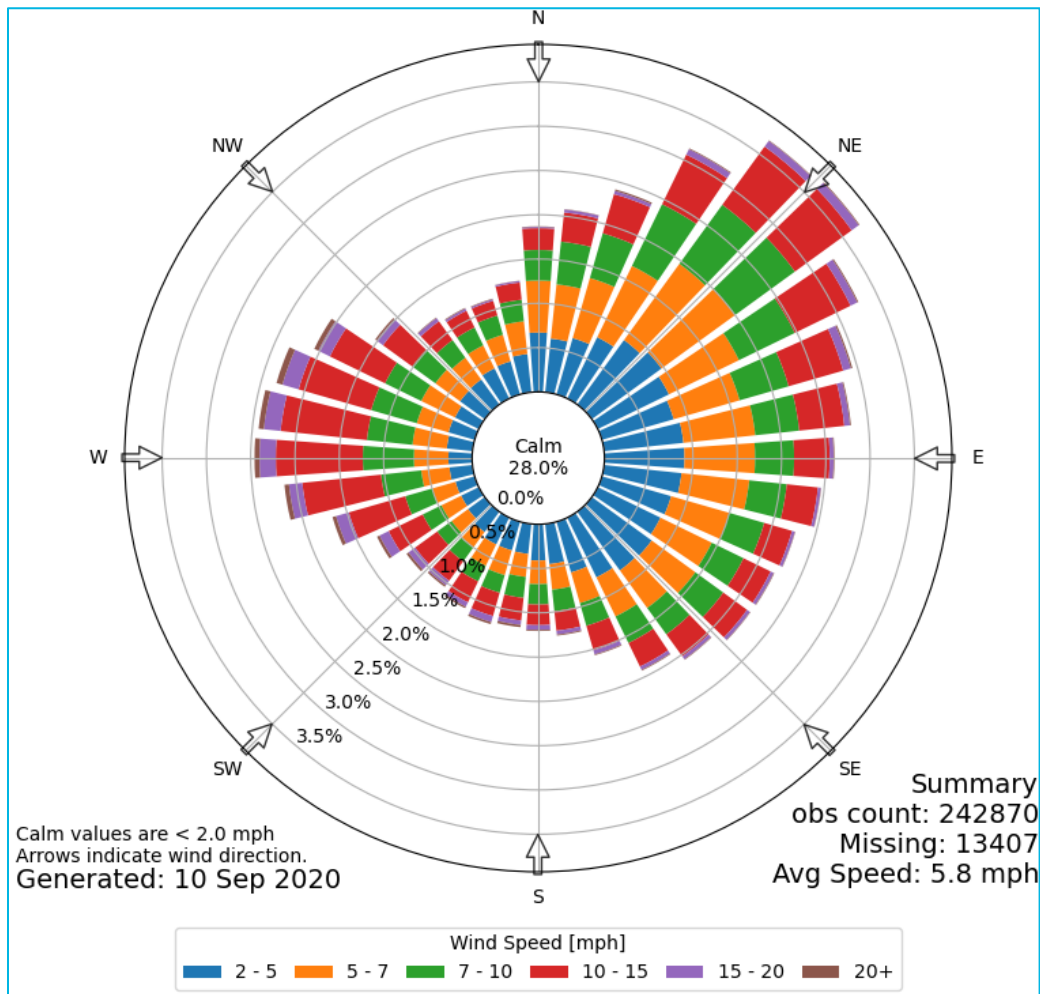
Figure 2-24: Wind Rose Plot, Tampa International Airport 1970 to 2020



Source: Iowa Environmental Mesonet 2020

The following wind rose plot is taken from data collected at the Brooksville-Tampa Bay Airport, which is approximately 10 miles from the Project Site. The wind rose plot represents wind data collected from July 1996 to September 2020 (Figure 2-25).

Figure 2-25: Wind Rose Plot, Brooksville-Tampa Regional Airport 1996 to 2020



Source: Iowa Environmental Mesonet 2020

2.3.7.2 Ambient Air Quality

The Clean Air Act Amendments (CAAA) require the USEPA to set National Ambient Air Quality Standards (NAAQS) for pollutants from numerous and diverse sources considered harmful to public health and the environment. Six pollutants are designated by the NAAQS: sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), ozone (O₃), and particulate matter (PM₁₀ and PM_{2.5}). These pollutants can cause adverse health effects if found in concentrations above thresholds established by the USEPA. 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, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment and damage to animals, crops, vegetation, and buildings. Florida has incorporated the NAAQS by reference into state regulations (FAC Section 62-204.800[1]). A list of the current NAAQS is provided in Table 2-18.

Table 2-18. National Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS		Form of Design Concentration
		Primary	Secondary	
Carbon Monoxide (CO)	8-hour	9 ppm		Not to be exceeded more than once per year.
	1-hour	35 ppm		
Nitrogen Dioxide (NO ₂)	Annual	100 $\mu\text{g}/\text{m}^3$ (0.053 ppm)	Same as primary	Annual mean never to be exceeded.
	1-hour	0.100 ppm		98 th percentile of 1-hour daily maximum concentrations, not to be exceeded as averaged over 3 years.
PM _{2.5}	Annual	12 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$	3-year average never to be exceeded.
	24-hour	35 $\mu\text{g}/\text{m}^3$	Same as primary	98 th percentile, not to be exceeded as averaged over 3 years.
Lead (Pb)	3-month rolling	0.15 $\mu\text{g}/\text{m}^3$	Same as primary	Not to be exceeded.
Ozone	8-hour	0.070 ppm	Same as primary	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years

Notes:

ppm = parts per million

$\mu\text{g}/\text{m}^3$ = micrograms of gaseous pollutant per cubic meter of ambient air

The Project Site is in Pasco County, which is part of the West Central Florida Intrastate Air Quality Control Region (40 Code of Federal Regulations [CFR] 81.96). As of spring 2020, the entire state of Florida is an attainment area (i.e., the air quality in Florida compliant with the NAAQS for the criteria pollutants). Background air quality is established by ambient air monitoring stations maintained by FDEP and local agencies and located throughout the state. These stations monitor ambient levels of the criteria pollutants (CO, NO₂, SO₂, lead [Pb], ozone, and particulates (PM₁₀ and PM_{2.5}). Two stations are in Pasco County, but these stations only collect data on ozone. Stations in Hillsborough and Pinellas County are used for the remaining criteria pollutants not analyzed by the monitoring stations in Pasco County. As was the case in 1988, the Project Site is in an area generally free from impacts of other major point and area sources of air pollution. The low density of industry within the surrounding community suggests that there is an associated low probability of impacts on air quality by such sources near the Project Site.

Background air quality data for the Project Site from 2017 through 2019 are provided in Table 2-19; in comparison to Table 2-18, the available monitoring data from these regional monitoring stations demonstrate that the concentrations of criteria pollutants in the ambient air near the Project Site are well below the NAAQS for each pollutant.

Table 2-19. Monitored Background Concentrations (2018 to 2020)

Pollutant	Averaging Time	Monitoring Location		Units	2018	2019	2020	Design Conc.
		County/City	Address					
Carbon Monoxide (CO)	8-hour ⁽¹⁾	Hillsborough/Tampa	1497 N Munro Street	ppm	0.9	1.0	0.9	1.0
	1-hour ⁽¹⁾	Hillsborough/Tampa	1497 N Munro Street	ppm	1.1	1.2	1.1	1.2
Nitrogen Dioxide (NO ₂)	Annual ⁽²⁾	Hillsborough/Tampa	1497 N Munro Street	ppm	9.6	9.6	8.7	9.6
	1-hour ⁽³⁾	Hillsborough/Tampa	1497 N Munro Street	ppm	37.0	37.0	35.0	36.3
Sulfur Dioxide (SO ₂)	3-hour ⁽¹⁾	Pinellas/Tarpon Springs	40673 US 19 North	ppm	0.0040	0.0037	0.0042	0.0042
	1-hour ⁽⁴⁾	Pinellas/Tarpon Springs	40673 US 19 North	ppm	0.0040	0.0040	0.0030	0.0040
PM ₁₀	24-hour ⁽¹⁾	Pinellas/St. Petersburg	1313 19th St. N.	µg/m ³	52	58	54	58
PM _{2.5}	Annual ⁽⁵⁾	Pinellas/St. Petersburg	7200-22 Avenue N.	µg/m ³	7.43	7.65	7.86	7.6
	24-hour ⁽³⁾	Pinellas/St. Petersburg	7200-22 Avenue N.	µg/m ³	14.9	17.4	17.5	16.6
Lead (Pb)	3-month rolling ⁽⁶⁾	Hillsborough/Tampa	1700 North 66th Street	µg/m ³	0.11	0.09	0.09	0.11
Ozone	8-hour ⁽⁷⁾	Pasco/Dade City	30908 Warder Road	ppm	0.063	0.060	0.059	0.061

Notes:

ppm = parts per million

µg/m³= micrograms of gaseous pollutant per cubic meter of ambient air

(1) Design concentration is the highest of the second-highest monitored values over 3 years.

(2) Design concentration is the maximum of the annual mean concentrations over 3 years.

(3) Design concentration is the 98th percentile of the annual distribution of daily maximum values, averaged over 3 years.

(4) Design concentration is the 99th percentile of the annual distribution of daily maximum values, averaged over 3 years.

(5) Design concentration is the annual mean concentration, averaged over 3 years.

(6) Design concentration is the maximum 3-month rolling average value over 3 years.

(7) Design concentration is the annual fourth-highest daily maximum concentration, averaged over 3 years.

2.3.7.3 Measurement Programs

The State of Florida, along with local partners, maintains a network of air quality monitoring stations throughout the state. The air is monitored for CO, Pb, NO₂, ozone (O₃), particulate matter (or particle pollution [PM₁₀ and PM_{2.5}]), and SO₂. Two monitoring stations are in Pasco County.

An air quality impacts analysis was performed by Pasco County in 1988 in support of the County's effort to obtain an air construction permit for the Resource Recovery Facility (Volume II, Appendix B, Section 5.6). The analysis predicted that the Resource Recovery Facility's impacts on air quality would be less than the *de minimis* concentrations for each pollutant. A new analysis has been performed for the proposed Project. The analysis indicates that the Project's impacts on air quality will be less than the *de minimis* levels.

Pre-construction ambient air quality monitoring is not required for the Project under the Prevention of Significant Deterioration (PSD) regulations because the predicted impacts of the Project do not exceed the *de minimis* monitoring concentrations, and representative ambient air quality data are available in the vicinity of the Project Site.

2.3.8 Noise

2.3.8.1 Sound Criteria for Human Receptors

The Resource Recovery Facility is enclosed, which reduces the sound levels generated by the facility's operations. Additional sounds are generated by the truck traffic entering and leaving the Resource Recovery Facility. There also are large on-site buffers, including wooded areas between

the Resource Recovery Facility and the areas to the north, east, and west of the Resource Recovery Facility. The vegetation and buffer areas help dissipate and reduce the facility's impacts on noise levels in off-site areas.

There are no state or federal regulations that apply to the noise levels generated in off-site areas by the Resource Recovery Facility. However, Pasco County has adopted noise limits in its code of ordinances. Section 66-93 of the County Code provides that the "maximum permitted noise level emanating from a commercially or industrially zoned district, measured at the closest adjacent residentially zoned property line for the hours between 6:00 p.m. and 7:00 a.m. Monday through Saturday and during all hours of Sunday shall be 55 dBA" (decibel A-weighted). The allowable noise level is 66 dBA from 7 a.m. to 6 p.m., Monday through Saturday, where an industrial zone adjoins a residential district. The Resource Recovery Facility has complied with these restrictions, with no registered noise complaints in its 30-year history of operations. Following construction of the Project, a noise study will be undertaken to demonstrate compliance with the local ordinance. Upon request, the results of the noise study will be submitted as a post-certification submittal.

2.3.8.2 Sound Criteria for Ecological Receptors

There are no known, or documented, bird colonies or nests that occur on the Certified Site. The only protected species that is known to occur on the Certified Site is the state threatened gopher tortoise. An approximately 170-acre gopher tortoise preserve occurs in the southwest quadrant of the Certified Site.

The gopher tortoise is protected by state regulations, including Chapter 68A-27, FAC (Rules Relating to Endangered or Threatened Species). The state regulation prohibits harming or harassing a protected species. There are no specific noise requirements or limits in the state regulations.

It is assumed that the noise generated by the Resource Recovery Facility does not harm or harass the gopher tortoise. The gopher tortoise preserve is well buffered from the Resource Recovery Facility by distance and native vegetation.

2.3.8.3 Ambient Sound Levels and Effects of the Project

A 1987 noise study found that the ambient sound levels in the surrounding community were 53 dBA. The Resource Recovery Facility was expected to generate a sound level of 48 dBA or below. The combined sound level was expected to be 53 dBA (Table 2-30, Pasco County Application 1987).

The proposed Project will be enclosed, like the existing Resource Recovery Facility, and the enclosure will dampen the noise generated by the operation of the new MWC unit. It is anticipated that the new MWC unit will only contribute a small increase in the ambient sound level, and will not exceed the maximum sound limits in the County ordinance. Any noise generated during the construction of the Proposed MWC Unit will be temporary, transient in nature, and in compliance with the County's ordinance.

The County will design and construct the Project to comply with the relevant noise limits in the County ordinance and minimize the risk of neighborhood complaints. At a minimum, the County will include the following noise reduction measures:

The County will design and construct the Project to avoid the application of character corrections due to tonality, impulsivity, intermittency, or others as applied in accordance with Pasco County building codes and other relevant ordinances.

Noise levels will comply with existing codes.

Safety relief discharges will comply with existing codes.

The steam turbine-generator set will be selected to be furnished with the manufacturer's standard acoustic treatment for industrial use. If the manufacturer's steam turbine-generator set noise signature exceeds 105 dBA, a separate custom-designed acoustic enclosure will be provided.

Silencers will be supplied for vents and the expansion flue, if required.

2.3.9 Other Environmental Features

No other environmental features were identified on the Project Site.

Section 3. The Plant and Directly Associated Facilities

3.1 Background

The development of the Proposed MWC Unit is responsive to Policy No. SWT 4.2.1 of Pasco County's 2025 Comprehensive Plan (Volume II, Appendix D), which states that Pasco County will "plan for expansion of the resource recovery plant when the disposal volume reaches eighty (80) % of daily capacity."

When the Proposed MWC Unit is operational, the Resource Recovery Facility will contain four MWC units (three existing, with a fourth added through the Project). These MWC units collectively will have a total design-rated capacity of 1,600 tpd. Each MWC unit will operate independently; therefore, it will be possible to shut down each unit individually for maintenance and inspection.

The Resource Recovery Facility currently includes a tipping floor, a refuse storage pit, air pollution control (APC) systems, a stack, a cooling tower, ash handling systems and an ash storage building, a turbine generator (T-G), a lime silo, a carbon silo, a maintenance building, a spare parts storage area, administration offices, a firewater pump and tank, ancillary equipment and structures, and interior roadways within the Certified Site.

The Project includes the following construction activities: (a) the construction of the Proposed MWC Unit, which will have a design rated capacity of 475 tpd when burning a reference waste with a heating value of 5,200 British thermal units per pound (Btu/lb); (b) the construction of the air pollution control ("APC") systems for the Proposed MWC Unit; (c) the installation of a new turbine generator; (d) the installation of a new boiler chemical feed system; (e) the expansion of the existing cooling tower; (f) the expansion of the existing ash handling system and ash storage area; (g) the removal of the existing settling basin and construction of a new settling basin; and (h) the temporary use of an equipment laydown area that will be approximately 0.7 acres. Depending on the final design of the Proposed MWC Unit, the County may install a new lime silo, a new carbon silo, a new ammonia storage tank, and/or a new water storage tank. In the alternative, the County may replace one or more of the existing silos and tanks with larger ones.

The APC systems for the Proposed MWC Unit will consist of: (a) an advanced selective noncatalytic reduction (SNCR) system for the control of oxides of nitrogen ("NO_x"); (b) a dry recirculation-type quench reactor ("scrubber") using hydrated lime for the removal of acid gases; (c) an activated carbon injection system for the removal of mercury; and (d) a fabric filter baghouse for the removal of particulate matter.

The Resource Recovery Facility has operated successfully for 30 years. The basic operation of the Resource Recovery Facility will continue to be substantially the same after the Project is completed. Recyclable materials will be removed from the MSW before the MSW is delivered to the Certified Site. The MSW will be delivered to the Resource Recovery Facility in transfer trailers and packer trucks, which will unload the MSW directly into the facility's refuse storage pit. The waste unloading and storage activities will be conducted indoors; no MSW will be stored outside. An upgraded replacement overhead bridge crane will be included in the Project, and will mix the waste in the storage pit and then load the charging hoppers of the four MWC units.

The MSW will be reduced by the combustion process to less than 10% of its original volume and 30 % of its original weight. The resulting ash will be quenched to approximately 25% moisture. The County will remove ferrous and other metals from the ash residue, to the extent it is cost effective. The recovered metals will be sold as scrap. The County also will use the ash for beneficial purposes, to the extent practicable. Among other things, the ash may be used as a substitute for aggregate in asphalt or concrete. If the ash residue is not beneficially used, it will be placed in the County's on-site ash monofill or Class I landfill for disposal, consistent with County's current practices.

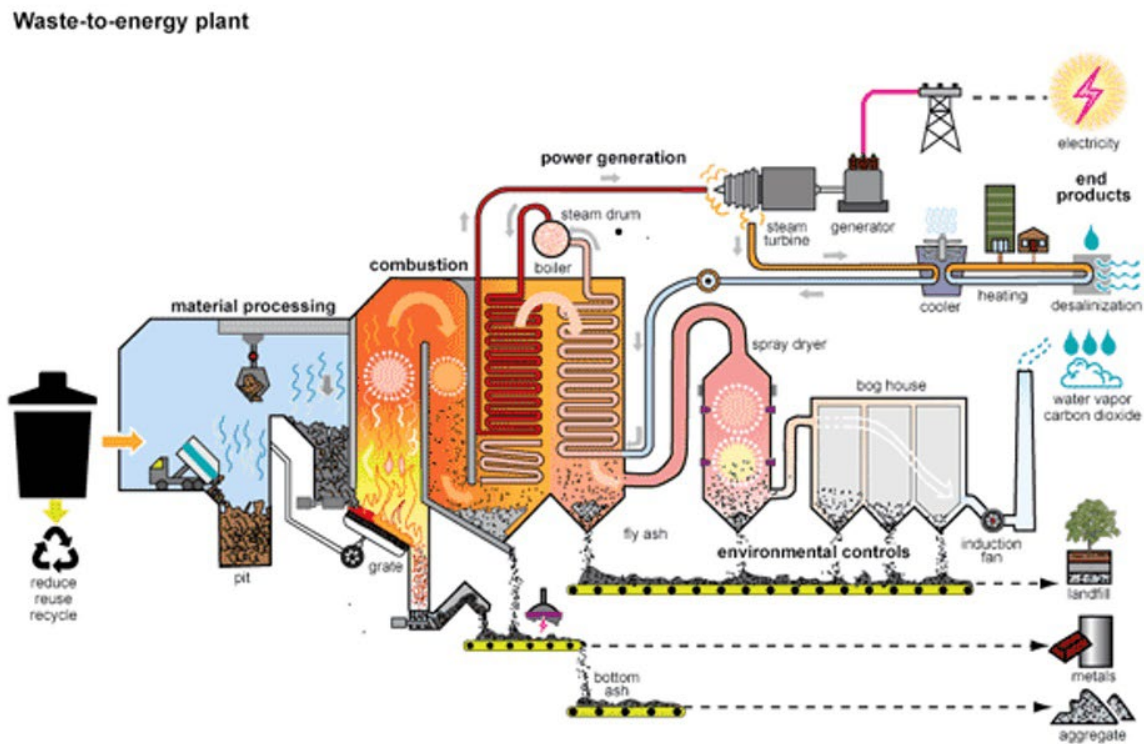
3.2 Site Layout

3.2.1 Existing Resource Recovery Facility

The three existing MWC units in the RRF collectively have a maximum design rated capacity of 1,050 tpd when burning a reference waste with a heating value of 4,800 Btu/lb²¹. The facility contains a tipping area and refuse storage pit sized to handle 8,500 tons of MSW (Section 3.2.1). The emissions stack is equipped with four flues. There is one steam turbine generator that generates electricity (approximately 31 MW). Powerlines from the Project's electrical switchyard connect with Duke Energy's Hudson substation via the powerline easement that crosses the Certified Site. Because the facility's MWC units use mass-burn technology, there is no preprocessing of wastes at the facility prior to combustion.

A schematic diagram of a typical resource recovery facility is shown on Figure 3-1. MSW is delivered to the facility via truck and ash residue is removed by the same mode of transport. MSW is deposited in the refuse bunker (Figure 3-2) directly from transfer trailers and packer trucks inside the building. Waste is stored inside the building; no waste is visible from the outside. Two overhead cranes mix the waste in the bunker and load the charging hoppers as required.

Figure 3-1. Generalized Process Flow Diagram for Waste-to-Energy/Resource Recovery Facilities



Source: Adapted from the National Energy Educational Development Program

Source: Adapted from National Energy Educational Development Program

²¹ Changes in the waste stream since the original design in the late 1980's have resulted in an increased waste heating value of approximately 5,200 Btu/lb, which will serve as the design value for Unit 4.

Figure 3-2. MSW Deposited on the Tipping Floor, with the Refuse Storage Pit to the Left



Source: Covanta Pasco 2020

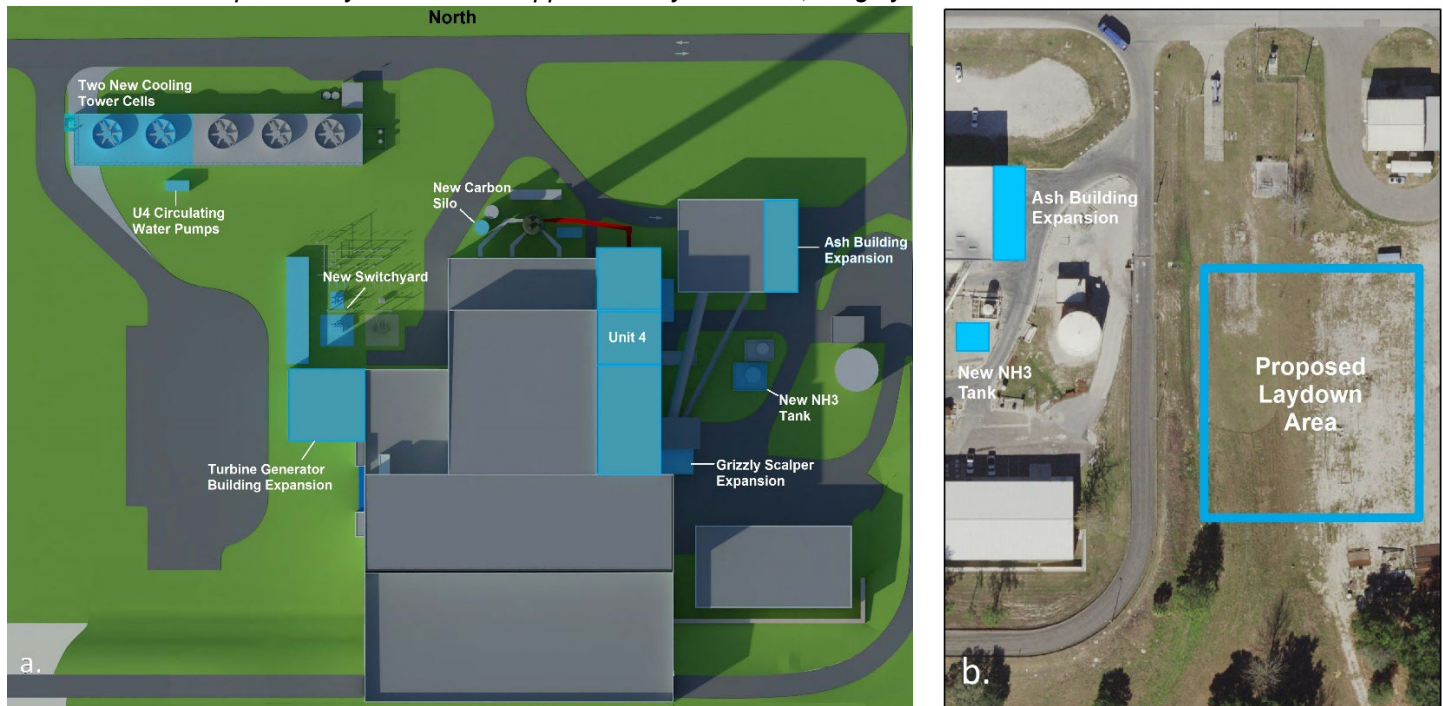
Each of the existing MWC units is equipped with a spray dryer absorber for the control of acid gases, SNCR with ammonia injection for the control of NOx, activated carbon injection for the control of mercury, and a fabric filter baghouse for the control of particulate matter.

3.2.2 Proposed MWC Unit (Unit 4)

The preliminary design basis for the Proposed MWC Unit includes the components described in Sections 3.2.2.1 through 3.2.2.7 below. Figure 3-3a shows the plan view layout of the Project with the proposed new facilities highlighted in light blue and labelled. Some components of the Project are not labelled in the figure because they are contained inside the enclosed RRF. Figure 3-3b shows the location of the proposed Project laydown area. When the final design plans are prepared, Pasco County will provide the final plans to the FDEP in a post-certification submittal.

Figure 3-3. Plan View of the Existing RRF and Project Facilities

- a. Project Facilities are highlighted in blue and labelled; these accrue to 0.55 acres ("Project Site")
- b. Proposed Laydown Area is approximately 0.7 acres, roughly 350 feet east of the RRF



Source: Enercon 2021

3.2.2.1 Boiler

A new 475 tpd MWC unit will be approximately 24.5 feet wide and will fit within the Resource Recovery Facility between building columns P1-4. The existing east wall of the boiler building will be removed and the east wall column steel replaced in order to accommodate the loads from the new MWC unit.

A 13-step Martin stoker grate MWC unit similar to the existing MWC units will be utilized. The new unit will be designed to process 475 tpd of MSW, based on a higher heat value (HHV) of 5,200 Btu/lb and 21% moisture content by weight. The new MWC unit will be fitted with two natural gas burners sized for a total heat input equivalent to 40% of the heat input from refuse. Inconel cladding will be installed throughout the new boiler/combustion unit consistent with the facility's existing boiler/combustion units.

The boiler's superheater outlet pressure and temperature have been selected to match the existing combustion units. The boiler economizer exit flue gas temperature and excess air rate will be lower than the existing boilers to accommodate the APC equipment design point, as well as the lower NOx emissions limits. The combustion air temperature will be similar to the facility's existing combustion units. The feedwater temperature for the new MWC unit will be 250°F (lower than the 300°F feedwater temperature for the existing MWC units); which is related to the change in waste heating value due to the changing waste stream since original design in the 1980s. A new boiler chemical feed system will be provided for the new combustion unit.

The spare flue in the existing stack will be used for the Project.

3.2.2.2 Refuse Pit and Floor

The sizing of the refuse pit has been evaluated based on current design philosophy. The pit is 224 feet long, 60 feet wide, 37.5 feet deep from the tipping floor, and 36.5 feet high from the tipping floor to the charging floor. Assuming a waste density of 550 lbs/yd³, the pit can store up to 8,500 tons of waste. Expansion of the refuse pit is not required to accommodate the Proposed MWC Unit.

To process 1,600 tpd (existing capacity plus 475 tpd expansion), the existing cranes will be modified/replaced by the County with cranes with larger electro-hydraulic grapples and variable frequency drives (VFDs). This work will be completed either in advance of or concurrent with the Project. The adequacy of the runway girders, columns, and bracing will also be investigated and upgraded, as needed, based on revised crane wheel loading and speeds required to process 1,600 tpd.

The existing opening for the fourth unit in the charging floor will be enlarged to accommodate the larger feed hopper. Access around the back of the refuse hopper will be provided by either a platform over the refuse hopper, modified feed hopper design, or through the boiler enclosure.

3.2.2.3 Water Systems

The original design for the Resource Recovery Facility included two 25 gallons per minute (gpm) demineralizers with associated storage tank, neutralization tank, acid and caustic tanks, and pumps, which were replaced by a 50 gpm RO system in 2014. The existing capacity will be inadequate to serve the fourth MWC unit and, accordingly, additional RO capacity will be added. The existing boiler makeup water tank (20,000 gallons) does not provide sufficient storage. In the final design for the Project, the tank will either be replaced with a larger storage tank or the existing tank will be supplemented and the boiler makeup water pumps will be upgraded or supplemented.

The existing sodium hypochlorite chlorination and acid feed systems for the cooling tower are adequate to serve the County's needs after the Proposed MWC Unit is operational.

The existing fire protection water supply system, which consists of a single 2,500 gpm diesel-driven fire pump and a 300,000 gallon tank, will be reviewed to determine compliance with current code, local fire official, and County insurance requirements. This system will be supplemented, if necessary. The existing fire protection piping system will be modified to tie in new standpipe stations and provide protection for the new turbine generator.

Two 100% capacity circulating water pumps will be provided for the Proposed MWC Unit, including the required pump well, intake screens, hoist, etc. Two new cooling tower cells, sized to maintain the cold water temperature needed to support the performance of the new MWC unit and turbine generator, will be installed as part of the Project. New fiberglass reinforced piping will be provided to run from the new circulating water pumps to the new surface condenser and new bypass condenser, then back to the new cooling tower cells. A new settling basin will be constructed to replace the existing settling basin. The location of the new settling basin will be established during final design. A new closed cooling water system will be provided to support the new equipment included in the Project.

The Facility's existing deaerator was sized for a facility of 1,400 tpd; it is too small for the expanded processing capacity of 1,600 tpd. A separate new deaerator, sized for the Project's new 475 tpd boiler, will be provided. The new deaerator's storage tank will be sized to provide 20 minutes of storage. Two new 100% capacity boiler feedwater pumps, one steam driven and one motor driven, will be provided. With regard to the steam/condensate systems, the new MWC unit will be installed as a stand-alone unit and will not be tied to the facility's existing steam/condensate systems.

3.2.2.4 Ash Handling

There will be no modifications to the bottom ash handling system as part of the Project, however, the existing ash residue building's storage capacity is inadequate. A new 10 to 15-foot-wide nonferrous metals storage bay and a 15 to 20-foot-wide fly ash storage bay will be added as an extension to the existing ash residue building. The existing fly ash silo, conditioner, and transport conveyors also are not adequately sized for the addition of the Proposed MWC Unit. A new fly ash conditioner system, sized for the expanded facility (Units 1-4), will be added in the new ash residue building extension, and will replace the existing system. The existing conveying systems for fly ash will be modified to accommodate the new conditioning system location. Conveyance of the fly ash from the Proposed MWC Unit separately to the conditioner system will be considered. A full engineering assessment will be conducted to appropriately modify the fly ash system while minimizing downtime.

Based on a 5-year review of the facility's operating data, the average amounts of bottom ash, fly ash, ferrous metals, and nonferrous metals have been determined as a percentage of waste processed. These percentages will be used to confirm the residue building storage bunker widths (as described above) to provide a nominal 3 days of storage, based on processing 5,200 Btu/lb waste with the four combustion units at 100% load. Storage volume will be based on the volume of free-forming cones and the back stacking of material to a height of 15 feet with the loader. Conveyors will be added, as needed.

3.2.2.5 Electric Power Generation

The Resource Recovery Facility's electrical and instrumentation and control (I&C) systems will be expanded to accommodate the installation of the fourth combustion unit and a second turbine generator unit. The new turbine generator will generate approximately 18 MW at Valves Wide Open conditions and will be provided with its own independent surface condenser, bypass condenser, liquid propane (LP) feedwater heater, and condensate pumping system.

The existing electrical switchyard will be expanded to accommodate the switchyard equipment, 15 kilovolt (kV) switchgear, 5 kV motor control center (MCC), 480 volt switchgear, and the MCC's bus duct and transformer equipment needed to integrate the additional electrical demand and generating capacity attributable to the Project. Space will be provided in the new 5 kV MCC layout to allow for the future addition of up to three additional 5 kV buckets.

3.2.2.6 Air Quality Management

The new APC system will consist of an advanced SNCR system, a dry recirculation type scrubber using hydrated lime, carbon injection, and a fabric filter baghouse. The baghouse will be designed for a nominal air-to-cloth ratio of 2.7:1 for expected operating conditions at 475 tpd and 5,200 Btu/lb. The existing settling basin will be demolished and a new settling basin will be constructed. The new APC equipment will be enclosed, like the existing APC systems. A new Continuous Emissions Monitoring (CEM) shelter and system will be provided for the Project.

The Resource Recovery Facility's existing carbon injection system will either be modified with equipment to support the Project's requirements or the entire existing carbon silo and feed system will be replaced with a larger new carbon injection system sized for the four MWC units in the facility. Activated carbon will be pneumatically injected directly into the flue gas ductwork of the new MWC unit downstream of the economizer. The activated carbon injection train equipment will be located in or adjacent to the skirted area of the carbon storage silo.

The County will evaluate the option of adding a new ammonia storage tank to the existing SNCR system, sized for only the new MWC unit, or replacing the existing ammonia storage tank with a new 20,000 gallon (gross) ammonia storage tank sized for the four MWC units. The SNCR system will be sized for the expanded Facility with the intent of achieving lower NOx emissions across

the three existing MWC units, while also achieving equally low NOx emissions with the Proposed MWC Unit. Advanced SNCR will be provided for the new MWC unit and it will include multiple levels of injection ports.

A new hydrated lime silo will be added for the Project. The hydrated lime will be conveyed from the new lime silo to the new MWC unit.

3.2.2.7 Distributed Control System

A new distributed control system (DCS) will be provided for the Project and integrated with the Resource Recovery Facility's existing DCS system.

3.2.3 External Appearance

A visual impact study was conducted and submitted with the County's PPSA application in 1987. That study found that the Resource Recovery Facility's building (maximum height 165 feet) would not be visible from most observation points outside the boundary of the Certified Site, while the stack (maximum height 275 feet) would be intermittently visible depending on the distance from the facility and the presence of trees as visual obstructions. The conclusions in the visual impact study are consistent with the actual visual impact of the Resource Recovery Facility. The trees and buffers on the Certified Site have limited the facility's visual impact in the surrounding areas. The roof addition for the fourth MWC unit will be several feet higher than the existing RRF roof, but will not substantively increase the maximum height of the Resource Recovery Facility, nor alter the stack height (Figure 3-4). The fourth MWC unit will be enclosed and integrated into the existing building. Consequently, the addition of a fourth MWC unit will not materially alter the physical appearance of the Resource Recovery Facility or its visual impact in off-site areas.

Figure 3-4. Rendering of the Pasco County RRF Including Project Construction

New construction associated with the Project is shown as brighter blue and labelled



Source: Enercon 2021

3.3 Fuel

MSW collected within Pasco County will be used as fuel in the Proposed MWC Unit, except during start-up, shut-down, and upset conditions, when natural gas will be used as a supplemental fuel. The Proposed MWC Unit, like the other MWC units in the Resource Recovery Facility, will use MSW from several general sources, including:

Residential Wastes. Mixed domestic household wastes, including garbage, trash and yard waste that is generated by individuals or families in single or multiple family dwellings.

Commercial Wastes. Wastes generated within the commercial and retail sector. These materials include garbage, trash, packaging, and similar wastes.

Institutional Wastes. Wastes from schools, churches, hospitals, and similar organizations. These materials are similar to residential and commercial wastes. However, they do not include hazardous waste, untreated medical waste, or other wastes that are prohibited under applicable FDEP or USEPA regulations.

Industrial Wastes. Wastes generated from industrial processes and manufacturing operations. However, they do not include hazardous waste, untreated biomedical waste, or other wastes that are prohibited under applicable FDEP or USEPA regulations.

The general composition of the MSW that will be received by the Proposed MWC Unit is provided in Table 3-1; however, the Proposed MWC Unit will be able to successfully process MSW that varies widely from the specific ranges provided in Table 3-1.

Table 3-1. Design MSW Composition and Ranges

Component	Design MSW Composition	Minimum Anticipated Value	Maximum Anticipated Value
Carbon	29.75%	-	-
Hydrogen	3.79%	-	-
Nitrogen	0.50%	-	-
Oxygen	25.06%	-	-
Sulfur	0.20%	-	0.45%
Chlorine	0.40%	-	1.50%
Iron	0.00%	-	-
Water	20.17%	10.00%	40.00%
Ash	20.13%	5.00%	40.00%
Total	100.00%		
HHV, Btu/lb	5,200	3,500	6,000

Notes:

3-Year average HHV is 5,134 Btu/lb

Btu/lb = British thermal units per pound

HHV = higher heat value

MSW = Municipal Solid Waste

As noted above, the Proposed MWC Unit will not burn hazardous waste, untreated biomedical waste, or other materials that are prohibited by the FDEP or USEPA. Natural gas will only be used as needed during start-up, shut-down, and upset conditions.

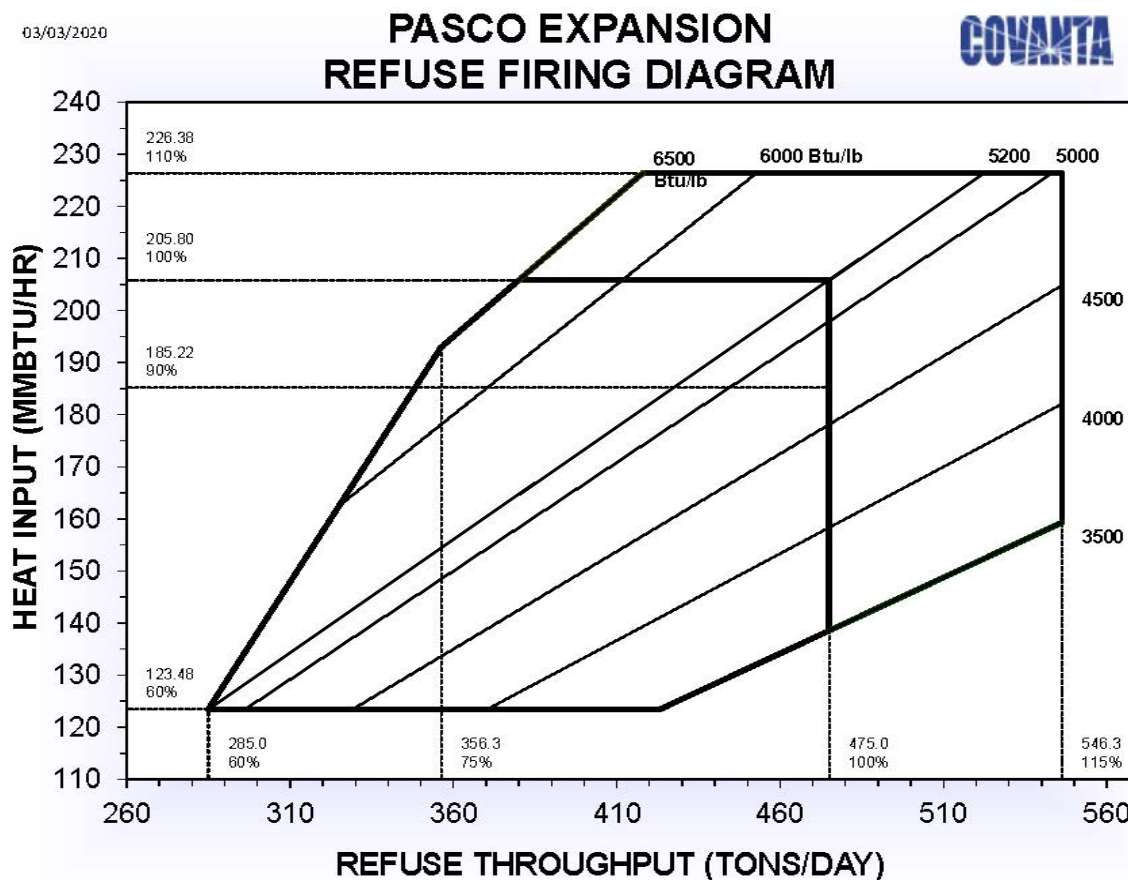
3.3.1 Fuel Supply Stream

The primary fuel burned in the Proposed MWC Unit will be MSW. A detailed description of the proposed fuel supply is provided within the Preliminary Draft Materials Separation Plan found in

Volume II Appendix O. Most of the MSW will be delivered to the Resource Recovery Facility in standard municipal-type packer vehicles, open-bodied roll-off waste dump trucks, and transfer trailers. The Resource Recovery Facility will receive solid waste deliveries 6 days per week, 52 weeks per year.

The design specifications for the MWC unit are based on the use of Martin® GmbH technology. As noted above, the new MWC unit will be designed to process 475 tpd at a heating value of 5,200 Btu/lb HHV and 21 % moisture content by weight (Figure 3-5). The boiler will be fitted with two natural gas burners sized for total heat input equivalent to 40% of heat input from refuse.

Figure 3-5. Pasco RRF Expansion Refuse Firing Diagram



Source: Covanta Pasco 2020

3.3.2 Fuel Storage

The County's Certified Site includes a scale house where all inbound waste delivery vehicles are weighed before they enter the Resource Recovery Facility. After the vehicles are weighed, they enter the Resource Recovery Facility, which has a fully enclosed tipping floor where the vehicles unload their cargo. The facility has 12 tipping bays, each 15 feet wide. Curbing is provided at each tipping bay to prevent vehicles from backing into the solid waste storage pit. The refuse storage pit is 224 feet long, 60 feet wide, 37.5 feet deep from the tipping floor, and 36.5 feet high from the tipping floor to the charging floor. If necessary, the County can stack additional volumes of MSW in the refuse storage pit above the level of the tipping floor. The pit provides sufficient storage capacity to hold the amount of MSW needed to fuel the facility for 3 days, which accommodates

operations during long weekends. If MSW is stacked above the level of the tipping floor, the County can stockpile MSW for longer periods of time. Assuming a waste density of 550 lb/yd³, the refuse storage pit can store up to 8,500 tons of waste. An expansion of the refuse pit is not being proposed as part of the County's Project.

3.4 Air Emissions and Controls

3.4.1 Air Emission Types and Sources

The County's three existing MWC units each exhaust into individual identical flues that are encased within a single stack. The existing stack was designed and built with a fourth flue, in anticipation of the addition of a fourth MWC unit. With the addition of the Proposed MWC Unit, the existing spare flue will need to be modified (design pending) to accommodate the flue gas flow from the new MWC unit, but the flue will still be located within the same common stack.

The emissions from the existing MWC units and the Proposed MWC Unit will be reduced through the application of industry-standard combustion practices coupled with the use of APC systems. The ash handling area, carbon silos, and cooling tower cells will be minor sources of particulate matter emissions. The new lime silo will be located within a building and therefore will not vent to the atmosphere or be a source of particulate emissions. The carbon silos will be equipped with particulate control devices to minimize the vented emissions and the cooling tower cells will be equipped with drift eliminators to minimize the drift droplet loss (droplets that evaporate, are the source of particulate emissions). The only major source of emissions expected from the Project will be from the stack.

3.4.2 Air Emission Controls

The APC systems selected for use in the Proposed MWC Unit consist of state-of-the-art technologies that have been proven to be effective in reducing air pollutant emissions and complying with both federal and state emission limits.

NO_x emissions from the Proposed MWC Unit will be controlled through the use of advanced SNCR systems. Emissions of acid gases, such as SO₂ and hydrogen chloride (HCl), will be reduced by using hydrated lime in a dry recirculation type quench reactor, combined with a fabric filter baghouse. Various metals and particulate matter emissions will also be controlled by using a fabric filter baghouse. A carbon injection system will be operated to control mercury emissions. Good combustion practices (GCP) will be used to reduce products resulting from incomplete combustion, such as CO, volatile organic compounds, and trace organic compounds. The emissions from the Proposed MWC Unit will be monitored and recorded using a Continuous Emissions Monitoring System (CEMS).

3.4.3 Best Available Control Technology

A new BACT analysis has been performed by the County for the Proposed MWC Unit. Emission limits based on BACT will be established by the County for each criteria pollutant for which there will be a significant net increase in emissions, as determined in accordance with the FDEP and USEPA regulations. For this Project, the County intends to reduce the emissions of NO_x from the three existing MWC units and thus ensure that the emissions from the Proposed MWC Unit will not cause a significant net increase in the Resource Recovery Facility's emissions of NO_x. Because the Proposed MWC Unit will not cause a significant net increase in NO_x emissions, the FDEP will set the emission limits for NO_x without performing a BACT analysis for this pollutant. For all of the other criteria pollutants for which there will be a significant net increase in emissions, it is anticipated that the FDEP will set the applicable emission limits based on the BACT analysis contained in Volume III.

3.4.4 Design Data for Control Equipment

A summary of the proposed control technologies designed to comply with BACT and the associated emission limits for the Proposed MWC Unit is provided in Table 3-2. Volume III of the application contains an air construction permit application (i.e., PSD permit) for the Proposed MWC Unit. The County's PSD application includes an assessment for controlling certain other air pollutants, in addition to the ones provided in Table 3-2. The County's assessment demonstrates that the County will minimize adverse environmental impacts through the use of good engineering practices, considering the state of available control technologies for these compounds

Table 3-2. Proposed Design/Control Technologies and Emission Limits for Project

Pollutant	Emission Limit	Design/Control Technology
SO ₂	24 ppmvd ¹ (24-hour)	CDS/FF
PM ₁₀	30 mg/dscm ^{1,2}	FF
PM _{2.5}	30 mg/dscm ^{1,2}	FF
MWC Acid Gases (SO ₂ /HCl)	HCl – 20 ppmvd (24-hour) ¹	CDS/FF
MWC Organics (Dioxins/Furans)	10 ng/dscm ¹ (total mass)	ACI, CDS/FF
Sulfuric Acid Mist (H ₂ SO ₄)	5 ppmvd ¹	CDS/FF
Greenhouse Gases (as CO ₂ e)	210,459 (12-month rolling)	Combustion Improvements

Notes:

ACI = Activated Carbon Injection

CDS = Circulating Dry Scrubber

GCP = Good Combustion Practice

dscm = dry standard cubic meter

FF = Fabric Filter

mg/dscm = milligrams per dry standard cubic meter

MWC = Municipal Waste Combustion

PM_{2.5} = Particulate Matter ≤ 2.5 microns

PM₁₀ = Particulate Matter ≤ 10 microns

ppmvd = parts per million by volume, dry

SO₂ = Sulfur Dioxide

¹Limits shown reflect concentrations corrected to 7% oxygen;

²PM₁₀ and PM_{2.5} emissions include condensable matter

³Maximum estimated annual emissions reflect a single MWC unit with a nominal rated MSW processing capacity of 475 tpd

3.4.5 Design Approach

The basic design approach for the Proposed MWC Unit's APC equipment consists of the following:

Advanced SNCR for controlling NO_x emissions.

A dry recirculation type quench reactor/baghouse using hydrated lime for minimizing emissions from acid gases, such as SO₂, HCl, and fluorides, as well as various metals and particulates.

A carbon injection system to control mercury emissions.

Compliance with GCP to reduce emissions resulting from incomplete combustion, including volatile organic compounds, trace organic compounds, and CO.

Each of these APC systems will be designed to comply with the applicable air quality regulations and BACT requirements.

3.5 Plant Water Use

The Proposed MWC Unit will use the same sources of plant process water and cooling water as the three existing MWC units in the Resource Recovery Facility. The primary source of process water and cooling water for the RRF currently is groundwater from a permitted industrial supply well. Treated effluent from the County's Shady Hills Wastewater Treatment Plant (WWTP) augments the industrial well supply. The same approach will be used at the RRF after the Proposed MWC Unit becomes operational.

The County has not yet completed the final design for the Proposed MWC Unit and the associated water systems. Consequently, the following discussion of the County's water supply needs is based on approximate amounts and is subject to change when the final design is prepared.

Adequate quantities of reclaimed water will be available from the Shady Hills WWTP to serve the reclaimed water needs of the Resource Recovery Facility, including the Proposed MWC Unit. The Shady Hills WWTP produces approximately nine million gallons per day (9 mgd) of treated effluent. Thus, the Shady Hills WWTP can provide the RRF with a sufficient quantity of treated effluent to meet the primary needs of the Proposed MWC Unit. However, the RRF cannot use treated effluent exclusively in the RRF because the effluent will cause corrosion and other problems in the RRF.

As noted above, the County uses an industrial supply well to augment its supply of treated effluent. The groundwater from the well is blended with the treated effluent to produce water that is of sufficient quality to be used in the RRF. Although the County is committed to using the lowest quality water to meet its needs at the RRF, it is not feasible to use treated effluent to meet all of the RRF's water supply needs. Blending the groundwater with the treated effluent allows the County to maximize its use of treated effluent while simultaneously minimizing its use of better quality water.

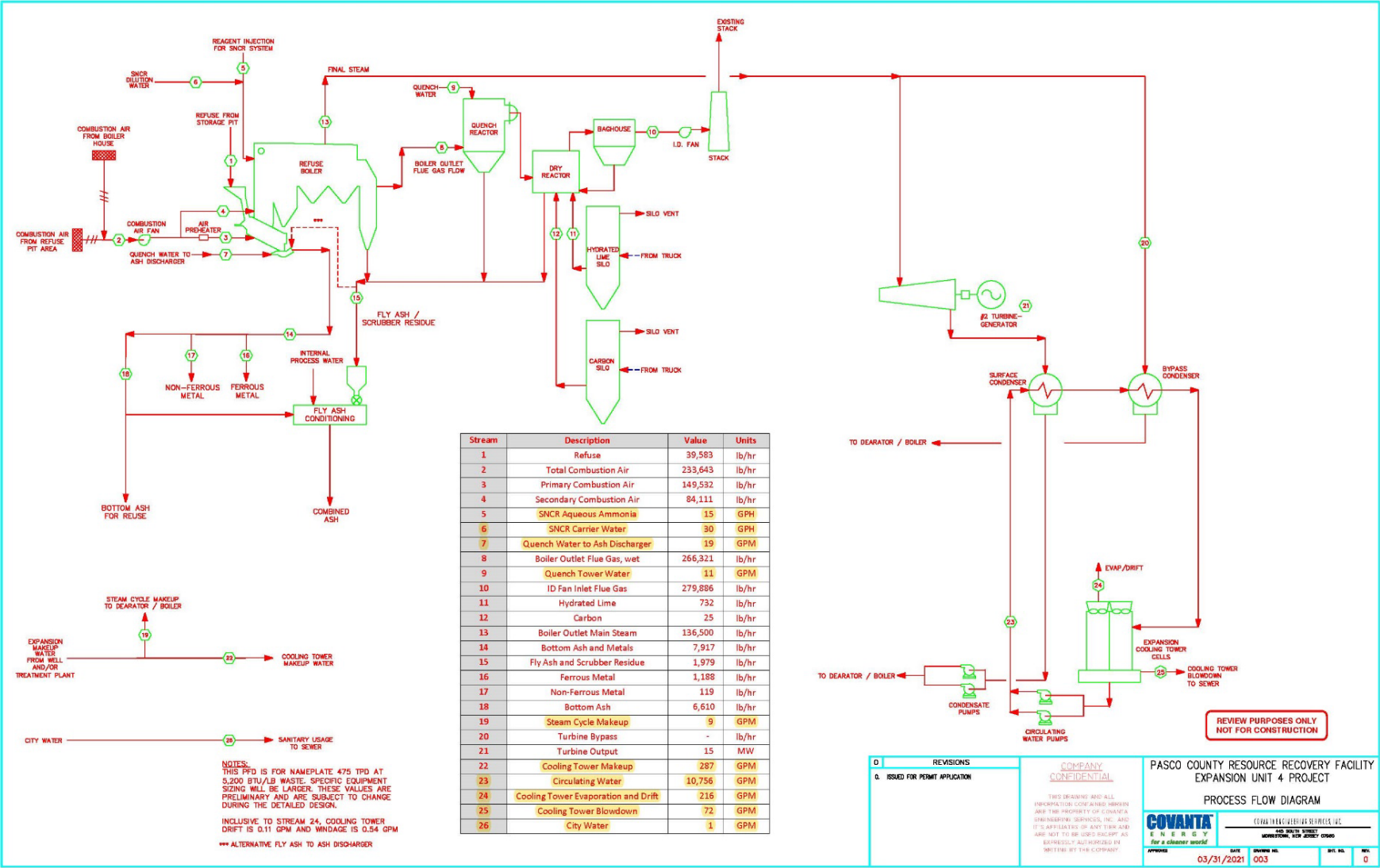
The Conditions of Certification (Section B.II.S) restrict the County's use of groundwater. Withdrawals are limited to a permitted maximum withdrawal rate of 720,000 gpd on an annual average basis, 720,000 gpd on a peak month basis, and 1,150,000 gpd on a daily maximum basis. Over the last five years, groundwater withdrawals have averaged approximately 350,000 gpd. After the Proposed MWC Unit becomes operational, the RRF's total consumption of groundwater will increase to approximately 563,000 gpd. Nonetheless, when the RRF is operating with four MWC units and processing 1,600 tpd of solid waste, the RRF's use of groundwater will still be significantly less than the quantity that was authorized by the Siting Board in 1988 for four MWC units processing 1,200 tpd of solid waste.

The County believes the previously approved groundwater allocation is sufficient to meet the County's water supply needs for four MWC units. The County is not requesting an increase in the groundwater allocation provided in the Conditions of Certification.

Wastewater generated by the Project will be discharged directly to the WWTP. Potable water for the Expansion will be provided by the same utility connection that currently serves the Resource Recovery Facility. Potable water will be used for equipment cleaning and the personnel areas of the plant (e.g., washrooms, locker room). No plant water will be discharged directly to surface waters or groundwater.

A preliminary process flow diagram for the Project is shown on Figure 3-6. It includes estimated flow rates for some of the major water streams.

Figure 3-6. Preliminary Process Flow Diagram for Expansion Unit 4



3.5.1 Heat Dissipation System

3.5.1.1 System Design

The Proposed MWC Unit will use a cooling tower as a heat dissipation system. As noted in Section 3.5, the Proposed MWC Unit will use the same sources of cooling water as the existing Resource Recovery Facility (i.e., industrial supply well groundwater augmented by treated effluent from the Shady Hills WWTP). Wastewater generated by the Proposed MWC Unit will be discharged directly to the WWTP. No plant water will be discharged directly to surface or groundwater bodies.

The preliminary process flow diagram for the Project shown above on Figure 3-6 also includes estimated flow rates for some of the major water streams.

3.5.1.2 Source of Cooling Water

Cooling tower makeup water for the Proposed MWC Unit will be supplied from industrial supply well groundwater augmented with treated effluent from the WWTP. The quantity that will be needed for cooling tower makeup water is estimated to be 413,000 gallons per day (gpd). Approximately 311,000 gpd will be needed to offset losses due to evaporation and drift. The remainder (102,000 gpd) will be lost as cooling water blowdown.

To maximize utilization of effluent from the WWTP, Pasco County installed a phosphate removal system at the WWTP in 2015. The system is dedicated to the supply line serving the Resource Recovery Facility and was partially funded with a SWFWMD cooperative funding grant. The system has reduced the amount of phosphate in the cooling tower, allowing the Resource Recovery Facility to maximize the consumption of reclaimed water.

3.5.1.3 Dilution System

No dilution water will be required for the Project.

3.5.1.4 Blowdown

Flows from blowdown will come from two sources: boiler blowdown and cooling tower blowdown.

Boiler blowdown will be two types: continuous and intermittent. Continuous blowdown will be accomplished with a flow control valve. The valve regulates the blowdown flow rate so that water in the boiler is maintained at a constant total dissolved solids (TDS) concentration. Manual blowdown will be performed once per day to remove sludge accumulations from the lowest point in the boiler. Cooling tower and boiler blowdown will be discharged to the WWTP.

3.5.2 Domestic/Sanitary Wastewater

It is anticipated that the Project would result in the addition of 10 new employees. The additional sanitary sewer flow associated with new employees is insignificant (approximately 1,400 gpd). New employees will use the existing personnel service areas at the Facility (e.g., locker rooms, washrooms) which will be upgraded within the existing RRF to accommodate the new employees.

3.5.3 Potable Water Systems

The existing potable water supply at the Resource Recovery Facility is provided through a utility connection with Pasco County's utilities department. Additional potable water needs associated with the Project will be satisfied by using the existing potable water system at the Resource Recovery Facility. The increased sanitary water usage is estimated to be 1 gpm or 1,440 gpd.

3.5.4 Process Water Systems

Additional quantities of process water will be required to operate the Proposed MWC Unit. The main uses of process water will be for boiler makeup water and the APC system. The existing

Resource Recovery Facility is served by a 50 gpm RO process water treatment system. The existing treatment capacity appears to be inadequate for the Proposed MWC Unit. Additional RO capacity will be required. The capacity of the proposed RO system is currently being evaluated. It is likely that the existing RO system will be expanded by installing an addition RO treatment train. The process water treatment system will be designed to allow for makeup water from the existing wells or treated WWTP effluent to be used. Reject water (brine) from the RO system will continue to be used as makeup water in the ash discharger (quench tank).

A new boiler deaerator and feedwater system will be provided. The system will be dedicated to the Proposed MWC Unit and will not be tied into the existing boiler feedwater system. The deaerator will supply de-aerated water to the new boiler via two new feedwater pumps

The capacity of the existing 20,000-gallon boiler makeup storage tank is also inadequate and will need to be upgraded. An evaluation is currently being performed to determine whether to supplement the existing tank with a second tank or, in the alternative, to replace the existing storage tank and makeup water pumps with a new larger tank.

A new boiler chemical feed system will also be provided for the Proposed MWC Unit. The chemical feed system will supply chemicals to the boiler that will reduce scaling and corrosion. The chemical feed system will use plant service water for chemicals dilution. The required capacity of the boiler chemical feed system is currently being evaluated.

Process wastewater generated by the Proposed MWC Unit will be reused as much as possible. The main uses will be as ash quench water, the ash discharger of the boiler/stoker system, and in the APC system.

No discharge of process wastewater to surface waters or groundwater will be allowed.

3.5.4.1 Process Water Requirements

Additional quantities of process water will be required to operate the Proposed MWC Unit. The main uses of process water will be for boiler makeup water, the APC system, ash quench water, etc. The estimated process water requirement for the Project is approximately 100,000 gpd. A summary of the individual process water requirements for each system is provided in Table 3-3.

Table 3-3. Major Process Water Users

Equipment/System	Process Water Quantity Estimates	
	(gpm)	(gpd)
Boiler Makeup Water	9	12,960
Quench Water to Ash Discharger	19	27,360
Quench Tower Water	11	15,840
SNCR Carrier Water	30	43,200
Total	69	99,360

Notes:

gpd = gallons per day

gpm = gallons per minute

SNCR = selective non-catalytic reduction

3.5.4.2 Process Water Sources

The Proposed MWC Unit will use the same source of plant service water as the existing Resource Recovery Facility, which is industrial supply well groundwater augmented by treated effluent from the WWTP.

3.5.4.3 Process Wastewater Disposal

Process wastewater generated by the Proposed MWC Unit will be reused as much as possible. No discharge of process wastewater to surface waters or groundwater will be allowed.

3.5.4.4 Boiler Makeup Water Treatment

The existing Resource Recovery Facility is served by a 50 gpm RO process water treatment system. As noted above, the existing treatment capacity of the RO system appears to be inadequate for the Proposed MWC Unit. Additional RO capacity will be needed. The capacity of the proposed RO system is currently being evaluated. The process water treatment system will be designed to allow for makeup water from the existing wells or treated WWTP effluent to be used.

A new boiler deaerator and feedwater system will be provided. The system will be dedicated to the Proposed MWC Unit and will not be tied with the existing boiler feedwater system. The deaerator will supply de-aerated water to the new boiler via two new feedwater pumps.

The capacity of the existing 20,000-gallon boiler makeup storage tank is also inadequate and will need to be upgraded. An evaluation is currently being performed to determine whether to supplement the existing tank with a second tank or, in the alternative, to replace the existing storage tank and makeup water pumps with a new larger tank.

3.5.4.5 Boiler Water Chemical Feed System

A new boiler chemical feed system will also be provided for the Proposed MWC Unit. The chemical feed system will supply chemicals to the boiler that will reduce scaling and corrosion. The chemical feed system will use plant service water for chemicals dilution.

3.5.4.6 Sampling System

Sampling will be conducted in compliance with, and as outlined in, the Industrial User Pretreatment Permit (Permit No. 2008-001) issued November 23, 2020, by Pasco County (Volume II, Appendix P) for parameters provided in Table 5-1. Sampling will occur at Outfall 001. Sampling will be conducted monthly (except as noted below) and it will comply with the following permit requirements:

Flow rate, temperature, and pH measurements need to continue throughout the discharge duration.

Samples will be taken when the facility is in operation and during the discharge periods.

Handling and preservation of collected samples and laboratory analyses of samples will be performed in accordance with 40 CFR Part 136, and amendments thereto, unless specified otherwise in the monitoring conditions of the permit.

Temperature, pH, and flow will be reported as maximum and minimum for the month only. The pH monitoring system will be checked for accuracy at least monthly. Corrective actions will be taken whenever the pH monitor shows an error greater than 0.2 S.U.

The temperature monitoring system will be checked for accuracy at least semiannually.

Corrective actions will be taken whenever the temperature monitor shows an error greater than 1°F.

The data reported in the quarterly report will only reflect normal plant operations; data collected during nondischarge, instrument repairs, or calibration do not need to be reported, but must be maintained on file.

3.6 Chemical and Biocide Waste

Both corrosion inhibitors and oxygen scavengers will be used in the boilers and in the cooling tower(s) at the Resource Recovery Facility. Blowdown from the boilers and cooling tower will be

treated at the Shady Hills WWTP in compliance with the Industrial User Pretreatment Permit (Permit No. 2008-001) issued November 23, 2020 (Appendix P). The exact flow diagram for the chemical waste system will be developed by the contractor selected to install this system for the County. This system will be installed inside the Resource Recovery Facility in an area where there will be a concrete floor and containment systems to ensure that there is no potential for any discharges or releases into the environment.

A new chemical feed system with containment will be installed within the RRF to supply water conditioning chemicals to the boiler water and feedwater for the Proposed MWC Unit. These chemicals will minimize corrosion and prevent scale formation. The boiler conditioning system will feed a solution to the boiler drum for corrosion minimization, pH control, and required hardness of the water quality. The oxygen scavenger feed system will feed a solution into the deaerator storage tank to remove oxygen from the boiler feedwater. Continuous boiler blowdown will be recovered as flash stream to the deaerator. Blowdown from the boiler and cooling tower will be discharged to the WWTP.

3.7 Solid and Hazardous Waste

The following solid waste management activities currently occur on the Certified Site at the West Pasco Solid Waste Management Complex:

- Scalehouse operations

- Solid Waste combustion at the Resource Recovery Facility

- Metals recovery in the Ash Storage Building of the Resource Recovery Facility

 - A regional metals cleaning operation

- Ash disposal in the Ash Monofill

- Engineered Aggregate processing within the Ash Monofill (including ash washing)

- Solid Waste Disposal in the Solid Waste Landfill

- Construction and demolition (C&D) disposal within the Class III Landfill

- Yard waste processing

- White goods collection and recycling

- Household hazardous waste (HHW) collection

- Recycled materials processing

- Stormwater collection and treatment

- Landfill gas monitoring

- Groundwater monitoring

- Landfill leachate collection and transport

- Waste tire collection and processing

The solid waste management operations for the Proposed MWC Unit will be substantially the same as the current operations on the Certified Site.

The Proposed MWC Unit will combust MSW and thereby produce noncombustible by-products, fly ash, bottom ash, and siftings. The ash residue removal system for the Proposed MWC Unit will be designed to remove these materials from the combustion system for beneficial reuse or disposal in the Ash Monofill or the Class I landfill. The bottom ash and siftings from the new MWC units will be water quenched and dewatered. Redundant capacity for the main ash residue conveyors will be provided. Fly ash removal conveyors will be supplied to transport fly ash from the boilers, dry scrubbers, and baghouse to the water quench tanks. Provisions will be made for the separate removal of fly ash, if required in the future.

The ash residue generated from the combustion process will be placed in the Ash Storage Building at the Resource Recovery Facility. Stored ash residue will then be loaded within the building, using a front-end loader into top loading trucks, and transported to an appropriate

location for beneficial use. In the alternative, the ash will be transported to the County's on-site landfill for disposal.

No other solid wastes will be produced during the normal operation of the Proposed MWC Unit, except for minimal amounts of office and lunchroom trash. Because the Resource Recovery Facility is designed to process solid waste, the facility will dispose of the trash generated by the Proposed MWC Unit. C&D debris generated during construction will either be recycled or disposed of in the on-site Class III landfill.

3.7.1 Ash Management Plan

Two types of ash, bottom ash and fly ash, will be produced by the Proposed MWC Unit and managed at the Resource Recovery Facility. Bottom ash will be generated from the boiler grate. Fly ash sources will include the boiler convection hopper, the two superheater hoppers, the economizer hopper, and the baghouse hoppers. Fly ash that has reacted with lime from the scrubber reactor vessel also will be produced. Some unreacted lime will be included in the ash from the reactor vessel hopper and the baghouse hoppers. There will also be a small amount of carbon included in the ash from these hoppers as a result of operating the carbon injection system as part of the APC system.

The fly ash from these sources will be transferred to the fly ash conditioner system within the ash storage building by a series of screw conveyors and drag chain conveyors. Ash flow from the various hoppers that are prone to collect large amounts of ash will be controlled by automatic gates to prevent overloading the screw conveyors. Some hoppers will have double automatic gates where the top gate has to close before the bottom gate opens to drop the ash into the screw. This not only helps prevent conveyor overloading and trip-out, but precludes pulling air into the hoppers. The baghouse hoppers will have rotary air locks that serve the same purposes. The bottom ash will be deposited directly into the ash discharger from the grate by the clinker roller.

The bottom ash from one or more MWC units will be transported by conveyor to the scalper building where the mixed ash will be processed by a grizzly scalper to remove the material that is more than 10 inches in length or width. Material that is less than 10 inches in length or width will fall through the grizzly scalper onto a vibrating feeder conveyor and be fed in a controlled manner onto an inclined belt conveyor. Material will be fed in a steady stream, rather than being dropped in batches, to avoid damaging the belt and/or overloading the conveyor.

The inclined belt is a continuous fabric-impregnated rubber belt that will carry the material to the residue storage building, where a vibrating distribution conveyor will discharge the materials. A magnet will be used to remove ferrous and non-ferrous metal from the ash residue before it is discharged. Other metals (such as rare earth metals) may be recovered in the future, if the County deems it cost-effective. The ash residue may be beneficially used as road base or as a substitute for aggregate material. Ash that is not beneficially used will be periodically hauled to the County's Ash Monofill or Class I landfill for disposal.

Ash is periodically loaded within the ash storage building by using a front-end loader into top loading trucks. The loaded trucks typically travel to the active ash disposal cell at the Ash Monofill, where they are off-loaded. Ash hauling operations occur between 7 a.m. and 6 p.m., Monday through Friday, or more frequently as needed.

In 2018, the average weight of the ash residue and recovered metals from the Resource Recovery Facility were approximately 27.5% of the weight of the MSW received at the facility. Based on the expected total facility throughput of 1,600 tpd, the average amount of residue and ferrous material expected to be generated by the facility (Units 1-4) in the future is estimated be approximately 20 tons per hour. Given this throughput, it is anticipated that replacement and/or modifications to the existing ash handling and metals recovery equipment will be needed. These modifications will

include additional residue storage with a new 32-foot-wide building extension and bay(s) on the east side of the existing ash residue storage building. These modifications will provide a minimum of 3 days of storage capacity by adding a new 10-foot-wide nonferrous metals storage bay and a 20-foot-wide fly ash storage bay within the ash residue building extension.

The existing fly ash silo, conditioner, and transport conveyors are not adequately sized to handle the fly ash generated by the Proposed MWC Unit. A new fly ash conditioner system, sized for the expanded facility (Units 1-4), will be added in the new extension to the ash residue building. The fly ash conditioner system will replace the existing system. Conveying systems for fly ash will be modified to accommodate the location of the new conditioning system. Conveyance of the fly ash from the Proposed MWC Unit separately to the conditioner system also will be considered. A full engineering assessment will be conducted to appropriately modify the fly ash system while minimizing downtime.

3.7.2 Hazardous Waste Management Plan

No hazardous wastes will be generated by the Proposed MWC Unit. No hazardous waste will be knowingly accepted for processing with the MSW. Therefore, there will be no hazardous waste to be managed or disposed of during normal operations.

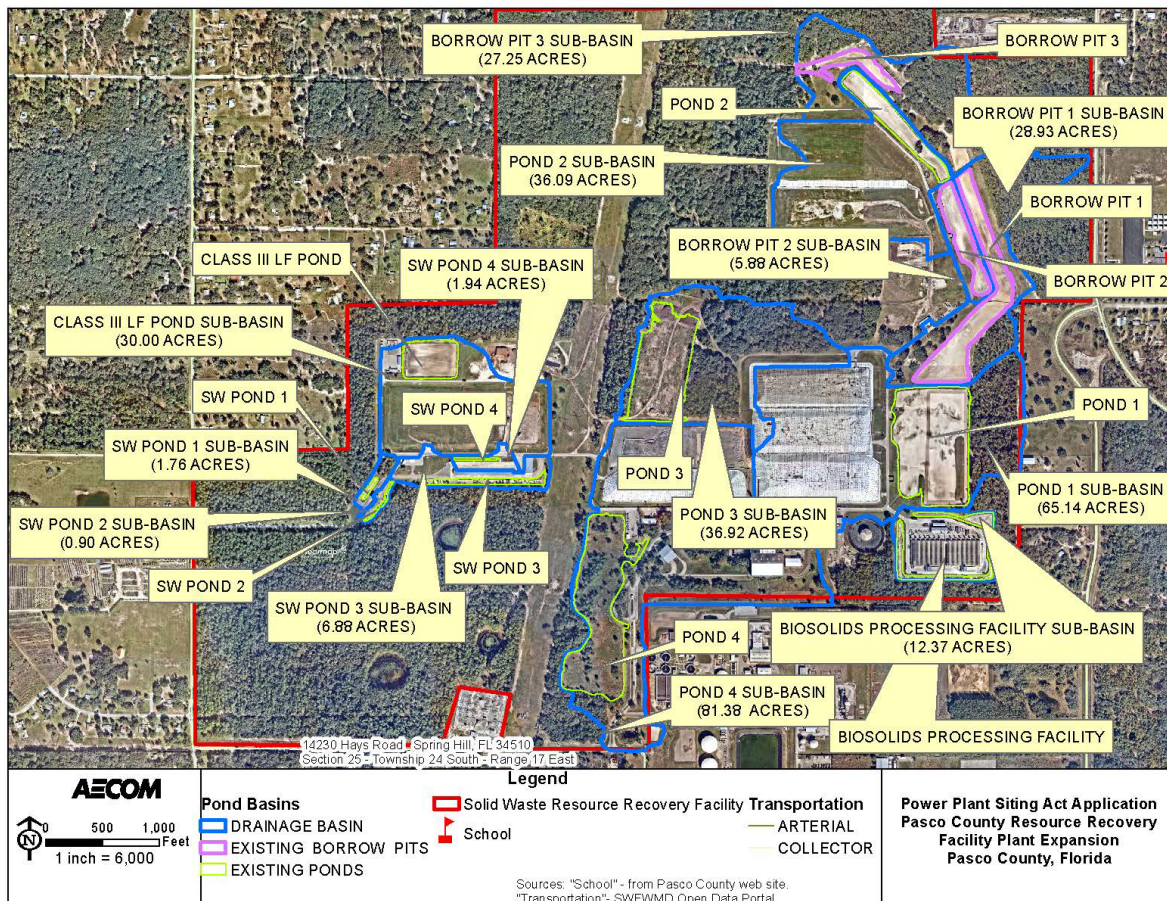
The procedures that will be followed if apparently hazardous materials are delivered to the Certified Site and identified by scale house personnel are described in the RRF's operations plan, as noted in Section 5.4.2, below. The operation plan also includes a description of the procedures that will be followed if apparently hazardous materials are identified by the crane operators.

3.8 On-Site Drainage System

3.8.1 Pre-Development Site Conditions

The existing drainage systems at the Resource Recovery Facility and adjacent landfill comprise 10 dry retention ponds and 3 borrow pit areas that receive stormwater runoff from a contributing drainage area encompassing approximately 335.44 acres. The 335.44-acre contributing drainage area is sub-divided into 13 sub-basins. The 10 dry retention ponds were authorized for construction under permits issued by FDEP. Three of the sub-basins contribute stormwater runoff to man-made low depressions that appear to be borrow pits. The drainage sub-basins and the existing dry retention ponds and borrow pits are shown on Figure 3-7 and descriptions are provided in Table 3-4.

Figure 3-7. Pasco County RRF Drainage Map



Source: Data from Pasco County

Table 3-4. Existing Condition Drainage Sub-basins

Drainage Sub-basin		Dry Retention Pond Name	Borrow Pit Name	Facility
Name	Area (acres)			
Pond 1 Sub-basin	65.14	Pond 1		Landfill
Pond 2 Sub-basin	36.09	Pond 2		Landfill
Pond 3 Sub-basin	36.92	Pond 3		Landfill
Pond 4 Sub-basin	81.38	Pond 4		Landfill and Resource Recovery
Class III LF Pond Sub-basin 1	30.00	Class III LF Pond		Class III Landfill
SW Pond 1 Sub-basin	1.76	SW Pond 1		Class III Landfill
SW Pond 2 Sub-basin	0.90	SW Pond 2		Class III Landfill
SW Pond 3 Sub-basin	6.88	SW Pond 3		Class III Landfill
SW Pond 4 Sub-basin	1.94	SW Pond 4		Class III Landfill
Biosolids Pond Sub-basin	12.37	Biosolids Pond		Biosolids
Borrow Pit 1 Sub-basin	28.93		Borrow Pit 1	Borrow Pit at Landfill
Borrow Pit 2 Sub-basin	5.88		Borrow Pit 2	Borrow Pit at Landfill

Drainage Sub-basin		Dry Retention Pond Name	Borrow Pit Name	Facility
Name	Area (acres)			
Borrow Pit 3 Sub-basin	27.25		Borrow Pit 3	Borrow Pit at Landfill
Total	335.44			

Notes:

LF = Landfill

The first four ponds identified as Ponds 1 through 4 were designed, permitted, and constructed when the existing power plant and landfill were constructed in the late 1980s under the PPSA. These were the first four ponds constructed at the facility, followed by the rest of the ponds listed in the order they were constructed. The pond identified as the Class III LF Pond was the next pond to be constructed at the facility, in 2010, following the original four ponds. The four ponds identified as SW Pond 1 through SW Pond 4 were constructed at the facility in 2012. The latest pond to be constructed at the facility was the Biosolids Pond in 2017. The three borrow pits receive stormwater runoff from sub-basins where no constructed improvements associated with the landfill and RRF are located. No impervious surfaces are located within the three sub-basins that contribute stormwater runoff to the three borrow pits.

The proposed improvements to the RRF will be in the Pond 4 Sub-basin that encompasses 81.38 acres and contributes stormwater runoff to Pond 4. Therefore, only details pertaining to Pond 4 are provided in this Application. Pond 4 has a storage capacity of 61.21 acre-feet from a pond bottom elevation of 41 feet to a top of bank elevation of 46 feet. The stage/storage relationship for Pond 4 in 1-foot increments is provided in Table 3-5.

Table 3-5. Retention Pond 4 Stage/Storage Summary

Stage (feet)	Area (acres)	Storage (acre-feet)
41	4.12	0.00
42	8.72	6.42
43	14.02	17.79
44	14.36	31.98
45	14.71	46.32
46	15.06	61.21

Pond 4 does not have an outfall structure. Stormwater collected in the pond leaves by infiltration or evaporation. Drainage calculations in the original and subsequent permit applications indicate that stormwater during the 25-year, 24-hour storm event overtops the banks of Pond 4 at the southwest corner of the pond and flows toward the Duke powerline easement that bisects the Certified Site. Very little surface flow occurs on the Certified Site because of the very porous sandy soils. The primary soil group throughout the facility is NRCS rated "Type A" soils. "Type A" soils are those that provide the greatest amount of infiltration. Due to the "Type A" soils and the collection of stormwater runoff in the 10 dry retention ponds and 3 borrow pits, no stormwater runoff leaves Pond 4, except during the most severe and infrequent rainfall events such as the 25-year, 24-hour storm event. After the final design for the Project is prepared, a post-certification submittal can be prepared and submitted to the Department, if necessary, to address the infrequent Pond 4 discharges.

3.8.2 Post-Development Site Conditions

The stormwater management system for the Proposed MWC Unit must be designed to meet the water quantity and water quality regulatory criteria of the FDEP and SWFWMD. The water quantity criteria provide that the peak discharge rate from the proposed Project will not exceed the pre-development discharge rate prior to construction of the Project for the 25-year, 24-hour storm event. In addition, the Project is located within a watershed that is considered to be "volume sensitive." Consequently, the proposed Project cannot increase the volume of water being discharged during the 25-year, 24-hour design storm compared to the runoff volume generated at the site prior to construction of the Project. The water quality criteria provide that the stormwater management pond must contain a water quality treatment volume equal to or greater than 1 inch of runoff over the contributing drainage area. Further, the water quality volume and water quantity volume must fully recover and completely infiltrate within 72 hours.

When the Resource Recovery Facility was originally designed, permitted, and constructed, the contributing drainage area to Pond 4 was assumed to be 153.02 acres. The original design allows for the expansion of the landfill and other areas as development progresses. The current contributing drainage area to Pond 4 is 81.38 acres, as shown on Figure 3-5 and provided in Table 3-4. However, the contributing drainage area to Pond 4 could potentially increase and approach 153.02 acres, as assumed in the original design, if the landfill expands and development progresses throughout the entire Certified Site in the future. Therefore, the current design calculations for the Proposed MWC Unit are based on a contributing drainage area of 153.02 acres to Pond 4.

The FDEP and the SWFWMD require that facilities located in volume-sensitive areas provide a retention volume that is at least equivalent to the difference in runoff volumes between the pre-developed and post -developed conditions and discharge no more than the peak runoff discharge rate for the 25-year, 24-hour storm event. The original design calculations for Pond 4 show that the 153.02-acre contributing drainage area prior to the construction of improvements on the Certified Site generated a total runoff volume of 46.81 acre-feet of stormwater and discharged 135.28 cubic feet per second (cfs) for the 25-year, 24-hour storm event. The original design calculations assumed the future development would produce a runoff volume of 69.68 acre-feet from the 153.02-acre contributing drainage area for the 25-year, 24-hour storm event. The difference between the post development runoff volume of 69.68 acre-feet and the pre-development runoff volume of 46.81 acre-feet is 22.87 acre-feet and is the required water quantity retention volume. The required water quality retention volume is equivalent to 1 inch over the 153.02-acre contributing drainage area, which is 12.75 acre-feet. Therefore, the required storage volume in Pond 4 is the water quantity volume of 22.87 acre-feet plus the required water quality volume of 12.75 acre-feet, which equals 35.62 acre-feet. Pond 4 provides a storage volume of 61.21 acre-feet (Table 3-4), which is greater than the required storage volume of 35.21 acre-feet.

The peak water surface elevation in Pond 4 for the 25-year, 24-hour storm event was determined to be 46.08 feet in the original calculations, which is slightly above the top of bank elevation of 46.0 feet. Therefore, water overtops the Pond 4 top of bank with a peak discharge rate of 7.50 cfs. The allowable discharge rate for the 25-year, 24-hour storm event is 135.28 cfs, which is the peak pre-development discharge rate. Therefore, the peak discharge rate leaving Pond 4 is approximately 18 times less than the allowable discharge rate.

Additional development occurred within the contributing drainage area to Pond 4 after the Resource Recovery Facility was constructed in the late 1980s. The latest development is a new warehouse building that was constructed in 2017. The drainage calculations in the permit application to the FDEP for the warehouse facility indicates the post-development runoff volume for the 25-year, 24-hour storm event increased from the 69.68 acre-feet originally estimated to 76.50 acre-feet. The difference between the post-developed runoff volume of 76.50 acre-feet and

the pre-development runoff volume of 46.81 acre-feet is the required water quantity volume of 29.69 acre-feet. The required water quality volume remains at 12.75 acre-feet. Therefore, the current required storage volume in Pond 4 meets the required water quantity volume of 29.69 acre-feet plus the required water quality volume of 12.75 acre-feet, which equals 42.44 acre-feet. The permit criteria are met because the required storage volume of 42.44 acre-feet is less than the available storage volume of 61.21 acre-feet.

The drainage calculations in the permit application for the warehouse building included a drawdown recovery analysis demonstrating the pond recovers the required storage volume of 42.44 acre-feet within 72 hours following a 25-year, 24-hour, storm event. Pond 4 is located in an area with rapidly draining sandy soils and a low seasonal high groundwater elevation estimated to be at 37 feet. The infiltration rate determined for Pond 4 is 0.21 feet per hour, as documented in the drainage calculations in the original permit application. The required storage volume for Pond 4 of 42.44 acre-feet is provided at elevation 44.70 feet. The drawdown analysis in the permit calculations reduced the 0.21 feet per hour infiltration rate to 0.11 feet per hour to apply a factor of safety of approximately 2 and determined that the required storage volume of 42.44 acre-feet infiltrates and fully recovers from elevation 44.70 feet to just below the pond bottom elevation of 41.0 feet in 33.6 hours.

An increase in the peak discharge for the 25-year, 24-hour storm event is expected because the runoff volume in the contributing drainage area to Pond 4 increased with the addition of impervious surfaces since the 1980s when the facility was originally constructed. No attempts have been made in the subsequent permit applications to quantify the slight increase in the peak discharge rate for the 25-year, 24-hour storm event because the pre-developed allowable discharge rate of 135.28 cfs, as determined in the original analysis for the Resource Recovery Facility, is 18 times greater than the original post-development discharge rate of 7.5 cfs.

3.8.3 Basin Design

The amount of new impervious area being added to for this Project has not yet been determined. Therefore, the increase in stormwater runoff within the contributing drainage area to Pond 4 cannot be determined at this time. However, based on the most recent drainage calculations for the recently constructed warehouse facility, the required storage volume of 42.44 acre-feet is 18.77 acre-feet less than the available storage volume of 61.21 acre-feet. Consequently, Pond 4 can be used without expansion or modification as long as the new impervious surfaces for this Project do not increase the runoff volumes for the 25-year, 24-hour storm event by more than 18.77 acre-feet. Increasing the runoff volume by this amount would require adding a substantial amount of impervious area (i.e., more than 20 acres), which is not anticipated for this Project. Therefore, Pond 4 is expected to have the capacity to meet the water quantity and water quality requirements for this Project. If this issue needs to be addressed in more detail, additional information concerning the new impervious areas can be submitted to the FDEP after the final design of the Project is prepared. This information can be reviewed and approved as a post-certification submittal, in compliance with the Conditions of Certification.

3.9 Materials Handling

Construction equipment, new boiler components, and other building materials will be delivered to the Project Site by truck. The Pasco County Resource Recovery Facility is accessible by modern roadways, which are paved and suitably maintained to handle the construction traffic associated with the construction of the Project. The construction laydown area will be approximately 0.7 acres and will be located in the area shown on Figure 3-3. Drainage of the laydown areas will be managed by using Best Management Practices (e.g., hay bales) and the existing swales and infrastructure.

Once construction of the Project is complete, no heavy equipment (e.g., cranes, boilers, or other large plant components) will be transported to the Certified Site, unloaded, stored, or moved around the site to support the normal operation or maintenance of the Proposed MWC Unit. The room in which the new steam turbine generator is housed will have an overhead crane for maintenance of the turbine generator.

The existing settling basin will be demolished and a new settling basin will be constructed in an appropriate location. The new APC equipment for the Proposed MWC Unit will be enclosed, like the APC systems serving the existing MWC units.

As noted above, the County will evaluate the option of adding a new ammonia storage tank , which will be sized to serve only the Proposed MWC Unit. In the alternative, the County may replace the existing ammonia storage tank with a new 20,000-gallon (gross) ammonia storage tank sized to serve the SNCR systems for all four MWC units

A new hydrated lime silo will be added for the Project. The hydrated lime will be conveyed from the new lime silo to the new MWC unit. Lime for the acid gas dry scrubber will be delivered weekly via truck and will be pneumatically transferred from the delivery trucks to an on-site storage silo (130-ton capacity). The lime will be pumped in a slurry form to the scrubber unit; approximately 18 tons of lime will be used each day in the scrubber for the Proposed MWC Unit.

3.10 Associated Facilities

The County's Project does not include the development of any new associated linear facilities.

A number of facilities/structures that are not associated with the Resource Recovery Facility are co-located on the Certified Site. These include:

- A biosolids processing facility
- A Class III Construction & Demolition Waste Landfill
- A Recyclable Materials Processing Facility
- A Citizen's Drop-Off Convenience Center

None of these facilities will be impacted by the County's Project.

3.11 Emergency Preparedness and Planning

Emergency disaster preparedness and response planning relevant to the RRF are covered within the 2021 Pasco County Disaster Preparedness Guide (Appendix Q).

Section 4. Effects of Site Preparation and Plant and Associated Facilities Construction

4.1 Impact Assessment Methodology

The methodology used for the impact assessment within this Application is a systematic approach to assess impacts based on ISO 14001, UNEP/OGP Guidelines, and World Bank/IFC Standards. It has been adapted to multiple types of development projects and applied at a range of scales. It is used for both environmental and social impact assessment. The systematic approach allows for generally consistent results through time and across projects, even though the assessment is not driven solely by quantitative measures.

Impacts are assessed separately by receptor (e.g., Impacts on Surface Water Bodies and Uses), and by Project activity (e.g., installation of new boiler), and are summarized as tables.

The impact assessment methodology presented in this section is for planned events. While unplanned (accidental) events are also often considered during impact assessment using a slightly different rating set, accidental events are considered unlikely to the point of exclusion from this analysis. Planned events consider the impact **intensity** and receptor **sensitivity**. Together, intensity and sensitivity determine impact **severity**, which is the final impact rating.

The criteria for establishing impact intensity, receptor sensitivity, and impact severity is described below.

4.1.1 Impact Intensity

Impact intensity is based on criteria provided in Table 4-1. Each parameter includes a definition to help determine the overall level of the intensity.

Table 4-1. Intensity criteria and qualitative definitions

Impact	Definition
Nature	Positive—An impact that is considered an improvement to the receptor or that introduces a new desirable factor. Negative—An impact that is considered adverse or that introduces a new undesirable factor.
Type of Impact	Direct—An impact created as a direct result of an activity (e.g., altered drainage from addition of impermeable surface); caused by the action. Indirect—An impact which is indirectly caused by an activity, which may follow on from the primary interactions between the Project and its natural and human environment because of subsequent interactions in the environment (e.g., shift in avian habitat usage); caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable
Reversibility	Temporary—Impacts are predicted to be of limited duration and intermittent/occasional in nature (reversible). Permanent—Impacts that occur during the development of the Project and cause a permanent change in the affected receptor or resource that endures substantially beyond the Project lifetime (irreversible).

Impact	Definition
Duration	Very Short-Term—Impacts that are predicted to last only for a limited period (less than 1 year) but will cease on completion of an activity, or as a result of mitigation measures and natural recovery. Short-Term—Impacts that are predicted to last over a period of 1 to 5 years. This will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period. Medium-Term—Impacts that are predicted to last over a period of 5 to 10 years. This will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period. Long-Term—Impacts that are predicted to last over an extended period (more than 10 years). This will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period.
Geographical Extent (Area)	Local—Disturbance to the environment limited to the immediate area, with potential recovery without intervention. Regional—Impacts on a unique habitat, or regional scale, that may require intervention. National—Impacts on a unique habitat, or national scale, requiring substantial intervention. International—Widespread Impacts that impact neighboring countries' habitats and/or internationally important resources such as areas protected by International Conventions.

Based on the qualitative assessment, modeling results (where relevant), and professional judgment, each Project impact was assigned a **Major**, **Moderate**, **Minor**, or **Negligible** intensity level (Table 4-2).

Table 4-2. Intensity levels and categories

Category	Level	Definition
Major	4	Long-term impact (>10 years) that is widespread (national or international in scope and severity). Impact is partially temporary or permanent. Significant consumption of raw materials, water, energy and fuel resulting in shortages on an international or national scale. Numerous nonconformities with respect to national regulations and international standards. Air pollution, water contamination, and coastal pollution by toxic or nonbiodegradable products and/or hazardous substances having a potentially negative impact on human health, including serious injury or death. Ambient in-air sound level impacting human health or causing death or injury to species. Ambient underwater sound level resulting in death or injuries to protected species, impacting overall species survival. Significant production of waste, which is neither sorted nor treated.
Moderate	3	Medium-term impacts (5-10 years) that are widespread (national or regional) and temporary or permanent. Significant consumption of raw materials, water, energy, and fuel resulting in shortages on a national or regional scale. Air pollution, water contamination, and coastal pollution by toxic or slightly biodegradable products and/or hazardous substances having a chronic effect on human health after long-term exposure. Ambient in-air sound level slightly higher than legal threshold. Underwater sound level resulting in death or injury of individuals of a protected species; however, no impact to the survival of the species. Significant production of sorted waste.

Category	Level	Definition
Minor	2	Short-term impact (1-5 years), local or regional and temporary. Significant consumption of raw materials, water, energy, and fuel on a regional or local scale. Level of air, water, and coastal pollution detectable, but below thresholds known to impact human health. Acceptable in-air sound level below the thresholds known to impact human health. Underwater sound level causing only minor impacts (behavioral shifts) to protected species. Low waste production and waste sorted and treated by specialized companies.
Negligible	1	Very Short-term impact (<1 year), local and temporary. Low consumption of raw materials with negligible water and energy consumption. Waste effluents released into water, air, and soil/ground at near-natural concentrations. In-air and in-water sound levels similar to background levels. Negligible change in the ecosystems and/or landscape. Negligible impacts on protected species. Negligible waste production and no hazardous or special waste.
Positive	-	Changes resulting in positive, desirable, or beneficial impacts on an ecosystem or socioeconomic impact indicator.

4.1.2 Receptor sensitivity

The degree of sensitivity of a receptor is, in part, based on its presence, vulnerability, and its resilience to naturally adapt to changes or recover from impacts. Based on an assessment of the baseline environment described in Section 2, each receptor was assigned a sensitivity category (Negligible, Low, Medium, and High) and level based on a qualitative assessment of the criteria (Table 4-3).

Table 4-3. Sensitivity Level Categories

Category	Level	Description
High	4	<i>Biotic</i> : Internationally endangered species that is protected by international Law or an internationally or nationally protected area that has little or no capacity to absorb or adapt to change within the area impacted by the project activities during periods of high sensitivity and during routine or reliably predictable peak presence. <i>Abiotic</i> : The air, water, or sediment resource has little or no capacity to absorb change fundamentally altering its present character. <i>Socioeconomic</i> : An already vulnerable social receptor with no capacity and means to adapt to change and maintain/improve current conditions.
Medium	3	<i>Biotic</i> : Internationally or nationally threatened species (IUCN Red List) within the area impacted by the Project activities during period of high sensitivity (e.g., during breeding, spawning, or nesting) and/or during routine or reliably predictable peak presence. These species are often important at the local and regional scale within the area impacted by the project activities. <i>Abiotic</i> : The air, water or sediment resource has some capacity to absorb change without fundamentally altering its present character. <i>Socioeconomic</i> : A social receptor with some capacity and means to adapt to change and maintain/improve current conditions. Adaptation may take time and/or may only be partial.
Low	2	<i>Biotic</i> : Nonthreatened/protected species and/or abundant population that has a moderate to high capacity to absorb or adapt to change (i.e., has capacity to move away from or adapt to the project impact). <i>Abiotic</i> : The air, water, or sediment receptor or resource has the capacity to absorb change without significantly altering its present character. <i>Socioeconomic</i> : A social receptor with the capacity and means to adapt to change and maintain/improve current conditions. Adaptation may take time and/or may only be partial.

Category	Level	Description
Negligible	1	<i>Biotic</i>: Includes no sensitive/protected fauna and/or flora or an ecosystem that is not sensitive or that is already impacted. <i>Abiotic</i>: The air, water, or sediment resource is tolerant of change without detriment to its character. <i>Socioeconomic</i>: A social receptor that does not need to adapt to a change either because the change is not perceptible in the quality of life or because it is highly adaptable.

Notes:

IUCN = International Union for Conservation of Nature

4.1.3 Potential Impact Severity

Once the impact intensity and receptor sensitivity were defined, the next step was to evaluate the severity of the potential impact using the assessment matrix below (Table 4-4).

Table 4-4. Impact Severity Matrix

		Intensity			
		Negligible (1)	Minor (2)	Moderate (3)	Major (4)
Sensitivity	High (4)	4	8	12	16
	Medium (3)	3	6	9	12
	Low (2)	2	4	6	8
	Negligible (1)	1	2	3	4

Using the matrix provided in Table 4-4 allowed severity of the impact to be identified. Impact severity was classified as Negligible, Minor, Moderate, or Major (Table 4-5.).

Table 4-5. Impact Severity Definitions

Severity	Definitions
Major >10	Potential or Residual Impacts with a " Major " severity are predicted to have damaging and lasting changes to the functioning of a receptor well outside the range of natural variation and may have broader irreversible consequences (e.g., on ecosystem health). Potential impacts of Major Severity are a priority for mitigation in order to avoid or reduce their severity to an acceptable level (i.e., Negligible or Minor) and control plans and procedures should be put in place, aiming to reduce the severity of identified impacts.
Moderate 5-9	Potential or Residual Impacts with a " Moderate " severity are predicted to be noticeable and result in lasting changes to or degradation of a receptor exceeding the natural variation. Broader consequences for the ecosystem cannot be anticipated in the medium-term. Additional mitigation measures will be required to help reduce the identified impact to an acceptable level (i.e., Negligible or Minor).
Minor 3-4	Potential or Residual Impacts with a " Minor " severity are predicted to be noticeable changes to baseline conditions, beyond what would naturally occur, but are not expected to cause hardship or degradation more than short term. Although not considered significant in terms of their effect, potential impacts of Minor Severity still warrant the attention of decision-makers and should be avoided or mitigated where practicable.
Negligible 1-2	Potential or Residual " Negligible " impacts are expected to be indistinguishable from the baseline or within the natural level of variation within the Project timescales. These potential impacts do not require mitigation and are not a concern of the decision-making process. Nevertheless, the established operational protocols of the Project need to be applied.
Positive	Changes resulting in a positive, desirable, or beneficial effect on a receptor.

The severity matrix (Table 4-4) and definitions (Table 4-5) were used to assess the potential and residual impacts of the Project.

4.1.4 Presentation of impact assessment

For each identified impact, an impact assessment evaluation matrix is provided to identify the impact intensity, receptor sensitivity, and the potential impact severity (Table 4-6). **Note that for receptors/activities where no impact is expected, we do not apply a ranking table.**

Table 4-6. Example Impact Summary Table

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
A summary of each Project aspect that may result in an impact.	Outlines which categories of the impact intensity parameters are applicable to the impact (Table 4-1).	Gives the rating for the impact intensity based on the definition provided in Table 4-2.	Gives the rating for the impact sensitivity based on the definitions provided in Table 4-3.	Defines the severity of the identified impact (using the matrix provided in Table 4-4).

4.2 Land Impact

4.2.1 General Construction Impacts

4.2.1.1 Staging, Material Laydown, and Work Force Parking

The staging, materials laydown, storage, and work force parking areas will be on the Certified Site (751 acres), adjacent to the Project Site (0.55 acres), as shown on Figure 3-3. An open area used for vehicle parking exists north of the metals sorting facility. Open land also occurs on the east side of the metal sorting facility. It is anticipated that these areas will be the primary location for material laydown. Areas used for construction will be prepared to minimize dust and potential run-off (silt screens, hay bales, gravel or mulch parking, etc.). Drainage of these laydown areas will be managed consistent with requirements of the approved stormwater management plan.

4.2.1.2 Construction Impacts

Construction of the Project will affect the Project Site, which is approximately 0.55 acres, plus an additional 0.7 acres that will be used for staging, materials laydown, and work force parking. These construction impacts will be negligible (Table 4-7). Open areas immediately surrounding the Project Site have been previously developed. No new roads, rail lines, sidings, or utility lines will be needed. Construction debris and other solid wastes will either be recycled or disposed of at the existing Resource Recovery Facility. Chemical waste, if any, will be appropriately handled and disposed of off-site at permitted facilities. General construction impacts will be the building pad for the construction of the Proposed MWC Unit and the other components of the Project.

Table 4-7. General Construction Impact Assessment

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
Staging, Material Laydown, and Work Force Parking: Alteration of drainage and increase in dust from staging, material laydown, and work force parking	Nature: negative Type: direct Duration: short-term Reversibility: temporary Area: local	1 - Negligible	2 - Low	2 - Negligible
Construction Impacts: Alteration of habitat quality/availability from construction waste, debris, staging, and activity	Nature: negative Type: direct Duration: very short-term Reversibility: temporary Area: local	1 - Negligible	2 - Low	2 - Negligible

Source: AECOM 2020

4.2.2 Roads

Existing public roads and the internal road network for the Resource Recovery Facility will be used for construction. There will be no new road construction for the Project, though road realignment within the Certified Site may occur in proximity to the Project with general routing remaining unchanged.

4.2.2.1 Construction Traffic

Construction of the Project will have a slight, temporary impact on the level of traffic at the intersection of State Route (SR) 52 and Hays Road, but will not significantly impact level of service provided here or on other off-site roads (Table 4-8). Other roads used for construction include Hudson Avenue and Shady Hills Road. Traffic will be associated with vehicles that will travel to and from the construction site each day for the duration of construction. The general categories of traffic include general work force vehicles, vehicles delivering construction equipment, and vehicles delivering construction materials and equipment for installation.

Traffic associated with the general work force is expected to have the greatest impact on the intersection of SR 52 and Hays Road. This daily traffic volume, consisting mainly of passenger vehicles, will closely follow the work force requirements for construction of the plant.

The traffic resulting from the delivery of construction equipment to the site is expected to have minimal impact over the duration of construction. Most of this equipment will be brought to the site during the site preparation phase of construction. This equipment will remain on site until construction activities associated with its use are complete.

The greatest increase in truck traffic during Project construction will be caused by the transport of construction materials to the site, including concrete, structural steel, and miscellaneous building materials. The traffic impact from the transport of concrete to the site during the peak phase of concrete placement will generate the highest level of traffic entering and exiting the site, except for work force traffic.

Table 4-8. Roads/Transportation Impact Assessment

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
Construction Traffic: Increased traffic congestion and impact to road maintenance	Nature: negative Type: direct Duration: very short-term Reversibility: temporary Area: local	1 - Negligible	2 - Low	2 - Negligible

Source: AECOM 2020

4.2.3 Workforce

The total construction work force for the Project is expected to average between 25 and 75 personnel for the 18 months of the construction period (Table 4-9). The minimum anticipated work force of 25 personnel will be in place during the closeout phase of construction. Peak work force levels are expected to be 400 personnel during critical stages of construction.

4.2.4 Work Shifts

Most of the activities required for construction of the Project will likely be on a 10-hour shift for 5 days a week (Table 4-9). Continuous placement of concrete may be required on a 24-hour basis for a short period based on final design and the method of construction being used.

Table 4-9. Workforce / Work Shifts Impact Assessment

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
Workforce: Increase to local employment	Nature: positive Type: direct Duration: short-term Reversibility: temporary Area: local	2 - Minor	2 - Low	4 – Minor (positive)
Work Shifts: Work outside of normal business days/hours	Nature: negative Type: direct Duration: short-term Reversibility: temporary Area: local	1 - Negligible	2 - Low	2 - Negligible

Source: AECOM 2020

4.2.5 Flood Zones

No impacts to flood zones are proposed. The Project Site lies within FEMA “Zone X,” which indicates the site is outside the 500-year flood zone.

4.2.6 Topography and Soils

No impacts to topography and soils will result from the construction. The Project Site and laydown area have been altered during construction of the Resource Recovery Facility. The construction will occur on developed areas of the Certified Site.

4.3 Impact on Surface Water Bodies and Uses

4.3.1 Impact Assessment

There will be no major activities that will have an impact on surface water bodies and uses. No construction activities will occur in or near surface water bodies. There are no proposed intake or discharge structures planned for the boiler cooling water. The required cooling water will be obtained from the adjacent Shady Hills WWTP.

4.3.2 Measuring and Monitoring Programs

Because there are no surface water bodies within the Project construction site and the natural overland flow patterns will be maintained whenever practical, a monitoring program is not needed.

4.4 Groundwater Impacts

4.4.1 Impact Assessment

The on-site surficial aquifer varies in thickness depending on seasonal precipitation patterns and varying depths to the confining clay layer. During the wet season, the surficial aquifer varies from 2 to 5 feet thick. In the dry season, the surficial aquifer disappears in some areas and shrinks to between 1 and 3 feet thick in other areas.

Construction should have a minimal effect on the surficial aquifer and will not impact the Floridan aquifer (Table 4-10). During the dry season, dewatering should not be needed. During the wet season, a wellpoint system may be needed for a period of less than 4 months. It is anticipated that the dewatering, if any, will not trigger the SWFWMD threshold for consumptive use permitting.

Table 4-10. Groundwater Impact Assessment

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
Dewatering During Construction: Use of a wellpoint system to accommodate altered drainage	Nature: negative Type: direct Duration: very short-term Reversibility: very temporary Area: local	1 - Negligible	1 - Negligible	1 - Negligible

Source: AECOM 2020

4.4.2 Measuring and Monitoring Programs

No groundwater measuring and monitoring programs are proposed.

4.5 Ecological Impacts

4.5.1 Impact Assessment

The construction of the Project will have a limited ecological impact on the Project Site and the Certified Site (Table 4-11). The Project Site totals 0.55 acres and is located adjacent to the existing Resource Recovery Facility. The laydown area also is adjacent to the Resource Recovery Facility. The Project Site and the laydown area were previously cleared and developed during construction of the Resource Recovery Facility. No native vegetation or native habitats occur within the footprint of the Project Site or the laydown area. Therefore, species diversity and composition are not anticipated to be affected by the Project.

The Project Site is not an area of unique habitat and has been completely developed. Habitats, species diversity, and composition on the Certified Site are not expected to undergo major alterations as a result of the proposed Project.

Table 4-11. Ecological Impact Assessment

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
Populations and Habitat: Alterations to habitat and changes in wildlife populations	Nature: negative Type: direct Duration: very short-term Reversibility: very temporary Area: local	1 - Negligible	1 - Negligible	1 - Negligible

Source: AECOM 2020

4.5.2 Measuring and Monitoring Programs

No ecological measuring and monitoring programs are proposed.

4.6 Air Impact

4.6.1 Construction Emission Sources

Project construction activities may cause localized, short-term, air quality impacts. Potential impacts would be associated with fugitive dust emissions from site preparation activities and temporary travel on unpaved surfaces, and emissions from construction equipment fuel combustion.

It is anticipated that Proposed Project construction will take approximately 18 months. Fugitive dust emissions during construction will be temporary and are expected to cause minimal impacts because the open areas immediately surrounding the Project Site have been previously developed and no new roads, rail lines, sidings, or utility lines will be needed for the Project.

Internal combustion engines associated with construction equipment will be primarily fueled with diesel and will include dozers, backhoes, tractors, graders, trucks, concrete mixers, cranes, generators and compressors. The fuel combustion will result in emissions of nitrogen oxides, carbon monoxide, sulfur dioxide, hydrocarbons, and particulates. These emissions will be temporary and transient, and are not expected to result in any significant air quality impacts.

4.6.2 Mitigation Measures for Fugitive Particulate Emissions

The County will use reasonable precautions to minimize fugitive particulate emissions in compliance with the requirements in Section 62-296.320(4)(c), FAC. The Project is in an area that is in attainment for all criteria pollutants.

The fugitive particulate emissions that may occur during construction are expected to have only potential short-term impacts that are typical of those found with other construction activities (Table 4-12). Good engineering practice will be used and contractors will be required to employ proper dust control techniques to minimize fugitive particulate emissions including: watering of exposed soil, wetting materials in trucks, or covering material as needed to reduce fugitive particulate emission during transportation, removing mud deposited on paved, public roads to minimize fugitive particulate matter.

Well maintained construction equipment with appropriate emission-control devices will be used to minimize CO and NO_x emissions.

Table 4-12. Air Impact Assessment

Description of the Impact	Impact Intensity Definition	Impact Intensity Ranking	Receptors Sensitivity Ranking	Impact Severity
Impacts to Local Air Quality Fugitive dust emissions, construction vehicles and equipment	Nature: negative Type: direct Duration: short-term Reversibility: very temporary Area: local	1 - Negligible	1 - Negligible	1 - Negligible

Source: AECOM 2020

4.7 Impact on Human Populations

4.7.1 Sensitive Receptors

Sensitive receptors are defined as individuals, organizations, or institutions located close enough to the Project Site to have the potential to be affected by the construction process. This includes residential homes, schools, places of worship, emergency services such as fire stations, medical centers, community and recreational facilities, and other. There are also low-income populations and communities of color located near the Project Site that are considered in this analysis. A comprehensive description of the land use and demographic features of the area near the Project Site is provided in Section 2.2.

Anticipated negative impacts on sensitive receptors include possible short-term visual, noise and vibration, workforce, traffic, and air quality impacts resulting from construction-related activities, described in more detail below.

The construction of the Project is also likely to create positive impacts to local populations (e.g., the creation of construction jobs and revenues from the purchase of construction material and services). This is explored in more detail in Section 7.1.

4.7.2 Visual, Sound, and Vibration Disturbance

Sensitive receptors near the Project Site are likely to be impacted in the short-term by construction-related activities, including site preparation and earth works, transportation of construction materials, operation of large-scale equipment, and other. These activities are likely to impact sensitive receptors near the Project Site by creating visual, noise, and vibration disturbance during the most active phase of construction, which is expected to last 12 months within the 18-month Project duration. These impacts will be short-term and localized in nature. Because these impacts are occurring at an existing solid waste management facility and are typical of construction projects of similar scale, and will be in compliance with the existing Pasco County ordinance levels, these impacts are unlikely to detrimentally impact the functioning of nearby organizations and institutions. There also are sufficient distances and vegetated buffers between the Project Site and most sensitive receptors, like private residences, so that the detrimental impacts of construction activities will be substantially reduced in most if not all circumstances. Additionally, best management practices and mitigation measures will minimize potential adverse impacts on nearby sensitive populations.

4.7.3 Workforce

During construction of the Project, it is anticipated the day-to-day workforce will comprise on average between 25 and 75 people for the 18-month duration of the Project, and over the full course of the construction phase it is estimated that a total of 750 workers will be employed. Work shifts are anticipated to be two shifts per day of 10 hours each, 5 days each week. No major relocation of construction workers and families is anticipated as part of constructing the Project

because there is an ample workforce in Pasco County and the Tampa Bay region. Therefore, no impact is anticipated on available housing, schools, medical facilities and other community assets, and emergency services.

4.7.4 Traffic Associated with Construction

The construction of the Project will require vehicles to transport workers, equipment, and construction material. The primary roads that will be used for these purposes include Hudson Avenue, Hays Road, and Shady Hills Road. Traffic levels are anticipated to increase during the construction phase. The transportation of large equipment such as derricks and cranes are likely to be undertaken during site preparation, while the transportation of construction material and workers will occur more frequently, including daily. No new road or access road construction is anticipated for this Project, though road realignment within the Certified Site in proximity to the Project may occur.

Of the different categories of construction traffic, commuting workers have the greatest potential for creating adverse traffic effects; it is expected that during peak construction periods there will be an additional 700 vehicle trips on local roads per day. However, this increase is not likely to significantly affect road capacity and is therefore considered short-term and minor in nature.

There are also certain safety risks associated with increased traffic and the transportation of installation and construction equipment and materials, including falling equipment, collision, and struck-by accidents. A Traffic Management Plan will be developed and in place to minimize safety risks from the transportation of equipment and materials and increased traffic flows during the construction phase. The Traffic Management Plan will be developed and enforced by the selected contractor to implement appropriate safety provisions related to construction traffic and its interaction with the delivery of solid waste to the Resource Recovery Facility.

4.7.5 Air Quality

Construction activities may cause localized, short-term, adverse air quality impacts to sensitive receptors near the Project Site, including the creation of fugitive dust emissions from site preparation, as well as mobile source emissions from construction equipment and vehicles. Best management practices and mitigation measures identified for air quality, such as routine watering of the site, and other good construction practices, will reduce potential air quality impacts on sensitive receptors. The County will use all reasonable precautions required by the FDEP to minimize fugitive particulate emissions in compliance with Section 62-296.320(4)(c), FAC.

4.8 Impact on Landmarks and Sensitive Areas

There are no landmarks or sensitive areas within the limits of the Project Site. None of the areas identified in Section 2.2.5 will be impacted by site preparation and construction of the Project.

4.9 Impact on Archaeological and Historic Sites

A review of records on file with the Florida DHR at the FMSF were consulted to assess a 0.5-mile (0.8 kilometer) buffer zone around the Certified Site boundary. This search revealed that there are no known archaeological sites located within the Certified Site, though it appears no formal archaeological survey of the Certified Site or the Project Site was conducted prior to the construction of the Resource Recovery Facility. There were 10 archaeological sites recorded in the 0.5-mile buffer zone around the Certified Site. There have also been eight cultural resource management studies conducted within the 0.5-mile buffer zone, four of which have occurred on a portion of the current Project area footprint. There are no historic standing structures, NRHP districts or sites, bridges, or cemeteries listed within the 0.5-mile (0.8 kilometer) buffer zone.

Based on the results of this study, it appears that there is a potential for archaeological resources within the Project Site. Accordingly, a Cultural Resources Assessment Survey (CRAS) of the Project Site should be conducted before the commencement of construction for the Project.

4.10 Special Features

Special features that could influence the environment and ecological systems may be associated with site preparation and construction of the Project. During construction, solid and liquid wastes may be generated, including discarded packaging materials, refuse produced by construction workers, earth spoils, sanitary wastes, or used oils and other wastes associated with this type of construction activity. These materials will be disposed of and/or recycled in compliance with local, state, and federal regulations. As appropriate, they will be disposed of using a licensed hauler to transport the materials to properly permitted facilities, such as the Resource Recovery Facility. Earth spoils will be transferred to the on-site landfill or other suitable disposal site. Sanitary wastes and used oils will be handled by the appropriate licensed haulers and taken to suitable disposal facilities.

4.11 Summary of Impacts and Benefits from Construction

Impacts from construction of the Project range from Minor to Negligible. Positive impacts will be associated with a temporary increase in local employment. Negative impacts will be associated with a modest and temporary increase in local traffic, dust, and noise.

4.12 Variances

The construction of the Project will comply with the applicable nonprocedural requirements of the local, regional, and state agencies with jurisdiction over the Project. No variances from applicable state, regional, and local standards are needed for the construction of the Project.

Section 5. Effects of Plant Operation

5.1 Effects of the Operation on the Heat Dissipation System

As described in Section 3, cooling towers will be used on site. There will be no thermal discharges to any waterbody; therefore, Section 316 (Clean Water Act) demonstrations are not applicable.

5.1.1 Temperature Effects on Receiving Body of Water

This section is not applicable to the Project because evaporative cooling towers will be used. There will not be any thermal discharges to any waterbody.

5.1.2 Effects on Aquatic Life

This section does not apply to this Project. Effluent from the RRF will be sent via pipelines to the Shady Hills WWTP. There will be no discharges to surface water or groundwater. There will be no thermal effects or other effects on aquatic life in the area.

5.1.3 Biological Effects of Modified Circulation

This section is not applicable to the Project. The Project will not use any waterbodies as a source of water. Therefore, the Project will not modify the natural circulation in any waterbody or have any biological effects on any waterbody.

5.1.4 Effects of Offstream Cooling

The cooling tower serving the Proposed MWC Unit will use an average of 400,000 gpd of makeup water (i.e., water used to “make up” for water lost to evaporation, see Figure 3-6). This water will be supplied through a combination of treated effluent and groundwater from the permitted industrial supply well. The WWTP provides secondary treatment of the influent wastewater followed by filtration and high-level disinfection. Tertiary treatment is provided by a phosphate removal system that was constructed with a cooperative grant from SWFWMD. This level of treatment provides a high-quality reclaimed water that is suitable for reuse in the cooling tower, in compliance with Chapter 62-610, Part VII, FAC.

During the cooling process, approximately 0.0005% of the makeup water is lost as droplets (cooling water “drift”). Therefore, approximately 0.065 gpm would be lost as drift from the two new cooling tower cells as a result of the operation of the Proposed MWC Unit. The drift will be of approximately the same quality as the treated wastewater used as makeup water. Once the droplets of water composing the drift are released from the tower, they are carried away from the cooling tower with the wind. The distance traveled is dependent on the size of the droplets formed. Aerosol particles or droplets larger than 600 microns in diameter (approximately 70% of the drift mass) are expected to settle within approximately 400 feet of the tower. At the Resource Recovery Facility, the nearest residential area is more than 2,500 feet south of the proposed cooling tower and trees will serve as a buffer between the cooling tower and off-site areas. Thus, most of the particles or droplets will settle out or be dispersed before reaching a residential area. In addition, the prevailing winds are from the east, so the drift will move primarily to the west of the cooling tower, where the closest residential area is more than 1 mile away. The operation of the cooling tower for the Proposed MWC Unit will be consistent with the operation of the cooling tower serving the existing Resource Recovery Facility. The existing cooling tower is not subject to any setback restrictions pursuant to Chapter 62-610, Part VII, FAC. The new cooling tower also will not be subject to any setback requirements.

During conditions when the atmospheric dew point exceeds the atmospheric dry-bulb temperature, condensation (or fog) will develop. The cooling tower evaporation will contribute locally to any fog that develops, but the cooling tower is approximately one half mile away from the nearest public access road. Accordingly, during fogging conditions, off-site areas will not be impacted.

5.1.5 Measurement Program

The Shady Hills WWTP conducts routine sampling and testing of its treated effluent, pursuant to the requirements of the USEPA and FDEP. The County will comply with all sampling and testing requirements applicable to the operation of the County's new cooling tower, including the requirements in Chapter 62-610, Part VII, FAC.

5.2 Effects of Chemical and Biocide Discharges

5.2.1 Industrial Wastewater Discharges

The Project does not include any discharges of industrial wastewater to any surface waters or groundwater. Effluent from the Proposed MWC Unit will go directly to the Shady Hills WWTP. Applicable local, state, and federal discharge regulations and water quality standards for industrial wastewater will be satisfied, including requirements applicable to chemical and biocidal wastes, and oil and grease. The Shady Hills WWTP has been designed for Class I reliability to safeguard against plant upsets.

5.2.1.1 Impact of Blowdown and Waste Discharges to WWTP

Effluent discharges from the Project will consist primarily of sanitary wastes generated by the facility's employees. The effluent will also include cooling tower and boiler blowdown. Blowdown is the wastewater collected from the bottom of boilers and cooling towers.

The quality of cooling tower and boiler blowdown will be dependent on both the influent water quality (supplied by the Shady Hills WWTP) and the maximum contaminant concentration tolerable in the recirculating loops. In general, the concentration of solids leaving the cooling tower and boiler loops as blowdown water will be increased due to evaporation. Wastewater discharges from the Resource Recovery Facility to the WWTP must comply with the maximum concentration restrictions in the Industrial User Pretreatment Permit (Permit No. 2008-001) issued November 23, 2020 (Appendix P). The concentration limits in the permit are provided in Table 5-1. Sampling must be conducted in compliance with the requirements in the permit and in compliance with 40 CFR Part 136. In the event that the discharge from the Project exceeds the maximum allowable concentrations, pretreatment of the discharged fluids will be provided.

Table 5-1. Maximum Concentration and Restrictions for Resource Recovery Facility Wastewater

Parameter	Maximum Allowable Concentration/Value/Range
Temperature	104°F
pH	5.5 – 9.5
Oil and Grease	100.00 mg/L
Arsenic	0.20 mg/L
Ammonia-N	40.00 mg/L
Beryllium	2.48 mg/L
BOD 5	350.00 mg/L
Cadmium as Cd	0.23 mg/L
Chromium	3.53 mg/L
Copper	1.50 mg/L
Cyanide	1.51 mg/L
Lead	1.40 mg/L
Mercury	0.12 mg/L
Molybdenum	0.32 mg/L
Nickel	3.00 mg/L
Phosphorous (total)	(per report)
Selenium	0.41 mg/L

Parameter	Maximum Allowable Concentration/Value/Range
Silver	3.13 mg/L
Sulfates	(per report)
Zinc as Zn	1.85 mg/L
Total Suspended Solids	350.00 mg/L

Source: Pasco County Industrial User Pretreatment Permit (Permit No. 2008-001) 2020

Notes:

°F = degrees Fahrenheit

Mg/L = milligrams per liter

5.2.1.2 Impact of WWTP Effluent on Facility and Other Reuse

The concentration of dissolved solids in the WWTP effluent will be acceptable for cooling process water at the Resource Recovery Facility, including the Proposed MWC Unit, following additional treatment. The WWTP effluent also will be used for some industrial reuse applications. For example, the treated effluent will be used to create a lime slurry, which will be sprayed in the APC system (scrubber) used to controls acid gas emissions. The treated effluent from the WWTP also will be used to replace the water in the ash quench tank.

5.2.2 Cooling Tower Blowdown

Cooling tower blowdown will be diluted with the wastewater flow from the Resource Recovery Facility and will be transmitted via pipeline to the Shady Hills WWTP. The cooling tower blowdown will not be discharged into any surface water or groundwater.

5.2.3 Measurement Program

There will be periodic monitoring of the Resource Recovery Facility's discharges to the WWTP. The maximum concentrations and restrictions for the discharge are provided in Table 5-3. The monitoring will be conducted in compliance with the requirements established in the Industrial User Pretreatment Permit (Permit No. 2008-001) issued November 23, 2020 (Appendix P).

5.3 Impacts on Water Supplies

5.3.1 Surface Water

The County will not use any surface water to meet the water supply needs of the Proposed MWC Unit or Project. The County will continue to obtain its process water from the Shady Hills WWTP and an on-site industrial supply well. There will not be any withdrawals of surface water or discharges to surface waters as a result of the Project. The County uses reclaimed water to the greatest extent practicable to meet the water supply needs of the Resource Recovery Facility. Pasco County projects that adequate quantities of reclaimed water will be available from the Shady Hills WWTP to serve the water supply needs of the Proposed MWC Unit.

5.3.2 Groundwater

The County has an existing industrial supply well that taps the Upper Floridan aquifer beneath the Certified Site. The well is located in the southwestern corner of the Certified Site (Figure 2-22). The County uses this well to obtain groundwater, which is used to augment the County's supply of process water (reclaimed water) from the WWTP. The groundwater also is used as makeup water for the cooling towers and boiler makeup water. The County's use of this well is restricted by the Conditions of Certification (Section B.II.S) for the Resource Recovery Facility. Withdrawals are limited to a permitted maximum withdrawal rate of 720,000 gpd on an annual average basis, 720,000 gpd on a peak month basis, and 1,150,000 gpd on a daily maximum basis. Over the last five years, groundwater withdrawals have averaged approximately 350,000 gpd. After the Proposed MWC Unit becomes operational, the RRF's total consumption of groundwater will increase to approximately 563,000 gpd, but the RRF's use of groundwater will still be significantly

less than the quantity that was authorized by the Siting Board in 1988 for four MWC units. The County is not requesting any increase in the quantity of groundwater allocated to the RRF in the Conditions of Certification. Table 5-2 provides permitted, current, and anticipated groundwater withdrawal rates.

Table 5-2. Groundwater Withdrawal Rates Associated with the RRF

Annual average of gallons per day

Permitted Withdrawal Rate	Current Withdrawal Rate	Anticipated Withdrawal Rate with addition of MWC Unit 4
720,000	350,000	563,000

5.3.3 Drinking Water

No discharges to drinking sources are anticipated. There will be limited withdrawals of groundwater, subject to the Conditions of Certification and Water Use Permit No. 9087 conditions (Volume II, Appendix R).

5.3.4 Leachate and Runoff

On the Certified Site, runoff is collected in the stormwater retention/detention basins from vegetated areas, paved surfaces, and roof tops. MSW or ash residue storage areas in the Resource Recovery Facility are enclosed and covered so that stormwater does not come into contact with MSW or ash residue in the areas. Groundwater and surface water quality are thereby protected from contamination by these materials.

Leachate generated in the active portions of the landfill/ashfill is captured by the landfill's leachate collection system, collected in a 2 million-gallon storage tank, and hauled to the City of Tampa's Howard F. Curren WWTP for disposal. Runoff from the inactive portions of the landfill/ashfill does not come into contact with the MSW or ash, so it is collected in the stormwater retention ponds.

The ashfill/landfill is used to dispose of the ash residue from the Resource Recovery Facility. The ashfill/landfill was designed and built using state-of-the-art construction methods and features, including double synthetic liners, leachate collection systems, groundwater monitoring, etc., in compliance with the FDEP requirements in Chapter 62-701, FAC. The groundwater monitoring data for the landfill/ashfill demonstrates that the operation of the landfill/ashfill has not caused any violations of applicable water quality standards. Thus, the disposal of the solid waste and ash residue generated by the Project is not expected to cause any violations of groundwater or surface water quality standards.

5.4 Solid/Hazardous Waste Disposal Impacts

5.4.1 Solid Waste

As described in Section 3.7, Pasco County has a comprehensive solid waste management plan that provides for the recycling, beneficial reuse, and disposal of solid waste, including construction and demolition debris, MSW, and ash residue, in accordance with the requirements of Chapter 62-701, FAC. The County will be able to manage most of the solid waste generated by the Project by using the existing facilities on the Certified Site. As noted in Section 1.1, the Project will significantly improve the County's ability to manage its MSW in the future. The operation of the Proposed MWC Unit will reduce the volume of the County's MSW by approximately 90% and, in turn, reduce the amount of landfill capacity (airspace) needed to dispose of the County's MSW. The operation of the County's Proposed MWC Unit also will convert the County's MSW to a relatively inert ash, which will reduce the potential for odors, methane emissions, vectors and nuisance conditions at the County's landfill/ashfill. Therefore, the Project will have no meaningful adverse impacts on the County's solid waste management facilities but will provide significant benefits to the County.

5.4.2 Hazardous Waste

The County has adopted and implemented inspection procedures at the Resource Recovery Facility to ensure that hazardous wastes are neither accepted nor burned at the facility. These procedures comply with the requirements adopted by the USEPA and FDEP. These procedures are described in the facility's operations plan. If any hazardous waste are discovered at the Resource Recovery Facility, the materials will be collected by a licensed hauler and transported off-site for disposal in compliance with applicable USEPA and FDEP requirements.

The County has tested its ash residue in compliance with the Toxicity Characteristic Leaching Procedure (TCLP) and confirmed that the ash residue is not a characteristic hazardous waste. The County's results are consistent with the results others have obtained by performing TCLP testing on the ash generated at other resource recovery facilities in Florida. After the new MWC Unit becomes operational, the County will perform TCLP testing on the ash generated by the new MWC unit to confirm that the ash is not a characteristic hazardous waste.

5.4.3 Ash Testing

FDEP no longer requires ash testing from municipal solid waste combustors. However, the facility operator (Covanta) conducts periodic in-house testing for process knowledge to verify that the leaching characteristics of the ash have not changed since the last formal 7-day ash characterization test. A new 7-day ash characterization effort will be undertaken following commencement of operation of the fourth combustion unit to demonstrate that the ash does not exhibit the toxicity characteristic described by the Resource Conservation and Recovery Act (RCRA).

5.5 Sanitary and Other Waste Discharges

Sanitary wastewater and other process wastewater will be discharged to the Shady Hills WWTP. The Project will not discharge any sanitary wastewater or other wastewater to any surface water or groundwater.

5.6 Air Quality Impacts

This Section 5.6 discusses the air quality impacts associated with the operation of the County's Proposed MWC Unit. These issues are discussed in more detail in the County's application for an air construction (PSD) permit, which is contained in Volume III of this PPSA Application.

Major stationary sources of air pollution and major modifications to major stationary sources are required by the Clean Air Act to obtain an air pollution permit before commencing construction. The process is called new source review (NSR) and is required whether the major source construction or modification to the existing source is planned. Through the NSR permitting program, proposed sources of air pollutant emissions must demonstrate that their potential emissions will not directly result in an exceedance of a NAAQS or contribute significantly to any violation of a NAAQS. As previously stated, Pasco County is in attainment for all NAAQS pollutants. NSR in an attainment area such as State of Florida requires review of PSD applicability for the Project.

5.6.1 Prevention of Significant Deterioration Review

PSD regulatory applicability is established based on an assessment of emissions associated with a given project and the existing status (major or minor source) of the subject emission source as defined by the PSD regulations. The existing Pasco County RRF is a PSD major source. As an existing major source, a two-step process was used to determine whether the Project is subject to PSD review. The first step is to compare the proposed Project annual emissions increases to the PSD significant emission rate (SER) thresholds. Pollutants which are less than the applicable SERs in this step are not subject to PSD review and are excluded from further analysis. A summary of the step one PSD pollutant applicability for the proposed Unit #4 is provided in

Table 5-3. The second step is to look at the net emissions increases from the remaining pollutants. Based on the net emission estimates for the Project and recognizing that the proposed project is not expected to result in any increases in the emissions from the existing operations at the RRF, the Project is subject to PSD review for the following criteria and noncriteria pollutants, per the applicable SER thresholds (Table 5-3):

SO₂

Particulate matter (PM₁₀ and PM_{2.5})

Sulfuric acid mist (SAM)

MWC organics (as dioxins/furans)

MWC acid gases (as SO₂ + HCl)

Greenhouse Gases (as CO₂e)

5.6.2 Prevention of Significant Deterioration Netting for NO_x

Emissions of NO_x from Unit #4 provided in Table 5-3 are greater than the SER; however, there will be a net decrease in NO_x emissions (Table 5-4) due to planned contemporaneous decreases in NO_x emissions from the existing three MWC units (Units 1-3). These decreases will be combined with an emissions cap on the existing three MWC units of 355.6 tons per year, which is 191.8 tons lower than the actual baseline emissions of 547.4 tons that the three units emitted averaged over the 24-month period of 2019-2020. Details on the calculation of baseline emissions is discussed in Section 3.3 of the Air Permit Application (Volume III).

Table 5-3. PSD Pollutant Applicability Summary—Step One

Pollutant	Proposed Unit #4 Emissions Increase (tons/year)	Significant Emission Rate Threshold (tons/year)	Potentially Subject to PSD Review / Further Analysis Needed
Sulfur Dioxide (SO ₂)	56.6	40	Yes
Nitrogen Oxides (NO _x)	186.2	40	Yes
Carbon Monoxide (CO)	92.7	100	No
Fluorides (F)	2.6	3	No
VOCs (as propane)	32.4	40	No
Particulate Matter (PM)	10.6	25	No
Particulate Matter (PM ₁₀)	26.8	15	Yes
Particulate Matter (PM _{2.5})	26.8	10	Yes
Lead (Pb)	0.12	0.60	No
Sulfuric Acid Mist (H ₂ SO ₄)	18.0	7	Yes
MWC Organics (as Dioxins/Furans)	8.86E-6	3.5E-6	Yes
MWC Metals (as PM)	10.6	15	No
MWC Acid Gases (as SO ₂ + HCl)	83.5	40	Yes

Pollutant	Proposed Unit #4 Emissions Increase (tons/year)	Significant Emission Rate Threshold (tons/year)	Potentially Subject to PSD Review / Further Analysis Needed
Carbon Dioxide Equivalent (as CO ₂ e)	210,459	75,000	Yes

Notes:

PSD = Prevention of Significant Deterioration

Table 5-4: PSD Pollutant Applicability Summary—Net Emissions

Pollutant	Proposed Unit #4 Emissions Increase (tons/year)	Contemporaneous Changes		Proposed Unit #4 Project Net Emissions (tons/year)	Significant Emission Rate Threshold (tons/year)	Subject to PSD Review
		Increases	Decreases			
Sulfur Dioxide (SO ₂)	56.6	0.02	0	56.6	40	Yes
Nitrogen Oxides (NO _x)	186.2	1.2	-191.8	-4.4	40	No
Particulate Matter (PM ₁₀)	26.8	0.06	0	26.8 ¹	15	Yes
Particulate Matter (PM _{2.5})	26.8	0.06	0	26.8 ¹	10	Yes
Sulfuric Acid Mist (H ₂ SO ₄)	18.0	0	0	18.0	7	Yes
MWC Organics (as Dioxins/Furans)	8.86E-6	0	0	8.86E-6	3.5E-6	Yes
MWC Acid Gases (as SO ₂ + HCl)	83.5	0	0	83.5	40	Yes
Carbon Dioxide Equivalent (as CO ₂ e)	210,459	2,065	0	212,524	75,000	Yes

Notes:

PSD = Prevention of Significant Deterioration

¹ Total net emissions increases for PM₁₀ and PM_{2.5} do not change due to rounding Project increases to one decimal place.

Class I areas are areas of special national or regional value from a scenic, recreational, or historic perspective. Projects subject to PSD review must include an analysis to demonstrate there will not be an adverse impact on a Class I area. Potential impacts are evaluated in terms of Class I PSD increments (to protect against air quality degradation) and air quality related values (AQRVs) that protect against adverse visibility and acidic deposition impacts where applicable. The Class I areas and analyses conducted for the Project are discussed further in Section 5.6.5. The Federal Land Managers (FLMs) have jurisdiction over the Class I areas and determine if a Class I air quality analysis is required, and if a proposed major source or major modification is near a Class I area, the area's FLM must be notified. The FDEP already has notified the FLM of the Project and is awaiting the FLM's response.

5.6.3 Impact Assessment

As required by the PSD permitting process for the Project, air dispersion modeling was performed to demonstrate that the air quality impacts of the proposed Project will comply with all applicable standards, including the NAAQS (which have been adopted by the state of Florida) that were designed by USEPA to protect public health and welfare, and PSD increments which protect against disproportionate degradation of air quality by a proposed project.

Air dispersion modeling analyses were performed in support of the air permit application for the Project to demonstrate compliance with the NAAQS and PSD Class II increments. These analyses focused on the Project's PSD significant emissions increases of SO₂, PM₁₀ and PM_{2.5}. Modeling methods and assumptions, including model selection and options, meteorological data, source parameters used in the modeling analyses, and modeling results are provided in the following sections.

The model analyses were based on USEPA modeling guidance and dispersion modeling protocol that was approved by FDEP on June 9, 2021 via an email from Heather Walsh (FDEP) to Joe Sullivan (AECOM).

The dispersion modeling addressed the following new emissions sources associated with the Project:

- the new MWC (Unit #4) which will exhaust through the existing fourth flue in the facility's existing stack;
- new carbon silo (particulate emissions only);
- new lime silo (particulate emissions only; not included in the modeling because the silo will be located within a building and emissions will not be vented directly to the atmosphere); and
- two new cooling tower cells (particulate emissions only).

5.6.3.1 Modeling Methodology

The modeling analysis was conducted using the USEPA and FDEP-approved AERMOD modeling system and the latest version of AERMOD (version 21112) which was applied with regulatory default options to determine compliance with the NAAQS and PSD increments.

The CALPUFF model (version 5.8.5) was used for modeling of deposition in the Chassahowitzka National Wildlife Area. CALPUFF is a specialized model, generally used for long-range transport between 50 and 300 kilometers from a source. CALPUFF is approved by the FLMs for use in Class I Area AQRV analyses. Further CALPUFF modeling details are provided in Section 5.6.5.

AERMOD was applied with 5 years of AERMOD-ready meteorological data (2015-2019) from the Brooksville-Tampa Bay Regional Airport (KBKV) that was obtained from FDEP.

A Good Engineering Practice (GEP) stack height analysis was performed based on the proposed Project design to determine the potential for building-induced aerodynamic downwash for all modeled point sources/stacks. The analysis procedures described in USEPA's Guidelines for Determination of Good Engineering Practice Stack Height, Stack Height Regulations (40 CFR 51), and current Model Clearinghouse guidance were used. The USEPA's Building Profile Input Program (BPIP-Version 04274) version that was designed for use with AERMOD was used to incorporate downwash effects in the model for all modeled stacks.

A comprehensive receptor grid was developed for the application of AERMOD to ensure resolution of the maximum modeled impacts as follows:

- 50 meter spacing along the ambient boundary
- 100 meter spacing from the ambient boundary to 2.5 kilometers
- 250 meter spacing from 2.5 to 5 kilometers
- 500 meter spacing from 5 to 10 kilometers
- 1,000 meter spacing from 10 to 15 kilometers
- 2,500 meter spacing from 15 to 20 kilometers

Ambient air is that portion of the atmosphere, external to buildings, to which the general public has access. The ambient boundary for the Project follows the fence surrounding the RRF property excluding the Duke Energy Florida owned properties north of the substation on Hays Road and the northern portion of the electrical transmission line.

AERMAP (Version 18081), the AERMOD terrain preprocessor program, was used to develop terrain data for the modeled receptors using National Elevation Data (NED) from the USGS.

The maximum annual concentration for all receptors and years of meteorological data modeled was selected for comparison to ambient air quality standards and PSD increments for long-term averaging times (annual periods). The highest value of the second-highest concentration at each receptor for each year of meteorological data modeled (i.e., “highest second high,” and abbreviated H2H) was selected for comparison to ambient air quality standards and PSD increments for short-term averaging times (24 hours or less) for all pollutants except PM₁₀. In the case of PM₁₀, the highest value of the sixth-highest concentration (H6H) over the 5-year meteorological database was used for comparison to the 24-hour ambient air quality standard. These tables appear in the PSD Air Permit Application (Volume III). A preliminary analysis was conducted to determine the worst operating load for the proposed new Unit 4 that resulted in the highest concentrations for each pollutant and averaging period. The worst-case operating load and corresponding emissions and source parameters was then used for all subsequent analyses. Further details on this analysis and all source parameters and emission rates used in the modeling analysis are provided in PPSA Application Volume III – PSD Permitting Application.

5.6.3.2 Preconstruction Monitoring

The PSD regulations require that a PSD permit application contain an analysis of existing air quality for all regulated pollutants that the source has the potential to emit in significant amounts (i.e., PM₁₀, PM_{2.5}, and SO₂ for the proposed Project). The definition of existing air quality can be satisfied by air measurements from either a state-operated or private network, or by a preconstruction monitoring program that is specifically designed to collect data in the vicinity of the proposed source. RRF used monitoring data from monitors in FDEP’s ambient air monitoring network to satisfy the preconstruction monitoring requirements. The monitors provided in Table 5-5 and shown on Figure 5-1 were selected as conservatively representative of the Project site. The Woodlawn (Pinellas County), Azalea Park (Pinellas County), and Sydney (Hillsborough County) monitors are the closest monitors with valid 2018-2020 design values for each pollutant and are likely conservative relative to the RRF site because they are closer to urban areas than the RRF. A comparison of the population, emissions, and population density between Pasco, Pinellas, and Hillsborough counties is provided in Table 5-6. Although the PM₁₀ and PM_{2.5} emissions are greater in Pasco County, they are more spread out; however, in Pinellas County, emissions occur in a more compact area. The SO₂ emissions from Hillsborough County are much higher than Pasco County. Therefore, the PM₁₀, PM_{2.5}, and SO₂ monitors are a conservative representation of background concentrations for the RRF.

Table 5-5. Monitor Design Values

Pollutant	Averaging Period	2018-2020 Design Value	Background Monitor	County
PM ₁₀ ¹	24-hour	58 µg/m ³	12-103-0012 Woodlawn	Pinellas
PM _{2.5} ²	24-hour	17 µg/m ³	12-103-0018 Azalea Park	Pinellas
	Annual	7.6 µg/m ³		
SO ₂ ²	1-hour	9 ppb	12-057-3002 Sydney	Hillsborough
	3-hour			

Notes:

¹[Monitor Values Report | Air Data: Air Quality Data Collected at Outdoor Monitors Across the US | USEPA](#)

²[Design Values 2019 \(arcgis.com\)](#)

Table 5-6. County Population and Emissions

County	2018 Population ¹	NEI17 Emissions (tons) ²			Population Density (persons/miles ²) ¹
		PM ₁₀	PM _{2.5}	SO ₂	
Pasco	539,630	8,301	2,848	190	722
Pinellas	975,280	4,198	2,008	--	3,562
Hillsborough	1,436,888	--	--	8,244	1,406

Notes:

¹National Association of Counties – County Explorer <https://ce.naco.org/>

²[2017 NEI Data | Air Emissions Inventories | USEPA](#)

[NEI = National Emissions Inventory](#)

Figure 5-1. Background Monitor Locations



Source: Data from Pasco County 2021

5.6.3.3 Significant Impact Analysis

Following USEPA and FDEP guidance, modeling was initially conducted for the Project emissions alone to determine if the modeled ambient air impacts from the proposed Project alone have the potential to exceed the NAAQS or PSD increment. This is determined by comparing the Project modeled impacts to the SILs for each criteria pollutant subject to PSD review (i.e., PM₁₀, PM_{2.5}, and SO₂ for the proposed Project). The SILs are ambient concentrations set to extremely low levels (1% to 5% of the NAAQS depending on the pollutant and averaging period) such that if the maximum-modeled impacts from a proposed project do not exceed a SIL, the project emissions for that pollutant are considered not to cause or contribute to an exceedance of a standard or increment without further analysis. If a SIL is exceeded, a full cumulative analysis is required to demonstrate compliance with the NAAQS and PSD increments which involves modeling of the Project emissions, existing facility sources, and major off-site sources plus an ambient background component which represents the contribution of non-modeled sources (NAAQS analysis only). For conservatism, comparison to the SILs uses the maximum annual and maximum short-term impacts for all pollutants and all averaging times.

A summary of the SIL modeling results for the Project is provided in Table 5-7.

Table 5-7. Class II SIL Modeling Results

Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m ³)	Secondary PM _{2.5} Concentration (µg/m ³)	Total Concentration (µg/m ³)	Class II SIL (µg/m ³) ¹	Above the SIL?
PM ₁₀	24-hour	1.29	--	1.29	5	No
	Annual	0.08	--	0.08	1	No
PM _{2.5}	24-hour	0.94	0.203	1.15	1.2	No
	Annual	0.07	0.014	0.08	0.2	No
SO ₂	1-hour	3.09	--	3.09	7.86	No
	3-hour	2.82	--	2.82	25	No
	24-hour	0.99	--	0.99	5	No
	Annual	0.11	--	0.11	1	No

Notes:

¹From FDEP PSD Air Quality Modeling Best Practices Table 2

km = kilometers

SIL = significant impact level

Note that in accordance with USEPA and FDEP requirements, the potential impacts associated with secondarily formed PM_{2.5} (i.e. resulting from Project SO₂ emissions) was also included in the analysis and summed with the AERMOD modeling results for the Project sources (see Volume III Air Permit Application for details).

As shown in Table 5-7, all modeled concentrations are below the respective SILs, which indicates that the proposed Project will not cause or contribute to an exceedance of the NAAQS or PSD increment. Therefore, no further analysis was required.

5.6.4 Additional PSD Impact Analyses

In accordance with PSD requirements, additional impacts must be addressed for projects subject to PSD review. The various components of the additional impact analyses are discussed below.

5.6.4.1 Growth Analysis

A growth analysis examines the potential emissions from secondary sources associated with the proposed Project. While these activities are not directly involved in Project operation, the emissions involve those that can reasonably be expected to occur; for instance, industrial, commercial, and residential growth that will occur in the Project area due to the Project itself. Secondary emissions do not include any emissions which come directly from a mobile source, such as emissions from the tailpipe of any on-road motor vehicle or the propulsion of a train. They also do not include sources that do not impact the same general area as the source under review.

Once operational, the Project is expected to employ ten additional permanent personnel. This incremental increase is deemed negligible as a source of secondary growth from the Project, and thus further analysis is not required.

5.6.4.2 Soils, Vegetation, and Wildlife Analysis

An analysis of the Project's potential impact on soils, vegetation, and wildlife in the vicinity of the facility was performed in accordance with the procedures recommended in USEPA's *A Screening Procedure for Impacts of Air Pollution Sources on Plants, Soils and Animals* (USEPA-450/2-81-078). The highest predicted impacts from the Project used in the SIL analysis were compared to the secondary NAAQS and screening concentrations listed in the above referenced document; a summary is provided in Table 5-8 to demonstrate compliance.

Table 5-8. Cumulative NAAQS Modeling Results

Pollutant	Averaging Period	Modeled Concentration (µg/m³)	Secondary NAAQS (µg/m³)	USEPA 1980 Screening Concentration (µg/m³)
SO ₂	1-hour	3.09	-	917
	3-hour	2.82	1,300	786
	Annual	0.11	-	18

Notes:

NAAQS = National Ambient Air Quality Standards

µg/m³ = micrograms of gaseous pollutant per cubic meter of ambient air

USEPA = United States Environmental Protection Agency

5.6.5 Class I Modeling Analyses

PSD regulations require that facilities within 100 kilometers of a mandatory federal Class I area perform a modeling evaluation of the ambient air quality in terms of Class I PSD Increments and AQRVs. In addition, large projects beyond 100 kilometers (but less than 300 kilometers) from the nearest Class I area may be requested to conduct an evaluation of air quality impacts by the FLMs.

There are five Class I areas within 300 kilometers of the RRF (see Figure 6-10 of the PSD Air Permit Application). These Class I areas and their distances from the RRF are as follows:

1. Chassahowitzka Wilderness Area, approximately 27 kilometers
2. Saint Marks Wilderness Area, approximately 234 kilometers
3. Okefenokee Wilderness Area, approximately 244 kilometers
4. Bradwell Bay Wilderness Area, approximately 274 kilometers
5. Everglades National Park, approximately 296 kilometers

5.6.5.1 Class I Area Secondary Pollutant Analysis

A Class I Area secondary pollutant analysis was performed similarly to the Class II analysis, except that Class I SIL values were used. Refer to the PSD Air Permit Application for details.

These secondary impact concentrations were added to the maximum modeled concentrations in subsequent Class I analyses before comparison to any standards.

5.6.5.2 Class I SIL Analysis

In accordance with the GAQM (Section 4.2.c.i), because AERMOD was used for the Project's near-field assessment, it can be used as a screening-level analysis to estimate the Project's potential for a significant modeled impact at the Class I areas listed above. As such, AERMOD was used as a screening analysis with the meteorological data described in Section 2.3.7.1 and with a radial arc of receptors located 50 kilometers from the proposed Project. Receptors along the 50 kilometers arc were placed every 1 degree. In addition, because the Chassahowitzka Wilderness Area is less than 50 kilometers from the RRF, receptors also covered the entire Wilderness Area (see the PSD Air Permit Application for additional details).

The modeled concentrations at all receptors were less than the Class I area SILs (Table 5-9). Consequently no additional modeling is required because the Project is not expected to cause or contribute to a violation of the Class I PSD increments. The secondary PM_{2.5} concentrations mentioned above were also included to estimate the total PM_{2.5} concentration.

Table 5-9. Class I SIL Modeling Results

Pollutant	Averaging Period	Maximum Facility Concentration (µg/m ³)	Secondary PM _{2.5} Concentration (µg/m ³)	Total Concentration (µg/m ³)	Class I SIL (µg/m ³) ¹	Above the SIL?
PM ₁₀	24-hour	0.02	--	0.02	0.3	No
	Annual	0.002	--	0.002	0.2	No
PM _{2.5}	24-hour	0.02	0.046	0.06	0.27	No
	Annual	0.002	0.004	0.006	0.05	No
SO ₂	3-hour	0.25	--	0.25	1.0	No
	24-hour	0.05	--	0.05	0.2	No
	Annual	0.004	--	0.004	0.1	No

Notes:

¹From FDEP PSD Air Quality Modeling Best Practices Table 5

PSD = Prevention of Significant Deterioration

SIL = significant impact level

5.6.5.3 Class I AQRV Analyses

FLMs are charged to protect the AQRVs, including visibility and deposition, of Class I areas. The FLM's AQRV Workgroup's (FLAG) guidance document²² for completing an AQRV analysis (FLAG 2010) was used to develop the AQRV analysis methodology.

FDEP requires an evaluation of the potential impacts of the proposed project for any portion of a Class I area located within 50 kilometers of the project, and to any area between 50 and 300 kilometers from the project that does not meet the FLAG 2010 screening criteria.

²² [Federal Land Managers' Air Quality Related Values Work Group \(FLAG\) Phase I Report—Revised \(2010\) \(state.fl.us\)](https://www.state.fl.us/flag/)

Visibility

The Chassahowitzka Wilderness Area is less than 50 kilometers from the PCRRF. Therefore, a visible plume analysis was conducted with the most current version of USEPA's screening model VISCSCREEN to determine if project emissions during normal operations have the potential to cause visibility impairment.

The analysis was conducted in accordance with USEPA's *Workbook for Plume Visual Impacts Screening and Analysis (Revised)* (Workbook). The VISCSCREEN model was applied to estimate two visual impact parameters, plume perceptibility (ΔE) and plume contrast (C_p). Screening-level guidance indicates that values above 2.0 for ΔE and ± 0.05 for C_p are considered perceptible.

The analysis is detailed in the Air Permit Application (Volume III). The VISCSCREEN results are below the significance criteria, thus demonstrating there is no potential for visibility impacts associated with the Project.

Deposition

The CALPUFF model was applied to obtain upper limit estimates of annual wet and dry deposition of sulfur compounds in kilograms per hectare per year (kg/ha/yr) associated with emissions from the Project at the Chassahowitzka Wilderness Area. Deposition of nitrogen compounds were not performed because the Project's net NO_x emissions are less than the PSD significant emission rates. Specifically, CALPUFF was used to model both wet and dry deposition of SO_2 and SO_4 to estimate the maximum annual wet and dry deposition of sulfur at the Class I area due to Project emissions.

The deposition results compared to the thresholds are provided in Table 5-10.

Table 5-10. Deposition Thresholds

Pollutant	Maximum Modeled Value (kg/ha/yr)	Threshold ¹ (kg/ha/yr)
Sulfur deposition	0.003	0.01

Notes:

¹From FDEP PSD Air Quality Modeling Best Practices Table 10

5.6.5.4 Class I Areas Beyond 50 Kilometers

The FLAG 2010 guidance allows for the use of a screening analysis for Class I Areas located between 50 and 300 kilometers from the Project. This screening analysis is known as the Q/D method. Q is the potential Project emissions of visibility-impairing pollutants (SO_2 , NO_2 , PM_{10} , and sulfuric acid mist) in tons per year, based on maximum allowable 24-hour emission limits. D is the distance in kilometers to each Class I area. Note that NO_2 emissions were not included in the calculation of Q because the Project's net NO_2 emissions are less than the PSD significant emission rate. If the Q/D ratio is less than 10, no further AQRV analysis is required for that Class I area.

The results of the Q/D analysis area provided in Table 5-11. The values are less than 1 for every Class I Area.

Table 5-11. Class I Area Q/D Analysis

Class I Area	SO ₂ (tpy)	PM ₁₀ (tpy)	H ₂ SO ₄ (tpy)	Q (tpy)	D (km)	Q/D
Saint Marks Wilderness Area	62.2	29.2	19.8	111.3	234	0.5
Okefenokee Wilderness Area					244	0.5
Bradwell Bay Wilderness Area					274	0.4
Everglades National Park					296	0.4

Notes:

Km = kilometers

tpy = tons per year

Annual emission rates used for this analysis are conservatively based on continuous peak emissions for 8760 hr/yr.

5.7 Noise

It is anticipated that the sound levels created by the Project (construction and operations) will be comparable to presently existing noise levels created by the existing Resource Recovery Facility. The operational characteristics of the Project are not expected to perceptibly increase the sound levels in any off-site areas. A fence-line noise compliance study will be conducted after the Proposed MWC Unit commences operation.

5.8 Changes in Nonaquatic Species Populations

5.8.1 Impacts

The construction of the Project will occur within an area that was cleared and developed during the construction of the existing Resource Recovery Facility. The Project is not expected to have any material effects on the population or diversity of nonaquatic species.

5.8.2 Monitoring

The Project is expected to have little or no impact on nonaquatic species. Therefore, no long-term wildlife monitoring is proposed.

5.9 Other Plant Operation Effects

5.9.1 Traffic Generated by the Proposed MWC Unit

Very little new traffic will be generated by the operation of the Proposed MWC Unit. The operation of the new MWC unit will result in some additional traffic associated with new employees and the delivery of carbon, lime, ammonia, and other chemicals, but the additional traffic will be negligible.

5.9.2 Impact to Off-Site Roadways

No meaningful impacts to off-site roadways are anticipated to occur as a result of the operation of the Proposed MWC Unit. The operation of the fourth MWC unit will not attract additional traffic to the Certified Site, except for the negligible traffic described in Section 5.9.1. Waste hauling vehicles will go to the County's solid waste management facilities on the Certified Site, regardless of whether the fourth MWC unit is operational. The new MWC unit will allow the County to process more MSW in the Resource Recovery Facility, but it will not create more traffic in off-site areas.

5.9.3 Distribution and Timing of Project Traffic

As detailed previously, a temporary increase in traffic due to construction is expected. This temporary increase will occur during construction of the Project and is expected to occur for 18 months. The operation of the Proposed MWC Unit will not have any meaningful impact on traffic in off-site areas.

5.10 Archaeological Sites

Ten archaeological sites were identified within 0.5 mile (0.8 kilometer) of the Certified Site boundary, provided in Table 2-2. The 10 identified archaeological sites were deemed ineligible for listing on the NRHP.

No archaeological sites were identified on the Certified Site. However, neither the Certified Site nor the Project Site have been subjected to a full CRAS.

5.11 Resources Committed

Natural and human resources will be consumed, converted, or made unavailable for future use if the Project is implemented. These impacts are typical for any capital-intensive project. In this case, some land will be irreversibly committed to the Project and some building materials will be irretrievably used for the construction of the Project. In addition to the materials consumed during construction, the energy and human labor expended cannot be retrieved.

Financial commitments for the Project include the issuance of municipal bonds to fund the Project, plus the commitment of existing capital from the County's Solid Waste Enterprise Fund. As with the commitment of labor and materials, the financial requirements for this Project are typical of the commitments that would be made for any major capital project.

5.12 Variances

The operation of the Project will comply with the applicable nonprocedural requirements of the local, regional, and state agencies with jurisdiction over the Project. No variances from applicable state, regional, and local standards are needed for the operation of the Proposed MWC Unit or Project.

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Section 6. Transmission Lines and Other Linear Facilities

6.1 Transmission Lines

The Project will use existing substations and transmission lines constructed for the Resource Recovery Facility. No new transmission lines or upgrades will be required or constructed for the Project. Because the Project will only use existing transmission lines and substations, a new analysis is not required for electromagnetic fields.

6.2 Associated Linear Effects

No new linear facilities will be constructed or operated for the Project.

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Section 7. Economic and Social Effects of Plant Construction and Operation

7.1 Socioeconomic Benefits

As described in Sections 1.4 through 1.6, there are a range of socioeconomic benefits from construction and operation of the Plant, including:

Direct and indirect **benefits to the local economy** by creating new jobs, personal income generated by workforce revenues, purchasing construction-related materials and services, and increased demand for local goods and services by the Project workforce;

Ecological benefits associated with the safe disposal of solid waste, generation of clean, efficient and renewable energy, and reduction of land required for landfilling; and

Establishing a **long-term economic method** of solid waste disposal, including generating revenue from the sale of energy.

7.1.1 Benefits to the Local Economy

Project construction and operation will create 750 jobs during the construction phase and 10 new permanent jobs during operation of the Plant. This equates to approximately \$33 million in annual payroll during construction, and \$15 million in additional payroll during the 30-year lifespan of the facility²³.

Project construction will also require the purchase of construction-related materials and services. During the construction phase, it is estimated that the services of approximately 25 local subcontractors will be needed to complete construction. For example, a significant amount of materials and hardware supplies such as steel, pipes, concrete, landscaping material, and grass will be purchased from local companies. During the operations phase, services and materials will be needed for operating and maintaining the Project, much of which will be procured from local companies and subcontractors.

There are also likely indirect positive impacts to the local economy created by increased demand for goods and services by the Project workforce. It is anticipated that local retail, tourist, restaurant, entertainment, and other service industries will benefit from the most.

7.1.2 Ecological Benefits

According to the USEPA, energy recovered from waste has less negative environmental impact than almost any other source of electricity²⁴. WTE is recognized as a source of clean, reliable, and renewable energy and its production and use reduces the need to consume electricity generated from less clean energy sources, such as gas, oil, and coal.

Landfilling of unprocessed garbage can result in the contamination of water resources, and the Project will therefore help protect the County's surface water and groundwater supply by providing for the safe disposal of solid waste.

Other long-term ecological benefits include decreasing waste volumes, decreasing the amount of land required for solid waste landfilling, and decreasing landfill emissions of CO₂ and methane. These benefits are especially important because land disposal of solid waste is increasingly difficult in Pasco County.

7.1.3 Long-Term Economic Gains

The cost of constructing the Project is estimated to be in the range of \$200 to \$220 million. The Project is expected to increase the energy-producing capacity of the existing RRF by 55 %. Once

²³ The \$33 and \$15 million estimates are based on the average annual income construction workers in Pasco County, which in 2019 was \$44,048; findings are provided in Section 2.2.7 Socioeconomics and Public Service.

²⁴ Source: <https://www.epa.gov/lmop/benefits-landfill-gas-energy-projects>

operational, the Proposed MWC Unit will produce approximately 18 MW (nominal) of electricity, which will result in increased revenue generated from the sale of electricity. It will also result in reduced dependency and spend on energy derived from oil and gas.

In addition, the indirect benefits to the local economy described in Section 7.1.1 will increase revenue generated within Pasco County, and increases in tax base.

7.2 Socioeconomic Costs

There are several socioeconomic costs associated with Project construction and operation, including:

Costs associated with **acquiring land** for expansion of the Plant are not applicable; the expansion will be sited within the Certified Site;

Costs of **site preparation; facility construction;** and other **legal, administrative, and financing costs** such as permit fees and utility extensions; and

Costs of **operating and maintaining the facility**—the operator will receive an annual operating and maintenance fee from Pasco County; however, operating and maintaining the Resource Recovery Facility will not be a fixed cost, and these costs will be adjusted periodically during the life of the operating agreement.

Section 8. Site and Plant Design Alternatives

8.1 Alternative Sites

The Project will be entirely contained within the boundary of the Certified Site and the existing Resource Recovery Facility; there is no alternative site relevant to this Application.

8.2 Proposed Site Design Alternatives

The Project will be constructed and operated within the design parameters established by the County, as described by JMG Engineering (2021). The Project will be integrated with the existing Resource Recovery Facility. There is no alternative site design relevant to this Application.

8.2.1 Cooling System (exclusive of intake and discharge)

Not applicable for the Project.

8.2.2 Biological Fouling Control

Not applicable for the Project.

8.2.3 Intake System

Not applicable for the Project.

8.2.4 Discharge System

Not applicable for the Project.

8.2.5 Chemical Waste Treatment

Not applicable for the Project.

8.2.6 Sanitary Waste System

Not applicable for the Project.

8.2.7 Solid Waste Disposal Systems

Not applicable for the Project.

8.2.8 Multiple Uses

Not applicable for the Project.

8.2.9 Other Systems

Not applicable for the Project.

8.2.9.1 Alternative Water Sources

Not applicable for the Project.

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