

RESOLUTION NO. ____

PROPOSED RESOLUTION NO. 25-032

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF LAKELAND, FLORIDA RELATING TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STATE REVOLVING FUND LOAN PROGRAM; ADOPTING THE CITY OF LAKELAND WASTEWATER SYSTEM FACILITIES PLAN UPDATE DATED APRIL 2025; ADOPTING THE CITY OF LAKELAND STATE REVOLVING FUND CAPITAL FINANCING PLAN; AUTHORIZING SUBMISSION OF THE PLANS TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION; DESIGNATING THE CITY OF LAKELAND'S AUTHORIZED REPRESENTATIVE; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City Commission of the City of Lakeland, Florida has determined that the projects recommended in the City of Lakeland Wastewater System Facilities Plan Update dated April 2025 relating to the City's western trunk sewer replacement and expansion project are in the best interests of the citizens of the City of Lakeland and the City's wastewater customers; and

WHEREAS, the City of Lakeland intends to seek funding from the Florida Department of Environmental Protection under its State Revolving Fund Loan Program in order to assist with the funding of the western trunk project; and

WHEREAS, the City Commission determines that the findings and conclusions of the City of Lakeland Wastewater System Facilities Plan Update dated April 2025 and the State Revolving Fund Capital Financing Plan are true and correct; and

WHEREAS, the City Commission finds that it is appropriate and in the best interests of the citizens and wastewater customers of the City of Lakeland to approve the City of Lakeland Wastewater System Facilities Plan Update dated April 2025 and the

State Revolving Fund Capital Financing Plan in accordance with the State Revolving Fund's requirements; and

WHEREAS, on May 19, 2025, the City Commission of the City of Lakeland conducted a duly-noticed public hearing prior to the adoption of this resolution;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF LAKELAND, FLORIDA:

SECTION 1. The foregoing findings are true and correct and are incorporated herein by reference and made a part hereof.

SECTION 2. The City Commission of the City of Lakeland hereby adopts the City of Lakeland Wastewater System Facilities Plan Update dated April 2025, attached hereto and incorporated herein by reference.

SECTION 3. The City Commission of the City of Lakeland hereby adopts the City of Lakeland State Revolving Fund Capital Financing Plan, attached hereto and incorporated herein by reference.

SECTION 4. The City Commission hereby authorizes the submission of the City of Lakeland Wastewater System Facilities Plan Update dated April 2025 and the City of Lakeland State Revolving Fund Capital Financing Plan to the Florida Department of Environmental Protection.

SECTION 5. The City Manager is authorized to represent the City of Lakeland in carrying out its responsibilities under the State Revolving Fund Loan Program and to delegate authority and responsibility to staff to carry out all activities to accomplish the goals and requirements of the State Revolving Fund Loan Program.

SECTION 6. All resolutions or parts of resolutions in conflict with any of the provisions of this Resolution are hereby repealed.

SECTION 7. If any section or portion of a section of this Resolution proves to be invalid, unlawful, or unconstitutional, it shall not be held to invalidate or impair the validity, force or effect of any other section or part of this Resolution.

SECTION 8. This Resolution shall take effect immediately upon passage.

PASSED AND CERTIFIED AS TO PASSAGE this 19th day of May, A.D. 2025.

H. WILLIAM MUTZ, MAYOR

ATTEST: _____
KELLY S. KOOS, CITY CLERK

APPROVED AS TO FORM AND CORRECTNESS: _____
PALMER C. DAVIS
CITY ATTORNEY

City of Lakeland



Wastewater System Facilities Plan Update

Western Trunk Gravity Sewer Replacement

April 2025

City of Lakeland

Western Trunk Gravity Sewer Replacement Facilities Plan Update April 2025



CITY OF LAKELAND

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	4
SECTION 1 – EXECUTIVE SUMMARY.....	5
SECTION 2 – ALTERNATIVES ANALYSIS	21
SECTION 3 – SELECTED ALTERNATIVE.....	49
SECTION 4 – ENVIRONMENTAL EFFECTS.....	52
SECTION 5 – PUBLIC PARTICIPATION PROCESS.....	54
APPENDIX A – DETAILED COST TABLES	55
APPENDIX B – ENVIRONMENTAL REVIEW OF SELECTED ALTERNATIVE	68
APPENDIX C – ENVIRONMENTAL REVIEW OF OTHER ALTERNATIVES.....	99
APPENDIX D – CAPITAL FINANCING PLAN	134

Acknowledgements

This Facility Plan Update was prepared by Chastain-Skillman, LLC and Angie Brewer & Associates, LC utilizing technical information and data provided by the City of Lakeland, Garney Construction, and Chastain-Skillman, LLC.

Section 1 – Executive Summary

1.1 Introduction

This Facilities Plan is being updated to reflect the addition of the Western Trunk Gravity Sewer Replacement, to reflect current cost estimates and to support the City of Lakeland request for funds under the State's Clean Water State Revolving Fund (SRF) Loan Program.

The original Facilities Plan was adopted by the City of Lakeland City Commission in June 2004. On October 22, 2004, the City of Lakeland obtained a Florida Finding of No Significant Impact (FFONSI) for the City of Lakeland State Revolving Fund Wastewater Facilities Plan dated June 2004. The Florida Department of Environmental Protection (FDEP) also issued a Florida Reaffirmation Notice on July 6, 2016. The City of Lakeland is requesting Environmental Clearance, in the form of a FFONSI, FCEN or FRAN, be approved for the following project included in this Facilities Plan Update: Western Trunk Gravity Sewer Replacement.

This Facilities Plan Update and Capital Financing Plan have been prepared to complete a step in the process of establishing the eligibility of the City of Lakeland for low-cost State Revolving Fund (SRF) loans to finance utility system improvements. The SRF program provides low interest loans to local governments for the planning, design, and construction of utility systems.

The Florida Department of Environmental Protection (FDEP) administers the Florida SRF program. Under the SRF program, local governments are required to submit to FDEP Facilities Plans and Capital Financing Plans containing detailed planning, financial, and technical information for the purpose of obtaining environmental clearance for the proposed project. This document was prepared to meet those requirements.

Review of this document, consideration of public input, and adoption of the Facilities Plan by the City of Lakeland City Commission is required by the SRF program. Adoption of the Plans by the City Commission in no way commits the City to construct the project, nor does it commit the City to using SRF funding or the FDEP to offering SRF funding.

The recommendations in this planning document are consistent with the City of Lakeland Comprehensive Plan as adopted by the City of Lakeland City Commission and updated as needed.

1.2 Existing Wastewater Utility System

The Lakeland wastewater collection and transmission system includes approximately 341 miles of 6-inch to 48-inch diameter gravity sewer, 146 miles of 2-inch to 36-inch diameter force main, and 182 pump stations. Most of the City's pump stations are equipped with telemetry, allowing City personnel to monitor their status and collect data from each pump station. This data is accessible from a central location at the Glendale facility. All pump stations are equipped with high wetwell level alarms and standby power generators or portable generator receptacles.

The City operates one pretreatment facility and two wastewater treatment facilities. To reduce the organic load on the Glendale facility, the City constructed the West Lakeland Wasteload Reduction Facility. The Glendale plant serves the southern portion of the service area and the Northside facility the northern portion. The Glendale facility is permitted for 13.7 million gallons per day (MGD) annual average daily flow (AADF). The Northside facility is permitted for 8 MGD AADF.

Wastewater effluent is utilized by the City's electrical power generating facility for cooling water. The cooling water and any excess effluent not used by the power plant is pumped to a wetlands treatment system and then utilized by Tampa Electric Company's Polk Power Station or discharged to the Alafia River.

The Western Gravity Sewer Trunk Line (trunk line) is one of the major collection systems for the City of Lakeland's wastewater utility. The trunk line begins near George Jenkins Boulevard and runs south to the Southwest Pump Station located near the intersection of Edgewood Drive and San Gully Road (Figure 1-1). The Southwest Pump Station then pumps the wastewater to the City's Glendale Water Reclamation Facility via either a second trunk line or through a large force main.

1.3 Need for Project

The Western Trunk Gravity Sewer begins south of George Jenkins Boulevard and terminates at the City's Southwest Pump Station located at the northeast corner of Edgewood Drive and San Gully Road (Figure 1-1). The trunk line is 24-inch non-reinforced concrete pipe (NRCP) from George Jenkins Boulevard and transitions to 36-inch NRCP at Herschell Street. The pipe was subsequently lined in the 1980s, reducing the 24-inch and 36-inch diameters to 20-inch and 30-inch, respectively. The reduction in diameter of the 36-inch line has led to capacity issues and pipe failures due to the pipe's age.

The City's primary goals for the new trunk line are the following:

- Provide capacity for current and future demand. Chastain-Skillman recently updated the City's sewer model to account for dry weather flow and peak 7-day wet weather flow. Chastain-Skillman is also preparing a 20-year wastewater master plan with flow projections. These projections and potential build-out of the drainage basin are considered when sizing the proposed trunk line.
- The existing trunk line is located under homes in the Oakhill, Colonial, and Citrus Center Colony MHPs may not remain in operation. Lateral flows from the homes must be captured and routed elsewhere, rather than reusing the existing trunk line.
- Approximately 1,400 feet of the existing trunk line and four manholes are under the pavement of Harden Boulevard. In addition, collector flows enter

the trunk line within this area. Harden Boulevard is a busy Florida Department of Transportation (FDOT) highway. The new line should be constructed outside of the Harden Boulevard corridor to allow access for maintenance and eliminate the possibility that FDOT would require its future relocation.

- The trunk line needs to be accessible for maintenance operations.

The City has established standards for its collection and transmission system.

Those that are most important for this project are:

- Depth of flow in gravity lines should never exceed 75% of the pipe diameter.
- Improvements to gravity lines should be considered when the depth of flow approaches 60% full.
- Recommended gravity upgrades should account for future demands for at least 20 years and should not be greater than 50% full to allow for additional capacity.
- Manholes should not surcharge.
- Maximum pump run times should not exceed 8 hours (5 hours for a new design).
- Force main velocity can be between 2.2 and 7.0 feet per second (fps). New designs should use 4.5 – 5.0 fps

1.4 Selected Plan

The selected plan is to replace the existing trunk line with a new 42-inch diameter gravity trunk line, wastewater pump station, 24 and 30-inch diameter force main, and associated collector lines. Of the six evaluated alternatives, the selected plan is the most cost-effective and viable option based on lowest capital cost and a 20-year present worth analysis. In addition, the selected plan scored the most favorable based on non-monetary factors.

The alignment along the northern half of the line will be west of the existing line to take advantage of better construction conditions and to avoid conflicts with existing manufactured home communities which restrict City access for operation

and maintenance. The southern half of the alignment will follow the route of the existing trunk line. This route is approximately 13,880 feet in length.

The selected plan route matches the existing trunk line alignment except for the section between Herschell Street and Patterson Street and along Forest Park Street and Webster Avenue. The new pipeline profile will allow collector sewers and services that enter the existing trunk line to be diverted to the new line.

1.5 Financing the Improvement Project

A summary of the SRF Estimated Loan Budget is presented in **Table 1-1**. The City has included the use of American Rescue Plan Act (ARPA) funds as well as City funds to reduce the estimated SRF Loan Amount. The total amount includes the estimated cost of construction, contingency, technical services, capitalized interest, and loan service fee. A detailed breakdown of the financial outlook is included in the Capital Financing Plan located in **Appendix D** of this document.

Table 1-1. SRF Estimated Loan Budget

Item	Total
Estimated Construction	\$77,730,040
Contingency	\$7,773,004
Technical Services After Bid Opening	\$7,773,004
Subtotal	\$93,276,048
Other Funding to Reduce Loan Amount	
ARPA	\$14,296,274
Subtotal Non-SRF Funds	\$14,296,274
Estimated SRF Loan Amount	\$78,979,774
Capitalized Interest	\$631,739
Loan Service Fee	\$1,579,595
Total SRF Cost for Amortization	\$81,191,108

An interest rate of 0.44% for the project included in this plan has been used to calculate the total estimated annual payment of approximately \$4,884,014 (including a coverage rate of 1.15).

The planning process for this project has established that the revenues generated by the water and wastewater systems are sufficient to support the operating expenses, existing debt obligations and the estimated annual SRF loan debt payments for the planned project. This plan presents a financially conservative outlook.

1.6 Planning Considerations

1.6.1 Planning Area Description

The Western Gravity Sewer Trunk Line (trunk line) is one of the major collection systems for the City of Lakeland's wastewater utility. The trunk line begins near George Jenkins Boulevard and runs south to the Southwest Pump Station located near the intersection of Edgewood Drive and San Gully Road (Figure 1-1). The Southwest Pump Station then pumps the wastewater to the City's Glendale Water Reclamation Facility via either a second trunk line or through a large force main.

Figure 1-1. Existing Western Gravity Sewer Trunk Line

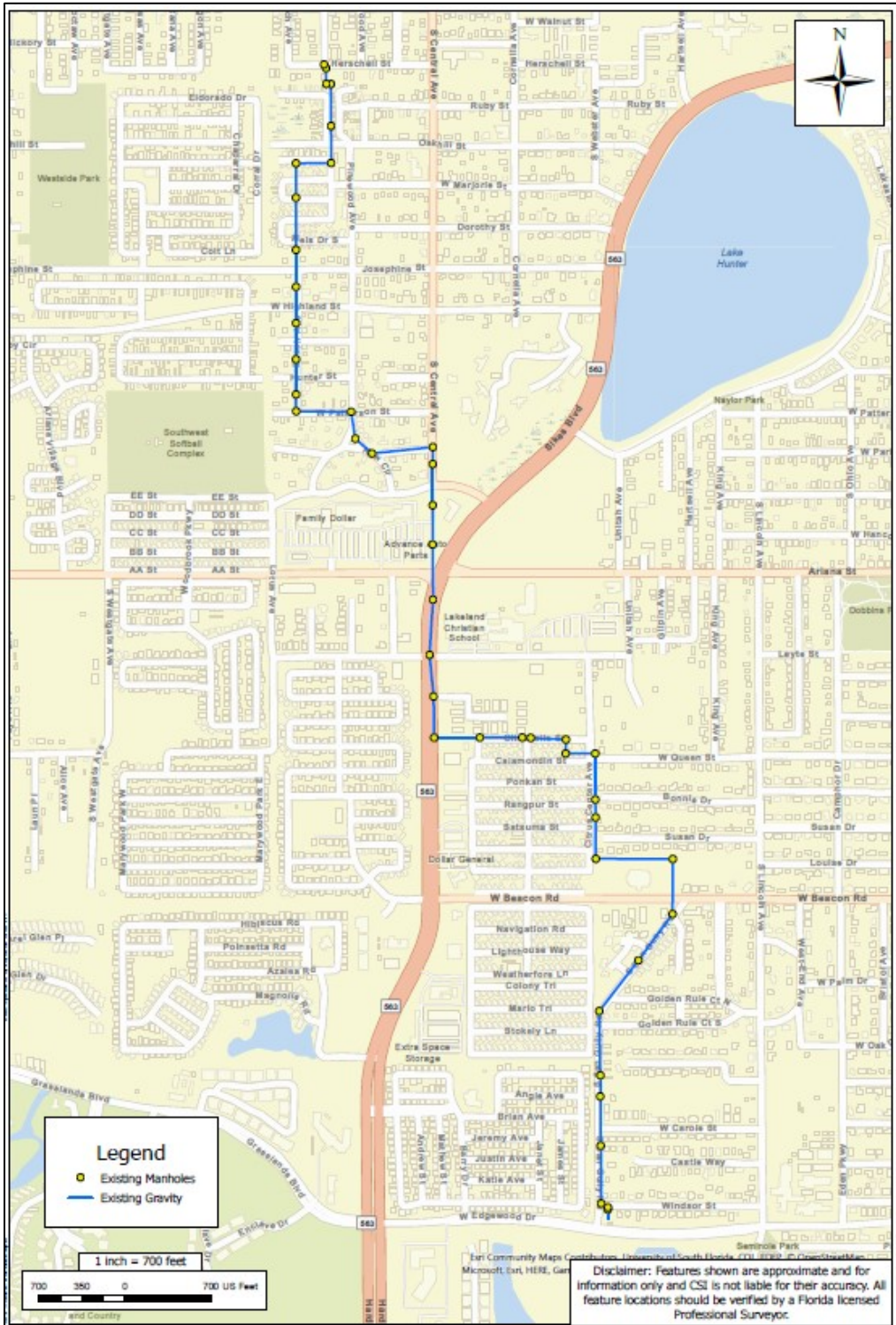
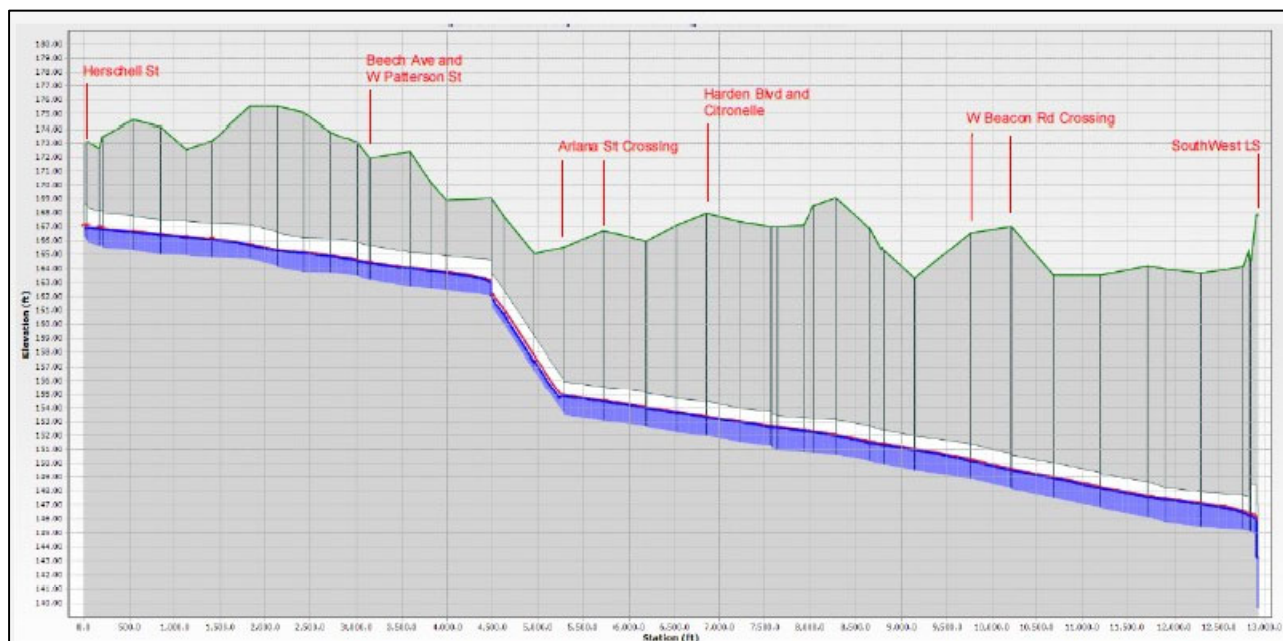


Figure 1-2. Western Gravity Sewer Trunk Line Drainage Area



The existing 36-inch diameter section of trunk line consists of approximately 12,800 lineal feet of lined NRCP slip lined to 30-inch diameter and 43 manholes. There are approximately 47 branch connections that flow into the manholes along the 36-inch sewer line's route. **Figure 1-3** shows the profile of the existing trunk line and modeled depth of flow in the pipe during current the peak week of the wet season. The model predicts that during the storm event flow condition, the lower end of the trunk line was flowing at 82% full (by level). It is important to point out that with gravity sewers, the peak flow capacity is reached at approximately 94% and decreases as the flow approaches full-pipe conditions. However, empirical evidence indicates the lower half of the Trunk Line surcharges during normal wet season peak day conditions.

Figure 1-3. Existing Trunk Line Depth of Flow – Peak Week



Maintaining the existing trunk line is problematic because of its alignment through urbanized areas with limited access. The following areas are of particular concern:

- The trunk line runs through the Oakhill Mobile Home Park (MHP) and the Bedrock Colonial MHP located west of Pinewood Avenue between Herschell Street and Josephine Street. The MHPs' private sewer collection system discharges into the trunk line at Manholes 7013, 7010, 7153, 7009,

7008, and 7006. The line runs under several of the homes which limits the City's access for maintenance.

- The line runs beneath the Harden Boulevard pavement for approximately 1,400 feet south of Ariana Street. Harden Boulevard is a State highway which limits City access for maintenance activities.
- The line exits Harden Boulevard right-of way south of Topaz Retreat Apartments and runs within a 15-foot-wide wastewater easement along Citronelle Street within the Bedrock Citrus Center Colony MHP. On the east side of the MHP, the line turns south and runs along the east side of the drainage channel to just north of Beacon Road. The line is 14-foot to 16-foot deep in this area and runs within 10 feet of several homes.

The Publix lift station (L0790) force main and Northwest lift station (L0810) discharge into the Trunk Line near Herschell Street. These force mains currently account for 78% of the dry weather flow in the Trunk Line. This percentage decreases to approximately 59% during the wet season peak day, suggesting that significant infiltration and inflow into the Trunk Line.

Table 1-2. Current Modeled Flow Conditions in Trunk Line

Location	Dry Weather Flow (MGD)	Wet Weather Flow (MGD)		
		Peak 7-Day Rolling Average	Peak Day	Hurricane Ian
Current Flow				
Northwest Force Main	0.67	1.00	1.05	1.13
Publix Force Main	1.17	1.65	1.65	1.66
Other Sources	0.53	1.10	1.90	3.07
Terminus of Trunk Line	2.37	3.75	4.60	5.86

The sewer model was run for projected year 2045 flow conditions. The flows were based on a hybrid projection of traffic analysis zone data with modifications

provided by the City planning department. **Table 1-3** summarizes the projected dry and wet weather flows in the trunk line.

Table 1-3. Modeled Flow Conditions in Trunk Line in Year 2045

Location	Dry Weather Flow (MGD)	Wet Weather Flow (MGD)		
		Peak 7-Day Rolling Average	Peak Day	Hurricane Ian
Projected Flow in 2045				
Northwest Force Main	0.74	1.06	1.12	1.20
Publix Force Main	1.21	1.69	1.70	1.70
Other Sources	0.58	1.23	2.03	3.21
<i>Terminus of Trunk Line</i>	2.53	3.98	4.85	6.11

Table 1-4 shows the modeled depth of flow for the existing 30-inch trunk line, a 36-inch line, and 42-inch line in 2045 under wet weather conditions. The maximum depth of flow in the modeled trunk line occurs in the southern half of the trunk line after the Ariana Street crossing. This is because there is less slope in this section.

Table 1-4. Modeled Depth of Flow in Year 2045

Flow Condition	Projected Depth of Flow (as a % of Pipe Diameter)		
	Existing 30" Trunk Line	36" Trunk Line	42" Trunk Line
Peak Wet Week	70%	47%	33%
Peak Wet Day	77%	51%	38%
Hurricane Day	96%	78%	41%

Figures 1-2, 1-3, and 1-4 show the projected year 2045 depth of flow in a proposed 36-inch trunk line. **Figures 1-7, 1-8, and 1-9** show the depth of flow for a proposed 42-inch trunk line.

Figure 1-4. Proposed 36-inch Trunk Line Depth of Flow – Peak Week in 2045

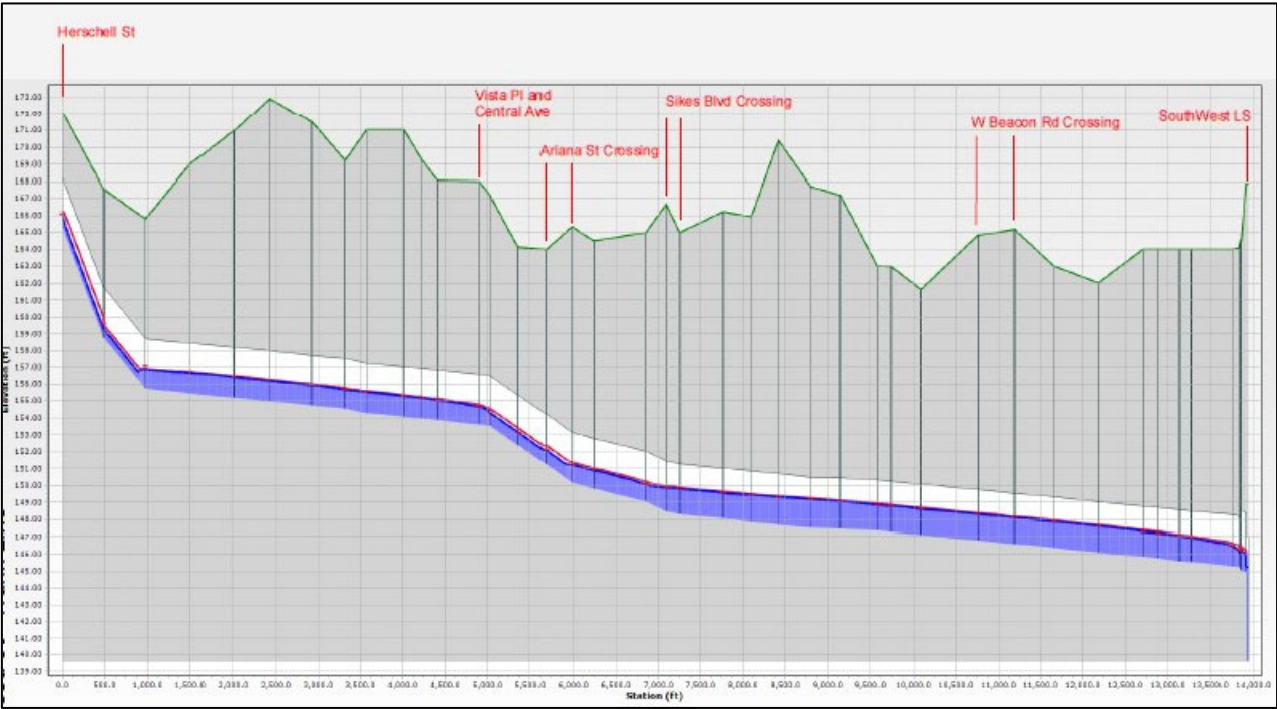


Figure 1-5. Proposed 36-inch Trunk Line Depth of Flow – Peak Day in 2045

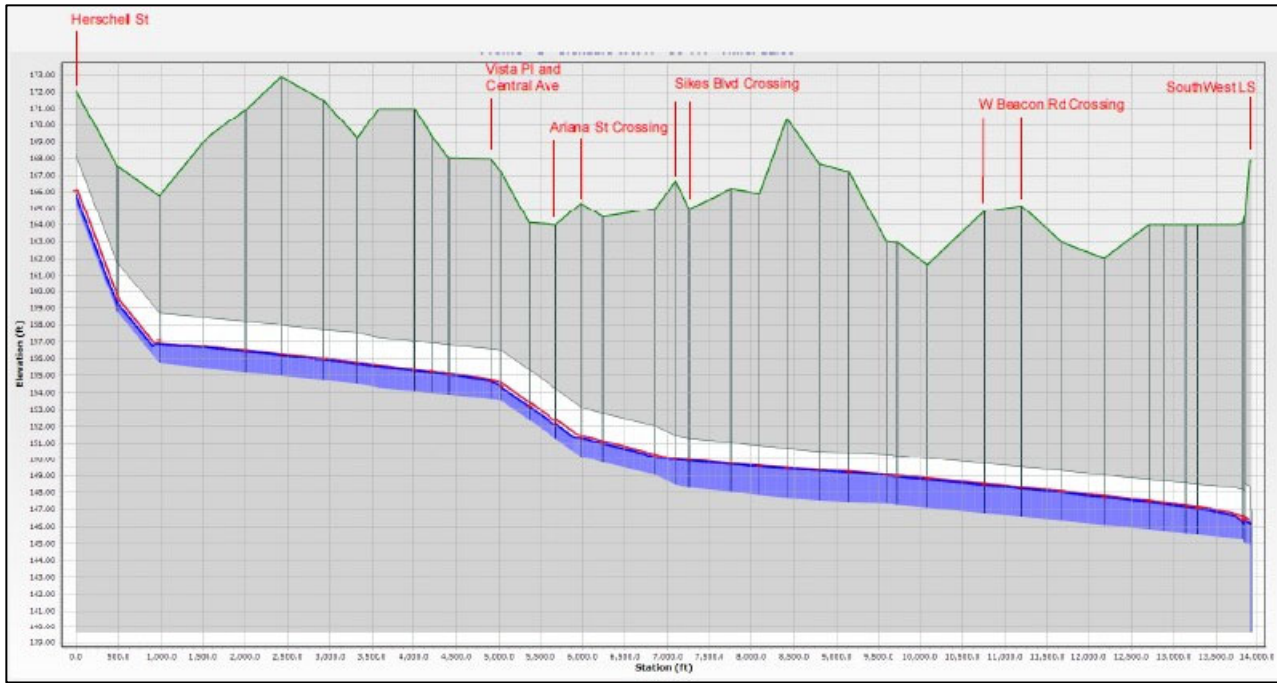


Figure 1-6. Proposed 36-inch Trunk Line Depth of Flow – Storm Event in 2045

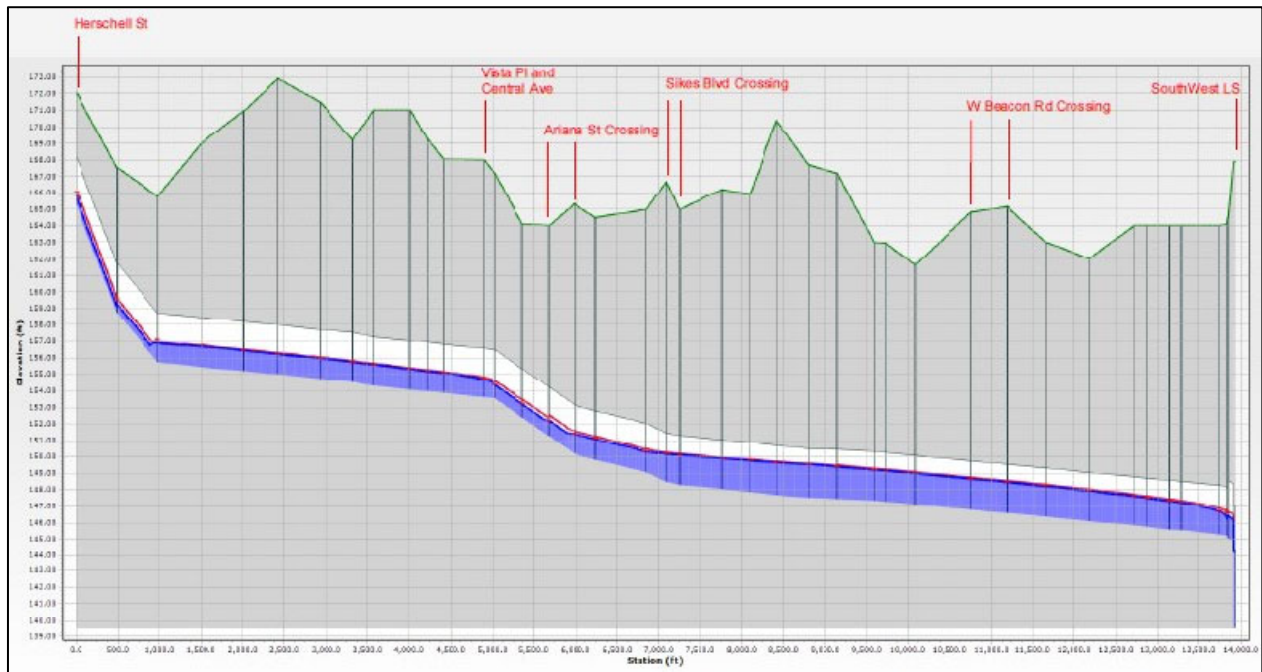


Figure 1-7. Proposed 42-inch Trunk Line Depth of Flow – Peak Week in 2045

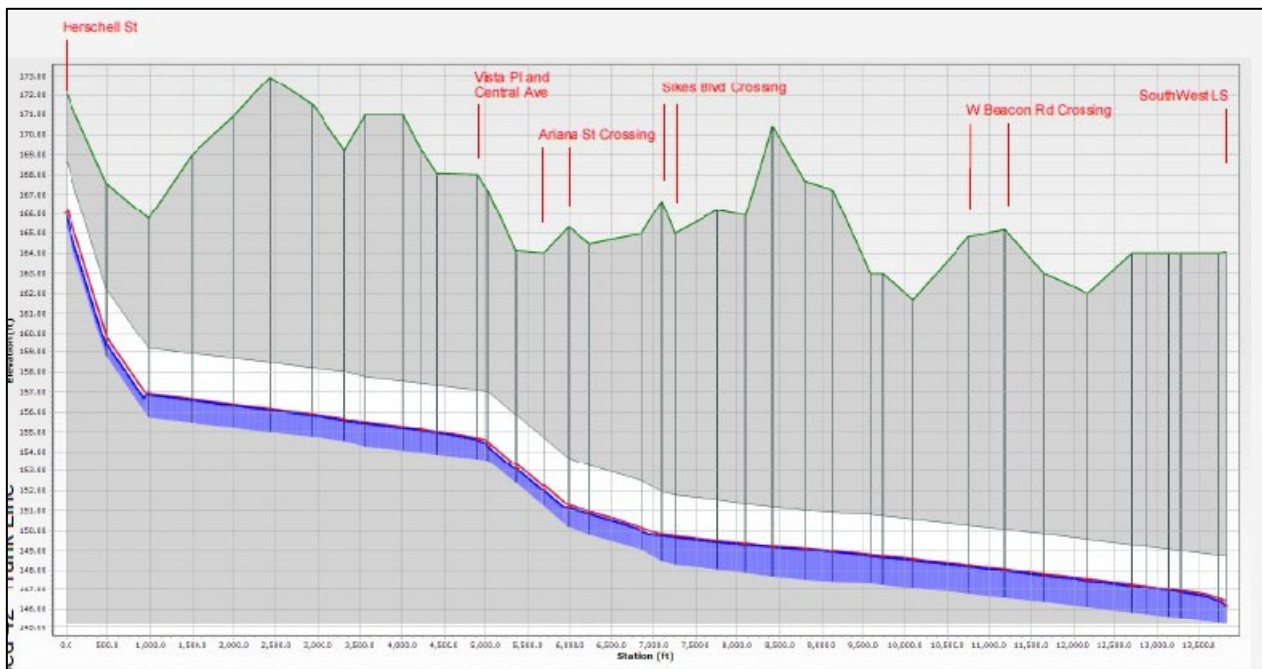


Figure 1-8. Proposed 42-inch Trunk Line Depth of Flow – Peak Day in 2045

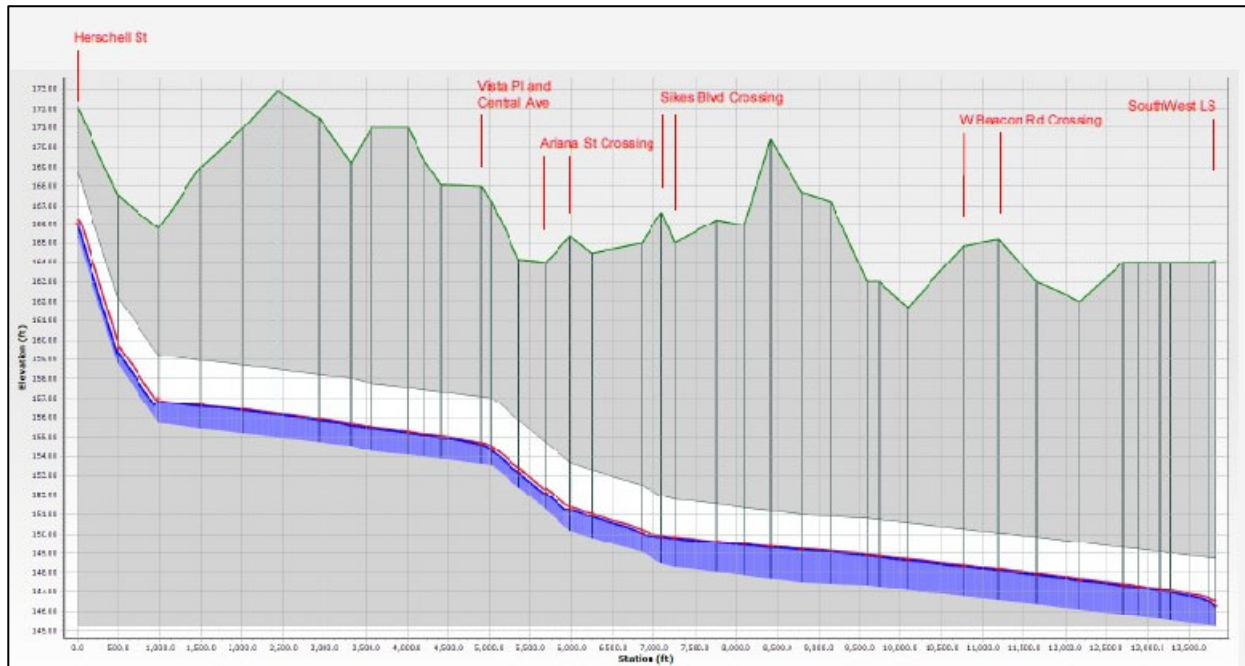
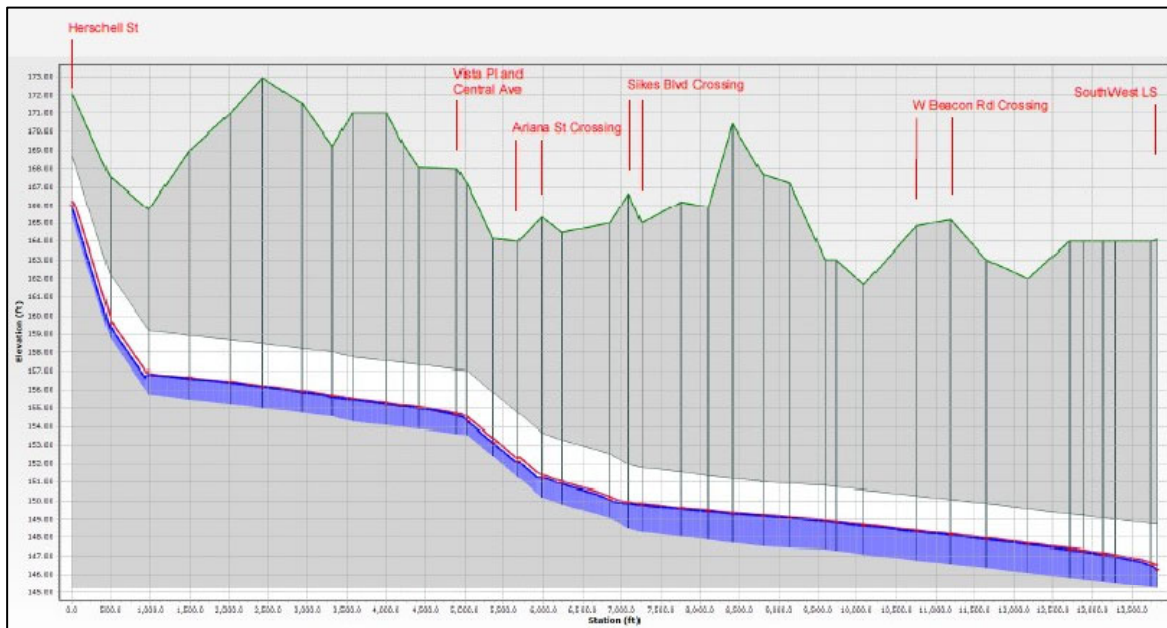


Figure 1-9. Proposed 42-inch Trunk Line Depth of Flow – Storm Event in 2045



1.6.2 Population Trends

Population projections are based on Polk County Traffic Analysis Zone data and edited by the City's planning department. **Table 1-5** summarizes the population projections for the trunk line drainage area and the City's entire service area.

Table 1-5. Population Trends
Population Projections

Year	Trunk Line Drainage Area	City Service Area
2020	24,294	146,777
2025	25,074	157,664
2030	25,937	169,100
2035	26,815	180,542
2040	27,796	191,269
2045	28,988	201,251

1.6.3 Wastewater Projected Flow Demands

The City's wastewater hydraulic model was recently improved to incorporate geocoded customer billing data and addresses to the nearest model element and established model generation rates and curves for residential and commercial accounts. The model was also updated to include base (dry weather), wet season flows, and estimations for infiltration and inflow. The current model projects wastewater flow through the year 2045.

Dry season flows were based on the average day flow from December 2021 through February 2022. Wet season flows were based on the highest 7-day rolling average from July 2022 through September 2022. The Trunk Line was also modeled for peak day during the wet season and a storm event (Hurricane Ian). Projected flows are shown in **Tables 1-6 and 1-7**.

Table 1-6. Wastewater Flow Projections for City Service Area

Wastewater Projections (MGD)		
Year	Dry Season	Wet Season
2020	13.62	18.16
2025	14.66	19.20
2030	15.67	20.21
2035	16.70	21.24
2040	17.75	22.29
2045	19.02	23.56

Table 1-7. Wastewater Flow Projections for Western Gravity Trunk Line

Wastewater Projections (MGD)				
Year	Dry Season	Wet Season	Peak Day	Storm Event
2020	2.34	3.79	4.66	5.92
2025	2.37	3.82	4.69	5.95
2030	2.40	3.85	4.72	5.98
2035	2.43	3.88	4.75	6.01
2040	2.47	3.92	4.79	6.05
2045	2.53	3.98	4.85	6.11

Section 2 – Alternatives Analysis

2.1 Western Trunk Gravity Sewer Replacement

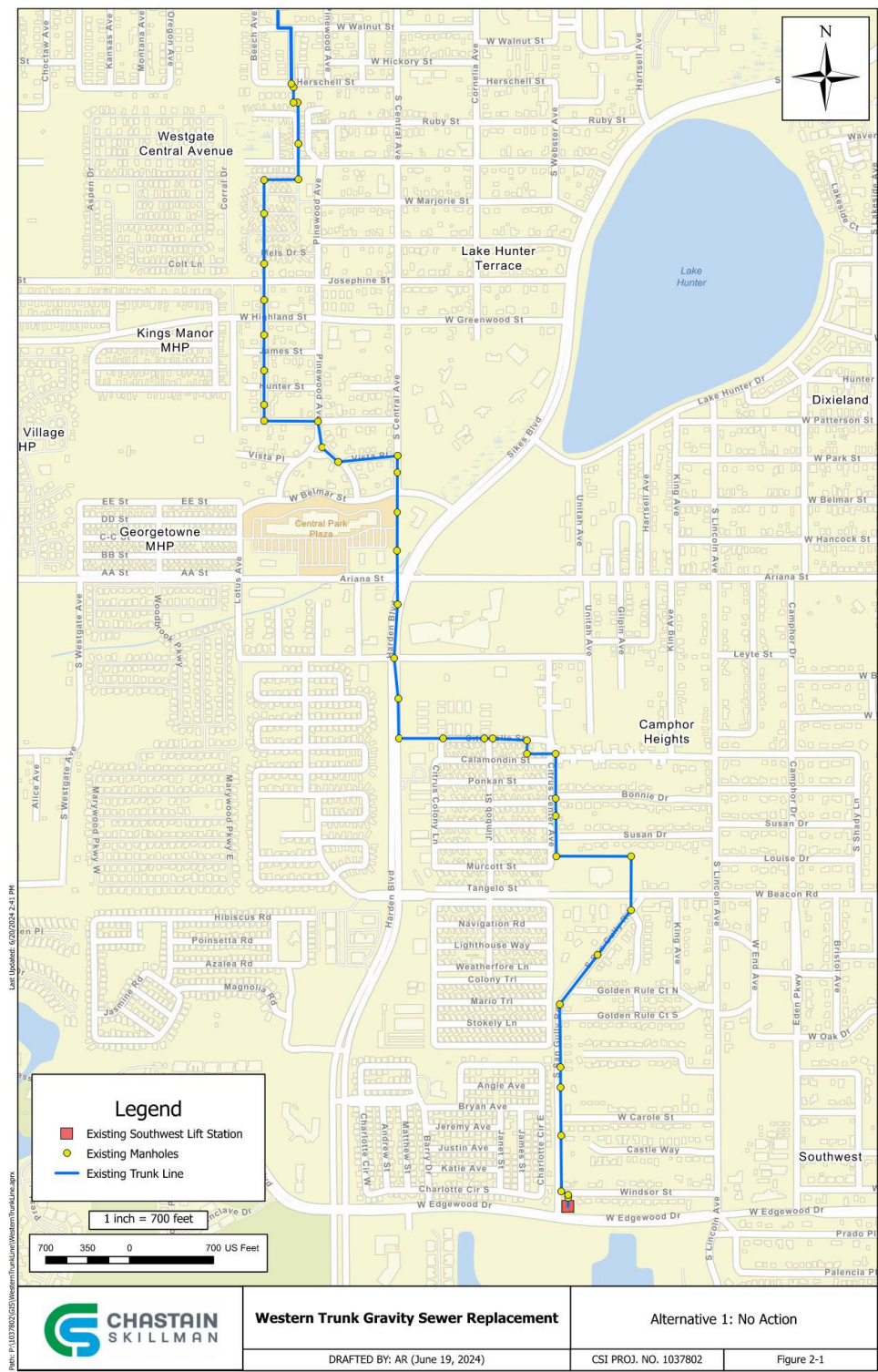
2.1.1 Alternative 1 – No Action – Utilize Existing Trunk Line

This alternative involves continuing to utilize the existing trunk line (Figure 2-1).

This alternative does not meet the City's objectives of:

- providing capacity for current demand and projected growth.
- relocation of the trunk line out from under homes in the Oakhill Mobile Home Park (MHP), Colonial Village, and Citrus Center Colony
- replacement of the trunk line due to pipe damage and age.
- accessibility for maintenance operations

Figure 2-1. Alternative 1 - No Action – Utilize Existing Trunk Line

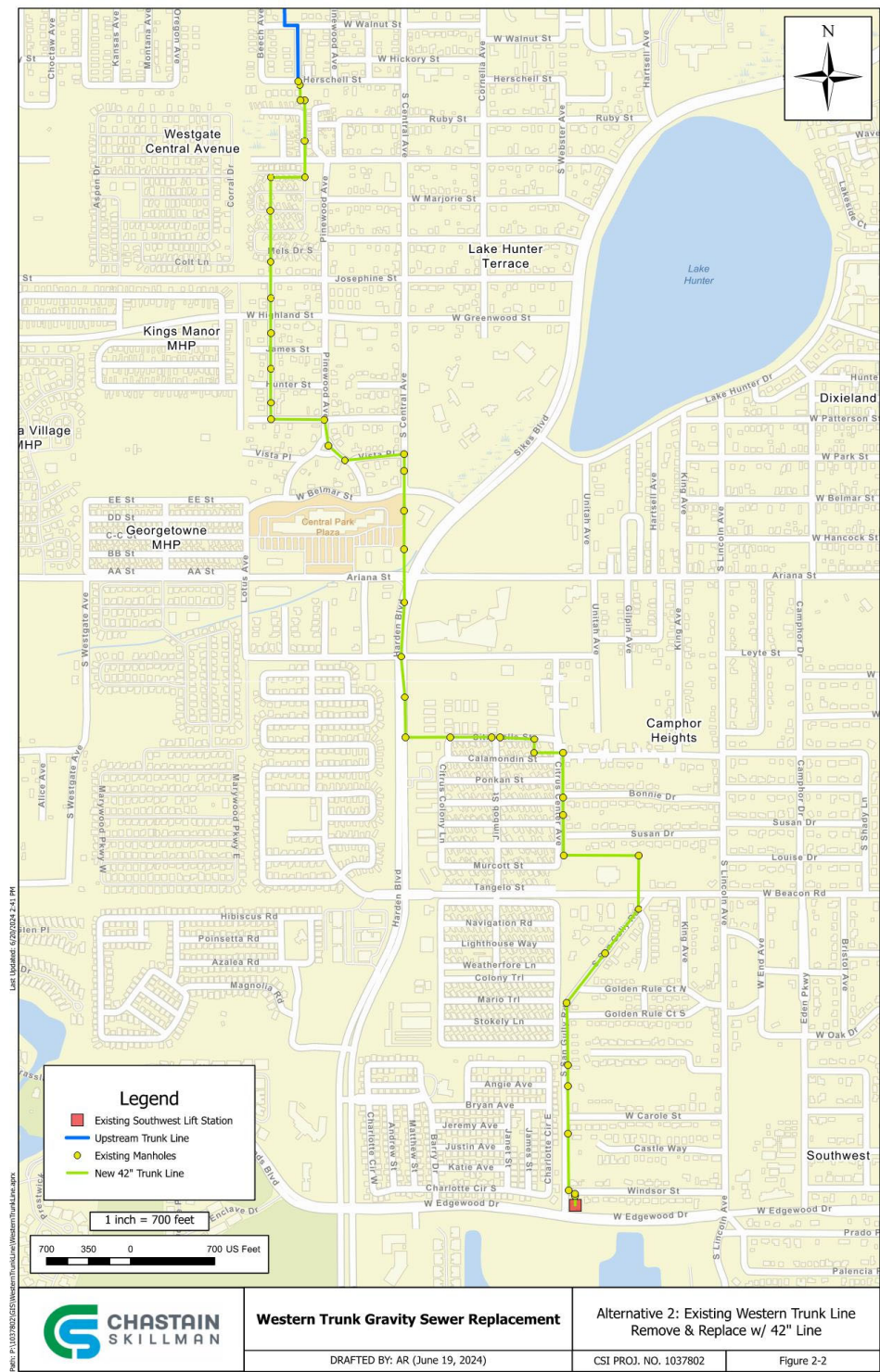


2.1.2 Alternative 2 – Remove and Replace Existing Trunk Line

This alternative involves removing the existing trunk line and replacing it with a new 42-inch diameter line within the same corridor (Figure 2-2). This alternative will require incremental removal of the existing line while construction proceeds with the new line. Construction of this alternative will require significant bypass pumping, and removal of mobile homes that conflict with the existing line. This alternative does not meet the City's objectives of:

- relocation of the trunk line out from under homes in the Oakhill Mobile Home Park, Colonial Village, and Citrus Center Colony
- accessibility for maintenance operations
- relocation outside of Harden Boulevard corridor.

Figure 2-2. Alternative 2 - Remove and Replace Existing Trunk Line in Same Location with 42"



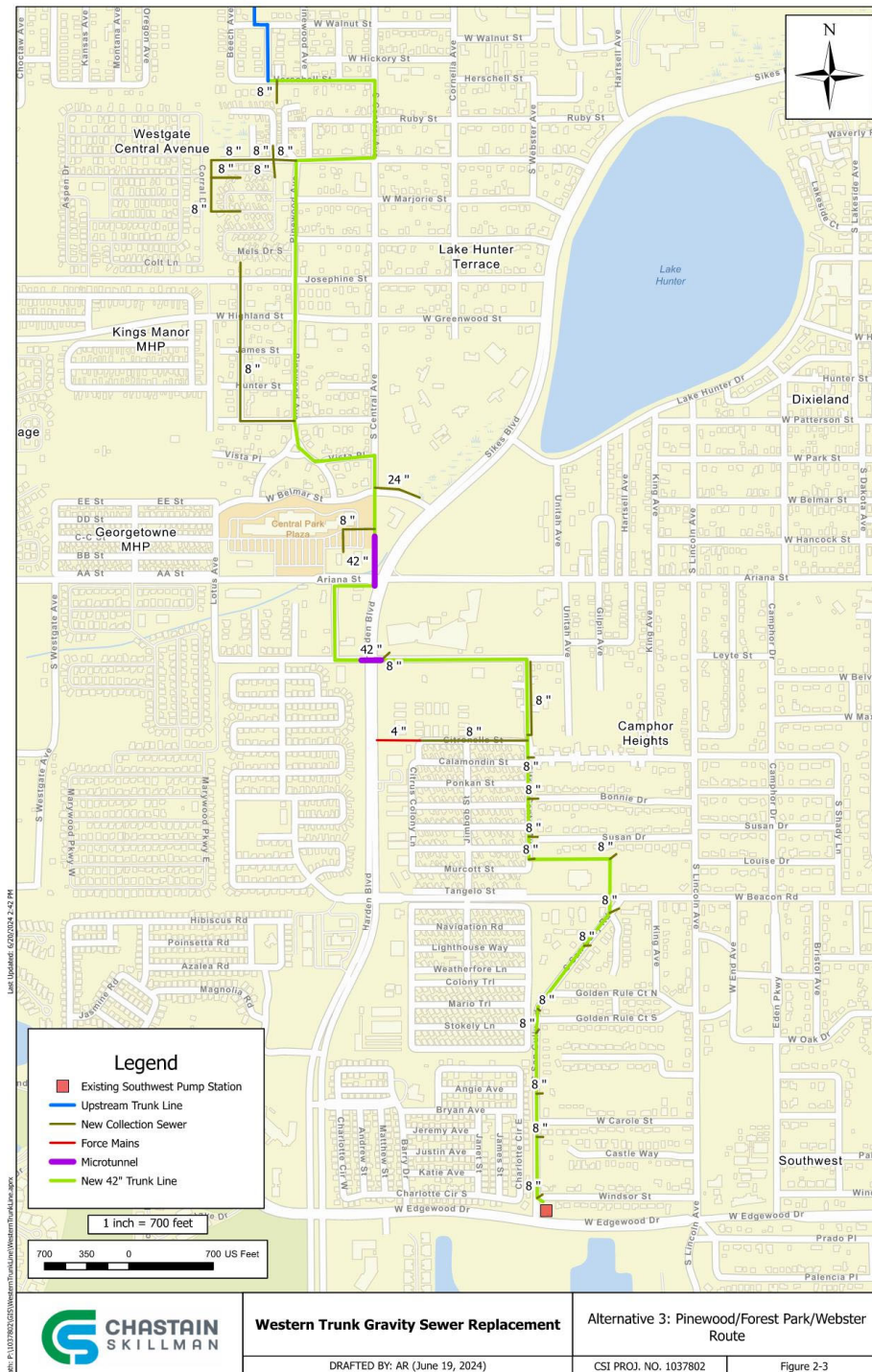
2.1.3 Alternative 3 – Pinewood/Forest Park/Webster Route

Route Description

Alternative 3 involves the construction of a new 42-inch diameter trunk line. The alignment begins at the intersection of Herschell Street and Dade Avenue and proceeds east to Central Avenue, south on Central to Oakhill Street, west on Oakhill, south on Pinewood Avenue, south on Pinewood to Kew Circle, cross to the south side of Ariana Street, west to Windermere Avenue, east on Forest Park Street, south on Webster Avenue and Citrus Center Avenue to San Gully Road, and south to the Southwest Pump Station (**Figure 2-3**). This route is approximately 14,300 feet in length. This alternative does meet the City's objectives; however, it also presents several construction concerns outlined as follows:

- Excessive depth along Central Avenue
- Trenchless crossing of conservation area at northwest corner of Harden Boulevard and Ariana Street
- High-risk trenchless crossing of the existing trunk line at Harden Boulevard and Forest Park Street
- Deep construction adjacent to Lakeland Christian School
- Construction adjacent to overhead power lines along San Gully Road

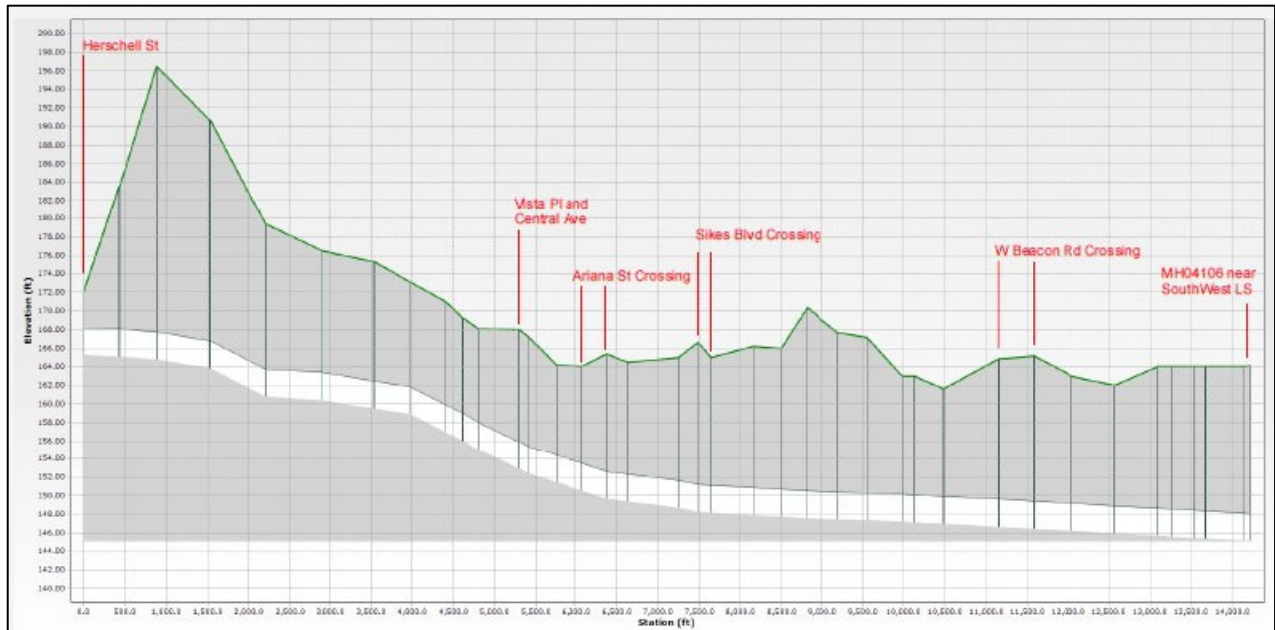
Figure 2-3. Alternative 3 – Pinewood/Forest Park/Webster Route



Construction Challenges

- The elevation increases by 24 feet from MH 7155 to Central Avenue. The proposed trunk line would be 25 to 32 feet in depth for 1000 linear feet along Central to Oakhill. **Figure 2-4** shows the profile of Alternative 3.

Figure 2-4. Alternative 3 – Pinewood/Forest Park/Webster Route



- A 425-linear foot microtunnel will be required to cross the conservation land at the northwest corner of Ariana Street and Harden Boulevard. The microtunnel will extend to the south side of Ariana Street at the Ariana Food Mart. An additional 200-linear foot microtunnel will be required to cross Harden Boulevard at Forest Park Street.
- The microtunnel crossing of Harden Boulevard will be high risk construction as the new trunk line will only have approximately 12-18 inches of vertical separation where it crosses beneath the existing trunk line.
- Construction along Forest Park Street to Webster Avenue will be challenging as the pipe depth will exceed 20 feet. This section is also adjacent to Lakeland Christian School and will require the road to be closed. This work cannot be accomplished during the school summer break because of the depth of construction.
- Webster Avenue is a narrow residential street lined with large oak trees that have canopies which extend over the road. Extensive trimming of the trees will be required to install the 42-inch pipeline. Because the roadway will need to be reconstructed, temporary parking and shuttle service will need to be established for residents as the construction proceeds down the roadway.
- The trunk line will exit Webster Avenue and run within Citrus Center Avenue, which is a private road within the Bedrock Citrus Center Colony development.
- Construction along San Gully Road will be challenging due to the depth of pipe, road width, and existing underground utilities and overhead power lines.

Diversion of Tributary Collector Flow into Alternative 3 Trunk Line

The following diversions will be constructed at the sections that do not coincide with the existing trunk line:

- Approximately 5,500 linear feet of 8-inch gravity collector lines will need to be constructed to divert flow to the new trunk line.
- It is unclear if collector flow from Oakhill and Colonial MHPs can be diverted to Alternative 3 trunk line as the elevation increases significantly going east.

- Collector flow entering MH 7006 between Mels Drive south and Josephine Street will be diverted to a new 8-inch gravity line that will be constructed along Beech Avenue south to the intersection of Patterson and Pinewood. This will allow collector flow currently entering the existing trunk line along Beech Avenue to enter the new trunk line.
- Approximately 293 linear feet of 10-inch gravity sewer will be required within the Central Park Plaza to divert flow to the new trunk line.
- The existing 8" clay sewer along Webster will likely need to be reconstructed to allow construction of the trunk line.
- Flow entering the existing trunk line along Citronelle Street on the north end of Citrus Center Colony MHP will be diverted into a new 8-inch gravity sewer to be constructed along the trunk line. The 8-inch sewer will flow east to the new trunk line at Webster Avenue.

2.1.4 Alternative 4 – Trail/Lotus/Forest Park/Webster Route

Route Description

Alternative 4 alignment begins at the intersection of Herschell Street and Dade Avenue and proceeds west crossing the ditch line into Parcel 232823-1005000-05040 (Olive Development Land Trust), turns south and proceeds along City-owned properties to Lotus Avenue. The City-owned properties are currently utilized for drainage and City park. The alignment continues south on Lotus Avenue, crosses Ariana Street, and turns east on Forest Park Street. The trunk line crosses Harden Boulevard at Forest Park Street with a 200-linear foot microtunnel. From this location, the alignment continues to the Southwest Pump Station via the same route described in Alternative 3 (**Figure 2-5**). This alternative meets the City's objectives; however, many of the same construction challenges identified in Alternative 3 will occur.

Legend

- Existing Southwest Pump Station
- Upstream Trunk Line
- Branch Connections
- Force Mains
- Microtunnel
- Proposed Trunk Line

1 inch = 700 feet

700 350 0 700 US Feet

Western Trunk Gravity Sewer Replacement

Alternative 4: Trail/Lotus/Forest Park/Webster Route

DRAFTED BY: AR (June 19, 2024)

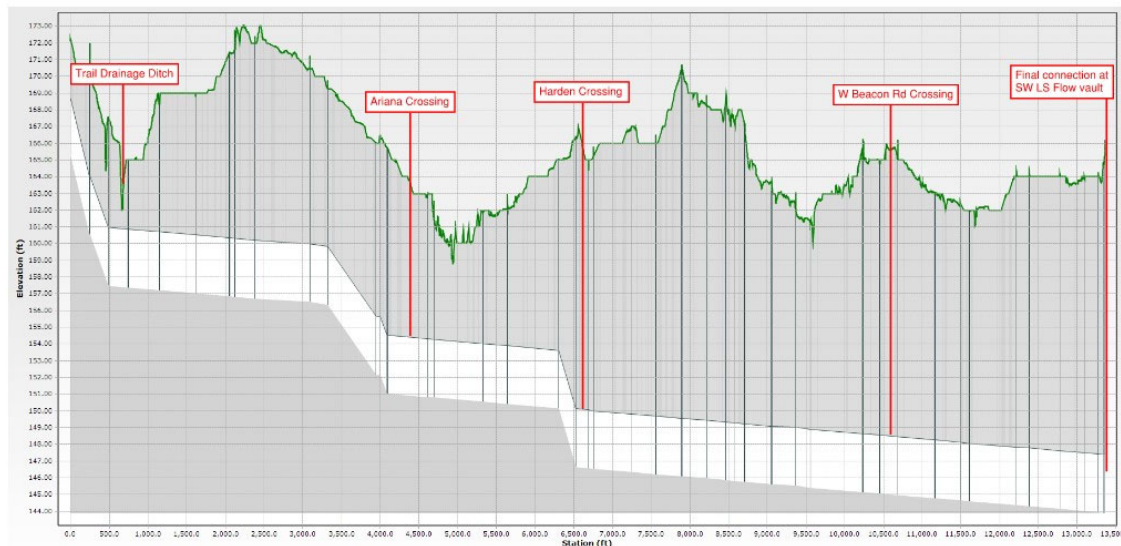
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Figure 2-5

Construction Challenges

- A 200-linear foot microtunnel will be required to cross Harden Boulevard at Forest Park Street.
- The microtunnel crossing of Harden Boulevard will be high risk construction as the new trunk line will only have approximately 12-18 inches of vertical separation where it crosses beneath the existing trunk line.
- Construction along Forest Park Street to Webster Avenue will be challenging as the pipe depth will exceed 20 feet. This section is also adjacent to Lakeland Christian School and will require the road to be closed. This work cannot be accomplished during the school summer break because of the depth of construction.
- Webster Avenue is a narrow residential street lined with large oak trees that have canopies which extend over the road. Extensive trimming of the trees will be required to install the 42-inch pipeline. Because the roadway will need to be reconstructed, temporary parking and shuttle service would need to be established for residents as the construction proceeds down the roadway.
- The trunk line will exit Webster Avenue and run within Citrus Center Avenue, which is a private road within the Bedrock Citrus Center Colony development.
- Construction along San Gully Road will be challenging due to the depth of pipe, road width, and existing underground utilities and overhead power lines.

Figure 2-6. Alternative 4 – Trail/Lotus/Forest Park Route Profile



Diversion of Tributary Collector Flow into Alternative 4 Trunk Line

The following diversions will be constructed at the sections that do not coincide with the existing trunk line:

- Approximately 2,084 linear feet of 8-inch gravity sewer to divert flow within the Oak Hill and Colonial Village developments.
- Collector flow entering MH 7006 between Mels Drive south and Josephine Street will be diverted to a new 8-inch gravity line that will be constructed along Beech Avenue south to the intersection of Patterson and the trail. This will allow collector flow currently entering the existing truck line along Beech Avenue to enter the new trunk line.
- Collector flow within along Kew Circle, Central Park Plaza, Trinity Apartments, and Lake Hunter Drive will be diverted along Belmar Street to the new trunk line at Lotus Avenue. This diversion will require approximately 1,500 linear feet of 8-inch to 12-inch gravity sewer and 1,690 linear feet of 24-inch sewer.
- Approximately 270 linear feet of 8-inch gravity sewer will be constructed along Windermere Avenue to collect flow from the Ariana Food Mart and Wells Fargo Bank.
- The existing 8" clay sewer along Webster will likely need to be reconstructed to allow construction of the trunk line.
- Flow entering the existing trunk line along Citronelle Street on the north end of Citrus Center Colony MHP will be diverted into a new 8-inch gravity sewer to be constructed along the trunk line. The 8-inch sewer will flow east to the new trunk line at Webster Avenue.

2.1.5 Alternative 5 – Trail/Lotus/Beacon Hill Colony Route

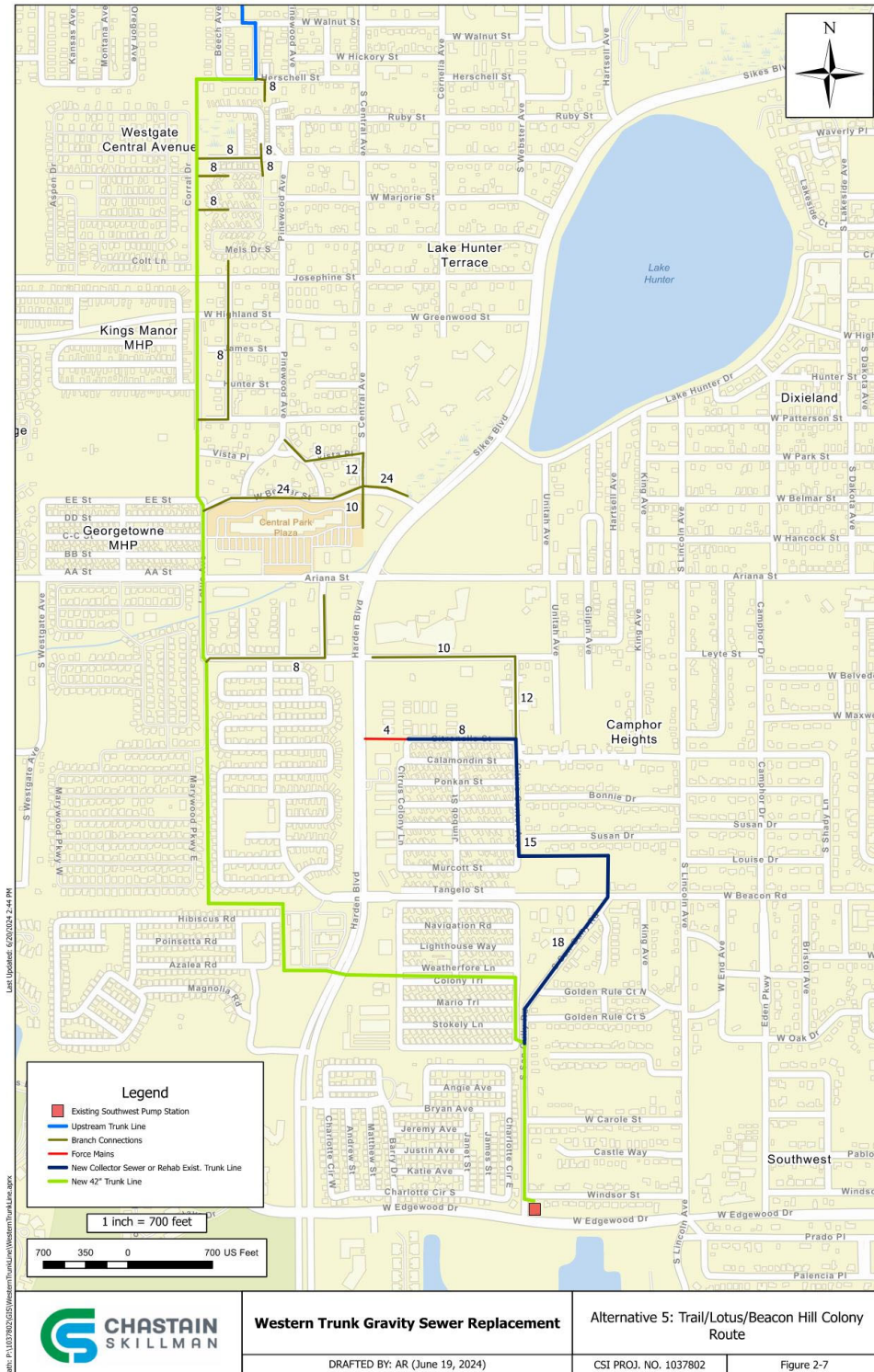
Route Description

Alternative 5 alignment begins at the intersection of Herschell Street and Dade Avenue and proceeds west crossing the ditch line into Parcel 232823-1005000-05040 (Olive Development Land Trust), turns south and proceeds along City-owned properties to Lotus Avenue. The City-owned properties are currently utilized for drainage and City park.

The alignment continues to the south end of Lotus Avenue where it continues along a private access road (Parcel 232826-0000000-11060 (FBCH Land Holdings Inc.)). The alignment continues south along the west side of Parcel 232826-0000000-11010 (HWV Holdings LLC). The alignment then turns east along a strip of land owned by Rodgers Revocable Trust (Parcel 232826-0000000-21060). This property has been evaluated by the City as a possible extension of Beacon Road. The alignment then turns south and runs along the west and south side of Parcel 232826-0000000-21100 (2115 Harden LLC).

The alignment then crosses to the east side of Harden Boulevard via a 200-linear foot microtunnel. The alignment continues east along the south side of Parcel 232825-0000000-43020 (Baron Management LLC). The pipe then proceeds east along the green space between Weatherfore Lane and Colony Trail (Parcel 232825-0000000-43010) within the Beacon Hill Colony development. The alignment turns south along Hill Colony Circle and then crosses the ditch line to San Gully Road, where it proceeds south to the Southwest Pump Station (Figure 2-7). This alternative meets the City's objectives regarding long-range planning and accessibility for maintenance operations.

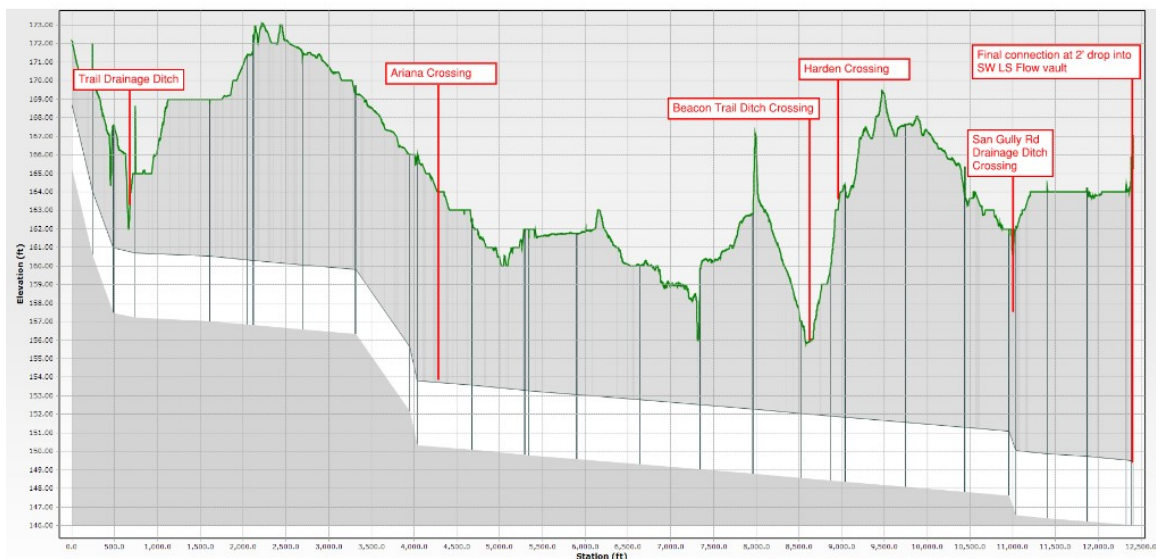
Figure 2-7. Alternative 5 – Trail/Lotus/Beacon Hill Colony Route



Construction Challenges

- Construction from Forest Park Street south to Harden Boulevard is along a ditch line which has limited access.
- A 200-linear foot microtunnel will be required to cross Harden Boulevard. The crossing at this location does not cross the existing trunk line, so it is less risky than Alternatives 3 and 4.
- Construction within the green space of Beacon Hill Colony development will require up to a 20-foot-deep trench.
- Construction along San Gully Road will be challenging due to the depth of pipe, road width, and existing underground utilities and overhead power lines.

Figure 2-8. Alternative 5 – Trail/Lotus/Beacon Hill Colony Route Profile



Diversion of Tributary Collector Flow into Alternative 5 Trunk Line

The following diversions will be constructed at the sections that do not coincide with the existing trunk line:

- Approximately 2,084 linear feet of 8-inch gravity sewer to divert flow within the Oak Hill and Colonial Village developments.
- Collector flow entering MH 7006 between Mels Drive south and Josephine Street will be diverted to a new 8-inch gravity line that will be constructed along Beech Avenue south to the intersection of Patterson and the trail. This will allow collector flow currently entering the existing trunk line along Beech Avenue to enter the new trunk line.

- Collector flow within along Kew Circle, Central Park Plaza, Trinity Apartments, and Lake Hunter Drive will be diverted along Belmar Street to the new trunk line at Lotus Avenue. This diversion will require approximately 1,500 linear feet of 8-inch to 12-inch gravity sewer and 1,690 linear feet of 24-inch sewer.
- Approximately 270 linear feet of 8-inch gravity sewer will be constructed along Windermere Avenue and Forest Park Drive to collect flow from the Ariana Food Mart and Wells Fargo Bank.
- Diversion of collector flow east of Harden Boulevard will require either new sewer construction or rehabilitation of the existing trunk line. At a minimum, 1,900 linear feet of 10-inch and 12-inch sewer will be required to divert flow from Lakeland Christian School and Webster Avenue to the existing trunk line at Citronelle Street. It is possible that the remaining trunk line can be rehabilitated. Otherwise, an additional 3,000 linear feet of sewer will need to be constructed to divert the flow to the new trunk line.

2.1.6 Alternative 6 – Trail/Lotus/Beacon Hill Colony Route – Pump Station and Force Main

Route Description

Alternative 6 trunk line alignment follows the same route as Alternative 5 to the west side of Harden Boulevard. A wastewater pump station will be constructed at the northeast corner of Parcel 232826-0000000-21050 (MHC Beacon Terrace Expansion LLC). This parcel is primarily utilized as a small golf course and stormwater treatment pond. The pump station will then pump the trunk line flow through 24-inch and 30-inch diameter force main to the Southwest pump station. The 24-inch force main is upsized to a 30-inch HDPE horizontal directional drill (HDD) across the San Gully Road drainage channel. The increased diameter is necessary because the inside diameter of HDPE is less than PVC. The HDD is proposed to prevent temporary impacts to the drainage channel. The alignment of the force main will follow the same route as Alternative 5. The force main will connect to an existing 20-inch and 24-inch force main that the Southwest pump station utilizes. The existing force main discharges to a gravity sewer at Florida Avenue (**Figure 2-9**). This alternative meets the City's objectives regarding long-range planning and accessibility for maintenance operations.

[illegible]

Western Trunk Line Pump Station Preliminary Design

Alternative 6 trunk line will capture all contributory flow west of Harden Boulevard and the Lake Hunter area east of Hardent Boulevard. All wastewater east of Harden Boulevard, south of Ariana Street will continue to flow into the Southwest Pump Station and bypass the new trunk line. **Table 2-1** shows the modeled projection of 2045 flows into the new Western Trunk Line Pump Station and existing Southwest Pump Station.

Table 2-1. Projected 2045 Wet Weather Flow

Pump Station	2045 Wet Weather Flows	
	Peak Day (MGD)	Peak Hour (GPM)
Western Trunk Line Pump Station	4.50	4,080
Southwest Pump Station	1.66	2,040

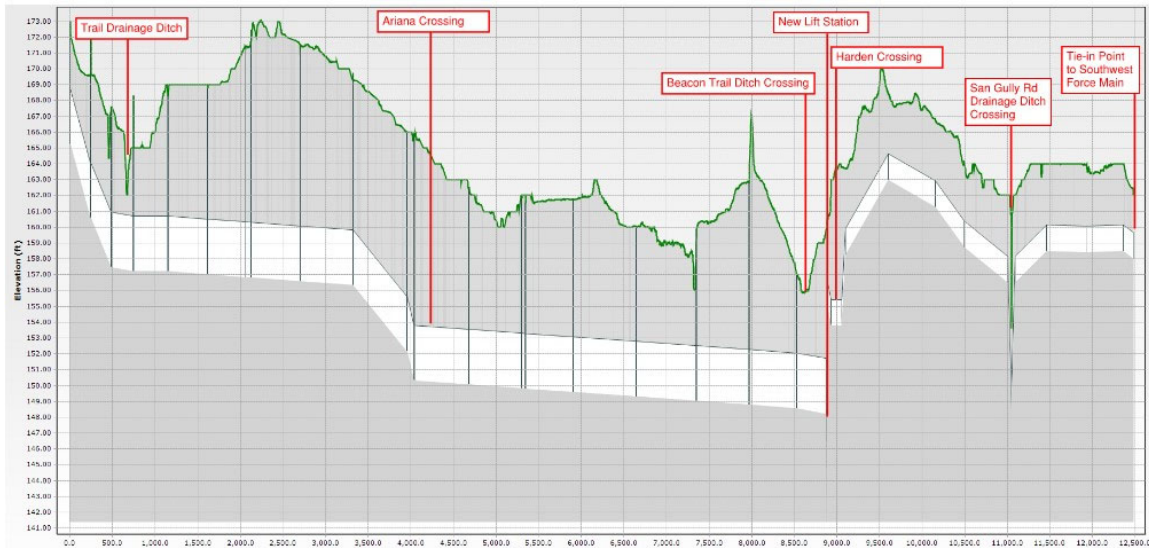
The new pump station will have a wetwell with three submersible pumps. Preliminary design indicates the wet well will be approximately 19 feet deep. The pumps and station will be sized for a firm capacity of approximately 5,100 gpm, with a standby pump. This capacity will handle the projected 2045 flow plus 25% safety factor for major storm events and additional future growth beyond the year 2045. The station will have an emergency generator and a pump out connection.

Construction Challenges/Advantages

- Construction from Forest Park Street south to Harden Boulevard along a ditch line has limited access.
- A 200-linear foot jack and bore will be required to cross Harden Boulevard. The crossing at this location does not cross the existing trunk line, so it is less risky than Alternatives 3 and 4.
- The force main construction within the green space of Beacon Hill Colony development will require a significantly shallower trench than the gravity trunk line in Alternative 5.
- The force main construction along San Gully Road will be less challenging than Alternative 5 because of the shallower depth.

- The site of the proposed Western Trunk Line Pump Station will be located adjacent to an isolated wetland and flood plain. Based on review by a wetland scientist, the wetland should not require any mitigation because of its quality.

Figure 2-10. Alternative 6 – Trail/Lotus/Beacon Hill Colony Route Profile



Diversion of Tributary Collector Flow into Alternative 6 Trunk Line

The following diversions will be constructed at the sections that do not coincide with the existing trunk line:

The following diversions will be constructed at the sections that do not coincide with the existing trunk line:

- Approximately 2,084 linear feet of 8-inch gravity sewer to divert flow within the Oak Hill and Colonial Village developments.
- Collector flow entering MH 7006 between Mels Drive south and Josephine Street will be diverted to a new 8-inch gravity line that will be constructed along Beech Avenue south to the intersection of Patterson and the trail. This will allow collector flow currently entering the existing truck line along Beech Avenue to enter the new trunk line.
- Collector flow within along Kew Circle, Central Park Plaza, Trinity Apartments, and Lake Hunter Drive will be diverted along Belmar Street to the new trunk line at Lotus Avenue. This diversion will require approximately 1,500 linear feet of 8-inch to 12-inch gravity sewer and 1,690 linear feet of 24-inch sewer.
- Approximately 270 linear feet of 8-inch gravity sewer will be constructed along Windermere Avenue and Forest Park Drive to collect flow from the Ariana Food Mart and Wells Fargo Bank.

- Diversion of collector flow east of Harden Boulevard will require either new sewer construction or rehabilitation of the existing trunk line. At a minimum, 1,900 linear feet of 10-inch and 12-inch sewer will be required to divert flow from Lakeland Christian School and Webster Avenue to the existing trunk line at Citronelle Street. It is possible that the remaining trunk line can be rehabilitated. Otherwise, an additional 3,000 linear feet of sewer will need to be constructed to divert the flow to the new trunk line.

2.2 Present Worth Analysis

2.2.1 Project O&M Cost

The following criteria were utilized to develop the present worth analyses for Alternatives 3, 4, 5 and 6. Costs were not developed for Alternatives 1 and 2 because they failed to meet City objectives.

- Project O&M costs were developed based on data provided by the City for its current operating expenses.
- Electricity: \$0.12 per kwh (based on average cost for City pump stations)
- Present worth evaluation period: $n = 30$ years
- Federal discount interest rate = 3.0%
- Depreciation period: 20 years
- Useful life of components
 - Sewer 75 years
 - Manholes 40 years
 - Force mains 50 years
 - Rehabilitated pipe/manholes 40 years
 - Pumps and controls 20 years
 - Valves 20 years
 - Generators 30 years

The net present worth (NPW) of each alternative was calculated based on the following:

Capital costs (C) – Construction, design, and permitting

Present Worth (PW) of annual O&M cost = O&M cost x (UPW (uniform present worth, conversion factor)

PW of Short-lived assets (SLA) = SLA cost x SPW (single year PW, conversion factor)

PW of Salvage Value = Construction cost x Useful life % x SPW (single year PW, conversion factor)

NPW = Construction cost + PW of annual O&M cost - PW of SLA

2.2.2 Cost to Construct Alternatives

The costs associated with Alternatives 3, 4, 5, and 6 are summarized below. Detailed costs are presented in **Appendix A**.

Alternative 1 – No Action

There is no capital cost with this alternative as it does not meet City objectives

Alternative 2 – Gravity Trunk Line – Remove and Replace

There is no capital cost with this alternative as it does not meet City objectives.

Alternative 3 – Pinewood/Forest Park/Webster Route

Capital Cost	\$ 87,627,998
Present Worth O&M Costs	\$ 1,177,568
Present Worth Salvage Value	<u>\$ (8,634,727)</u>
30-Year Present Worth Cost	\$ 80,170,839

Alternative 4 – Trail/Lotus/Forest Park/Webster Route

Capital Cost	\$ 85,018,353
Present Worth O&M Costs	\$ 1,332,950
Present Worth Salvage Value	<u>\$ (8,452,937)</u>
30-Year Present Worth Cost	\$ 77,898,366

Alternative 5 – Trail/Lotus/Beacon Hill Colony Route – Trunk Line

Capital Cost	\$ 83,814,109
Present Worth O&M Costs	\$ 1,168,833
Present Worth Salvage Value	<u>\$ (9,605,805)</u>
30-Year Present Worth Cost	\$ 75,377,137

Alternative 6 – Trail/Lotus/Beacon Hill Colony Route – Pump Station/Force Main

Capital Cost	\$ 77,730,040
Present Worth O&M Costs	\$ 3,777,004
Present Worth Salvage Value	<u>\$ (7,073,732)</u>
30-Year Present Worth Cost	\$ 74,433,312

2.3 Ranking Analysis

2.3.1 Ranking Criteria

Differences which cannot be quantified monetarily may exist between the alternatives. Factors considered important when evaluating the alternatives summarized in **Table 2-2**.

Table 2-2. Non-Monetary Factors

Criterion	Considerations
Constructability	Proximity to overhead powerlines, utility crossings, water/wetland crossings, roadway crossing.
Public Inconvenience	Complaints, business operations, traffic impacts, school operations, pedestrian traffic, mail delivery
Safety	Accessibility for emergency vehicles, adequate detour routes, traffic hazards, traffic proximity to construction workers, sufficient staging areas
Land	Number of permanent/temporary easements
Operation & Maintenance Accessibility	Future O&M convenience, avoid future public inconvenience, re-route trunk line out of mobile home parks
Long Range Planning	Consistency with future projects, development, and capacity
Environmental/Cultural Resources	Hazardous materials, contaminated soils, wetland/ecosystem impacts, dewatering activities, impacts to cultural resources

Each alternative was ranked how it best fits the criteria, from 1 to 5, with a least fit having a rank of 1 to a best fit having a rank of 5, as generally indicated in **Table 2-3**.

Table 2-3. Non-Monetary Ranking Criteria

Criteria	Weighting Factor, % of 100%	Comment
Constructability	20	Increases direct cost and duration
Public Impacts	5	Public impacts temporary
Safety	10	Important but can be mitigated
Land	10	Significant permanent easement
Operation & Maintenance	20	Long term impact important
Long Range Planning	25	Long term impact important
Environmental/Cultural Impacts	10	May increase costs and duration

2.3.2 Alternatives Non-Monetary Ranking

Each alternative was ranked based on the non-monetary criteria in **Table 2-4**. Alternatives 5 and 6 rank the highest across all the non-monetary criteria. This is because the trunk line will be constructed primarily along City-owned property and reduce impacts to the public and safety. These alternatives also meet the long-range planning goals to provide service for future growth. Both routes also allow for easier access for future maintenance.

Alternatives 1 and 2 rank the lowest. This is primarily due to limited access for maintenance, safety concerns, and not meeting the long-range planning goals. In addition, Alternative 1 is the No Action option which does not address service life and capacity concerns.

Table 2-4. Alternative Non-Monetary Ranking.

Criteria	Alternative											
	1		2		3		4		5		6	
	No Action		Remove & Replace in Same Location		Pinewood / Forest Park / Webster Route		Trail / Lotus / Forest Park / Webster Route		Trail / Lotus / Beacon Hill Colony Route – Trunk Line		Trail / Lotus / Beacon Hill Colony Route – Trunk Line / Pump Station / Force Main	
	Unweighted Rank						Weighted Rank					
Constructability	1	0.20	1	0.20	2	0.40	2	0.40	4	0.80	5	1.00
Public Impacts	1	0.05	1	0.05	2	0.10	2	0.10	4	0.20	5	0.25
Safety	2	0.20	1	0.10	2	0.20	2	0.20	4	0.40	5	0.50
Land	3	0.30	3	0.30	3	0.30	4	0.40	4	0.40	4	0.40
O & M	1	0.20	1	0.20	3	0.60	4	0.80	5	1.00	4	0.80
Long Range Planning	1	0.25	1	0.25	4	1.00	4	1.00	5	1.25	5	1.25
Environmental/Cultural	2	0.20	2	0.20	3	0.30	3	0.30	5	0.50	4	0.40
Total Weighted Rank		1.40		1.30		2.90		3.20		4.55		4.60

2.3.3 Alternatives Cost and Ranking Summary

Costs were not developed for Alternatives 1 and 2 as they failed to meet the basic objectives of the City. Because of this, they were ranked the lowest for the non-monetary criteria. Of the Alternatives that costs were developed, Alternatives 3 and 4 were the most expensive and had the lowest non-monetary score. Non-monetary ranking for Alternatives 5 and 6 were nearly identical; however, Alternative 6 capital cost and present worth value is significantly lower than Alternative 5.

Table 2-5. Alternative Ranking Summary.

Alternative No.	Description	Cost		Non-Monetary Ranking
		Capital	30-Year Present Worth (1)	
1	No Action	Cost Not Developed	Cost Not Developed	1.40
2	Remove & Replace in Same Location	Cost Not Developed	Cost Not Developed	1.30
3	Pinewood / Forest Park / Webster Route	\$ 87,627,998	\$ 80,170,839	2.90
4	Trail / Lotus / Forest Park / Webster Route	\$ 85,018,353	\$ 77,898,366	3.20
5	Trail / Lotus / Beacon Hill Colony Route – Trunk Line	\$ 83,814,109	\$ 75,377,137	4.55
6	Trail / Lotus / Beacon Hill Colony Route – Trunk Line / Pump Station / Force Main	\$ 77,730,040	\$ 74,433,312	4.60

Present Worth includes capital cost, O&M, and salvage value (excludes cost of easements)

Section 3 – Selected Alternative

3.1 Western Trunk Gravity Sewer Replacement – Alternative 6 – Trail/Lotus/Beacon Hill Route – Pump Station and Force Main

Alternative 6 (Trail/Lotus/Beacon Hill Colony Route – Pump Station and Force Main) is selected as the most cost-effective and viable option. This alternative has the lowest capital cost and 30-year present worth value. Alternative 6 also scores the highest for non-monetary considerations. The selected alternative is described as the construction of a new 42-inch diameter gravity trunk line, wastewater pump station, 24 and 30-inch diameter force main, and associated collector lines. The estimated capital cost for the project is \$77.7 million.

The following permits will be required to construct the project:

- Florida Department of Environmental Protection (FDEP) “Construction of a Domestic Wastewater Collection/Transmission System Permit”.
- FDEP “NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities”
- FDEP Environmental Resource Permits
- Florida Department of Transportation Utility Permit for construction within the Harden Boulevard right-of-way
- City of Lakeland Right-of-Way Use Permit
- Polk County Right-of-Way Use Permit for construction with the rights-of-way of Ariana Street and Highland Street.

Table 3-1 lists the easements needed to construct and maintain the new trunk line, pump station, and force main. **Table 3-2** lists the easements need for the associated collector lines.

Table 3-1. Probable Easement Requirements.

Owner	Parcel Number	Easement Type
Olive Development Land Trust	232823-100500-005040	Permanent Utility
Granite Georgetowne Manor LLC	232823-000000-024020	Permanent Utility
FBCH Land Holdings Inc	232826-000000-011060	Permanent Utility & Temporary Construction
HWV Holdings LLC	232826-000000-011010	Permanent Utility & Temporary Construction
Rogers Sam R Revocable Trust	232826-000000-021060	Permanent Utility & Temporary Construction
2115 Harden LLC	232826-000000-021100	Permanent Utility & Temporary Construction
Baron Management LLC	232825-000000-043020	Permanent Utility & Temporary Construction
MHC Beacon Hill Colony LLC	232825-000000-043010	Permanent Utility & Temporary Construction
MHC Beacon Terrace Expansion LLC	232826-000000-021050	Permanent Utility

Table 3-2. Easement Requirements for Collector Lines.

Owner	Parcel Number	Easement Type
Oak Hill MHC	232823-102000-01120	Permanent Utility & Temporary Construction
Bedrock Colonial LLC	232823-000000-012010	Permanent Utility & Temporary Construction
Ortiz Moises Algarin	232823-107500-001080	Permanent Utility
Advance Stores Company Inc	232823-000000-022080	Permanent Utility
Ariana Associates LLC	232823-000000-022020	Permanent Utility
Ariana Central LLC	232826-137110-005131	Temporary Construction (to relocate existing service lateral)
Ariana Central LLC	232826-137110-005171	Temporary Construction (to relocate existing service lateral)
Wachovia Bank NA	232826-137110-005132	Temporary Construction (to relocate existing service lateral)

Section 4 – Environmental Effects

4.1 Environmental Impacts of Proposed Facilities

Short-term impacts during construction will include increased air-borne particulates and sediments in stormwater runoff associated with site work activities. The construction documents will contain control measures to minimize these impacts.

The proposed projects will not have any adverse effects upon, flora, fauna, threatened or endangered plant or animal species, surface water bodies, prime agricultural lands, wetlands, or undisturbed areas.

Alternatives 4, 5, and 6 cross into a parcel of land west of Herschell Street that was previously impacted by the former Landia Chemical Company and Florida Favorite Fertilizer operations. These companies had a history of pesticide manufacturing and fertilizer blending operations. Chastain-Skillman's environmental risk scientist reviewed assessment and remediation reports available from 2001 through 2022. The findings indicate that the USEPA appears to have completed all required soil remediation activities along the proposed route. Based on the information reviewed, remaining soil and sediment contaminants of concern (COC) along the proposed route, if any, are limited. If needed, a soil management plan should account for any potentially remaining COCs. In addition, the inferred extent of groundwater impacts exceeding criteria in 2020 did not extend to the proposed route.

4.2 Land Use, Sensitive Lands, Listed Species, and Cultural Resources

Environmental Science Associates (ESA) performed a desktop environmental assessment of the proposed routes. The review included existing land use, wetlands and waterbodies, State and Federally listed wildlife species, cultural resources, and contamination. ESA's reports are enclosed at **Appendix B and C**. Based on the desktop

review, Alternatives 5 and 6 offer a slight reduction in potential environmental impacts to regulated/unregulated wetlands and surface waters, as well as impacts to listed species.

Section 5 – Public Participation Process

5.1 Public Meeting Minutes/Advertisement

This section will be completed after the Public Meeting is held and the information becomes available.

Appendix A – Detailed Cost Tables

	Capital Cost			
Project name:	City of Lakeland Western Gravity Trunk Line			
Alternative:	Alternative 3 - Pinewood/Forest Park/Webster Route			
Description	Quantity	Unit	Unit Price	Extension
42" Trunk Sewer Main	14,925.0	LF	\$ 1,807.92	\$ 26,983,206.00
Gravity Collector Main				\$ -
8"	5,501.0	LF	\$ 278.11	\$ 1,529,883.11
10"	293.0	LF	\$ 284.33	\$ 83,309.99
12"	-	LF	\$ 497.08	\$ -
24"	-	LF	\$ 1,380.77	\$ -
Trunk Line Manholes	44.0	EA	\$ 159,027.07	\$ 6,997,191.08
Branch Manholes	23.0	EA	\$ 87,065.63	\$ 2,002,509.49
Kingpin Manhole	1.0	EA	\$ 354,251.92	\$ 354,251.92
24" Force Main	-	LF	\$ -	\$ -
Force Main Relocations	1.0	LS	\$ 98,879.53	\$ 98,879.53
Trenchless Crossings	625.0	LF	\$ 13,350.30	\$ 8,343,937.50
Inside Drop Connections	17.0	EA	\$ 6,612.51	\$ 112,412.67
Bypass Pumping	1.0	LS	\$ 935,282.57	\$ 935,282.57
Existing Utility Relocations	1.0	LS	\$ 532,528.24	\$ 532,528.24
Pipe Abandonment	12,800.0	LF	\$ 117.37	\$ 1,502,336.00
Pump Station	1.0	LS	\$ -	\$ -
CCTV Inspection	20,719.0	LF	\$ 28.19	\$ 584,068.61
Maintenance of Traffic	1.0	LS	\$ 1,669,965.83	\$ 1,669,965.83
Erosion Control	20,094.0	LF	\$ 9.30	\$ 186,874.20
Asphalt Paving (R&R)	26,099.9	SY	\$ 84.80	\$ 2,213,271.52
Asphalt Milling and Overlay	9,923.1	SY	\$ 41.82	\$ 414,984.04
Concrete Curb (R&R)	4,466.6	LF	\$ 98.48	\$ 439,870.77
Concrete Sidewalk (R&R)	2,047.0	SY	\$ 155.61	\$ 318,533.67
Driveway (R&R)	4,246.6	SY	\$ 188.24	\$ 799,379.98
Fencing (R&R)	500.0	LF	\$ 83.53	\$ 41,765.00
Grassing/Landscaping	41,160.0	SY	\$ 11.90	\$ 489,804.00
Mobilization & Demobilization	1.0	LS	\$ 511,924.99	\$ 511,924.99
General Conditions	1.0	LS	\$ 6,289,149.81	\$ 6,289,149.81
Engineering Construction Services	1.0	LS	\$ 1,080,720.16	\$ 1,080,720.16
Construction Fee	10.0	%	\$ 64,516,040.69	\$ 6,451,604.07
				\$ 70,967,644.76
Description	Quantity	Unit	Unit Price	Extension
Unsuitable Soils - Import/Export	1	LS	\$ 4,010,766.67	\$ 4,010,766.67
Deep Well Dewatering System	1	LS	\$ 5,014,143.08	\$ 5,014,143.08
Tree Trimming, Removal & Replacement	1	LS	\$ 740,000.00	\$ 740,000.00
Utility Pole Relocation/Holds	1	LS	\$ 176,550.00	\$ 176,550.00
Grout Stabilization	1	LS	\$ 965,140.00	\$ 965,140.00
Weather/Delays	1	LS	\$ 3,603,607.92	\$ 3,603,607.92
Utility Conflicts & Relocations	1	LS	\$ 295,275.66	\$ 295,275.66
Escalation	1	LS	\$ 815,601.13	\$ 815,601.13
Harden Permanent Bypass	1	LS	\$ 301,573.38	\$ 301,573.38
Vibration Monitoring & Property Claims	-	LS	\$ -	\$ -
Owner's Allowance	1	LS	\$ 446,965.00	\$ 446,965.00
Mats	1	LS	\$ 290,730.00	\$ 290,730.00
Collector Main for Gas Station	-	LS	\$ -	\$ -
Collector Main East of Harden	-	LS	\$ -	\$ -
				\$ 16,660,352.84
				\$ 87,627,997.60

	Life Cycle Cost			
Project name:	City of Lakeland Western Gravity Trunk Line			
Alternative:	Alternative 3 - Pinewood/Forest Park/Webster Route			
Year of repair/replacement	Item / event #2	2025 Federal discount rate conversion factor #1	Cost of event in todays dollars	Present value
0	annual O&M costs	19.60	\$27,825	\$545,382
1		0.971		\$0
2		0.943		\$0
3		0.915		\$0
4		0.888		\$0
5		0.863		\$0
6		0.837		\$0
7		0.813		\$0
8		0.789		\$0
9		0.766		\$0
10		0.744	\$369,752	\$275,130
11		0.722		\$0
12		0.701		\$0
13		0.681		\$0
14		0.661		\$0
15		0.642		\$0
16		0.623		\$0
17		0.605		\$0
18		0.587		\$0
19		0.570		\$0
20		0.554	\$369,752	\$204,723
21		0.538		\$0
22		0.522		\$0
23		0.507		\$0
24		0.492		\$0
25		0.478		\$0
26		0.464		\$0
27		0.450		\$0
28		0.437		\$0
29		0.424		\$0
30		0.412	\$369,752	\$152,333
30	salvage value #3	-0.412	\$20,958,748	(\$8,634,727)
	(This may be a negative value)		TOTAL Present Value	(\$7,457,159)
	Capital cost = \$ 87,627,997.60			
Present worth is = Project cost + Total Present Value				\$80,170,839

	Life Cycle Cost				
Project name:	City of Lakeland Western Gravity Trunk Line				
Alternative:	Alternative 3 - Pinewood/Forest Park/Webster Route				
O&M Expenses					
Description		Recurrence (yrs)	Expense (2024 \$)		
Check manholes		annual	\$13,600	\$200	per
Administration		annual	\$14,225		
	Total		\$27,825		
Short lived asset expenses in first 30 years					
Clean and repair manholes		10	\$204,000	\$3,000	per
Clean/flush/TV sewers		10	\$165,752	\$ 8.00	/lf
The O&M costs are the annual recuring cost for 30 years, the rate conversion factor is for uniform present value (UPV)					
				n =	30
				i=interest rate	
The conversion factor for present value of a cost that occurs in a specific year (SPV)					
				n=year	
				i=interest rate	
#1. SRF discount interest rate for 2025				3.00%	
#2. Explain each item in great detail on a separate sheet, do not lump items together					
Supporting documentation may be requested on the life and cost of each item.					
#3. Salvage value in the present worth calculaions.					
Use straight line deperciation.					
The salvage value is subtracted from the other present values to obtain the total present value.					
Assumed life of the collection system is 75 years					
Construction cost is the cost to construct the system not including the engineering, legal, contingency, interest, and other non construction costs.					
	construction cost	useful life	years remaining	Value	
Sewer	\$ 28,596,399	75	45	\$17,157,839	
Manholes	\$ 9,353,952	50	20	\$3,741,581	
Force Main	\$ 98,880	75	45	\$59,328	
Total Salvage Value				\$20,958,748	

	Capital Cost			
Project name:	City of Lakeland Western Gravity Trunk Line			
Alternative:	Alternative 4 - Trail/Lotus/Forest Park/Webster Route			
Description	Quantity	Unit	Unit Price	Extension
42" Trunk Sewer Main	13,865	LF	\$ 1,807.92	\$ 25,066,811
Gravity Collector Main				\$ -
8"	5,808	LF	\$ 278.11	\$ 1,615,263
10"	500	LF	\$ 284.33	\$ 142,167
12"	293	LF	\$ 497.08	\$ 145,644
24"	1,689	LF	\$ 1,380.77	\$ 2,332,121
Trunk Line Manholes	43	EA	\$ 159,027.07	\$ 6,838,164
Branch Manholes	39	EA	\$ 87,065.63	\$ 3,395,560
Kingpin Manhole	1	EA	\$ 354,251.92	\$ 354,252
24" Force Main	-	LF	\$ -	\$ -
Force Main Relocations	1	LS	\$ 98,879.53	\$ 98,880
Trenchless Crossings	198	LF	\$ 13,350.30	\$ 2,643,359
Inside Drop Connections	20	EA	\$ 6,612.51	\$ 132,250
Bypass Pumping	1	LS	\$ 935,282.57	\$ 935,283
Existing Utility Relocations	1	LS	\$ 532,528.24	\$ 532,528
Pipe Abandonment	12,800	LF	\$ 117.37	\$ 1,502,336
Pump Station	1	LS	\$ -	\$ -
CCTV Inspection	22,155	LF	\$ 28.19	\$ 624,549
Maintenance of Traffic	1	LS	\$ 1,669,965.83	\$ 1,669,966
Erosion Control	21,530	LF	\$ 9.30	\$ 200,229
Asphalt Paving (R&R)	42,366	SY	\$ 84.80	\$ 3,592,603
Asphalt Milling and Overlay	8,257	SY	\$ 41.82	\$ 345,299
Concrete Curb (R&R)	5,907	LF	\$ 98.48	\$ 581,721
Concrete Sidewalk (R&R)	1,689	SY	\$ 155.61	\$ 262,810
Driveway (R&R)	3,375	SY	\$ 188.24	\$ 635,310
Fencing (R&R)	500	LF	\$ 83.53	\$ 41,765
Grassing/Landscaping	48,149	SY	\$ 11.90	\$ 572,972
Mobilization & Demobilization	1	LS	\$ 511,924.99	\$ 511,925
General Conditions	1	LS	\$ 6,289,149.81	\$ 6,289,150
Engineering Construction Services	1	LS	\$ 1,080,720.16	\$ 1,080,720
Construction Fee	10	%	\$ 62,143,636.81	\$ 6,214,364
				\$ 68,358,000
Description	Quantity	Unit	Unit Price	Extension
Unsuitable Soils - Import/Export	1	LS	\$ 4,010,766.67	\$ 4,010,767
Deep Well Dewatering System	1	LS	\$ 5,014,143.08	\$ 5,014,143
Tree Trimming, Removal & Replacement	1	LS	\$ 740,000.00	\$ 740,000
Utility Pole Relocation/Holds	1	LS	\$ 176,550.00	\$ 176,550
Grout Stabilization	1	LS	\$ 965,140.00	\$ 965,140
Weather/Delays	1	LS	\$ 3,603,607.92	\$ 3,603,608
Utility Conflicts & Relocations	1	LS	\$ 295,275.66	\$ 295,276
Escalation	1	LS	\$ 815,601.13	\$ 815,601
Harden Permanent Bypass	1	LS	\$ 301,573.38	\$ 301,573
Vibration Monitoring & Property Claims	-	LS	\$ -	\$ -
Owner's Allowance	1	LS	\$ 446,965.00	\$ 446,965
Mats	1	LS	\$ 290,730.00	\$ 290,730
Collector Main for Gas Station	-	LS	\$ -	\$ -
Collector Main East of Harden	-	LS	\$ -	\$ -
				\$ 16,660,353
				\$ 85,018,353

		Life Cycle Cost		
Project name:		City of Lakeland Western Gravity Trunk Line		
Alternative:		Alternative 4 - Trail/Lotus/Forest Park/Webster Route		
Year of repair/replacement	Item / event #2	2025 Federal discount rate conversion factor #1	Cost of event in todays dollars	Present value
0	annual O&M costs	19.60	\$30,825	\$604,184
1		0.971		\$0
2		0.943		\$0
3		0.915		\$0
4		0.888		\$0
5		0.863		\$0
6		0.837		\$0
7		0.813		\$0
8		0.789		\$0
9		0.766		\$0
10		0.744	\$426,240	\$317,163
11		0.722		\$0
12		0.701		\$0
13		0.681		\$0
14		0.661		\$0
15		0.642		\$0
16		0.623		\$0
17		0.605		\$0
18		0.587		\$0
19		0.570		\$0
20		0.554	\$426,240	\$235,999
21		0.538		\$0
22		0.522		\$0
23		0.507		\$0
24		0.492		\$0
25		0.478		\$0
26		0.464		\$0
27		0.450		\$0
28		0.437		\$0
29		0.424		\$0
30		0.412	\$426,240	\$175,605
30	salvage value #3	-0.412	\$20,517,498	(\$8,452,937)
(This may be a negative value)			TOTAL Present Value	(\$7,119,987)
Capital cost =		\$ 85,018,353.33		
Present worth is = Project cost + Total Present Value				\$77,898,366

		Life Cycle Cost			
Project name:		City of Lakeland Western Gravity Trunk Line			
Alternative:		Alternative 4 - Trail/Lotus/Forest Park/Webster Route			
O&M Expenses					
Description		Recurrence (yrs)	Expense (2024 \$)		
Check manholes		annual	\$16,600	\$200	per
Administration		annual	\$14,225		
	Total		\$30,825		
Short lived asset expenses in first 30 years					
Clean and repair manholes		10	\$249,000	\$3,000	per
Clean/flush/TV sewers		10	\$177,240	\$	8.00 /lf
The O&M costs are the annual recurring cost for 30 years, the rate conversion factor is for uniform present value (UPV)					
				n =	30
				i=interest rate	
The conversion factor for present value of a cost that occurs in a specific year (SPV)					
				n=year	
				i=interest rate	
#1. SRF discount interest rate for 2025				3.00%	
#2. Explain each item in great detail on a separate sheet, do not lump items together Supporting documentation may be requested on the life and cost of each item.					
#3. Salvage value in the present worth calculations. Use straight line depreciation. The salvage value is subtracted from the other present values to obtain the total present value.					
Assumed life of the collection system is 75 years					
Construction cost is the cost to construct the system not including the engineering, legal, contingency, interest, and other non construction costs.					
	construction cost	useful life	years remaining	Value	
Sewer	\$ 29,302,006	75	45	\$17,581,204	
Manholes	\$ 7,192,416	50	20	\$2,876,966	
Force Main	\$ 98,880	75	45	\$59,328	
Total Salvage Value				\$20,517,498	

	Capital Cost			
Project name:	City of Lakeland Western Gravity Trunk Line			
Alternative:	Alternative 5 - Trail/Lotus/Beacon Hill Colony Route - Trunk Line			
Description	Quantity	Unit	Unit Price	Extension
42" Trunk Sewer Main	12,550	LF	\$ 1,764.05	\$ 22,138,828
Gravity Collector Main (West of Harden)				\$ -
8"	5,710	LF	\$ 278.11	\$ 1,588,008
10"	500	LF	\$ 284.33	\$ 142,167
12"	293	LF	\$ 497.08	\$ 145,644
24"	1,689	LF	\$ 1,380.77	\$ 2,332,121
Trunk Line Manholes	29	EA	\$ 160,856.30	\$ 4,664,833
Branch Manholes (West of Harden)	37	EA	\$ 89,356.37	\$ 3,306,186
Kingpin Manhole	1	EA	\$ 428,376.17	\$ 428,376
24" Force Main	-	LF	\$ -	\$ -
Force Main Relocations	1	LS	\$ 128,967.49	\$ 128,967
Trenchless Crossings	200	LF	\$ 15,496.23	\$ 3,099,246
Inside Drop Connections	8	EA	\$ 6,612.51	\$ 52,900
Bypass Pumping	1	LS	\$ 671,483.45	\$ 671,483
Existing Utility Relocations	1	LS	\$ 513,928.24	\$ 513,928
Pipe Abandonment	13,000	LF	\$ 109.88	\$ 1,428,440
Pump Station	1	LS	\$ -	\$ -
CCTV Inspection	20,742	LF	\$ 28.19	\$ 584,717
Maintenance of Traffic	1	LS	\$ 601,852.66	\$ 601,853
Erosion Control	20,542	LF	\$ 9.55	\$ 196,176
Asphalt Paving (R&R)	34,897	SY	\$ 84.80	\$ 2,959,232
Asphalt Milling and Overlay	8,257	SY	\$ 41.82	\$ 345,299
Concrete Curb (R&R)	5,907	LF	\$ 97.48	\$ 575,814
Concrete Sidewalk (R&R)	1,689	SY	\$ 155.61	\$ 262,810
Driveway (R&R)	3,375	SY	\$ 188.24	\$ 635,310
Fencing (R&R)	500	LF	\$ 179.83	\$ 89,915
Grassing/Landscaping	41,281	SY	\$ 12.76	\$ 526,747
Mobilization & Demobilization	1	LS	\$ 511,924.99	\$ 511,925
General Conditions	1	LS	\$ 5,377,585.46	\$ 5,377,585
Engineering Construction Services	1	LS	\$ 1,080,720.16	\$ 1,080,720
Construction Fee	10	%	\$ 54,389,230.95	\$ 5,438,923
				\$ 59,828,154
Description	Quantity	Unit	Unit Price	Extension
Unsuitable Soils - Import/Export	1	LS	\$ 3,747,721.45	\$ 3,747,721
Deep Well Dewatering System	1	LS	\$ 4,362,436.02	\$ 4,362,436
Tree Trimming, Removal & Replacement	1	LS	\$ 544,000.00	\$ 544,000
Utility Pole Relocation/Holds	1	LS	\$ 128,400.00	\$ 128,400
Grout Stabilization	1	LS	\$ 776,820.00	\$ 776,820
Weather/Delays	1	LS	\$ 3,177,607.02	\$ 3,177,607
Utility Conflicts & Relocations	1	LS	\$ 295,140.67	\$ 295,141
Escalation	1	LS	\$ 740,144.14	\$ 740,144
Harden Permanent Bypass	-	LS	\$ -	\$ -
Vibration Monitoring & Property Claims	1	LS	\$ 487,515.60	\$ 487,516
Owner's Allowance	1	LS	\$ 446,965.00	\$ 446,965
Mats	1	LS	\$ 290,730.00	\$ 290,730
Collector Main for Gas Station	1	LS	\$ 1,740,594.06	\$ 1,740,594
Collector Main East of Harden	1	LS	\$ 7,247,880.68	\$ 7,247,881
				\$ 23,985,955
				\$ 83,814,109

		Life Cycle Cost		
Project name:		City of Lakeland Western Gravity Trunk Line		
Alternative:		Alternative 5 - Trail/Lotus/Beacon Hill Colony Route - Trunk Line		
Year of repair/replacement	Item / event #2	2025 Federal discount rate conversion factor #1	Cost of event in todays dollars	Present value
0	annual O&M costs	19.60	\$27,625	\$541,462
1		0.971		\$0
2		0.943		\$0
3		0.915		\$0
4		0.888		\$0
5		0.863		\$0
6		0.837		\$0
7		0.813		\$0
8		0.789		\$0
9		0.766		\$0
10		0.744	\$366,936	\$273,035
11		0.722		\$0
12		0.701		\$0
13		0.681		\$0
14		0.661		\$0
15		0.642		\$0
16		0.623		\$0
17		0.605		\$0
18		0.587		\$0
19		0.570		\$0
20		0.554	\$366,936	\$203,164
21		0.538		\$0
22		0.522		\$0
23		0.507		\$0
24		0.492		\$0
25		0.478		\$0
26		0.464		\$0
27		0.450		\$0
28		0.437		\$0
29		0.424		\$0
30		0.412	\$366,936	\$151,173
30	salvage value #3	-0.412	\$23,315,810	(\$9,605,805)
(This may be a negative value)			TOTAL Present Value	(\$8,436,971)
Capital cost =		\$ 83,814,108.68		
Present worth is = Project cost + Total Present Value				\$75,377,137

		Life Cycle Cost			
Project name:		City of Lakeland Western Gravity Trunk Line			
Alternative:		Alternative 5 - Trail/Lotus/Beacon Hill Colony Route - Trunk Line			
O&M Expenses					
Description		Recurrence (yrs)	Expense (2024 \$)		
Check manholes		annual	\$13,400	\$200	per
Administration		annual	\$14,225		
	Total		\$27,625		
Short lived asset expenses in first 30 years					
Clean and repair manholes		10	\$201,000	\$3,000	per
Clean/flush/TV sewers		10	\$165,936	\$	8.00 /lf
The O&M costs are the annual recurring cost for 30 years, the rate conversion factor is for uniform present value (UPV)					
				n =	30
				i=interest rate	
The conversion factor for present value of a cost that occurs in a specific year (SPV)					
				n=year	
				i=interest rate	
#1. SRF discount interest rate for 2025				3.00%	
#2. Explain each item in great detail on a separate sheet, do not lump items together Supporting documentation may be requested on the life and cost of each item.					
#3. Salvage value in the present worth calculations. Use straight line depreciation. The salvage value is subtracted from the other present values to obtain the total present value.					
Assumed life of the collection system is 75 years					
Construction cost is the cost to construct the system not including the engineering, legal, contingency, interest, and other non construction costs.					
	construction cost	useful life	years remaining	Value	
Sewer	\$ 35,335,243	75	45	\$21,201,146	
Manholes	\$ 5,093,209	50	20	\$2,037,284	
Force Main	\$ 128,967	75	45	\$77,380	
Total Salvage Value				\$23,315,810	

	Capital Cost			
Project name:	City of Lakeland Western Gravity Trunk Line			
Alternative:	Alternative 6 - Trail/Lotus/Beacon Hill Colony Route - Trunk Line/Pump Station			
Description	Quantity	Unit	Unit Price	Extension
42" Trunk Sewer Main	8,880	LF	\$ 1,291.78	\$ 11,471,038
Gravity Collector Main	-			\$ -
8"	6,116	LF	\$ 455.16	\$ 2,783,773
10"	1,745	LF	\$ 642.04	\$ 1,120,360
12"	967	LF	\$ 524.33	\$ 507,027
15"	2,025	LF	\$ 606.12	\$ 1,227,384
18"	2,432	LF	\$ 620.12	\$ 1,508,137
24"	1,688	LF	\$ 669.16	\$ 1,129,546
Trunk Line Manholes	22	EA	\$ 131,198.56	\$ 2,886,368
Branch Manholes (West of Harden)	56	EA	\$ 73,156.07	\$ 4,096,740
Kingpin Manhole	1	EA	\$ 542,170.90	\$ 542,171
24" Force Main	3,402	LF	\$ 750.81	\$ 2,554,265
4" Force Main (Collector)	346	LF	\$ 285.38	\$ 98,741
Force Main Relocations	1	LS	\$ -	\$ -
Trenchless Crossings	153	LF	\$ 5,483.22	\$ 838,933
Inside Drop Connections	11	EA	\$ 8,498.59	\$ 93,485
Bypass Pumping	1	LS	\$ 616,311.79	\$ 616,312
Existing Utility Relocations	1	LS	\$ 1,631,797.25	\$ 1,631,797
Pipe Abandonment	13,000	LF	\$ 106.79	\$ 1,388,213
Pump Station	1	LS	\$ 12,205,191.00	\$ 12,205,191
CCTV Inspection	13,000	LF	\$ 27.15	\$ 352,901
Maintenance of Traffic	1	LS	\$ 1,490,601.35	\$ 1,490,601
Erosion Control	27,601	LF	\$ 8.22	\$ 226,770
Asphalt Paving (R&R)	25,016	SY	\$ 126.99	\$ 3,176,698
Asphalt Milling and Overlay	53,895	SY	\$ 33.00	\$ 1,778,298
Concrete Curb (R&R)	1,987	LF	\$ 95.46	\$ 189,679
Concrete Sidewalk (R&R)	1,473	SY	\$ 183.82	\$ 270,858
Driveway (R&R)	410	SY	\$ 120.00	\$ 49,254
Fencing (R&R)	3,777	LF	\$ 52.76	\$ 199,274
Grassing/Landscaping	93,713	SY	\$ 11.66	\$ 1,092,239
Mobilization & Demobilization	1	LS	\$ 1,259,485.69	\$ 1,259,486
General Conditions	1	LS	\$ 6,185,049.51	\$ 6,185,050
Engineering Construction Services	1	LS	\$ 1,201,196.00	\$ 1,201,196
Construction Fee	10	%	\$ 64,171,782.66	\$ 6,417,178
				\$ 70,588,961
Description	Quantity	Unit	Unit Price	Extension
Unsuitable Soils - Import/Export	1	LS	\$ 2,580,960.34	\$ 2,580,960
Deep Well Dewatering System	1	LS	\$ -	\$ -
Tree Trimming, Removal & Replacement	1	LS	\$ 431,166.93	\$ 431,167
Utility Pole Relocation/Holds	1	LS	\$ 60,000.00	\$ 60,000
Grout Stabilization	1	LS	\$ 303,600.00	\$ 303,600
Weather/Delays	1	LS	\$ 1,662,524.20	\$ 1,662,524
Utility Conflicts & Relocations	1	LS	\$ 96,742.60	\$ 96,743
Escalation	1	LS	\$ 541,046.09	\$ 541,046
Harden Permanent Bypass	1	LS	\$ -	\$ -
Vibration Monitoring & Property Claims	1	LS	\$ 300,625.48	\$ 300,625
Collector Main for Gas Station	1	LS	\$ -	\$ -
Collector Main East of Harden	1	LS	\$ -	\$ -
Trenchless Crossings	1	LS	\$ 426,718.20	\$ 426,718
Owner's Allowance	1	LS	\$ 446,965.00	\$ 446,965
Mats	1	LS	\$ 290,730.00	\$ 290,730
				\$ 7,141,079
				\$ 77,730,040

		Life Cycle Cost		
Project name:		City of Lakeland Western Gravity Trunk Line		
Alternative:		Alternative 6 - Trail/Lotus/Beacon Hill Colony Route - Trunk Line/Pump Station		
Year of repair/replacement	Item / event #2	2025 Federal discount rate conversion factor #1	Cost of event in todays dollars	Present value
0	annual O&M costs	19.60	\$122,325	\$2,397,616
1		0.971		\$0
2		0.943		\$0
3		0.915	\$15,000	\$13,727
4		0.888		\$0
5		0.863	\$5,000	\$4,313
6		0.837	\$15,000	\$12,562
7		0.813		\$0
8		0.789		\$0
9		0.766	\$15,000	\$11,496
10		0.744	\$432,824	\$322,062
11		0.722		\$0
12		0.701	\$15,000	\$10,521
13		0.681		\$0
14		0.661		\$0
15		0.642	\$40,000	\$25,674
16		0.623		\$0
17		0.605		\$0
18		0.587	\$15,000	\$8,811
19		0.570		\$0
20		0.554	\$1,359,824	\$752,902
21		0.538	\$15,000	\$8,063
22		0.522		\$0
23		0.507		\$0
24		0.492	\$15,000	\$7,379
25		0.478	\$5,000	\$2,388
26		0.464		\$0
27		0.450	\$15,000	\$6,753
28		0.437		\$0
29		0.424		\$0
30		0.412	\$467,824	\$192,737
30	salvage value #3	-0.412	\$17,169,805	(\$7,073,732)
(This may be a negative value)			TOTAL Present Value	(\$3,296,728)
Capital cost =		\$ 77,730,039.77		
Present worth is = Project cost + Total Present Value				\$74,433,312

		Life Cycle Cost			
Project name:		City of Lakeland Western Gravity Trunk Line			
Alternative:		Alternative 6 - Trail/Lotus/Beacon Hill Colony Route - Trunk Line/Pump Station			
O&M Expenses					
Description		Recurrence (yrs)	Expense (2024 \$)		
Check manholes		annual	\$15,800	\$200	per
Administration		annual	\$14,225		
Pump station inspection/cleaning		annual	\$36,500	\$100	day
Site maintenance		annual	\$5,000		
Fuel		annual	\$2,550	\$3.40	per gal
Electricity		annual	\$26,250	750	gal/yr
Administration		annual	\$22,000	Runtime/year (hrs)	50
	Total		\$122,325		
Short lived asset expenses in first 30 years					
Clean and repair manholes		10	\$237,000	\$3,000	per
Clean/flush/TV sewers		10	\$190,824	\$8	/lf
Minor pump repairs		3	\$15,000		
Repair/replace pump station controls		5	\$5,000		
HVAC Replacement		15	\$20,000		
Replace pumps		20	\$475,000		
Generator replacement		20	\$320,000		
Replace valves		20	\$132,000		
Annual Pump station electrical cost	\$26,250	Annual daily flow, gal	2,200,000	Pump efficiency %	82%
		Avg Daily runtime, min	506	one pump	
		Electrical cost per kwh	\$0.12		
		Head (ft)	71		
The O&M costs are the annual recuring cost for 30 years, the rate conversion factor is for uniform present value (UPV)					
				n =	30
				i=interest rate	
The conversion factor for present value of a cost that occurs in a specific year (SPV)					
				n=year	
				i=interest rate	
#1. SRF discount interest rate for 2025				3.00%	
#2. Explain each item in great detail on a separate sheet, do not lump items together Supporting documentation may be requested on the life and cost of each item.					
#3. Salvage value in the present worth calculaions. Use straight line deperciation. The salvage value is subtracted from the other present values to obtain the total present value.					
Assumed life of the collection system is 75 years Construction cost is the cost to construct the system not including the engineering, legal, contingency, interest, and other non construction costs.					
	construction cost	useful life	years remaining	Value	
Sewer	\$ 19,747,265.37	75	45	\$11,848,359	
Manholes	\$ 7,525,279	50	20	\$3,010,112	
Force Main	\$ 3,079,724	75	45	\$1,847,834	
Valves	\$ 132,000	20	10	\$66,000	
HVAC	\$ 20,000	15	0	\$0	
Pumps	\$ 475,000	20	10	\$237,500	
Generator	\$ 320,000	20	10	\$160,000	
Total Salvage Value				\$17,169,805	

Appendix B – Environmental Review of Selected
Alternative

City of Lakeland – Lakeland Western Trunk Line, Phase 2

June 2024



TABLE OF CONTENTS

City of Lakeland – Lakeland Western Trunk Line, Phase 2 Environmental Constraints Report

	<u>Page</u>
Section I Introduction	1
1.1 Introduction and Project Overview	1
1.2 Extent of Review	1
Section II Ecological Conditions	3
2.1 Existing Land Use	3
2.2 Wetlands and Waterbodies	4
2.2.1 Permitting and Mitigation	4
2.3 State and Federally Listed Wildlife Species	5
2.3.1 Critical Habitat	7
2.4 Cultural Resources	8
2.5 Contamination	8
Section III Summary	10
Tables	
Table 1 Potential Listed Species within Project Alternatives and Potential Impacts to Those Species	6
Table 2 Identified FDEP Hazardous Waste Sites within Close Proximity Of the Project Area (2024)	9
Appendices	
A Project Exhibits	
Exhibit 1 Project Location	
Exhibit 2 Project Aerial	
Exhibit 3 Land Use	
Exhibit 4 National Wetlands Inventory (NWI)	
Exhibit 5 USGS Topographic	
Exhibit 6 NRCS Soils	
Exhibit 7A Resource Conservation and Recovery Act (RCRA) Sites	
Exhibit 7B Other Contamination	
B Florida Natural Areas Inventory (FNAI) – Polk County	
C Florida Master Site File Correspondence	

SECTION 1

Introduction

1.1 Introduction and Project Overview

The City of Lakeland (Client) proposes to replace an existing 36” gravity sewer transmission with a new transmission main. This new transmission system is associated with the Lakeland Western Trunk Line – Phase 2 Project (Project). The Project proposes a selected alignment under environmental review, considered within this document. The selected alignment is approximately 2.4 miles in length and generally located between Herschell Street and West Edgewood Drive, in Lakeland, Florida (**Appendix A – Exhibit 1, Project Location**). More specifically, the proposed Project is located in Sections 23, 25 and 26, Township 28 South and Range 23 East, in Polk County (**Appendix A - Exhibit 2 – Project Aerial**).

1.2 Extent of Review

This document “Environmental Constraints Report” is provided as the initial environmental desktop review for the selected Project footprint. For this review, it is anticipated that the Project footprint will include the installation of a gravity sewer line with a 20-foot-wide workspace. Therefore, for the purpose of identifying potential constraints within the immediate area, a 50-foot-wide corridor was assessed along the Project route. The environmental review of the alignment was performed by conducting literature reviews, agency database searches, and gathering geographic information systems (GIS) data within the assessment corridor. Data sources for the environmental review included:

Southwest Florida Water Management District (SWFWMD) – Florida Land Use Cover Classification System (FLUCCS) shapefiles (2017),
Florida Managed Areas (FLMA),
National Wetland Inventory (NWI) for the Hillsborough Watershed,
Florida Natural Areas Inventory (FNAI),
Natural Resources Conservation Service (NRCS) Polk County Soil Survey,
United States Geological Survey (USGS) Topographic Map for Polk County,
Audubon Florida EagleWatch Nest Locator (accessed June 2024),
Florida Fish and Wildlife Conservation Commission (FWC) Terrestrial GIS Records,
United States Fish and Wildlife Service (FWS) IPaC Guide (accessed June 2024),
Florida Department of Environmental Protection (FDEP) Data Files (accessed June 2024),

FWS Consultation Areas, and other Publicly Available Databases and Florida Department of State, Division of Historical Resources –Data Search (accessed June 2024).

Based upon the available desktop datasets the following environmental constraints were reviewed and are discussed within **Section 2 – Ecological Conditions**.

- ❖ Existing Land Use
- ❖ Wetlands and Waterbodies,
- ❖ State and Federally Listed Wildlife and Plant Species,
- ❖ Critical Habitat,
- ❖ Cultural Resources, and
- ❖ Contamination.

SECTION 2

Ecological Conditions

2.1 Existing Land Use

The vegetative communities are classified using GIS aerial photography and the Southwest Florida Water Management District (SWFWMD) Florida Land Use Cover Classification System (FLUCCS) shapefiles. Included in **Appendix A**, as **Exhibit 3 - Land Use**, illustrates the existing land use within and adjacent (within a 50-foot review corridor) to the proposed alignment alternatives. Land use designations that were identified within the preferred corridor based on desktop review are as follows.

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 1400 – Commercial and Services
- 1800 – Recreational
- 1900 – Open Land
- 8100 - Transportation

The Project corridor largely traverses residential communities (with medium and high-density housing). The area is generally characterized as urbanized development, that supports a variety of housing communities, institutional buildings, light industrial activities, recreational areas and roadways.

2.2 Wetlands and Waterbodies

As identified in **Exhibit 4**, found in **Appendix A**, the proposed Project appears to contain wetlands and waterbodies that were assessed utilizing the National Wetlands Inventory (NWI) desktop database for the Hillsborough River Watershed. It should be noted that NWI is utilized as a desktop tool and that field verifications have not occurred. Therefore, the actual (delineated) wetland and waterbody boundaries are not included within this evaluation. In addition, NWI data may not include applicable wetland and waterbody features due to inconsistent data and new construction within the Project area. As such, the limits of all wetlands and waterbodies in the vicinity of the Project corridor should be validated by a field review.

According to the NWI, wetlands and other surface water (OSW) features exist within and directly adjacent to the selected route. At this time, it appears that the proposed Project will avoid wetland features that exist adjacent to the force main footprint. However, one forested wetland system that exists southwest of the intersection of the proposed Project and Harden Boulevard (Blvd), may incur unavoidable impacts due to the construction of a new pump station at that location. The OSW features are classified as linear upland-cut ditches that will be traversed at a number of locations along the Project footprint. These features will incur temporary impacts, which will be replaced in-kind after construction activities associated with the Project.

2.2.1 Permitting and Mitigation

At this time, it does appear that the proposed force main will avoid wetland features that exist adjacent to the Project footprint. However, as stated previously, one forested wetland system may incur unavoidable impacts with the construction of a new pump station in support of the proposed Project. Although this wetland system appears to be isolated and is not jurisdictional to the US Army Corp of Engineers (ACOE), the system will need to be considered for permitting through FDEP. Based on the NWI, the wetland system is approximately 0.52 acres in size. If it is determined during field delineations that the wetland is less than 0.5 acres in size, compensatory mitigation for impacts may not be required in accordance with Section 10.2.2.1 of the FDEP Applicant Handbook, Volume 1. However, it is important to note that if the wetland system is greater than 0.5 acres, FDEP may assess wetland impacts associated with the pump station, as an impact to the wetland in its entirety for the unimpacted area of wetland after construction must be 0.5 acres or greater to avoid a complete take. If this is the case, compensatory mitigation will be assessed by the FDEP on the wetland as a whole and not just the pump station footprint.

The OSW features that are proposed to be impacted are considered upland-cut ditches that were constructed for stormwater conveyance during residential and commercial development of the area. Any impacts during construction of the proposed Project to these features will be temporary in nature and all of the impacted areas will be replaced in-kind. Although these features will require permitting considerations through the FDEP, mitigation is not typically required for impacts to upland-cut ditches. There is an Environmental Resource Permit (ERP) - General Permit (GP) for the installation of utility lines under 62-330.453 Florida Administrative Code (FAC). Under this GP, open-trench installation is permitted if forested wetland impacts can be limited to 0.5 acres or less and the open trench equals 8-feet wide or less.

However, should field delineations determine that the wetland associated with the new pump station is 0.5 acres or greater, an ERP Individual Permit (IP) may be required for the Project, and it is anticipated that compensatory mitigation will be assessed by the FDEP during the permitting process. Additionally, in accordance with FDEP permitting guidelines, the unimpacted area of a wetland after construction must be 0.5 acres or greater, or the entire wetland system will be considered a complete take, requiring additional mitigation. If it is determined during the field survey that the wetland system is less than 0.5 acres and isolated, compensatory mitigation may not be required based on Section 10.2.2.1 of the FDEP Applicant Handbook, Volume 1 and the Project may qualify for the above-mentioned GP.

Should mitigation be required, the purchase of appropriate wetland credits at a FDEP approved mitigation bank, in the same drainage basin as the Project impacts, will satisfy this permit condition. The proposed Project is located within the Hillsborough River Drainage Basin. Mitigation banks that support this basin include Hillsborough River Phase 2, North Tampa, Two Rivers Ranch, TerraLargo, Fox Branch Ranch and Wiggins Prairie. During the permitting phase of the Project, a Uniform Mitigation Assessment Method (UMAM) evaluation of the proposed impacted wetland will be conducted to determine the appropriate credit requirement for the Project.

2.3 State and Federally Listed Wildlife Species

The environmental review used to identify the potential presence of state and federally listed wildlife species was conducted by initiating a literature review to determine the potential occurrence of listed species within the area, identifying and reviewing the land use potential within the Project footprint, and obtaining information from available FWS and FWC data base sources (**Appendix B – FNAI for Polk County, Florida**). At this time, it appears that the following species, identified in **Table 1** below, could potentially be found in and adjacent to the Project footprint. However, as identified within Table 1, the proposed Project is not anticipated to impact habitat related to a majority of these species. Species that could be impacted by the proposed Project are further discussed below.

Table 1. Potential Listed Species within the Project Corridor and Potential Impacts to Those Species

Common Name		Scientific Name	Listing Status		Potential for Impacts
			Federal	State	
Birds	Florida Grasshopper Sparrow	<i>Ammodramus savannarum floridanus</i>	E		None. Proposed Project is not anticipated to impact habitat.
	Florida Sand Hill Crane	<i>Antigone canadensis paratensis</i>		T	None. Proposed Project is not anticipated to impact habitat.
	Florida Scrub Jay	<i>Aphelocoma coerulescens</i>	T		None. Proposed Project is not anticipated to impact habitat.
	Burrowing owl	<i>Athene cunicularia floridana</i>	MBTA	T	None. Proposed Project is not anticipated to impact habitat.
	Crested Caracara	<i>Caracara cheriway</i>	T		None. Proposed Project is not anticipated to impact habitat.
	Red-Cockaded Woodpecker	<i>Dryobates borealis</i>	E		None. Proposed Project is not anticipated to impact habitat.
	Little Blue Heron	<i>Egretta caerulea</i>		T	Low. Impacts to habitat are considered minimal and temporary in nature.
	Tricolored Heron	<i>Egretta tricolor</i>		T	Low. Impacts to habitat are considered minimal and temporary in nature.
	Southeastern American Kestrel	<i>Falco sparverius paulus</i>		T	None. Proposed Project is not anticipated to impact habitat.
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	MBTA, BGEA		None. There are no identified bald eagle nests within the 660-foot Nest Protection Buffer Zone for the proposed Project.
	Wood Stork	<i>Mycteria americana</i>	T		Moderate. Impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations.
	Snail Kite	<i>Rostrhamus sociabilis</i>	E		None. Proposed Project is not anticipated to impact habitat.
Reptiles and Amphibians	American alligator	<i>Alligator mississippiensis</i>		T (S/A)	Low. Impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations.
	Eastern indigo snake	<i>Drymarchon couperi</i>	T	T	Low. Impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations. The FWS <i>Standard Protection Measures for the Eastern Indigo Snake</i> will be implemented and gopher tortoise burrows (should they be found within 25 feet of the project footprint) will be permitted and relocated. Coordination with FWS may be required. based upon field reviews.

Common Name	Scientific Name	Listing Status		Potential for Impacts
		Federal	State	
Gopher tortoise	<i>Gopherus polyphemus</i>		T	Low. Minimal habitat exists within the Project footprint. At least 90 days prior to the initiation of construction activities, a 100-percent gopher tortoise burrow survey will need to be performed within 25 feet of the Project footprint. Gopher tortoise burrows observed will be identified, permitted, and relocated to an off-site FWC approved long term-recipient site.
Short-tailed snake	<i>Lampropeltis extenuate</i>		T	None. Proposed Project is not anticipated to impact habitat.
Pine snake	<i>Pituophis melanoleucus</i>		T	None. Proposed Project is not anticipated to impact habitat.
Blue-tailed mole skink	<i>Plestiodon egregius lividus</i>	T	T	None. No skink soils are identified within the Project footprint.
Sand skink	<i>Plestiodon reynoldsi</i>	T	T	None. No skink soils are identified within the Project footprint.

Source: FNAI, IPAC and ESA, 2024

Key

T= Threatened

E= Endangered

MBTA = Migratory Bird Treaty Act

BGEA = Bald and Golden Eagle Act

S/A = Similar in Appearance

Based on available desktop data, the following species are most likely to occur within the Project footprint: Little Blue Heron, Tri-Colored Heron, Wood Stork, Eastern indigo snake, gopher tortoise and the American alligator. It is important to note, that in accordance with the *Peninsular Florida Species Conservation and Consultation Guide – Sand Skink and Blue-tailed Mole Skink* (December 2023), the Project footprint meets the appropriate skink elevations of 82-feet or greater (**Appendix A, Exhibit 5, USGS Topographic**), however, no longer supports suitable skink soils (**Appendix A, Exhibit 6, NRCS Soils**), as per the December 2023 consultation guidelines update. During the field survey, the Project footprint will be reviewed to determine if any of the above listed species or their habitat is present. Once appropriate habitat is verified, surveys should be initiated, and the appropriate permit(s) through the FWS and/or FWC should be obtained, prior to construction activities.

2.3.1 Critical Habitat

Critical habitat was not identified within the proposed Project footprint.

2.4 Cultural Resources

A search of reasonably available databases and maps was conducted to identify historic resources on or adjacent to the Project footprint that are listed in, or previously determined to be eligible for listing in the National Register of Historic Places (NRHP). A search of the Florida Master Site File was also conducted to identify any previously recorded archaeological and cultural resource sites. A 500-foot buffer was utilized to review cultural resources and/or surveys that may have been performed and recorded along the selected route (found as **Appendix C, Florida Master Site File Correspondence**). The review of available data identified no Florida Structures, Historical Sites, or Resource Groups associated with the Project footprint. As such, it is anticipated that cultural resources will not be affected during construction activities associated with the Project.

Although database research has been conducted within the review area, the possibility exists that previously unrecorded archaeological sites could be discovered during the construction activities. Therefore, pursuant to federal and state regulations and guidelines, if an inadvertent discovery is made during clearing and construction activities, all actions in the immediate vicinity of the discovery will be suspended and a professional archaeologist will be contacted to evaluate the importance of the discovery. The area will be examined by the archaeologist, who, in consultation with State Historic Preservation Office (SHPO) staff, will determine if the discovery is significant or potentially significant.

2.5 Contamination

A search of the following additional databases was conducted to evaluate the Project footprint and adjacent properties within one quarter mile (buffer review area) for hazardous materials and related environmental concerns:

- *Florida Department of Environmental Protection (FDEP) online “Contamination Locator Map”*
- *US Environmental Protection Agency (EPA) “NEPAssist” website*
- *US Environmental Protection Agency (EPA) “My Environment” website*

Based on the June 2024 database search of the proposed force main route, there are no Resource Conservation and Recovery Act (RCRA) sites within close proximity to the proposed Project footprint (**Appendix A, Exhibit 7A – RCRA Sites**). However, one Petroleum Contamination Tracking Site (PCTS) and a Storage Tank Contamination Monitoring (SCTM) site are in close proximity to the south end of the proposed force main (**Appendix A, Exhibit**

7B – Other Contamination) at the City of Lakeland - Southwest (SW) Pumping Station. Please refer to **Table 2** for the site-specific details as provided by the FDEP database. At this time, these facilities appear to be in compliance with FDEP monitoring and reporting procedures.

Table 2. Identified FDEP Hazardous Waste Sites Within Close Proximity of the Project Area (2024)

ID Number	FDEP ID	Facility Name	Permit Type	Compliance	Location
<i>PCTS Sites</i>					
8628541	29918	City of Lakeland SW Pumping Station	Permit for Petroleum Discharge	N/A	Northeast of Intersection of SW Edgewood Dr and S San Gully Rd.
<i>SCTM Sites</i>					
8628541	41578	City of Lakeland SW Pumping Station	Tanks – Petroleum Contamination	Open, Monitoring	Northeast of Intersection of SW Edgewood Dr and S San Gully Rd.

FDEP 2024

SECTION 3

Summary

In June 2024, ESA biologists conducted a desktop review of the proposed Lakeland Western Trunk Line, Phase 2 Project (Project) to determine the potential environmental constraints that may exist within the Project footprint. Several database resources were utilized to obtain information on potential environmental issues for planning purposes during the design phase of the Project.

Based on desktop review utilizing the NWI and Project aeriels, the proposed Project appears to avoid all wetland features. However, one forested wetland system may incur direct impacts from the construction of a new pump station associated with the proposed force main. The Project does traverse a number of linear OSW features that will require permitting considerations through the FDEP. The impacts to the OSW features will be temporary in nature and replaced in-kind when construction is complete. If forested wetland impacts do not exceed 0.5 acres and the trench width can be limited to 8 feet or less, the Project may qualify for a GP under 62-330.453 FAC. However, if the proposed Project does not meet the permit conditions of the GP, an IP will be required through the FDEP prior to construction activities. Compensatory mitigation requirements for impacts to the forested wetland at the new pump station location will be dependent on the actual size of the wetland feature, once it has been delineated during the field review. If mitigation is required, the appropriate wetland credits can be purchased from one of several FDEP approved mitigation banks within the same drainage basin as the Project impacts.

In utilizing available FWS and FWC database resources it was determined that there is the potential for state and federally listed species to occur within and directly adjacent to the Project footprint. The species that could be encountered include the Little Blue Heron, Tri-Colored Heron, Wood Stork, Eastern indigo snake, gopher tortoise and the American alligator. The Project footprint will be field evaluated to determine the presence of listed species/habitat and if species-specific surveys are warranted. If state and/or federally listed species are identified within or directly adjacent to the Project footprint, surveys will be initiated, and the appropriate permits will be obtained through FWS and/or FWC prior to construction implementation.

A desk-top cultural resource review was also conducted utilizing the Division of Historical Resources (DHR) database to determine if any documented resources exist in or within 500 feet of the Project corridor. As a result of the database search, no recorded cultural resources exist within 500 feet of the Project footprint. As such, impacts to cultural resources are not anticipated as result of the proposed Project. Though database research was conducted, there is still the potential that unrecorded resources could be discovered onsite. If additional historic resources are discovered, coordination with the SHPO should be initiated.

FDEP and EPA database resources were utilized to determine if any recorded hazardous materials or sites exist within 0.25 miles of the Project footprint. Though a number of RCRA, PCTS and SCTM sites do exist within the 0.25-mile radius, only one PCTS and one SCTM site are within close proximity to the Project footprint. These sites are located at the City of Lakeland SW Pumping Station at the terminus of the proposed Project, northeast of Intersection of SW Edgewood Dr and South San Gully Rd. At the time of the database review, the sites appear to be in compliance with all FDEP monitoring and reporting requirements.

APPENDICES

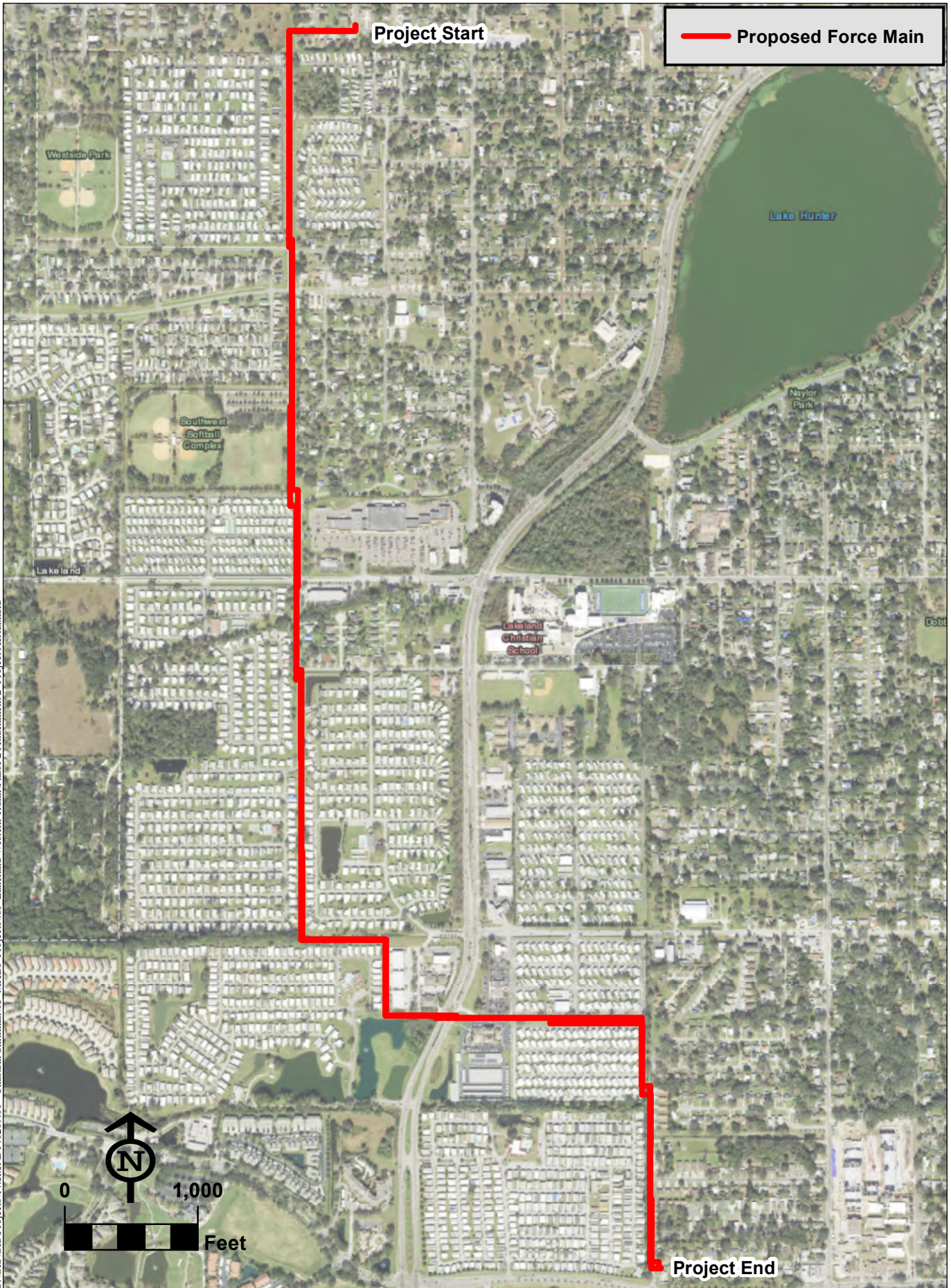


Appendix A

Project Exhibits



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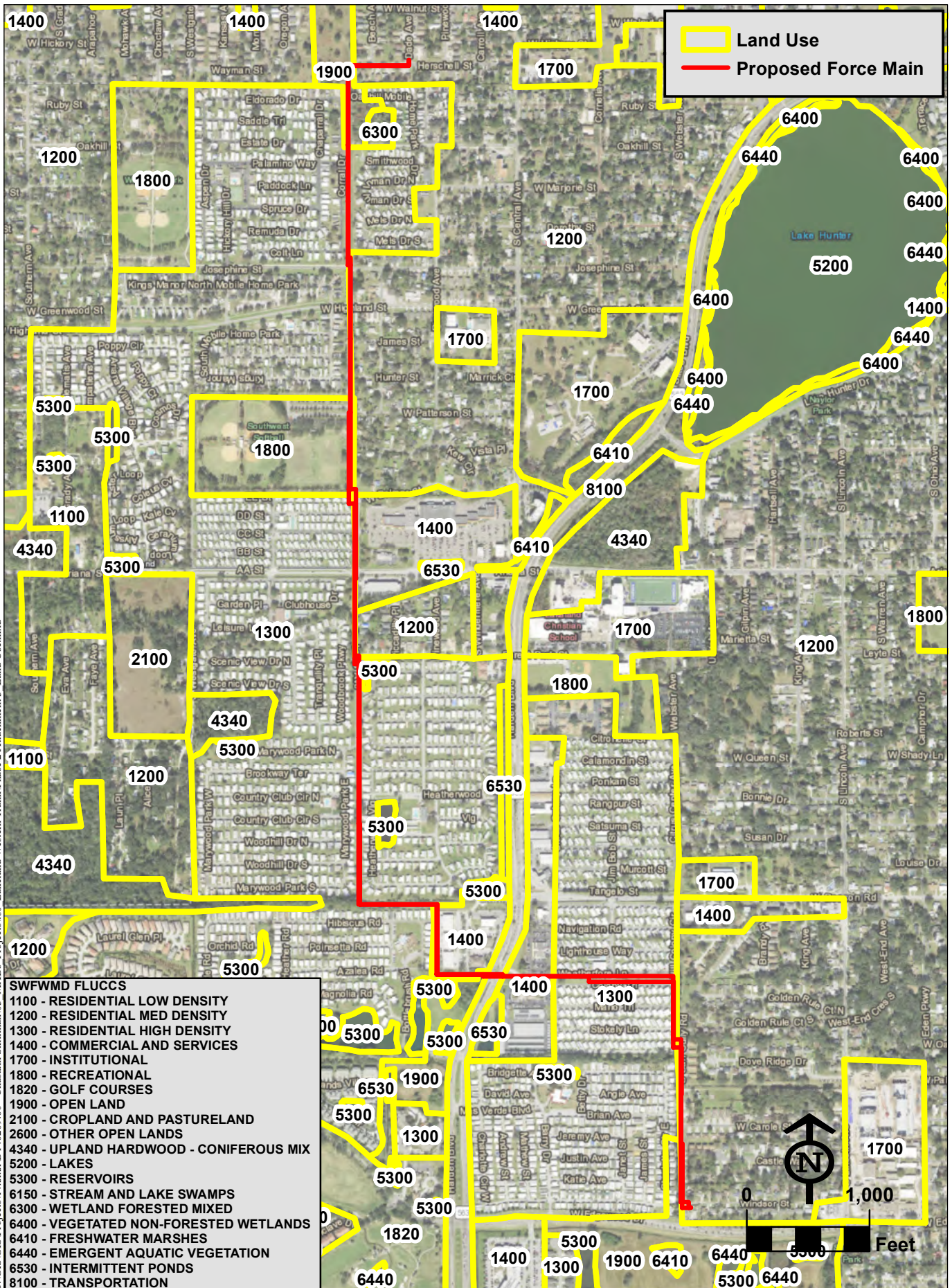


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 2
PROJECT AERIAL

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Date: 6/25/2024

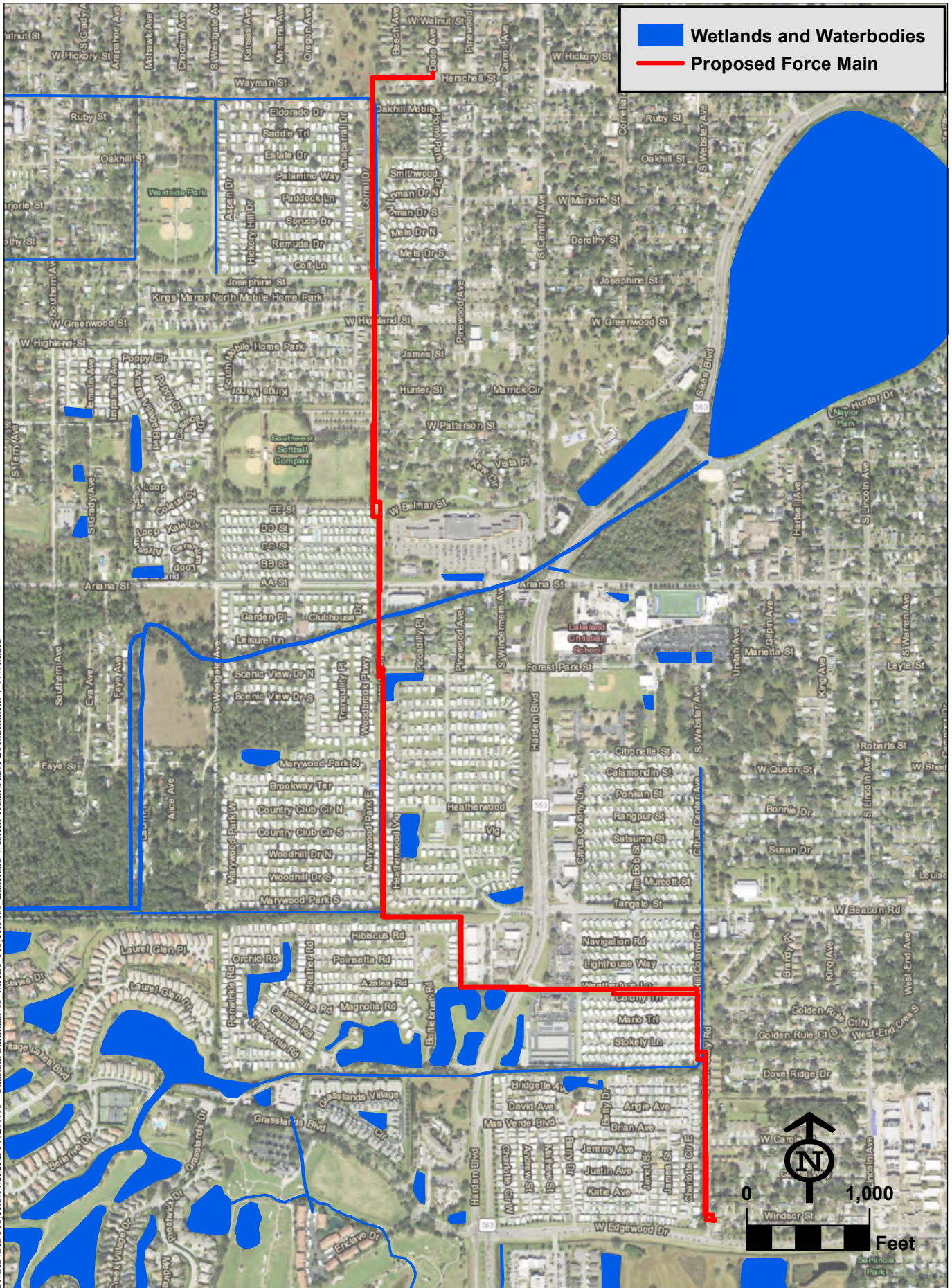


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, SWFWMD, 2017, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 3
LAND USE

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Date: 6/25/2024

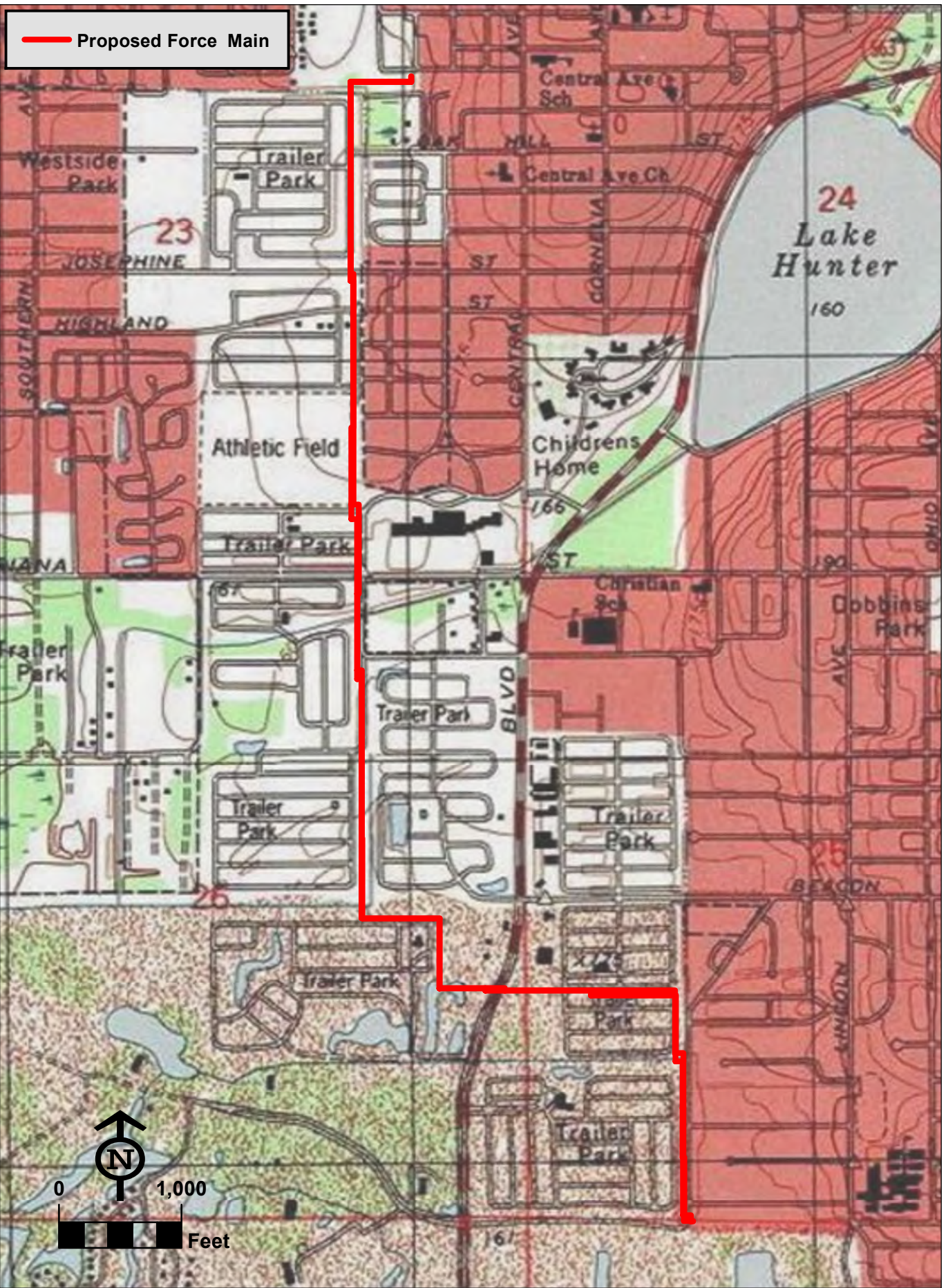


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, USFWS 2024, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 4 NATIONAL WETLANDS INVENTORY (NWI) HILLSBOROUGH RIVER WATERSHED

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Date: 7/1/2024

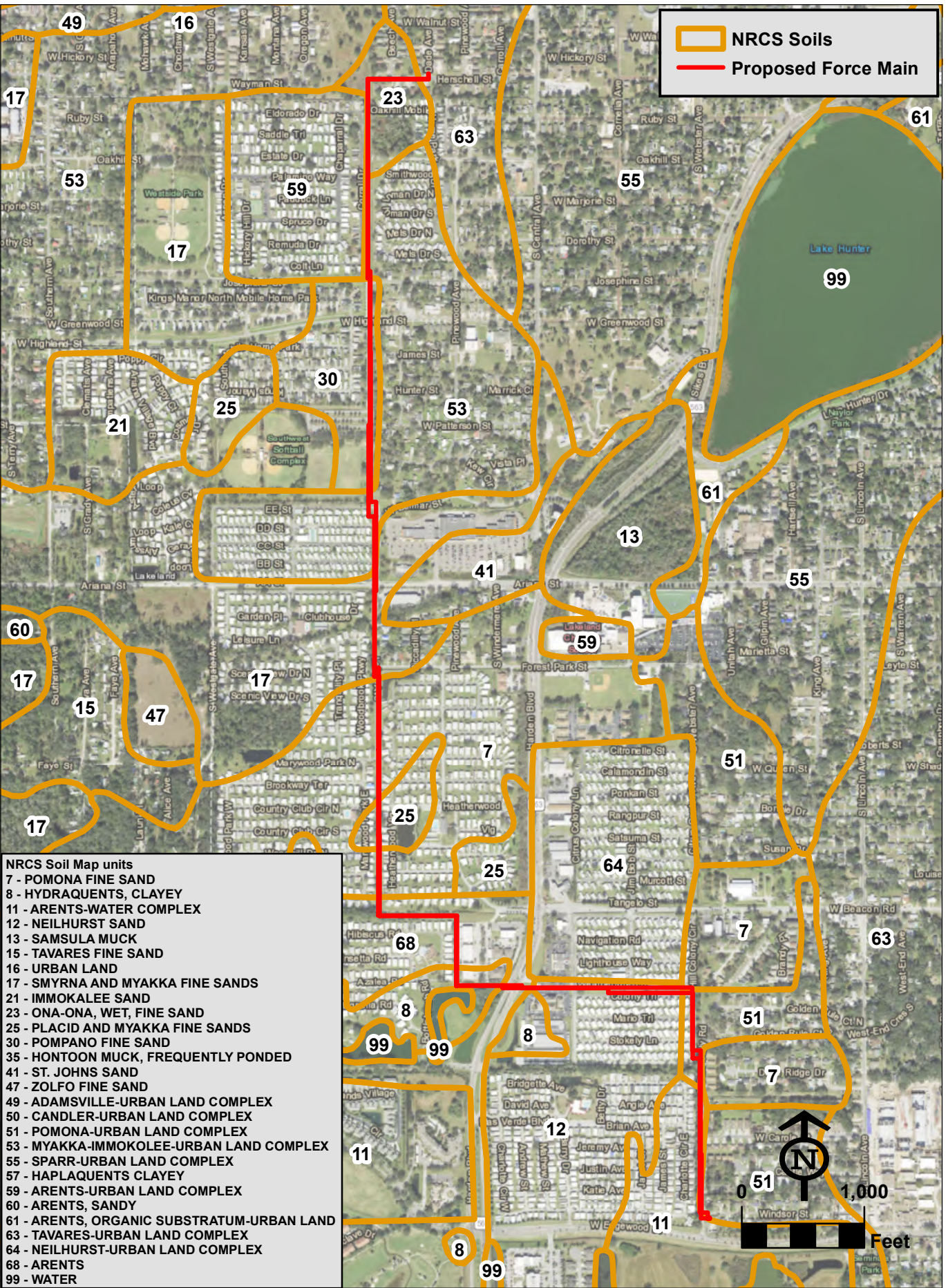


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 5
USGS TOPOGRAPHIC

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Date: 7/1/2024

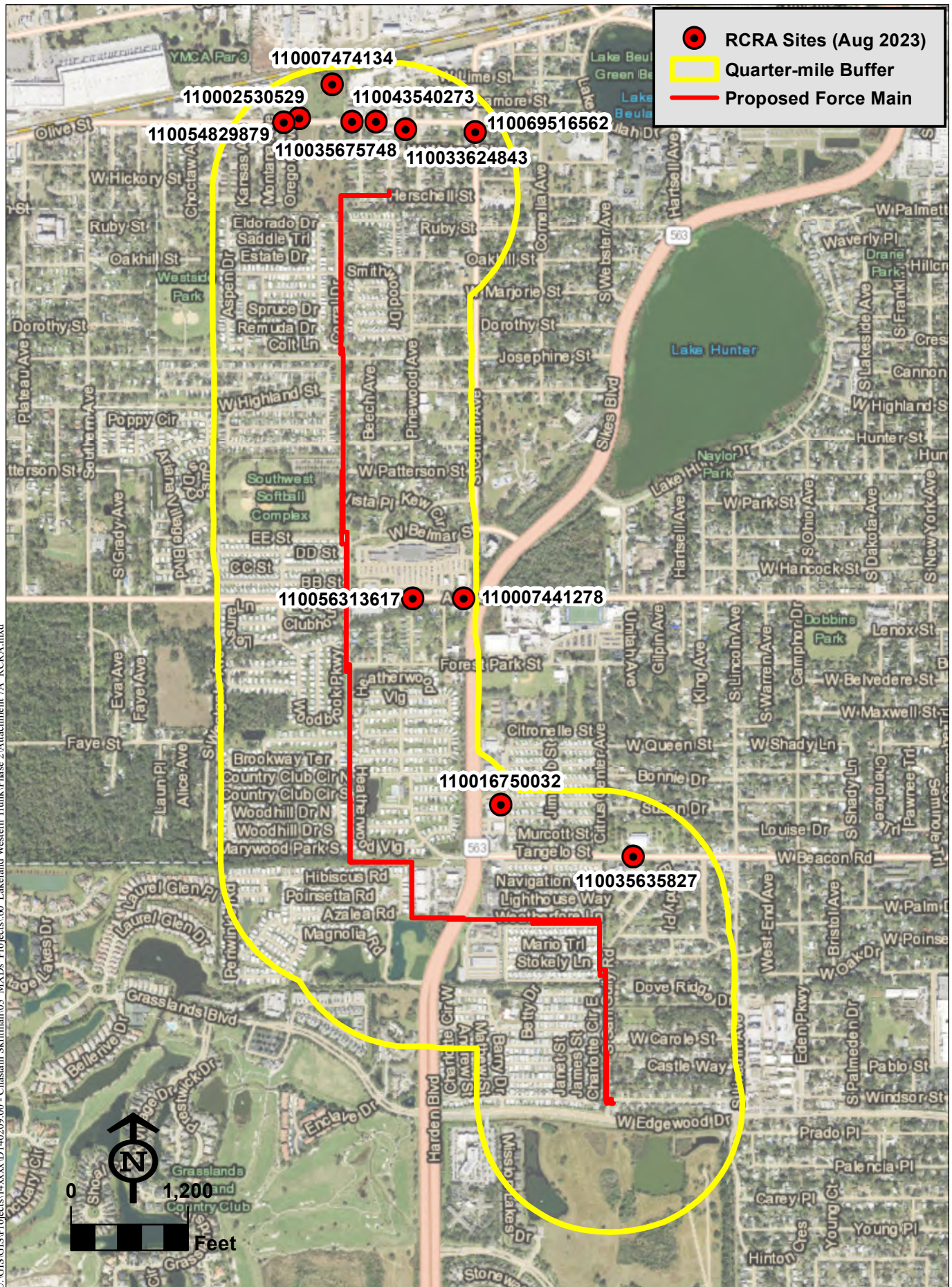


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, NRCS 2020, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 6
LAND USE

Date: 6/25/2024
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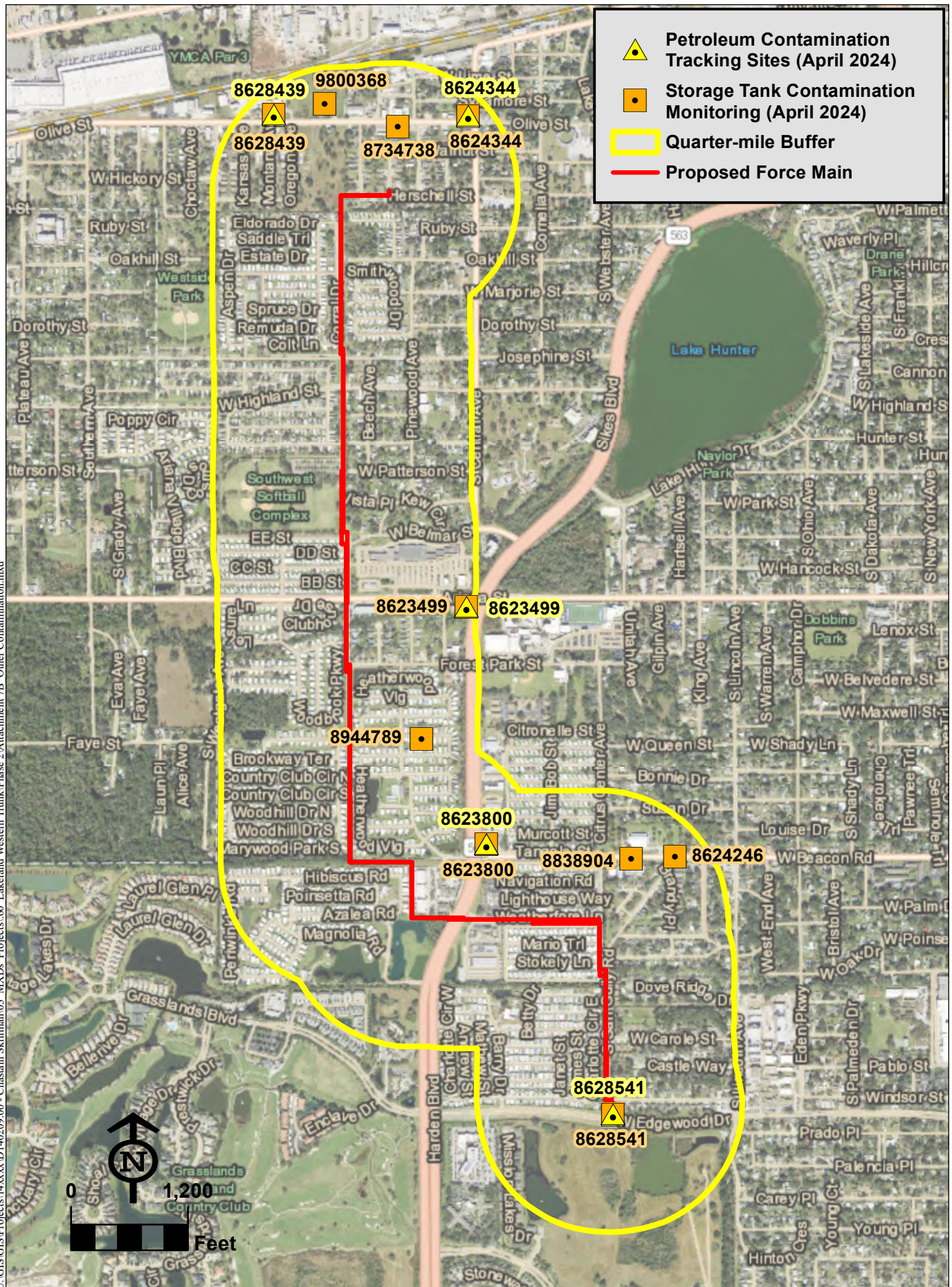


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, EPA 2023, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 7A
RESOURCE CONSERVATION
AND RECOVERY ACT (RCRA) SITES

U:\GIS\GIS Projects\14xxxx\140209.00 - Chastain Skillman\03 MXDs Projects\60 Lakeland Western Trunk\Phase 2\Attachment 7B Other Contamination.mxd
Date: 6/25/2024



Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2023, USGS 2023, FDEP 2024, POLK COUNTY 2024, CSI 2024, ESA, 2024

CITY OF LAKE LAND - WESTERN TRUNK LINE - PHASE 2

EXHIBIT 7B
OTHER CONTAMINATION SITES


**Appendix B
Florida Natural Areas
Inventory (FNAI) –
Polk County**




FNAI Tracking List

POLK COUNTY
45 Vertebrates Found
Last Updated: June 2024

Scientific Name is linked to the FNAI Online Field Guides when available.

 - links to **NatureServe Explorer**, an online encyclopedia of more than 55,000 plants, animals, and natural communities in North America, compiled by the **NatureServe** network of natural heritage programs, of which the Florida Natural Areas Inventory is a member.

 - links to a species distribution map (**Adobe SVG viewer** required). If your browser does not support Adobe SVG, try this [link](#)































SEARCH RESULTS

NOTE: This is not a comprehensive list of all species and natural communities occurring in the location searched. Only elements documented in the FNAI database are included and occurrences of natural communities are excluded. Please see FNAI Land Cover information or Reference Natural Community map for more information on communities.















Fishes		EXPLANATION				
Scientific Name		Common Name	Global Rank	State Rank	Federal Status	State Status
<i>Enneacanthus chaetodon</i>		  Blackbanded Sunfish	G3G4	S1S3		N

Amphibians			EXPLANATION				
Scientific Name			Common Name	Global Rank	State Rank	Federal Status	State Status
<i>Lithobates capito</i>		 	Gopher Frog	G3	S3		N

Reptiles		EXPLANATION					
Scientific Name		Common Name	Global Rank	State Rank	Federal Status	State Status	
<i>Alligator mississippiensis</i>		American Alligator	G5	S4	SAT	FT(S/A)	
<i>Clemmys guttata</i>		Spotted Turtle	G5	S2S3		N	
<i>Crotalus adamanteus</i>		Eastern Diamondback Rattlesnake	G4	S3		N	
<i>Drymarchon couperi</i>		Eastern Indigo Snake	G3	S3	T	FT	
<i>Gopherus polyphemus</i>		Gopher Tortoise	G3	S3	C	ST	
<i>Lampropeltis extenuata</i>		Short-tailed Snake	G3	S3		ST	
<i>Lampropeltis floridana</i>		Florida Kingsnake	G5	S2S3		N	
<i>Pituophis melanoleucus</i>		Pine Snake	G4	S3		ST	
<i>Plestiodon egregius lividus</i>		Blue-tailed Mole Skink	G5T2	S2	T	FT	
<i>Plestiodon reynoldsi</i>		Sand Skink	G2	S2	T	FT	
<i>Sceloporus woodi</i>		Florida Scrub Lizard	G2G3	S2S3		N	

Birds		EXPLANATION					
Scientific Name			Common Name	Global Rank	State Rank	Federal Status	State Status
<i>Ammodramus savannarum floridanus</i>			Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Antigone canadensis pratensis</i>			Florida Sandhill Crane	G5T2	S2		ST
<i>Aphelocoma coerulescens</i>			Florida Scrub-Jay	G2?	S2	T	FT
<i>Aramus guarauna</i>			Limpkin	G5	S3		N
<i>Athene cunicularia floridana</i>			Florida Burrowing Owl	G4T3	S3		ST
<i>Buteo brachyurus</i>			Short-tailed Hawk	G4G5	S1		N
<i>Caracara cheriway</i>			Crested Caracara	G5	S2	T	FT
<i>Dryobates borealis</i>			Red-cockaded Woodpecker	G3	S2	E	FE
<i>Dryobates villosus</i>			Hairy Woodpecker	G5	S3		N
<i>Egretta caerulea</i>			Little Blue Heron	G5	S4		ST
<i>Egretta thula</i>			Snowy Egret	G5	S3		N
<i>Egretta tricolor</i>			Tricolored Heron	G5	S4		ST
<i>Elanoides forficatus</i>			Swallow-tailed Kite	G5	S2		N
<i>Eudocimus albus</i>			White Ibis	G5	S4		N
<i>Falco sparverius paulus</i>			Southeastern American Kestrel	G5T4	S3		ST
<i>Haliaeetus leucocephalus</i>			Bald Eagle	G5	S3		N
<i>Mycteria americana</i>			Wood Stork	G4	S2	T	FT
<i>Nyctanassa violacea</i>			Yellow-crowned Night-heron	G5	S3		N

<i>Nycticorax nycticorax</i>			Black-crowned Night-heron	G5	S3		N
<i>Pandion haliaetus</i>			Osprey	G5	S3S4		N
<i>Peucaea aestivalis</i>			Bachman's Sparrow	G3	S3		N
<i>Plegadis falcinellus</i>			Glossy Ibis	G5	S3		N
<i>Rostrhamus sociabilis</i>			Snail Kite	G4G5	S2	E	FE
<i>Sternula antillarum</i>			Least Tern	G4	S3	N	ST

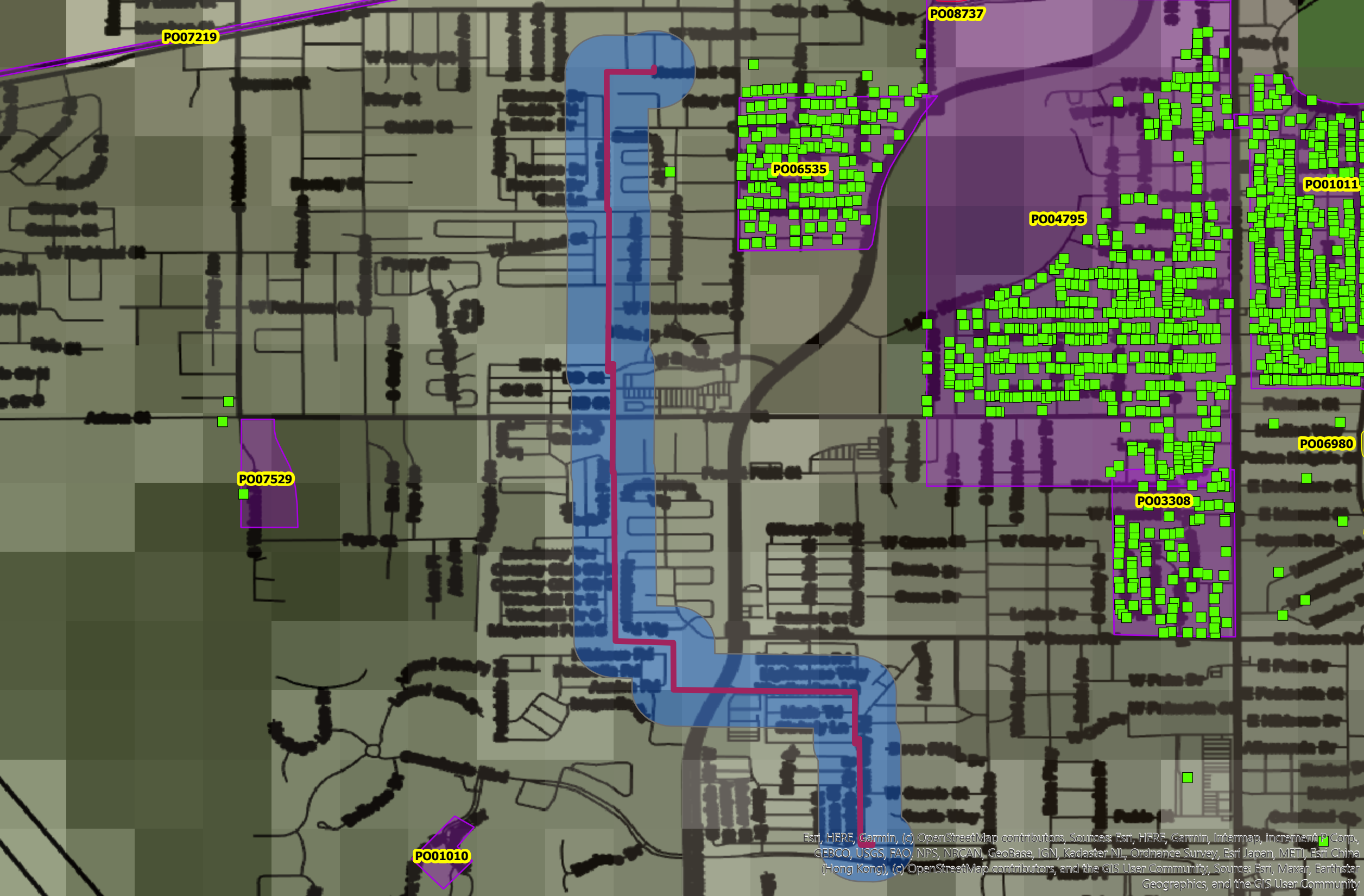
Mammals			EXPLANATION				
Scientific Name			Common Name	Global Rank	State Rank	Federal Status	State Status
<i>Corynorhinus rafinesquii</i>			Rafinesque's Big-eared Bat	G3G4	S1		N
<i>Eptesicus fuscus</i>			Big Brown Bat	G5	S3		N
<i>Eumops floridanus</i>			Florida bonneted bat	G1	S1	E	FE
<i>Mustela frenata peninsulae</i>			Florida Long-tailed Weasel	G5T3?	S3		N
<i>Neofiber alleni</i>			Round-tailed Muskrat	G3	S3		N
<i>Peromyscus floridanus</i>			Florida Mouse	G3	S3		N
<i>Sciurus niger niger</i>			Southeastern Fox Squirrel	G5T5	S3		N
<i>Ursus americanus floridanus</i>			Florida Black Bear	G5T4	S4		N

Appendix C

Florida Master Site File

Correspondence





ENVIRONMENTAL CONSTRAINTS REPORT

City of Lakeland – Lakeland Western Trunk Line, Phase 2

Prepared for:
City of Lakeland
228 South Massachusetts Avenue
Lakeland, FL 33801

June 2024

Appendix C – Environmental Review of Other Alternatives

City of Lakeland – Lakeland Western Trunk Line

City of Lakeland – Lakeland Western Trunk Line

Prepared for:

February 2023

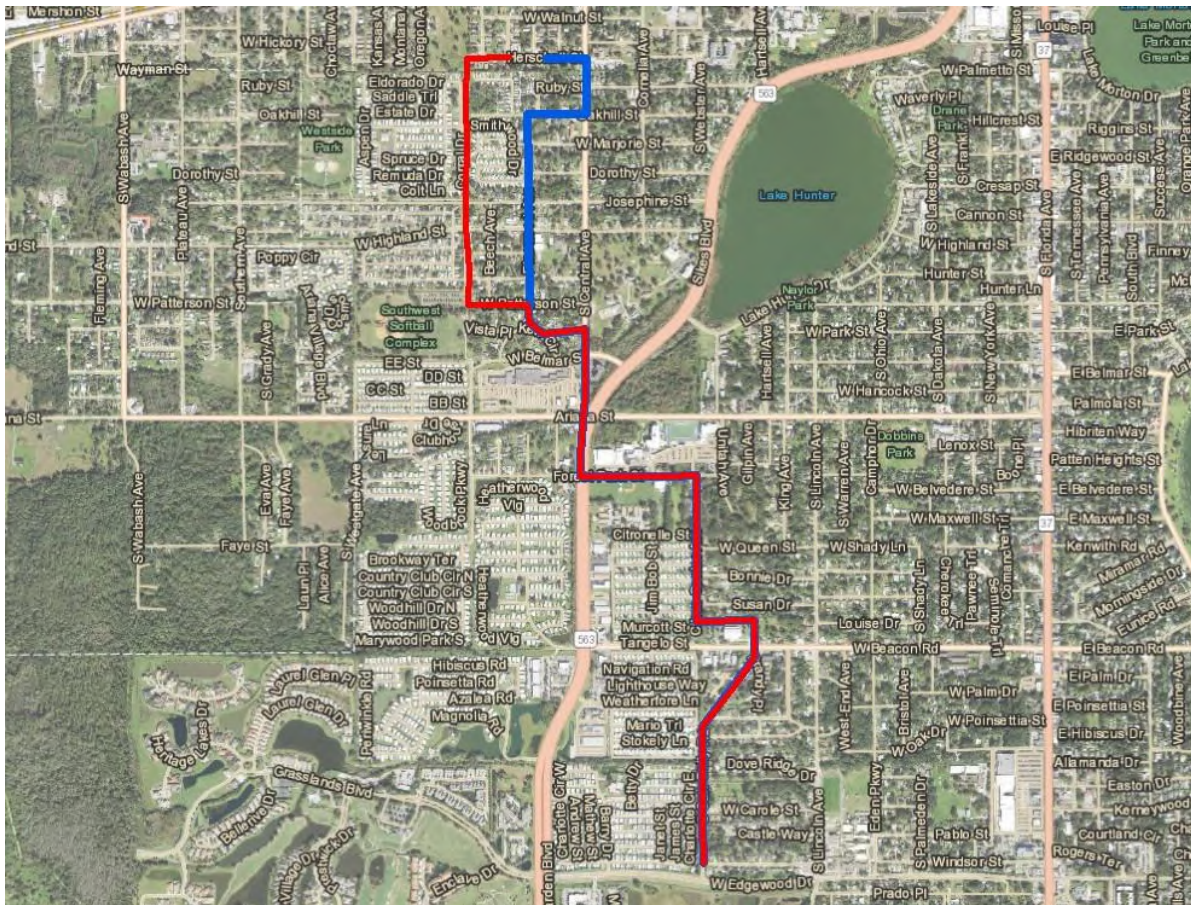


TABLE OF CONTENTS

City of Lakeland – Lakeland Western Trunk Line Environmental Alternatives Report

	<u>Page</u>
Section I Introduction	1
1.1 Introduction and Project Overview	1
1.2 Extent of Review	1
Section II Ecological Conditions	3
2.1 Existing Land Use	3
2.2 Wetlands and Waterbodies	4
2.2.1 General Conditions and Permitting	4
2.3 State and Federally Listed Wildlife Species	5
2.3.1 Critical Habitat	7
2.4 Cultural Resources	7
2.5 Contamination	8
Section III Summary	10
Tables	
Table 1 Potential Listed Species within Project Alternatives and Potential Impacts to Those Species	5
Table 2 Identified FDEP Hazardous Waste Sites within Close Proximity Of the Project Area (2023)	9
Table 3 Summary of the Environmental Parameters Assessed for the Project Alternatives	11
Appendices	
A Project Exhibits	
Exhibit 1 Project Location	
Exhibit 2 Project Aerial	
Exhibit 3 Land Use	
Exhibit 4 National Wetlands Inventory (NWI)	
Exhibit 5 NRCS Soils	
Exhibit 6 USGS Topographic	
Exhibit 7A Resource Conservation and Recovery Act (RCRA) Sites	
Exhibit 7B Other Contamination	
B Florida Natural Areas Inventory (FNAI) – Polk County	
C Florida Master Site File Correspondence	

SECTION 1

Introduction

1.1 Introduction and Project Overview

The City of Lakeland (Client) proposes to replace an existing 36" gravity sewer transmission with a new transmission. This new transmission system is associated with the Lakeland Western Trunk Line – Phase I Project (Project). The Project proposes two (2) alternative alignments under environmental review, considered within this document. Both alignments are approximately 2.5 miles in length and generally located between Herschell Street and West Edgewood Drive, in Lakeland, Florida (**Appendix A – Exhibit 1, Project Location**). More specifically, the proposed Project review area extends from Lime Steet, south to East Oakbridge Boulevard, in Sections 23, 25 and 26, Township 28 South and Range 23 East (**Appendix A - Exhibit 2 – Project Aerial**).

1.2 Extent of Review

This document “Environmental Alternatives Report”, is provided as the initial environmental desktop review for the two (2) selected Project Alternatives. A second phase to physically review the accuracy of the desktop data, will be provided in a supplemental update to this Environmental Alternatives Report. For this review, it is anticipated that the installation of the gravity sewer line will require a 20-foot-wide working footprint. Therefore, for the purpose of identifying potential constraints within the immediate area, a 50-foot-wide corridor was assessed along each Project Route. The two (2) alignment routes (**Alternative 1 and Alternative 2**) are identified in **Exhibit 2**, found in **Appendix A** and their location is generally described as:

Alternative 1 is approximately 2.5 miles in length and aligns west of the existing transmission. Alternative 1 originates at the Dade Avenue and Herschell Street intersection and continues west to Corral Street sifting south to Patterson Street. At Patterson Street the alignment runs east to Pinewood Avenue, where the transmission will follow the exiting gravity sewer transmission alignment (continues south on Pinewood Avenue, east towards Central Avenue, south to Forest Park Steet, east to Webster Avenue, South to just past Susan Drive, east to align with and continue southeast and south along San Gully Road where it terminates at the intersection of Sand Gully Road and Windsor Street).

[Alternative 2](#) is approximately 2.5 miles in length and aligns east of the existing transmission. Alternative 2 originates at the Dade Avenue and Herschell Street intersection and continues east to Central Avenue, south to Oakhill Street, west to Pinewood Avenue, and south to Patterson Street, where it continues south following the exiting gravity sewer transmission alignment, as described above.

The environmental review of the Alignment Routes was performed by conducting literature reviews, agency database searches, and gathering geographic information systems (GIS) data within each 50-foot assessment corridor. Data sources for the environmental review included:

Southwest Florida Water Management District (SWFWMD) – Florida Land Use Cover Classification System (FLUCCS) shapefiles (2017),
Florida Managed Areas (FLMA),
National Wetland Inventory (NWI),
Florida Natural Areas Inventory (FNAI),
Natural Resources Conservation Service (NRCS) Polk County Soil Survey,
United States Geological Survey (USGS) Topographic Map for Polk County,
Audubon Florida EagleWatch Nest Map (accessed February 2023),
Florida Fish and Wildlife Conservation Commission (FWC) Terrestrial GIS Records,
United States Fish and Wildlife Service (FWS) IPaC Guide (accessed February 2023),
Florida Department of Environmental Protection (FDEP) Data Files (accessed February 2023),
FWS Consultation Areas, and other Publicly Available Databases and
Florida Department of State, Division of Historical Resources –Data Search (accessed February 2023).

Based upon the available desktop datasets the following environmental constraints were reviewed and are discussed within **Section 2 – Environmental Conditions**.

- ❖ Existing Land Use
- ❖ Wetlands and Waterbodies,
- ❖ State and Federally Listed Wildlife and Plant Species,
- ❖ Critical Habitat,
- ❖ Cultural Resources, and
- ❖ Contamination.

SECTION 2

Ecological Conditions

2.1 Existing Land Use

The vegetative communities are classified using GIS aerial photography and Southwest Florida Water Management District's (SWFWMD) Florida Land Use Cover Classification System (FLUCCS) shapefiles. Included in **Appendix A**, as **Exhibit 3 - Land Use**, that illustrates the existing land use within and adjacent (within a 50-foot review corridor) to the proposed alignment alternatives. Land use characteristic that was identified within each corridor are provided below.

Alternative 1 – Land use identified within the 50-foot corridor is illustrated on Exhibit 3 and included the following FLUCCS classifications:

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 5100 – Ditches / Canals

Alternative 2 – Land use identified within the 50-foot corridor is illustrated on Exhibit 3 and include the following FLUCCS classifications:

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 1700 – Institutional
- 5100 – Ditches / Canals

Both alignment alternatives largely traverse residential communities (with medium and high-density housing). The area is generally characterized as urbanized development, that supports a variety of housing communities, institutional buildings, light industrial activities, and recreational areas.

Where both alignments converge together (Patterson Street - existing gravity sewer transmission), the following land use classifications are identified.

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 1400 – Commercial and Services

- 1700 – Institutional
- 8100 – Transportation
- 5100 – Ditches / Canals

This segment is also considered heavily urbanized with both medium and high residential communities, commercial and service buildings, institutional buildings, and major highways (identified as Transportation, above).

2.2 Wetlands and Waterbodies

As identified in **Exhibit 4**, found in **Appendix A**, both alignments appear to contain wetlands and waterbodies that were assessed utilizing the 2023 National Wetlands Inventory (NWI) desktop dataset, within a 50-foot buffer. It should be noted that NWI is utilized as a desktop tool and that field verifications within the Project alternatives have not occurred. Therefore, the actual (delineated) wetland and waterbody boundaries are not included within this evaluation. In addition, NWI data may miss and/or not include applicable wetland and waterbody features due to inconsistent data and new construction within the focus area. As such, it is suggested that wetland and waterbody evaluations be validated by a field review.

2.2.1 General Conditions and Permitting

At this time, it does not appear that either of the two Alignments Routes will impact wetlands, or jurisdictional wetlands that will require mitigation. Several ditch / canal and swale features exist along both Routes that typically do not require mitigation, only documentation within the appropriate permit application. Alternative 1 does appear to impact more of these features than Alignment 2. However, where the two (2) alignments converge there is one riverine / canal crossing (north of the intersection of Ariana Street and Sikes Boulevard) that appears to have adjacent wetland features. This remnant wetland area is part of the historical slough system that has now been channelized. It is anticipated that trenchless construction methods (such as microtunneling) will be utilized to cross this surface water and intersection. It should be noted, that although mitigation is not expected for this activity, the crossing of the surface water will also need to be documented within the appropriate permit application. Additionally, a safe upland deployment pit and retrieval pit should be delineated, to ensure that the adjacent wetland features associated with the surface water, will not be impacted at this location.

Should trenchless construction methods not be applied, or the Project incurs unavoidable impacts to wetland features considered jurisdictional, mitigation may be required. If

unavoidable impacts occur, mitigation compensation through the purchase of wetland credits at a FDEP and FDEP 404 Program approved mitigation bank can be acquired. The proposed Project is located within the Hillsborough River Drainage Basin, therefore, mitigation banks that support the basin include Hillsborough River Phases 1 & 2, Two Rivers Ranch, Fox Branch Ranch and Wiggins Prairie.

2.3 State and Federally Listed Wildlife Species

The environmental review used to identify the potential presence of state and federally listed wildlife species was conducted by initiating a literature review to determine the potential occurrence of listed species within the area, identifying and reviewing the land use potential within the Project alternatives, and obtaining information from available FWS and FWC data base sources (**Appendix B, FNAI – Polk County**). At this time, it appears that each corridor may support listed species as identified in **Table 1**, below. Project routes with a greater potential to support listed species are also identified within the Table 1.

Table 1. Potential Listed Species within the Project Alternatives and Potential Impacts to Those Species

Common Name		Scientific Name	Listing Status		Potential for Impacts
			Federal	State	
Birds	Florida Grasshopper Sparrow	<i>Ammondramus savannarum floridanus</i>	E	E	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Florida Sand Hill Crane	<i>Antigone canadensis paratensis</i>		T	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Florida Scrub Jay	<i>Aphelocoma coerulescens</i>	T	T	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Burrowing owl	<i>Athene cunicularia floridana</i>	MBTA	T	<i>None.</i> Proposed Project Alternatives are not anticipated to impact habitat.
	Crested Caracara	<i>Caracara cheriway</i>	T	T	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Red-cockaded woodpecker	<i>Dryobates borealis</i>	E	E	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Little Blue Heron	<i>Egretta caerulea</i>		T	<i>Low.</i> Alternative 1 and Alternative 2 impacts to habitat are considered minimal and temporary in nature.
	Tricolored Heron	<i>Egretta tricolor</i>		T	<i>Low.</i> Alternative 1 and Alternative 2 impacts to habitat are considered minimal and temporary in nature.

Common Name		Scientific Name	Listing Status		Potential for Impacts
			Federal	State	
	Southeaster American Kestrel	<i>Falco sparverius paulus</i>		T	<i>None.</i> Proposed Alternative are not anticipated to impact habitat.
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	MBTA, BGEA		<i>None.</i> There are no identified bald eagle nests within the 660-foot Nest Protection Buffer Zone for the proposed Alternatives.
	Wood Stork	<i>Mycteria americana</i>	T	T	<i>Moderate.</i> Alternative 1 and Alternative 2 impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations.
Reptiles and Amphibians	American Alligator	<i>Alligator mississippiensis</i>		T (S/A)	<i>Low.</i> Alternative 1 and Alternative 2 impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations.
	Eastern Indigo Snake	<i>Drymarchon couperi</i>	T	T	<i>Low.</i> Alternative 1 and Alternative 2 impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations. Standard Protection Measures for the Eastern Indigo Snake will be implemented and gopher tortoise burrows (should they be found within 25 feet of the project corridor) will be permitted and relocated. Coordination with FWS may be required. based upon field reviews. Alternative 1 offers a greater potential to impact Eastern indigo snake habitat as the corridors offers a greater acreage of vegetative communities that may also support a greater number of gopher tortoise's and their burrows.
	Gopher tortoise	<i>Gopherus polyphemus</i>		T	<i>low.</i> Minimal habitat exists within both Project alternatives, with a greater potential occurring within Alternative 1 . At least 90 days' prior the initiation of construction activities, a 100 percent gopher tortoise burrow survey will need to be performed within 25 feet of the project footprint of the selected route. Gopher tortoise burrows observed will be identified, permitted, and relocated to an off-site FWC approved long term-recipient site.
	Short-tailed snake	<i>Lampropeltis extenuate</i>		T	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Pine snake	<i>Pituophis melanoleucus</i>		T	<i>None.</i> Proposed Alternatives are not anticipated to impact habitat.
	Blue-tailed mole skink	<i>Plestiodon egregius lividus</i>	T	T	<i>Low - None.</i> A minimal amount of appropriate skink soils is identified within both Alternatives, however, these areas that are identified as containing historic skink soils have been urbanized and contain medium to high residential areas. Habitat may no longer exist and will need to be filed verified.

Common Name	Scientific Name	Listing Status		Potential for Impacts
		Federal	State	
Sand skink	<i>Plestiodon reynoldsi</i>	T	T	<i>Low - None.</i> A minimal amount of appropriate skink soils is identified within both Alternatives, however, these areas that are identified as containing historic skink soils have been urbanized and contain medium to high residential areas. Habitat may no longer exist and will need to be field verified.

Source: FNAI, IPAC and ESA, 2023

Key

T= Threatened

E= Endangered

MBTA = Migratory Bird Treaty Act

BGEA = Bald and Golden Eagle Act

S/A = Similar in Appearance

Based on the available desktop data the following species are most likely to occur, or habitat will need to be field verified within the Alignment Routes: little blue heron, tri-colored heron, wood stork, Eastern indigo snake, gopher tortoise, American alligator, and sand / blue-tailed mole skinks. At this time, it appears that **Alternative 1** is more likely to support additional gopher tortoises, little blue herons, tri-colored herons, and wood storks, since this route supports supplemental areas of potential habitat.

Alternative 1 supports potential sand and bluetail mole skink soils (located in **Appendix A, Exhibit 5, NRCS Soils**), identified as 30 – Pompano Fine Sand, as well as appropriate skink elevations (please refer to **Appendix A, Exhibit 6, USGS Topographic**). However, areas denoted with these soil classifications may no longer support skink habitat as the surrounding area has been completely developed and most open areas support non-native grass species that is heavily maintained. These areas should be field verified and an email coordination with FWS should be initiated to reduce and/or request concurrence that skink surveys are not warranted within the Project area. The route for **Alternative 2** does not appear to traverse suitable sand and blue-tail mole skink soils, therefore, it is anticipated impacts to this species is not expected as a result of the construction of this alternative.

2.3.1 Critical Habitat

Critical habitat was not identified within **Alternative 1** or **Alternative 2**.

2.4 Cultural Resources

A search of reasonably available databases and maps was conducted to identify historic resources on or adjacent to the Project area that are listed in, or previously determined to be

eligible for listing in the National Register of Historic Places (NRHP). A search of the Florida Master Site File was also conducted to identify any previously recorded archaeological and cultural resource sites. A 500-foot buffer was utilized to review cultural resources and/or surveys that may have been performed and recorded along the two (2) Alignment Routes (found as **Appendix C, Florida Master Site File Correspondence**). The review of available data identified no Florida Structures, Historical Sites, or Resource Groups associated with **Alternative 1** (please refer to Appendix C). While **Alternative 2** contains several Florida Sites (including several single-family residences – PO06298, PO06348, PO06347 and a National Guard Armory, 116th Artillery – PO08525) and one (1) Resource Group (Lake Hunter Terrace Neighborhood – Historical District PO6535) that occur within close proximity of the route. Although these structures and resources exist near the proposed alignment, impacts are not anticipated as the construction activities will occur within previously delineated right-of-way (ROW) or under current sidewalk and/or road structures (please refer Appendix C).

2.5 Contamination

A search of the following additional databases was conducted to evaluate the Alternative Routes and adjacent properties within one quarter mile (buffer review area) for hazardous materials and related environmental concerns:

- *Florida Department of Environmental Protection online “Contamination Locator Map”*
- *US Environmental Protection Agency “NEPAssist” website*
- *US Environmental Protection Agency “My Environment” website*

Based on the February 2023 database search of the alternative routes there are no Resource Conservation and Recovery Act (RCRA) sites, Petroleum Contamination Tracking Sites (PCTS), or Storage Tank Contamination Monitoring Sites (SCTM) within proximity to the **Alternate 1** and **Alternate 2**. However, once the alignments converge there is a total of four (4) RCRA sites, two (2) PCTS sites and three (3) SCTM sites (please refer to **Table 2, Identified FDEP Hazardous Waste Sites Within Close Proximity of the Project Area (2023)**, provided below and found in **Appendix A, Exhibit 7A - RCRA Sites and 7B - Other Contamination**). In addition, one Brownfield Area was also identified within one quarter mile from **Alternate 2** and is also identified within Table 2. At this time, these facilities appear to be in compliance with FDEP handling procedures.

Table 2. Identified FDEP Hazardous Waste Sites Within Close Proximity of the Project Area (2023)

ID Number	FDEP ID	Facility Name	Permit Type	Compliance	Location
<i>RCRA Sites</i>					
1100356635827	FLTMP9404776	Traman Corporation	Small Hazardous Waste Generator	Yes	Converged Alignment – West Beacon Road
1100043986853	FLR000178582	Lakeland Christian School	Small Hazardous Waste Generator	Yes, Since 2011	Converged Alignment – Forest Park Street
110054828718	FLR000195883	PHOSLAB Environmental Services	Small Hazardous Waste Generator	Yes, Since 2012	Converged Alignment – Beacon Road
110007441278	FLD984186064	Ariana Friends Incorporated	Small Hazardous Waste Generator	Yes	Converged Alignment – Ariana Street
<i>PCTS Sites</i>					
8623499	31221	Ariana Friends Incorporated	Permit for Petroleum Discharge	N/A	Converged Alignment – Ariana Street
8628541	29918	City of Lakeland SW Pumping Station	Permit for Petroleum Discharge	N/A	Converged Alignment – Edgewood Drive
<i>SCTM Sites</i>					
8623499	42416	Ariana Friends Incorporated	Tanks – Petroleum Contamination	Open, Monitoring	Converged Alignment – Ariana Street
8624246	41973	Sykes Friends Incorporated	Tanks – Petroleum Contamination	Closed	Converged Alignment – West Beacon Road
8628541	41578	City of Lakeland SW Pumping Station	Tanks – Petroleum Contamination	Open, Monitoring	Converged Alignment – Edgewood Drive
<i>Brownfield</i>					
BF531701000	428	West Lake Apartments – Green Reuse Area	Data Not Obtained – Located Between Herschell Street and West Walnut Street		

FDEP 2023

SECTION 3

Summary

In order to determine the alternative that offers the least amount of environmental impacts, only segments of **Alternative 1** and **Alternative 2** that are separated, were assessed. Environmental impacts for the sections where both alignments merge, is not addressed below, but are addressed within this document.

Based on the desktop review of the environmental parameters assessed within this Report, **Alternative 2** offers a slight reduction in potential environmental impacts to regulated/unregulated wetlands and surface waters, as well as, impacts to listed species. Therefore, this assessment identifies **Alternative 2** as the route that provides the least amount of potential impacts to the assessed environmental parameters. **Table 3**, below is provided as a ***Summary of the Environmental Parameters Assessed for the Project Alternatives***.

Table 3. Summary of the Environmental Parameters Assessed for the Project Alternatives

Potential Environmental Constraints	Project Alternatives	
	Alternative 1	Alternative 2
Land Use		
Open Areas	N/A	N/A
Other Surface Waters (Ditches/Swales)	Moderate	Low
State / Federally Listed Wildlife		
Eastern Indigo snake	Minimal	Minimal
Gopher tortoise	Minimal	None
Blue-tailed mole skink	Minimal	Minimal to None
Sand skink	Minimal	Minimal to None
Wood stork	Minimal to None	Minimal to None
Critical Habitat		
	None	None
Cultural Resources		
Resources Identified	None	Close Proximity Not anticipated to Impact Resources
Contamination		
Issues Identified	None Within Close Proximity	None Within Close Proximity

Source: ESA 2023

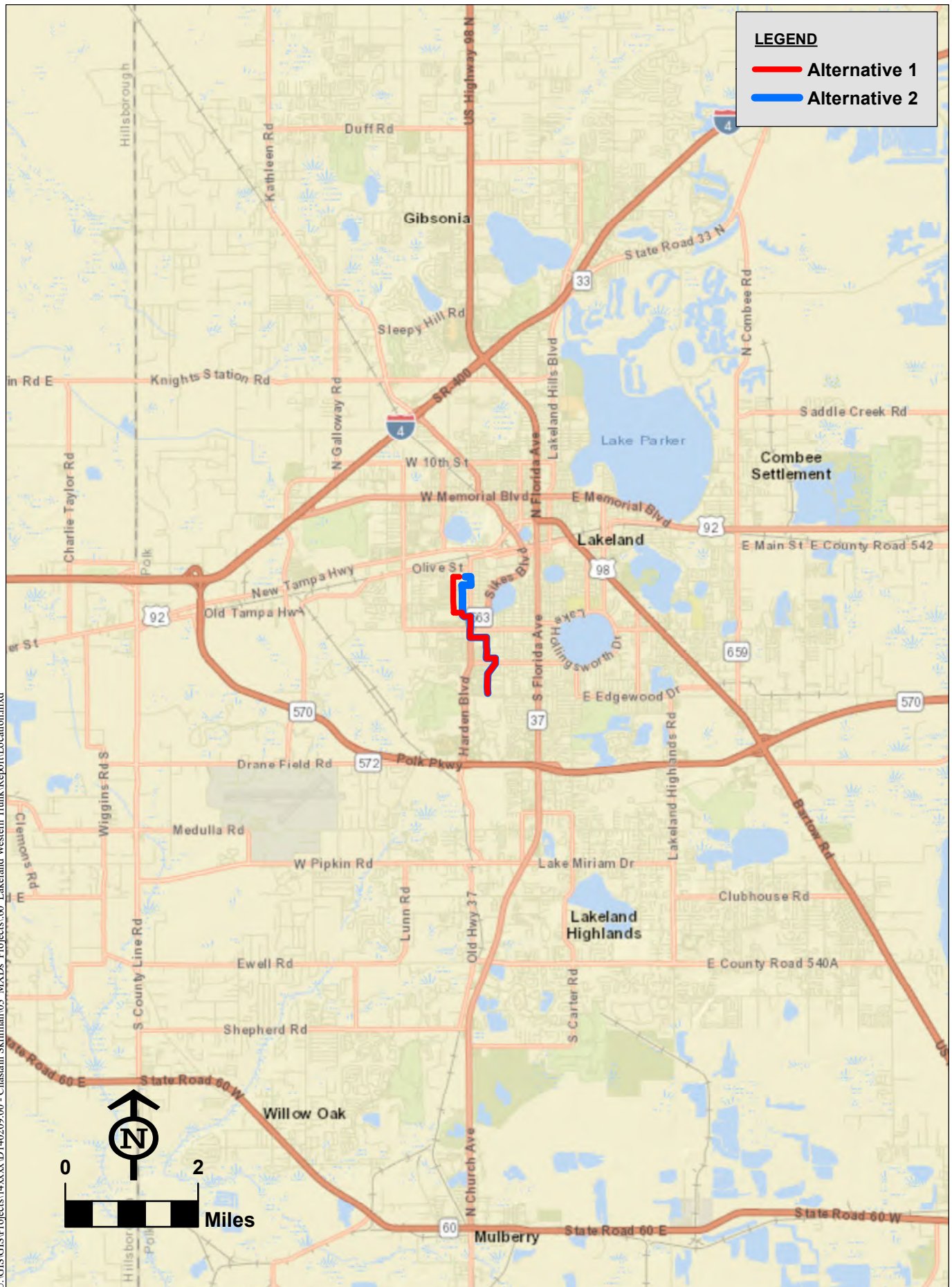
APPENDICES

Appendix A

Project Exhibits



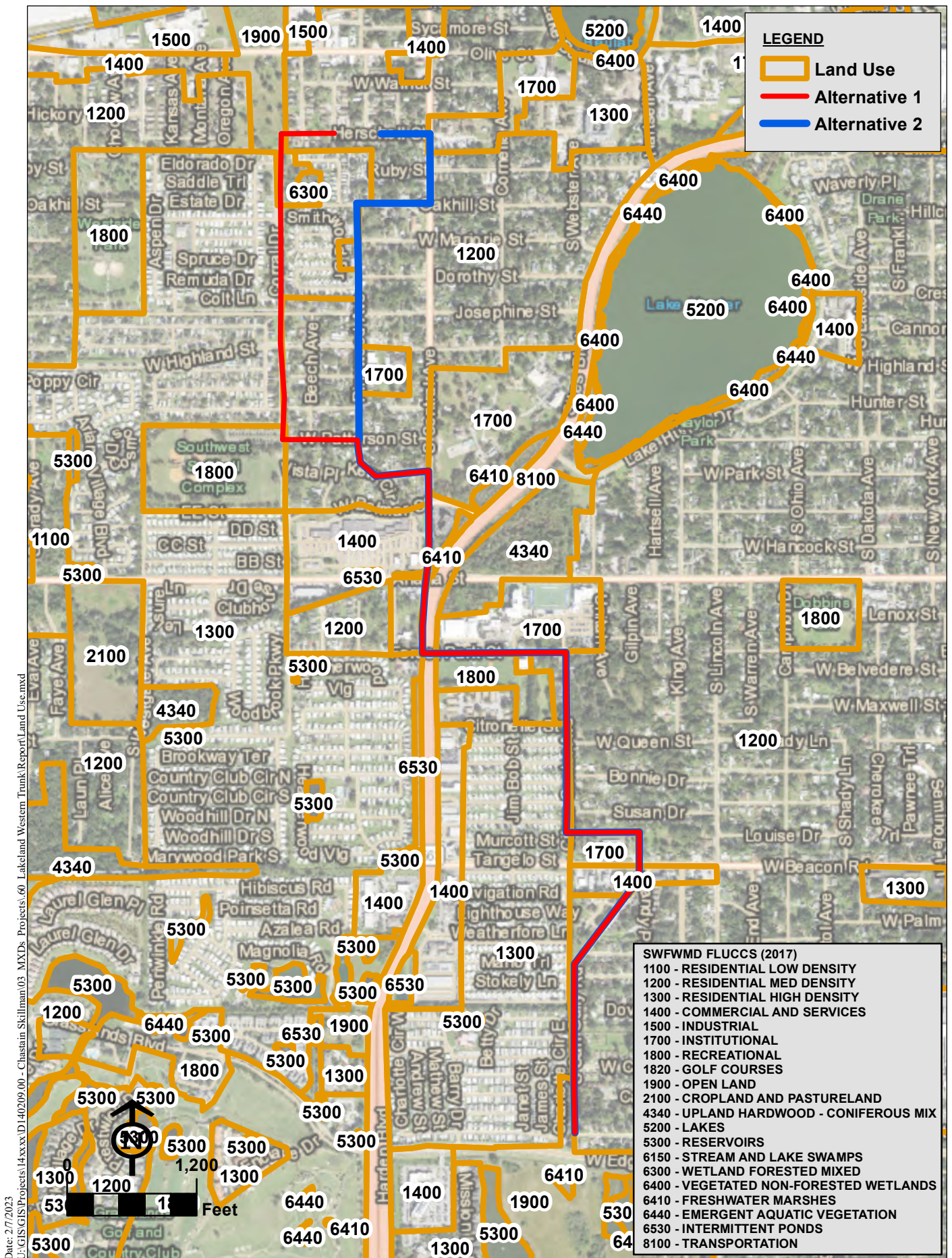
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Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, USGS 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

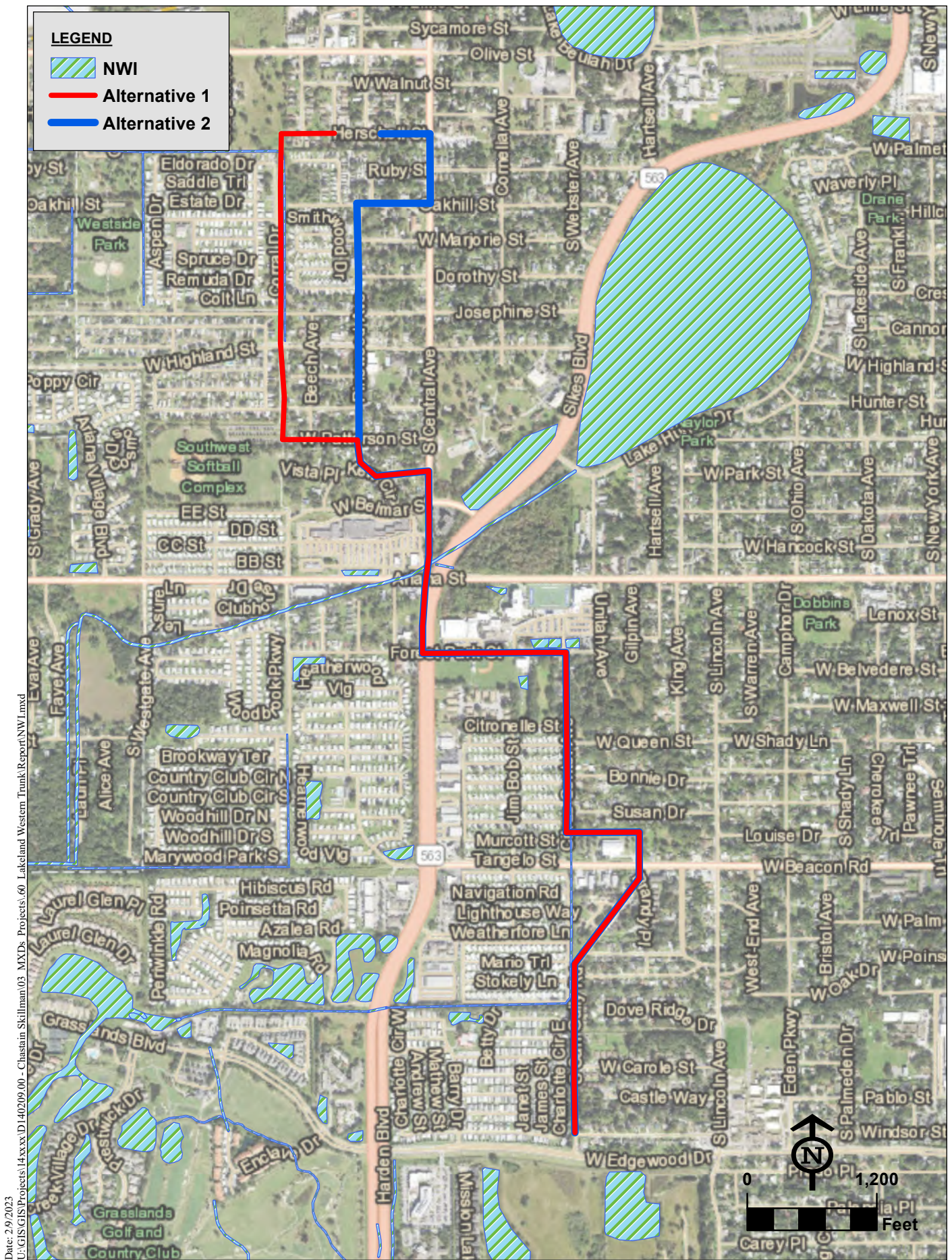
EXHIBIT 1 PROJECT LOCATION



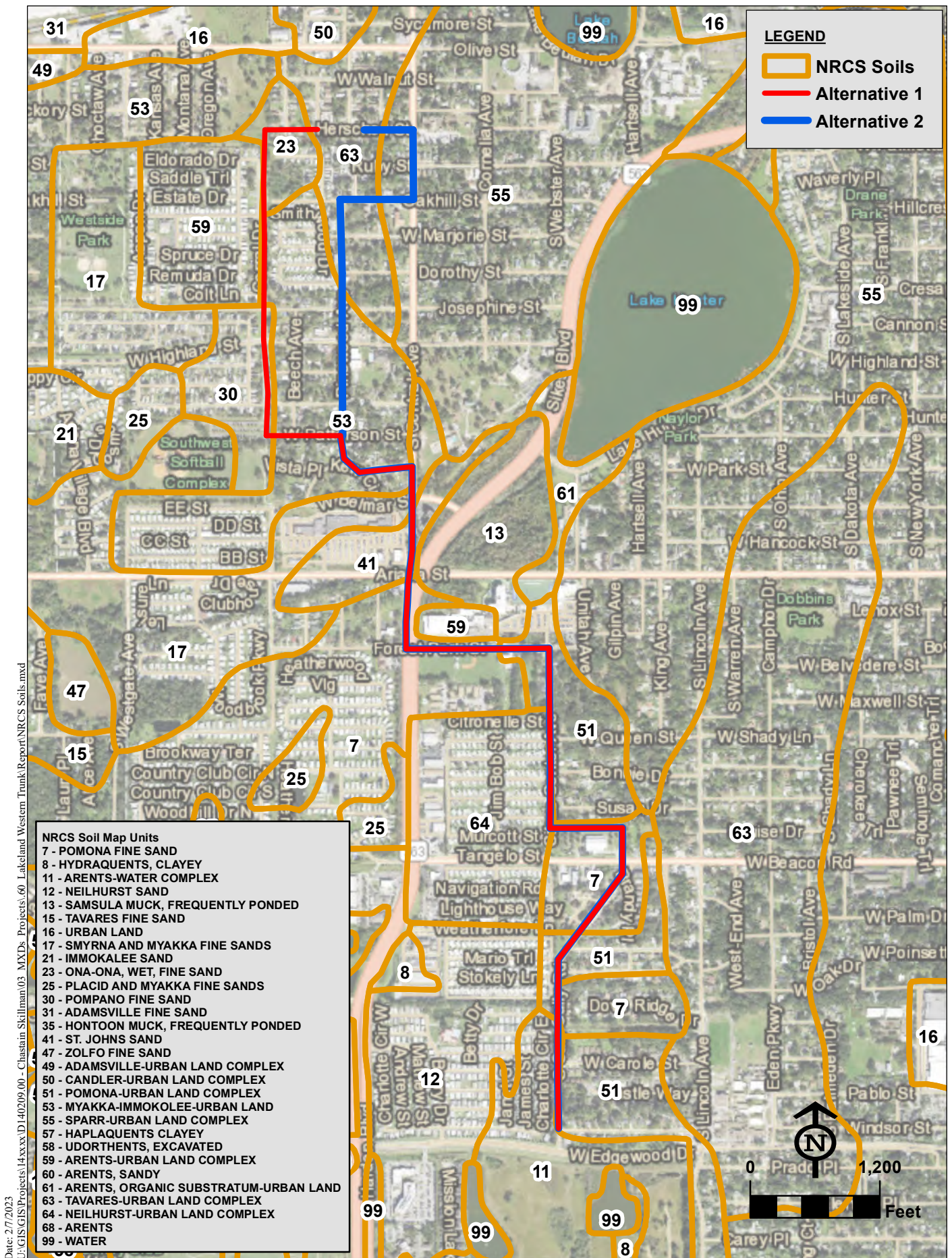
Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, SWFWMD 2017, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 3
LAND USE



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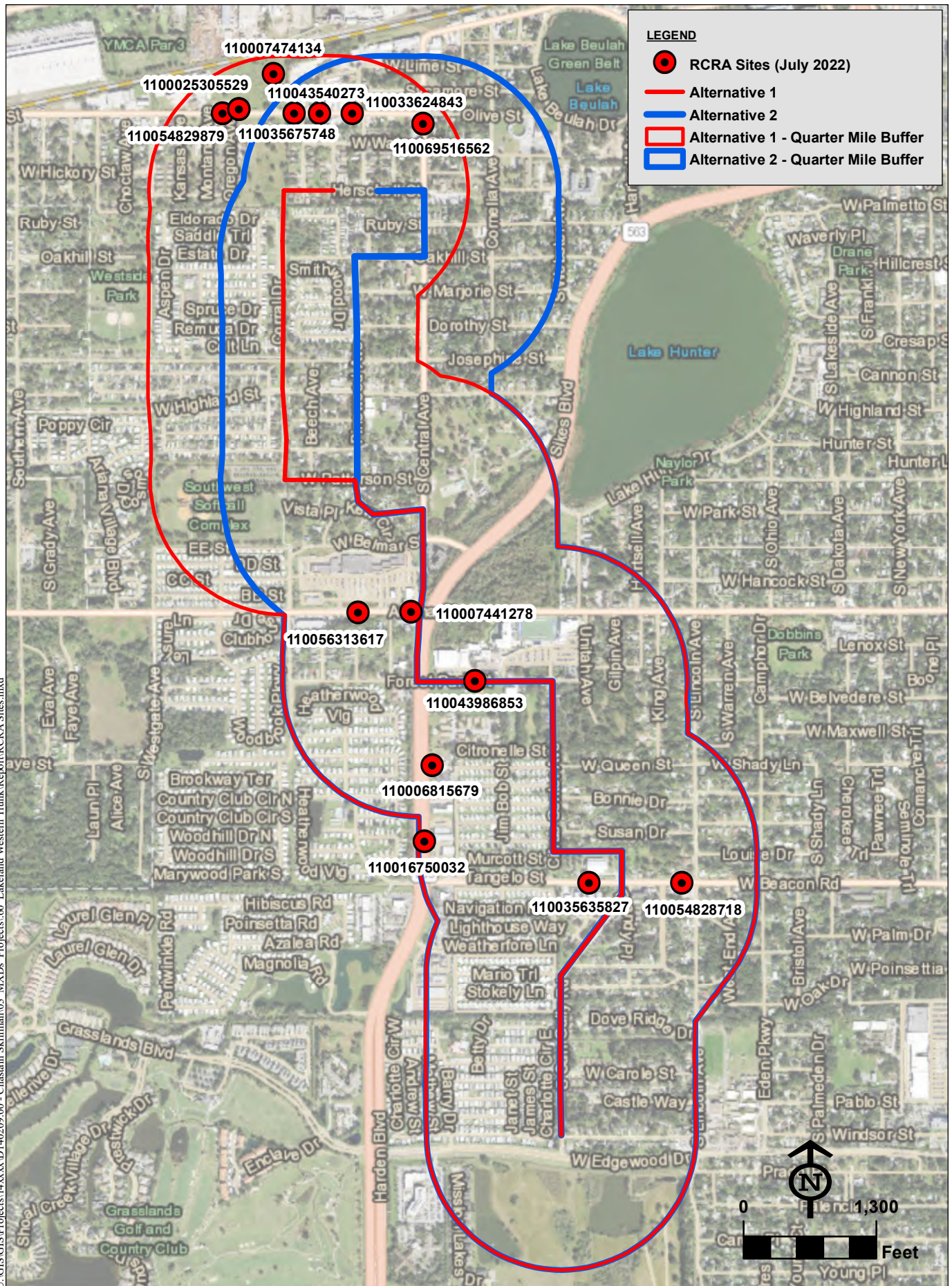


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, NRCS 2022
CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 5 NRCS SOILS

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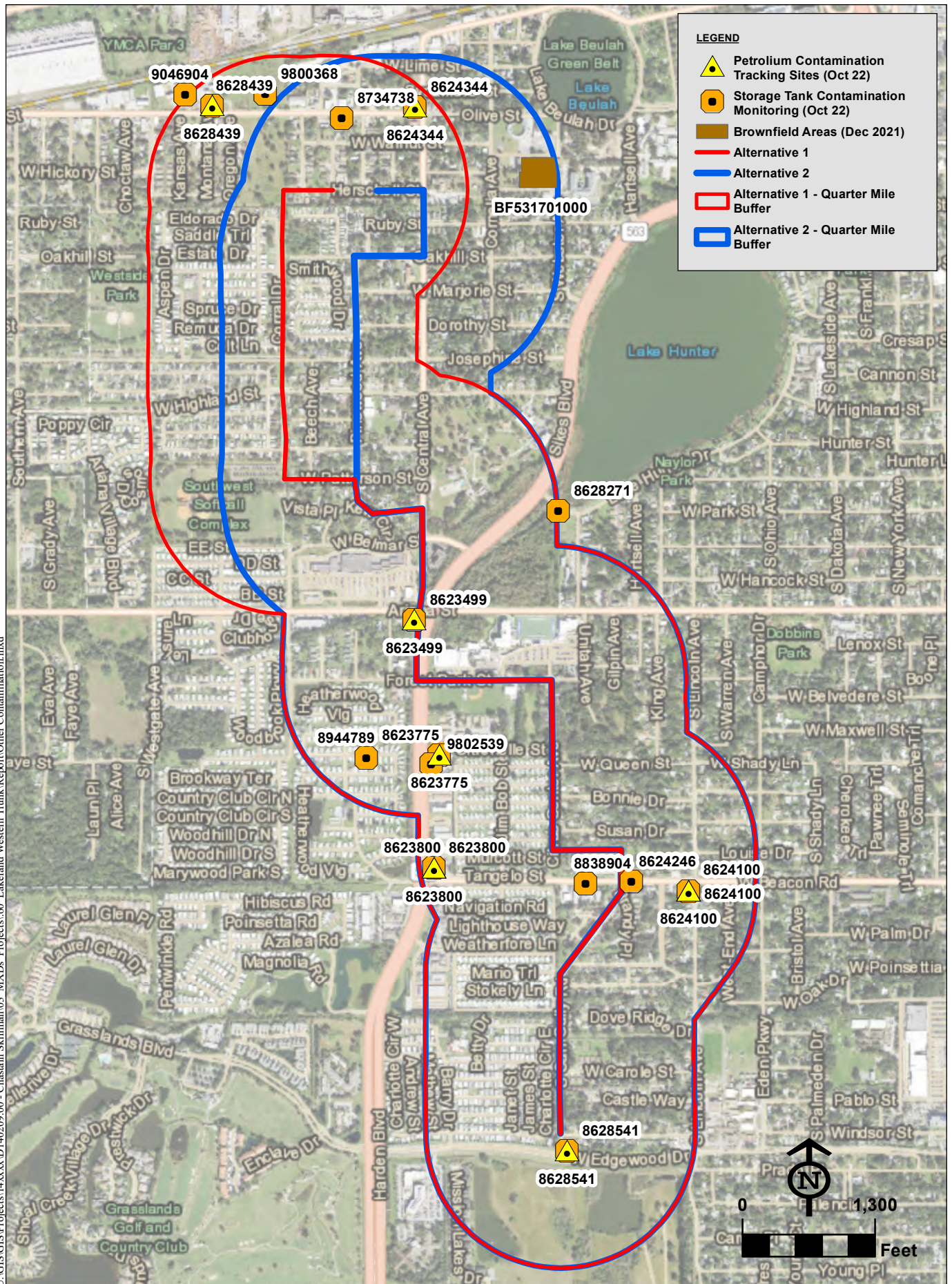


Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, FDEP 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 7A **RESOURCE CONSERVATION AND** **RECOVERY ACT (RCRA) SITES**

Date: 2/7/2023
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Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, FDEP 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 7B OTHER CONTAMINATION

**Appendix B
Florida Natural Areas
Inventory (FNAI) –
Polk County**





Polk County, Florida
February 2023

Group	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Tracked?
Fishes	<i>Enneacanthus chaetodon</i>	Blackbanded Sunfish	G3G4	S1S3		N	Y
Amphibians	<i>Lithobates capito</i>	Gopher Frog	G2G3	S3		N	Y
Reptiles	<i>Alligator mississippiensis</i>	American Alligator	G5	S4	SAT	FT(S/A)	Y
Reptiles	<i>Clemmys guttata</i>	Spotted Turtle	G5	S2S3		N	Y
Reptiles	<i>Crotalus adamanteus</i>	Eastern Diamondback Rattlesnake	G3	S3		N	Y
Reptiles	<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S2?	T	FT	Y
Reptiles	<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	NR	ST	Y
Reptiles	<i>Lampropeltis extenuata</i>	Short-tailed Snake	G3	S3		ST	Y
Reptiles	<i>Lampropeltis floridana</i>	Florida Kingsnake	G2	S2		N	Y
Reptiles	<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3		ST	Y
Reptiles	<i>Plestiodon egregius lividus</i>	Blue-tailed Mole Skink	G5T2	S2	T	FT	Y
Reptiles	<i>Plestiodon reynoldsi</i>	Sand Skink	G3	S3	T	FT	Y
Reptiles	<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3		N	Y
Birds	<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE	Y
Birds	<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2		ST	Y

Birds	<i>Aphelocoma coerulescens</i> 🦅	Florida Scrub-Jay	G1G2	S1S2	T	FT	Y
Birds	<i>Aramus guarauna</i> 🦅	Limpkin	G5	S3		N	Y
Birds	<i>Athene cunicularia floridana</i> 🦉	Florida Burrowing Owl	G4T3	S3		ST	Y
Birds	<i>Buteo brachyurus</i> 🦅	Short-tailed Hawk	G4G5	S1		N	Y
Birds	<i>Caracara plancus</i> 🦅	Crested Caracara	G5	S2	T	FT	Y
Birds	<i>Dryobates borealis</i> 🦅	Red-cockaded Woodpecker	G3	S2	E, PT	FE	Y
Birds	<i>Dryobates villosus</i> 🦅	Hairy Woodpecker	G5	S3		N	Y
Birds	<i>Egretta caerulea</i> 🦅	Little Blue Heron	G5	S4		ST	Y
Birds	<i>Egretta thula</i> 🦅	Snowy Egret	G5	S3		N	Y
Birds	<i>Egretta tricolor</i> 🦅	Tricolored Heron	G5	S4		ST	Y
Birds	<i>Elanoides forficatus</i> 🦅	Swallow-tailed Kite	G5	S2		N	Y
Birds	<i>Eudocimus albus</i> 🦅	White Ibis	G5	S4		N	Y
Birds	<i>Falco sparverius paulus</i> 🦅	Southeastern American Kestrel	G5T4	S3		ST	Y
Birds	<i>Haliaeetus leucocephalus</i> 🦅	Bald Eagle	G5	S3		N	Y
Birds	<i>Mycteria americana</i> 🦅	Wood Stork	G4	S2	T	FT	Y
Birds	<i>Nyctanassa violacea</i> 🦅	Yellow-crowned Night-heron	G5	S3		N	Y
Birds	<i>Nycticorax nycticorax</i> 🦅	Black-crowned Night-heron	G5	S3		N	Y
Birds	<i>Pandion haliaetus</i> 🦅	Osprey	G5	S3S4		N	Y
Birds	<i>Peucaea aestivalis</i> 🦅	Bachman's Sparrow	G3	S3		N	Y
Birds	<i>Plegadis falcinellus</i> 🦅	Glossy Ibis	G5	S3		N	Y

Birds	<i>Rostrhamus sociabilis</i> 🌐	Snail Kite	G4G5	S2	E	FE	Y
Birds	<i>Sternula antillarum</i> 🌐	Least Tern	G4	S3	N	ST	Y
Mammals	<i>Eptesicus fuscus</i> 🌐	Big Brown Bat	G5	S3		N	Y
Mammals	<i>Eumops floridanus</i> 🌐	Florida bonneted bat	G1	S1	E	FE	Y
Mammals	<i>Mustela frenata peninsulæ</i> 🌐	Florida Long-tailed Weasel	G5T3?	S3?		N	Y
Mammals	<i>Neofiber alleni</i> 🌐	Round-tailed Muskrat	G2	S2		N	Y
Mammals	<i>Peromyscus floridanus</i> 🌐	Florida Mouse	G3	S3		N	Y
Mammals	<i>Sciurus niger niger</i> 🌐	Southeastern Fox Squirrel	G5T5	S3		N	Y
Mammals	<i>Ursus americanus floridanus</i> 🌐	Florida Black Bear	G5T4	S4		N	Y

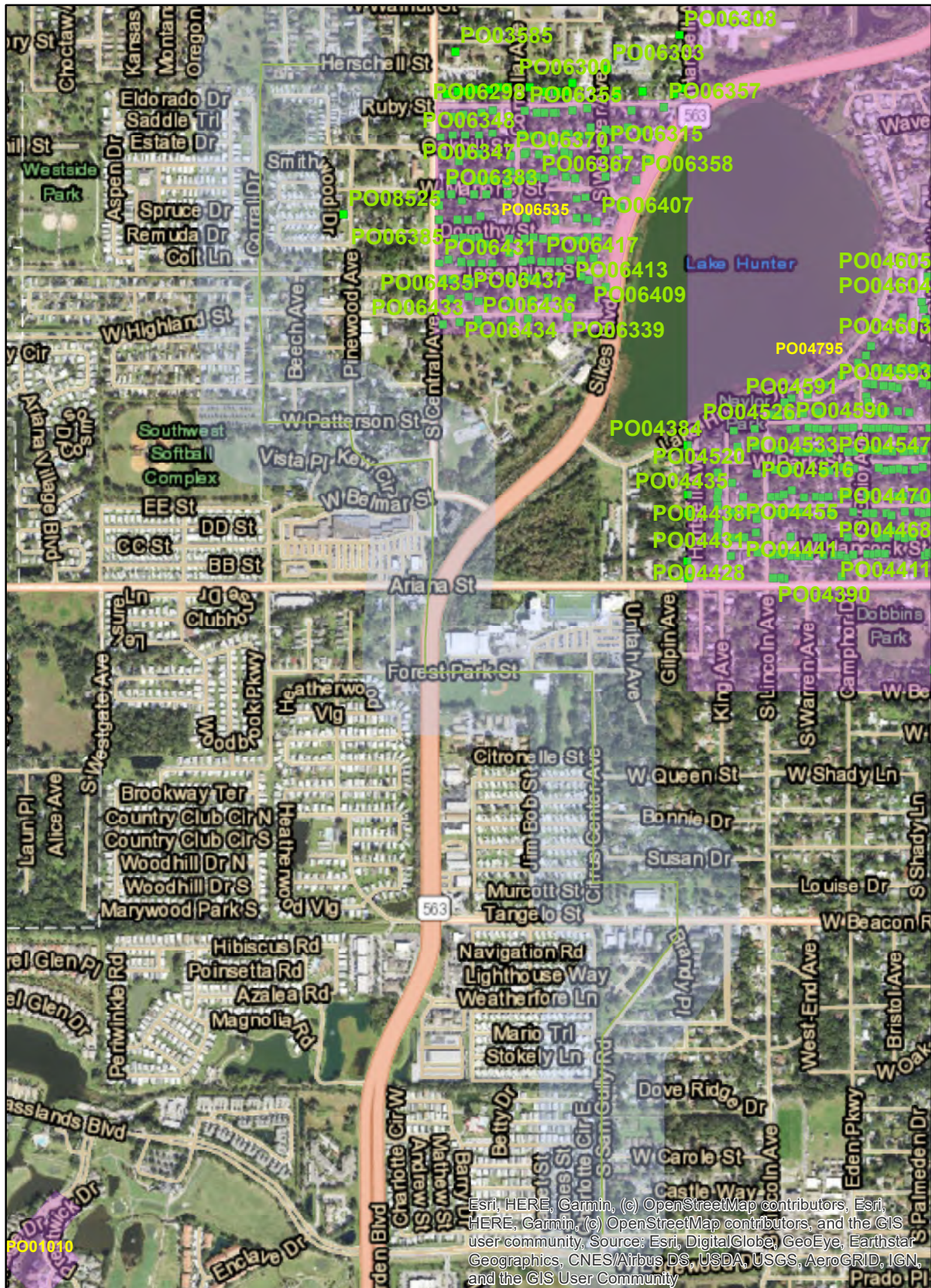
Appendix C

Florida Master Site File

Correspondence



Alternative 1



Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Buffer_of_Pipeline_Route_1_3
- Pipeline_Route_1
- FloridaSites
- HistoricalCemeteries
- ResourceGroups
- FloridaStructures

440 220 0 440 Meters



N



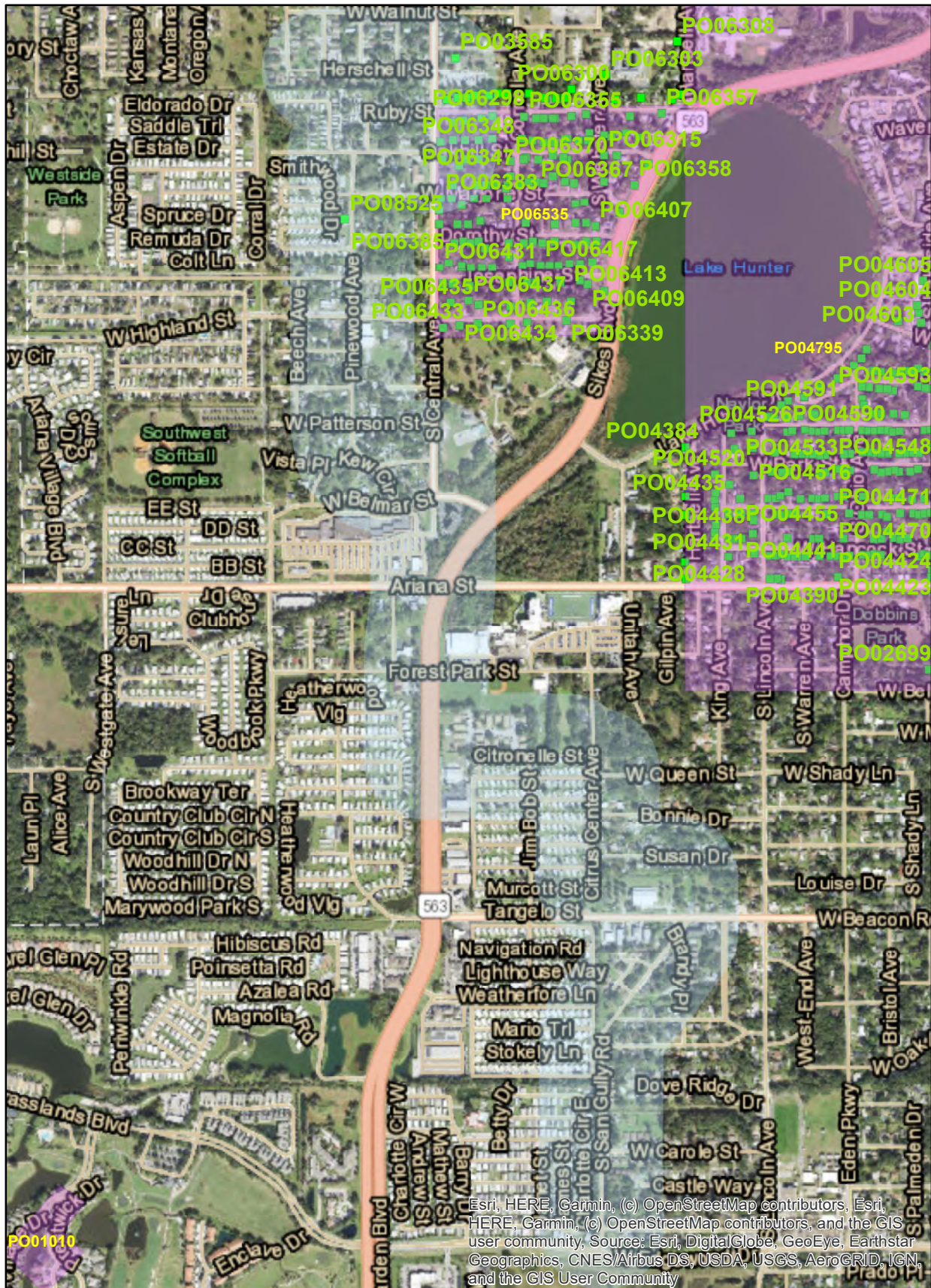


Total=2

Alternative 1
Manuscript Roster

MS#	Title	Publication Information	Year
5828	Archaeological Site Location Predictive Model for the City of Lakeland	ARCHAEOLOGICAL CONSULTANTS, INC. SUBMITTED TO CITY OF LAKELAND, COMMUNITY DEVELOPMENT DEPARTMENT, 1999	1999
2132	Cultural resource assessment for the Oakbridge DRI, Drummond Properties, Lakeland, Polk Co., Florida	Water and Air Research, Inc., Gainesville.	1985

Alternative 2



Legend

- Buffer_of_Pipeline_Route_2_2
- FloridaSites
- HistoricalCemeteries
- ResourceGroups
- FloridaStructures

440 220 0 440 Meters



N





AR=0
SS=28
CM=0
RG=1
BR=0
Total=29

Alternative 2

Cultural Resource Roster

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
PO03585	SS	CENTRAL AVENUE ELEMENTARY SCHOOL	604 S CENTRAL AVE, LAKELAND	1926 Masonry Vernacular		NR Listed - Jul 22, 1999
PO06287	SS	1145 RUBY ST	1145 RUBY ST, LAKELAND	c1924 Bungalow		NR Contrib - PO06535
PO06288	SS	1148 RUBY ST	1148 RUBY ST, LAKELAND	c1943 Frame Vernacular		NR Contrib - PO06535
PO06289	SS	1141 RUBY ST	1141 RUBY ST, LAKELAND	c1943 Frame Vernacular		NR Contrib - PO06535
PO06290	SS	1139 RUBY ST	1139 RUBY ST, LAKELAND	c1924 Bungalow		
PO06291	SS	1140 RUBY ST	1140 RUBY ST, LAKELAND	c1925 Frame Vernacular		
PO06292	SS	1133 RUBY ST	1133 RUBY ST, LAKELAND	c1924 Bungalow		NR Contrib - PO06535
PO06293	SS	1134 RUBY ST	1134 RUBY ST, LAKELAND	c1930 Bungalow		NR Contrib - PO06535
PO06294	SS	1125 RUBY ST	1125 RUBY ST, LAKELAND	c1926 Bungalow		NR Contrib - PO06535
PO06295	SS	1126 RUBY ST	1126 RUBY ST, LAKELAND	c1929 Frame Vernacular		NR Contrib - PO06535
PO06331	SS	1148 OAKHILL STREET	1148 OAKHILL ST, LAKELAND	c1949 Frame Vernacular		NR Contrib - PO06535
PO06341	SS	1117 OAKHILL STREET	1117 OAKHILL ST, LAKELAND	c1946 Frame Vernacular		NR Contrib - PO06535
PO06342	SS	1120 OAKHILL STREET	1120 OAKHILL ST, LAKELAND	1944 Masonry Vernacular		NR Contrib - PO06535
PO06343	SS	1128 OAKHILL STREET	1128 OAKHILL ST, LAKELAND	c1927 Frame Vernacular		NR Contrib - PO06535
PO06344	SS	1127 OAKHILL STREET	1127 OAKHILL ST, LAKELAND	c1926 Bungalow		NR Contrib - PO06535
PO06345	SS	1132 OAKHILL STREET	1132 OAKHILL ST, LAKELAND	c1924 Frame Vernacular		NR Contrib - PO06535
PO06346	SS	1135 OAKHILL STREET	1135 OAKHILL ST, LAKELAND	c1946 Frame Vernacular		NR Contrib - PO06535
PO06347	SS	1145 OAKHILL STREET	1145 OAKHILL ST, LAKELAND	c1948 Masonry Vernacular		NR Contrib - PO06535
PO06348	SS	1149 OAKHILL STREET	1149 OAKHILL ST, LAKELAND	c1946 Masonry Vernacular		NR Contrib - PO06535
PO06376	SS	1117 WEST MARJORIE STREET	1117 W MARJORIE ST, LAKELAND	c1942 Masonry Vernacular		
PO06377	SS	1121 WEST MARJORIE STREET	1121 W MARJORIE ST, LAKELAND	c1947 Masonry Vernacular		
PO06379	SS	1126 WEST MARJORIE STREET	1126 W MARJORIE ST, LAKELAND	c1925 Bungalow		NR Contrib - PO06535
PO06380	SS	1134 WEST MARJORIE STREET	1134 W MARJORIE ST, LAKELAND	c1948 Masonry Vernacular		NR Contrib - PO06535
PO06381	SS	1137 WEST MARJORIE STREET	1137 W MARJORIE ST, LAKELAND	c1947 Frame Vernacular		NR Contrib - PO06535
PO06382	SS	1140 WEST MARJORIE STREET	1140 W MARJORIE ST, LAKELAND	c1948 Frame Vernacular		NR Contrib - PO06535
PO06383	SS	6383 SOUTH CENTRAL AVENUE	6545 S CENTRAL AVE, LAKELAND	c1948 Frame Vernacular		NR Contrib - PO06535
PO06384	SS	842 SOUTH CENTRAL AVENUE	842 S CENTRAL AVE, LAKELAND	c1950 Frame Vernacular		NR Contrib - PO06535
PO06535	RG	Lake Hunter Terrace Historic District	Lakeland	Historical District - 163 Contrib Resources	Eligible	NR Listed - Dec 20, 2002
PO08525	SS	National Guard Armory, 116th Artillery	845 Pinewood AVE, Lakeland	c1925 Frame Vernacular		



Total=4

Alternative 2

Manuscript Roster

MS#	Title	Publication Information	Year
26685	Phase I Archaeological Survey Letter For Trileaf Corporation; Trileaf Project 655216 (Legacy / FL7092N), Lakeland, Polk County, Florida	Johson, Mirmiran & Thompson, prepared for Trileaf Corporation	2019
6545	The Lake Hunter Terrace Neighborhood of The City of Lakeland, Florida	SIDNEY P. JOHNSTON, DELAND. Submitted TO THE CITY OF LAKE LAND COMMUNITY DEVELOPMENT DEPARTMENT, LAKE LAND	2000
5828	Archaeological Site Location Predictive Model for the City of Lakeland	ARCHAEOLOGICAL CONSULTANTS, INC. SUBMITTED TO CITY OF LAKE LAND, COMMUNITY DEVELOPMENT DEPARTMENT, 1999	1999
2132	Cultural resource assessment for the Oakbridge DRI, Drummond Properties, Lakeland, Polk Co., Florida	Water and Air Research, Inc., Gainesville.	1985

ENVIRONMENTAL ALTERNATIVES REPORT

City of Lakeland – Lakeland Western Trunk Line

Prepared for:
City of Lakeland
228 South Massachusetts Avenue
Lakeland, FL 33801

February 2023

Appendix D – Capital Financing Plan

CAPITAL FINANCING PLAN

City of Lakeland

(Project Sponsor)

Shawn Sherrouse, City Manager

(Authorized Representative and Title)

Lakeland, FL 33801

(City, State, and Zip Code)

Michael Brossart, Finance Director

(Capital Financing Plan Contact, Title and Telephone Number)

228 S. Massachusetts Ave.

(Mailing Address)

Lakeland, FL 33801

(City, State, and Zip Code)

The Department needs to know about the financial capabilities of potential State Revolving Fund (SRF) loan applicants. Therefore, a financial capability demonstration (and certification) is required well before the evaluation of the actual loan application.

The sources of revenues being dedicated to repayment of the SRF loan are: The gross revenues derived yearly from the operation of the Utilities Systems after payment of the operation and maintenance expense and the satisfaction of all yearly payment obligations on account of the senior revenue obligations.

(Note: Projects pledging utility operating revenues should attach a copy of the existing/proposed rate ordinance)

Estimate of Proposed SRF Loan Debt Service

Capital Cost*	\$ 78,979,774
Loan Service Fee (2% of capital cost)**	\$ 1,579,595
Subtotal	\$ 80,559,369
Capitalized Interest***	\$ 631,739
Total Cost to be Amortized	\$ 81,191,108
Interest Rate****	0.44%
Annual Debt Service	\$ 4,246,968
Annual Debt Service Including Coverage	\$ 4,884,014

* Capital Cost = Allowances + Construction Cost (including a 10% contingency) + Technical Services After Bid Opening.

** Estimated Capitalized Interest = Subtotal times Interest Rate times construction time in years divided by two.

*** 20 GO Bond Rate times Affordability Index divided by 200.

**** Coverage factor is generally 15%. However, it may be higher if other than utility operating revenues are pledged.

SCHEDULE OF PRIOR AND PARITY LIENS

List annual debt service beginning two years before the anticipated loan agreement date and continuing at least fifteen fiscal years. Use additional pages as necessary.

IDENTIFY EACH OBLIGATION

#1 FDEP State Revolving Fund Loan CW 60815P Coverage % 115% Insured (Yes/No) No	#2 FDEP State Revolving Fund Loan CW 608160 Coverage % 115% Insured (Yes/No) No	#3 FDEP State Revolving Fund Loan CW 608180 Coverage % 115% Insured (Yes/No) No
#4 FDEP State Revolving Fund Loan CW 608190 Coverage % 115% Insured (Yes/No) No	#5 FDEP State Revolving Fund Loan CW 530610 Coverage % 115% Insured (Yes/No) No	#6 FDEP State Revolving Fund Loan CW 530630 Coverage % 115% Insured (Yes/No) No
#7 FDEP State Revolving Fund Loan CW 530650 Coverage % 115% Insured (Yes/No) No	#8 FDEP State Revolving Fund Loan CW 530651 Coverage % 115% Insured (Yes/No) No	#9 FDEP State Revolving Fund Loan CW 530652 Coverage % 115% Insured (Yes/No) No
#10 FDEP State Revolving Fund Loan CW 530670 Coverage % 115% Insured (Yes/No) No	#11 FDEP State Revolving Fund Loan DW 530660 Coverage % 115% Insured (Yes/No) No	#12 FDEP State Revolving Fund Loan DW 530661 Coverage % 115% Insured (Yes/No) No
#13 FDEP State Revolving Fund Loan CW 530671 Coverage % 115% Insured (Yes/No) No	#14 Water and Wastewater Revenue Note, Series 2015 Coverage % 120% Insured (Yes/No) No	#15 Water and Wastewater Revenue Refunding and Improvement Bonds, Series 2021 Coverage % 120% Insured (Yes/No) No

FISCAL YEAR	ANNUAL DEBT SERVICE (PRINCIPAL + INTEREST)															TOTAL NON SRF DEBT SERVICE W/COVERAGE	TOTAL SRF DEBT SERVICE W/COVERAGE
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15		
2020	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$855,276.25	\$0.00	\$1,026,331.50	\$3,193,256.45
2021	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$0.00	\$0.00	\$0.00	\$0.00	\$44,828.51	\$0.00	\$0.00	\$855,276.99	\$0.00	\$1,026,332.39	\$3,937,268.08
2022	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$0.00	\$0.00	\$0.00	\$89,657.02	\$0.00	\$0.00	\$855,276.85	\$2,913,321.00	\$4,522,317.42	\$4,043,071.08
2023	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$374,118.64	\$0.00	\$0.00	\$89,657.02	\$966,289.70	\$0.00	\$855,276.53	\$2,907,646.56	\$4,515,507.71	\$5,584,540.67
2024	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$0.00	\$0.00	\$89,657.02	\$966,289.70	\$0.00	\$855,276.46	\$2,907,205.94	\$4,514,978.88	\$6,014,777.10
2025	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$89,657.02	\$966,289.70	\$0.00	\$4,771,749.85	\$2,906,494.09	\$9,213,892.73	\$6,222,986.90
2026	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$89,657.02	\$966,289.70	\$0.00	\$0.00	\$2,905,262.96	\$3,486,315.56	\$6,222,986.90
2027	\$113,970.36	\$841,811.58	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$89,657.02	\$966,289.70	\$2,200,874.00	\$0.00	\$2,908,261.44	\$3,489,913.73	\$8,753,992.00
2028	\$0.00	\$0.00	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$89,657.02	\$966,289.70	\$2,200,874.00	\$0.00	\$2,904,986.53	\$3,485,983.84	\$7,654,842.77
2029	\$0.00	\$0.00	\$1,194,608.40	\$547,925.62	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$89,657.02	\$966,289.70	\$2,200,874.00	\$0.00	\$2,905,441.56	\$3,486,529.87	\$7,654,842.77
2030	\$0.00	\$0.00	\$0.00	\$273,962.81	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$89,657.02	\$966,289.70	\$2,200,874.00	\$0.00	\$2,904,123.10	\$3,484,947.72	\$5,595,985.88
2031	\$0.00	\$0.00	\$0.00	\$0.00	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$44,828.51	\$966,289.70	\$2,200,874.00	\$0.00	\$2,905,233.28	\$3,486,279.94	\$5,599,375.86
2032	\$0.00	\$0.00	\$0.00	\$0.00	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$2,901,519.58	\$3,481,823.50	\$5,547,823.08
2033	\$0.00	\$0.00	\$0.00	\$0.00	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,547,823.08
2034	\$0.00	\$0.00	\$0.00	\$0.00	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$56,434.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,547,823.08
2035	\$0.00	\$0.00	\$0.00	\$0.00	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,482,923.98
2036	\$0.00	\$0.00	\$0.00	\$0.00	\$78,428.78	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,482,923.98
2037	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,392,730.88
2038	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,392,730.88
2039	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,392,730.88
2040	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$602,138.12	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$5,392,730.88
2041	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$47,174.10	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$4,700,272.04
2042	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$748,237.28	\$124,618.00	\$0.00	\$0.00	\$966,289.70	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$4,646,021.83
2043	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$374,118.64	\$124,618.00	\$0.00	\$0.00	\$0.00	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$3,104,552.24
2044	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$124,618.00	\$0.00	\$0.00	\$0.00	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$2,674,315.80
2045	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,200,874.00	\$0.00	\$0.00	\$0.00	\$2,531,005.10
2046	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2047	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2048	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2049	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2050	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

SCHEDULE OF ACTUAL REVENUES AND DEBT COVERAGE FOR PLEDGED REVENUE

(Provide information for the two fiscal years preceding the anticipated date of the SRF Loan Agreement)

	FY 2023	FY 2024
(a.) Operating Revenues (Identify)		
Charges for Service	\$ 82,650,827	\$ 85,471,452
Misc	\$ 528,732	\$ 506,086
	\$ -	\$ -
(b.) Interest Income	\$ 5,745,277	\$ 6,993,505
(c.) Other Incomes or Revenues (Identify)		
(d.) Total Revenues	\$ 88,924,836	\$ 92,971,043
(e.) Operating Expenses (excluding interest on debt, depreciation, and other non-cash items)	\$ 46,319,543	\$ 55,865,897
(f.) Net Revenues (f = d - e)	\$ 42,605,293	\$ 37,105,146
(g.) Debt Service (including coverage) Excluding SRF Loans	\$ 4,515,508	\$ 4,514,979
(h.) Debt Service (including coverage) for Outstanding SRF Loans	\$ 5,584,541	\$ 6,014,777
(i.) Net Revenues After Debt Service (i = f - g - h)	\$ 32,505,245	\$ 26,575,390

Source:

City of Lakeland, Florida Annual Comprehensive Financial Report for the Fiscal Year Ending September 30, 2023

City of Lakeland, Florida Annual Comprehensive Financial Report for the Fiscal Year Ending September 30, 2024

Notes:

SCHEDULE OF PROJECTED REVENUES AND DEBT COVERAGE FOR PLEDGED REVENUE

(Begin with the fiscal year preceding first anticipated semiannual loan payment)

	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
(a.) Operating Revenues (Identify)					
Charges for Service	\$ 96,232,300	\$ 98,541,875	\$ 100,906,880	\$ 103,328,645	\$ 105,808,533
Misc	\$ 569,802	\$ 583,477	\$ 597,481	\$ 611,820	\$ 626,504
	\$ -	\$ -	\$ -	\$ -	\$ -
(b.) Interest Income	\$ -	\$ -	\$ -	\$ -	\$ -
(c.) Other Incomes or Revenues (Identify)					
(d.) Total Revenues	\$ 96,802,102	\$ 99,125,352	\$ 101,504,361	\$ 103,940,466	\$ 106,435,037
(e.) Operating Expenses ¹	\$ 62,899,408	\$ 64,408,994	\$ 65,954,810	\$ 67,537,725	\$ 69,158,631
(f.) Net Revenues (f = d - e)	\$ 33,902,694	\$ 34,716,358	\$ 35,549,551	\$ 36,402,740	\$ 37,276,406
(g.) Existing Debt Service on Non-SRF Projects (including coverage)	\$ 3,486,530	\$ 3,484,948	\$ 3,486,280	\$ 3,481,823	\$ -
(h.) Existing SRF Loan Debt Service (including coverage)	\$ 7,654,843	\$ 5,965,986	\$ 5,599,376	\$ 5,547,823	\$ 5,547,823
(i.) Total Existing Debt Service (i = g + h)	\$ 11,141,373	\$ 9,450,934	\$ 9,085,656	\$ 9,029,647	\$ 5,547,823
(j.) Projected Debt Service on Non-SRF Future Projects (including coverage)	\$ -	\$ -	\$ -	\$ -	\$ -
(k.) Projected SRF Loan Debt Service (including coverage)	\$ -	\$ 4,884,014	\$ 4,884,014	\$ 4,884,014	\$ 4,884,014
(l.) Total Debt Service (Existing and Projected) (l = i + j + k)	\$ 11,141,373	\$ 14,334,947	\$ 13,969,669	\$ 13,913,660	\$ 10,431,837
(m.) Net Revenues After Debt Service (m = f - l)	\$ 22,761,321	\$ 20,381,411	\$ 21,579,882	\$ 22,489,080	\$ 26,844,569

Source:

Notes: (I.e. rate increases, explanations, etc.)

FY 2029-2032 revenues and expenditures have been projected using current CPI of 2.4% from FY2024 audited figures.

CERTIFICATION

I, Michael Brossart, certify that I have reviewed the information
Chief Financial Officer (please print)

included in the preceding capital financing plan worksheets, and to the best of my knowledge, this
information accurately reflects the financial capability of City of Lakeland

Project Sponsor

I further certify that City of Lakeland has the financial capability to ensure
Project Sponsor

adequate construction, operation, and maintenance of the system, including this SRF project.

Signature

Date



SRF PROJECT COST WORKSHEET / LOAN CALCULATION

Construction, Demolition and Related Procurement	\$	77,730,040
Eligible Land	\$	0
Contingency (10% or 5% of construction and land)	\$	7,773,004
Technical Services After Bid Opening	\$	7,773,004
Interim Financing (excluding SRF capitalized interest)	\$	0
Start-up Services	\$	0
Allowance	\$	0
Other Funding		
ARPA	\$	14,296,274
City Funds	\$	
Total Non-SRF Funds	\$	14,296,274
Subtotal (Estimated Costs minus Non-SRF Funds)		
	\$	78,979,774
Years to Construct / Capitalized Interest	3	\$ 631,739
Total Cost for Priority List	\$	79,611,513
Service Fee (2% of subtotal)	\$	1,579,595
Total SRF Cost for Amortization	\$	81,191,108
Estimated Interest Rate	0.44%	
Semi-annual Payment Start Date / Annual Payment	10/15/2029	\$ 4,246,968
Annual Payment with	115% Coverage	\$ 4,884,014
Total Payments	\$	84,934,665

Notes:

Angie Brewer & Associates, L.C.

Estimated SRF WW Amortization Schedule



Enter Values	
Loan Amount	\$ 81,191,108.07
Annual Interest Rate	0.444%
Loan Period in Years	20
Number of Payments Per Year	2
Start Date of Loan	4/15/2029
Coverage Factor	1.15

Loan Summary	
Scheduled Payment	\$ 2,123,484.21
Scheduled Number of Payments	40
Actual Number of Payments	40
Total Early Payments	\$ -
Total Interest	\$ 3,748,260.20
Annual Payment	\$ 4,246,968.41
Annual Payment with Coverage	\$ 4,884,013.69
Total Payments	\$ 84,934,664.57

Lender Name: FDEP

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance
1	10/15/2029	\$ 81,191,108.07	\$ 2,123,484.21	-	\$ 2,123,484.21	\$ 1,943,239.95	\$ 180,244.26	\$ 79,247,868.12
2	4/15/2030	79,247,868.12	2,123,484.21	-	2,123,484.21	1,947,553.94	175,930.27	77,300,314.18
3	10/15/2030	77,300,314.18	2,123,484.21	-	2,123,484.21	1,951,877.51	171,606.70	75,348,436.67
4	4/15/2031	75,348,436.67	2,123,484.21	-	2,123,484.21	1,956,210.68	167,273.53	73,392,225.99
5	10/15/2031	73,392,225.99	2,123,484.21	-	2,123,484.21	1,960,553.46	162,930.74	71,431,672.53
6	4/15/2032	71,431,672.53	2,123,484.21	-	2,123,484.21	1,964,905.89	158,578.31	69,466,766.63
7	10/15/2032	69,466,766.63	2,123,484.21	-	2,123,484.21	1,969,267.98	154,216.22	67,497,498.65
8	4/15/2033	67,497,498.65	2,123,484.21	-	2,123,484.21	1,973,639.76	149,844.45	65,523,858.89
9	10/15/2033	65,523,858.89	2,123,484.21	-	2,123,484.21	1,978,021.24	145,462.97	63,545,837.65
10	4/15/2034	63,545,837.65	2,123,484.21	-	2,123,484.21	1,982,412.45	141,071.76	61,563,425.20
11	10/15/2034	61,563,425.20	2,123,484.21	-	2,123,484.21	1,986,813.40	136,670.80	59,576,611.80
12	4/15/2035	59,576,611.80	2,123,484.21	-	2,123,484.21	1,991,224.13	132,260.08	57,585,387.67
13	10/15/2035	57,585,387.67	2,123,484.21	-	2,123,484.21	1,995,644.65	127,839.56	55,589,743.03
14	4/15/2036	55,589,743.03	2,123,484.21	-	2,123,484.21	2,000,074.98	123,409.23	53,589,668.05
15	10/15/2036	53,589,668.05	2,123,484.21	-	2,123,484.21	2,004,515.14	118,969.06	51,585,152.91
16	4/15/2037	51,585,152.91	2,123,484.21	-	2,123,484.21	2,008,965.17	114,519.04	49,576,187.74
17	10/15/2037	49,576,187.74	2,123,484.21	-	2,123,484.21	2,013,425.07	110,059.14	47,562,762.67
18	4/15/2038	47,562,762.67	2,123,484.21	-	2,123,484.21	2,017,894.87	105,589.33	45,544,867.79
19	10/15/2038	45,544,867.79	2,123,484.21	-	2,123,484.21	2,022,374.60	101,109.61	43,522,493.19
20	4/15/2039	43,522,493.19	2,123,484.21	-	2,123,484.21	2,026,864.27	96,619.93	41,495,628.92
21	10/15/2039	41,495,628.92	2,123,484.21	-	2,123,484.21	2,031,363.91	92,120.30	39,464,265.01
22	4/15/2040	39,464,265.01	2,123,484.21	-	2,123,484.21	2,035,873.54	87,610.67	37,428,391.47
23	10/15/2040	37,428,391.47	2,123,484.21	-	2,123,484.21	2,040,393.18	83,091.03	35,387,998.30
24	4/15/2041	35,387,998.30	2,123,484.21	-	2,123,484.21	2,044,922.85	78,561.36	33,343,075.45
25	10/15/2041	33,343,075.45	2,123,484.21	-	2,123,484.21	2,049,462.58	74,021.63	31,293,612.87
26	4/15/2042	31,293,612.87	2,123,484.21	-	2,123,484.21	2,054,012.39	69,471.82	29,239,600.48
27	10/15/2042	29,239,600.48	2,123,484.21	-	2,123,484.21	2,058,572.29	64,911.91	27,181,028.19
28	4/15/2043	27,181,028.19	2,123,484.21	-	2,123,484.21	2,063,142.32	60,341.88	25,117,885.86
29	10/15/2043	25,117,885.86	2,123,484.21	-	2,123,484.21	2,067,722.50	55,761.71	23,050,163.36
30	4/15/2044	23,050,163.36	2,123,484.21	-	2,123,484.21	2,072,312.84	51,171.36	20,977,850.52
31	10/15/2044	20,977,850.52	2,123,484.21	-	2,123,484.21	2,076,913.38	46,570.83	18,900,937.14
32	4/15/2045	18,900,937.14	2,123,484.21	-	2,123,484.21	2,081,524.13	41,960.08	16,819,413.01
33	10/15/2045	16,819,413.01	2,123,484.21	-	2,123,484.21	2,086,145.11	37,339.10	14,733,267.90
34	4/15/2046	14,733,267.90	2,123,484.21	-	2,123,484.21	2,090,776.35	32,707.85	12,642,491.55
35	10/15/2046	12,642,491.55	2,123,484.21	-	2,123,484.21	2,095,417.88	28,066.33	10,547,073.68
36	4/15/2047	10,547,073.68	2,123,484.21	-	2,123,484.21	2,100,069.70	23,414.50	8,447,003.97
37	10/15/2047	8,447,003.97	2,123,484.21	-	2,123,484.21	2,104,731.86	18,752.35	6,342,272.12
38	4/15/2048	6,342,272.12	2,123,484.21	-	2,123,484.21	2,109,404.36	14,079.84	4,232,867.75
39	10/15/2048	4,232,867.75	2,123,484.21	-	2,123,484.21	2,114,087.24	9,396.97	2,118,780.51
40	4/15/2049	2,118,780.51	2,123,484.21	-	2,118,780.51	2,114,076.82	4,703.69	0.00