Kimley»Horn

Town of Cutler Bay

STORMWATER MASTER PLAN

Update #1 (2024)

Cutler Bay
FLORIDA
INCORPORATED 2005

EXECUTIVE SUMMARY

The purpose of this Stormwater Master Plan is to identify opportunities to protect surface water quality and reduce flooding within the limits of the Town of Cutler Bay, Florida. The Town of Cutler Bay (Town) is a community incorporated in November, 2005 of approximately 10.3 square miles located along Biscayne Bay in southern Miami-Dade County. In 2006, the South Florida Water Management District (SFWMD) recognized the importance of developing and implementing a Stormwater Master Plan for the newly created Town of Cutler Bay. Accordingly, SFWMD approved in its Fiscal Year 2007 budget funding to support this high priority project. In November 2006, SFWMD entered into a funding agreement with the Town, and in April 2007, the Town selected Kimley-Horn and Associates, Inc. (KHA) to prepare its first Stormwater Master Plan. In February 2022, KHA was selected to update the original existing Stormwater Master Plan to enable the Town to examine the performance of the work completed to date, the effectiveness of the Operation and Maintenance program in place, as well as identify new prioritized capital improvement projects for future system improvements, improved storm water management, and water quality improvements throughout the Town of Cutler Bay.

This Stormwater Master Plan update includes the following components:

- An updated review of existing stormwater and drainage data, reports, and plans available through SFWMD, Miami-Dade County, and Town sources.
- Review of Town Basin and Sub-basin delineations based on available survey data and other sources.
- Hydrologic and hydraulic modeling analysis of the 12 chosen basins and their capacity to handle the 10-year/24-hour, 25-year/72-hour, and 100-year/72-hour storm events.
- Identification and analysis of alternatives for improvements needed to alleviate deficiencies identified in the hydrologic and hydraulic modeling phase, including the possible 6” rise in groundwater table to ensure resiliency.
- Development of an optional Capital Improvement Plan (CIP) to implement the identified improvements.

Based on a review of the drainage deficiencies identified and input from Town staff, 12 drainage sub-basins were selected as a priority for detailed analysis through hydrologic and hydraulic modeling. Additionally, twenty-six roadway sections were identified by the Town as having known drainage deficiencies. Prior to modeling and evaluating the priority drainage sub-basins, performance goals were identified. These performance goals representing the minimum standards for sub-basin performance are as follows:

- During the 10-year 24-hour design storm event, flooding in roadway travel lanes should be below the crown of the roadway. This standard is the same as the current Miami-Dade County standard for arterial roadways.
- During the 100-year 72-hour storm event, flooding should be below the building finish floor elevations. This standard is the same as the current Miami-Dade County standard.
- Drainage sub-basins which discharge directly into canals should have water quality pre-treatment for the first one inch of runoff. This standard is consistent with federal, state and county water quality treatment requirements.
- Drainage sub-basins which discharge into lakes or drainage wells should have water quality pre-treatment for the first one-half inch of runoff. This standard is consistent with federal, state and county water quality treatment requirements.

In addition to flooding reduction goals, projects were analyzed for water quality. Currently water quality goals set by the state are being amended by HB965, which passed legislation in March 2022. This has increased the minimum percent reduction for all stormwater treatment systems requiring an ERP are the following:

- All sites will be required to have treatment systems designed to achieve an 80% reduction of Total Nitrogen (TN) and Total Phosphorus (TP) from the post-development condition.
- Sites contributing to Outstanding Florida Waters (OFW's) will be required to have their treatment systems achieve a 95% reduction in TN and TP from post-development condition (increase from the current 50% reduction requirement).
- Sites contributing to waterbodies on the verified list of impaired waters or with TMDL's would be required to meet 80% reduction of TN and TP from the post-development condition, as well as other applicable pollutant reduction required.
- While the new rules have not taken effect by the time this analysis was performed, they were used to set performance goals.

The Town of Cutler Bay actively participates in the National Flood Insurance Program (NFIP) to provide affordable flood insurance and reduce flooding impact. They've achieved an impressive improvement from CRS Class 6 in 2011 to CRS Class 3 in 2023, making them one of only eleven communities in the nation and one of four in Florida to reach this status. This achievement leads to a 35% average reduction in flood insurance premiums for residents in flood-prone areas, saving the Town a total of $2,636,085 annually.

Projects in this Stormwater Master Plan to bring each of the priority sub-basins into compliance with the performance goals were identified and the twelve (12) priority sub-basins and the twenty-six (26) roadway sections were ranked from worst to best according to current performance against goals. The ranking and budgets for improvements for each basin were used to develop a 30-year CIP. The average annual budget for the 30-year CIP is $6,701,358. The CIP includes an annual budget of $2,116,800 for operations and maintenance costs such as cleaning catch basins, pipes and exfiltration trench, swale maintenance, street sweeping, participation in federally mandated programs, minor repairs, and administration.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

I. INTRODUCTION

The purpose of this Stormwater Master Plan Update is to identify opportunities to protect surface water quality and reduce flooding within the limits of the Town of Cutler Bay, Florida. The Town of Cutler Bay (Town) is a community incorporated November 2005 of approximately 10.3 square miles located along Biscayne Bay in southern Miami-Dade County (County). See Figure 1 for a map of the Town. Prior to that date, the Town was a part of unincorporated Miami-Dade County, and the County operated all stormwater management improvements and programs within the Town limits.

In 2006, the South Florida Water Management District (SFWMD) recognized the importance of developing and implementing a Stormwater Master Plan for the newly created Town of Cutler Bay. Accordingly, SFWMD approved in its Fiscal Year 2007 budget funding to support this high priority project. In November 2006, SFWMD entered into a funding agreement with the Town, and in April 2007, the Town selected Kimley-Horn and Associates, Inc. (KHA) to prepare its original Stormwater Master Plan (SWMP). In February of 2022, the Town selected KHA to review the original SWMP and provide any updates as well as study additional areas to be incorporated into the Town's Capital Improvements Plan.

The update of this Stormwater Master Plan includes a resiliency component that will be taken into account by increasing the groundwater table for each study area simulation by 6" to ensure that the proposed improvements for each sub-basin can still be effective.

This Stormwater Master Plan includes the following components:

- An updated review of existing stormwater and drainage data, reports, and plans available through SFWMD, Miami-Dade County, and Town sources.
- Review of Town Basin and Sub-basin delineations based on available survey data and other sources.
- Hydrologic and hydraulic modeling analysis of the 12 chosen basins and their capacity to handle the 10-year/24-hour, 25-year/72-hour, and 100-year/72-hour storm events.
- Identification and analysis of alternatives for improvements needed to alleviate deficiencies identified in the hydrologic and hydraulic modeling phase, including the possible 6" rise in groundwater table to ensure resiliency.
- Development of an optional Capital Improvement Plan (CIP) to implement the identified improvements.

In 2007, KHA had prepared a Stormwater Management Report for the Town to help supply information necessary for the original Stormwater Master Plan. It discussed the establishment and organization of a Stormwater Utility, including basis for a utility fee, utility structures, recommended standard fees, a description of the billing system, legal authority, and collection and enforcement protocols. The Town has used the information contained in its Stormwater Master Plan and Stormwater Management Report to determine that they will assume responsibility for stormwater management within Town boundaries.

Ordinances and resolutions have been developed for the following steps in the process:

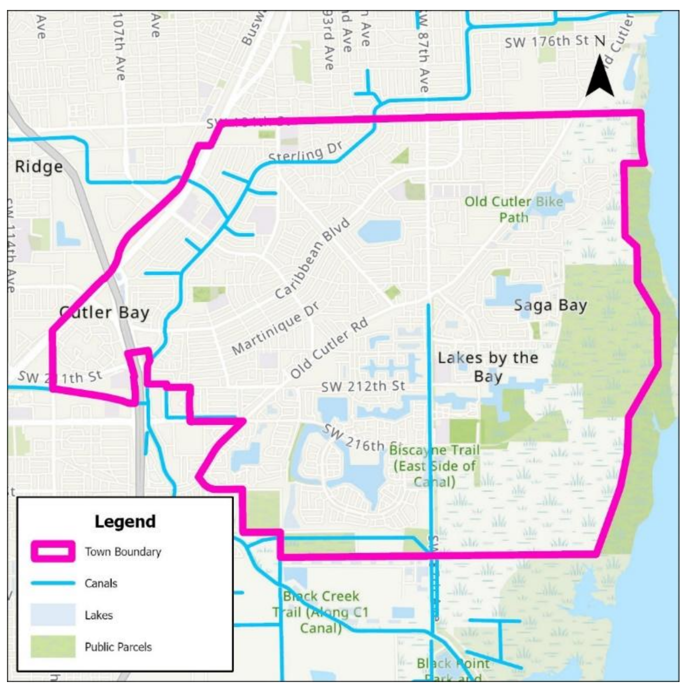


Figure 1-Town of Cutler Bay Boundary Map

- Resolution No. 07-18 – The Town of Cutler Bay exercised its option to exempt the Town from inclusion in Miami-Data County's stormwater utility.
- Ordinance No. 07-29 – The Town of Cutler Bay created a stormwater utility system for the Town.
- Resolution No. 07-63 – The Town of Cutler Bay approved the agreement for billing of the stormwater charges between Miami-Dade County and the Town.

These items have received approval by the Town Council prior to submittal to Miami-Dade County for consideration which then was approved by the County.

II. REVIEW OF AVAILABLE DATA

Kimley-Horn collected available data on the existing stormwater management system and stormwater management requirements within the Town of Cutler Bay as the first step in the preparation of the Stormwater Master Plan. The information was collected from local, regional, state, and national sources.

A. South Miami-Dade Watershed Study and Plan

The South Miami-Dade Watershed Study and Plan (SMDWSP) was commissioned by the South Florida Regional Planning Council and published in 1996. Its mandate was to identify and protect lands that are essential to preserving the Everglades to the west and Biscayne National Park to the east by assuring compatible land use and zoning decisions in the watershed area that are consistent with the long-term objectives of a sustainable South Miami-Dade. Since the Town is located within the South Miami-Dade watershed.

Kimley-Horn reviewed the South Miami-Dade Watershed Study and Plan because the Town of Cutler Bay is located within the study area and the recommendations could have an impact on future development, water resources, and infrastructure within the Town. The South Miami-Dade Watershed is located in the southeastern portion of Miami-Dade County between two national treasures: Biscayne National Park and Everglades National Park and is considered one of the most critical watersheds in Florida. The watershed includes 20 municipalities and 20% of the total land area of the County. The Watershed Study and Plan was mandated by the County's Comprehensive Development Master Plan Use Policy 3E on October 10, 1996, and commissioned by the South Florida Regional Planning Council with no update since. The report was designed to meet the following criteria:

1. Identify and protect lands, including their uses and functions, that are essential for preserving the environmental, economic and community values of Biscayne National Park.
2. Identify and establish mechanisms for protecting constitutional private property rights.
3. Support a viable, balanced, economy including agriculture, recreation, tourism, and urban development in the Plan area.
4. Assure compatible land use and zoning decisions in the Watershed Area are consistent with the long term objectives for a sustainable South Miami-Dade.

The scope of work was shaped by the Watershed Study Committee (WASC), who reviewed study reports and provided a venue for stakeholder and public input. They evaluated potential policy choices on how growth might occur and looked at the consequences of each of those choices.

Growth Patterns

The committee specified two distinct growth patterns in developing areas: sprawl and smart growth. Sprawl was defined as "non-contiguous, scattered or leap-frog patterns of development," including low-density communities that fan out from their established cores to incorporate open land. This type of growth negatively affects the land by reducing the ecological significance of wetlands, agriculture, and forests. It also disrupts surface water flow and diminishes ground infiltration. The increase in impervious area associated with sprawl increases runoff and the conveyance of pollutants to waterways.

Smart growth is the incorporation of land use patterns that are more compact, transit-oriented, walkable, bicycle-friendly, and include mixed-use development with a range of housing choices. This type of growth preserves natural and cultural resources and long-range, regional considerations of sustainability over a short-term focus. Smart growth utilizes land more efficiently in order to reduce needless loss of ecological resources and to reduce the developments' impact on the environment.

Watershed Plan Guideline Zones

The watershed area was broken into three distinct zones:

1. Zone A, located one-quarter mile on each side of US 1, has a minimum density of 15 units per acre and average density of 21 units per acre.

2. Zone B is generally located one-half mile on each side of US 1 and along other major corridors such as Kendall Drive and 137th Avenue. The densities in this zone range from 6 to 20 units per acre with an average of 10 units per acre. The Town of Cutler Bay includes areas within these zones around US 1.
3. Zone C, located on the eastern portions of the watershed near the confluence of canals C-1, C-102, and C-103 with Biscayne Bay.

These areas are intended to be a mix of stormwater treatment areas, wetland restoration, and open space. The portions of the Town within the DA-4 Basin and southern parts of the C-1 Basin (described below in section 'B') are mostly classified as Zone C. It is stressed that the guidelines are not intended to be rigid rules but are written to provide an understanding of how densely each zone is expected to be developed in comparison with the other zones.

Parameters and Thresholds

The SMDWSP developed parameters to measure characteristics and associated tolerance levels for land assessment and land use scenario planning. The parameters were based on the Miami-Dade County Comprehensive Development Master Plan Land Use Policy 3E and the Watershed Study Advisory Committee's goals/vision statement. Parameters assist in pointing out characteristic levels desired when designing for development and expansion. The following parameters were listed and used for the Watershed Study and Plan:

- Water Quality
- Groundwater Demand
- Surface Water Flows/Distribution
- Flood Protection
- Tidal Wetlands
- Native-Plant-Dominated Freshwater Wetlands
- Exotic-Plant-Dominated Freshwater Wetlands
- Transitional Freshwater Wetlands
- Remnant Natural Forests
- Development Patterns
- Agricultural Land
- Proximity of Housing and Employment of Transit
- Parks, Recreation, and Open Space
- Economic Base
- Cost of Housing
- Mixed of Wages
- Transportation
- Public Schools
- Potable Water, Wastewater, and Air Quality

Once these parameters were established, thresholds were determined that would promote quality of life for development and nature alike. Water quality parameters set forth by the Miami-Dade County Comprehensive Development Plan force the use of water quality treatment stormwater systems, which are maintained to prevent pollutant discharge into the canals and groundwater.

Water Resources

Water quality in Biscayne Bay was one of the primary concerns that lead to the SMDWSP. Three separate development scenarios were tested:

- Test Scenario 1 utilized a low density development, sprawl pattern.
- Test Scenario 2 was of average density, lightly compact development.
- Test Scenario 3 utilized a high-density, compact development pattern.

Of the three scenarios tested for the watershed, the low-density development pattern of Test Scenario 1 resulted in substantially greater impacts in terms of water quality compared to the more compact development in Test Scenarios 2 and 3. All three scenarios, however, resulted in pollutant load increases compared to the baseline. For the projected year 2050, Test Scenario 3, the most compact development pattern, had the least negative impact on the environment and had the best overall performance with regard to water quality. It was determined that groundwater demands will substantially increase under all three of the test scenarios and, in the year 2025, there will be a slight decrease in the annual volume of surface runoff from the baseline. Based on the Flood Protection Level of Service (FPLOS), 350 sites exceeded threshold parameters. All three test scenarios resulted in some, if not substantial, flooding site increases. Test Scenario 1, low-density expansion, resulted in the most flooding site increases subsequently increasing by approximately 30%.

The general results of the three test scenarios showed that the implementation of smart growth, high-density, transit-oriented, policies of Test Scenario 3 provide a more sustainable environment and economy compared to the current land development pattern represented by Test Scenario 1. Test Scenario 3 provides less water pollution, less increase in flooding, less loss of natural resources, less reliance on the automobile, and less costs to the public. Therefore, the SMDWSP recommended implementation of land use and zoning regulations that encouraged growth to occur in a pattern more consistent with Test Scenario 3 than Test Scenario 1. Kimley-Horn recommended that the Town of Cutler Bay consider these recommendations as it developed its own Comprehensive Plan.

B. 2021 Miami-Dade County Stormwater Master Plan

C-1, C-100, and DA-4 Watersheds

Kimley-Horn began the data collection process by researching available stormwater watershed information throughout Miami-Dade County. Prior to the incorporation of the Town, SFWMD and DERM established stormwater watershed (also known as basin) and sub-watershed (also known as sub-basin) delineations throughout the County. The Town is located within the C-1, C-100, and DA-4 watersheds as delineated by these two agencies. It is KHA's intent to utilize existing watershed delineation information from DERM as the basis for development of the Town's stormwater master plan. In 2021, Miami-Dade County completed an update to their Stormwater Master Plan which includes the C-1 and C-100 Watersheds that provides revisions to the existing watershed numerical models to incorporate the most recent hydrologic and hydraulic data.

As initial background information, a brief description of the C-1 and C-100 watersheds is offered based on the Miami-Dade County DERM's Stormwater Master Plans. Currently, the DA-4 watershed, which covers approximately 3.6 square miles in the eastern portion of the Town, does not have a stormwater master plan and not included in the current 2021 update of Miami-Dade County's Stormwater Master Plan. The portion of the C-1 watershed within the Town's boundaries is approximately 4.7 square miles. The portion of the C-100 watershed within the Town's boundaries is approximately 1.8 square miles. Figure 2 depicts the watershed boundaries and canals. The location of the Town of Cutler Bay as it relates to the watersheds is also shown for reference.

Boundary Conditions

The C-1 Watershed has an area of approximately 59.69 square miles and is located in southeastern Miami-Dade County. The C-1 Watershed is somewhat trapezoidal in shape for the portion within the Town's boundary. The width north to south at the central portion is approximately four miles, while the length from its eastern and western boundaries is approximately 10 miles. The western boundary of the C-1 watershed is delimited by the L31-N Borrow Canal. A western wedge of the C-1 Watershed reaches up to Tamiami Trail and the C-4 Canal in the central part of the County. This wedge is approximately one mile wide and extends east to Krome Avenue from the L31-N canal, down to SW 88th Street (Kendall Drive) then east to SW 174th Avenue, south to SW 136th Street, southeast approximately to SW 87th Avenue (Galloway Road), and then south to SW 248th Street. From 248th Street, the south-western boundary of the C-1 watershed reaches up to the intersection of approximately SW 184th Street and the L31-N Borrow Canal and then directly north to close at the C-4 Canal. A number of canals within the C-1 Watershed are tributaries to the main C-1 Canal (Black Creek Canal). There is one project canal associated with the C-1 Watershed. Canal C-100B connects the C-1N to C-100 canals, while Canal C100B joins Canal C-1N one-half mile downstream of the Florida East Coast (FEC) Railway. The canal leaves the watershed at control structure S-122.

The C-100 Watershed is bounded by the C-2 Watershed to the north, the C-1 Watershed to the west and south, and DA-4 Watershed and Biscayne Bay to the east. The C-2 Watershed is hydraulically connected to the C-100 Watershed by the SFWMD Control Structure S-121. This structure is located at the intersection of SW 88th Street (Kendall Drive) with the C-100C Canal (approximately three-quarters mile west of SR 874). The purpose of this control structure is to divide the C-100 Watershed and C-2 Watershed areas. The C-1 Watershed is hydraulically connected to the C-100 Watershed by the SFWMD control structure S-122, which is located at the intersection of SW 97th Avenue with the C-100B Canal (approximately one-half mile east of US 1, one-quarter mile south of 184th Street). The purpose of this control structure is to divide the C-100 Watershed and C-1 Watershed areas. The C-100 Canal's outfall is to Biscayne Bay through the SFWMD control structure S-123. This structure provides a tidal outfall boundary condition.

There is no stormwater master plan developed for the DA-4 Watershed and information is limited. Within the Town of Cutler Bay, the DA-1 Watershed is bounded by the C-100 Watershed to the north, the C-1 Watershed to the west, and Biscayne Bay to the east. The DA-4 Watershed is hydraulically connected to the C-1 Watershed by the SFWMD control structure S-21. This structure is located near the mouth of the C-1 Canal at its junction with Levee L-31E, approximately 3,500 feet from the Biscayne Bay shoreline. The purpose of this structure is to divide the C-1 and DA-4 watersheds and to regulate water levels and salinity in the C-1 Watershed.

Watershed Characterization

The C-1 Watershed and C-100 Watershed have negligible topographic relief. They are urbanized areas drained by a network of canals that intersect the groundwater table in the unconfined Biscayne Aquifer. This aquifer is highly transmissive and provides base flow to the canals. The following sections discuss the hydrologic and hydraulic characteristics of the C-1 and C-100 watersheds.

Soils Data

Major soil types within the C-1 and C-100 watersheds were determined from the National Resources Conservation Service's (NRCS) Soil Survey. Due to the urban nature of the area and the sandy soils of southeastern Florida, soil properties in Miami-Dade County are highly variable, with saturated hydraulic conductivities ranging from 0.6 inches per hour to 20 inches per hour.

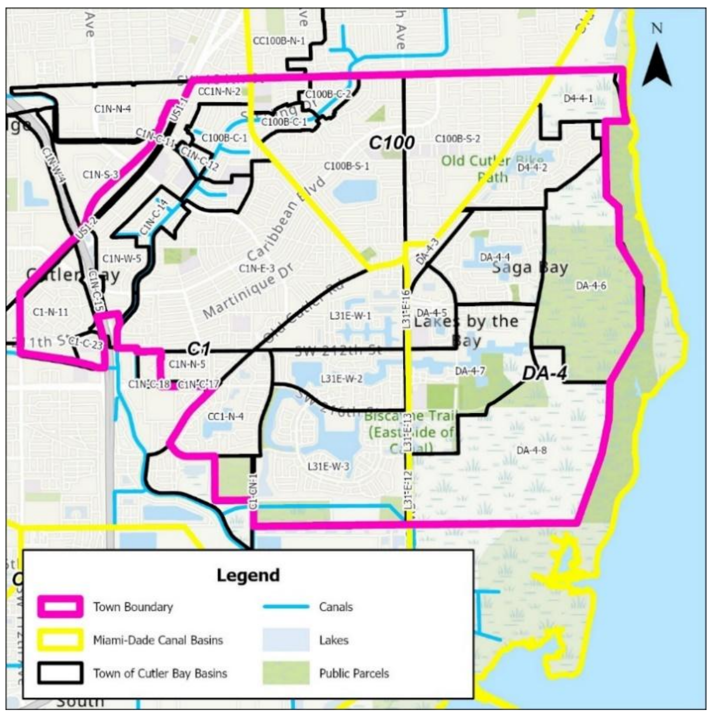


Figure 2-Basin/Watershed Delineation Map

Hydraulic Characteristics

There are four major canals throughout the C-1 and C-100 (include DA-4) watersheds with the following three functions:

- To provide drainage and flood protection for the watersheds
- To supply water to the watersheds for irrigation
- To maintain a groundwater table elevation near the lower reach of the watersheds adequate to prevent saltwater intrusion to local groundwater

The C-1 and C1W canals are continuous and make up the main canal (hereafter designated C-1/C-1W) in the C-1 Watershed. Canal C-1N and the L-31N Borrow Canal are tributary to C-1/C-1W. C-1/C-1W begins in the east borrow canal of L-31N, one and a half miles north of Howard Drive. Flow in the canal is to the southeast with discharge via control structure S-21 to Biscayne Bay, southeast of Black Point. Canal C-1N begins at the intersection of Lindgren Road and Coral Reef Drive. Flow in the canal is to the south to the confluence of the canal with C-1/C-1W just east of the West Dade Expressway. The C-100B Canal connects canals C-1N to C-100 and joins Canal C-1N one-half mile downstream of the FEC Railway. The canal leaves the watershed at S-122. Normal flows in the canal are to the north to the C-100 watershed.

The primary conveyance in the C-100 Watershed is the C-100 Canal. The C-100 Canal begins just north of the intersection of Killian Road and Lindgren Road. Flow in the canal is to the southeast, with discharge via the SFWMD Outfall Structure S-123 to Biscayne Bay east of Old Cutler Road. The C-100A, C-100B, and C-100C canals are tributary to the C-100 Canal. The C-100A Canal begins in Green Mar Acres at US 1. Flow in the C-100A Canal is to its confluence with the C-100 Canal one-half mile west of Biscayne Bay. The C-100B Canal connects Canal C-100 to the C-1 Canal to the south of the C-100 Watershed. Canal C-100B enters the C-100 Watershed at SFWMD control structure S-122 one-tenth of a mile south of the east end of Peters Road. Normal flows in Canal C-100B are to the northeast to the canal's confluence with Canal C-100 one-quarter mile west of Biscayne Bay. The C-100C Canal connects Canal C-100 to Canal C-2 to the north of the C-100 Watershed. C-100C enters the C-100 Watershed at SFWMD Structure S-121 at SR 94. Normal flows in C-100C are to the southeast to the canal's confluence with C-100A one-quarter mile north of Coral Reef Drive.

Stormwater Management Facilities

There are five control structures that directly affect portions of the C-1, C-100, and DA-4 watersheds within the Town of Cutler Bay: S-21, S-122, S-123, S-148, and S-149. The structures function as follows:

Structure S-21 is a fixed crest, reinforced concrete, gated spillway located near the mouth of the C-1 canal at its junction with Levee 31E, approximately 3,500 feet from the Biscayne Bay shoreline. The structure operates automatically to maintain a seasonally optimal headwater varying between 1.2 feet during dry season and 2.0 feet during rainy season. The structure also operates to regulate salinity. It will automatically close the gates under high flood tides when the differential between headwater and tailwater pool elevations reaches 0.2 feet.

Structure S-122 is a gated culvert located in C-100B, one-tenth of a mile south of the east end of Peters Road. There are no specific operational guidelines for this structure. In general, it is closed to prevent flood flows in the C-1 Watershed from entering the C-100 Watershed. It is opened as necessary to supply water from the C-1 Watershed to the C-100 Watershed for irrigation and to maintain the optimum stage in the lower reaches of canals in the watershed.

Structure S-123 is a reinforced, gated spillway located near the mouth of the C-100 Canal below the junction of the C-100, C-100A, and C-100B canals, approximately 600 feet from the Biscayne Bay shoreline. The structure operates automatically to maintain a seasonally optimal headwater between 2.0 feet and 3.5 feet. The structure is also operated to regulate salinity. It will automatically close the gates under high flood tides when the differential between headwater and tailwater pool elevations reaches 0.3 feet. The structure also incorporates a special timing device to protect manatees during automatic operations.

Structure S-148 is a reinforced, gated spillway located on the C-1 Canal, approximately 1,800 feet west of Highway 1. The structure operates automatically to maintain the optimal upstream water level at 4.5 feet for Canal C-1.

Structure S-149 is a double-barreled, reinforced-concrete pipe culvert located on the C-1N Canal, approximately one-quarter mile west of Highway 1. The structure operates automatically to maintain the optimal upstream water level at 5.5 feet for Canal C-1.

Other stormwater management facilities include infiltration devices such as drainage wells, exfiltration trenches, and swales which allow stormwater runoff to percolate into the groundwater system. This water enters the canal system though groundwater interflow.

Sub-Watershed Delineation

The C-1 Watershed was originally divided into 243 sub-watersheds and the C-100 Watershed was divided into 446 sub-watersheds by the DERM Stormwater Planning and Design Section. The sub-watershed delineations are described below (from *DERM Stormwater Master Plan C-7 Basin Report,* Volume 2, "Hydrologic and Hydraulic Modeling of Existing and Future Conditions without Control Measures", September 1997 and *DERM Stormwater Master Plan C-1 Basin Report*, Volume 2, "Hydrologic and Hydraulic Modeling for Existing and Future Conditions without Control Measures", October 2003).

DERM developed section maps in AutoCAD format in association with Florida Power and Light (FPL) geographic information system (GIS) base mapping. The section maps identify edge and centerline of roads, canal rights-of-way, lakes, buildings, subdivisions, and parcel lines. The following information is available on the GIS maps:

- Roadway crown elevations
- Locations of storm sewer systems
- Locations of drainage wells
- Location of cross drains

Through the use of the topographic (road crown elevations) data, and by combining many of the conterminous closed sub-watersheds into one sub-watershed, the C-1 Watershed and the C-100 Watershed were delineated into sub-watersheds ranging in size from 1.38 to 2,369 acres and 3.8 to 839 acres, respectively.

Each sub-watershed is given a name based on its location within the watersheds, proximity to one of the major canals or tributaries, or proximity to a major roadway. Sub-watersheds are assigned a direction from the adjacent canal and numbered from upstream to downstream in that area.

Therefore, the first upstream watershed east of the C-100C Canal is labeled C100C-E-1; the next is C100C-E-2 and so forth. Sub-watersheds that contain portions of the canals are assigned the canal name, a 'C' label, and are numbered upstream to downstream such as C100-C-14. Sub-watersheds along major roads are assigned names based on the roadway such as SR874-3. Closed sub-watersheds are assigned a leading 'C' label in the name, such as C100-W-1.

It was the C-1 and C-100 sub-watersheds provided by the County within the Town of Cutler Bay that were used as the guideline for establishing the stormwater watersheds throughout the Town. KHA utilized the elevation data provided by the County in CAD format to delineate sub-watersheds within the DA-4 Watershed. KHA used these sub-watersheds as the Town's watersheds and then further reduced them into sub-watersheds for use in modeling the Town. Watershed and sub-watershed maps for the Town are included and discussed later in this report.

Treatment Systems

Throughout the C-1, C-100, and DA-4 watersheds, there are developed land drainage types or treatment systems. The treatment systems most commonly found in the watersheds and Miami-Dade County are listed below:

System	*Description*
Exfiltration Systems	Pipe systems consisting of perforated pipes, located above the water table, surrounded by one- to two-inch diameter aggregate and filter material for rapid discharge of stormwater to the subsurface.
Positive Systems	Systems such as concrete pipes that do not provide exfiltration or attenuation of pollutants.
Hybrid Systems	A combination of exfiltration and positive systems that utilizes exfiltration in small storm events and an overflow discharge positive system during large storm events.
Grassy Swales	Systems in which water runs over grassy channels and control is provided through infiltration into the shallow groundwater system at a relatively slow rate on the order of one inch per hour.

Ponding Systems	Systems including ponds and lakes with a standing water surface. Control is provided by means of settling and exfiltration.
Undeveloped Systems	Abandoned or undeveloped land where control is provided by infiltration. *(See grassy swales)*
Drainage Wells	Control is provided by means of pressurized stormwater injection into the underlying aquifer, 40 to 100 feet deep, through the use of gravity or pumping systems. Generally located on the bottom of stormwater inlets.

Appendix A contains a map that shows the locations of each of these system types within the Town of Cutler Bay to the extent that they can be determined by reviewing existing infrastructure detailed within the County's stormwater master plans.

Level of Service Criteria

As part of developing a stormwater master plan, level of service is an established criterion that defines levels of stormwater management for a community. As part of the Town's previous stormwater master plan, a level of service was developed. The following is a description of the levels of service as defined by Miami-Dade County:

- All structures (commercial, residential, and public) should be flood-free during the 100-year storm event.
- Principal arterial roadways, including major evacuation routes, should be passable during the 100-year storm event, i.e. at most eight inches of water on roadway.
- All canals should operate within their banks during the respective design floods. Primary canal design criteria vary from 10-year to 100-year storm events and are described for the major drainage watersheds in the Miami-Dade County Comprehensive Plan. The C-1 Canal is designed for the 100-year, 25-year, and 10-year storm event for the part east of the Turnpike, east of US 1, and west of US 1, respectively. The C-1 secondary canal systems are designed for the 25-year storm event. The C-100C and C-100 secondary canals are designed for a 10-year storm event.
- Minor arterial roadways such as four-lane roads should be passable during the 10-year storm event, i.e. water level does not exceed the crown of the road.
- Collector and local residential streets should be passable during the five-year storm event per Miami-Dade County drainage policy.

As levels of service are developed for the Town, hydraulically modeled areas with flooding results that exceed the criteria will be identified and prioritized as areas requiring stormwater management improvements.

Results of 2021 Miami-Dade Stormwater Masterplan

The results of the C-1 and C-100 Watersheds in the 2021 Stormwater Master Plans were analyzed to see which of the County's Priority Sub-Watersheds for water quality and flooding severity were within the Town of Cutler Bay's boundary limits. Between the C-1 Watershed and the C-100 Watershed, 15 proposed priority projects in each watershed, 30 proposed projects in total across various sub-watersheds, portions thereof, were within Town limits. Water quality within the C-1 and C-100 watersheds is of average standing with respect to the other Miami-Dade County watersheds. Therefore, this indicator was weighted less than the Flooding Problem Severity when determining priority sub-watersheds for proposed projects within the C-1 and C-100 watersheds. Taking more than just flooding problem areas into account, there are many county sub-watershed that had insufficient storage volumes to provide and meet the required stormwater quality retention volumes criteria. Therefore, proposed the projects in each the C-1 Watershed and C-100 Watershed included the potential addition of hybrid systems of exfiltration trenches, swales, or underground systems in locations deemed necessary. This information was used in the development of the update to the Town's stormwater masterplan.

2021 Miami-Dade County SWMP - Proposed Projects

2021 MDC SWMP - C-1 Watershed Projects

It's important to note that the 15 priority projects located in the C-1 Watershed aren't exclusive to the Town of Cutler Bay in the 2021 Miami-Dade County Stormwater Master Plan. There isn't any indication included in the 2021 report that correlate specific improvements or locations with the table above, therefore, KHA cannot indicate which improvements will be proposed to each specific basin nor which City/Town the proposed projects will take place.
The proposed mitigation projects were based on analysis of the flood maps for design events 100-, 25-, and 5-YR/72-HR using Sea Level Rising (SLR) boundary conditions for 2060. The proposed projects will mitigate deficiencies of low road elevations, canal banks with low elevations within project limits and within the urban boundary and will result in drainage improvements for parcels and address as summarized in the table below.

Project	*Area (acre)*	*Parcels Mitigated*	*Addresses Mitigated*	*Roads Class 3*	*Roads Class 4*	*Roads Class 5*	*Canals*	*Flood Problem Severity Score*
C1-PR01	72.74	397	410			21,200		2,835
C1-PR02	42.67	170	183			10,310		1,244
C1-PR03	98.21	244	267	1,720		18,490		1,804
C1-PR04	42.09	156	162			11,010		1,118
C1-PR05	11.99	3	67			780		277
C1-PR06	33.78	193	212	1,030		8,210		1,429
C1-PR07	10.38	46	61			3,680		383
C1-PR08	12.25	55	73			3,120		458
C1-PR09	38.49	14	297	910		2,730		1,231
C1-PR10	128.03	344	449	6,090		21,900		2,836
C1-PR11	165.00	385	533	1,910		30,780		3,294
C1-PR12	220.74	857	843		4210	40,130		5,952
C1-PR13	30.00	150	172			7,140		1,139
C1-PR14	84.26	249	361	50		17,870	2520	2,196
C1-PR15	177.16	342	404	1,380	1450	27,020	3900	2,651
C1 Total	1,167.80	3,605	4,494	13,090	5660	224,370	6420	28,847

The stormwater improvement criteria are based on several criteria including flood elevations and duration, passable roads, and conveyance of the secondary canals. The focus of this outline is on improving flood parameters (extent, duration, depth). Considering that most improvements add storage, the water quality can be addressed with some of the proposed improvements (exfiltration trenches and drainage wells, detention). The criterial will be based on the DERM's Planning Criteria and Procedures listed in the Chapter 24 and 11C from municipal code [33].

The prevailing cause of flooding problems in the selected sub-watersheds is a lack of sufficiently sized PSMS to allow them to drain fast enough to meet LOS. Currently, many of the County sub-watersheds only drain to a major drainage structure or canal once water levels have risen beyond a certain elevation (typically, the surrounding roadway crowns which define the sub-watershed). In addition to the lack of a positive system, many County sub-watersheds have insufficient storage volumes, i.e. a lack of detention or retention ponds, swales, or underground systems, which results in excess runoff impoundment in roads and yards, and related flooding. Potential control measures include the construction of exfiltration (French Drain) systems and hybrid systems to allow discharge of flood waters during severe storm events once the required stormwater quality retention volume criteria are met. Peak water levels in portions of the primary canal during certain storm events are predicted to be higher than the ground elevations of neighboring sub-watersheds; therefore, the aforementioned potential hybrid systems will need to be complemented with the construction of containment berms and seawalls, backflow preventers, and pump stations.

<u>2021 MDC SWMP - Proposed C-100 Watershed Projects</u>

It's important to note that the 15 priority projects located in the C-1 Watershed aren't exclusive to the Town of Cutler Bay in the 2021 Miami-Dade County Stormwater Master Plan. There isn't any indication included in the 2021 report that correlate specific improvements or locations with the table above, therefore, KHA cannot indicate which improvements will be proposed to each specific basin nor which City/Town the proposed projects will take place.

The proposed mitigation projects were based on analysis of the flood maps for design events 100-, 25-, and 5-YR/72-HR using Sea Level Rising (SLR) boundary conditions for 2060. The proposed projects will mitigate deficiencies of low road elevations, canal banks with low elevations within project limits and within the urban boundary, and will result in drainage improvements for parcels and address as summarized in the table below.

Project	*Area (acre)*	*Parcels Mitigated*	*Addresses Mitigated*	*Roads Class 3*	*Roads Class 4*	*Roads Class 5*	*Canals*	*Flood Problem Severity Score*
C100-PR01	80.44	189	518		150	7,840		2,641
C100-PR02	30.89	67	67	1,110	470	2,570		470
C100-PR03	38.78	53	66			6,140		424
C100-PR04	35.36	48	60		1,840	4,640		386
C100-PR05	32.47	47	68	1,240		5,090		415
C100-PR06	28.43	20	24			3,930		157
C100-PR07	34.85	22	33		1,820	4,740		200
C100-PR08	53.47	38	52		770	4,980		323
C100-PR09	40.17	50	80		500	7,640		472
C100-PR10	34.66	43	58		1,750	3,100	50	362
C100-PR11	41.24	51	70		1,350	4,030	1,090	435
C100-PR12	73.83	45	65	960	400	6,980		397
C100-PR13	41.34	52	79		2,630	3,940		474
C100-PR14	104.38	96	115	700	3,570	10,550	190	752
C100-PR15	326.80	602	2,817	6,020	140	48,880	5,230	13,090
C100 Total	997.10	1,423	4,172	10,030	15,390	125,050	6,560	20,996

The stormwater improvement criteria are based on several criteria including flood elevations and duration, passable roads, and conveyance of the secondary canals. The focus of this outline is on improving flood parameters (extent, duration, depth). Considering that most improvements add storage, the water quality can be addressed with some of the proposed improvements (exfiltration trenches and drainage wells, detention). The criterial will be based on the DERM's Planning Criteria and Procedures listed in the Chapter 24 and 11C from municipal code [33].

The prevailing cause of flooding problems in the selected sub-watersheds is a lack of sufficiently sized PSMS to allow them to drain fast enough to meet LOS. Currently, many of the County sub-watersheds only drain to a major drainage structure or canal once water levels have risen beyond a certain elevation (typically, the surrounding roadway crowns which define the sub-watershed). In addition to the lack of a positive system, many County sub-watersheds have insufficient storage volumes, i.e. a lack of detention or retention ponds, swales, or underground systems, which results in excess runoff impoundment in roads and yards, and related flooding. Potential control measures include the construction of exfiltration (French Drain) systems and hybrid systems to allow discharge of flood waters during severe storm events once the required stormwater quality retention volume criteria are met.

Peak water levels in portions of the primary canal during certain storm events are predicted to be higher than the ground elevations of neighboring sub-watersheds; therefore, the aforementioned potential hybrid systems will need to be complemented with the construction of containment berms and seawalls, backflow preventers, and pump stations.

C. Comprehensive Everglades Restoration Plan (CERP)

The Town of Cutler Bay is located within SFWMD boundaries. SFWMD is one of five water management districts established by the state to manage and protect water resources by balancing and improving water quality, flood control, natural systems, and water supply. The Comprehensive Everglades Restoration Plan (CERP) and the South Florida Environmental Report (SFER) are two initiatives implemented by the US Army Corps of Engineers (USACE) and SFWMD to maintain and improve the environmental quality of the Everglades and the surrounding South Florida ecosystems and to report on the progress of said improvements, respectively. The CERP was published in 1999 and is continually updated with the acquisition of new data. The CERP initiated the construction of many of the canals and control structures that serve as the major stormwater collection infrastructure for the Town. The SFER was last published in 2007 and reviewed the development of water quality databases for the Everglades and Biscayne Bay from May 2006 to April 2007. The SFER forecasts Capital Improvement Programs (CIPs) from various agencies over a five-year period. The projects included restoration, monitoring programs, and land acquisitions to improve water quality in the South Florida region.

The *Central and Southern Florida Project Comprehensive Review Study* (April 1999) is a report that was generated by several regulatory agencies throughout Florida including USACE as the lead agency, SFWMD, and other federal, state, local, and tribal partners. The report details a comprehensive plan for the restoration, protection, and preservation of water resources for central and southern Florida, specifically the Everglades. The report integrates a *Programmatic Environmental Impact Statement* (PEIS) that entails the identification and the discussion of the plan's proposed features, its beneficial effects, and its impacts on the existing habitat. Over 60 project features are included within the report that will generate approximately 217,000 acres of new reservoir and wetlands-based water treatment areas. These features are expected to greatly increase water storage and supply for urban and agricultural demands while maintaining current Central and Southern Florida Project (C&SF) purposes. The purpose of the CERP is to achieve vast improvement to the presently depleting natural habitats by restoring natural flows, improving water quality, and generating more natural hydro-periods in South Florida ecosystem. Ultimately the improvements to the native flora and fauna, including threatened and endangered species will be achieved with the restoration of hydrologic conditions.

History

In 1948 Congress initiated C&SF and this multi-purpose project enforced regulations upon state agencies to provide flood control, water supply for municipal, industrial, and agricultural uses, water supply for Everglades National Park, prevention of saltwater intrusion, and protection of fish and wildlife resources. The project entailed 1,000 miles of levees and canals, 150 water control structures, and 16 major pump stations.

A reexamination of the initial 1948 C&SF project was commenced under the Water Resource Act of 1992. This led to the development of today's Central and Southern Florida Project Comprehensive Review Study. The purpose of the reexamination was to determine the feasibility of modifying Congress's initial enforced regulations to include the restoration of South Florida's ecosystem and provide sufficient supply for any water-related demands within the region. The CERP was guided by the following list of principles:

- Restoration, preservation and protection of South Florida's ecosystem while providing water-related needs to the region.
- The best available science and independent scientific review to be an integral part of its development and implementation.
- Development of the plan will be through an inclusive and an open process that engages all stakeholders.

- All applicable federal, tribal, state, and local agencies will be full partners and their views will be considered without any prejudice.
- Flexibility within the plan in order to base the concept of adaptive assessment – knowing that modifications will be made based on future information.

The cost estimate of the finalized CERP has been forecasted at $7.8 billion with an annual operation and maintenance cost of $182 million. This cost includes conditions of adaptive assessment and monitoring. Significant features within the plan detail directive actions which include the following:

- Surface Water Storage Reservoirs
- Water Preserve Areas
- Manage Lake Okeechobee as an Ecological Resource
- Improve Water Deliveries to Estuaries
- Underground Water Storage
- Treatment Wetlands
- Improve Water Deliveries to the Everglades
- Remove Barriers to Sheet Flow
- Store Water in Existing Quarries
- Reuse Wastewater, Pilot Projects
- Improve Fresh Water Flows to Florida Bay
- Southwest Florida Projects
- Comprehensive Integrated Water Quality Plan

D. South Florida Environmental Report (SFER)

The *2023 South Florida Environmental Report* (SFER) is the latest version of an annual report focusing on updates and highlights of the past fiscal year, October 2021 to September 2022, regarding the South Florida environment. The SFER is a compilation of updates from SFWMD, the Florida Department of Environmental Protection (FDEP), the Florida Department of Agriculture and Consumer Services (FDACS), and other state, local, and tribal governments. It highlights programs such as CERP, the Biscayne Bay Surface Water Improvement and Management Plan (SWIM Plan), the Everglades Forever Act (EFA), and other programs. The Everglades, being the largest ecosystems of its kind, is the primary focal point of this report. The Town of Cutler Bay lies within the Biscayne Bay–South Bay watershed of SFWMD. This area extends along the Biscayne Bay coast between Shoal Point (north) and Turkey Point (south). The SFER is broken into two volumes. The first reviews the South Florida environment at large and the second reviews the district annual plans and reports.

Volume I: South Florida Environment

Water quality in South Florida is of major concern and programs have been implemented over the years to monitor it and to mitigate its degradation. Current programs established by EFA, such as phosphorous source control and nitrogen monitoring, are exceeding expectations and the water quality of the Everglades overall has generally been meeting state criteria. Another achievement is the decrease in mercury levels in fish throughout South Florida.

A long-term plan was developed for achieving Everglades' water quality goals that included the monitoring of Stormwater Treatment Areas (STA) and Everglades Source Control. Mandated by EFA, over 40,000 acres of large, constructed wetlands, STAs have been established along the southern extent of the Everglades Agricultural Area (EAA) and are managed by SFWMD. In order to reduce total phosphorous levels in the waters entering the Everglades Protection Area, surface water is directed through vegetated treatment cells and the STAs accumulate phosphorous in sediments through biological and chemical processes. This process has removed over 800 metric tons of phosphorous entering the Everglades Protection Area since 1994, effectively reducing the concentration of phosphorous by 69%. Other methods of restoration included planting rice to stabilize sediments and removing sediment from water control structures. A full scale implementation project using algae, referred to as Periphyton Stormwater Treatment Areas, is in the grow-in phase with the assistance of USACE.

With regards to Biscayne Bay, the development of a water quality database was initiated to better analyze water quality trends. In addition, a funding agreement with U.S. Geological Survey was established for modeling the surface water and groundwater flows to the Bay. This will assist in identifying causes of recurring hyper-salinity events in near-shore regions of the Bay. High salinity levels affect many species of animals and plants, while unusually high salinity levels create harsh environments that decrease the amount of area that is habitable to these species.

The remainder of Volume I reviews hydrological and ecological issues of South Florida, CERP and Accelerate performance, and management and restoration plan for the Lake Okeechobee, Kissimmee, and coastal ecosystem.

Volume II: District Annual Plans and Reports

Volume II reviews past projects, current work plans, and future improvement plans. In order to "…limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area," the State defined minimum flow requirements of multiple water bodies. Florida law mandates that all water management districts establish Minimum Flows and Levels (MFL) for surface waters and aquifers within their jurisdictions. In addition to this, the State mandated that each district establishes water reservations, or water areas set aside in a certain location, time, or quantity. The water reservations were mandated for a specific use that may be required for the protection of fish and wildlife or public health and safety. The Town of Cutler Bay is located within Biscayne Bay–South District. MFLs for Biscayne Bay–South are scheduled for development in 2008.

CIPs were forecasted for a five-year period. Budget estimates for project implementation are expected to peak in 2008 and gradually decline by 2011. This is due to the plan for proposed projects to be in full production in 2008 and to be relatively accomplished or in sustaining phases in the following years. These projects include restoration, monitoring programs, and land acquisitions for STA projects.

E. Biscayne Bay Surface Water Improvement Plan (SWIM Plan)

The Biscayne Bay Surface Water Improvement and Management Plan (SWIM Plan), published by SFWMD in 1989 and revised in 1995, has been superseded by the CERP and the SFER. However, it was one of the first water quality improvement plans for the area that includes the Town of Cutler Bay and it is, therefore, summarized in this report.

Water quality, water quantity, and environmental impact are the three major concerns that the Biscayne Bay Surface Water Improvement and Management Plan (SWIM Plan) was implemented to review. The current plan, prepared by SFWMD in 1995, incorporated portions of the original plan enacted in 1989 and provides more comprehensive research and updated objectives. Though this report has been superseded to some degree by the CERP and the SFER, Kimley-Horn and Associates, Inc. reviewed it for mandates, requirements, and influential information that may affect recommendations on proposed stormwater improvements within the Town of Cutler Bay.

Water Quality

From Miami-Dade's water quality monitoring program, the SWIM Plan proposed to develop water quality targets for contamination levels. Much rainfall within Miami-Dade County directly enters into the surficial Biscayne Aquifer system, which represents the sole source of drinking water for the greater Miami metropolitan area. Biscayne Bay's water quality has been degrading due to poorly treated surface water runoff. In addition, sewage pollution requires attention, which has shown to be a direct threat to humans via parasites and microorganisms and indirectly via other substances that may discharge through the sewage system. The developed targets assisted project effectiveness determination in the area of mitigation of water quality degradation.

Water Quantity

Changes in water flow throughout the Miami-Dade area have disrupted the ecosystem and species composition in Biscayne Bay. Timing patterns of flow rates must be as closely identical to nature as possible to maintain a balanced ecosystem. The flow timing also affects the salinity of the bay. Too much, or too little, salinity in the bay will threaten many species. As more industry is developed, more fresh water is used and less flows into the bay. The inflow of freshwater into the bay must be regulated to maintain proper salinity levels.

Environmental Protection

Certain plants and animals play a role in water quality and, thus, must be looked into. For example, mangroves provide buffers between the land and water and help protect against erosion. Seagrass helps anchor sea floor sediments, reducing turbidity, and provides a habitat for marine organisms. Filter feeding organisms, such as oysters, sponges, and sea squirts assist in maintaining water clarity by removing particles. It is important to rebuild the lost habitats and restore the wetlands in order to save these species and to increase water quality in the Bay.

Due to limited resources, the SWIM Plan focused on a few priority areas including south Miami-Dade County. Among specified areas within south Miami-Dade County, Canal 1, Canal 100, and Levee L-1E were selected. These three drainage mechanisms directly affect the Cutler Bay drainage system. The SWIM Plan proposed projects for each problem area that would meet set objectives and goals including canal water monitoring programs. Levee L-31E was proposed to have a flow redistribution project implemented as a pilot project in enhancing the timing of freshwater flow to Biscayne Bay via wetlands. This project was to be implemented by the end of 1995 and a monitoring program was set up to detect changes to the hydrology, chemistry, and biota of the canal.

The vast majority of the proposed SWIM Plan projects have been either been completed or abandoned. The SWIM Plan is no longer used by SFWMD as more current reports have been published and are being implemented.

F. National Flood Insurance Program (NFIP) Data

In addition to being governed by the local and regional plans described above, stormwater management in Florida is subject to state and federal regulations. Two programs regulated by the state and federal governments are the National Flood Insurance Program (NFIP) and the National Pollutant Discharge Elimination System (NPDES). The NFIP is managed by the Federal Emergency Management Agency (FEMA) and the Florida Department of Community Affairs (DCA). The NPDES is managed by the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (DEP).

The requirements of the National Flood Insurance Program (NFIP) will play an important role in flood protection for the Town of Cutler Bay. Therefore, KHA researched these requirements for the areas included within the Town.

The U.S. Congress established NFIP with the passage of the National Flood Insurance Act of 1968. The NFIP is a program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. The NFIP is administered through the Federal Emergency Management Agency (FEMA).

Flood Hazard Identification and Risk Assessment

The director of FEMA is required by statute to identify and map flood-prone areas and to establish flood-risk zones in such areas. The FEMA flood hazard maps are used for community floodplain management regulations, for calculating flood insurance premiums, and for determining whether property owners are required by law to obtain flood insurance as a condition of obtaining mortgage loans or other federal or federally related financial assistance. FEMA's flood hazard maps are also used by states and communities for emergency management.

The "100-Year" Standard

The NFIP would not be able to offer insurance at affordable rates without the existence of risk management (floodplain management) to reduce flood losses. In order to assess and manage the flood risk, a national standard was needed. The U.S. Department of Housing and Urban Development, which initially administered the NFIP before FEMA was created, began its administration of the NFIP by calling on a group of experts to advise the agency as to the best standard to be used as the basis for risk assessment, insurance rating, and floodplain management for the program. After extensive study and coordination with federal and state agencies, this group recommended the 1-percent-annual-chance flood (also referred to as the "100-year" or "Base Flood") be used as the standard for the NFIP.

The 1-percent-annual-chance flood is a regulatory standard used by federal agencies, and most states to administer floodplain management programs. It has been used since the inception of the NFIP and is used for floodplain management purposes in all of the at least 20,200 participating communities that have been issued flood hazard maps.

Identifying and Mapping Flood-Prone Areas

Flood insurance studies (FIS) that use detailed hydrologic and hydraulic analyses to develop base flood elevations (BFE) and designate floodways and risk zones for developed areas of the floodplain have been produced for most NFIP communities.

In producing and updating FISs, FEMA typically uses a combination of two study approaches (approximate and detailed) in identifying a community's flood hazards. Detailed study methods typically employ the use of engineering models and, at a minimum, result in the determination of BFEs or flood depths and floodways that will be displayed on the flood insurance rate maps (FIRM). In general, the decision whether to use the approximate method or detailed method is based on existing and anticipated development in and near the floodplain. Flood hazard information for flooding sources that affect developed or developing areas are based on detailed studies whenever possible; approximate study methods, which are less rigorous than detailed methods and do not determine BFEs or floodways, may be used for undeveloped or sparsely developed areas.

An FIS usually generates the following flood hazard information:

- BFEs are presented as either water-surface elevations or average depths of flow above the ground surface. These elevations and depths are usually referenced to either the National Geodetic Vertical Datum of 1929 (NGVD29) or the North American Vertical Datum of 1988 (NAVD88).
- Water-surface elevations for the 10-year (10-percent-annual-chance), 50-year (2-percent-annual-chance), 100-year (1-percent-annual-chance), and 500-year (0.2-percent-annual-chance) floods.
- Boundaries of the regulatory 100-year floodway. The regulatory floodway is defined as the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the entire base flood (100-year flood) discharge can be conveyed with no greater than a 1.0-foot increase in the BFE.
- The boundaries of the 100- and 500-year floodplains. The 100-year floodplain is referred to as the Special Flood Hazard Area (SFHA).

The results of the FIS are presented on a map, referred to as a flood insurance rate map (FIRM), and presented in the FIS report in a narrative and graphically as flood profiles attached to the narrative. FEMA determines the 1-percent-annual-chance flood, shown on the FIRMs as A-Zones or V-Zones, from information obtained through consultation with the community, and from floodplain topographic surveys, detailed hydrologic and hydraulic analyses, and historic records. FEMA uses commonly accepted computer models and engineering methods that estimate hydrologic and hydraulic conditions to determine the 1-percent-annual-chance flood and to determine BFEs, and to designate flood-risk zones.

Along rivers, streams, and lakes within the United States, FEMA computes flood elevations using computer models, statistical techniques, or both. These elevations are a function of the amount of water expected to enter a particular system by means of precipitation and runoff. SFHAs in river areas are primarily identified as A-Zones on the FIRM.

Along the coast, FEMA determines SFHAs by an analysis of storm surge, wind direction and speed, wave heights, and other factors. FEMA designates these areas along the coast as both V-Zones and A-Zones on the FIRM. V-Zones are the more hazardous coastal flood zones because they are subject to high-velocity wave action. FEMA applies the V-Zone designation to those areas along the coast where water depth and other conditions would support at least a three-foot wave height. FEMA also considers other factors in identifying V-Zones, such as wave run-up. FEMA usually designates A-Zones in coastal areas landward of the V-Zone. Coastal flood hazards areas mapped as A-Zones can be subject to storm surge and damaging waves; however, the waves are less than three feet in height.

Changes to the Flood Maps

The flood risk information presented on the FIRM and in the FIS report forms the technical basis for the administration of the NFIP. FEMA exercises great care to ensure that the analytical methods employed in the FISs are scientifically and technically correct, that the engineering standards followed meet professional standards, and, ultimately, that the results of the FIS are accurate. Although the NFIP maps and FIS reports are prepared according to rigorous technical standards, FEMA recognizes that changes to the maps and reports may be necessary. Some reasons for the changes are due to improvements in the techniques used in assessing flood risks, changes in physical conditions in the floodplains or watersheds, and the availability of new scientific or technical data.

The NFIP regulations allow FEMA to revise and amend maps and FIS reports as warranted or after it receives requests from community officials and individual property owners. To help FEMA ensure that the maps and reports present information that accurately reflects existing flood risks, the NFIP regulations require that each NFIP community inform FEMA of any physical changes that affect BFEs in the community and, within six months of the date that this data is available, submit the data that shows the effects of the changes.

In making revisions and amendments, FEMA must adhere to the same engineering standards applied in the preparation of the original NFIP maps and FIS reports. Therefore, when requesting changes to NFIP maps and reports, community officials and property owners are required to submit adequate supporting data. That data enables FEMA to review and evaluate the requests and to carry out its responsibility of ensuring that the flood-risk information presented is scientifically and technically correct.

Minimum NFIP Floodplain Management Requirements

Under the NFIP, the minimum floodplain management requirements that a community must adopt depend on the type of flood risk data (detailed FIS and FIRMs with BFEs or approximate A-Zones and V-Zones without BFEs) that the community has been provided by FEMA. Under the NFIP regulations, participating NFIP communities are required to regulate all development in SFHAs. Before a property owner can undertake any development in the SFHA, a permit must be obtained from the community. The community is responsible for reviewing the proposed development to ensure that it complies with the community's floodplain management ordinance. Communities are also required to review proposed development in SFHAs to ensure that all necessary permits have been received from those governmental agencies from which approval is required by federal or state law.

Under the NFIP, communities must review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions to ensure that these development proposals are reasonably safe from flooding and that utilities and facilities servicing these subdivisions or other developments are constructed to minimize or eliminate flood damage.

In general, the NFIP minimum floodplain management regulations require that new construction or substantially improved or substantially damaged existing buildings in A-Zones must have their lowest floor (including basement) elevated to or above the BFE. Non-residential structures in A-Zones can be either elevated or flood-proofed.

For all new and substantially improved buildings in V-Zones:

- All new construction and substantial improvements of buildings must be elevated on piles and columns so that the bottom of the lowest horizontal structural member of the lowest floor is elevated to or above the BFE. No fill can be used for structural support.
- All new construction and substantial improvements of buildings must be properly anchored to resist flotation, collapse, and lateral movement.

In V-Zones, the velocity of water and wave action associated with coastal flooding can exert strong hydrodynamic forces on any obstruction to the flow of water. Standard foundations such as solid masonry walls or wood-frame walls will obstruct flow and be at risk to damage from high-velocity flood forces. In addition, solid foundation walls can direct coastal floodwaters into the elevated portion of the building or into adjacent buildings. The result can be structural failure of the buildings. For these reasons, the area below the lowest floor of the elevated building in V-Zones must either be free of obstruction or be constructed with open wood lattice panels or insect screening or constructed with non-supporting/non-load bearing breakaway walls that meet applicable NFIP criteria. Any enclosed area below the BFE can only be used for the parking of vehicles, building access, or storage.

To further protect structures from damaging wave impacts, structures must be located landward of the reach of mean high tide. Furthermore, man-made alterations of sand dunes and mangrove stands, which would increase potential flood damage, are prohibited within V-Zones.

In responding to the public's desire to have an enclosed area below an elevated building, but recognizing the potential risks to lives and property, the NFIP floodplain management regulations permit certain limited uses of enclosures below the lowest floor in A-Zones or V-Zones. Under the NFIP, the enclosed area below an elevated building in an A-Zone or V-Zone can only be used for the parking of vehicles, building access, or storage. The allowance of these uses below the BFE is permitted because the amount of damage caused by flooding to these areas can easily be kept to a minimum by following the performance standards for the design and construction of enclosures in A-Zones and V-Zones described above and by using flood-resistant building materials. To further minimize flood damages, mechanical, electrical, plumbing equipment, and other service facilities must be designed and/or located above the BFE as to prevent damage during flooding conditions.

The NFIP substantial improvement requirement and substantial damage requirement provides a mechanism to ensure that a significant increase in investment in existing pre-FIRM buildings will receive needed protection from the flood risk. If a community determines that the cost of improvements to a home or business equals or exceeds 44% of the market value of the building, the building is considered a "substantial improvement." If a community determines that the cost of restoring a home or business equals or exceeds 44% of the market value of the building before the damage from any origin occurred, the building is considered "substantially damaged." A substantially improved building or substantially damaged building must meet the minimum requirements of the NFIP. It is the community's responsibility to make substantial improvement or substantial damage determinations.

Ordinance Adoption

Once FEMA provides a community with the flood hazard information upon which floodplain management regulations are based, the community is required to adopt a floodplain management ordinance that meets or exceeds the minimum NFIP requirements. FEMA can suspend communities from the program for failure to adopt once the community is notified of being flood-prone or for failure to maintain a floodplain management ordinance that meets or exceeds the minimum requirements of the NFIP.

In suspended communities, flood insurance is not available to property owners. In addition, these communities are subject to limitations on federal financial assistance accordingly to Section 202(a) of 1973 Act which prohibits federal officers or agencies from approving any form of loan, grant, guaranty, insurance, payment, rebate, subsidy, disaster assistance loan or grant, for acquisition or construction purposes within SFHAs. For example, this would prohibit mortgage loans guaranteed by the Department of Veterans Affairs, insured by the Federal Housing Administration, or secured by the Rural Economic and Community Development Services. In the case of disaster assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended, this prohibition only applies to assistance in connection with a flood.

Monitoring Community Compliance

FEMA monitors communities to ensure that they have adopted an ordinance that meets or exceeds the minimum NFIP floodplain management criteria and to ensure that they are effectively enforcing their ordinance. While the NFIP floodplain management criteria are administered by states and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. If communities do not adequately enforce their floodplain management regulations, they can be placed on probation and potentially suspended from the program following probation.

FEMA (or states on behalf of FEMA) conduct Community Assistance Visits (CAV) and Community Assistance Contacts (CAC) to monitor community floodplain management programs. A CAV is a scheduled visit to an NFIP community for the purpose of conducting a comprehensive assessment of the community's floodplain management program. The CAV is also used as an opportunity to provide technical assistance to the community. A CAV typically involves a tour of the floodplain, a meeting with local floodplain management officials, and an examination of the community's floodplain development permit and variance files. The visit is documented in a follow-up letter to the community. If any issues are identified during the CAV, such as a possible floodplain violation or program deficiency, these issues are also addressed in the follow-up letter. The community is responsible for resolving any program deficiencies or remedying any violations identified.

A CAC is used to establish a contact with a community for the purpose of determining if any problems or issues exist and to offer the community assistance if necessary. CACs can be conducted by means of a telephone call or brief visit. While CACs are a less comprehensive assessment of a community's floodplain management program, sufficient information about the community's floodplain management program can be obtained in order to determine whether there are more serious floodplain management problems in the community.

Flood Zones Located in the Town of Cutler Bay

Portions of the Town of Cutler Bay are located within FIRM Map Numbers 12025C0357J, 12025C0269J, 12025C0356J, and 12025C0268J. Figure 5 in *Appendix A* depicts the FIRM Flood Zones for the Town. A review of the information contained in the FIRM Maps shows that the Town contains VE, AE and X Zones. VE-Zones are areas subject to coastal flooding in the 100-year flood with velocity hazard (wave action) where base flood elevations have been determined. AE-Zones are areas subject to flooding in the 100-year flood without velocity hazard (wave action) where base flood elevations have been determined. X-Zones are areas that are not subject to flooding in the 100-year flood. Some areas within X-Zones are subject to flooding in the 500-year flood. The areas located within AE-Zones and VE-Zones can be referred to as Special Flood Hazard Areas (SFHA). Based on KHA's analysis of the FIRM Maps and aerial photographs, approximately 4,656 acres within the Town boundary are located within SFHAs, or 75% of the Town. This includes all property east of Old Cutler Road and most property within one-quarter mile on either side of the C-1N and C-100B Canals. Approximately 10,000 residential units are within SFHAs.

The Town has adopted a resolution to join the NFIP and a Floodplain Management Ordinance and will be responsible for regulating development in the floodplain. The Building Department will require plans for new and substantially improved buildings to be in compliance with the requirements of the Floodplain Management Ordinance before issuance of a building permit.

G. National Pollution Discharge Elimination System (NPDES)

Urbanization and industrial activities around the country have significantly altered the natural landscape of our nation's watersheds. This, in turn, has adversely affected both the quantity and quality of stormwater runoff and has contributed to the chemical, physical, and biological impairment of receiving waters. Studies have shown that stormwater from urban and industrial areas are commonly contaminated with heavy metals, synthetic organics, pesticides, fuels, waste oils, and pathogens.

Congress, recognizing the importance of controlling these discharges, passed amendments to the Clean Water Act (CWA) in 1987 requiring that the U.S. Environmental Protection Agency (EPA) issue regulations addressing stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program. Promulgated on November 16, 1990, Phase I NPDES regulations establish permit application requirements for operators of certain Municipal Separate Storm Sewer Systems (MS4), as well as stormwater discharges associated with certain industrial activity. Regulated municipalities include those cities and counties operating medium and large MS4s (serving a population of 100,000 or greater) and other MS4s specifically designated by the permitting authority.

According to the CWA mandate, municipalities regulated under the NPDES program must, at a minimum, achieve technology-based requirements. Therefore, they must reduce pollutant loadings in MS4s to the maximum extent practicable (MEP) and must effectively prohibit non-stormwater discharges through their MS4s as a first step toward achieving loading reductions consistent with applicable water quality standards. While MEP was not explicitly defined by Congress, EPA interpreted it to mean that municipalities will develop and implement comprehensive stormwater management programs. These programs, proposed by the regulated municipalities under Part 2 of the permit application, are required to address a number of stormwater control measures, including methods to detect and remove illicit discharges entering municipal storm sewer systems, as well as appropriate best management practices (BMP) to address discharges from industrial, commercial, and development activities.

Polluted stormwater runoff is often transported to MS4s and ultimately discharged into local rivers and streams without treatment. EPA's MS4 stormwater management program is intended to improve the nation's waterways by reducing the quantity of pollutants that stormwater picks up and carries into storm sewer systems during storm events. Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

As required by law, the Town of Cutler Bay has coordinated with Miami-Dade County and is now a co-permittee on the MS4 permit for Miami-Dade County. As a co-permittee, the Town is required to meet the obligations of the permit. These obligations fall into the following general categories:

- Maintaining and inspecting stormwater quality treatment infrastructure such as swales, exfiltration trench, pollution control boxes, catch basins, and manholes.
- Updating maps and inventories of outfalls and stormwater management infrastructure
- Adhering to the policies of the 2000/2010/2020 Miami-Dade County Comprehensive Development Master Plan.
- Requiring compliance with Miami-Dade County DERM and Public Works Department drainage design requirements.

- Reviewing current municipal land development regulations to determine where changes can be made to reduce the stormwater impact of new development.
- Implementing roadway litter control and street sweeping programs.
- Assuring that all flood control projects include stormwater quality treatment consistent with SFWMD rules.
- Evaluating, monitoring, and inspecting municipal waste treatment, storage, and disposal facilities
- Providing public education programs related to the application of pesticides, herbicides and fertilizers.
- Requiring employees and contractors responsible for application of pesticides, herbicides and fertilizers to be certified and/or licensed.
- Implementing an inspection program to detect illicit discharges and illegal connections to the stormwater management system.
- Publicizing the Miami-Dade County pollution complaint hotline.
- Maintaining a citizen complaint log documenting illicit discharges.
- Implementing a public outreach program to instruct the public on the proper disposal of used motor oil, leftover hazardous household products and lead acid batteries.
- Identifying and maintaining a GIS database of areas served by septic systems and advising the local health department of potential violations if constituents common to wastewater contamination due to malfunctioning septic tank systems are discovered.
- Advising the appropriate utility owner of potential violation if constituents common to wastewater contamination are found in areas served by sanitary sewer systems.
- Inspecting industrial and high risk facilities for illegal discharges into the MS4.
- Requiring new construction sites to obtain NPDES permits from DEP prior to land clearing.
- Enforcing compliance with approved erosion and sediment control BMPs for construction sites.
- Conducting stormwater erosion control training for construction site operators and inspectors.

H. MDC Impervious Area Ordinance and Green Infrastructure

In 2023 Miami-Dade County drafted amending sections of Chapter 24, Chapter 33, and Chapter 8cc of the Municode. The scope includes revising development standards and procedures relating to drainage and impervious surfaces as well as revising definitions and cross-references, making technical changes and enforcing them by civil penalties. Highlights of these updates include the need for county approvals for all non-structural impervious surface improvements. These changes will also allow municipalities to regulate non-structural impervious surface improvements if they adopt their own ordinance, although this only applies to single-family and duplex properties. Counties may still review properties causing flooding onto the right-of-way or adjacent properties. All development, improvement, construction, or alteration on parcels with stormwater infrastructure will require county approvals. Adds requirement to maintain and submit asset inventory and maintenance records of stormwater infrastructure from municipalities; public entities owning or operating stormwater infrastructure serving the public right-of-way; special taxing district, community development district and private property owners' association for stormwater infrastructure draining onto the public right-of-way system.

New regulations developed by The Florida Department of Environmental Protection (FDEP) and water management districts (WMDs) updates operation regulations and stormwater design for environmental resource permitting as prescribed in the Clean Waterways Act. The latest version of the proposed rule includes revisions to Chapter 62-330 of the Florida Administrative Code and Applicants Handbook I which involves the construction and operation of stormwater facilities. These new regulations will likely become effective on July 1st, 2024, the following changes will be introduced.

- Increased Treatment Standards: The use and practice of BMP presumptive treatment will be discontinued, and all new developments will need to meet specific performance criteria to help mitigate nutrient pollution in waterbodies. This change requires a significant reduction in post-development total phosphorus and nitrogen loads.

- Enhanced compensatory and off-site treatment criteria with broadens the criteria for compensatory and off-site treatment which will allow for greater flexibility in meeting required treatment levels. The “last resort” and “less than 10%” limitations are eliminated from the current rule. This allows projects to utilize combinations of on-site and off-site treatments to achieve compliance.
- The forthcoming regulations include an increased focus on inspection, monitoring, and reporting on all stormwater facilities to ensure they are operating as intended and the performance aligns with the new requirements.
- An update to training and certification for inspector rules are being introduced. To ensure a high level of compliance and performance a structured inspection checklist will enable consistent assessments of stormwater facilities.
- The new regulations demand a more comprehensive documentation. This includes but not limited to as-built plans, operation and maintenance plans, cost estimates, and financial capability assessments transitioning to the operation and maintenance phases. The intent and purpose are designed to enhance transparency and accountability in the stormwater facility performance.

III. TOWN ORDINANCES, REGULATIONS, AND GUIDANCE

Data reviewed from the Town's website, including their notable efforts maintaining and improving their Community Rating Score, or CRS score. Programs that help support and improve this outstanding rating include their Repetitive Loss Area Analysis (RLAA), Local Mitigation Strategy (LMS), Flood Mitigation Plan, and the Program for Public Information (PPI). KHA collected information on stormwater management requirements and current efforts from each of these agencies.

A. Town of Cutler Bay Community Rating System (CRS)

The Town has updated the Flood Mitigation Plan (FMP), see Sub-Section D, as well as the Program for Public Information (PPI), see Sub-Section E, and established a Repetitive Loss Area Analysis (RLAA), see Sub-Section B, which were implemented on November 17, 2021, via Town Resolutions No. 21-77, 21-78, and 21-79 respectively which were subsidized through the Stormwater Utility Fund. The recently adopted Flood Mitigation Plan helped the Town improve its current FEMA Community Rating System (CRS).

The Town of Cutler Bay actively participates in the NFIP since 2006 and complements it with additional floodplain management for reduced flood vulnerability. Through the Community Rating System (CRS), the town was classified as CRS Class 4 and as of April 1, 2023, has achieved an impressive, upgraded rank of Class 3, rewarding policyholders in Special Flood Hazard Areas (SFHAs) with a 35% premium reduction, with discounts for other policy types. The Town of Cutler Bay became the first municipality of all municipalities in the Broward, Miami-Dade, and Monroe Counties to reach a Class 3 status. The improvement to CRS Class 3 from the previous rating of CRS Class 4 saves policyholders an average of $431 per flood insurance policy which sums up to a total savings for the Town of $2,659,085.

B. Repetitive Loss Area Analysis

Flooding is a prevalent and expensive natural hazard in the United States, often resulting in Presidential Disaster Declarations. Over 22,000 communities, with 8.7 million structures, are exposed to flood risks and participate in the National Flood Insurance Program (NFIP). However, the NFIP faces a challenge in maintaining financial stability while keeping premiums affordable. Repetitive loss properties, constituting a significant obstacle, have received over $12.5 billion in payments since NFIP's inception. Though the NFIP has been successful in floodplain management, repetitive loss properties still strain its resources, projected to contribute 15-20% of future losses despite representing only 1.3% of policies.

Private insurers can adjust premiums, but the NFIP's options are limited by statute. Losses may trigger incremental adjustments in premium rates by the Federal Emergency Management Agency (FEMA), which is prevented from discontinuing coverage for high-risk properties. While floodplain regulations mitigate damage for substantially damaged buildings, numerous repetitive loss properties remain at risk due to lack of regulation or insufficient damage. Property buyers may be unaware of flood hazards, leading to disclosure issues since repetitive loss areas aren't depicted on Flood Insurance Rate Maps (FIRMs).

Cutler Bay faces challenges with 33 repetitive loss properties, and a comprehensive Repetitive Loss Area Analysis (RLAA) is being conducted to encourage mitigation efforts and enhance the town's CRS Program credit. Biscayne National Park, covering most of Cutler Bay, plays a critical role in flood protection and should be integrated into local mitigation strategies. The town is also concerned about its central area, which lies in an X-Zone but remains vulnerable to low-level flooding and houses repetitive loss properties.

C. Local Mitigation Strategy

On August 20, 2008, the Town of Cutler Bay initially adopted the 2007 Miami-Dade County Local Mitigation Strategy (LMS) through Resolution 08-52. Later, on September 16, 2020, via Resolution No. 20-52, the town re-adopted the 2020 Miami-Dade County LMS. The purpose of this report is to provide a progress update on the Miami-Dade County LMS, a requirement to maintain Floodplain Management Plan credit under the Community Rating System (CRS). This memorandum is also being shared with local media and posted on the town's website in accordance with Community Rating System credit criteria.

The original Local Mitigation Strategy (LMS) was established in 1998 with funding from the State of Florida. During its development, each municipality in the county assigned a representative to the LMS Working Group. This group includes various participants such as Miami-Dade County, State and Federal agencies, educational institutions, hospitals, non-profit organizations, and private sector companies. Despite state funding uncertainties, the LMS Working Group decided to continue the program in 1999. The group presently convenes quarterly, with a representative from the Town of Cutler Bay in attendance.

In December 2000, the LMS Working Group agreed that the LMS master document would be updated and published twice a year, on June 30 and December 31. The LMS Coordinator, a Miami-Dade County employee, collaborates with the Miami-Dade Office of Emergency Management and Homeland Security, as well as the LMS Steering Committee, to compile updates from Working Group members at least 30 days prior to publication. The most recent version of the LMS was published in July 2021, encompassing seven distinct sections.

Part 1 of the Local Mitigation Strategy, titled "The Strategy," includes sections detailing guiding principles, mitigation goals and objectives, policies, ordinances, and programs influencing mitigation, effectiveness evaluation, existing policies and programs analysis, conflict resolution procedures, hazard identification and vulnerability assessment, specific to windstorm, flooding, and other hazards, data sources, private sector interests, prioritizing mitigation initiatives, evaluation criteria, procedures for LMS review and revision, and the Miami-Dade County critical facilities inventory.

Part 2, titled "The Projects," compiles countywide disaster mitigation initiatives and projects. Each participating member of the LMS Working Group submits a brief description of their projects and initiatives, along with an estimated cost. The "Countywide Initiatives" and "Town of Cutler Bay" sections within Part 2 are most pertinent to the town.

Part 3 of the LMS outlines potential funding sources for LMS projects and initiatives, Part 4 consists of Appendices referred to in supporting documents, Part 5 documents Meeting Minutes, Part 6 showcases Completed Projects, and Part 7 provides insight into the National Flood Insurance Program and Community Rating System (CRS).

D. Flood Mitigation Plan

In September 2021, the Town of Cutler Bay published it's updated Flood Mitigation plan. The development of this plan adheres to the guidelines set by the Federal Emergency Management Agency (FEMA). It was formulated under the guidance of a Flood Mitigation Planning Committee (FMPC) composed of representatives from various Cutler Bay departments, its citizens, and other relevant stakeholders. The FMPC undertook a thorough risk assessment, identifying and analyzing flood hazards that pose a threat to the Town. Furthermore, they evaluated the Town's susceptibility to these hazards and appraised the existing capabilities to counter them.

The flood hazards profiled in this plan include:

- Climate Change and Sea Level Rise
- Coastal/Canal Bank Erosion
- Dam/Levee Failure
- Flood: 100/500 year
- Flood: Stormwater/ Localized Flooding
- Hurricane and Tropical Storms (including Storm Surge)

This plan outlines actions that can be carried out by both public and private entities with the aim of decreasing risks to safety, health, and property resulting from floods. Using the risk assessment conducted for each of the aforementioned flood hazards, the FMPC established objectives and targets to diminish the Town's exposure to these hazards. The objectives and targets are summarized as follows:

Goal 1 – Protect the public health, life, safety and welfare by increasing public awareness and education of the flood hazard by encouraging collective and individual responsibility for mitigating the flood risk.

Goal 2 – Improve technical capability (including administrative resources, tools, data and equipment) to implement hazard mitigation and respond to flood events.

Goal 3 – Minimize the flood threat to life and property by protecting vulnerable populations, buildings, and critical facilities through the implementation of cost-effective and technically feasible mitigation actions.

Goal 4 – Incorporate resiliency into future growth by ensuring that flood risk is considered for both new development and post-disaster redevelopment and recovery.

In order to meet the Town's identified goals, the plan suggests 14 mitigation actions listed below:

1. Ensure that storm drains are cleaned on a regular and consistent bi-annual basis in order to maintain adequate stormwater drainage as they were designed.
2. Improve drainage along the C-100 canal through a dredging project in order to mitigate flooding in the sub-basin that currently outfalls to the canal.
3. Continue implementation of drainage system maintenance on all surface water channels, canals, and ditches to ensure proper storage, disposal, and water quality treatment of runoff.
4. Promote an Enviro Scape model to elementary school students to help them understand sources of flooding and prevention of water pollution.
5. Work with local, state, and federal partners to target repetitive loss properties for acquisition or elevation to eliminate potential for future flooding.
6. Promote public outreach encouraging retrofitting techniques where residents can help themselves to potentially eliminate damage from low level flooding to their structure.
7. Promote the purchase of flood insurance to residents and businesses to increase policy base and ensure protection from flood losses.
8. Protect the natural floodplain functions within the Town including the Cutler Wetlands.
9. Increase awareness of the flood hazard through development of a PPI.
10. Work with Miami-Dade County Emergency Management on identifying vulnerable populations who may need assistance for evacuations.
11. Work with Miami-Dade County Emergency Management, state, and federal governments, to protect vulnerable critical facilities to ensure they can operate properly during flooding conditions.
12. Complete the Cutler Bay Wetlands Restoration Project Plan to prevent flood damages and restore mitigation property to a world-class birding sanctuary. Share information about this project with stakeholders and the public.
13. Acquire or redevelop parcels for recreational open space and natural and beneficial functions.
14. Educate repetitive loss property owners on ways to protect their building from flood damage.

E. Program for Public Information (PPI)

In September 2021, The Town of Cutler Bay published it's update to their Program for Public Information document. A Program for Public Information (PPI) constitutes an ongoing endeavor aimed at formulating, executing, and overseeing a variety of public information initiatives. The objective of obtaining CRS credit through a PPI is to secure additional recognition for information campaigns tailored to local requirements, which are vigilantly assessed, appraised, and modified for enhanced efficiency. The Town has constructed its PPI adhering to the CRS credit criteria specified within Activity 330. The Town initially established its PPI back in 2016. Over the years, the Town, collaborating with multiple departments and in coordination with stakeholder groups and external agencies, has created several informative messages to educate the public about flood-related risks.

The Town has been actively addressing stormwater concerns along various canals, including the C-100, to mitigate flooding, particularly in areas prone to repeated losses and regions susceptible to localized stormwater inundation. Additionally, the Town has championed the safeguarding of natural resources by dedicating an area as a bird sanctuary and safeguarding the Cutler Wetlands along its eastern periphery, adjacent to Key Biscayne National Park.

While undertaking the original PPI planning process, the Town recognized that sending information directly to property owners might not be the most effective means of conveying certain messages. Thus, it broadened its outreach approaches to capitalize on technological advancements and increased familiarity with web-based services. This extended planning process enables the Town to explore alternate avenues for distributing flood hazard-related messages to the community.

Changes made to the PPI in 2021 from the original PPI document published by the Town in May of 2016 are as follows:

- Information on the target areas was updated with current data.
- The flood insurance assessment was updated with 2020 policy data from CIS and 2020 parcel data.
- Target Areas were revised to include Lending, Real Estate, and Insurance Agents.
- Topics, Messages, and Outcomes were reviewed and revised.
- Outreach projects were updated.

IV. DATA COLLECTION AND EXISTING CONDITIONS

A. Geographic Information System (GIS) Data Review

Canal Locations and Cross-Sections

Miami-Dade County is responsible for the operation and maintenance of the finger canals connected to the C1-N canal. Other canals within Cutler Bay are operated and maintained by the South Florida Water Management District (SFWMD). SFWMD maintains the C-100B Canal, the C-1N Canal, the C-1W Canal, the C-1 Canal, and the L-31E Canal. Canal location and cross-section information were obtained from Miami-Dade County DERM. Canal locations can be seen on the Town Boundary Map in *Appendix A*. In general, canal depths range from 8 to 25 feet and canal widths range from 25 to 140 feet.

Catch Basin, Pipe, and Data

As part of the data collection effort for the Town's Stormwater Master Plan, Kimley-Horn obtained copies of the GIS data from the Town of Cutler Bay's GIS database. Data obtained from this collection includes catch basin and outfall locations along with pipe sizes as well as land-use. In 2003, Miami-Dade County DERM created a GIS map of the C-1 and C-100 basins as part of their C-1 and C-100 Basin Stormwater Master Plans. Since then, Miami-Dade County has updated their website to provide town data in an open source format to download data which include stormwater drainage structures. KHA also supplemented our data collection effort by utilizing Miami-Dade County's GIS Data Hub in conjunction with the Town of Cutler Bay's GIS database.

The GIS data includes the following:

- GIS data files containing base information including section boundaries, street names, right-of-way lines, lot lines, and edge of pavement lines.
- GIS data files containing location information for drainage structures such as catch basins, manholes, pipe, exfiltration trench, slab covered trench, and outfalls.
- GIS data file showing subdivision names and boundaries.
- GIS data file containing topographic LiDAR mapping (road crown elevations)

Additional data on the drainage structures and existing surfaces were cross-referenced utilizing the Town of Cutler Bay's GIS hub for confirmation of data obtained from Miami-Dade's Data Hub. The LiDAR surface elevation data utilized in the study area simulation of each priority sub-basin and roadway project was confirmed and adjusted with the use of up-to-date field survey data obtained for the ongoing projects throughout the Town for accuracy in this analysis.

B. Types of Systems

The drainage systems for the Town were classified into the following four categories:

- Outfall systems – systems with no exfiltration trench. Pipe connections are made to the canal system.
- Closed systems – systems that do not have pipe connections to the canal system and rely solely on exfiltration trench and/or swales for drainage.
- Combination systems – systems that have both exfiltration trench and outfall pipe connections to the canal system.
- Undeveloped or unknown – systems located in areas where GIS information is not available or areas that are not developed.

Based on a review of the data included in the GIS obtained from Miami-Dade DERM, KHA developed the map in *Appendix A*. This map shows the types of drainage systems located within the Town of Cutler Bay. The majority of the Town of Cutler Bay currently relies on closed systems for drainage.

C. Sub-Basin Delineation

The Town of Cutler Bay is located at the junction of three Miami-Dade County Canal Basins: C-100, C-1, and DA-4.

The C-100 Basin portion of the Town is bounded as follows: starting at the intersection of SW 184th Street (Eureka Drive) and SW 97th Avenue (Franjo Road), east on Eureka Drive to Old Cutler Road, southwest along Old Cutler Road to SW 200th Street, west on SW 200th Street to SW 87th Avenue (Galloway Road), then south on Galloway Road to Old Cutler Road, to west southwest on Old Cutler Road to Franjo Road, and then northwest on Franjo Road to Eureka Drive.

The C-1 Basin portion of the Town is bounded as follows: starting at the intersection of Eureka Drive and Franjo Road, west on Eureka Drive to US 1, following the west and south borders of the Town to Galloway Road, north on Galloway Road to Old Cutler Road, west southwest on Old Cutler Road to Franjo Road, and then northwest on Franjo Road to Eureka Drive.

The DA-4 Basin portion of the Town is bounded as follows: starting at the intersection of Eureka Drive and Old Cutler Road, east on Eureka Drive, along the north, east and south borders of the Town to Galloway Road, the north on Galloway Road to SW 200th Street, east on SW 200th Street to Old Cutler Road, and then northeast on Old Cutler Road to Eureka Drive.

The boundaries of these basins are delineated by DERM and SFWMD. There are six major canals that lie within and/or border the Town of Cutler Bay: C-100, C-100B, C-1, C-1N, C-1W, and L-31E. These canals provide three main functions:

- To provide drainage and flood protection for the C-100, C-1N, and DA-4 basins
- To supply water to the basins for irrigation
- To maintain a groundwater table elevation that is adequate near the lower reach of C-100 and to DA-4 in order to prevent saltwater intrusion into local groundwater. Water is supplied to the basins during periods of low natural flow from C-1 by way of S-122 and C-100B and from C-1W by way of S-338.

To delineate the C-100, C-1, and DA-4 canal basins more effectively according to Miami-Dade County's Stormwater Master Plan, DERM divided the drainage basins into drainage sub-basins based on topography, land use, and drainage characteristics. As done in the previous Stormwater Master Plan, The Town adopted the boundaries and numbering system of the Miami-Dade County drainage sub-basins that are located within the Town from the C-1 and C-100 basins, although, the County has not delineated such sub-basins for the DA-4 Basin. These Miami-Dade County sub-basins will be designated as drainage basins for the Town of Cutler Bay Stormwater Master Plan. The Town's Basins (County sub-basins and KHA delineated DA-4 sub-basins) were then further sub-divided into Town sub-basins based on hydrologic characteristics and subdivision boundaries. Figure 3 shows the location of the Town's basins and sub-basins, the sub-basins and roadway sections highlighted are considered the updated priority sub-basins and roadway projects in this Stormwater Master Plan.

D. Cutler Bay Stormwater Master Plan (2008)

In order to address adequate environmental protection and adequate flood protection, the Town of Cutler Bay created the Stormwater Utility to enable the Town to take ownership and operational responsibilities of its storm water management system through Resolution No. 07-18, Ordinance No. 07-29, and Resolution No. 07-63. As a part of the Stormwater Utility establishment, the Town selected Kimley-Horn and Associates, (KHA) to conduct and prepare a Stormwater Master Plan as well as a Stormwater Utility Management Report.

The 2008 Stormwater Master Plan identified areas of concern as well as analyzed seventeen (17) sub-basins for drainage analysis:

- Saga Bay Section 1.1
- Saga Bay Section 1.2
- Saga Bay Section 1.3
- Saga Bay Section 1.4
- Saga Bay Section 1.5
- Saga Bay Section 1.6
- Saga Bay Section 1.7
- Saga Bay Section 1.8
- SW 87th Avenue
- SW 97th Avenue
- Bel Aire Section 1.1
- Bel Aire Section 1.2
- Bel Aire Section 5.2
- Bel Aire Section 6
- Port Royale Section 5
- Pine Tree Manor Sec. 3
- Cutler Ridge Section 5

The analysis consisted of the establishment of performance goals to reduce flooding and improve water quality. All the performance goals identified have been the basis of all subsequent storm water management update analysis. A Capital Improvement and Operations and Maintenance Program was developed for the Town's Storm Water Utility to help plan and implement the proposed improvements identified in the original Stormwater Master Plan. Many of the projects identified have been constructed with the remaining improvements no longer needed due to a significant reduction in flooding due to the implementation of the Operations and Maintenance Program.

E. Summary of Completed Stormwater Projects

The priority sub-basins analyzed in the original 2008 Stormwater Master Plan and their current status for improvements are listed on the following table:

Table 1-2008 Cutler Bay Stormwater Master Plan Priority Sub-Basin Project Status

Priority Ranking	*Sub-Basin*	*Status*
1	SW 87th Avenue	Future Unfunded Project
2	SW 97th Avenue	Future Unfunded Project
3	Saga Bay 1.3	Complete
4	Saga Bay 1.5	Complete
5	Bel Aire Sec. 1.2	In Progress
6	Bel Aire Sec. 5.2	Complete
7	Saga Bay 1.4	Complete
8	Saga Bay 1.1	In Progress
9	Saga Bay 1.7	Complete
10	Pine Tree Manor Sec. 3	In Progress
11	Cutler Ridge Sec. 5	Complete
12	Port Royale Sec. 5	Complete
13	Bel Aire Sec. 1.1	Future Unfunded Project
14	Saga Bay 1.8	In Progress
15	Saga Bay 1.6	In Progress
16	Saga Bay 1.2	Complete
17	Bel Aire Sec. 6	In Progress

Progress on the original 17 priority basins outlined in the 2008 Stormwater Master Plan are actively being monitored.

For the purposes of this updated Stormwater Master Plan, the Town and KHA has evaluated the existing conditions, identified drainage deficiencies, and updated the priority sub-basins list to add the areas outlined in the follow sub-sections, Sub Sections E and F, respectfully.

F. Visual Assessment of Existing Conditions

<u>Drainage Deficiencies</u>

Kimley-Horn reviewed drainage complaints reported to DERM, Miami-Dade County Public Works, and the Town of Cutler Bay. Complaints from the Town included both complaints by Town staff as well as residents. *Appendix A* contains a comprehensive map that shows the location of these drainage complaint areas.

In order to evaluate existing drainage conditions within the Town, KHA visually assessed roadway flooding conditions during and after rainfall events lasting one hour or more. Locations, where flooding extended across the entire width of the roadway. KHA also evaluated the condition of existing drainage within the Town. GIS data provided by DERM was used to map the location of the majority of the public drainage structures within the Town.

G. Sub-Basin Prioritization

Based on a review of available data, pertinent studies, drainage deficiencies identified and input from Town staff, 12 drainage sub-basins and 26 roadway section projects were selected as a priority for more detailed analysis. The development of the priority sub-basin list was based on several factors including:

- Magnitude of observed flooding
- Flood complaint records
- Town input
- Condition of existing roadways
- Proximity to other priority sub-basins
- Relative traffic volumes on the affected roadways

The locations of the priority sub-basins and roadway projects are shown in Figure 3 and Figure 4, with detailed exhibits of the improvements in *Appendix A*. The next section of this report will detail the hydraulic and hydrologic analysis of these priority drainage sub-basins and make recommendations for correcting the observed deficiencies.

Flood mitigation plans for the priority areas are likely to consist of one or more of the following:

- Constructing additional catch basins and drainage system connectors or exfiltration trench for low points without positive drainage.
- Increasing drainage capacity by adding exfiltration trench or increasing the size of existing pipes. Exfiltration trench consists of a perforated pipe placed underground and surrounded with gravel. The gravel is wrapped in a porous textile cloth that allows water to gradually seep into the surrounding soil. Exfiltration trench is commonly referred to as a French drain. It provides underground water storage in the pores between the gravel. Increased pipe size can allow for greater capacity in the movement of water from one place to another (i.e. from the road to the lake).
- Installing exfiltration trench where none currently exists to provide pre-treatment prior to discharge into lakes. Pretreatment improves the water quality of stormwater runoffs from rain and other areas. The filtration provided by the gravel and geotextile in an exfiltration trench can remove pollutants before the water is allowed to discharge onto a body of water. Federal, state, and county resolutions require this pre-treatment.
- Installing stormwater injection wells to provide increased discharge capacity to the drainage systems. An injection well uses the principle of hydraulic head to inject water deep into the ground. They can be used in areas where discharge to a lake is not available.
- Increased maintenance within the sub-basin. This is a likely recommendation for all areas, but especially those where grates were observed to be covered with leaves, catch basins were full of dirt, leaves, and debris, swales were overgrown, and/or damage to pipes and exfiltration trench was observed.
- Adding baffles and sumps in catch basins to protect exfiltration trench from oil and grease deposits and excess debris and sediment. Oil and grease deposits can block the pores in the gravel and geotextile in an exfiltration trench, decreasing the seepage of water out of the trench and into the surrounding soil. Debris and sediment can also block these pores over time. Baffles protect the trench from oil and grease by forcing water to go under them before entering the pipe. Since oil and grease float, they are prevented from entering the pipe. This depression provides an area where debris and sediment can settle and accumulate instead of entering the pipe system.
- Limited re-grading of roadways to promote flow to existing drainage structures. This is a recommendation that would apply to areas where the roadway has deteriorated or where "birdbaths" (minor low spots) have occurred. The roadway would be "evened out" to eliminate such birdbaths.
- Increasing pervious areas within the right-of-way. A pervious area is land that is not covered with pavement, concrete, or other surfaces that prevent rainfall from soaking into the ground. The

opposite of a pervious area is an impervious area. Increasing pervious area while decreasing impervious area allows more rainfall to soak directly into the ground. The increase in pervious areas provides minor reduction in runoff and is typically considered in areas designated for major drainage improvements or pavement resurfacing. This is a likely recommendation in areas where the right-of-way contains more pavement than is necessary for roadways, parking, and sidewalks.

- Increasing swale capacity within the right-of-way. Swales are low pervious areas located outside of the roadway travel lanes in the right-of-way. Swales store runoff from the roadway and allow it to percolate into the soil over time. Swale storage capacity can be expanded by increasing the slope of the sides of the swale and making the overall swale deeper.

H. Updated Sub-Basin/Roadway Prioritization

Based on the available data noted in this update as well as KHA observed areas and complaints the following sub-basins located within the town limits of Cutler Bay that have been reported to have insufficient drainage structures. These sub-basins were selected due to observed flooding during storm events by both Town officials as well as residents that preside in the yellow highlighted sub-basins shown in Figure 3. The resulting list of affected sub-basins were constructed in no specific order.

The following sub-basins in this Stormwater Master Plan update include:

- Bel Aire Section 13.1
- Bel Aire Section 23
- Whispering Pines Estates Section 1
- Omni Estates
- Old Cutler Omni Pines
- Old Cutler Cove
- Cutler Ridge Section 4
- Cantamar
- Lakes by the Bay Section 10
- Cutler Ridge Section 7
- Cutler Ridge Pines 1
- Bel Aire Section 2.1
- Pointe Royal Section 1
- Whispering Pines Estates Section 4
- Cutler Ridge Section 5
- Pine Tree Manor Section 3
- Bel Aire Section 3.2
- Whispering Pines Estates Section 3
- Benson Manor 1
- Pine Tree Manor Section 4
- Lincoln City Section G
- Gomez Estates
- Bel Aire Section 3.1
- Bel Aire Section 14
- S Coral Homes Section 1
- Pine Tree Manor Section 1
- Saga Bay Townhomes
- Bel Aire Section 1.1
- Bel Aire Section 3.3
- Bel Aire Section 15
- Bel Aire Section 4
- Cutler Ridge Manor Estates 1
- Pine Tree Manor Section 2
- Cutler Ridge Section 3
- SW 187th Terrace
- SW 192nd Street
- SW 216th Street

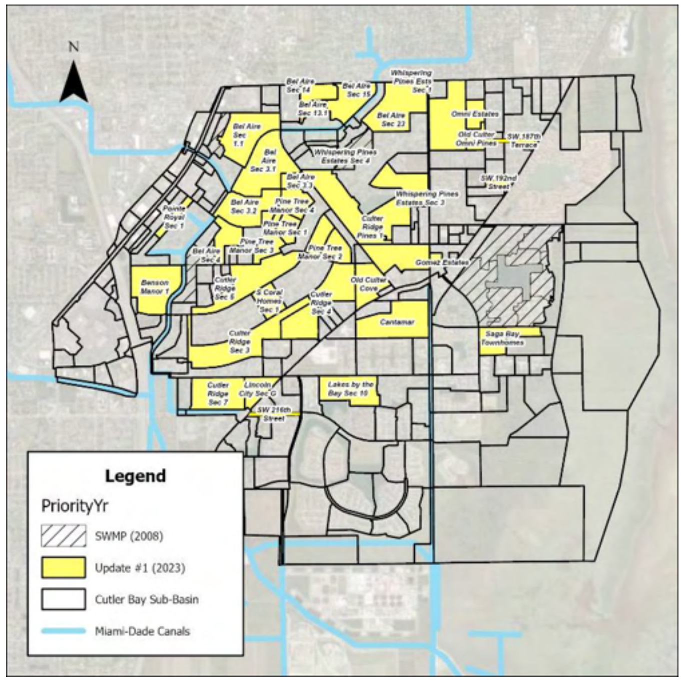


Figure 3-Sub-Basin Delineation Map

V. DRAINAGE ANALYSIS

A. Town Performance Goals

Prior to modeling and evaluating the priority drainage sub-basins, performance goals were identified. These performance goals represent the minimum standards for sub-basin performance. The drainage sub-basins were evaluated based on the following performance goals:

Water Quantity Performance Goals

- Per the Town's Growth Management Plan, where two or more standards impact a specific development, the most restrictive standards shall apply: post-development runoff shall not exceed the pre-development runoff rate for a 25-year storm event, up to and including an event with a 72-hour duration. Treatment of the runoff from the first 1 inch of rainfall onsite or the first 0.5 inch of runoff, whichever is greater. *NOTE:* This performance goal does not apply for sub-basins that do not include outfall systems. For applicable sub-basins, see the ICPR models in *Appendix B*.
- During the 10-year return design storm event, flooding in roadway travel lanes should be below the crown of the roadway. This standard is the same as the current Miami-Dade County standard for arterial roadways.
- During the 100-year return storm event, flooding should be below the building finish floor elevations, for the purpose of this analysis 18" above the lowest crown of road was assumed as the finish floor elevation. This standard is the same as the current Miami-Dade County standard.

Water Quality treatment Performance Goals

New stormwater quality rules set forth by HB965, which passed legislation in March 2022, has increased the minimum percent reduction for all stormwater treatment systems requiring an ERP are the following:

- All sites will be required to have treatment systems designed to achieve an 80% reduction of Total Nitrogen (TN) and Total Phosphorus (TP) from the post-development condition.
- Sites contributing to Outstanding Florida Waters (OFW's) will be required to have their treatment systems achieve a 95% reduction in TN and TP from post-development condition (increase from the current 50% reduction requirement).
- Sites contributing to waterbodies on the verified list of impaired waters or with TMDL's would be required to meet 80% reduction of TN and TP from the post-development condition, as well as other applicable pollutant reduction required.

The hydrologic and hydraulic modeling utilized to evaluate whether each priority sub-basin meets the performance goals are based on the data collected and described in previous sections of this report. The following sections of this report describe existing conditions, hydrologic and hydraulic modeling results, potential storm drainage deficiencies and recommended drainage infrastructure improvements for each of the priority sub-basins.

Resiliency Alternatives

Another component included in the update of this Stormwater Master Plan involves resiliency planning and flood mitigation. The focus was on addressing the impacts of sea level rise and seal level rise’s effects on groundwater rise. The SWMP Update is aimed to create a capital improvement program to safeguard residents' and visitors' quality of life and enhance prospects for future generations.

The Town acknowledged the community's firsthand experiences with hurricanes and tidal events that had directly affected them. The portion of the Stormwater Master Plan Update demonstrates the Town's commitment to implementing resiliency goals and objectives.

Within this undertaking, flood control levels of service, vulnerability, resiliency, and potential risks were evaluated for the Primary Stormwater Management System and infrastructure. The assessment considered existing sea level conditions and tides, including normal high tide ranges and extreme surges from severe storms, as indicated by model results. To enhance resiliency, the water table level was raised by six inches (6”) for each of the following section’s sub-basin models. Design strategies incorporated best practices to address reduced groundwater storage due to the elevated water table in the most effective, as well as cost effective, manner.

B. Bel Aire Sec 23

Location

Bel Aire Sec 23 is located on the southwestern portion of the intersection of SW 104th Street and SW 87th Avenue. This sub-basin includes the Whispering Pines Hammock Preserve and is part of the C100B-S-1 Basin. The sub-basin is outlined and labeled in the following figure, Figure 4.

Figure 4-Bel Aire Sec 23 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Bel Aire 23. The sub-basin consists of approximately 47 acres of existing detached single-family development with approximately 9,500 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected exfiltration trench, drainage wells, and catch basins with slab covered trench. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 5.9 feet to a high of approximately 6.5 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 2-Sub-Basin Bel Aire Sec 23 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Bel Aire Sec 23	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Bel Aire Sec 23 can be found in *Appendix A* that outlines the areas of reported drainage deficiencies by both residents and Town officials.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, exfiltration trenches, slab covered trenches, and catch basins are not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trench.

Table 3-Sub-Basin Bel Aire Sec 23 Capital Improvements Estimated Cost

Northeast - Phase 1:

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$61,760	$62,000
2	Stormwater Pollution Prevention	1	L.S.	$7,720	$8,000
4	Driveway/Sidewalk Restoration	100	S.Y.	$45	$5,000
3	Inlet Apron	673	S.Y.	$45	$31,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,000	L.F.	$125	$250,000
5	Exfiltration Trench w/ Trench Restoration	1,050	L.F.	$180	$189,000
6	Pollution Retardant Baffle	21	EA.	$600	$13,000
7	Catch Basin	10	EA.	$6,000	$60,000
8	Manhole	24	EA.	$7,000	$168,000
9	Core Drill Existing Structure	17	EA.	$1,000	$17,000
10	Swale Restoration	1535	S.Y.	$25	$39,000
11	Utility Sleeves and Adjustments	1	L.S.	$20,850	$21,000
12	Professional Services	1	L.S.	$172,600	$173,000
13	15% Contingency	1	L.S.	$155,400	$156,000
TOTAL					$1,192,000

Northeast - Phase 2:

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$79,040	$80,000
2	Stormwater Pollution Prevention	1	L.S.	$9,880	$10,000
4	Driveway/Sidewalk Restoration	100	S.Y.	$45	$5,000
3	Inlet Apron	673	S.Y.	$45	$31,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	680	L.F.	$125	$85,000
5	Exfiltration Trench w/ Trench Restoration	2,670	L.F.	$180	$481,000
6	Pollution Retardant Baffle	42	EA.	$600	$26,000
7	Catch Basin	12	EA.	$6,000	$72,000
8	Manhole	33	EA.	$7,000	$231,000
9	Core Drill Existing Structure	13	EA.	$1,000	$13,000
10	Swale Restoration	1735	S.Y.	$25	$44,000
11	Utility Sleeves and Adjustments	1	L.S.	$39,200	$40,000
12	Professional Services	1	L.S.	$223,600	$224,000
13	15% Contingency	1	L.S.	$201,300	$202,000
TOTAL					$1,544,000

Southwest:

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$114,640	$115,000
2	Stormwater Pollution Prevention	1	L.S.	$14,330	$15,000
4	Driveway/Sidewalk Restoration	100	S.Y.	$45	$5,000
3	Inlet Apron	927	S.Y.	$45	$42,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,410	L.F.	$125	$177,000
5	Exfiltration Trench w/ Trench Restoration	3,600	L.F.	$180	$648,000
6	Pollution Retardant Baffle	45	EA.	$600	$27,000
7	Catch Basin	21	EA.	$6,000	$126,000
8	Manhole	42	EA.	$7,000	$294,000
9	Core Drill Existing Structure	23	EA.	$1,000	$23,000
10	Swale Restoration	3610	S.Y.	$25	$91,000
11	Utility Sleeves and Adjustments	1	L.S.	$53,400	$54,000
12	Professional Services	1	L.S.	$323,400	$324,000
13	15% Contingency	1	L.S.	$291,150	$292,000
TOTAL					$2,233,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 4-Sub-Basin Bel Aire Sec 23 Pollutant Loading Analysis

Pollutant	Existing Load (kg/yr)	Reduction (kg/yr)	Proposed Load (kg/yr)
Total Phosphorous	78.16	75.04	3.13
Total Nitrogen	12.35	11.85	0.49

C. Whispering Pines Estates Sec 1

Whispering Pines Estates Sec 1 is located to the east of SW 87th Ave, south of SW 184th Street, and just north of SW 188th Street. The road named Caribbean Boulevard runs through the center of this sub-basin and is part of the C100-B-S-2 Basin. The Whispering Pines Estates Sec 1 sub-basin is outlined and labeled in the following figure, Figure 5.

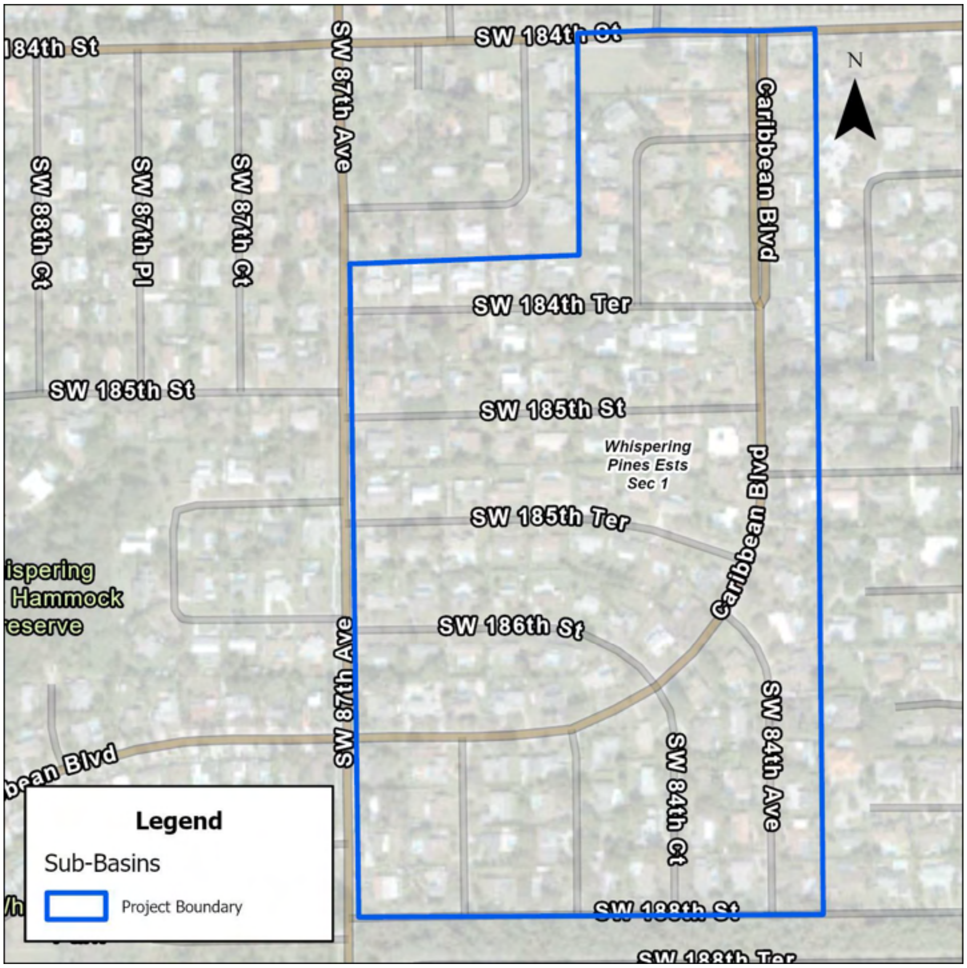


Figure 5-Whispering Pines Estates Sec. 1 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Whispering Pines Estates Sec 1. The sub-basin consists of approximately 60 acres of existing detached single-family development with approximately 11,500 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected exfiltration trench and catch basins with slab covered trench. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 8.5 feet to a high of approximately 11.0 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. "Yes" means the given drainage area within the sub-basin meets the performance goal, and "No" means that the given drainage area within the sub-basin does not meet the performance goal.

Table 5-Sub-Basin Whispering Pines Estates Sec 1 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Whispering Pines Ests Sec 1	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Whispering Pines Estates Sec 1 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

The lack of sufficient drainage structures in the areas where the Town of Cutler Bay has received resident complaints is causing flooding in this sub-basin. Also, the existing exfiltration trench and/or catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, exfiltration trenches, and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6" Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6" rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trench.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trench. In addition, additional exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 6-Sub-Basin Whispering Pines Estates Sec 1 Capital Improvements Estimated Cost

Phase 1:

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$116,000	$116,000
2	Stormwater Pollution Prevention	1	L.S.	$14,500	$15,000
3	Inlet Apron	625	S.Y.	$45	$29,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	3,970	L.F.	$125	$497,000
5	Exfiltration Trench w/ Trench Restoration	2,109	L.F.	$180	$380,000
6	Pollution Retardant Baffle	14	EA.	$600	$9,000
7	Catch Basin	33	EA.	$6,000	$198,000
8	Manhole	32	EA.	$7,000	$224,000
9	Core Drill Existing Structure	17	EA.	$1,000	$17,000
10	Swale Restoration	3807	S.Y.	$25	$96,000
11	Utility Sleeves and Adjustments	1	L.S.	$40,100	$41,000
12	Professional Services	1	L.S.	$324,400	$325,000
13	15% Contingency	1	L.S.	$292,050	$293,000
TOTAL					$2,240,000

Phase 2:

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$107,280	$108,000
2	Stormwater Pollution Prevention	1	L.S.	$13,410	$14,000
3	Inlet Apron	380	S.Y.	$45	$18,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	4,732	L.F.	$125	$592,000
5	Exfiltration Trench w/ Trench Restoration	1,499	L.F.	$180	$270,000
6	Pollution Retardant Baffle	37	EA.	$600	$23,000
7	Catch Basin	25	EA.	$6,000	$150,000
8	Manhole	27	EA.	$7,000	$189,000
9	Core Drill Existing Structure	21	EA.	$1,000	$21,000
10	Swale Restoration	3091	S.Y.	$25	$78,000
11	Utility Sleeves and Adjustments	1	L.S.	$30,450	$31,000
12	Professional Services	1	L.S.	$298,800	$299,000
13	15% Contingency	1	L.S.	$268,950	$269,000
TOTAL					$2,062,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 7-Sub-Basin Whispering Pines Estates Sec 1 Pollutant Loading Analysis

Pollutant	Existing Load (kg/yr)	Reduction (kg/yr)	Proposed Load (kg/yr)
Total Phosphorous	35.06	33.66	1.40
Total Nitrogen	5.54	5.32	0.22

D. Omni Estates

The Omni Estates sub-basin is located just east of Caribbean Boulevard and west of SW 83rd Avenue with the SW 185th Terrace corridor crossing through, running east to west. The sub-basin is part of the C100-B-S-2 Basin and is outlined and labeled in the following figure, Figure 6.

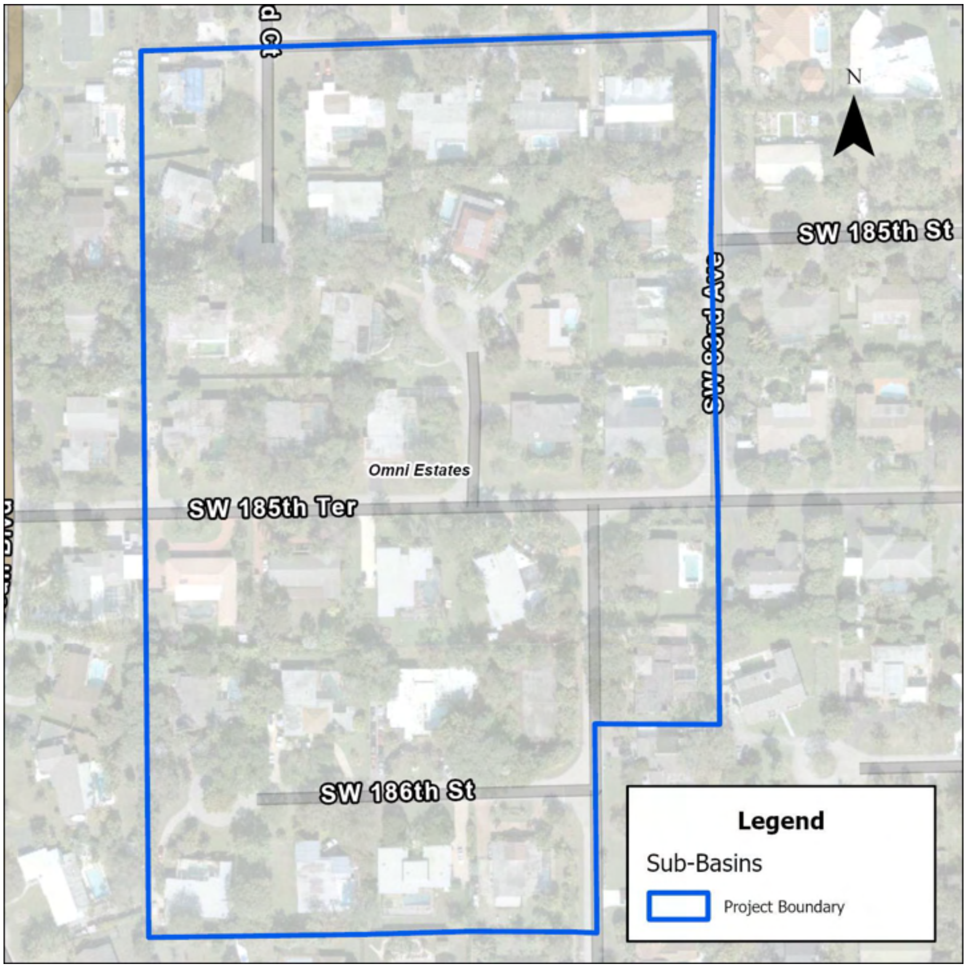


Figure 6-Omni Estates Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Omni Estates. The sub-basin consists of approximately 14 acres of existing detached single-family development with approximately 3,000 linear feet of roadway. The drainage system in this sub-basin is a system consisting of interconnected catch basins. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A.* The sub-basin area was modeled based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 10.5 feet to a high of approximately 11.7 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area

is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. "Yes" means the given drainage area within the sub-basin meets the performance goal, and "No" means that the given drainage area within the sub-basin does not meet the performance goal.

Table 8-Sub-Basin Omni Estates Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Omni Estates	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Omni Estates can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The existing exfiltration trenches and/or catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6" Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6" rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins and pipes.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches. In addition, additional exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 9-Sub-Basin Omni Estates Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$58,960	$59,000
2	Stormwater Pollution Prevention	1	L.S.	$7,370	$8,000
3	Inlet Apron	275	S.Y.	$45	$13,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	860	L.F.	$125	$108,000
5	Exfiltration Trench w/ Trench Restoration	2,000	L.F.	$180	$360,000
6	Pollution Retardant Baffle	18	EA.	$600	$11,000
7	Catch Basin	19	EA.	$6,000	$114,000
8	Manhole	13	EA.	$7,000	$91,000
9	Core Drill Existing Structure	2	EA.	$1,000	$2,000
10	Swale Restoration	1520	S.Y.	$25	$38,000
11	Utility Sleeves and Adjustments	1	L.S.	$28,250	$29,000
12	Professional Services	1	L.S.	$166,600	$167,000
13	15% Contingency	1	L.S.	$150,000	$150,000
TOTAL					$1,150,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 10-Sub-Basin Omni Estates Pollutant Loading Analysis

Pollutant	*Existing Load (kg/yr)*	*Reduction (kg/yr)*	*Proposed Load (kg/yr)*
Total Phosphorous	8.14	7.82	0.33
Total Nitrogen	1.286	1.235	0.051

E. Bel Aire Section 13.1

The Bel Aire Section 13.1 sub-basin is located just east of Tiffany Drive Park and north of Sterling Drive with the SW 94th Avenue corridor running north to south through the sub-basin. This sub-basin is part of the CC100B-N-1 Basin and is outlined in the following figure, Figure 7.

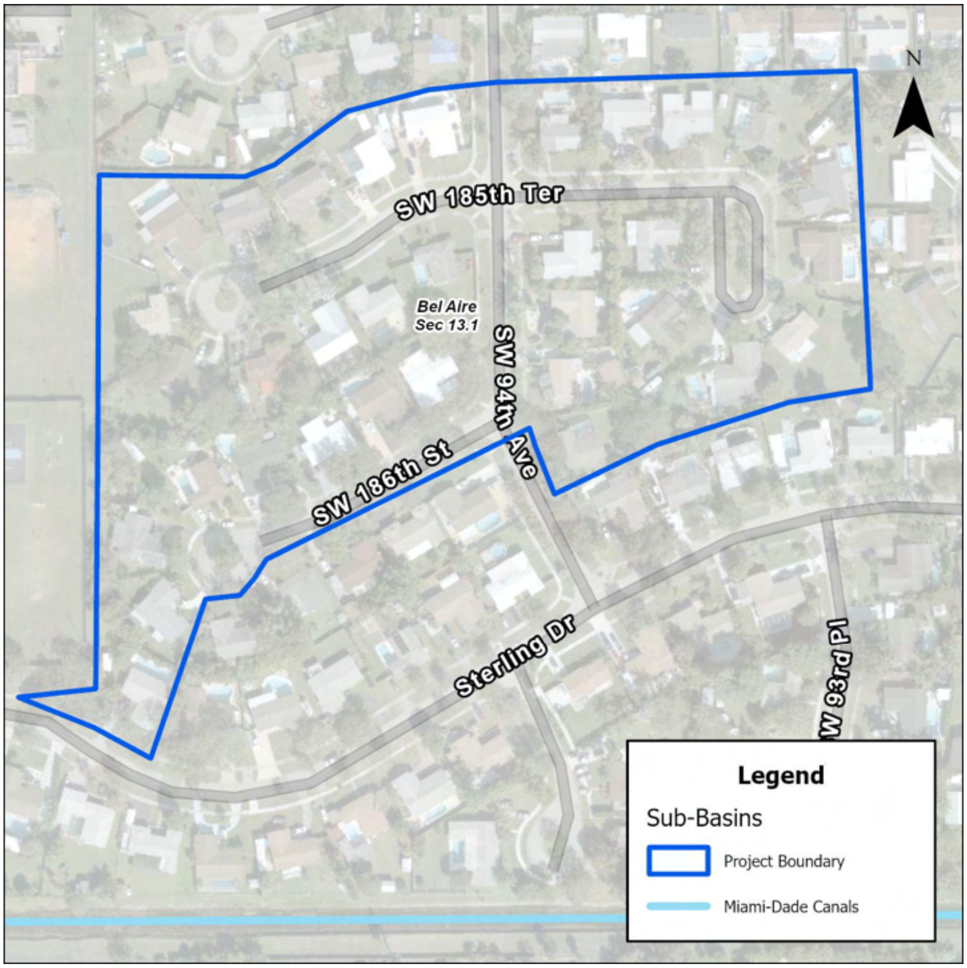


Figure 7-Bel Aire Section 13.1 Location Map

<u>*Existing and Future Conditions*</u>

Appendix A shows existing conditions for Bel Aire Section 13.1. The sub-basin consists of approximately 9.95 acres of existing detached single-family development with approximately 1,800 linear feet of roadway. The drainage system in this sub-basin is a system consisting of interconnected catch basins leading to an outfall into the C-100B canal. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 6.5 feet to a high of approximately 7.7 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 11-Sub-Basin Bel Aire Section 13.1 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Bel Aire Sec 13.1	no	no	yes	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Bel Aire Section 13.1 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The exfiltration trenches and/or outfall have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, French drains, and outfalls is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trenches.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches and weir structures should be installed prior to each outfall to restrict the discharge of pollutants to the lake. In addition, additional exfiltration trench, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 12-Sub-Basin Bel Aire Section 13.1 Capital Improvements Estimated Cost

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$26,400	$27,000
2	Stormwater Pollution Prevention	1	L.S.	$3,300	$4,000
3	Inlet Apron	90	S.Y.	$45	$5,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	825	L.F.	$125	$104,000
5	Exfiltration Trench w/ Trench Restoration	650	L.F.	$180	$117,000
6	Pollution Retardant Baffle	1	EA.	$600	$1,000
7	Catch Basin	6	EA.	$6,000	$36,000
8	Manhole	6	EA.	$7,000	$42,000
9	Core Drill Existing Structure	5	EA.	$1,000	$5,000
10	Swale Restoration	795	S.Y.	$25	$20,000
11	Utility Sleeves and Adjustments	1	L.S.	$9,750	$10,000
12	Professional Services	1	L.S.	$74,200	$75,000
13	15% Contingency	1	L.S.	$66,900	$67,000
TOTAL					$513,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 13-Sub-Basin Bel Aire Section 13.1 Pollutant Loading Analysis

Pollutant	Existing Loading (kg/yr)	Reduction (kg/yr)	Proposed Loading (kg/yr)
Total Phosphorous	5.54	5.32	0.22
Total Nitrogen	0.88	0.84	0.04

F. Old Cutler Omni Pines

Old Cutler Omni Pines is located north of SW 188th street and just west of SW 84th Ave. This sub-basin is part of the C100B-S-2 Basin. The sub-basin is outlined and labeled in the following figure, Figure 8.

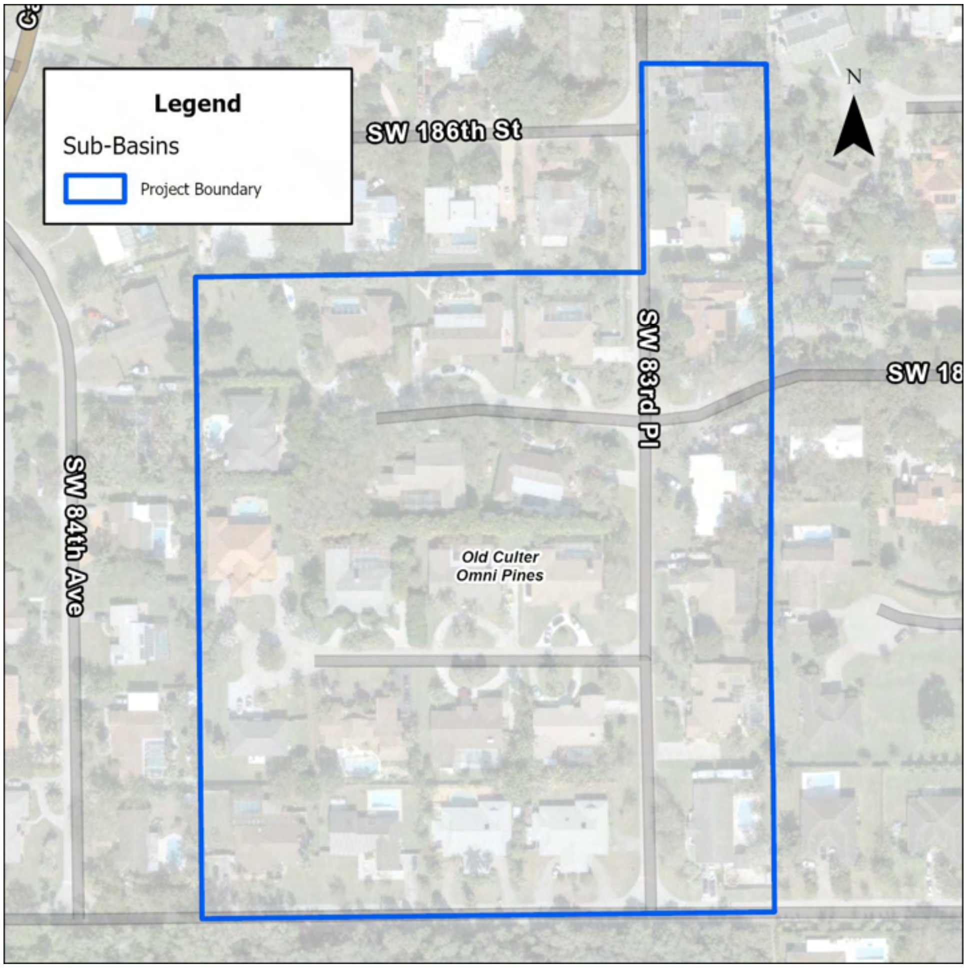


Figure 8-Old Cutler Omni Pines Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Old Cutler Omni Pines. The sub-basin consists of approximately 11 acres of existing detached single-family development with approximately 2,600 linear feet of roadway. The drainage system in this sub-basin is a system consisting of interconnected catch basins with slab covered trench. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 12.6 feet to a high of approximately 14.6 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. "Yes" means the given drainage area within the sub-basin meets the performance goal, and "No" means that the given drainage area within the sub-basin does not meet the performance goal.

Table 14-Sub-Basin Old Cutler Omni Pines Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Old Cutler Omni Pines	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Old Cutler Omni Pines can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The exfiltration trench and/or catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, slab covered trench, and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6" Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6" rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trench.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the French drains and weir structures should be installed prior to each outfall to restrict the discharge of pollutants to the lake. In addition, additional French drain, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 15-Sub-Basin Old Cutler Omni Pines Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$50,480	$51,000
2	Stormwater Pollution Prevention	1	L.S.	$6,310	$7,000
3	Inlet Apron	195	S.Y.	$45	$9,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,240	L.F.	$125	$280,000
5	Exfiltration Trench w/ Trench Restoration	520	L.F.	$180	$94,000
6	Pollution Retardant Baffle	6	EA.	$600	$4,000
7	Curb Inlet Catch Basin	4	EA.	$10,500	$42,000
8	Catch Basin	10	EA.	$6,000	$60,000
9	Manhole	14	EA.	$7,000	$98,000
10	Core Drill Existing Structure	10	EA.	$1,000	$10,000
11	Swale Restoration	1360	S.Y.	$25	$34,000
12	Utility Sleeves and Adjustments	1	L.S.	$12,600	$13,000
13	Professional Services	1	L.S.	$140,400	$141,000
14	15% Contingency	1	L.S.	$126,450	$127,000
TOTAL					$970,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 16-Sub-Basin Old Cutler Omni Pines Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	7.00	6.72	0.28
Total Nitrogen	1.106	1.062	0.044

G. Cutler Ridge Section 7

Cutler Ridge Section 7 is located just north of SW 216th Street and south of SW 212th Street. This sub-basin is part of the C1N-N-5 Basin. The sub-basin is outlined and labeled in the following figure, Figure 9.

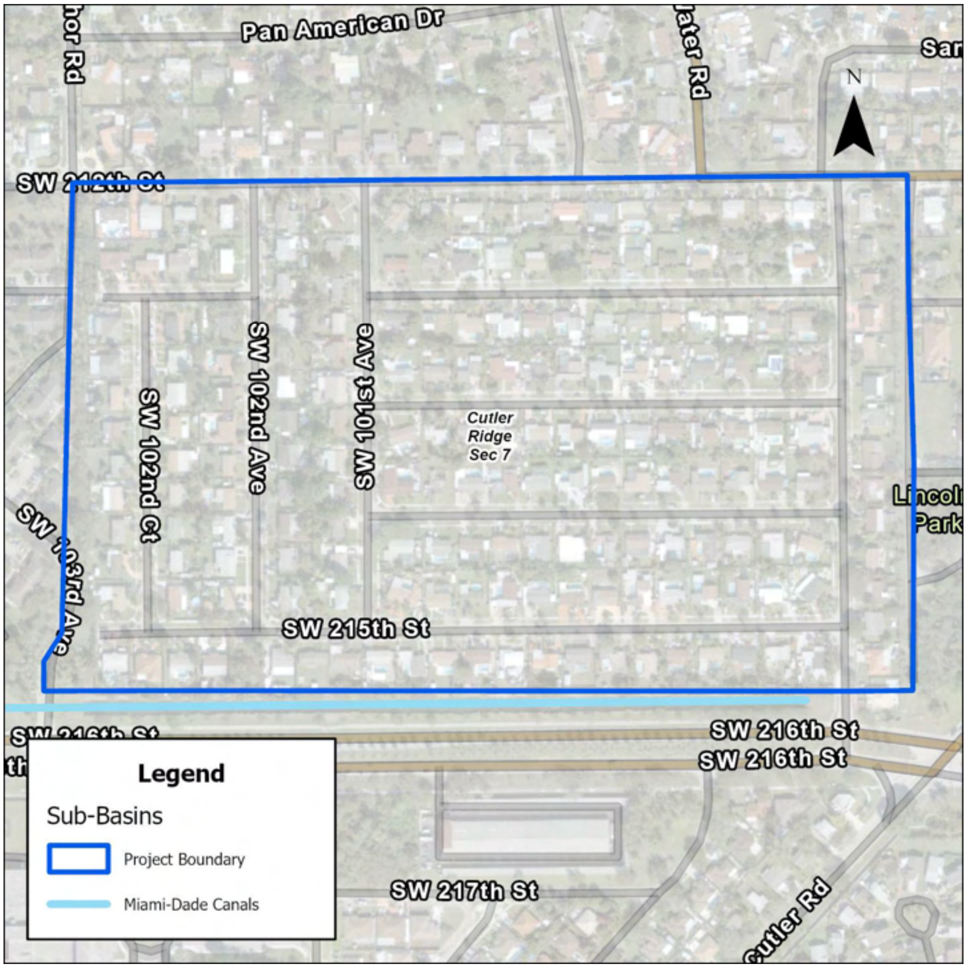


Figure 9-Cutler Ridge Section 7 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Cutler Ridge Section 7. The sub-basin consists of approximately 45 acres of existing detached single-family development with approximately 10,500 linear feet of roadway. The drainage system in this sub-basin consists of few interconnected catch basins with a pipe connection to an outfall into a canal that connects to the Black Creek canal. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled together with the other sub-basins within the Saga Bay area of the Town based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 7.7 feet to a high of approximately 8.9 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is

already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. "Yes" means the given drainage area within the sub-basin meets the performance goal, and "No" means that the given drainage area within the sub-basin does not meet the performance goal.

Table 17-Sub-Basin Cutler Ridge Section 7 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Cutler Ridge Sec 7	no	no	yes	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Cutler Ridge Section 7 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The catch basins and/or outfall have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, catch basins, and outfall is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6" Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6" rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and outfall structure.

Capital Improvements: Install the additional infrastructure depicted in Appendix A. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches and weir structures should be installed prior to each outfall to restrict the discharge of pollutants to the canal. In addition, exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 18-Sub-Basin Cutler Ridge Section 7 Capital Improvements Estimated Cost

Phase 1:

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$80,240	$81,000
2	Stormwater Pollution Prevention	1	L.S.	$10,010	$11,000
3	Driveway/Sidewalk Restoration	23	S.Y.	$45	$2,000
4	Inlet Apron	368	S.Y.	$45	$17,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	3,395	L.F.	$125	$425,000
6	Exfiltration Trench w/ Trench Restoration	1,138	L.F.	$180	$205,000
7	Pollution Retardant Baffle	11	EA.	$600	$7,000
8	Catch Basin	23	EA.	$6,000	$138,000
9	Manhole	24	EA.	$7,000	$168,000
10	Core Drill Existing Structure	2	EA.	$1,000	$2,000
11	Swale Restoration	1543	S.Y.	$25	$39,000
12	Utility Sleeves and Adjustments	1	L.S.	$25,550	$26,000
13	Professional Services	1	L.S.	$224,200	$225,000
14	15% Contingency	1	L.S.	$201,900	$202,000
TOTAL					$1,548,000

Phase 2:

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$80,240	$81,000
2	Stormwater Pollution Prevention	1	L.S.	$7,280	$8,000
3	Driveway/Sidewalk Restoration	23	S.Y.	$45	$2,000
4	Inlet Apron	368	S.Y.	$45	$17,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	4,430	L.F.	$125	$554,000
6	Exfiltration Trench w/ Trench Restoration	2,362	L.F.	$180	$426,000
7	Pollution Retardant Baffle	8	EA.	$600	$5,000
8	Catch Basin	44	EA.	$6,000	$264,000
9	Manhole	28	EA.	$7,000	$196,000
10	Core Drill Existing Structure	1	EA.	$1,000	$1,000
11	Swale Restoration	3287	S.Y.	$25	$83,000
12	Utility Sleeves and Adjustments	1	L.S.	$44,300	$45,000
13	Professional Services	1	L.S.	$336,400	$337,000
14	15% Contingency	1	L.S.	$302,850	$303,000
TOTAL					$2,322,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 19-Sub-Basin Cutler Ridge Section 7 Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	28.77	27.62	1.15
Total Nitrogen	4.545	4.363	0.182

H. Old Cutler Cove

Old Cutler Cove is located to the east of Ranch Road, north of Old Cutler Road, and west of Franjo Road. This sub-basin is part of the C1N-E-3 Basin. The sub-basin is outlined and labeled in the following figure, Figure 10.

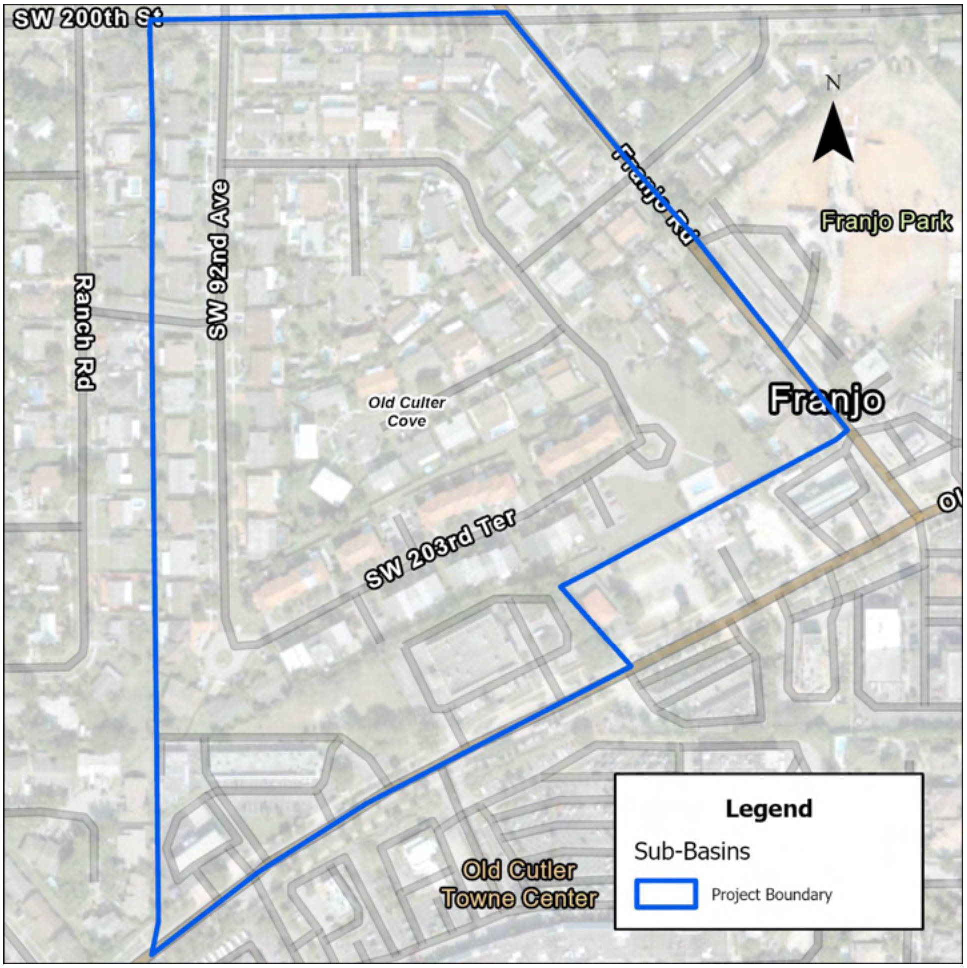


Figure 10-Old Cutler Cove Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Old Cutler Cove. The sub-basin consists of approximately 29 acres of existing detached and attached single-family development with approximately 4,200 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected exfiltration trenches and catch basins with slab covered trenches. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled together with the other sub-basins within the Saga Bay area of the Town based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 6.8 feet to a high of approximately 9.0 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is

already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 20-Sub-Basin Old Cutler Cove Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Old Cutler Cove	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Old Cutler Cove can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The exfiltration trenches, slab covered trenches, and/or catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, exfiltration trenches, and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A.*

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trenches.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the exfiltration trenches. In addition, additional exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 21-Sub-Basin Old Cutler Cove Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$89,760	$90,000
2	Stormwater Pollution Prevention	1	L.S.	$11,220	$12,000
3	Driveway/Sidewalk Restoration	160	S.Y.	$45	$8,000
4	Inlet Apron	480	S.Y.	$45	$22,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,630	L.F.	$125	$329,000
6	Exfiltration Trench w/ Trench Restoration	2,070	L.F.	$180	$373,000
7	Pollution Retardant Baffle	23	EA.	$600	$14,000
8	Catch Basin	13	EA.	$6,000	$78,000
9	Manhole	35	EA.	$7,000	$245,000
10	Core Drill Existing Structure	27	EA.	$1,000	$27,000
11	Swale Restoration	1024	S.Y.	$25	$26,000
12	Utility Sleeves and Adjustments	1	L.S.	$34,800	$35,000
13	Professional Services	1	L.S.	$251,800	$252,000
14	15% Contingency	1	L.S.	$226,650	$227,000
TOTAL					$1,738,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 22-Sub-Basin Old Cutler Cove Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	18.02	17.30	0.72
Total Nitrogen	2.847	2.733	0.114

I. Cantamar

Cantamar is located just south of Old Cutler Road, west of SW92nd Avenue, and north of SW 208th Street. This sub-basin is part of the L31E-W-1 Basin. The sub-basin is outlined and labeled in the following figure, Figure 11.

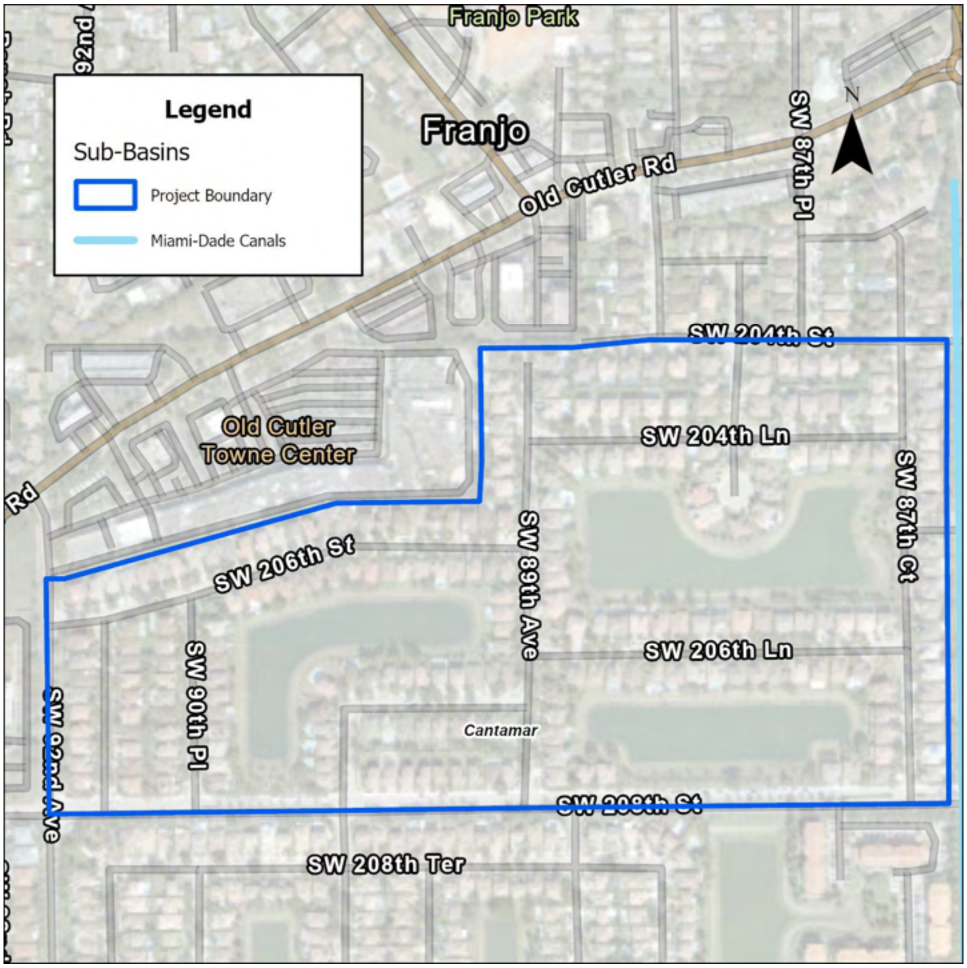


Figure 11-Cantamar Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Cantamar. The sub-basin consists of approximately 47 acres of existing detached single-family development with approximately 9,000 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected catch basins with multiple pipe connections to outfalls into the three Cantamar Lakes. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 6.4 feet to a high of approximately 7.2 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is

already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 23-Sub-Basin Cantamar Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Cantamar	no	no	yes	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Cantamar can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The catch basins, and/or outfalls have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, catch basins, and outfalls is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins and pipes.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches and weir structures should be installed prior to each outfall to restrict the discharge of pollutants to the lakes. In addition, additional exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 24-Sub-Basin Cantamar Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$101,200	$102,000
2	Stormwater Pollution Prevention	1	L.S.	$12,650	$13,000
3	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,580	L.F.	$125	$198,000
4	Exfiltration Trench w/ Trench Restoration	3,850	L.F.	$180	$693,000
5	Pollution Retardant Baffle	71	EA.	$600	$43,000
6	Manhole	44	EA.	$7,000	$308,000
7	Core Drill Existing Structure	5	EA.	$1,000	$5,000
8	Swale Restoration	715	S.Y.	$25	$18,000
9	Utility Sleeves and Adjustments	1	L.S.	$50,050	$51,000
10	Professional Services	1	L.S.	$286,200	$287,000
11	15% Contingency	1	L.S.	$257,700	$258,000
TOTAL					$1,976,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 25-Sub-Basin Cantamar Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	39.08	37.52	1.56
Total Nitrogen	6.17	5.927	0.247

J. Lakes by the Bay Section 10

Lakes by the Bay Section 10 is located just south of SW 212 Street with the SW 212th Terrace corridor running through the basin. This sub-basin is part of the L31E-W-2 Basin. The sub-basin is outlined and labeled in the following figure, Figure 12.

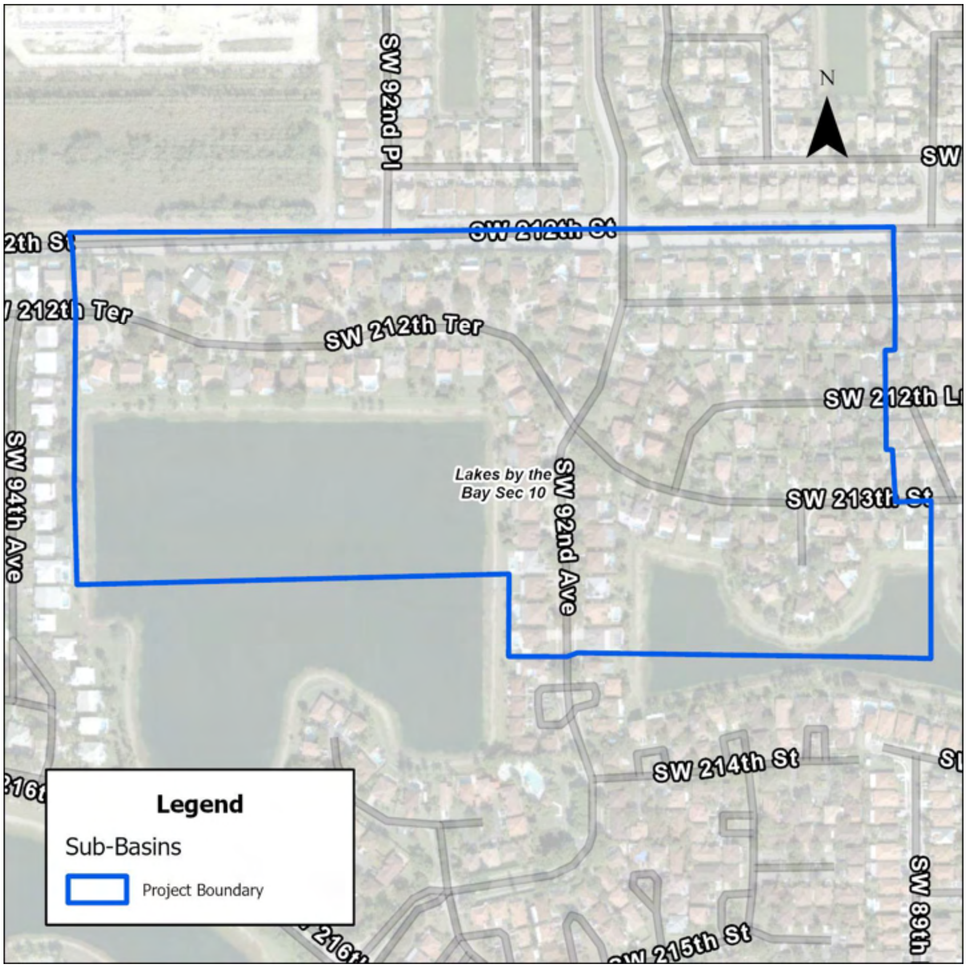


Figure 12-Lakes by the Bay Section 10 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Lakes by the Bay Section 10. The sub-basin consists of approximately 30 acres of existing detached single-family development with approximately 4,700 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected exfiltration trenches and catch basins with slab covered trenches. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled together with the other sub-basins within the Saga Bay area of the Town based on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 6.4 feet to a high of approximately 7.9 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 26-Sub-Basin Lakes by the Bay Section 10 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Lakes by the Bay Sec 10	no	yes	yes	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Lakes by the Bay Section 10 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The exfiltration trenches, slab covered trenches, and catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, exfiltration trenches, slab covered trenches, and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trenches.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches and weir structures should be installed prior to each outfall to restrict the discharge of pollutants for the proposed outfall to the lake. In addition, additional exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 27-Sub-Basin Lakes by the Bay Section 10 Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$101,520	$102,000
2	Stormwater Pollution Prevention	1	L.S.	$12,690	$13,000
3	Driveway/Sidewalk Restoration	50	S.Y.	$45	$3,000
4	Inlet Apron	615	S.Y.	$45	$28,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	3,250	L.F.	$125	$407,000
6	Exfiltration Trench w/ Trench Restoration	1,890	L.F.	$180	$341,000
7	Pollution Retardant Baffle	25	EA.	$600	$15,000
8	Curb Inlet Catch Basin	2	EA.	$10,500	$21,000
9	Catch Basin	15	EA.	$6,000	$90,000
10	Manhole	45	EA.	$7,000	$315,000
11	Core Drill Existing Structure	20	EA.	$1,000	$20,000
12	Swale Restoration	1160	S.Y.	$25	$29,000
13	Utility Sleeves and Adjustments	1	L.S.	$37,300	$38,000
14	Professional Services	1	L.S.	$284,400	$285,000
15	15% Contingency	1	L.S.	$256,050	$257,000
TOTAL					$1,964,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 28-Sub-Basin Lakes by the Bay Section 10 Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	23.72	22.77	0.95
Total Nitrogen	3.747	3.597	0.15

K. Cutler Ridge Section 4

Cutler Ridge Section 4 is located to the east of Gulfstream Road, northwest of Old Cutler Road, and south of SW 200th Street. This sub-basin is part of the C1N-E-3 Basin. The sub-basin is outlined and labeled in the following figure, Figure 13.

Figure 13-Cutler Ridge Section 4 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Cutler Ridge Section 4. The sub-basin consists of approximately 64 acres of existing detached single-family development with approximately 15,500 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected exfiltration trench and catch basins with slab covered trench. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 6.7 feet to a high of approximately 10.0 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area

is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 29-Sub-Basin Cutler Ridge Section 4 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Cutler Ridge Sec 4	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Cutler Ridge Section 4 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The exfiltration trenches, slab covered trenches, and/or catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, exfiltration trenches, and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map series showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins, pipe, and exfiltration trench.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches. In addition, additional exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 30-Sub-Basin Cutler Ridge Section 4 Capital Improvements Estimated Cost

Northeast – Phase 1:

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$119,200	$120,000
2	Stormwater Pollution Prevention	1	L.S.	$14,900	$15,000
3	Driveway/Sidewalk Restoration	39	S.Y.	$45	$2,000
4	Inlet Apron	341	S.Y.	$45	$16,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	4,891	L.F.	$125	$612,000
6	Exfiltration Trench w/ Trench Restoration	2,242	L.F.	$180	$404,000
7	Pollution Retardant Baffle	25	EA.	$600	$15,000
8	Catch Basin	30	EA.	$6,000	$180,000
9	Manhole	29	EA.	$7,000	$203,000
10	Core Drill Existing Structure	5	EA.	$1,000	$5,000
11	Swale Restoration	2085	S.Y.	$25	$53,000
12	Utility Sleeves and Adjustments	1	L.S.	$49,750	$50,000
13	Professional Services	1	L.S.	$335,000	$335,000
14	15% Contingency	1	L.S.	$301,500	$302,000
TOTAL					$2,312,000

Northeast – Phase 2:

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$108,720	$109,000
2	Stormwater Pollution Prevention	1	L.S.	$13,590	$14,000
3	Driveway/Sidewalk Restoration	39	S.Y.	$45	$2,000
4	Inlet Apron	820	S.Y.	$45	$37,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,880	L.F.	$125	$360,000
6	Exfiltration Trench w/ Trench Restoration	2,557	L.F.	$180	$461,000
7	Pollution Retardant Baffle	9	EA.	$600	$6,000
8	Catch Basin	27	EA.	$6,000	$162,000
9	Manhole	39	EA.	$7,000	$273,000
10	Core Drill Existing Structure	16	EA.	$1,000	$16,000
11	Swale Restoration	1677	S.Y.	$25	$42,000
12	Utility Sleeves and Adjustments	1	L.S.	$39,750	$40,000
13	Professional Services	1	L.S.	$304,400	$305,000
14	15% Contingency	1	L.S.	$274,050	$275,000
TOTAL					$2,102,000

Southwest – Phase 1:

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$87,280	$88,000
2	Stormwater Pollution Prevention	1	L.S.	$10,910	$11,000
3	Driveway/Sidewalk Restoration	39	S.Y.	$45	$2,000
4	Inlet Apron	283	S.Y.	$45	$13,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	3,950	L.F.	$125	$494,000
6	Exfiltration Trench w/ Trench Restoration	850	L.F.	$180	$153,000
7	Pollution Retardant Baffle	9	EA.	$600	$6,000
8	Catch Basin	23	EA.	$6,000	$138,000
9	Manhole	28	EA.	$7,000	$196,000
10	Core Drill Existing Structure	6	EA.	$1,000	$6,000
11	Swale Restoration	3317	S.Y.	$25	$83,000
12	Utility Sleeves and Adjustments	1	L.S.	$41,400	$42,000
13	Professional Services	1	L.S.	$246,400	$247,000
14	15% Contingency	1	L.S.	$221,850	$222,000
TOTAL					$1,701,000

Southwest – Phase 2:

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$62,800	$63,000
2	Stormwater Pollution Prevention	1	L.S.	$7,850	$8,000
3	Driveway/Sidewalk Restoration	39	S.Y.	$45	$2,000
4	Inlet Apron	283	S.Y.	$45	$13,000
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,150	L.F.	$125	$269,000
6	Exfiltration Trench w/ Trench Restoration	770	L.F.	$180	$139,000
7	Pollution Retardant Baffle	14	EA.	$600	$9,000
8	Catch Basin	22	EA.	$6,000	$132,000
9	Manhole	19	EA.	$7,000	$133,000
10	Core Drill Existing Structure	6	EA.	$1,000	$6,000
11	Swale Restoration	3255	S.Y.	$25	$82,000
12	Utility Sleeves and Adjustments	1	L.S.	$26,700	$27,000
13	Professional Services	1	L.S.	$176,600	$177,000
14	15% Contingency	1	L.S.	$159,000	$159,000
TOTAL					$1,219,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future, and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 31-Sub-Basin Cutler Ridge Section 4 Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	37.13	35.64	1.49
Total Nitrogen	5.865	5.63	0.235

L. Bel Aire Sec 2.1

Bel Aire Sec 2.1 is located near the Black Creek Canal, just southeast of Dixie Highway and northeast of Florida Turnpike. This roadway project is part of the C1N-C-14 Basin. The project area is outlined in the following figure, Figure 14.

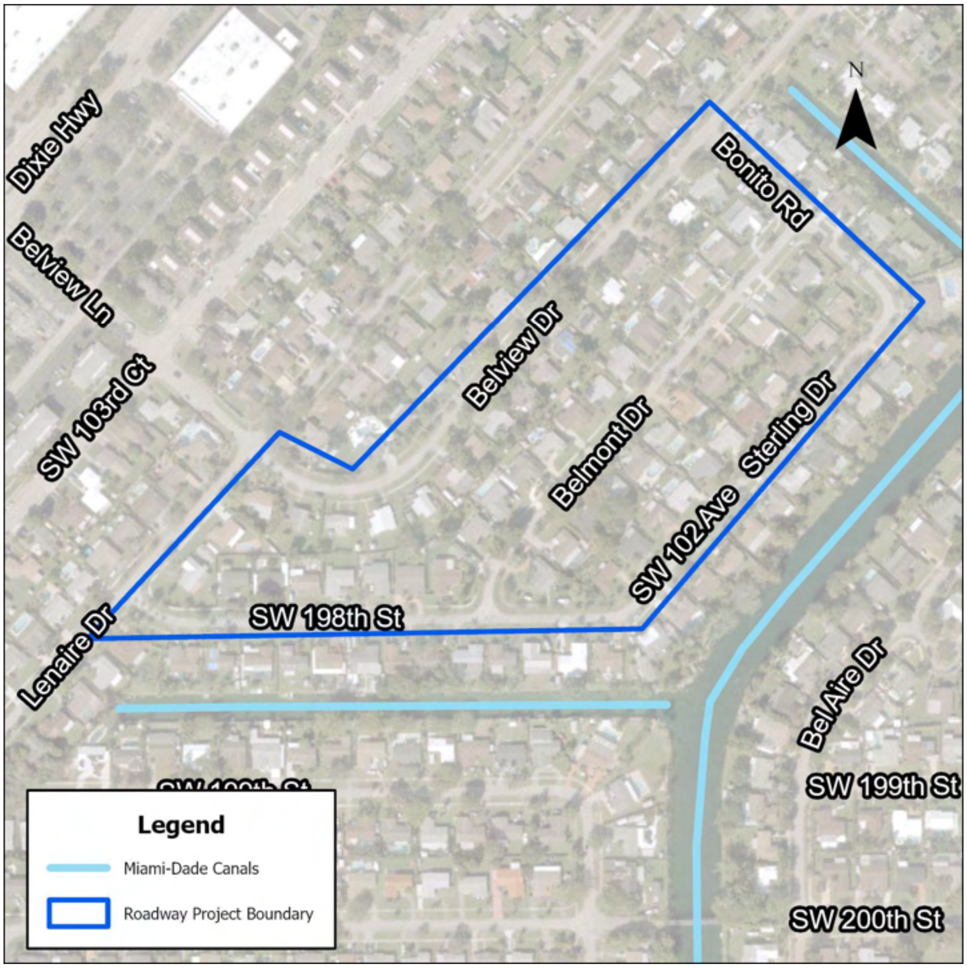


Figure 14-Bel Aire Sec 2.1 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Sterling Drive. The project area consists of approximately 26.34 acres of existing detached single-family development with approximately 5400 linear feet of roadway. The drainage system in this project area is a hybrid system consisting of interconnected catch basins with outfalls leading to the Black Creek Canal. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 6.8 feet to a high of approximately 7.4 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. “Yes” means the given drainage area within the sub-basin meets the performance goal, and “No” means that the given drainage area within the sub-basin does not meet the performance goal.

Table 32-Sub-Basin Tenalla Ocean Farms Add. 3 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Bel Aire Section 2.1	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Tenalla Ocean Farms Add. 3 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The catch basins and pipes have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the catch basins and pipes is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6” Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6” rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins and pipe.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches. In addition, exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 33-Bel Aire Sec 2.1 Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$83,520	$84,000
2	Stormwater Pollution Prevention	1	L.S.	$10,440	$11,000
3	Inlet Apron	285	S.Y.	$45	$13,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	4,240	L.F.	$125	$530,000
5	Exfiltration Trench w/ Trench Restoration	825	L.F.	$180	$149,000
6	Pollution Retardant Baffle	8	EA.	$600	$5,000
7	Catch Basin	25	EA.	$6,000	$150,000
8	Manhole	20	EA.	$7,000	$140,000
9	Swale Restoration	2256	S.Y.	$25	$57,000
10	Utility Sleeves and Adjustments	1	L.S.	$41,000	$41,000
11	Professional Services	1	L.S.	$236,000	$236,000
12	15% Contingency	1	L.S.	$212,400	$213,000
TOTAL					$1,629,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 34-Sub-Basin Bel Aire Section 2.1 Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	0.197	0.189	0.008
Total Nitrogen	1.25	1.20	0.05

M. Cutler Ridge Pines 1

Cutler Ridge Pines 1 is located just northeast of the intersection of Franjo Road and Cutler Ridge Drive. This sub-basin is part of the C100B-S-1 Basin. The roadway project located in this sub-basin is outlined in the following figure, Figure 15.

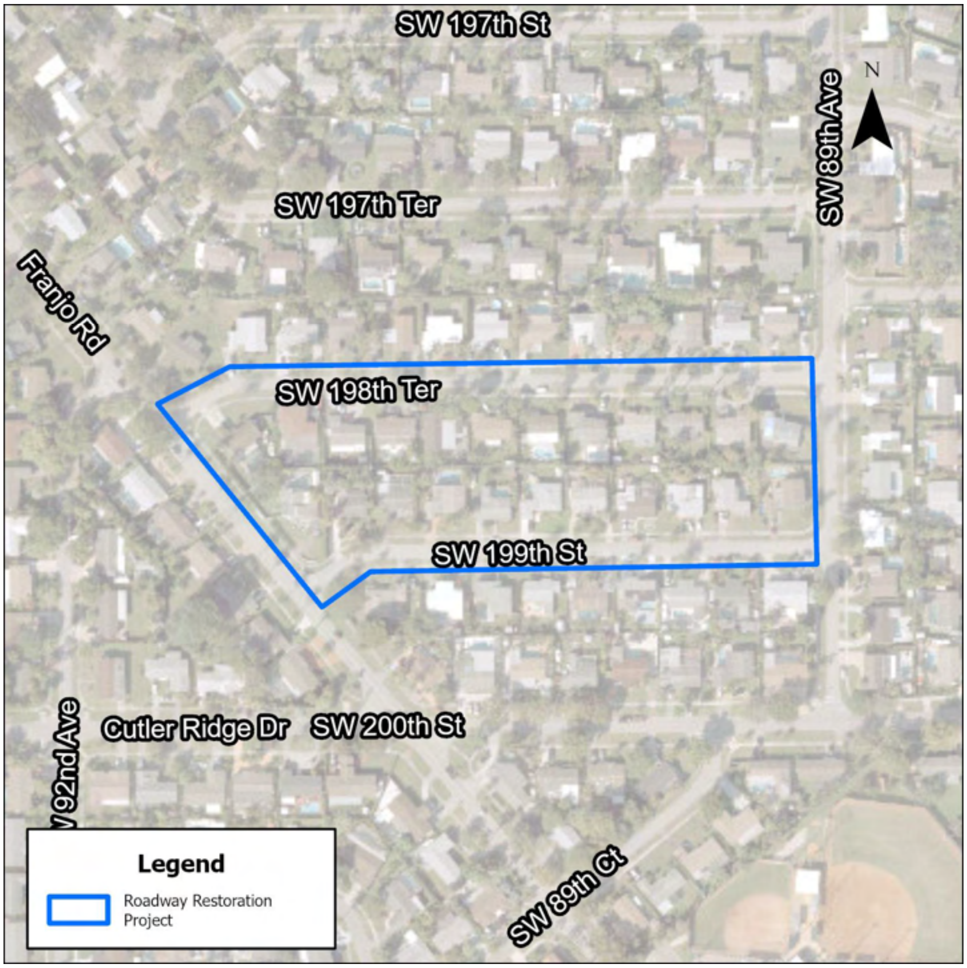


Figure 15-Cutler Ridge Pines 1 Location Map

Existing and Future Conditions

Appendix A shows existing conditions for Cutler Ridge Pines 1. The sub-basin consists of approximately 8.5 acres of existing single family detached homes with approximately 2000 linear feet of roadway. The drainage system in this sub-basin is a hybrid system consisting of interconnected catch basins with pipe connections. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

KHA observed flooding across the roadway and localized ponding in the roadway in multiple locations within this sub-basin. In addition, the Town of Cutler Bay has received complaints regarding drainage conditions within the sub-basin. The location of these observed deficiencies figure can be seen in *Appendix A*. The sub-basin area was modeled on data collected as part of the stormwater master plan process.

Based on available GIS and as-built information, the elevation of existing crowns of the roads range from a low of approximately 8.5 feet to a high of approximately 10.7 feet NGVD. It was assumed that building finish elevations are 1.5 feet above crown of road elevations. Pervious area elevations were assumed to range from 0.5 feet below the minimum roadway elevation in the roadside swales to 0.5 feet below the finish floor elevations. Since the area

is already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Performance Goal Analysis

Based on the detailed hydrologic and hydraulic calculations for this sub-basin, which can be found in *Appendix B*, the majority of the modeled drainage areas within the sub-basin do not currently meet the Town of Cutler Bay performance goals. The table below shows the performance of the basin versus performance goals. "Yes" means the given drainage area within the sub-basin meets the performance goal, and "No" means that the given drainage area within the sub-basin does not meet the performance goal.

Table 35-Sub-Basin Tenalla Ocean Farms Add. 3 Performance Goal Analysis

Sub-Basin Area	*Water Quality*	*10-Year Storm*	*100-Year Storm*	*Observed Flooding*
Cutler Ridge Pines 1	no	no	no	yes

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes Tenalla Ocean Farms Add. 3 can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials.

Maintenance: The lack of sufficient drainage structures is causing flooding in this sub-basin. The catch basins and pipes have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for this sub-basin, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the catch basins and pipes is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Resiliency Alternative Analysis – 6" Ground Water Table Rise

The simulation models, which incorporated the possibility of a 6" rise in the groundwater table, demonstrated that this adjustment did not compromise the feasibility and efficiency of the proposed enhancements in flood control and water staging. Importantly, the simulations showed that the anticipated rise in the water table did not cause the stormwater to exceed the maximum elevations specified for the sub-basin. This outcome reassures that the following suggested improvements to flood control measures and water staging would remain effective, even with the potential increase in groundwater levels. The comprehensive analysis provided valuable insights, reinforcing the confidence that the proposed strategies would successfully address flooding concerns while accounting for the potential rise in the water table.

Recommended Drainage Improvements

A map showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins and pipe.

Capital Improvements: Install the additional infrastructure depicted in Appendix A. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches. In addition, exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

Table 36-Sub-Basin Cutler Ridge Pines 1 Capital Improvements Estimated Cost

Item	*Description*	*Qty.*	*Units*	*Unit Price*	*Sub-total*
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$18,480	$19,000
2	Stormwater Pollution Prevention	1	L.S.	$2,310	$3,000
3	Inlet Apron	50	S.Y.	$45	$3,000
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	95	L.F.	$125	$12,000
5	Exfiltration Trench w/ Trench Restoration	560	L.F.	$180	$101,000
6	Pollution Retardant Baffle	5	EA.	$600	$3,000
7	Catch Basin	12	EA.	$6,000	$72,000
8	Manhole	5	EA.	$7,000	$35,000
9	Core Drill Existing Structure	5	EA.	$1,000	$5,000
10	Utility Sleeves and Adjustments	1	L.S.	$10,400	$11,000
11	Professional Services	1	L.S.	$52,800	$53,000
TOTAL					$365,000

Environmental Impact of Proposed Improvements

A full analysis of the estimated pollutant loading for existing, future and proposed conditions was prepared for the priority sub-basins utilizing a spreadsheet developed for this purpose which can be found in *Appendix C*. The table below shows how the proposed improvements will result in significant reduction in the pollutant load contribution from this sub-basin to the lake for three major pollutants.

Table 37-Sub-Basin Cutler Ridge Pines 1 Pollutant Loading Analysis

Pollutant	*Existing Loading (kg/yr)*	*Reduction (kg/yr)*	*Proposed Loading (kg/yr)*
Total Phosphorous	0.077	0.074	0.003
Total Nitrogen	0.49	0.47	0.02

N. Roadway Drainage Projects

This section of the Stormwater Master Plan update focuses on the planning of twenty-six (26) roadway drainage projects in addition to the previous sections of the twelve (12) modeled sub-basins, all expressly requested by the Town as there has been reported. The following figure shows a map of the project boundaries that encompass the proposed roadway drainage projects, Figure 16.

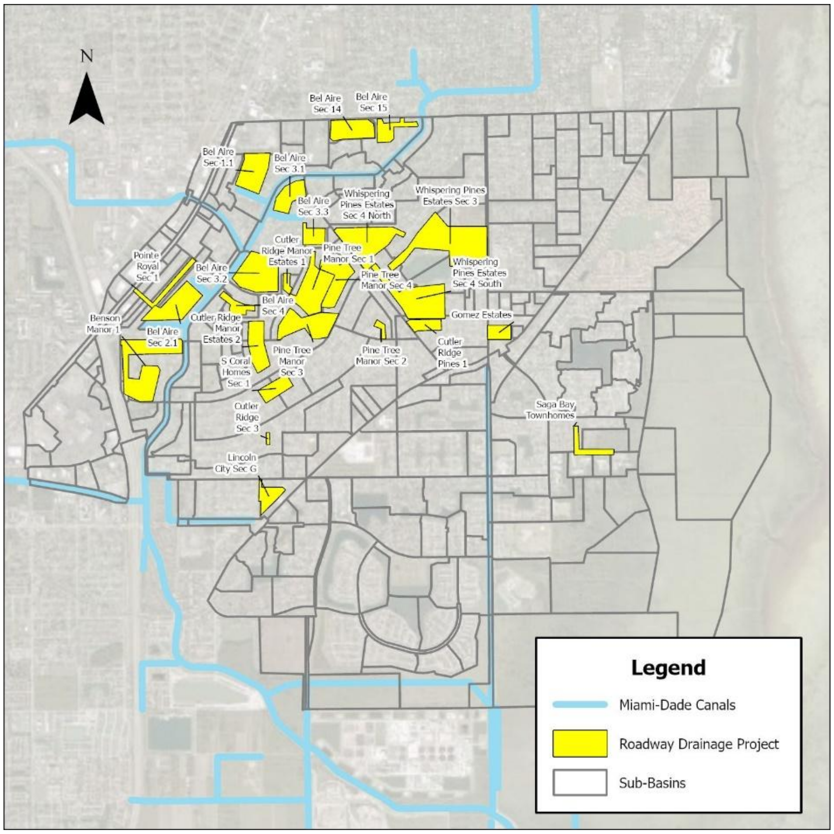


Figure 16-Roadway Drainage Project Location Map

Table 38-Proposed Roadway Drainage Project Table

Roadway Drainage Projects	
Pointe Royal Sec 1	Bel Aire Sec 3.1
Whispering Pines Estates Sec 4 - North	Bel Aire Sec 14
Cutler Ridge Sec 5	S Coral Homes Sec 1
Pine Tree Manor Sec 3	Pine Tree Manor Sec 1
SW 216th Street	Whispering Pines Estates Sec 4 - South
Bel Aire Sec 3.2	Saga Bay Townhomes
Whispering Pines Estates Sec 3	Bel Aire Sec 1.1
Benson Manor 1	Bel Aire Sec 3.3
Pine Tree Manor Sec 4	Bel Aire Sec 15
Lincoln City Sec G	Bel Aire Sec 4
SW 192nd Street	Cutler Ridge Manor Estates 1
SW 187th Terrace	Pine Tree Manor Sec 2
Gomez Estates	Cutler Ridge Sec 3

Existing and Future Conditions

Appendix A shows existing conditions for all the roadway projects listed. The project areas consist of public Right-of-Way consisting of swales and trees in predominantly low-density single family detached home neighborhoods. The drainage systems in these project areas are a system consisting of interconnected catch basins, exfiltration trenches, as well as some contain outfalls. Roadside swales also provide some water quality pre-treatment and storage of roadway run-off.

Since these areas are already developed, it is anticipated that future development conditions will not vary significantly from the existing conditions.

Storm Drain Deficiencies

A townwide storm drain deficiency map exhibit that includes these roadway drainage projects can be found in *Appendix A* which outlines the areas of reported drainage deficiencies by both residents and Town officials. Town officials have reported repeated instances of flooding in each of these proposed projects.

Maintenance: The lack of sufficient drainage structures is causing flooding in these sub-basins. The drainage pipes and/or catch basins have most likely been adversely impacted due to lack of maintenance.

Inadequate Drainage Infrastructure: Based on the hydrologic and hydraulic calculations for these sub-basins, the existing drainage infrastructure does not discharge adequate runoff to meet the desired performance criteria. The capacity of the existing swales, exfiltration trenches, and catch basins is not sufficient to discharge the volume of runoff outlined in the performance criteria during the modeled storm events. Improvements to drainage infrastructure will be needed to address these inadequacies.

Recommended Drainage Improvements

Maps for each of the respective roadway drainage project showing the recommended drainage improvements can be found in *Appendix A*.

Maintenance: Clean and flush all sediment and debris from catch basins and pipe.

Capital Improvements: Install the additional infrastructure depicted in *Appendix A*. Existing catch basins should be modified or reconstructed as required to provide sediment traps (sumps) and pollution retardant baffles to protect the proposed exfiltration trenches. In addition, exfiltration trenches, catch basins, and manholes are proposed to provide water quality and water quantity treatment. Finally, concrete aprons can be installed around each of the catch basins to ensure that roadway runoff flow is not impeded by landscaping around the catch basins.

The following table shows the costs for each of the basins listed above. Detailed CIP tables with quantities per respective project can be found in *Appendix A*.

Table 39-Roadway Drainage Project Cost Summary

No.	Sub-Basin Roadway Project Name	Cost
1	Gomez Estates	$615,000
2	Bel Aire Sec 1.1	$1,613,000
3	Bel Aire Sec 3.1	$970,000
4	Bel Aire Sec 3.2	$1,022,000
5	Bel Aire Sec 3.3	$749,000
6	Bel Aire Sec 14	$839,000
7	Bel Aire Sec 15	$897,000
8	Whispering Pines Estates Sec 4 Phase 1	$1,470,000
9	Whispering Pines Estates Sec 4 Phase 2	$1,268,000
10	Whispering Pines Estates Sec 3 Phase 1	$1,776,000
11	Whispering Pines Estates Sec 3 Phase 2	$1,914,000
12	Bel Aire Sec 4	$784,000
13	Cutler Ridge Sec 5	$1,345,000
14	S Coral Homes Sec 1	$888,000
15	Pointe Royal Sec 1	$1,125,000
16	Benson Manor 1 Phase 1	$1,792,000
17	Benson Manor 1 Phase 2	$1,386,000
18	Pine Tree Manor Sec 3	$1,791,000
19	Pine Tree Manor Sec 1	$2,353,000
20	Pine Tree Manor Sec 4	$1,481,000
21	Cutler Ridge Manor Estates 1	$296,000
22	Whispering Pines Estates Sec 4 South	$2,152,000
23	Pine Tree Manor Sec 2	$320,000
24	Saga Bay Townhomes	$684,000
25	Cutler Ridge Sec 3	$219,000
26	Lincoln City Sec G	$987,000

VI. CAPITAL IMPROVEMENT PROGRAM

A. Background

Original Capital Improvement Program - 2008

Kimley-Horn had prepared CIP budgets for the recommended enhancements within each priority sub-basin, aiding the Town in prioritizing and establishing budgets necessary to plan, construct, operate, and maintain the Town's stormwater infrastructure. The CIP served as the foundation for an expenditure budget designated for the Town's Stormwater Utility.

The proposed CIP had its basis in the conclusions derived from the evaluation of existing drainage conditions across the Town and the comprehensive analysis of the original 17 drainage sub-basins that had been identified as top-priority areas in the previous 2008 Stormwater Master Plan. Two key aspects were outlined within the CIP: the operational and maintenance element, as well as the capital improvements segment.

The operational and maintenance facet drew from a general appraisal of the prevailing drainage conditions within the Town's boundaries. This report pinpointed the recommended operational and maintenance practices, while the initial budget estimates were formulated around the annual implementation of these procedures.

On the other hand, the capital improvement component was founded on the outcomes of the analysis carried out on the original 17 priority sub-basins. Each sub-basin had been associated with suggested enhancements aimed at achieving specified performance objectives, and these enhancements had been quantified based on the available data. Preliminary cost estimates (preliminary budgets) had been prepared for each sub-basin. Guided by these preliminary budgets, the enhancements for priority sub-basins were categorized and sequenced to offer alternative five-year and ten-year capital improvement programs. The subsequent is a comprehensive breakdown and summary of each component found within the CIP.

However, it's important to note that this update to the original Stormwater Master Plan's CIP was only formulated for a ten-year capital improvement program.

Updated Capital Improvement Program - 2024

Kimley-Horn prepared the updated CIP budgets for the recommended improvements in each of the priority sub-basins and roadway projects to assist the Town in prioritizing and setting budgets required to plan, construct, operate, and maintain the Town's stormwater infrastructure. The CIP is intended to provide the basis for an expenditure budget for the Town's Stormwater Utility.

The proposed CIP is based on the findings of the assessment of existing drainage conditions within the Town and the detailed analysis of the 12 (twelve) drainage sub-basins which were identified as priority basins along with the 26 (twenty-six) roadway section projects. Two components of the CIP were identified: the operation and maintenance component and the capital improvements component.

The operation and maintenance component are based on the general assessment of the existing drainage conditions and projected additions and/or improvements within the Town limits. The recommended operation and maintenance procedures are identified in this report, and the preliminary budget estimates are based on the implementation of these procedures on an annual basis.

The capital improvement component is based on the findings of the analysis of the 12 (twelve) priority sub-basins and the 26 (twenty-six) roadway section projects. Recommended improvements to achieve the stated performance goals were identified for each sub-basin and were quantified based on the available data. Preliminary opinions of probable costs (preliminary budgets) were prepared for each sub-basin. Based on the preliminary budgets, the priority sub-basin improvements were grouped and phased to provide a thirty-year capital improvement program. The following is a detailed explanation and summary of each component of the CIP.

B. Operation and Maintenance Plan

The implementation and continued updates to the operation and maintenance plan will allow the Town to maintain the integrity of its stormwater management system and ensure that it continues to operate at design capacity. An operation and maintenance plan has aided the Town in complying with the National Pollutant Discharge Elimination System (NPDES) as required by state and federal regulations. The Town has adopted Resolution 07-19 to become a co-permittee under the Municipal Separate Storm Sewer Systems (MS4) permit for Miami-Dade County. The majority of the MS4 permit requirements are directly related to operation and maintenance of the stormwater infrastructure with particular emphasis on water quality pre-treatment. Periodic observations, routine maintenance, and general improvements are also required. This section of the Stormwater Master Plan is not intended to serve as a complete operation and maintenance manual, but to provide enough information to allocate sufficient budget to stormwater infrastructure operations and maintenance costs.

Inspecting and Maintaining Swales

Grassed swales play an important role in the storage, disposal, and water quality treatment of runoff from many of the roadways located in the Town of Cutler Bay. Consistent mowing of such features promotes stormwater retention and efficient percolation. The Town is responsible for maintaining swales and medians within public roadways, individual business owners and residents are mandated through local codes to maintain their facilities. It is recommended that the Town inspect all swales located within the Town twice per year for signs that they are not performing as designed. If inspections yield unsatisfactory results, maintenance activities such as sediment removal or restoring sod in the swales may be required.

Inspecting and Maintaining Exfiltration Trench and Pipe Systems

Exfiltration trench (French drain) is important in the storage, disposal, and water quality treatment of stormwater runoff. Maintenance of exfiltration trench includes removing the sediment, oil, and grease that accumulate in the bottom of the catch basins attached to exfiltration trench and pipes to reduce the amount of these pollutants entering the pipe system and adversely impacting the exfiltration or outfall rate. Even with removal of sediment from the catch basins, over time sediment will build up in drainage pipes. Therefore, the pipes should be cleaned and flushed on a regular basis. Pipe flushing is typically performed in conjunction with catch basin cleaning and can be contracted out on an as-needed basis. During this activity, a high-pressure water hose is inserted into the pipe network. This process flushes debris into the catch basin where it can then be removed. Under the MS4 permit, the Town is required to inspect all exfiltration trench operated by the Town twice per year. If inspections yield unsatisfactory results, maintenance activities such as sediment removal from catch basins and pipe flushing will be required. It is anticipated that sediment will need to be removed from the Town catch basins once every two years and drainage pipes will need to be cleaned and flushed once every five years.

Updating Maps and Inventories of Stormwater Management Infrastructure

As part of this Stormwater Master Plan, a GIS map of the drainage infrastructure located within the Town was created using information obtained from Miami-Dade County. It is recommended that this map be updated regularly to reflect the installation of new drainage infrastructure. An updated map of drainage outfalls is required to be submitted annually under the MS4 permit.

Implementing Roadway Litter Control and Street Sweeping Programs

Street sweeping and litter control programs are recommended to reduce the amount of debris entering the stormwater management system. This activity cleans intake structures, reduces debris deposition within the pipe network, and enhances the aesthetics of the Town. Generally, street sweeping is a positive maintenance activity that provides measurable benefits. Because pollutants such as hydrocarbons and metals adhere to dirt particles, removing this dirt from the street system will remove these pollutants before they are allowed to discharge into the Town’s drainage system.

Complying with Public Outreach and Education Requirements

Public outreach activities and education required under the MS4 permit include:

- Providing education related to the application of pesticides, fertilizers, and herbicides.
- Publicizing the Miami-Dade County pollution complaint hotline
- Instructing the public on the proper disposal of used motor oil, leftover hazardous household products, and lead acid batteries
- Conducting erosion control training for construction site inspectors and contractors

The Town is currently a member of the National Flood Insurance Program Community Rating System (CRS) and currently receives credit for public outreach programs dedicated to informing the public about the risks of flooding and steps people can take to protect themselves and their property. Additionally, property owners within the Town receive a discount of 35% on flood insurance due to the remarkable CRS rating of Class 3. The more credit the Town receives in the CRS through the implementation of updates to their existing systems through these updated Stormwater Master Plans, the higher the flood insurance discount for the residents as well as the Town.

Conducting Inspections and Monitoring Activities

Under the MS4 permit, the Town is required to conduct inspections of the following activities:

- Evaluating, monitoring, and inspecting waste treatment, storage, and disposal facilities
- Implementing an inspection program to detect illicit discharges and illegal connections to the stormwater management system.
- Maintaining a citizen complaint log documenting illicit discharge
- Identifying and maintaining a GIS database of areas served by septic systems and advising the local health department of potential violations if constituents common to wastewater contamination due to malfunctioning septic tank systems are discovered.
- Advising the appropriate utility owner of potential violation if constituents common to wastewater contamination are found in areas served by sanitary sewer systems.
- Inspecting industrial and high-risk facilities for illegal discharges into the MS4
- Requiring new construction sites to obtain NPDES permits from Department of Environmental Protection (DEP) prior to land clearing.
- Monitoring water quality in the canals

Some of the tasks listed under this item can be performed by DERM. However, it will be the Town's responsibility to show that inspections and appropriate monitoring have been conducted. It is recommended that the Town continues to coordinate in becoming a co-permittee on the Miami-Dade County MS4 permit and enter into an agreement with Miami-Dade County to provide water quality monitoring in the canals. The County charges municipalities an annual fee for this service based on the number of outfalls located within the municipal boundaries. For the Town of Cutler Bay which has 211 outfalls, the estimated annual cost of $17,454.

Minor Repairs and Improvements

The final task conducted to maintain the stormwater collection system is routine improvements and repairs. This task covers a significant spectrum of activities ranging from the repair of collapsed pipes and manholes to the replacement of catch basin grates. Maintenance activities are performed in response to an immediate problem using the best methods available. These tasks often cannot be foreseen or scheduled.

Update to Operation and Maintenance Costs

Table 42 includes the budget for the annual cost associated with operation and maintenance of the stormwater infrastructure within the Town of Cutler Bay. As the maintenance activities continue, we recommend utilizing the database of GIS information to track and schedule the maintenance and inspection activities. This process will identify the date and time that a system was last maintained and will also provide a tool to identify the next scheduled maintenance.

The operation and maintenance budget considers personnel to oversee the operation and maintenance of the stormwater system. The Town of Cutler Bay published Resolution No. 22-71 that includes the adopted budget for the fiscal year of 2022-2023 which includes the adopted budget for operating expenses under the table "Stormwater Utility Fund". This is where the figure utilized for the operation and maintenance cost line utilized in the updated CIP for the initial fiscal year of 2022-2023. To account for the increase in operation and maintenance costs each year the base value taken from Resolution No. 22-71 was scaled up by 5% per year.

Because the Town adopted Resolution No. 07-18 assuming responsibility for the drainage system, a revenue source was identified to offset the costs associated with its operation and maintenance. The implementation of a stormwater utility will provide the Town with this revenue source. Procedures for implementing a Stormwater Utility within the Town of Cutler Bay have been outlined in the Stormwater Utility Management Report.

C. Drainage Capital Projects

The Capital Improvement Program is based on the results of the analysis of the 12 priority sub-basins and twenty-six (26) roadway projects. Recommended improvements to achieve the stated performance goals were identified for each basin. The recommended improvements were quantified based on the available data and preliminary opinions of probable costs (preliminary budgets) were prepared for each basin. Prior to each individual project being implemented, professional services such as surveying, engineering, and permitting will be required and are included within the budgets. The budget figures were developed by reviewing recent costs from similar projects. The CIP budgets are based on 2024 dollars.

The following assumptions have been made in the formulation of the budgets for the drainage improvements:

- The budgets include the recommended improvements identified in the analysis of the twelve (12) priority sub-basins and twenty-six (26) roadway projects.
- Projects were separated by sub-basin or section of identified roadway.
- The budgets include restoration of the roadway impacted by the proposed trenching, but do not include any additional roadway resurfacing. It is assumed that roadway resurfacing will be completed concurrently with the proposed drainage projects, but that the Town will have a separate roadway resurfacing budget.
- The budgets do not include any costs of obtaining construction easements. A budget of $30,000 is included for obtaining easements when a new outfall is proposed although no new outfall has been proposed in this update of the Stormwater Master Plan.
- The budgets include a 10 % allowance for mobilization and maintenance of traffic.
- The budgets include a 15% contingency for each project. A relatively high contingency value is used, due to the age and level of coverage of the survey and geotechnical data available to prepare the conceptual design for the projects.
- The budgets include a minimum of $60,000 or 20% of construction cost, listed as professional services, allowance for surveying, engineering, permitting, and construction phase assistance (site observations during construction).
- The budgets include swale restoration costs to replace sod only. No budget for additional landscape improvements or restoration is included.

The budgetary numbers are an opinion of probable construction costs in the current marketplace. Unit pricing for similar projects constructed in Miami-Dade County was used as the basis for the construction budget. Based on the preliminary budgets, the proposed priority sub-basin and roadway drainage improvements were grouped and phased to provide the ten-year capital improvement program.

Table 40 and Table 41 shows the priority ranking for the capital improvement projects. Each project was given a score between 1 and 5 in the categories of Observed Flooding, and Complaints. Scores were calculated for the categories of Hydraulic Analysis, Roadway Conditions, and Traffic Volumes. The basis for the calculated category scores is detailed below. The scores were then totaled, and the projects were ranked from highest to lowest.

Table 40-Sub-Basin Prioritization Matrix

Priority Ranking	Sub-Basin Name	Hydraulic Analysis	Water Quality Treatment	Observed Flooding	Complaints	Traffic Volumes	Total Score
1	Old Cutler Omni Pines	5	5	5	3	1	19
2	Bel Aire Sec 23	5	5	5	3	1	19
3	Whispering Pines Est Sec 1	5	5	3	2	3	18
4	Old Cutler Cove	5	5	2	5	1	18
5	Cutler Ridge Sec 4	5	5	3	4	1	18
6	Omni Estates	5	5	3	3	1	17
7	Cutler Ridge Pines	3	5	3	3	3	17
8	Cantamar	3	5	2	5	1	16
9	Cutler Ridge Sec 7	2	5	5	2	1	15
10	Bel Aire Sec 2.1	5	5	2	2	1	15
11	Lake by the Bay Sec 10	1	5	3	5	1	15
12	Bel Aire Sec 13.1	4	5	3	2	1	15

Table 41-Sub-Basin Roadway Project Prioritization Matrix

Priority Ranking	Sub-Basin Name	Roadway Conditions	Traffic Volumes	Total Score
13	Pointe Royal Sec 1	5	5	10
14	Whispering Pines Estates Sec 4 - North	5	3	8
15	Cutler Ridge Sec 5	3	5	8
16	Pine Tree Manor Sec 3	3	5	8
17	SW 216th Street	1	5	6
18	Bel Aire Sec 3.2	1	5	6
19	Whispering Pines Estates Sec 3	3	3	6
20	Benson Manor 1	3	3	6
21	Pine Tree Manor Sec 4	3	3	6
22	Lincoln City Sec G	5	1	6
23	SW 192nd Street	3	1	4
24	SW 187th Terrace	3	1	4
25	Gomez Estates	3	1	4
26	Bel Aire Sec 3.1	1	3	4
27	Bel Aire Sec 14	1	3	4
28	S Coral Homes Sec 1	1	3	4
29	Pine Tree Manor Sec 1	1	3	4
30	Whispering Pines Estates Sec 4 - South	1	3	4
31	Saga Bay Townhomes	3	1	4
32	Bel Aire Sec 1.1	1	1	2
33	Bel Aire Sec 3.3	1	1	2
34	Bel Aire Sec 15	1	1	2
35	Bel Aire Sec 4	1	1	2
36	Cutler Ridge Manor Estates 1	1	1	2
37	Pine Tree Manor Sec 2	1	1	2
38	Cutler Ridge Sec 3	1	1	2

Hydrologic and Hydraulic Analysis

1 = All water quantity performance goals met in future condition analysis.

2 = Future condition water quantity performance goals failed in less than 1/3 of drainage areas.

3 = Future condition water quantity performance goals failed in 1/3 to 1/2 of drainage areas.

4 = Future condition water quantity performance goals failed in 1/2 to all but one drainage area.

5 = Future condition water quantity performance goals failed in all of the drainage areas.

Water Quality Treatment

1 = All water quality performance goals met in future condition analysis.

2 = Future condition water quality performance goals failed in less than 1/3 of drainage areas.

3 = Future condition water quality performance goals failed in 1/3 to 1/2 of drainage areas.

4 = Future condition water quality performance goals failed in 1/2 to all but one drainage area.

5 = Future condition water quality performance goals failed in all of the drainage areas.

Complaints Scoring

1 = No complaints were reported by the Town of Cutler Bay.

2 = One complaint was reported by the Town of Cutler Bay.

3 = Two complaints were reported by the Town of Cutler Bay.

4 = Three complaints were reported by the Town of Cutler Bay.

5 = More than three complaints were reported by the Town of Cutler Bay.

Observed Flooding Scoring

1 = KHA did not observe flooding across the roadway in the sub-basin.

2 = KHA observed flooding across the roadway at one location in the sub-basin.

3 = KHA observed flooding across the roadway at two locations in the sub-basin.

4 = KHA observed flooding across the roadway at three locations in the sub-basin.

5 = KHA observed flooding across the roadway at more than three locations in the sub-basin.

Traffic Volumes

The ratings for this category are based on percentage of roadway length classified as local, collector, or arterial roadways according to the Town's Growth Management Plan.

1 = The majority of roadways in sub-basin are local roadways.

3 = The majority of roadways in sub-basin are collector roadways.

5 = The majority of roadways in sub-basin are arterial roadways.

Roadway Conditions

The ratings for this category are based on percentage of roadway length classified as poor, fair, or good roadways according to visual inspection.

1 = The majority of roadways in sub-basin are good condition roadways.

3 = The majority of roadways in sub-basin are fair condition roadways.

5 = The majority of roadways in sub-basin are poor condition roadways.

The updated Thirty-Year CIP summary is contained in Table 42. Please note that although the Old Cutler Omni Pines basin and the Bel Aire Sec 23 basin have the highest priority ranking scores due to a high number of citizen and town complaints and poor performance of hydraulic analyses, they are projected to be implemented in the 1st and 2nd years of the CIP due to the score they received from the prioritization matrix analysis. The tables at the end of each of the individual sub-basin sections detail the budgets for the recommended drainage improvements for each sub-basin. Table 42 also includes the updated operations and maintenance budget considering a 5% increase per year. The projects are recommended to be coordinated with any roadway CIP project scheduling to ensure that the drainage improvements are complete before or at the same time as the roadway improvements in the same area. This may require some adjustment to the roadway CIP schedule. Additionally, the cost estimates for these projects were carried out relative to the 2024 markets and dollar value. At the time of each project undertaking, these values should be adjusted to reflect and account for future inflation.

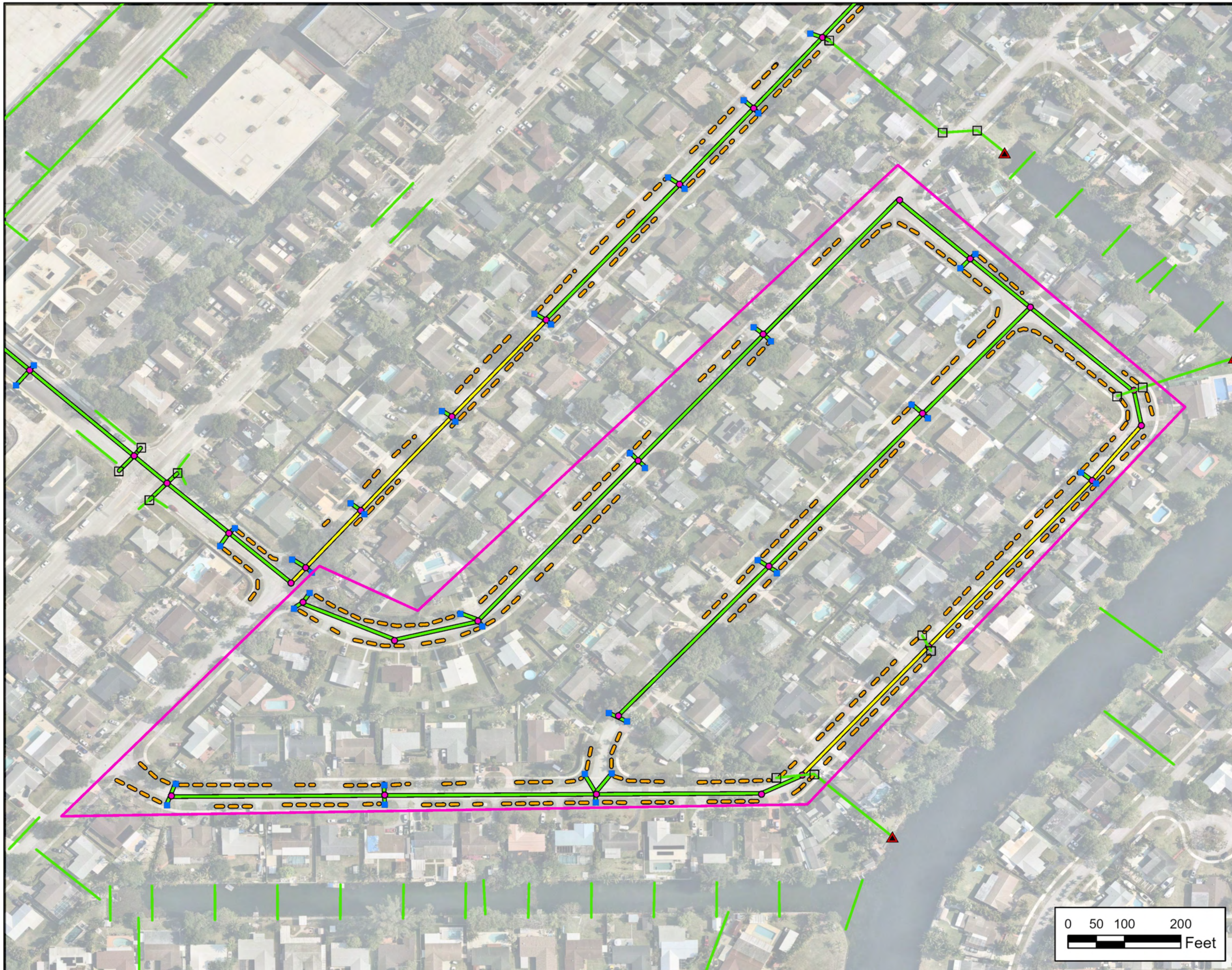
Table 42-Thirty Year Storm Water Master Plan CIP

Proposed Project	Priority Ranking	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32	FY 32-33	TOTALS
Old Cutler Omni Pines	1	$970,000										**$970,000**
Bel Aire Sec 23 Southwest	2	$2,233,000										**$2,233,000**
Bel Aire Sec 23 Northeast	2		$1,192,000									**$1,192,000**
Whispering Pines Est Sec 1 South	3		$2,240,000									**$2,240,000**
Whispering Pines Est Sec 1 North	3			$2,062,000								**$2,062,000**
Old Cutler Cove	4				$1,738,000							**$1,738,000**
Cutler Ridge Sec 4 Southwest Phase 1	5					$1,701,000						**$1,701,000**
Cutler Ridge Sec 4 Southwest Phase 2	5					$1,219,000						**$1,219,000**
Cutler Ridge Sec 4 Northeast Phase 1	5						$2,312,000					**$2,312,000**
Cutler Ridge Sec 4 Northeast Phase 2	5						$2,102,000					**$2,102,000**
Omni Estates	6							$1,150,000				**$1,150,000**
Cutler Ridge Pines	7							$365,000				**$365,000**
Cantamar	8								$1,976,000			**$1,976,000**
Cutler Ridge Sec 7 Phase 1	9									$1,548,000		**$1,548,000**
Cutler Ridge Sec 7 Phase 2	9									$2,322,000		**$2,322,000**
Bel Aire Sec 2.1	10										$1,629,000	**$1,629,000**
Operation & Maintenance		$2,116,800	$2,222,640	$2,333,772	$2,450,461	$2,572,984	$2,701,633	$2,836,714	$2,978,550	$3,127,478	$3,283,852	**$26,624,883**
TOTALS		**$5,319,800**	**$5,654,640**	**$4,395,772**	**$4,188,461**	**$5,492,984**	**$7,115,633**	**$4,351,714**	**$4,954,550**	**$6,997,478**	**$4,912,852**	

Proposed Project	Priority Ranking	FY 33-34	FY 34-35	FY 35-36	FY 36-37	FY 37-38	FY 38-39	FY 39-40	FY 40-41	FY 41-42	FY 42-43	TOTALS
Lake by the Bay Sec 10	11	$1,964,000										$1,964,000
Bel Aire Sec 13.1	12	$513,000										$513,000
Pointe Royal Sec 1	13		$1,125,000									$1,125,000
Whispering Pines Estates Sec 4 North - Phase 1	14		$1,470,000									$1,470,000
Whispering Pines Estates Sec 4 North - Phase 2	14			$1,268,000								$1,268,000
Cutler Ridge Sec 5	15			$1,345,000								$1,345,000
Pine Tree Manor Sec 3	16				$1,791,000							$1,791,000
SW 216th Street	17				$673,000							$673,000
Bel Aire Sec 3.2	18				$1,022,000							$1,022,000
Whispering Pines Estates Sec 3	19					$2,152,000						$2,152,000
Benson Manor 1 Phase 1	20						$1,792,000					$1,792,000
Benson Manor 1 Phase 2	20						$1,386,000					$1,386,000
Pine Tree Manor Sec 4	21							$1,481,000				$1,481,000
SW 192nd Street	22							$435,000				$435,000
Lincoln City Sec G	23								$987,000			$987,000
SW 187th Terrace	24								$861,000			$861,000
Gomez Estates	25									$615,000		$615,000
Bel Aire Sec 3.1	26									$970,000		$970,000
Bel Aire Sec 14	27										$839,000	$839,000
Operation & Maintenance		$3,448,044	$3,620,446	$3,801,469	$3,991,542	$4,191,119	$4,400,675	$4,620,709	$4,851,744	$5,094,332	$5,349,048	$43,369,129
TOTALS		$5,925,044	$6,215,446	$6,414,469	$7,477,542	$6,343,119	$7,578,675	$6,536,709	$6,699,744	$6,679,332	$6,188,048	

Proposed Project	Priority Ranking	FY 43-44	FY 44-45	FY 45-46	FY 46-47	FY 47-48	FY 48-49	FY 49-50	FY 50-51	FY 51-52	FY 52-53	TOTALS
S Coral Homes Sec 1	28	$888,000										$888,000
Pine Tree Manor Sec 1	29		$2,353,000									$2,353,000
Whispering Pines Estates Sec 4 - South	30			$2,152,000								$2,152,000
Saga Bay Townhomes	31				$684,000							$684,000
Bel Aire Sec 1.1	32					$1,613,000						$1,613,000
Bel Aire Sec 3.3	33						$749,000					$749,000
Bel Aire Sec 15	34							$897,000				$897,000
Bel Aire Sec 4	35								$784,000			$784,000
Cutler Ridge Manor Estates 1	36									$296,000		$296,000
Pine Tree Manor Sec 2	37									$320,000		$320,000
Cutler Ridge Sec 3	38										$219,000	$219,000
Operation & Maintenance		$5,616,501	$5,897,326	$6,192,192	$6,501,801	$6,826,892	$7,168,236	$7,526,648	$7,902,980	$8,298,129	$8,713,036	$70,643,741
TOTALS		$6,504,501	$8,250,326	$8,344,192	$7,185,801	$8,439,892	$7,917,236	$8,423,648	$8,686,980	$8,914,129	$8,932,036	

APPENDIX A-EXHIBITS



Key Map

N

Legend

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale
- Roadway Restoration Project

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

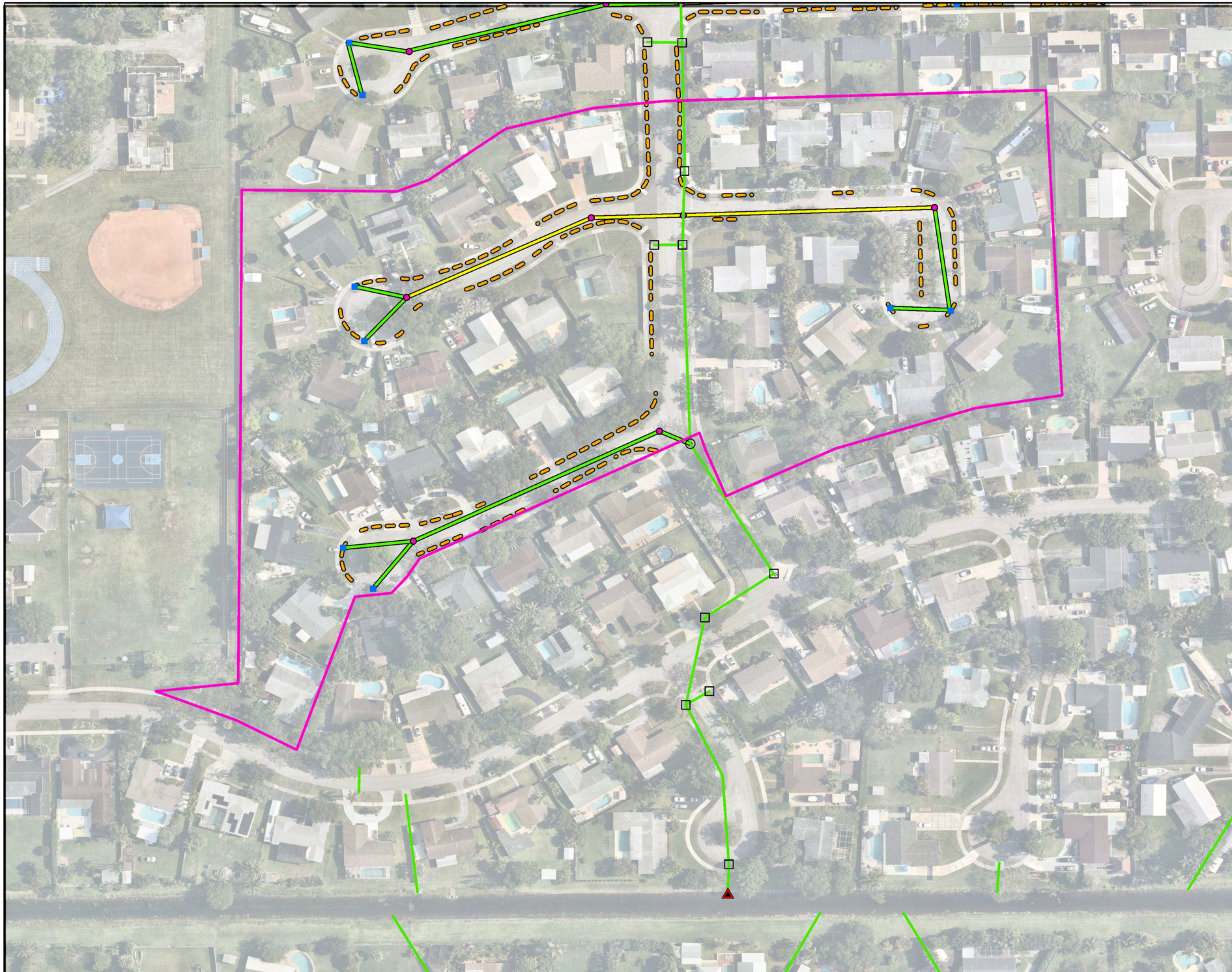
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 2.1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

TOWN OF CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIR SEC 13.1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

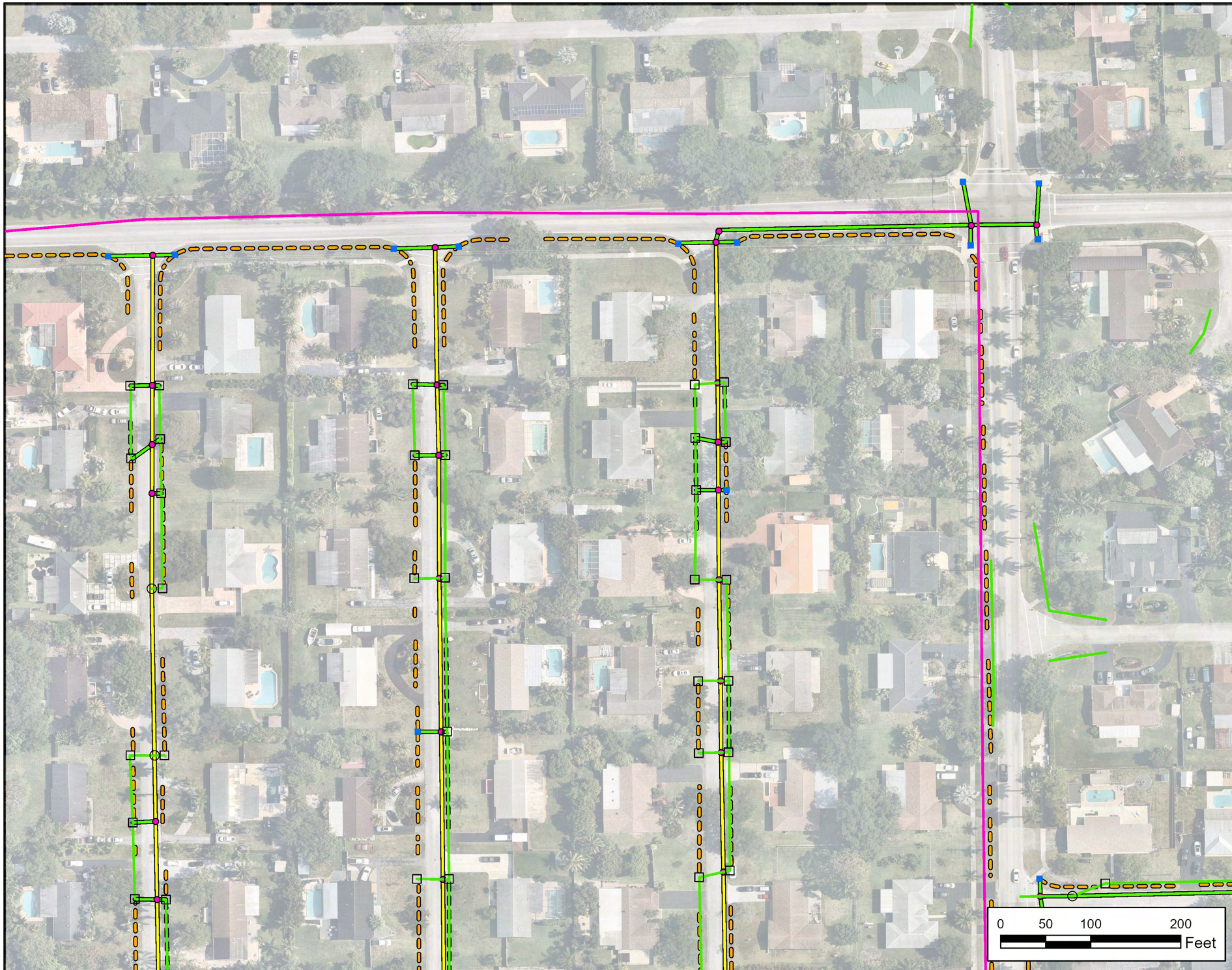
SHEET
1

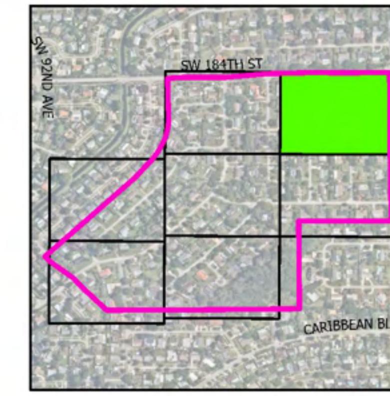
Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Manhole
- Existing Outfall
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

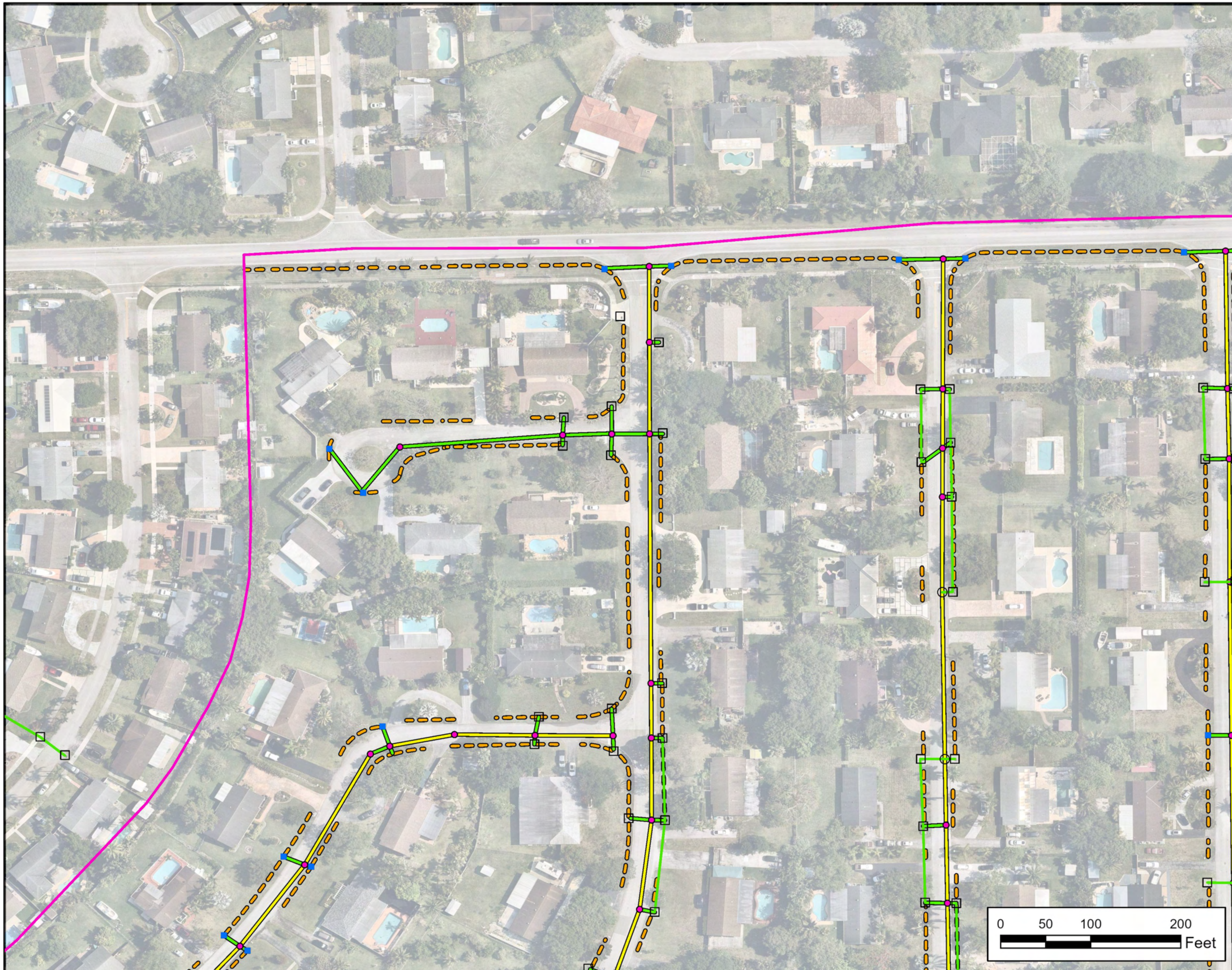
CUTLER BAY STORMWATER MASTER PLAN

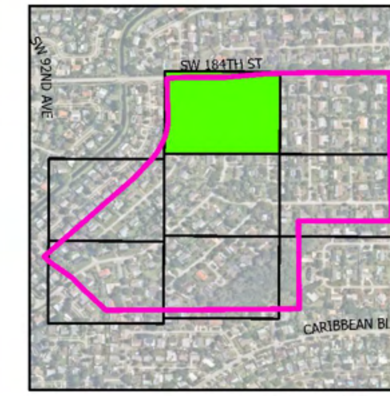
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

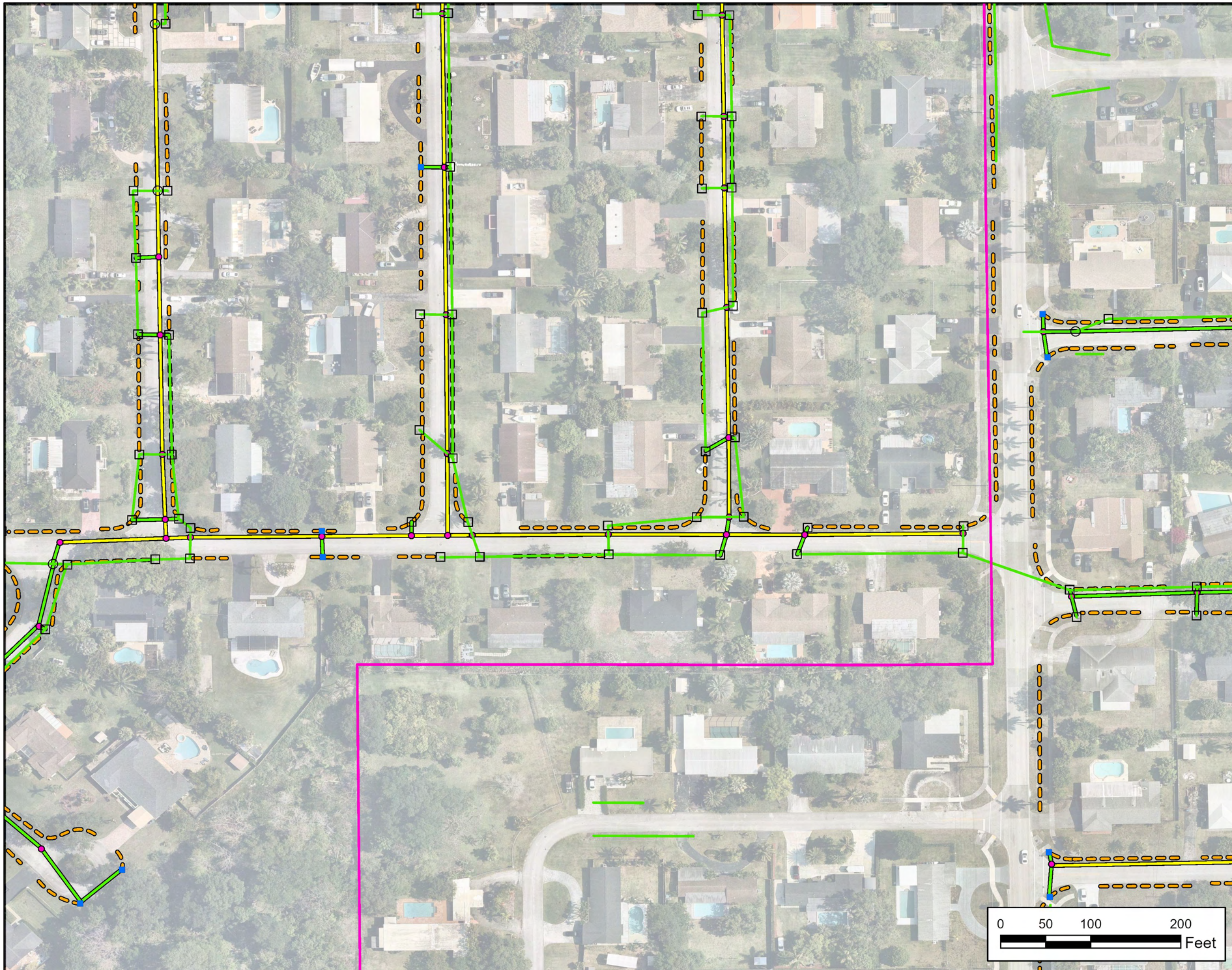
CUTLER BAY STORMWATER MASTER PLAN

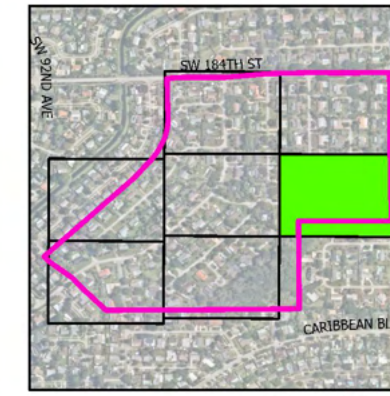
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

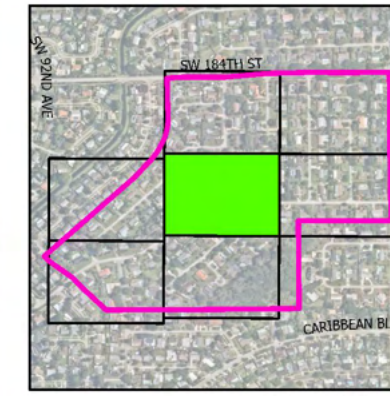
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

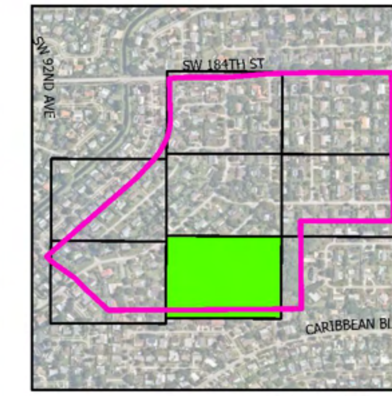
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

4



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

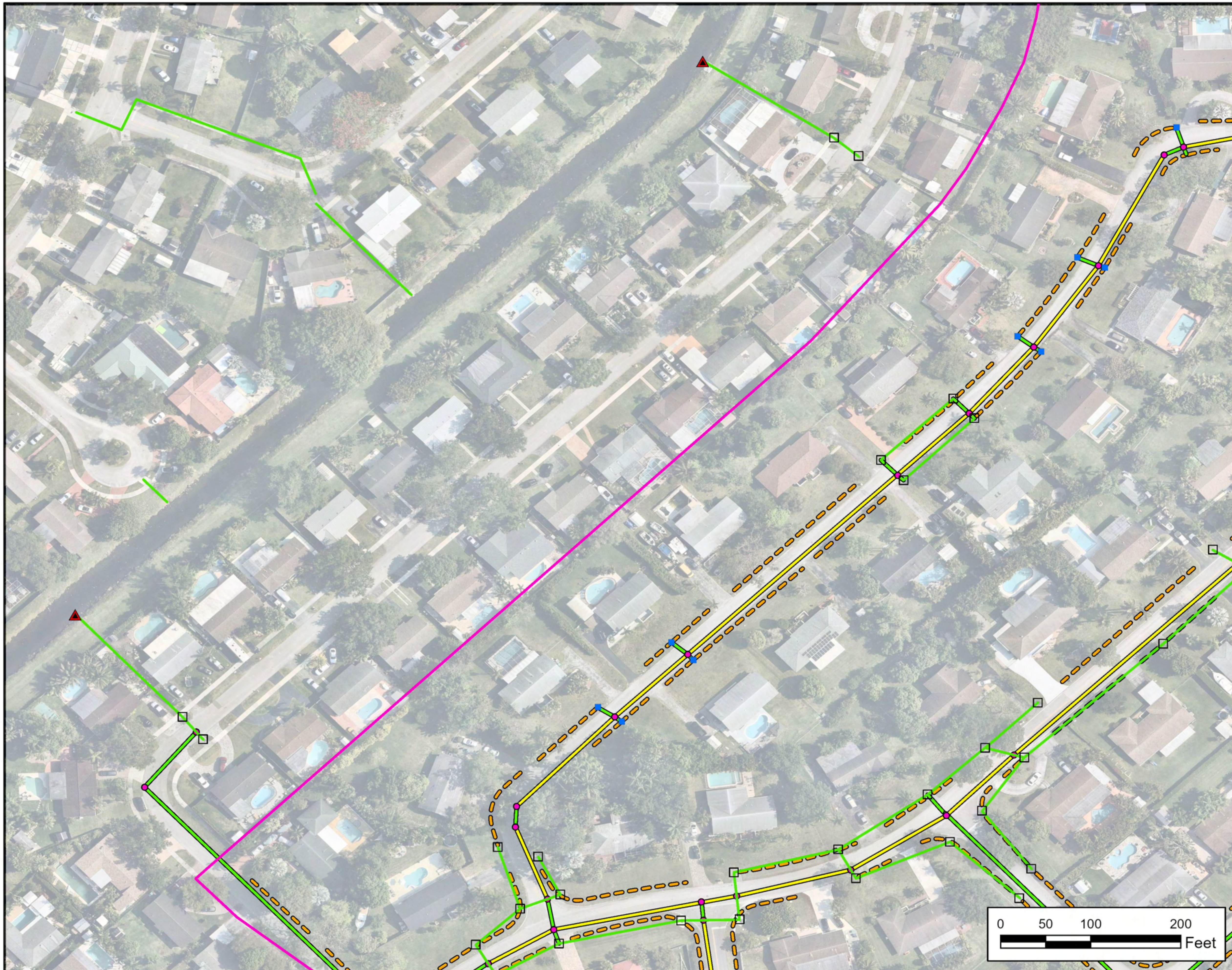
N

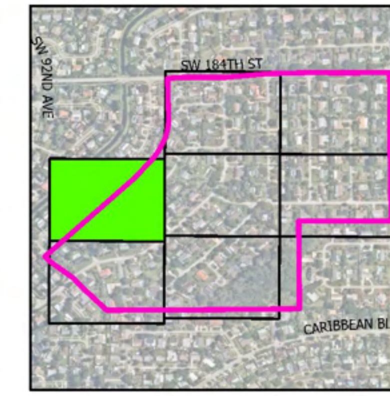
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

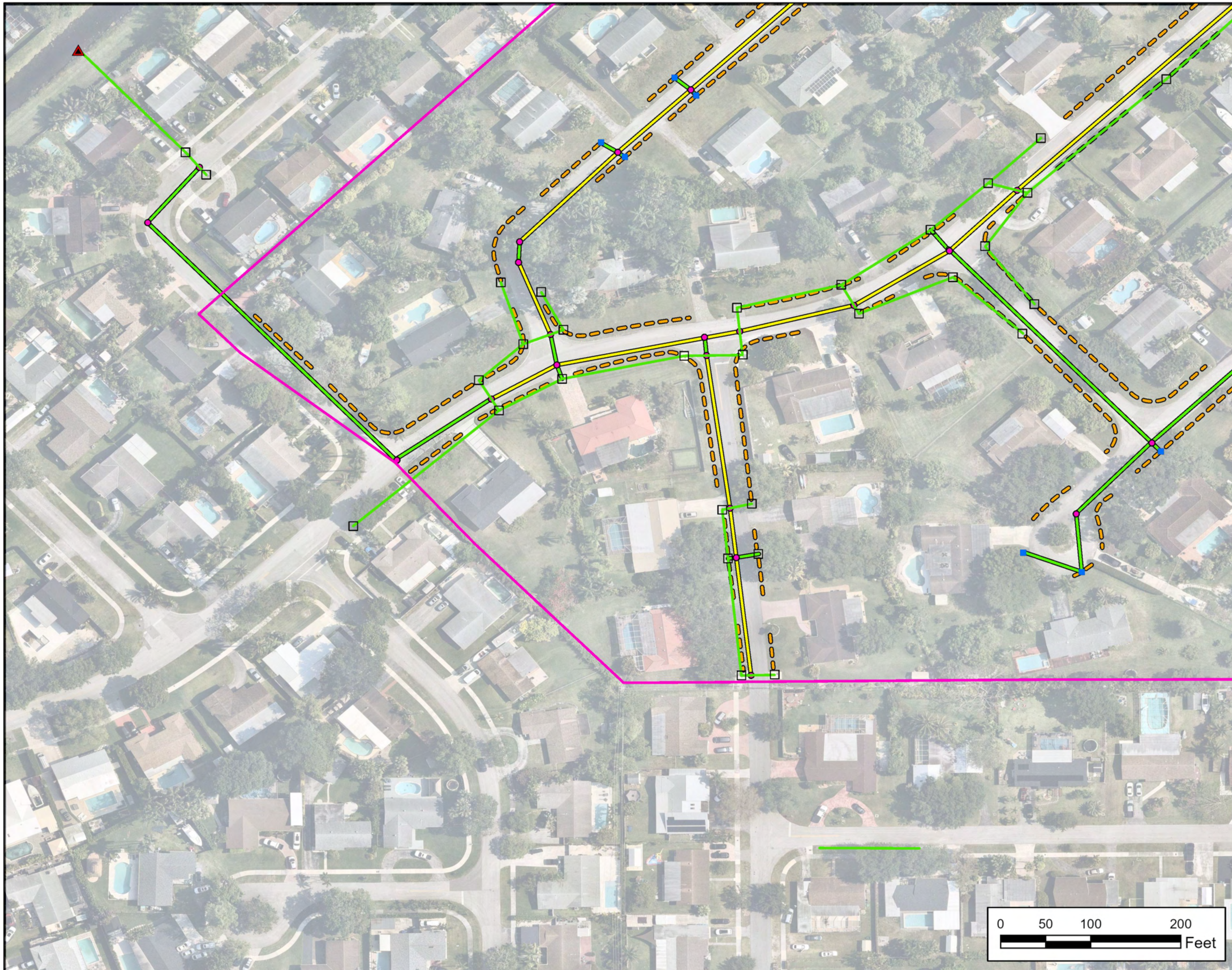
CUTLER BAY STORMWATER MASTER PLAN

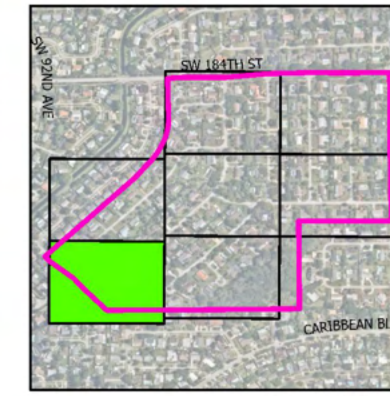
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
6





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

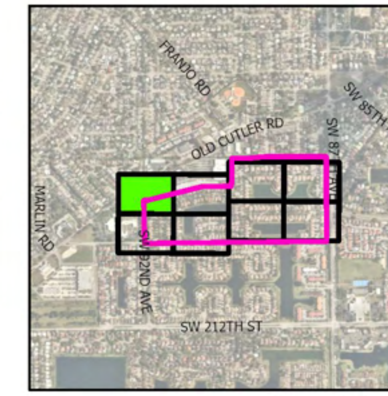
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
7



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

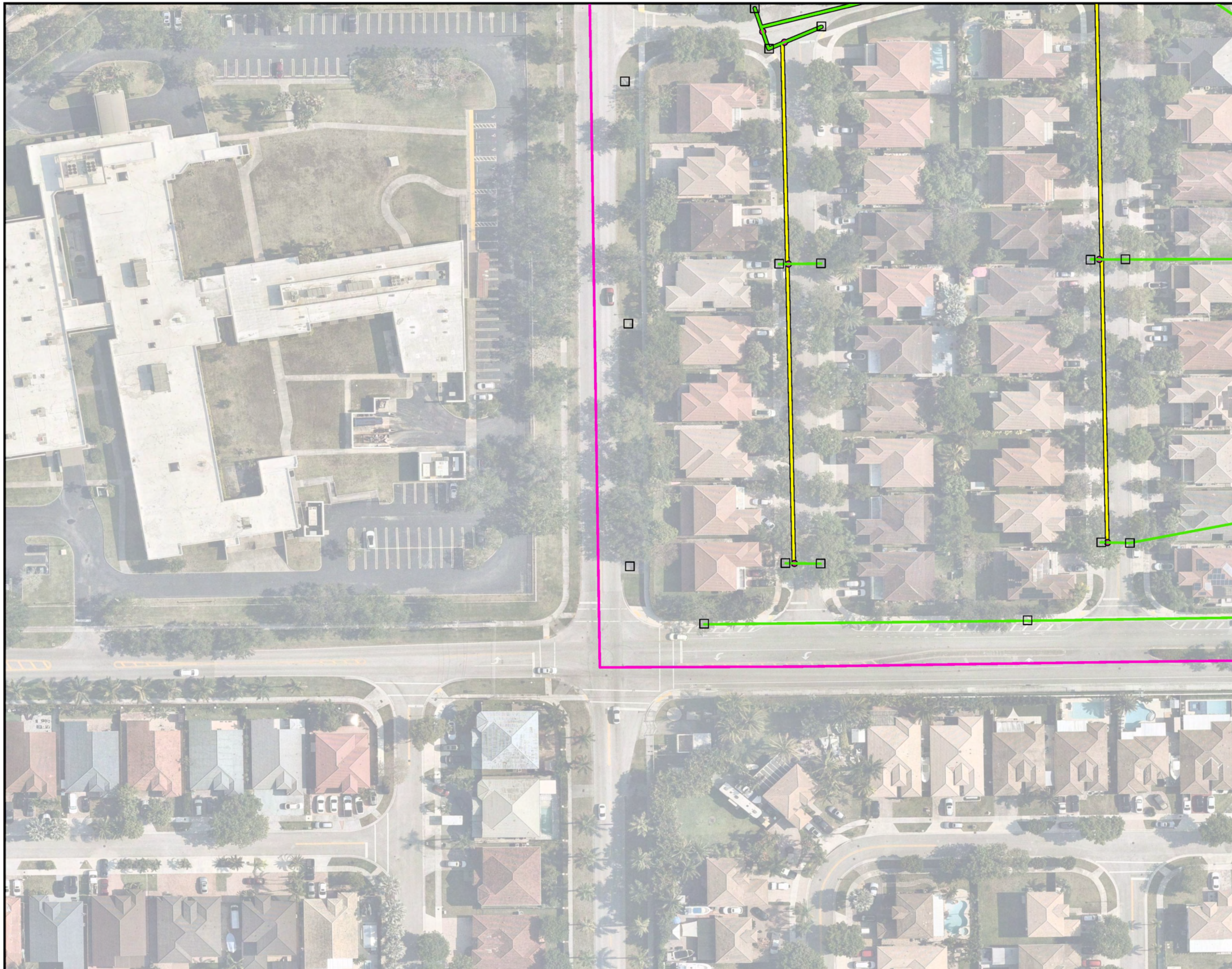
Prepared for:
Town of Cutler Bay

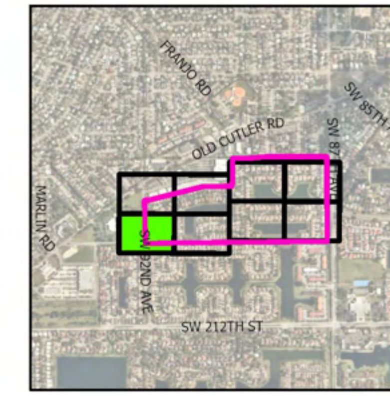
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

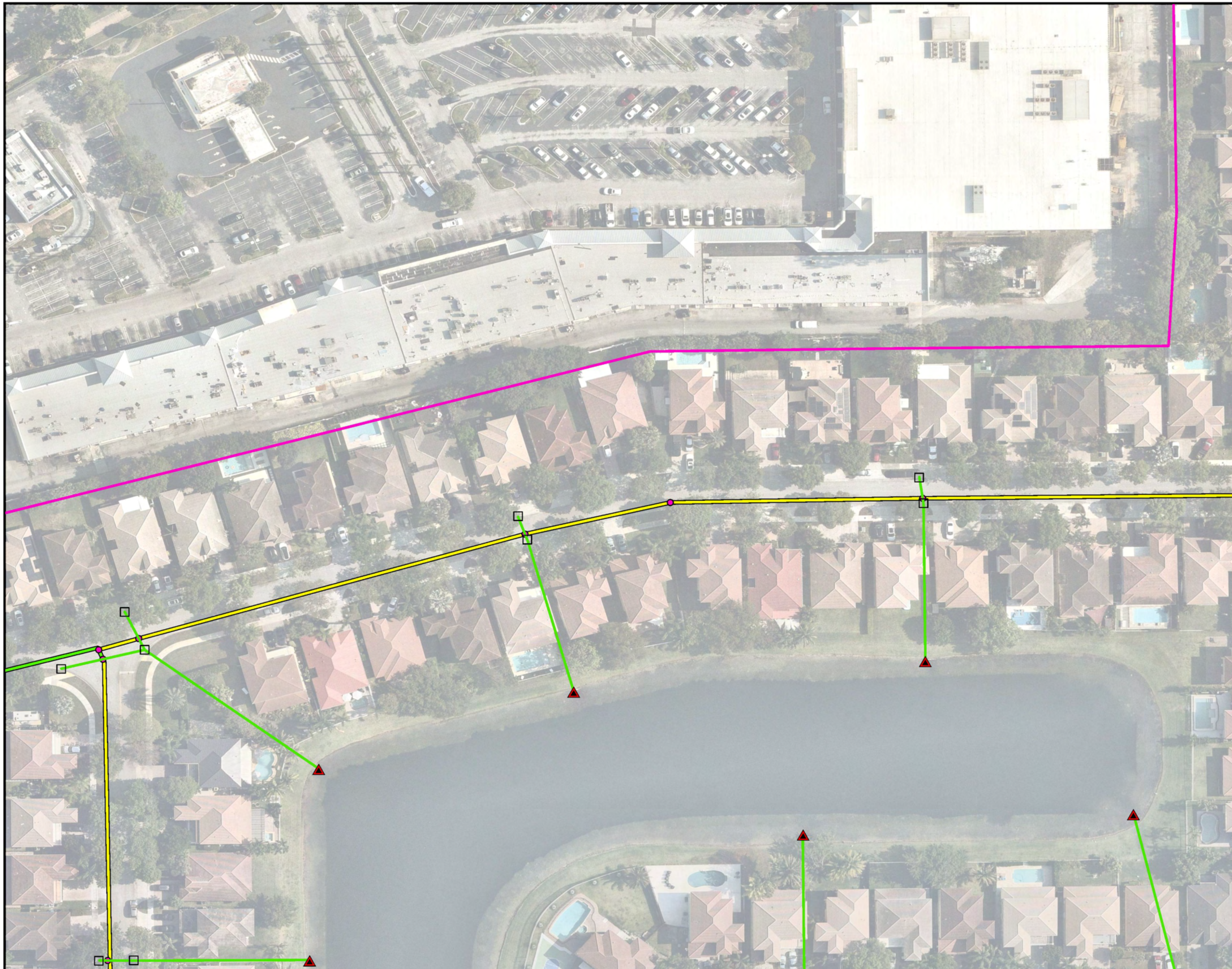
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

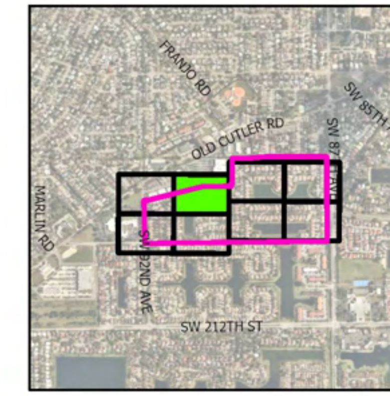
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

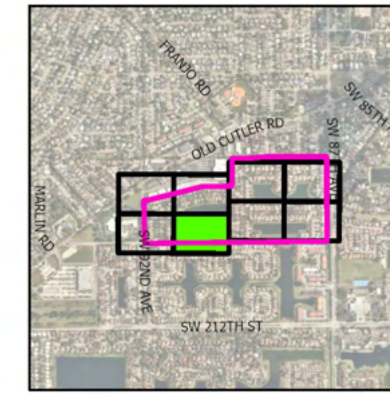
Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

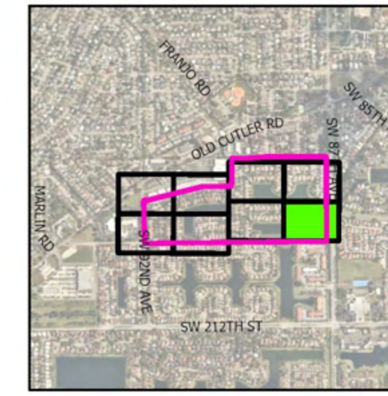
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4



Key Map

Legend

PriorityYr

2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

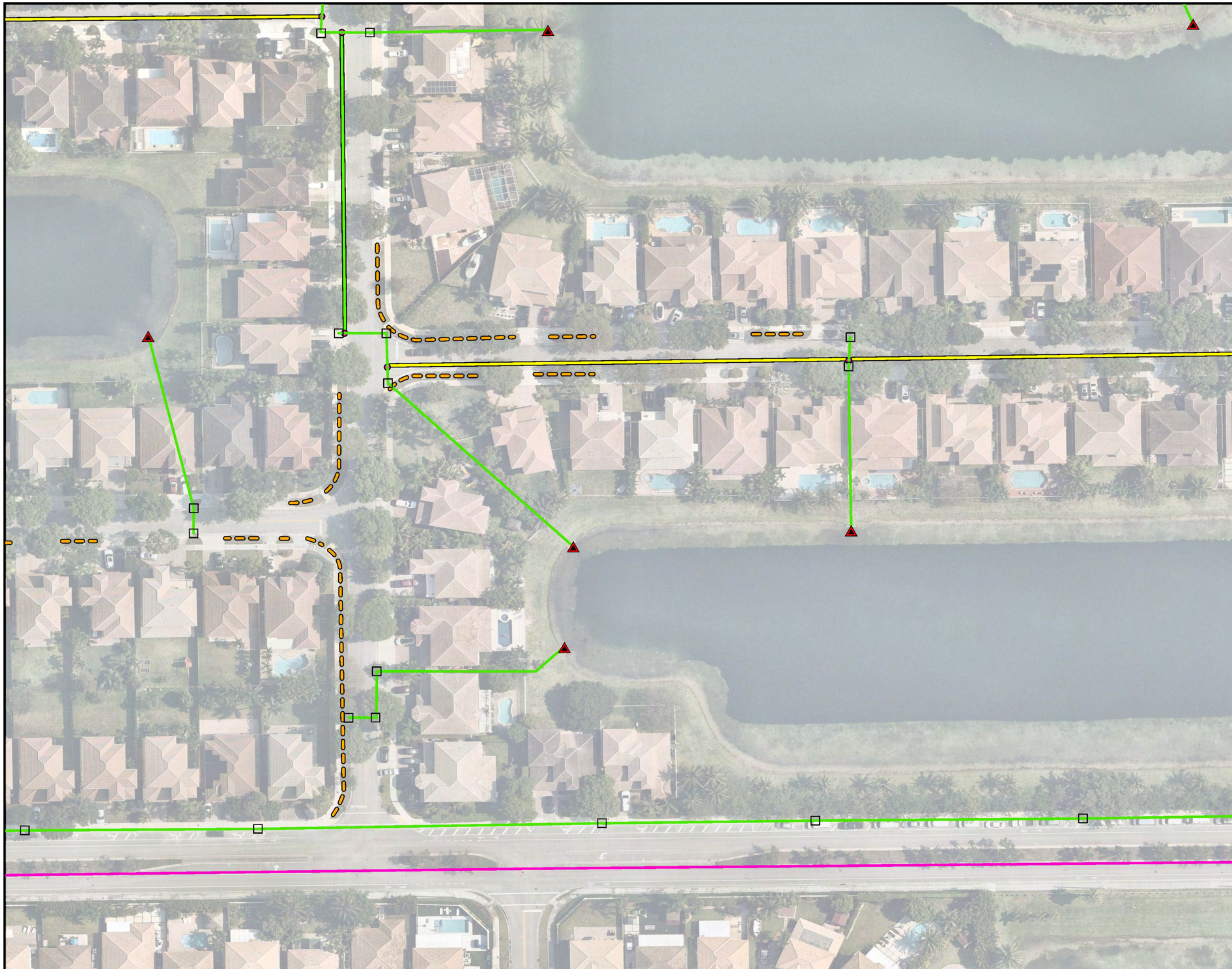
Prepared for:
Town of Cutler Bay

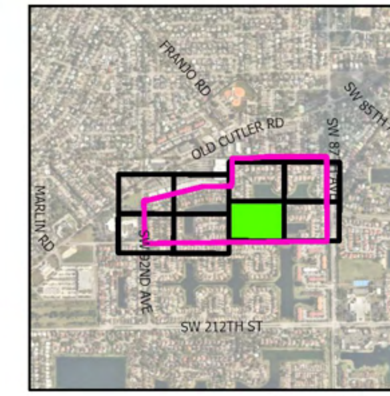
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

5





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Outfall

Existing Storm Pipe

Proposed

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

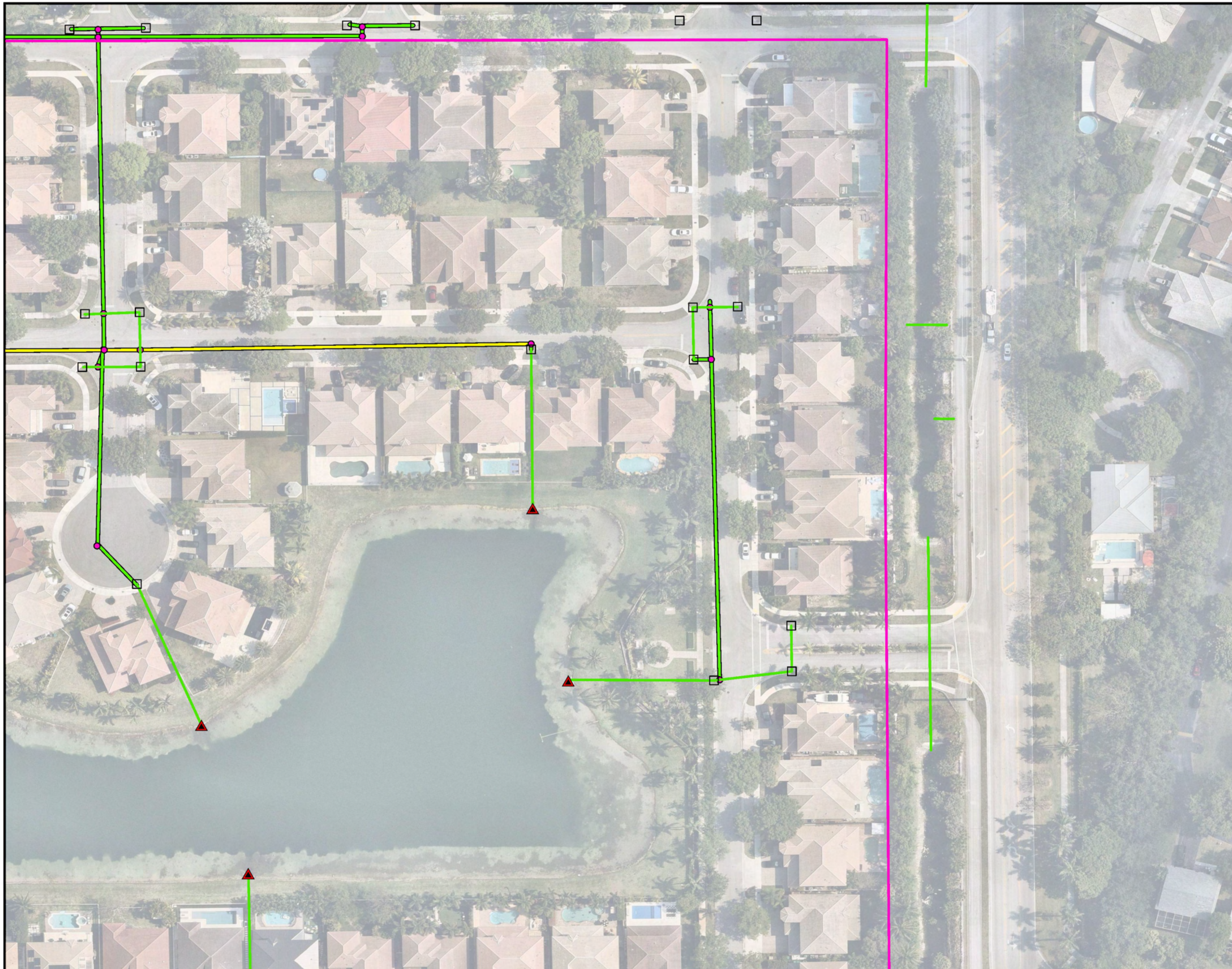
Prepared for:
Town of Cutler Bay

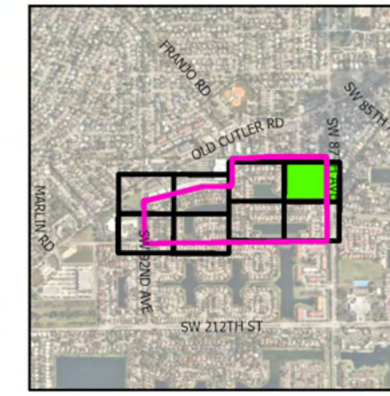
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

6





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

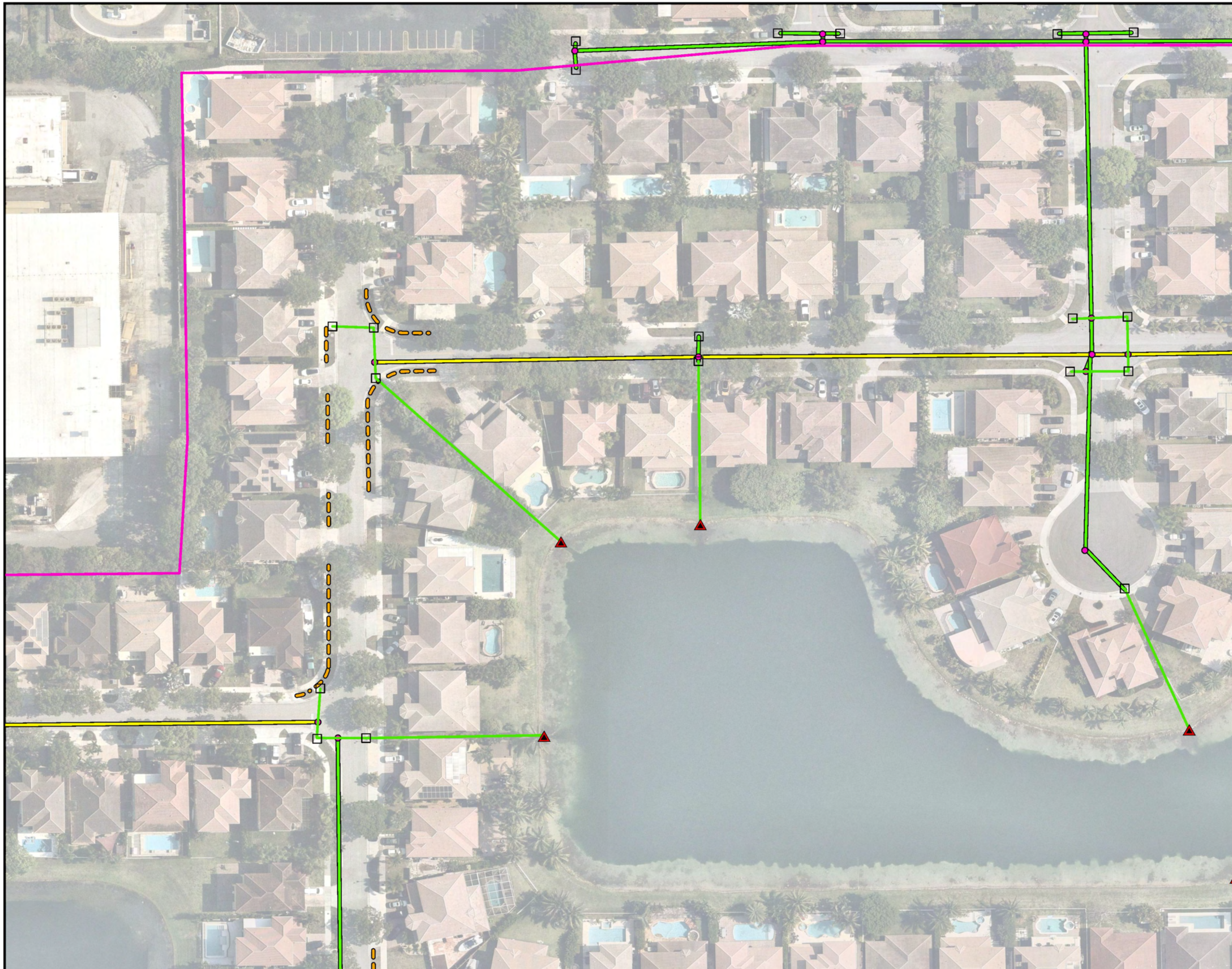
CUTLER BAY STORMWATER MASTER PLAN

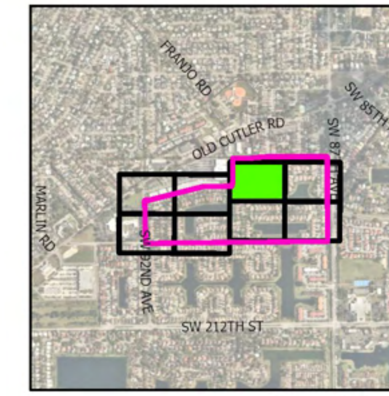
Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
7





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

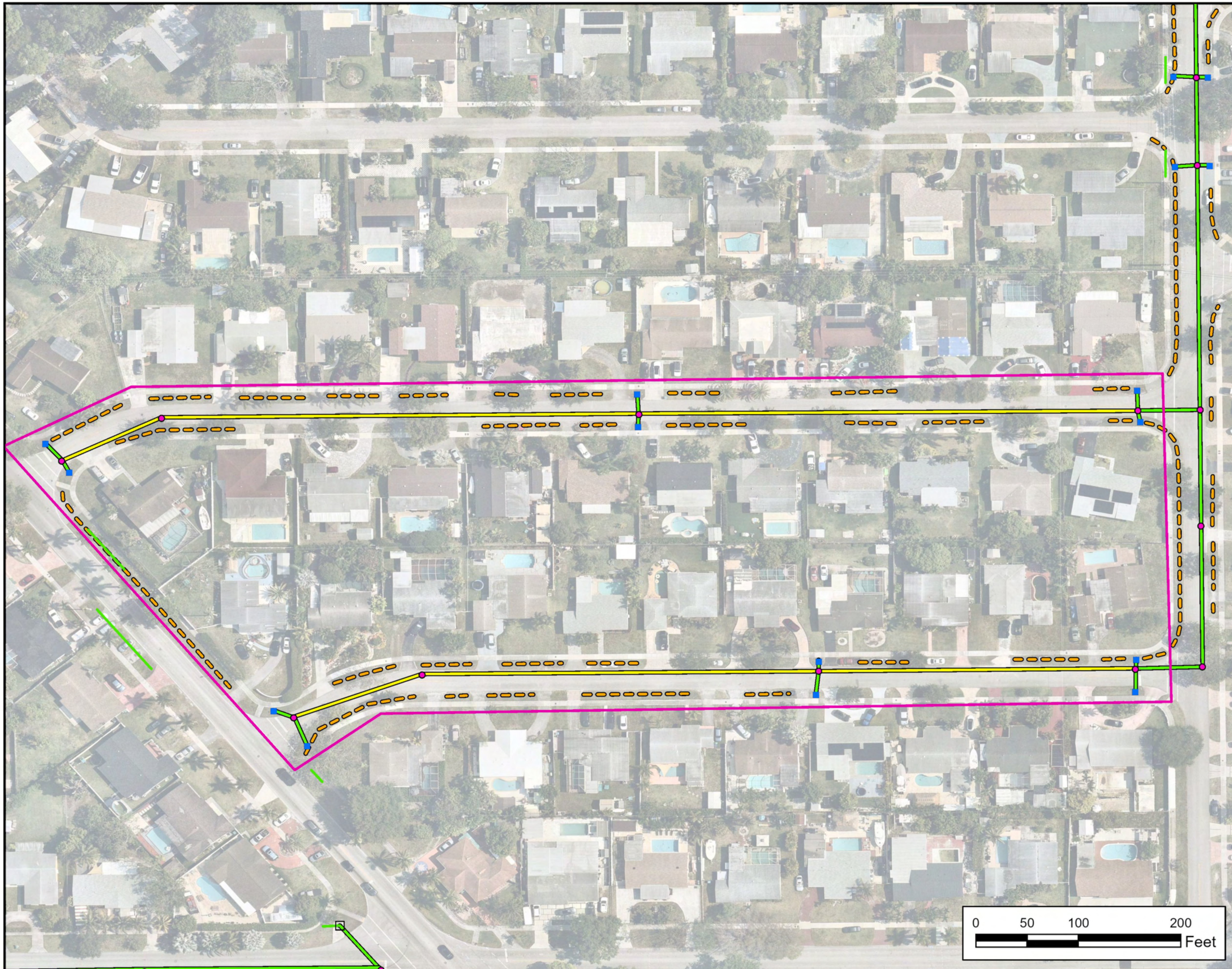
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
8



Key Map

Legend

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale
- Roadway Restoration Project

0 50 100 200 Feet

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

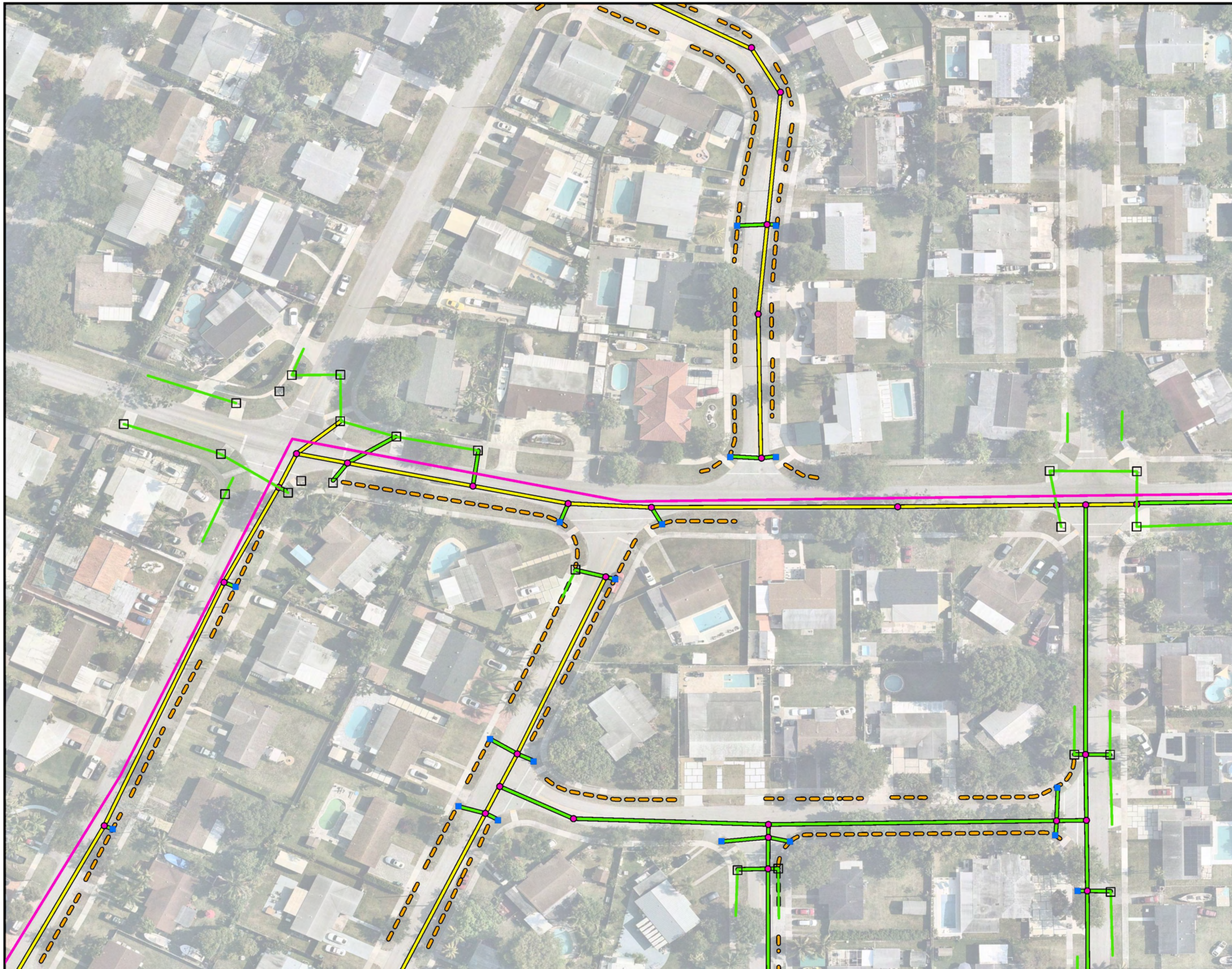
CUTLER BAY STORMWATER MASTER PLAN

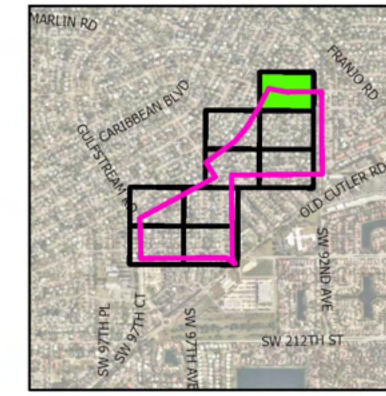
Prepared for:
Town of Cutler Bay

CUTLER RIDGE PINES 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	042602101

SHEET
1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

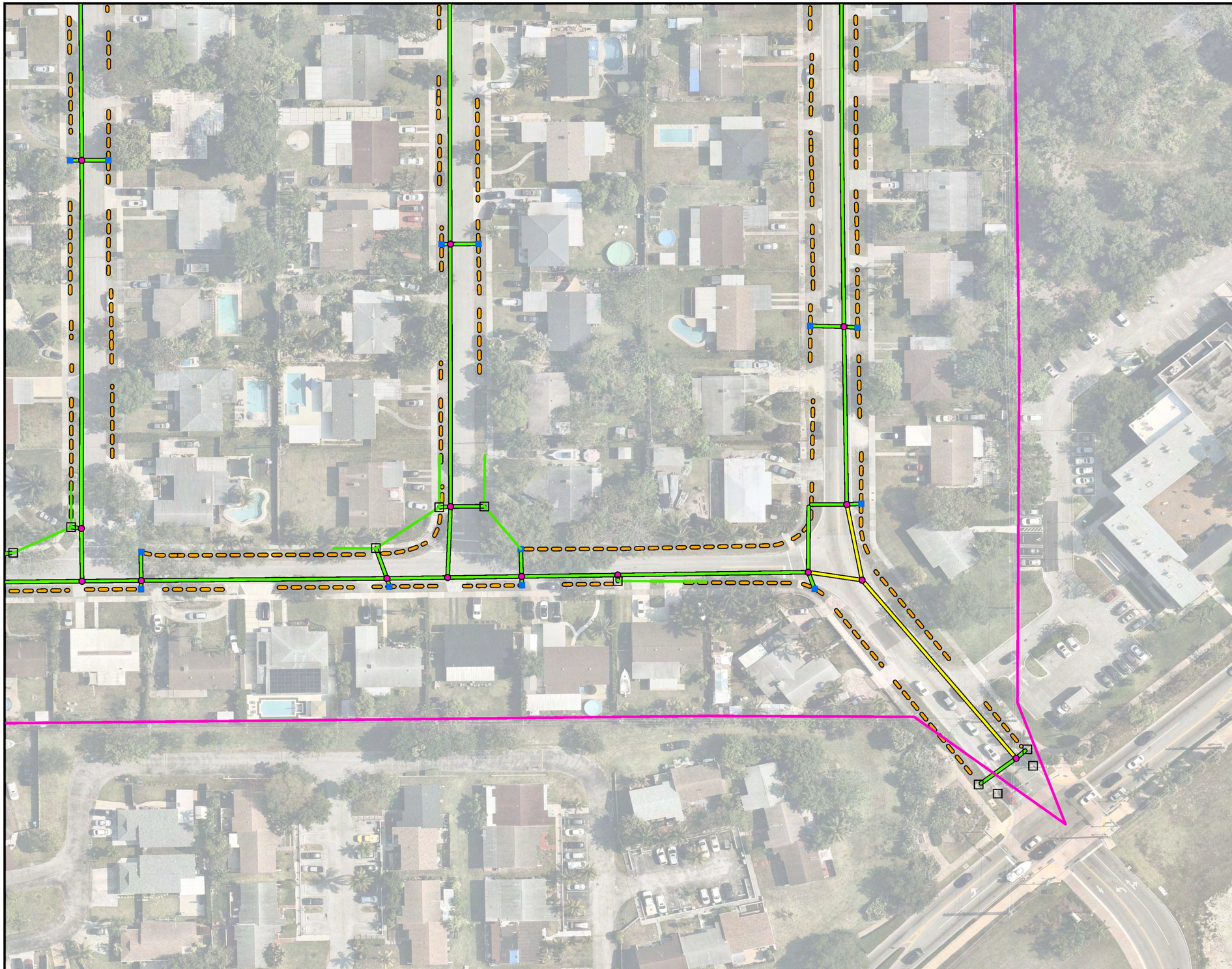
CUTLER BAY STORMWATER MASTER PLAN

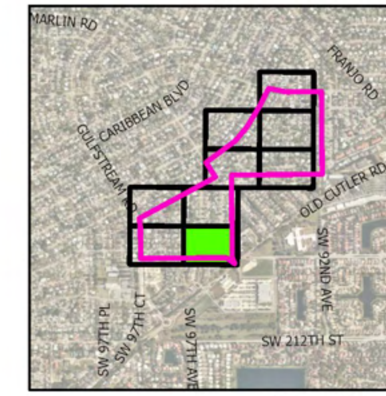
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

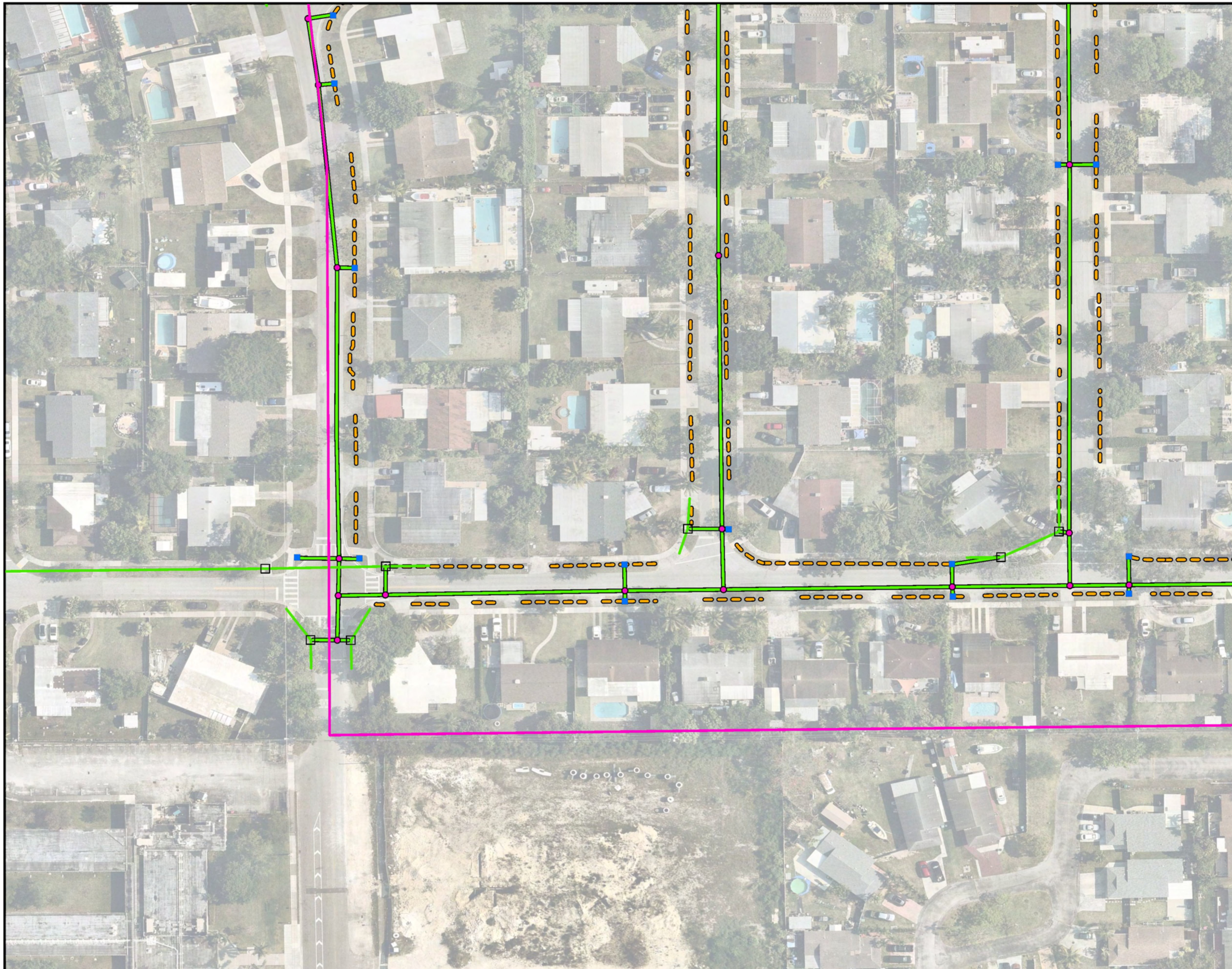
CUTLER BAY STORMWATER MASTER PLAN

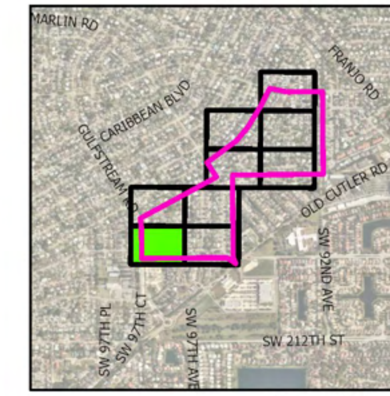
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

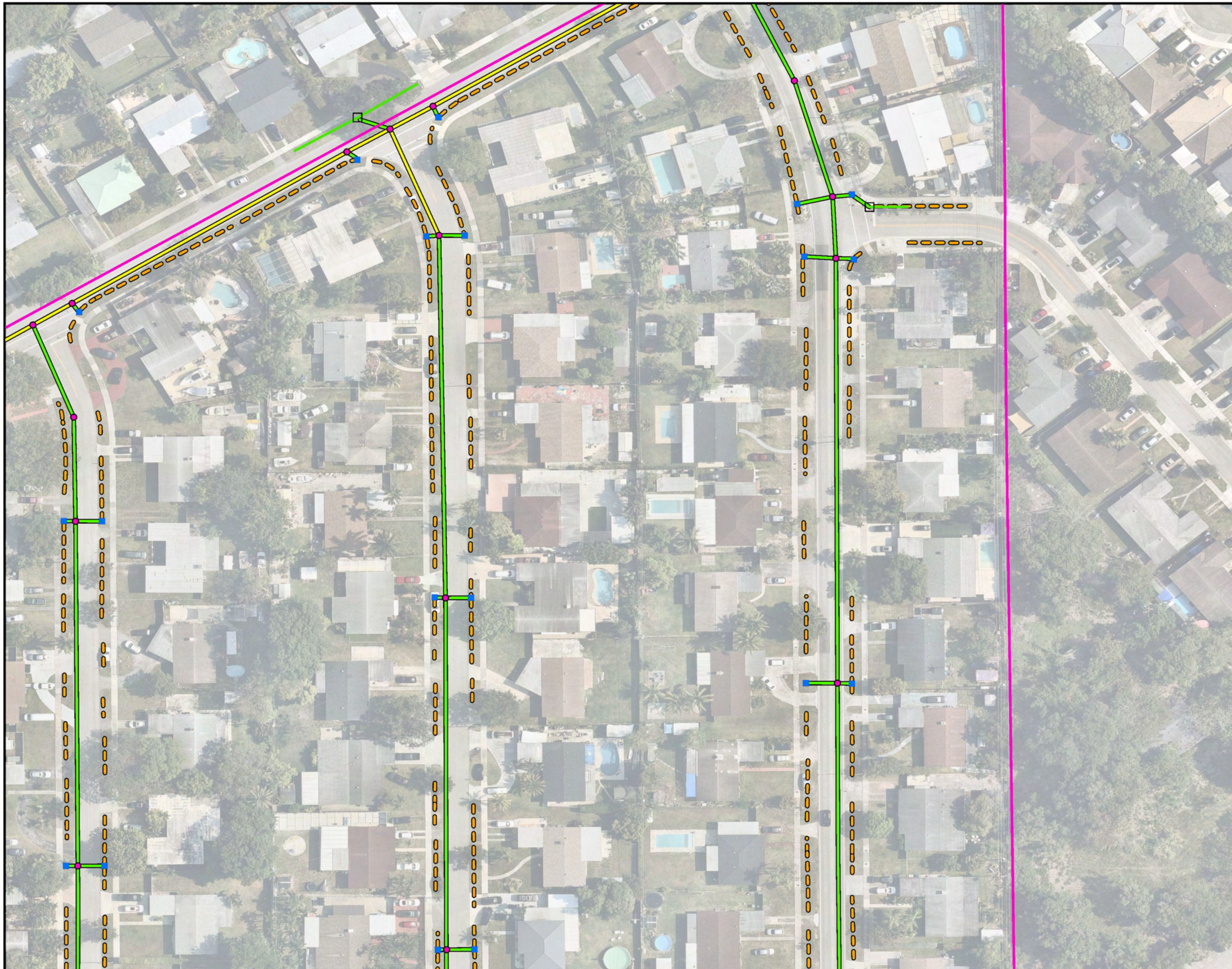
Prepared for:
Town of Cutler Bay

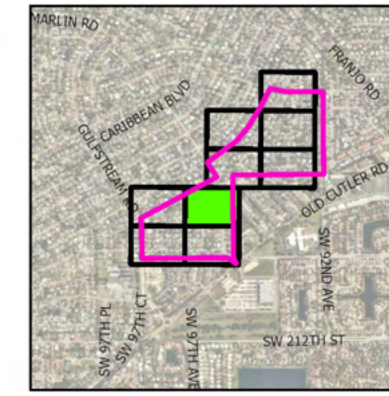
CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3





Key Map

Legend

PriorityYr

2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

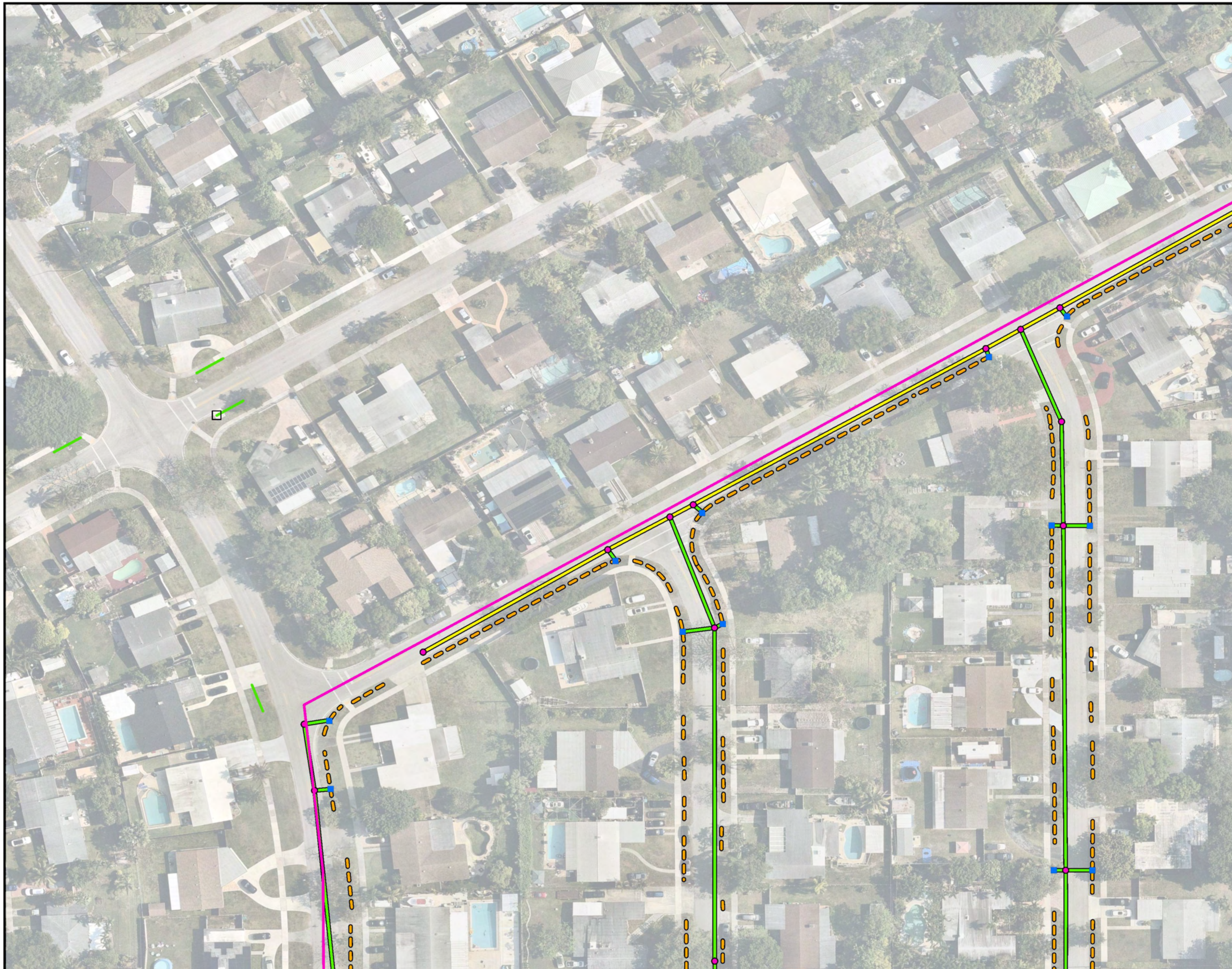
CUTLER BAY STORMWATER MASTER PLAN

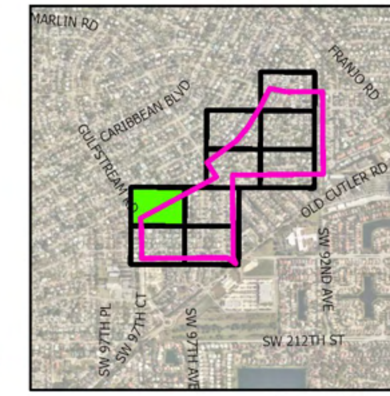
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

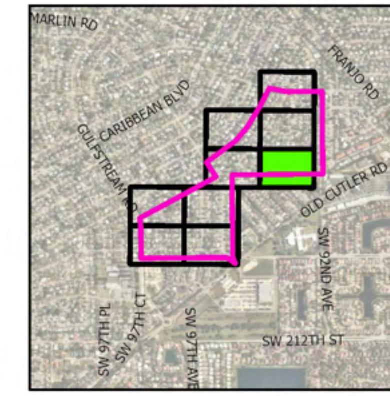
N

CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5



Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

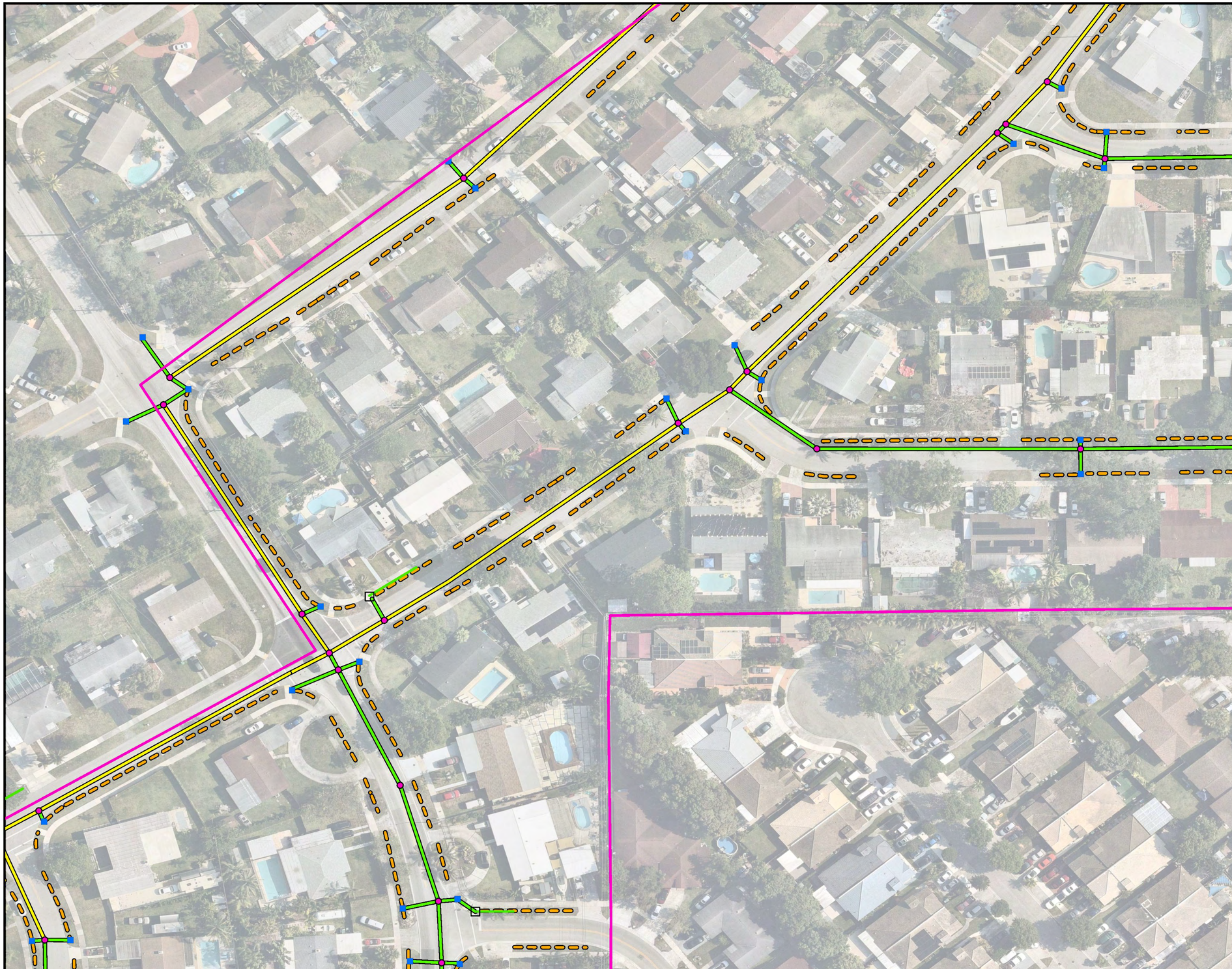
Prepared for:
Town of Cutler Bay

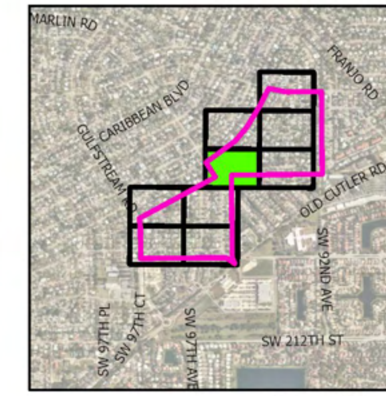
CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

6





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

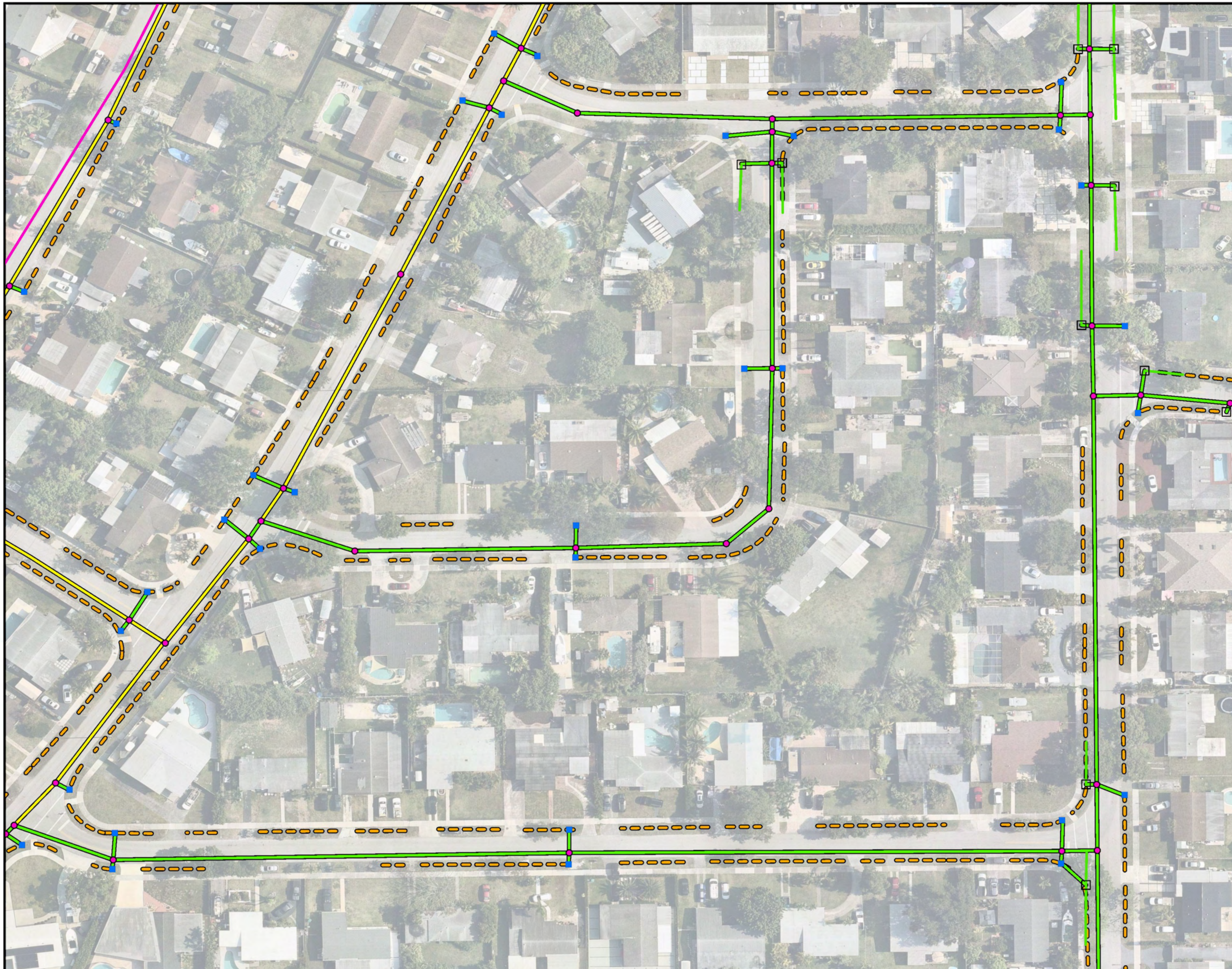
CUTLER BAY STORMWATER MASTER PLAN

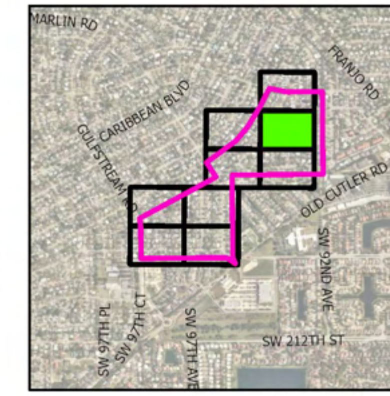
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
7





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

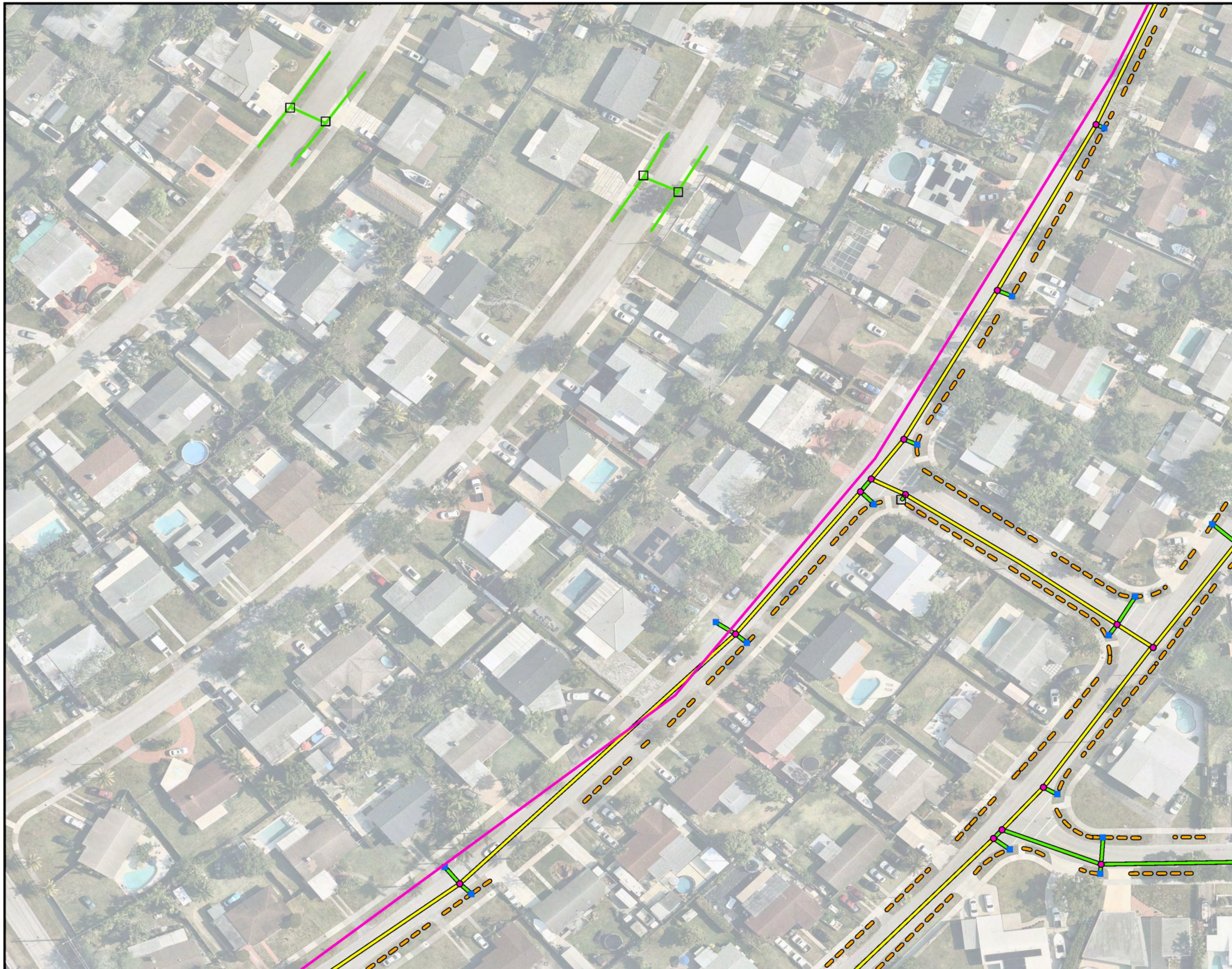
CUTLER BAY STORMWATER MASTER PLAN

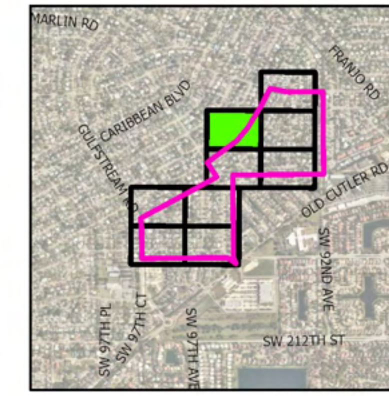
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
8





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

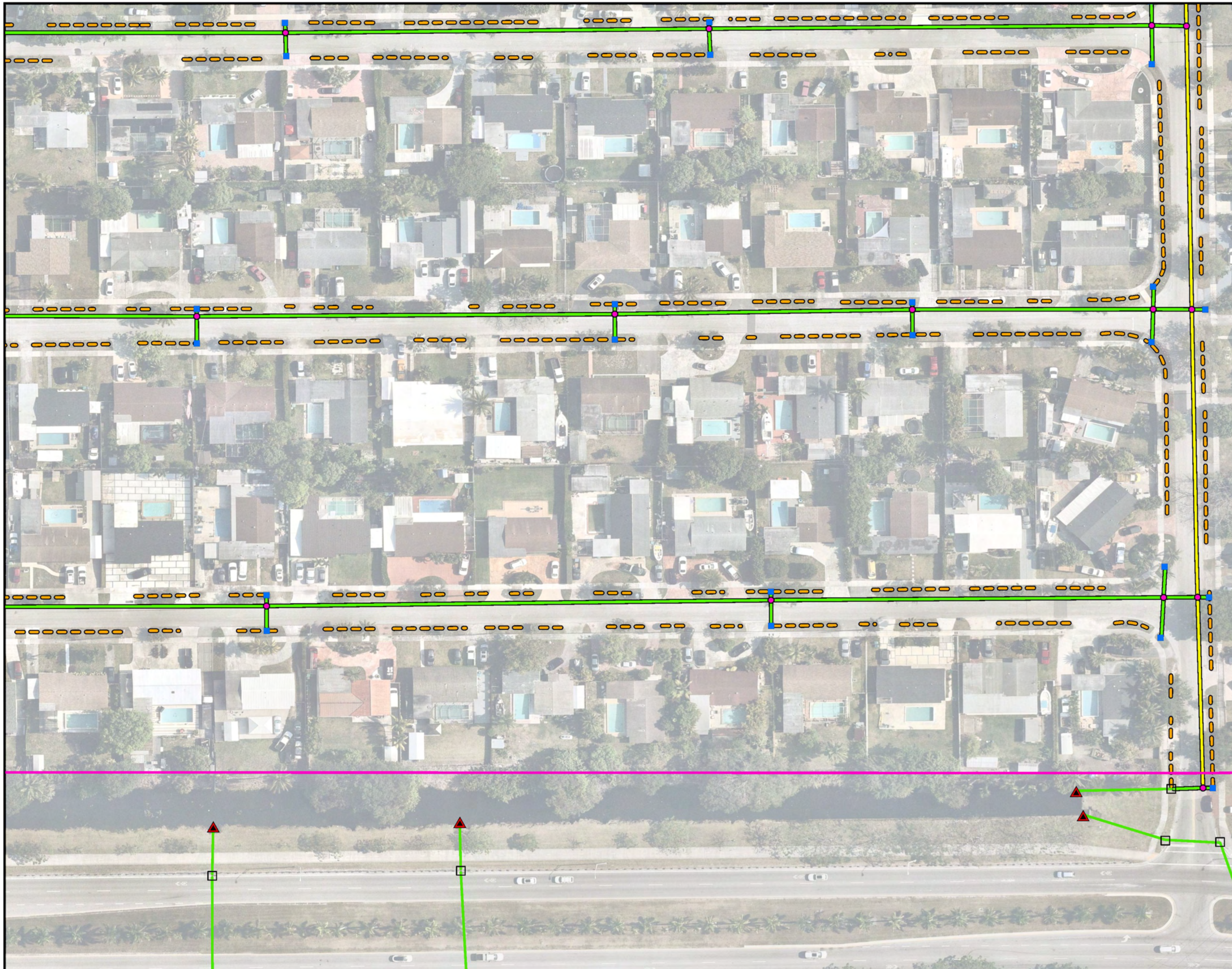
N

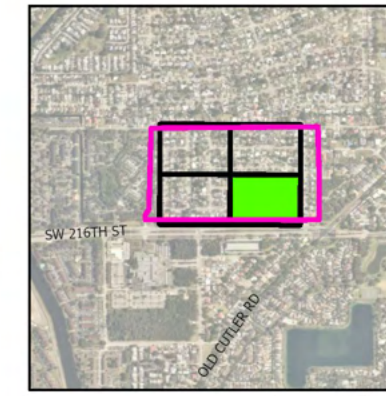
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
9





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

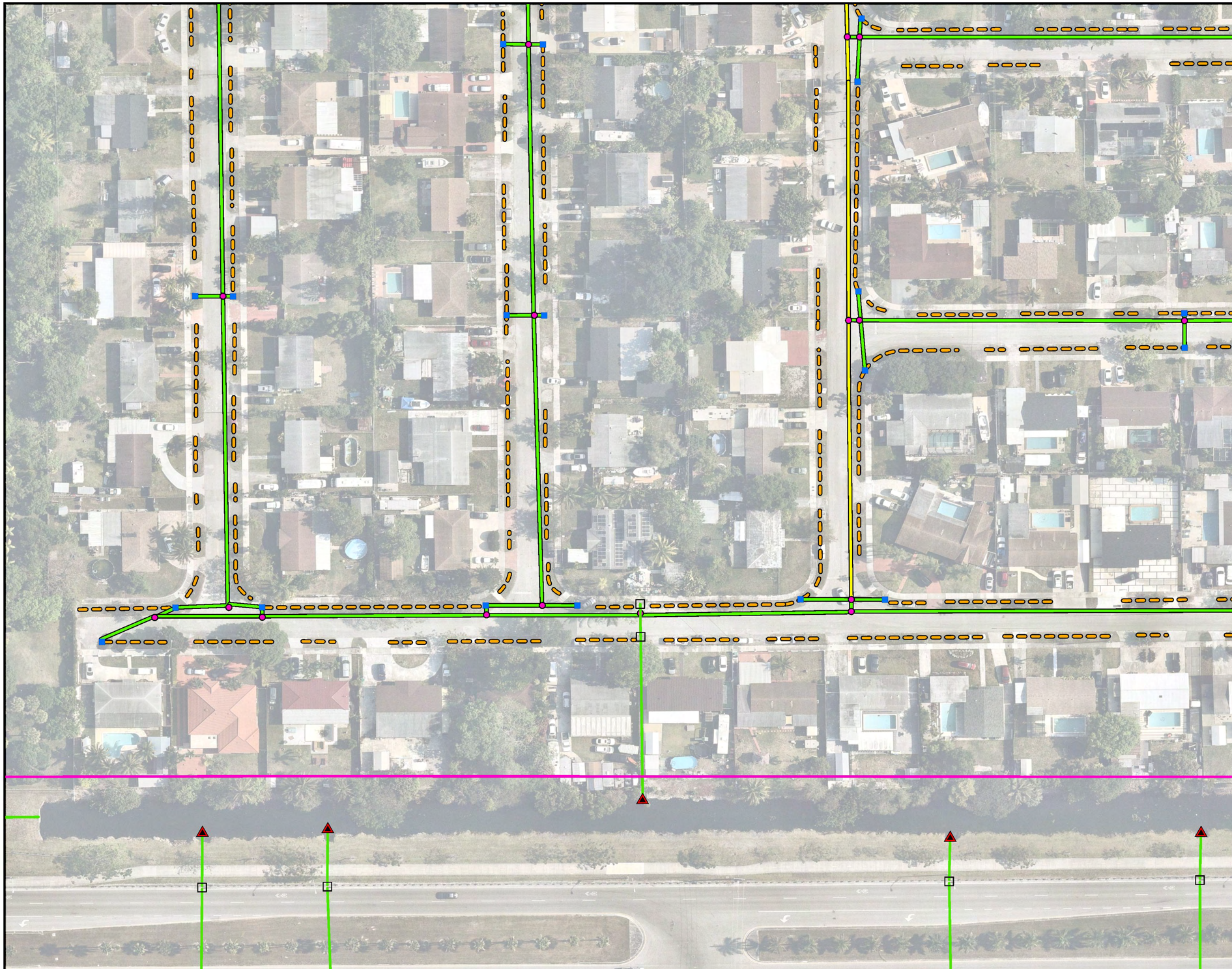
Prepared for:
Town of Cutler Bay

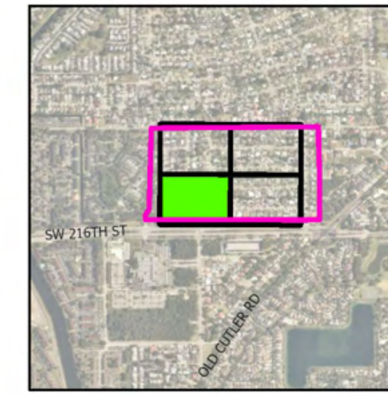
CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

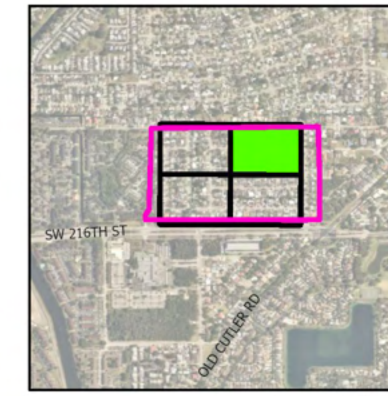
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2



Key Map

Legend

PriorityYr

2023

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

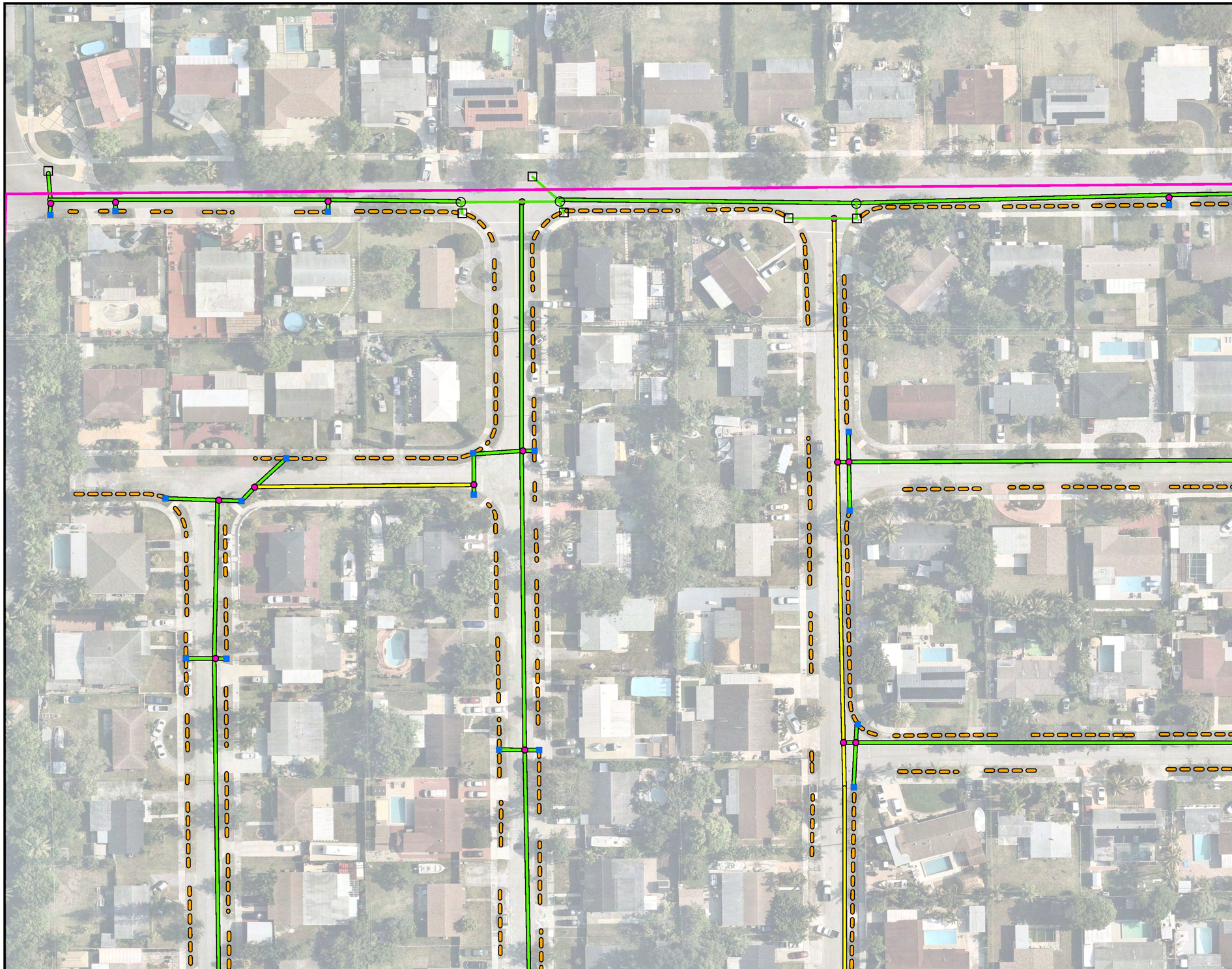
CUTLER BAY STORMWATER MASTER PLAN

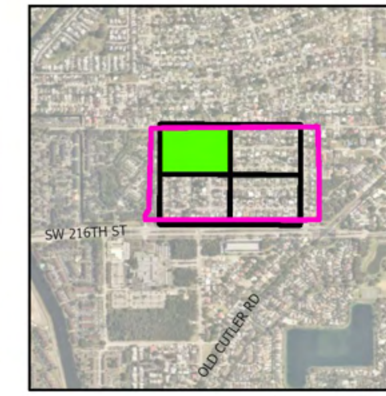
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

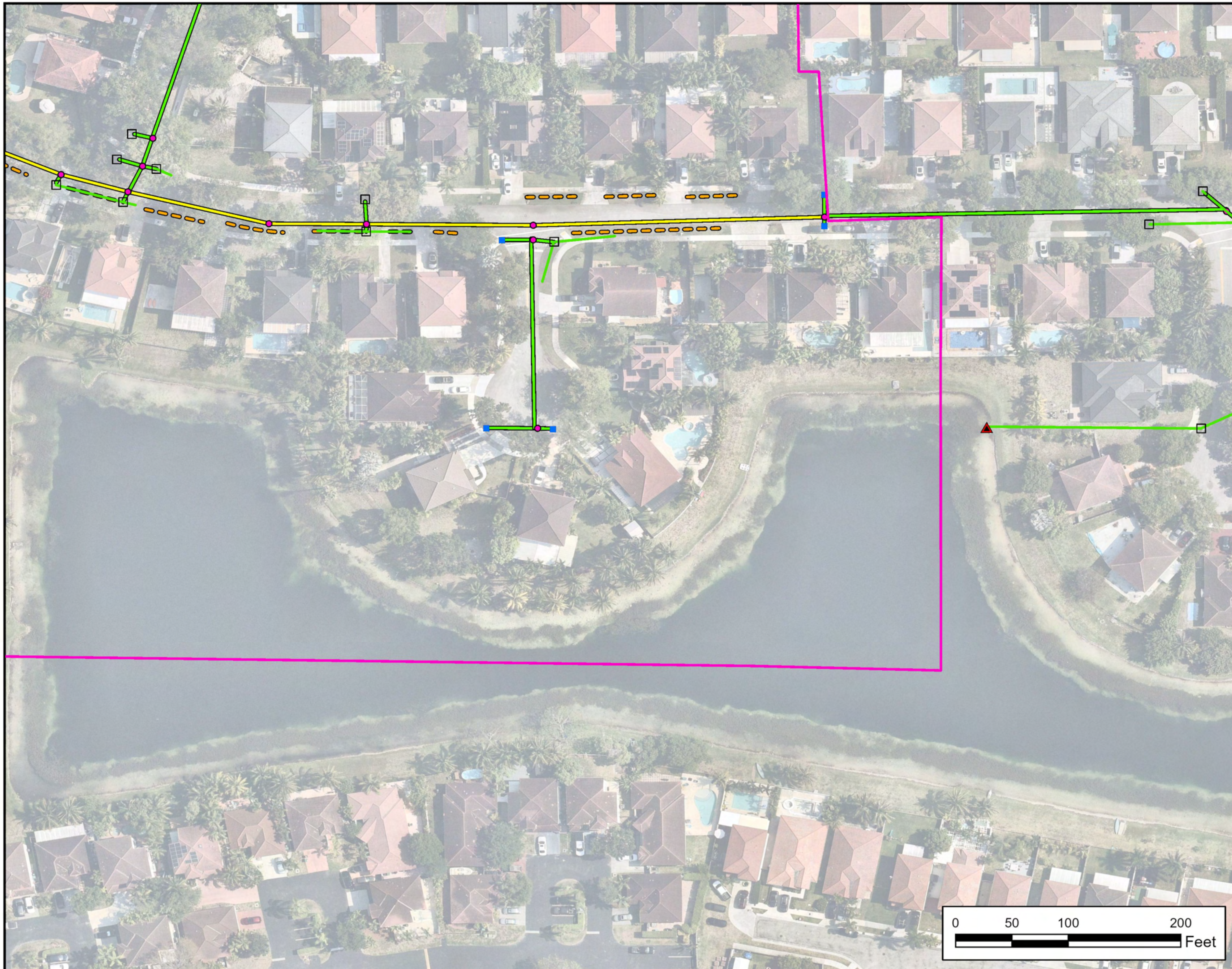
CUTLER BAY STORMWATER MASTER PLAN

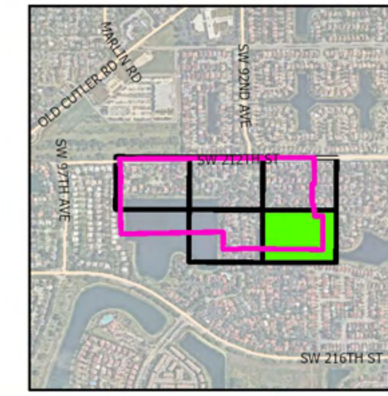
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

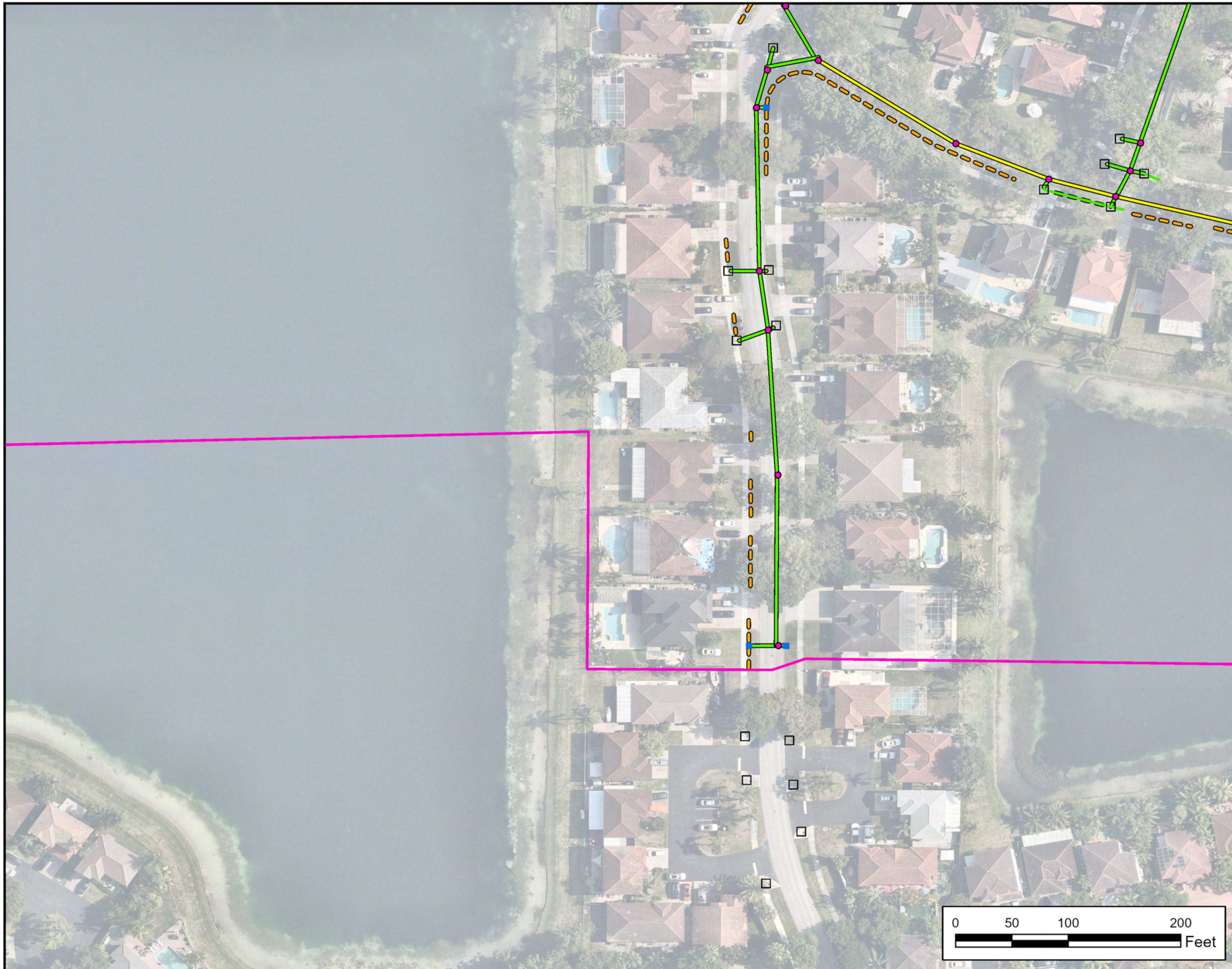
CUTLER BAY STORMWATER MASTER PLAN

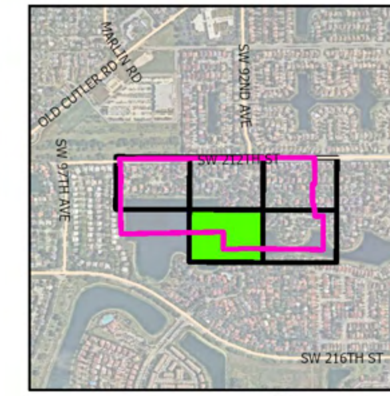
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

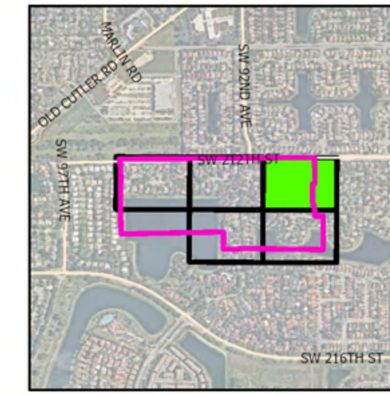
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

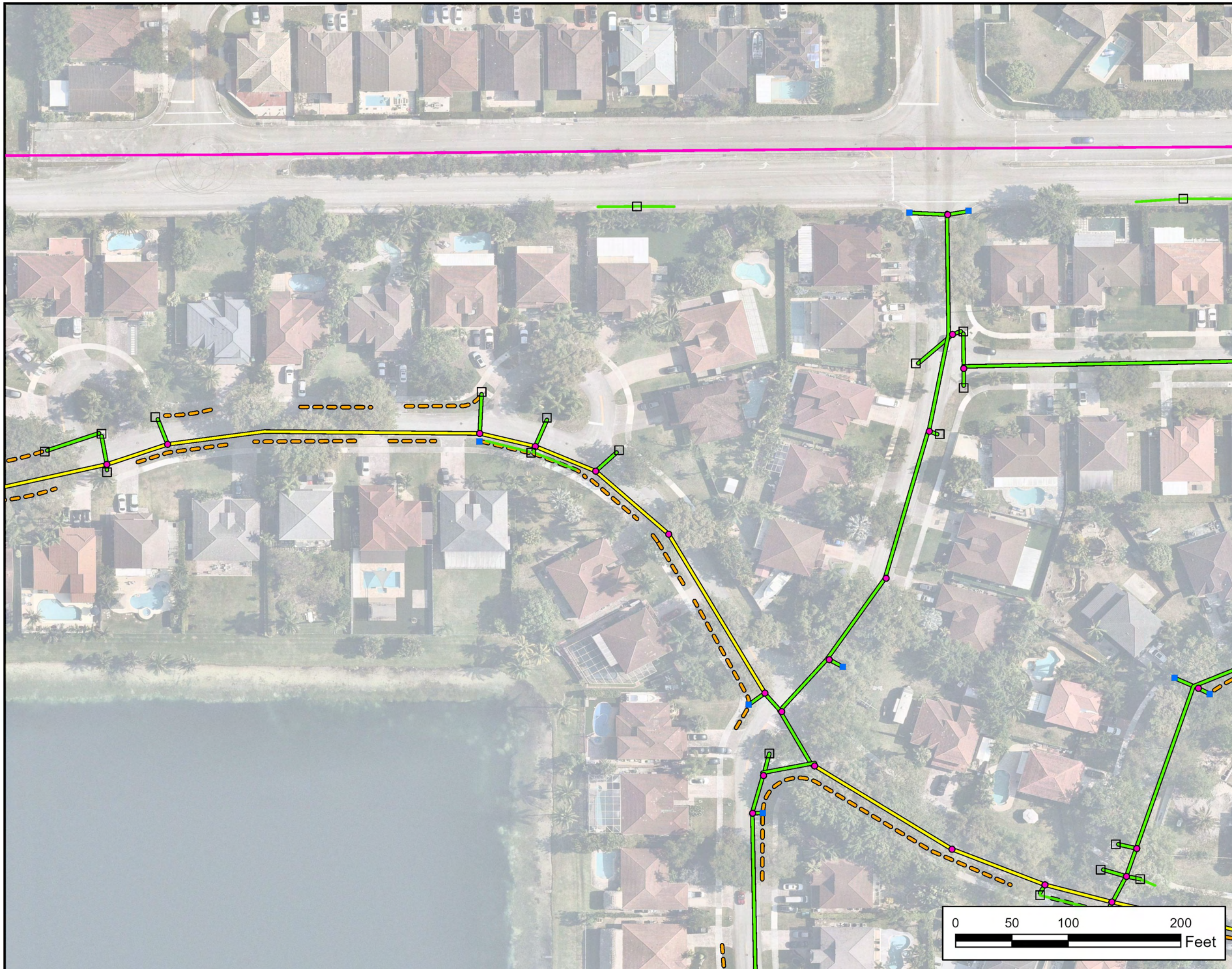
N

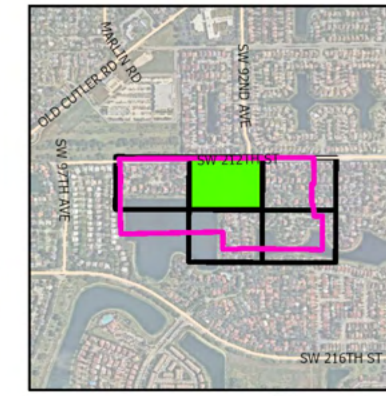
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10
IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

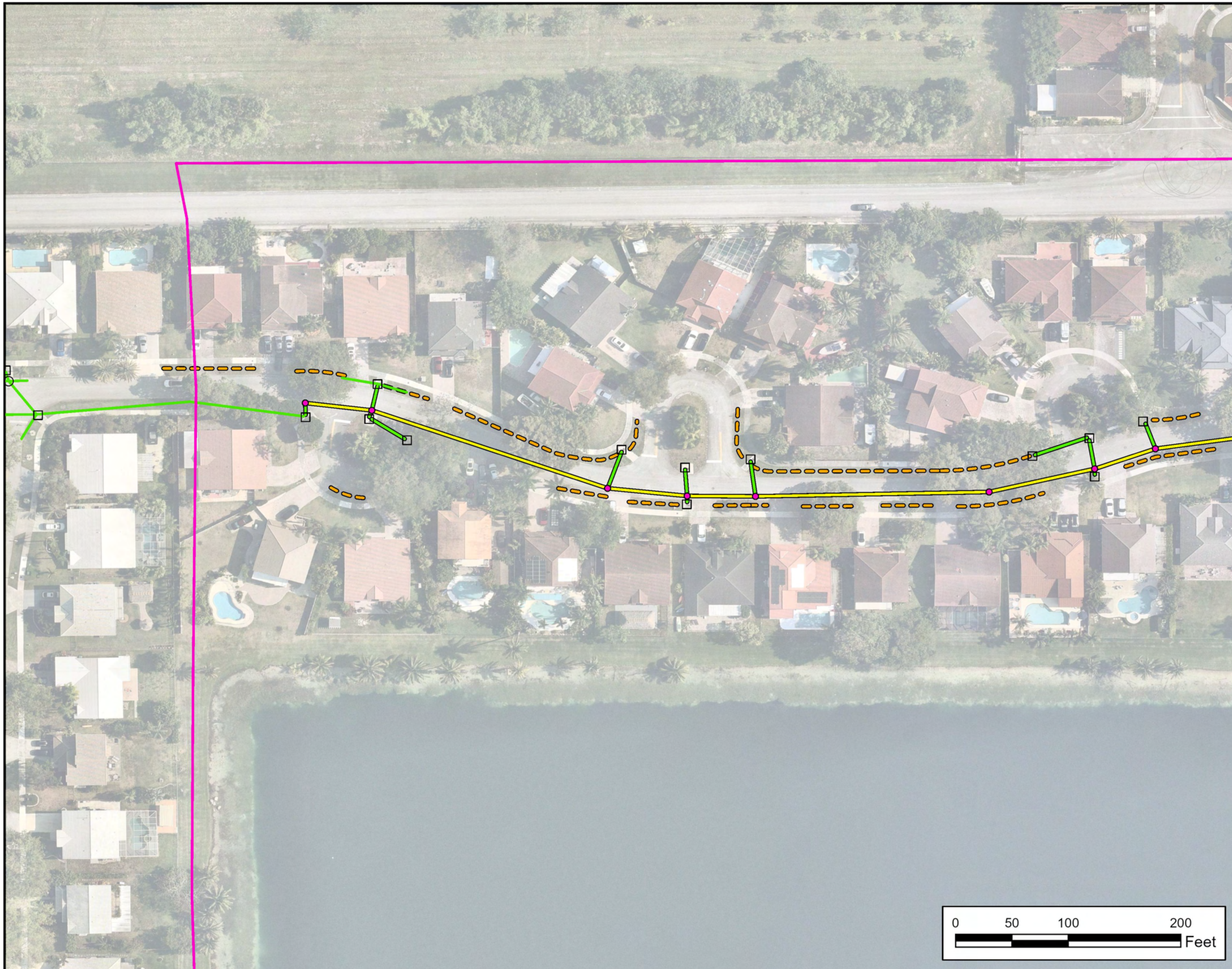
CUTLER BAY STORMWATER MASTER PLAN

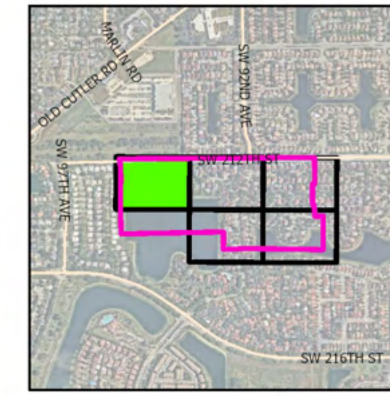
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

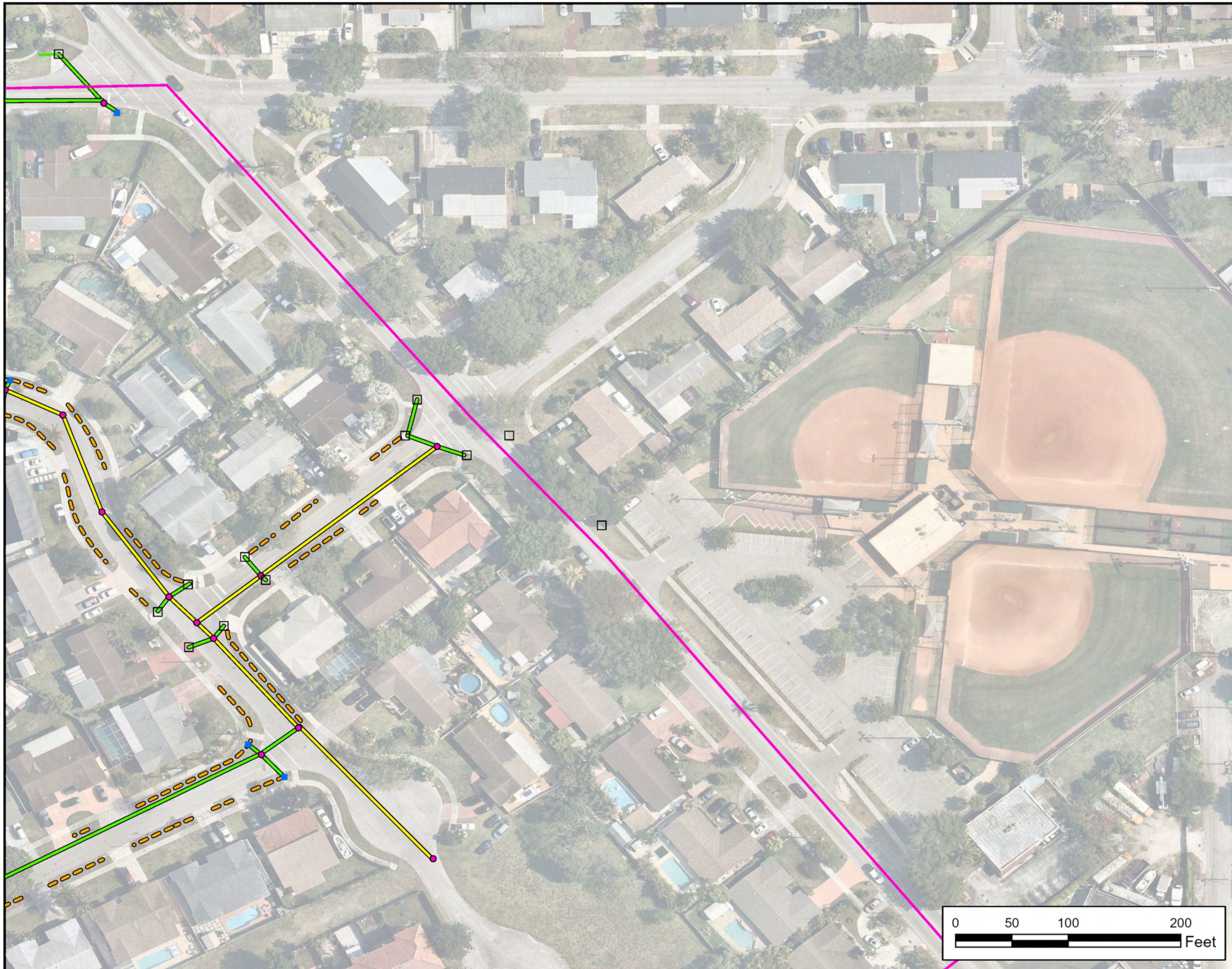
CUTLER BAY STORMWATER MASTER PLAN

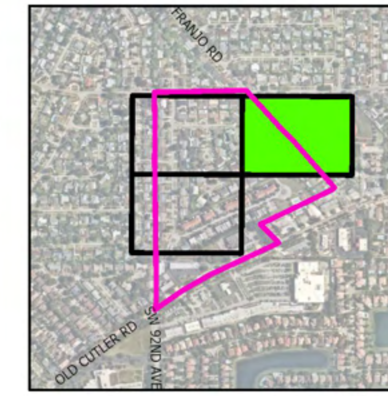
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

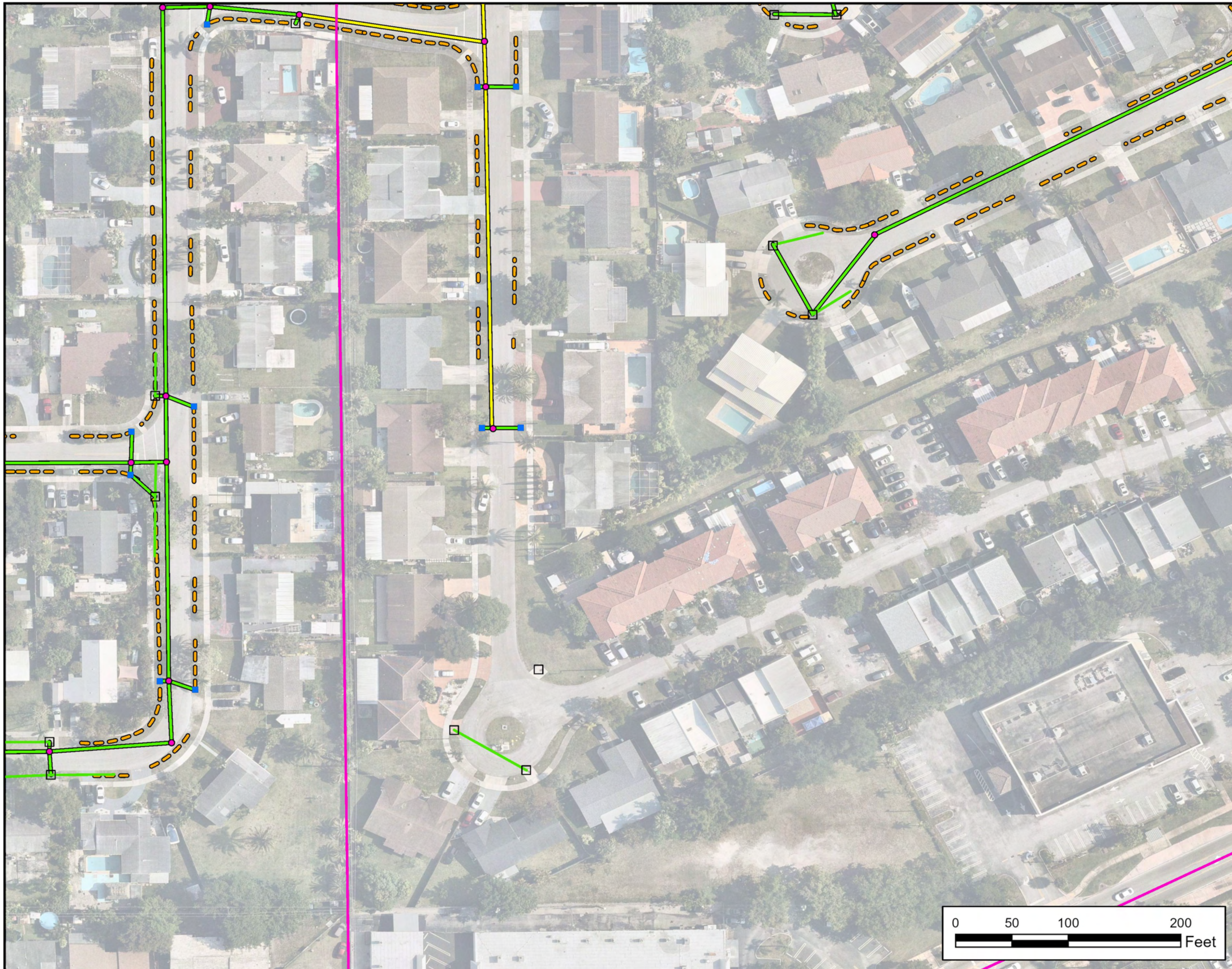
Prepared for:
Town of Cutler Bay

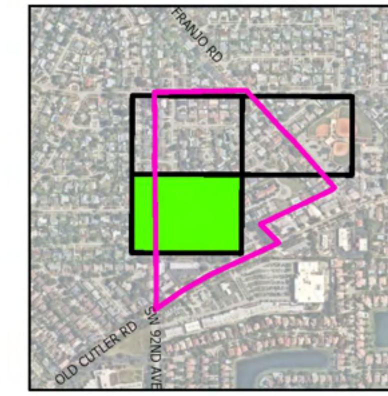
OLD CUTLER COVE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

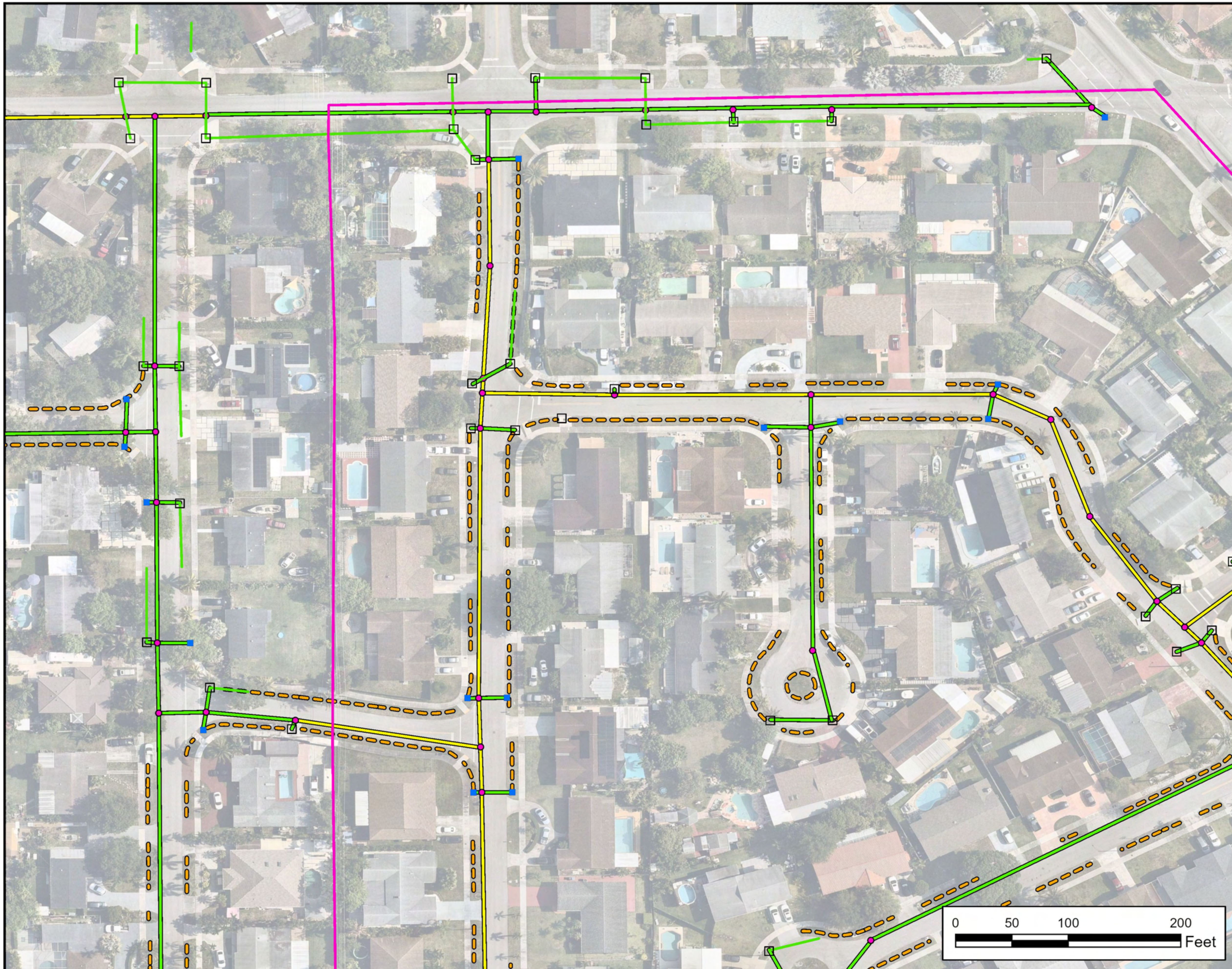
CUTLER BAY STORMWATER MASTER PLAN

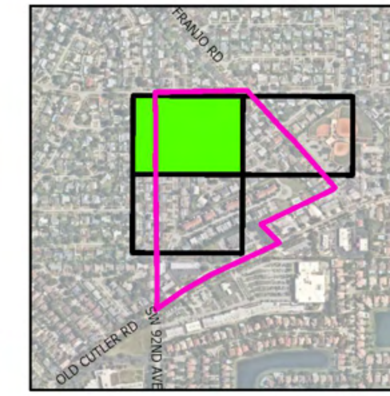
Prepared for:
Town of Cutler Bay

OLD CUTLER COVE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

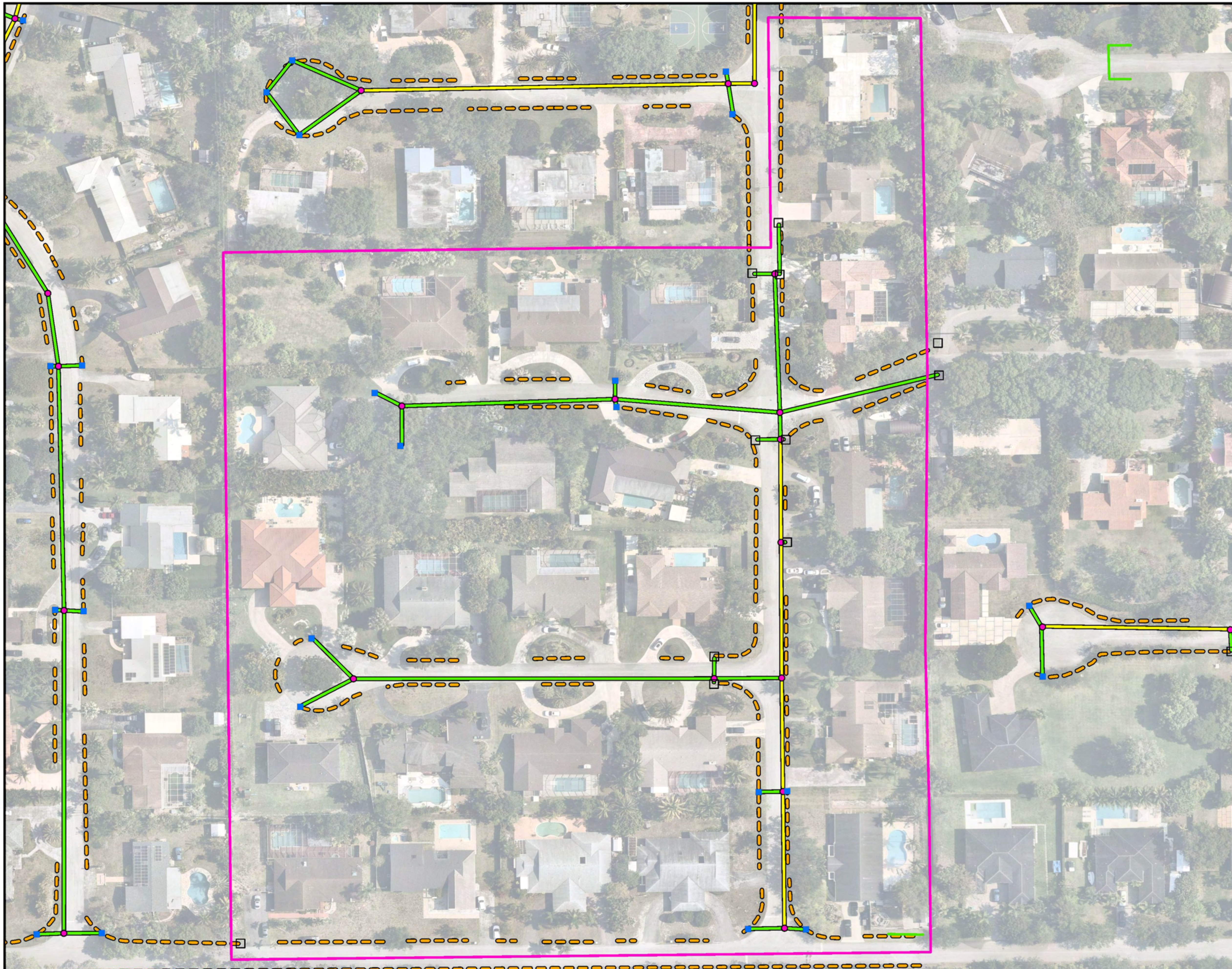
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

OLD CUTLER COVE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

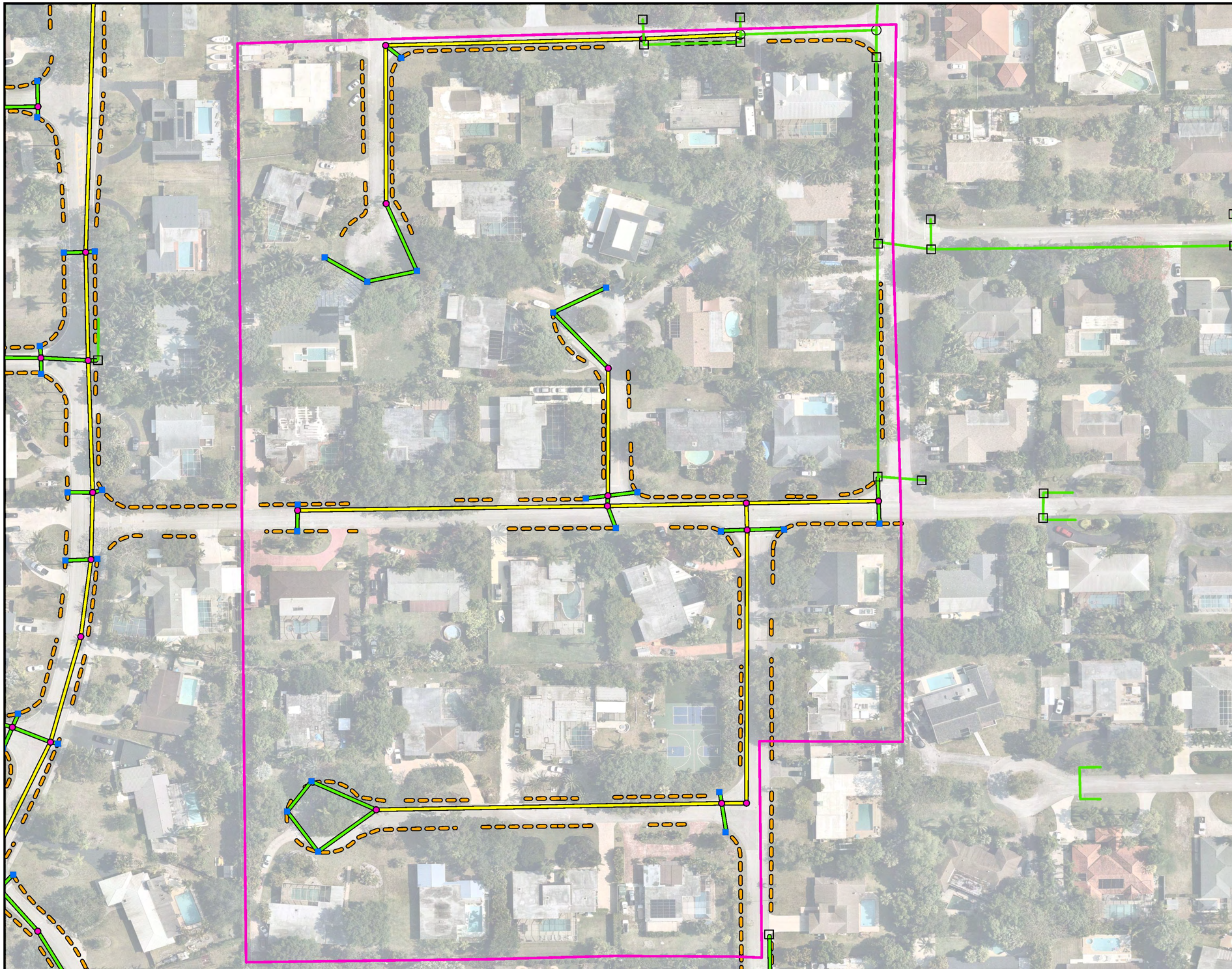
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

OLD CUTLER OMNI PINES IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

TOWN OF CUTLER BAY STORMWATER MASTER PLAN

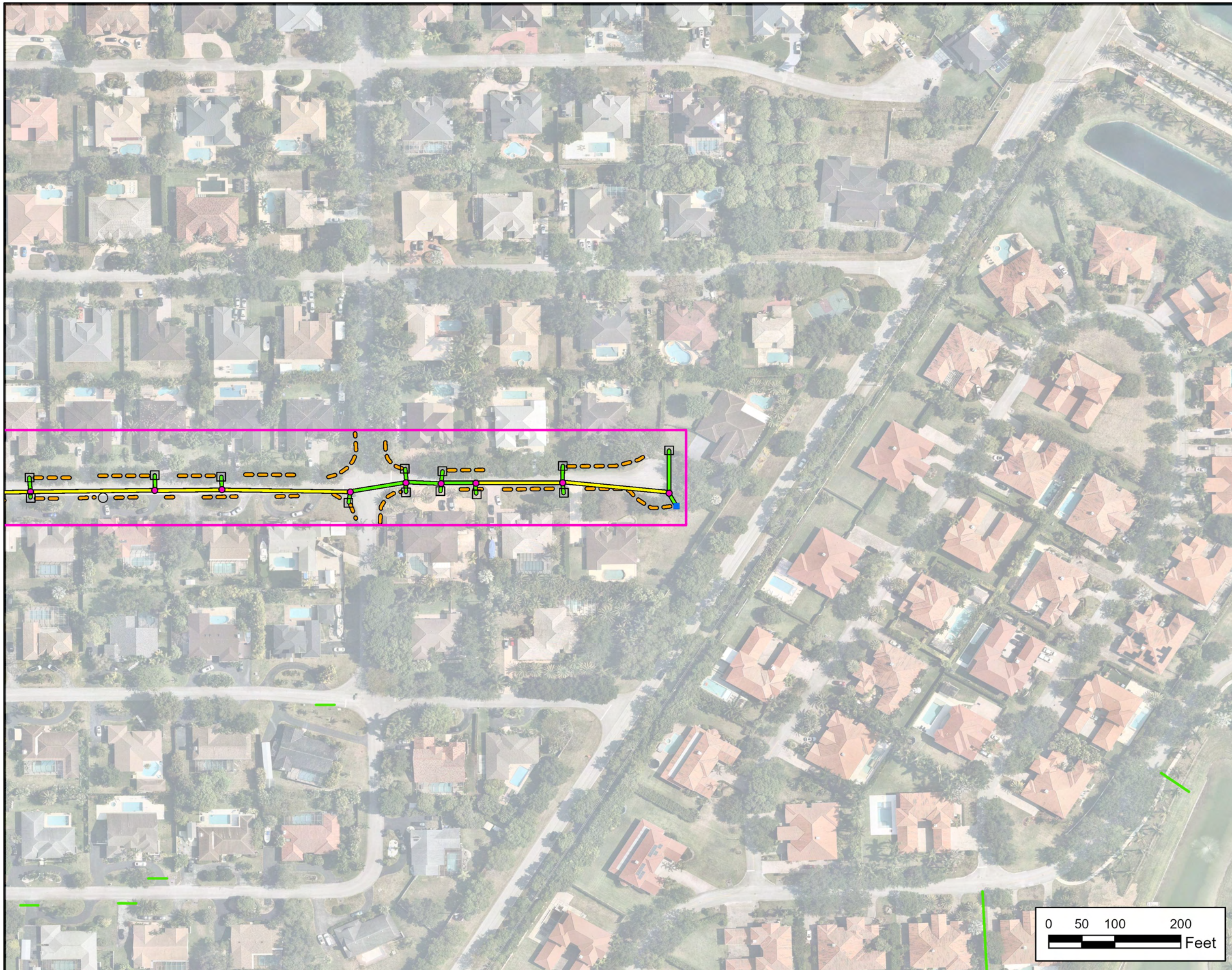
Prepared for:
Town of Cutler Bay

OMNI ESTATES IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1



Key Map

Legend

- Roadway Project Area

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

0 50 100 200 Feet

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

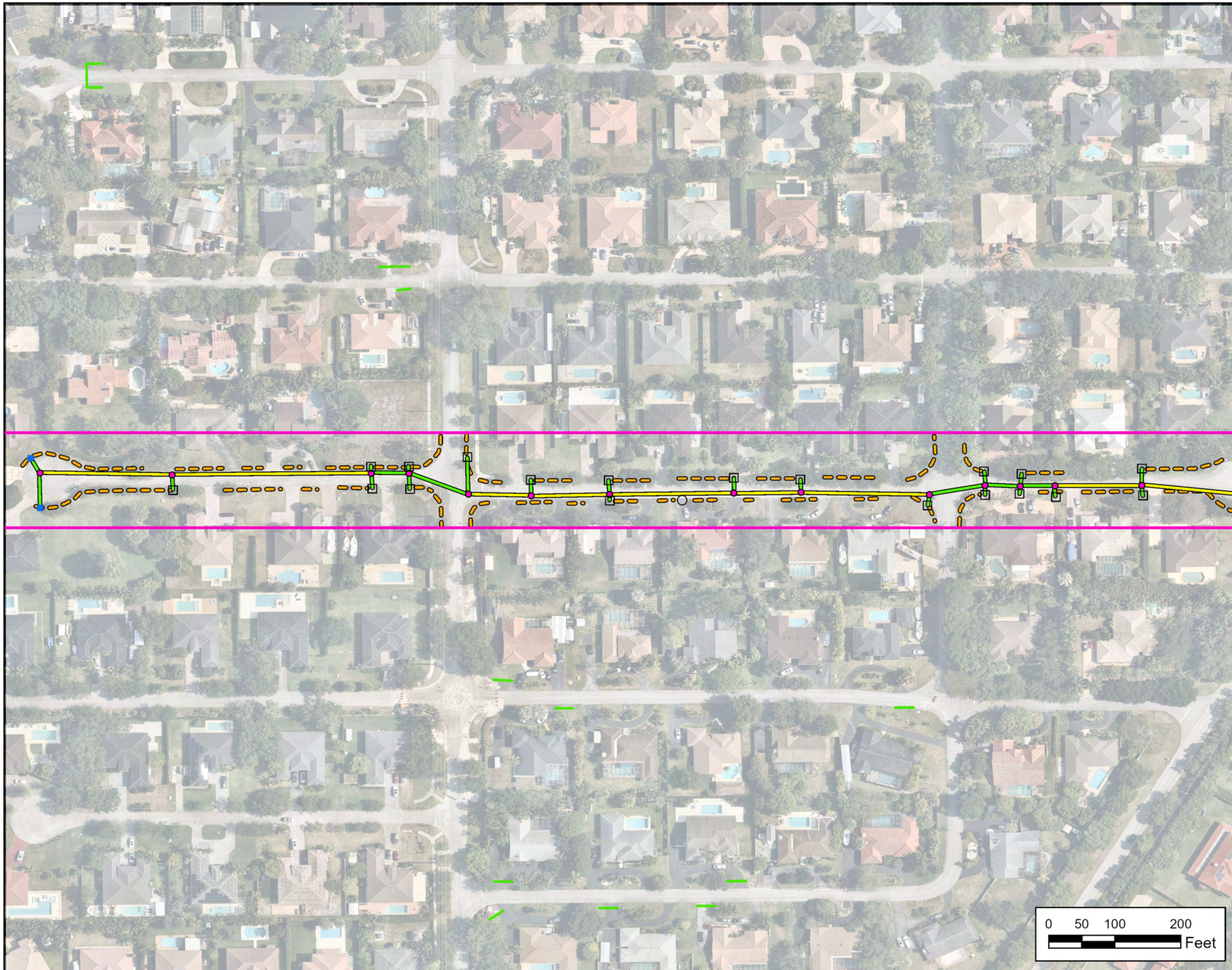
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 187TH TERRACE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Legend

Roadway Project Area

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

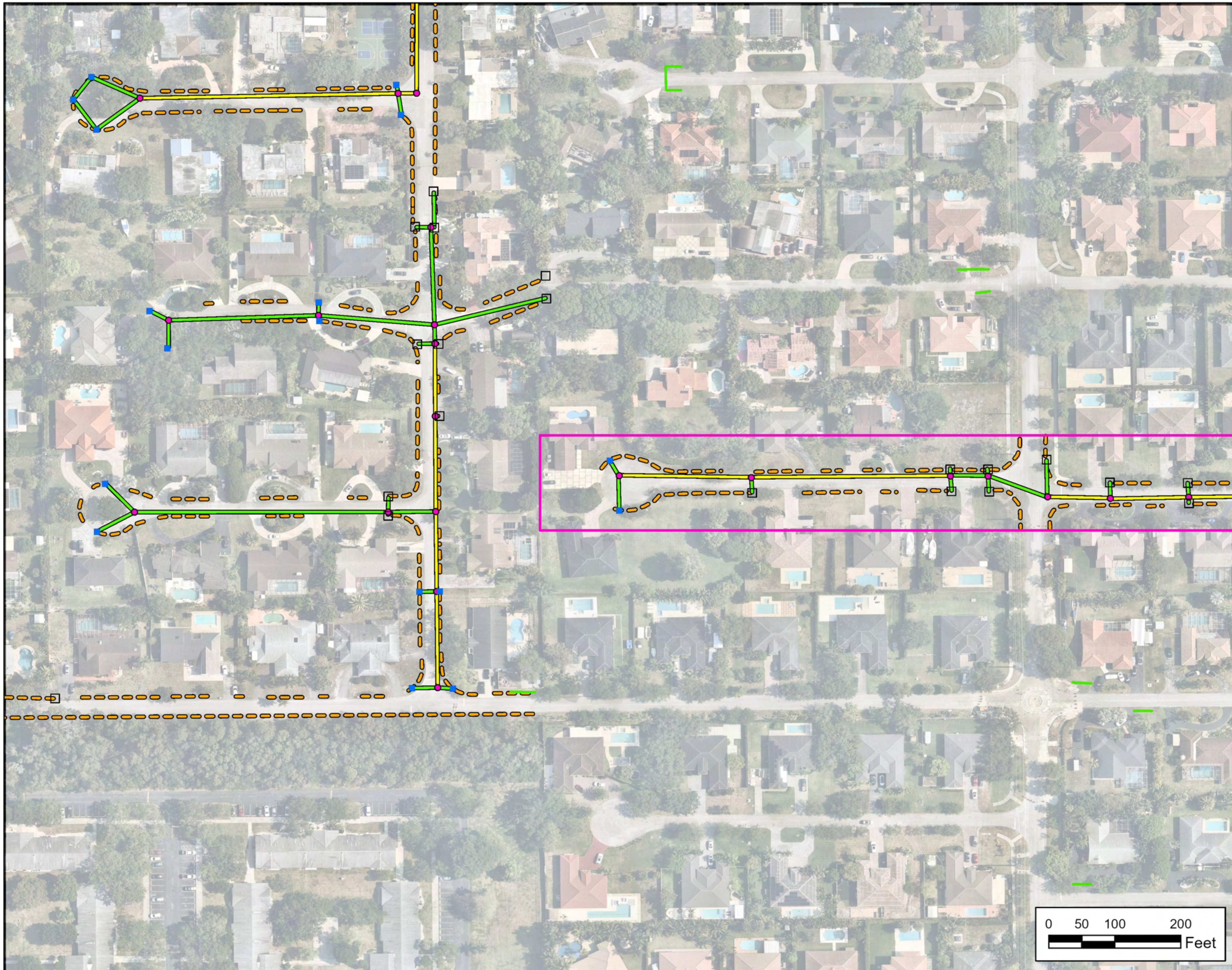
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 187TH TERRACE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2



Key Map

0 50 100 200 Feet

Legend

Roadway Project Area

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

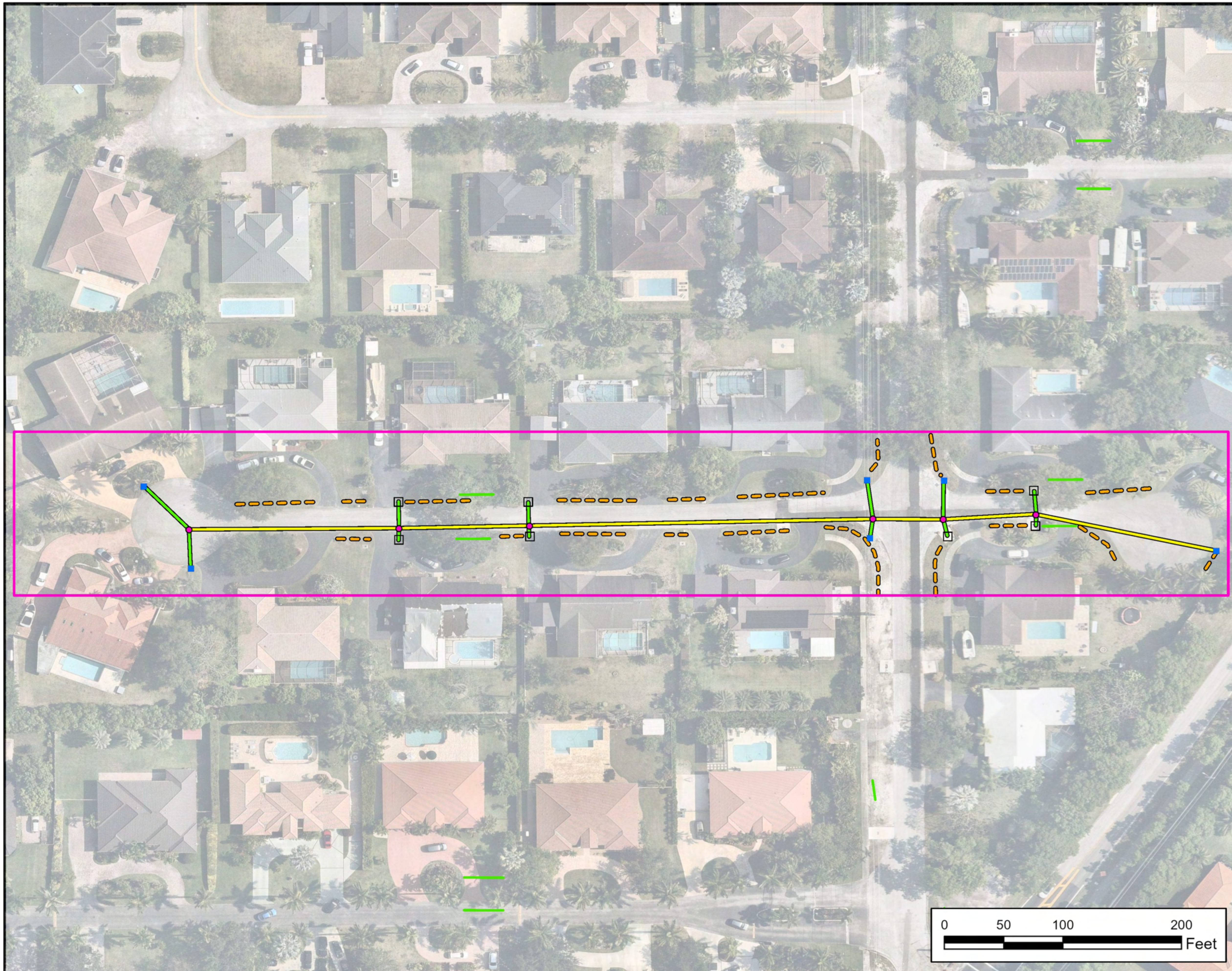
Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

SW 187TH TERRACE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3



Key Map

Legend

- Roadway Project Area

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

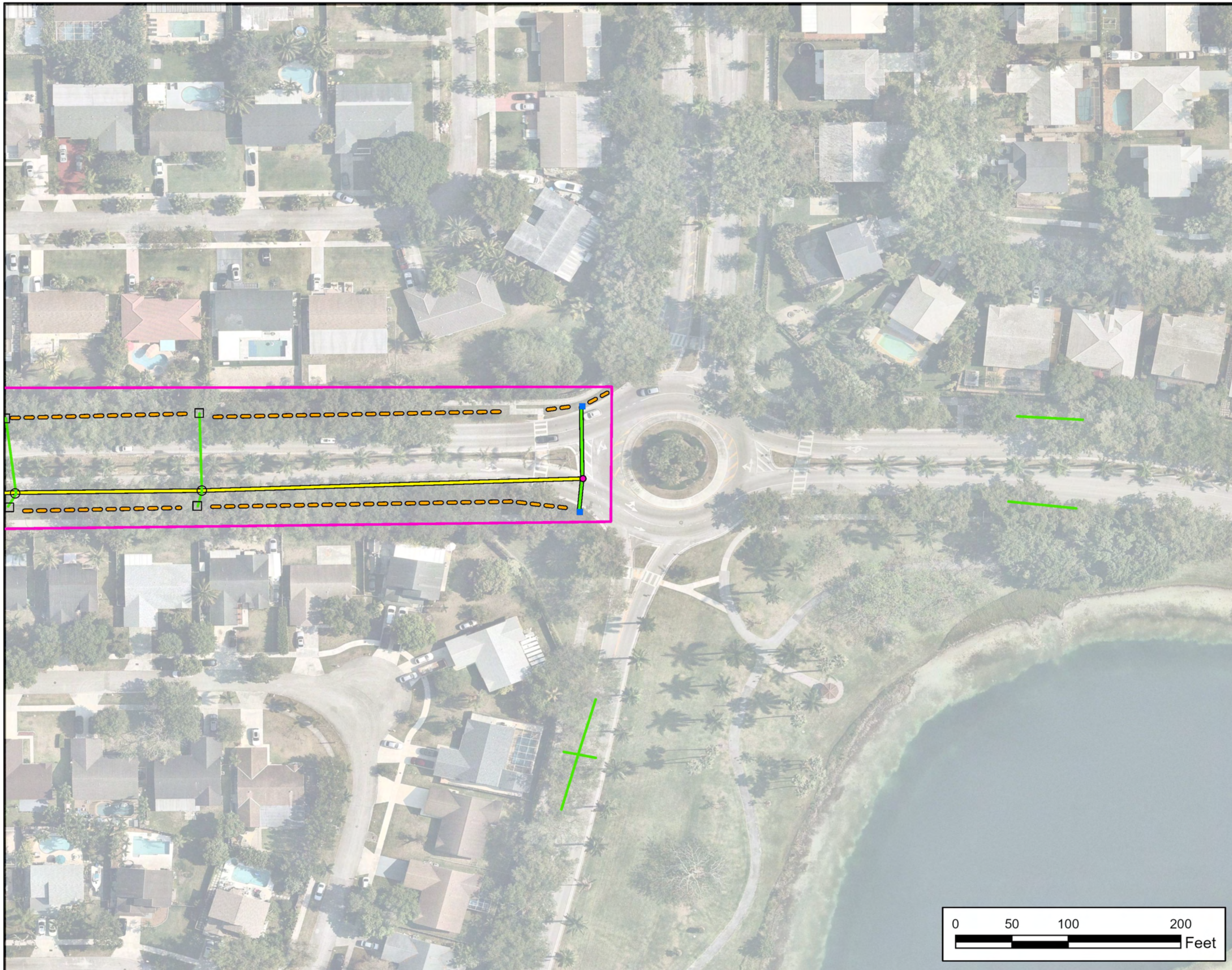
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 192ND STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 216TH STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1

Legend

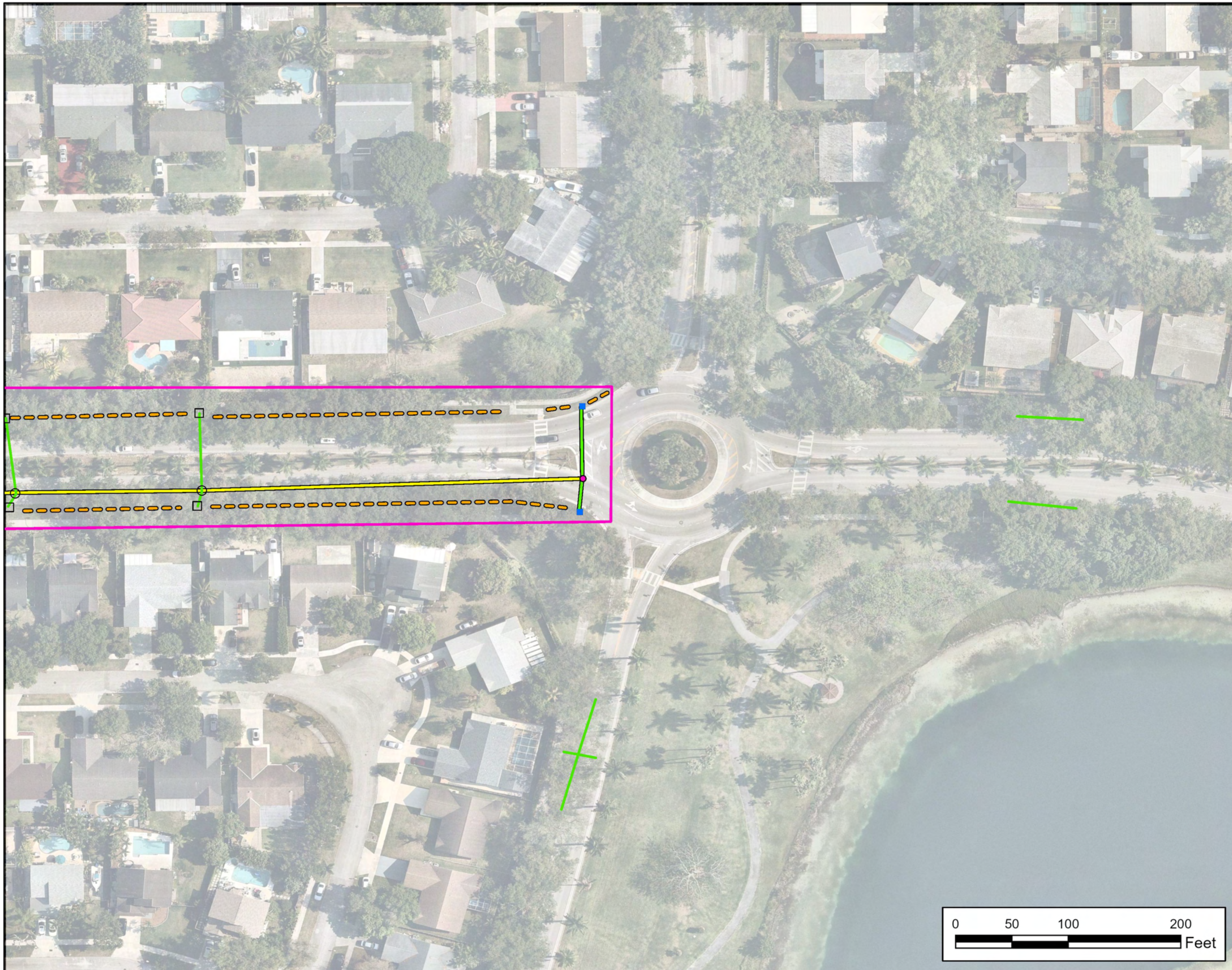
Roadway Project Area

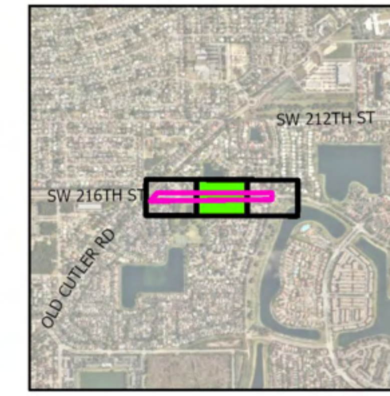
Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale





Key Map

Legend

Roadway Project Area

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

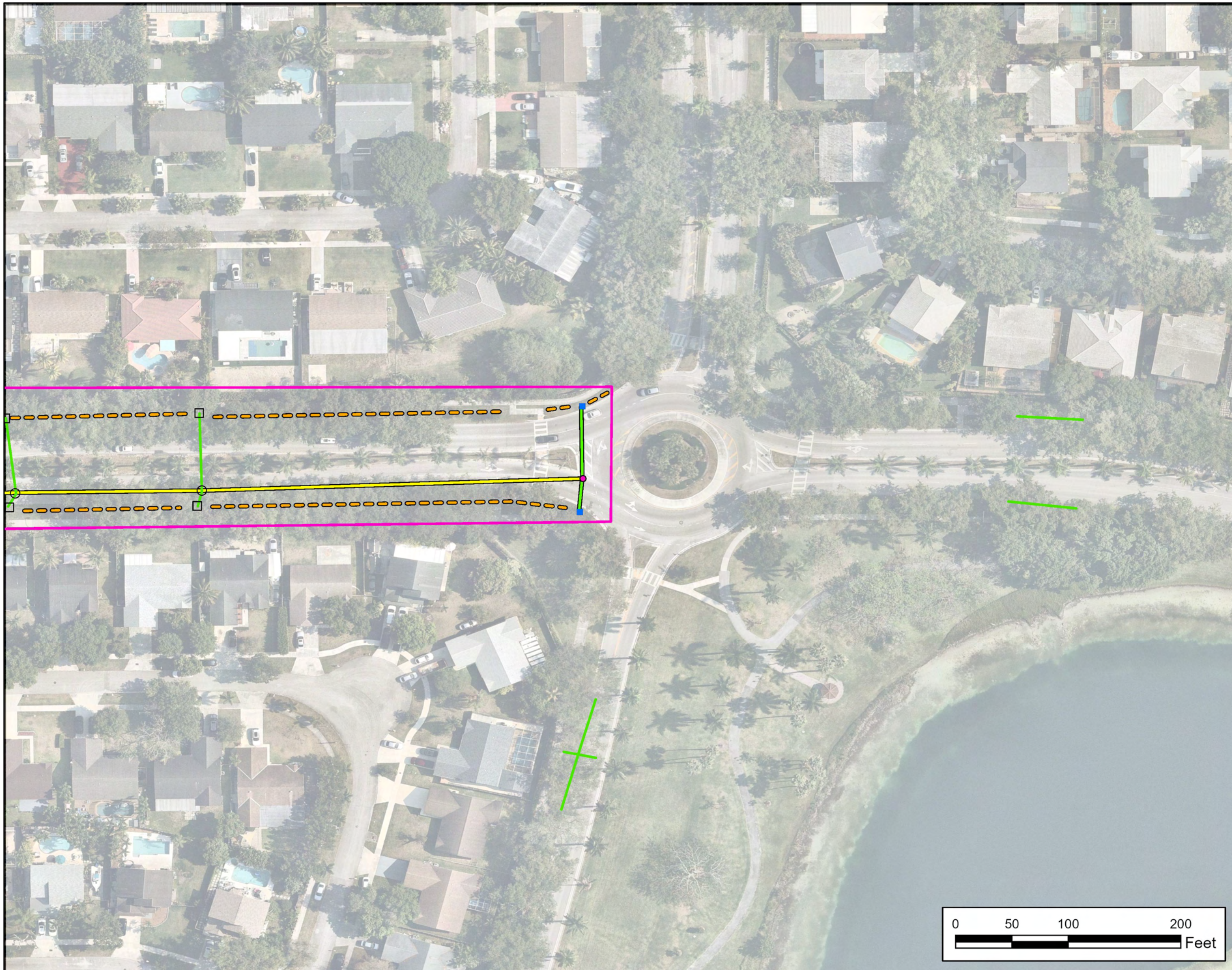
CUTLER BAY STORMWATER MASTER PLAN

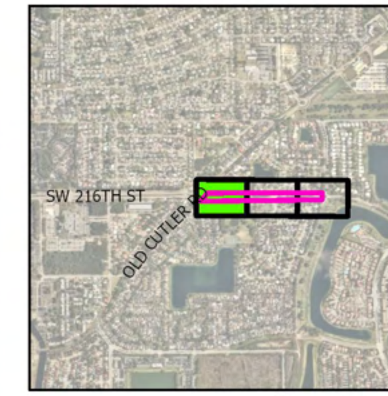
Prepared for:
Town of Cutler Bay

SW 216TH STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

Roadway Project Area

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

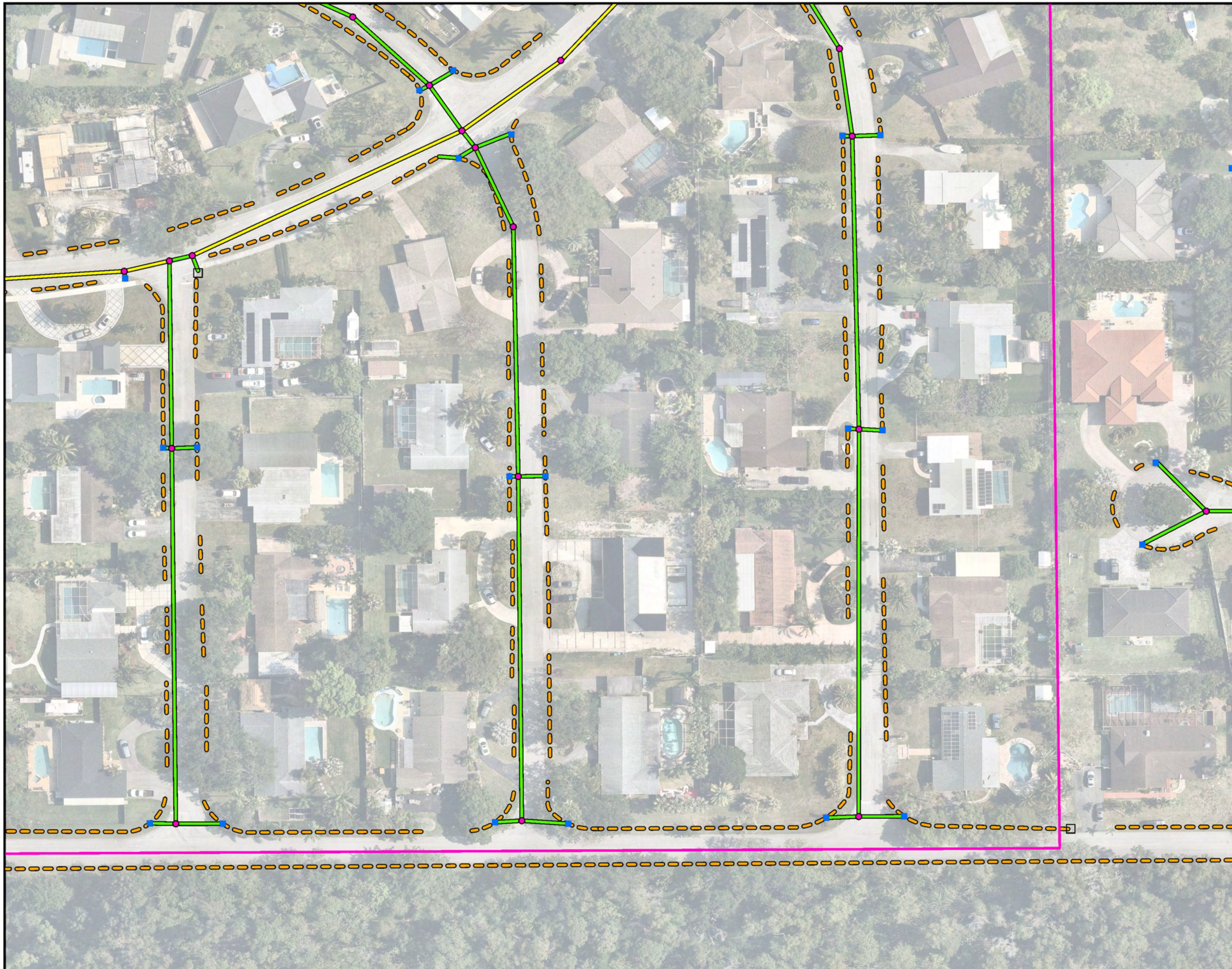
Prepared for:
Town of Cutler Bay

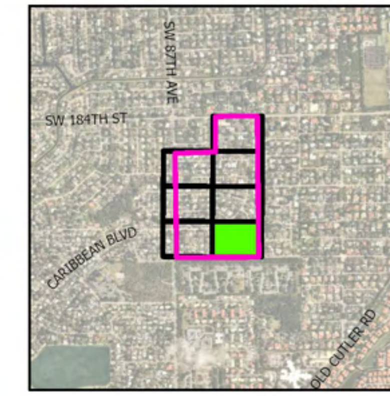
SW 216TH STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

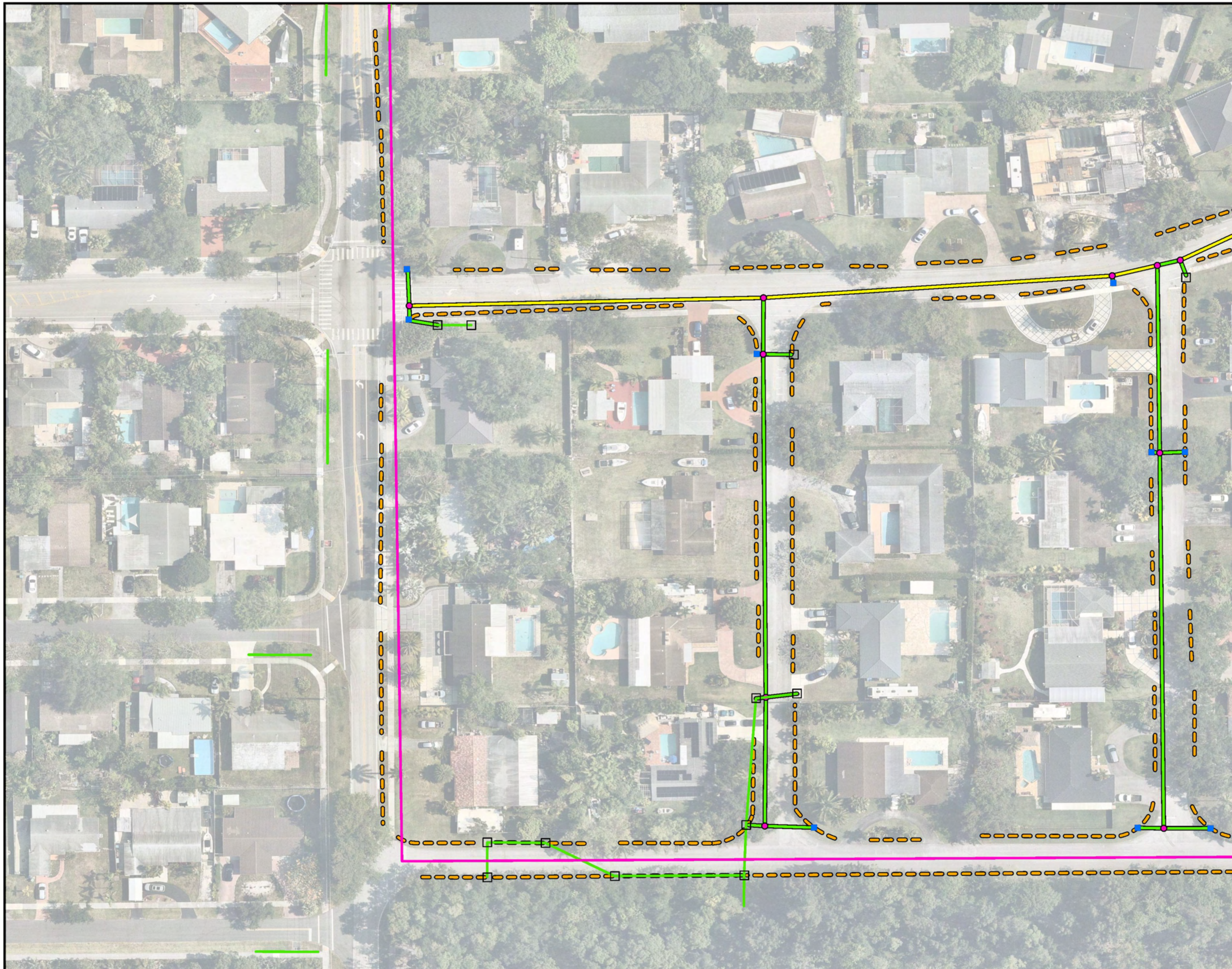
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

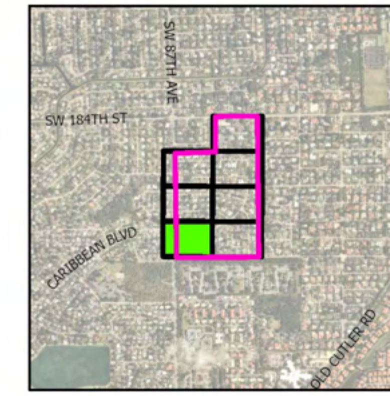
WHISPERING PINES ESTATES SEC 1
IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

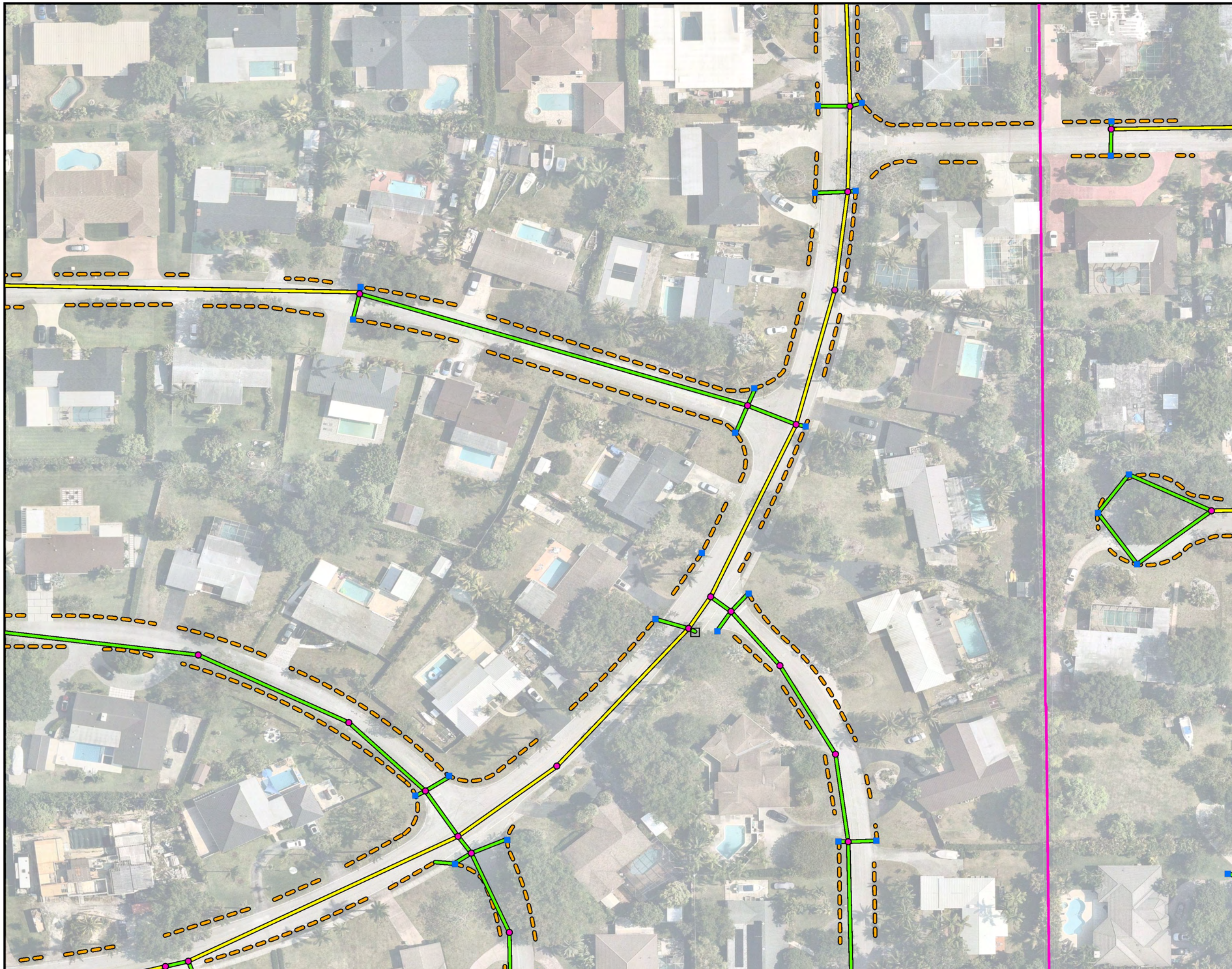
Prepared for:
Town of Cutler Bay

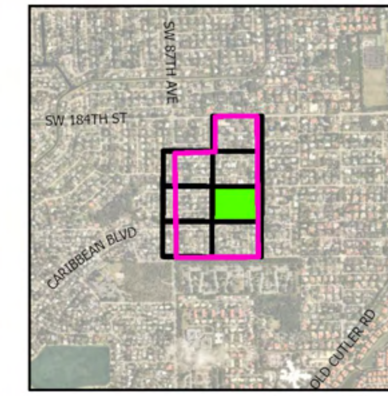
WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

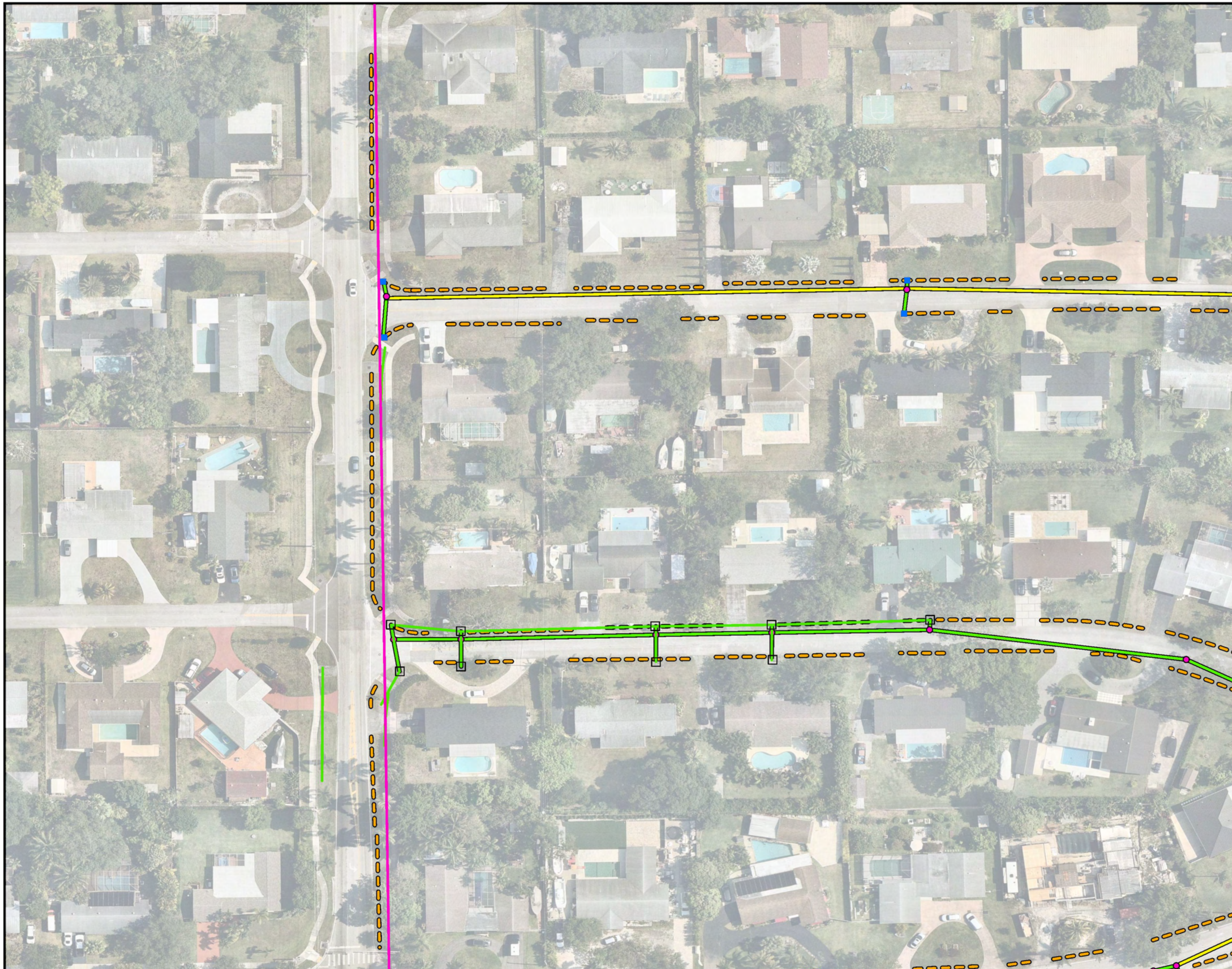
CUTLER BAY STORMWATER MASTER PLAN

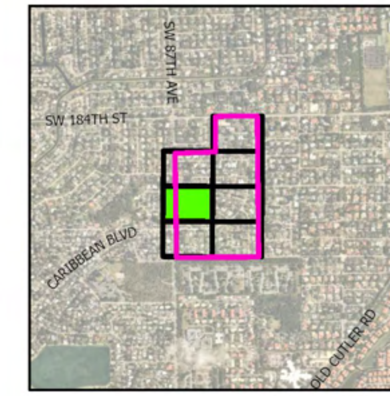
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

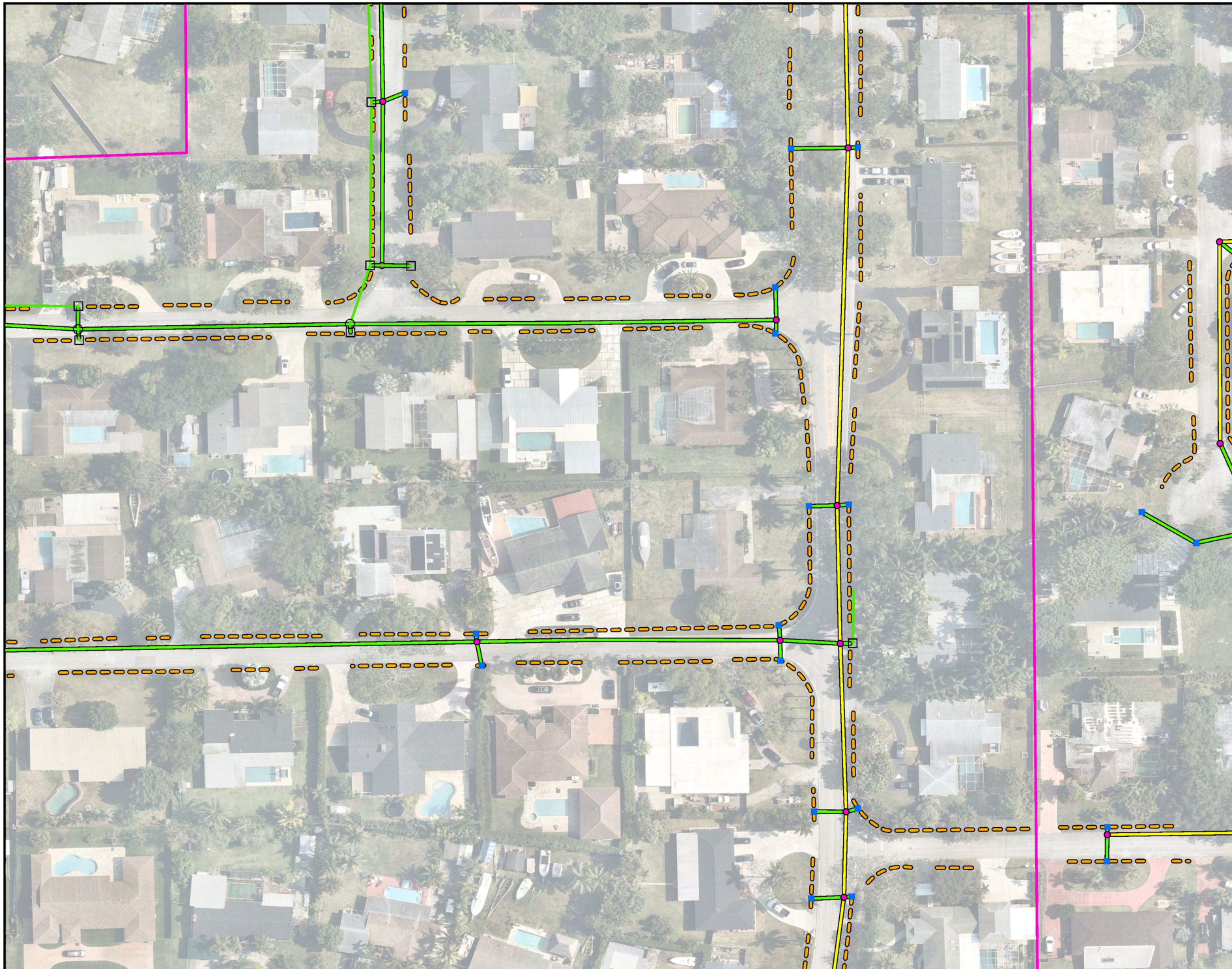
CUTLER BAY STORMWATER MASTER PLAN

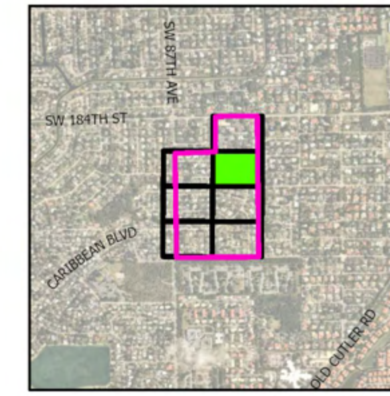
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

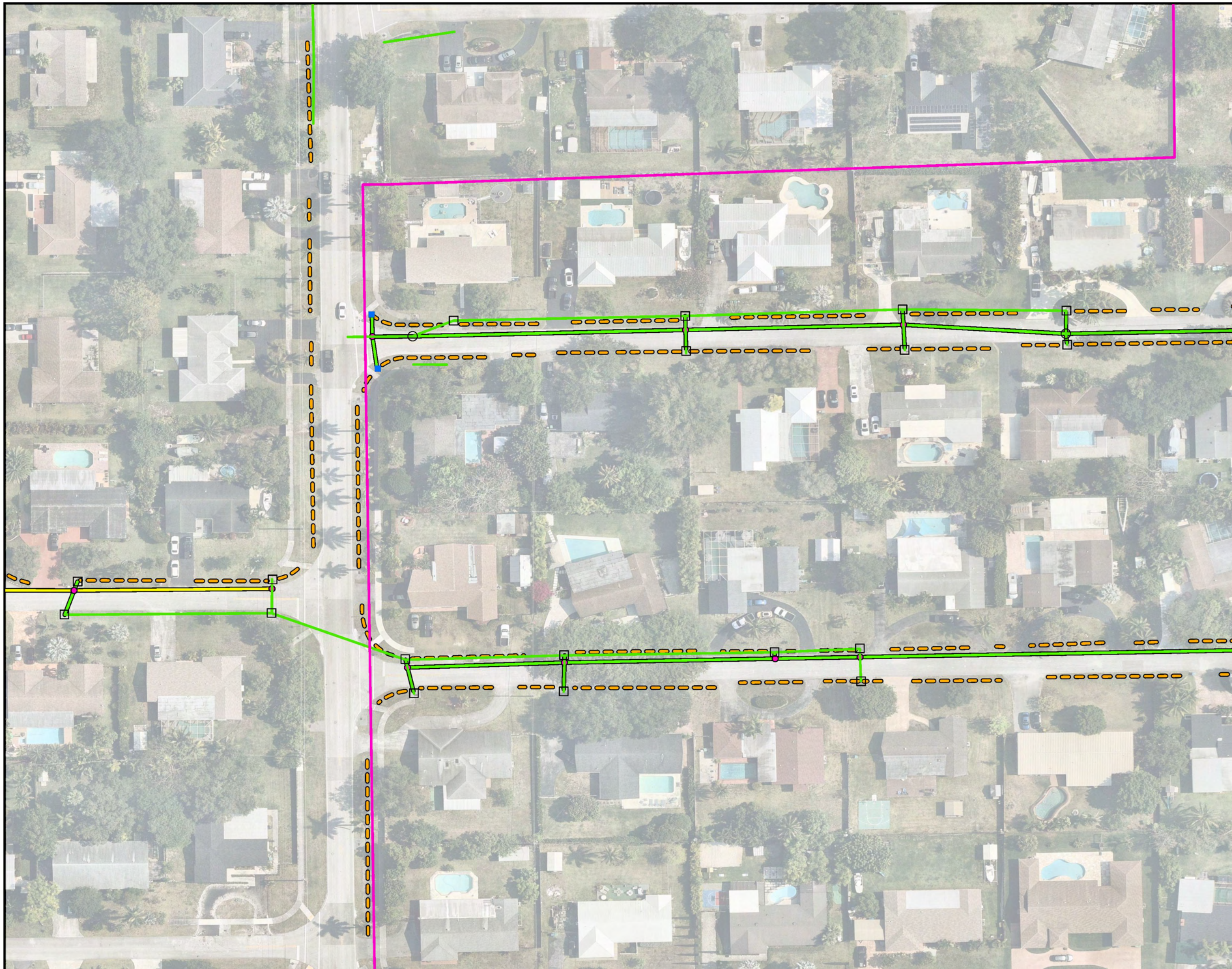
Prepared for:
Town of Cutler Bay

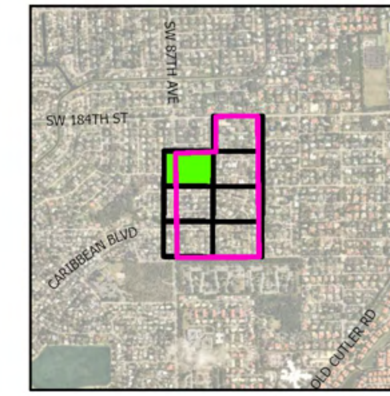
WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

5





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

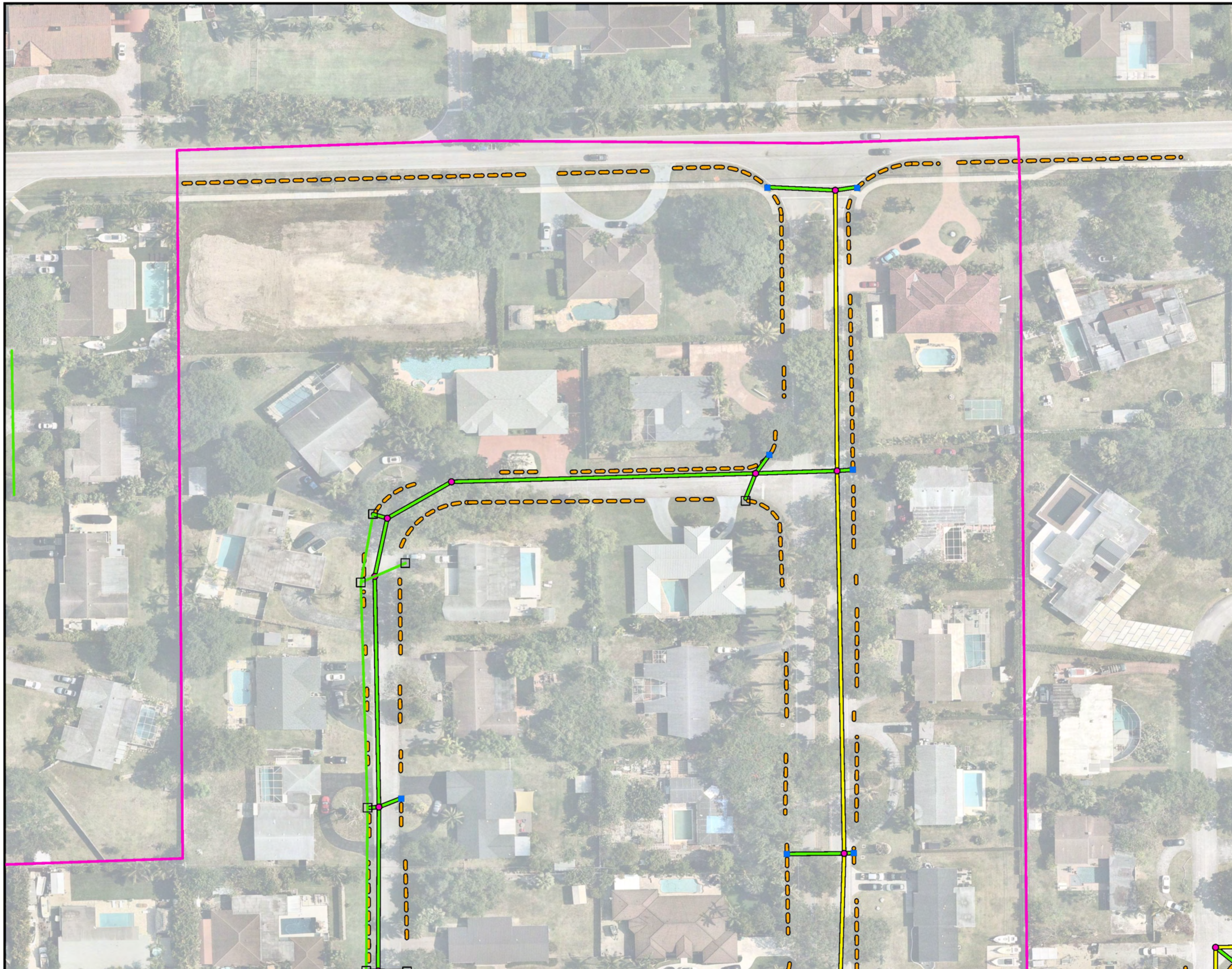
CUTLER BAY STORMWATER MASTER PLAN

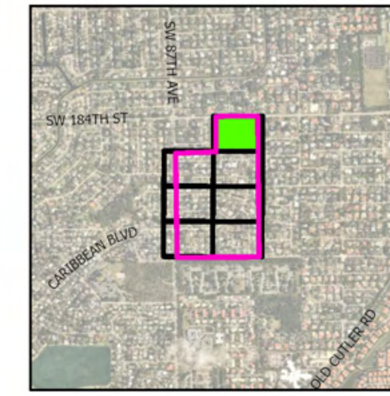
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
6





Key Map

Legend

PriorityYr

2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

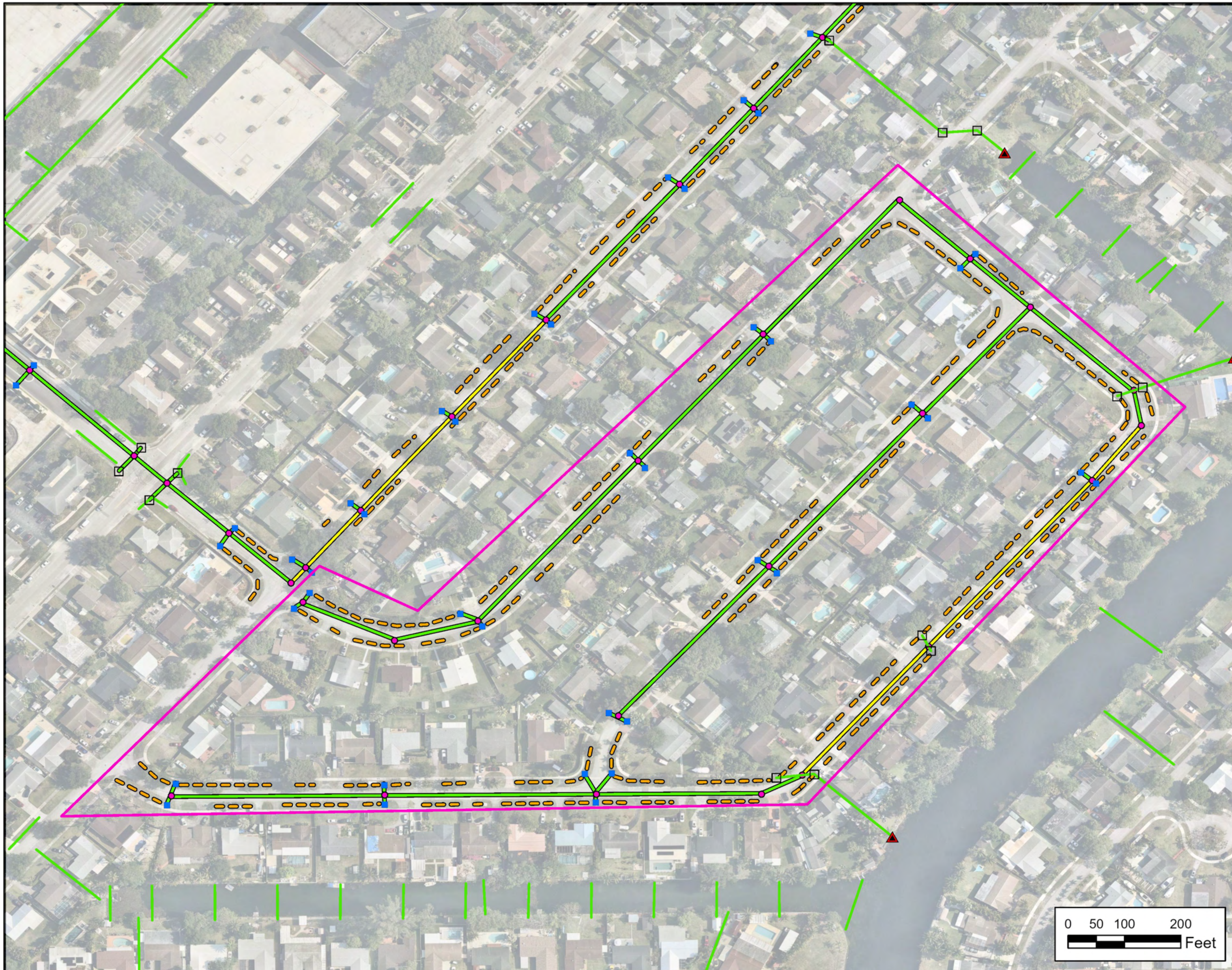
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

7



Key Map

Legend

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale
- Roadway Restoration Project

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

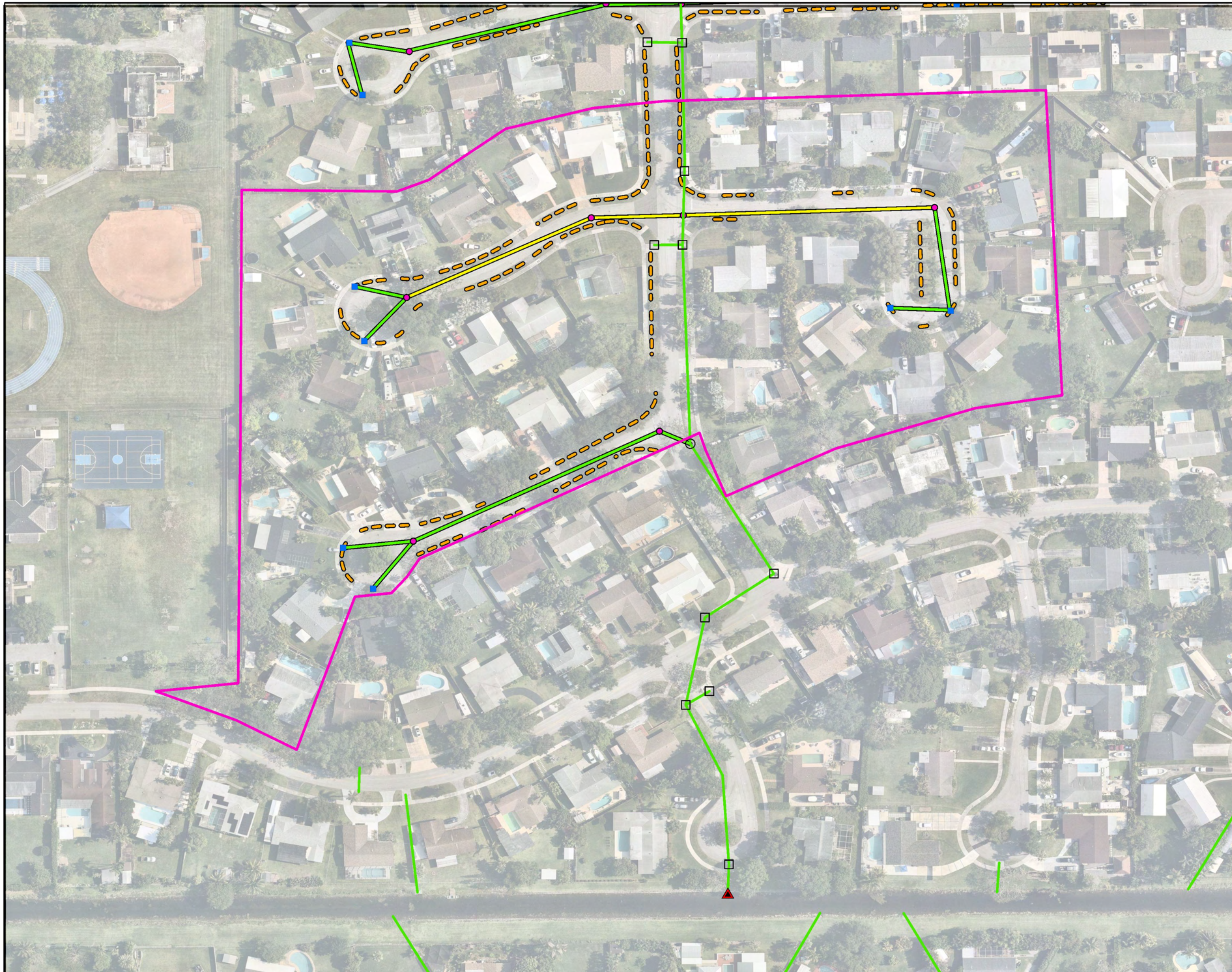
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 2.1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

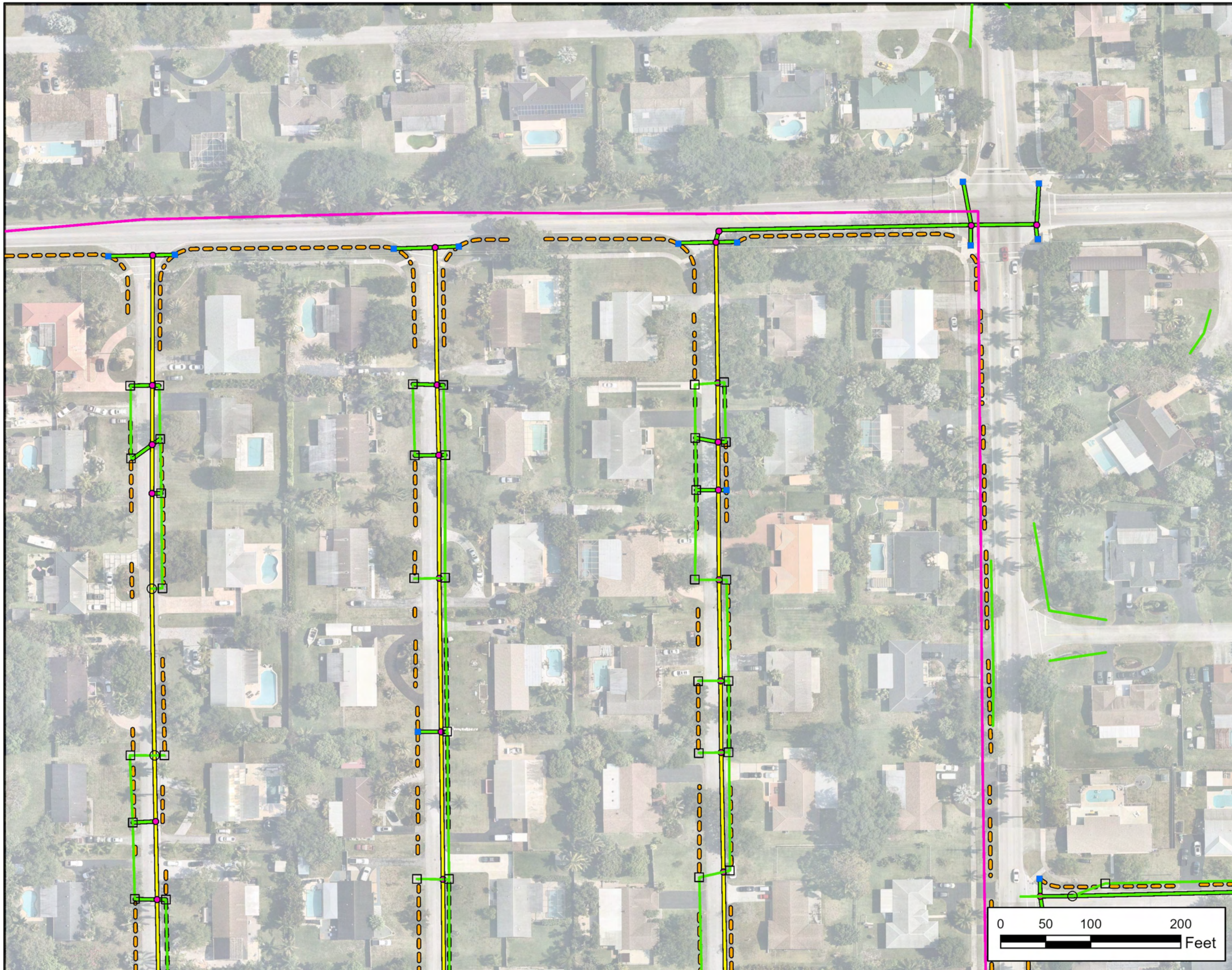
TOWN OF CUTLER BAY STORMWATER MASTER PLAN

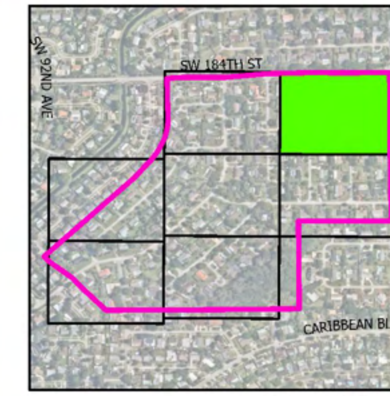
Prepared for:
Town of Cutler Bay

BEL AIR SEC 13.1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

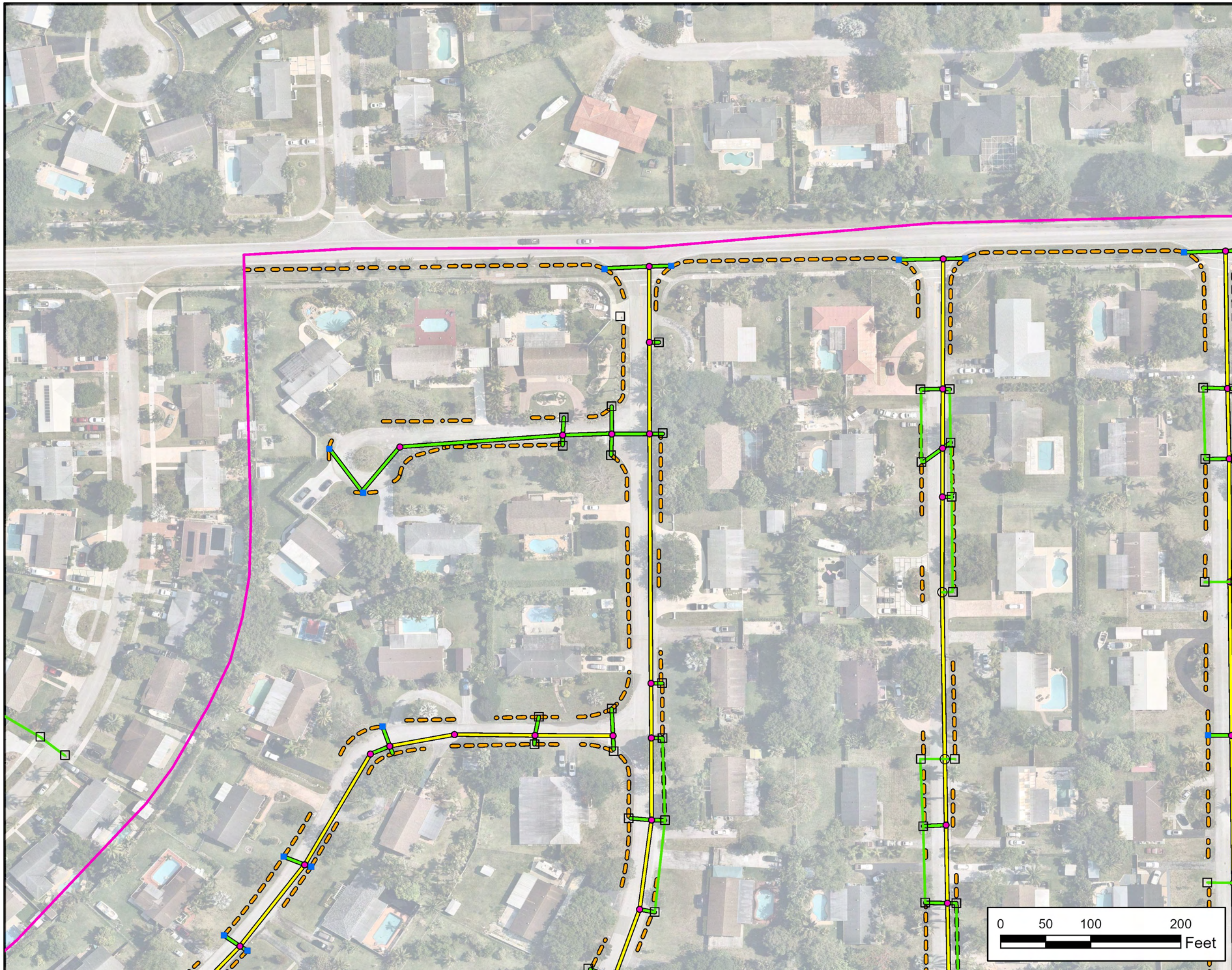
CUTLER BAY STORMWATER MASTER PLAN

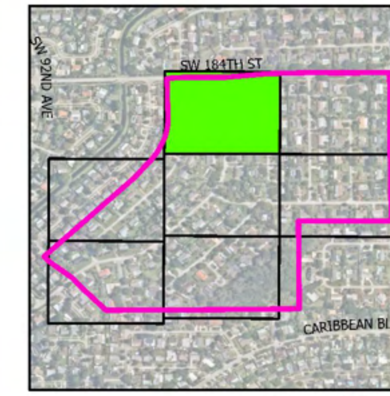
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

N

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

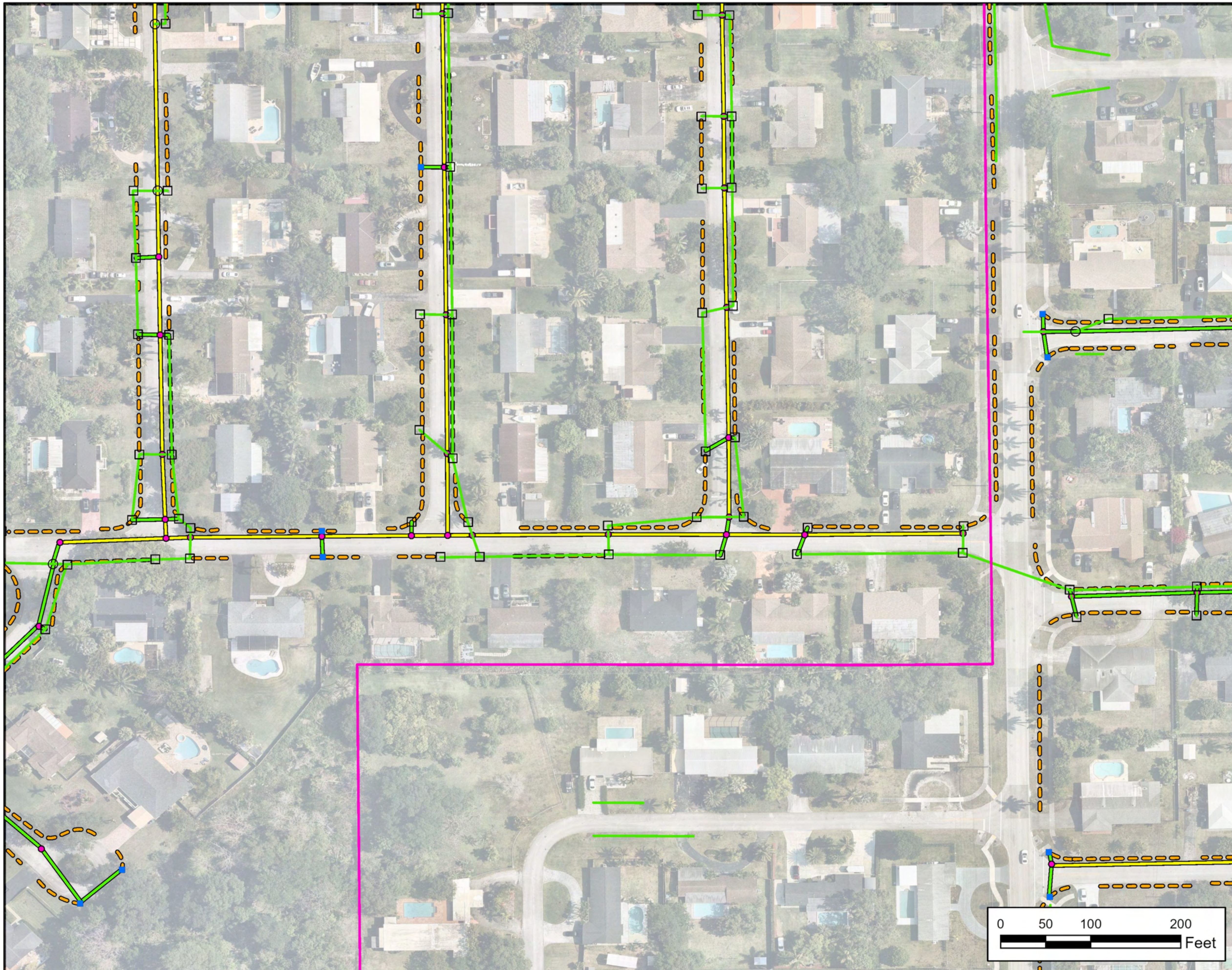
CUTLER BAY STORMWATER MASTER PLAN

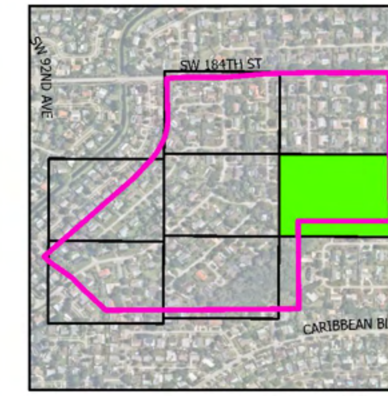
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

PriorityYr

2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

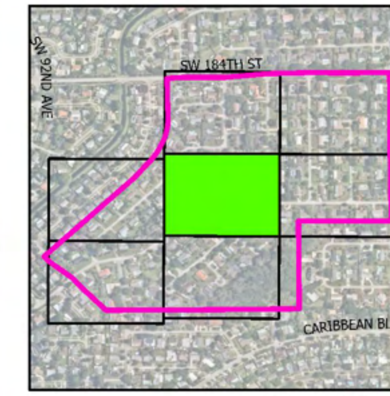
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3



Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

0 50 100 200 Feet

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

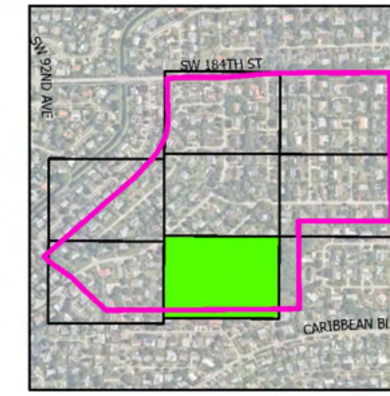
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

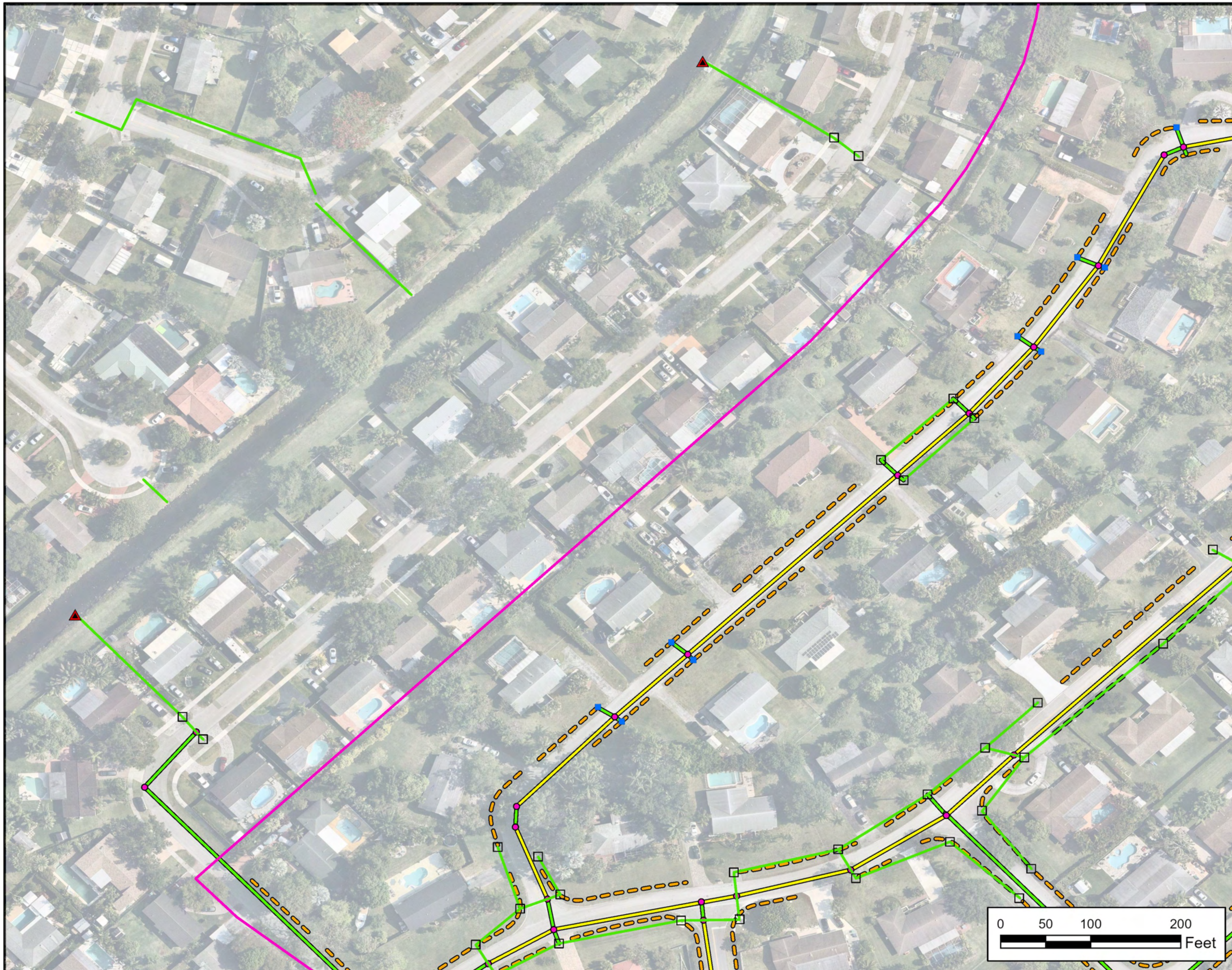
CUTLER BAY STORMWATER MASTER PLAN

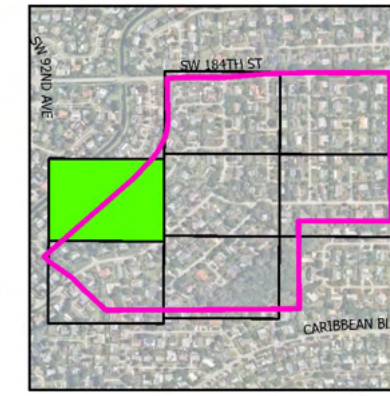
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

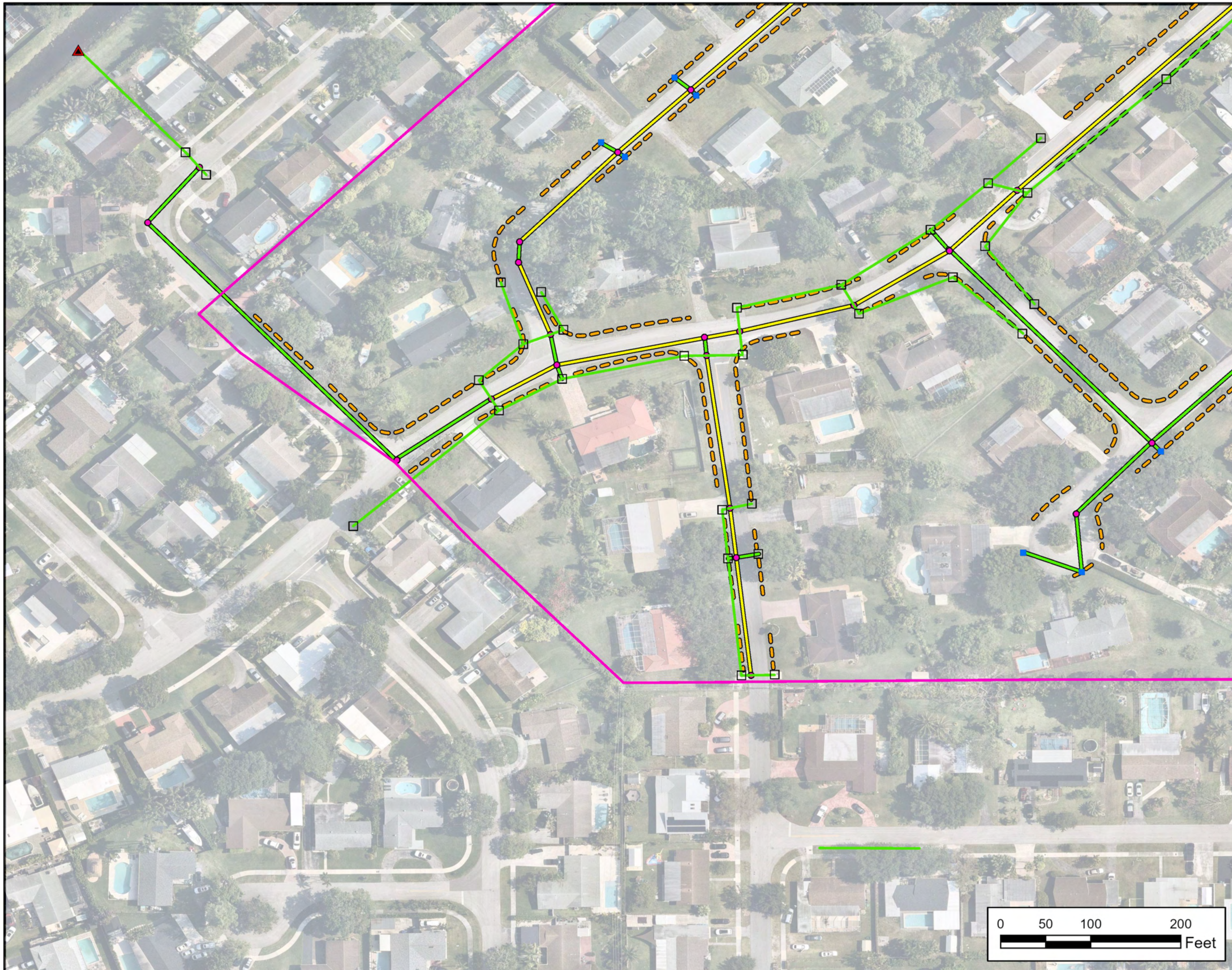
CUTLER BAY STORMWATER MASTER PLAN

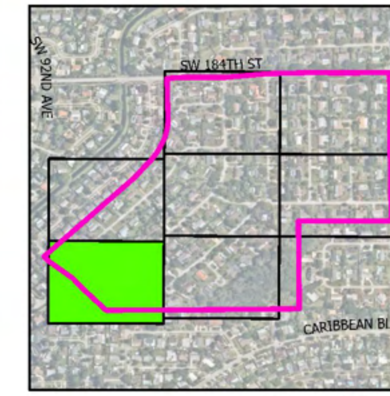
Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
6





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

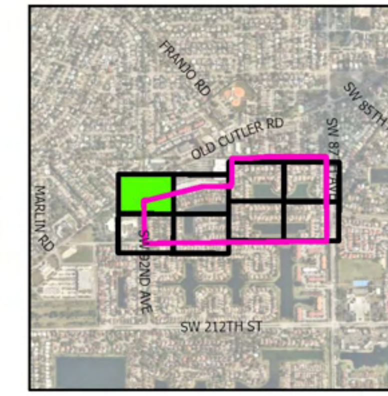
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

BEL AIRE SEC 23 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
7



Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

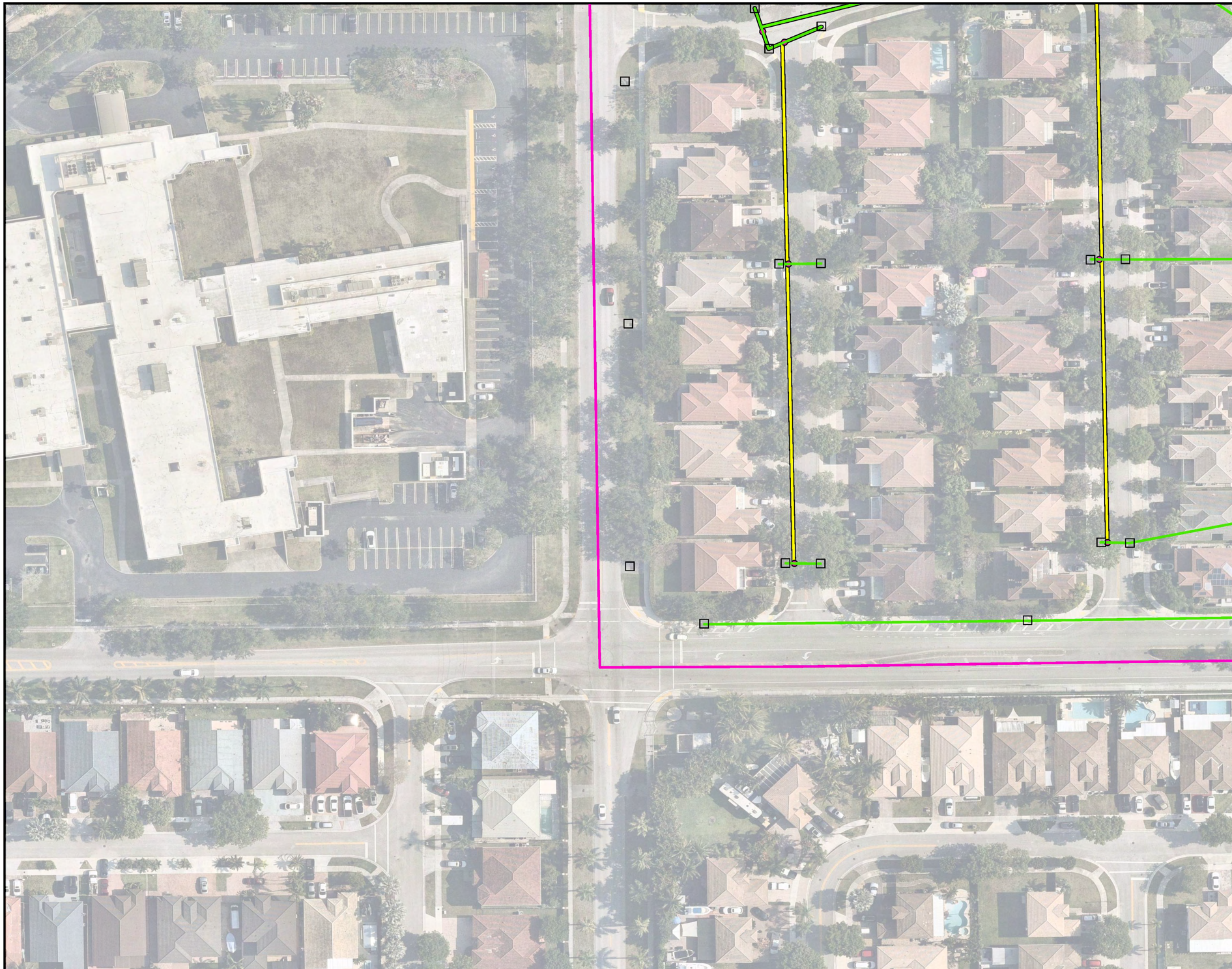
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

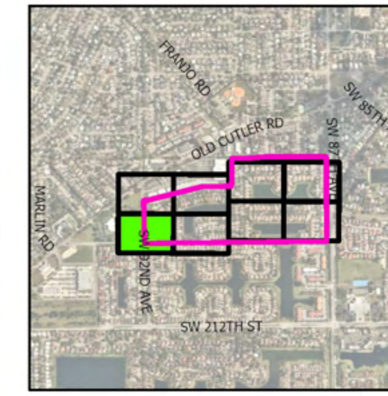
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

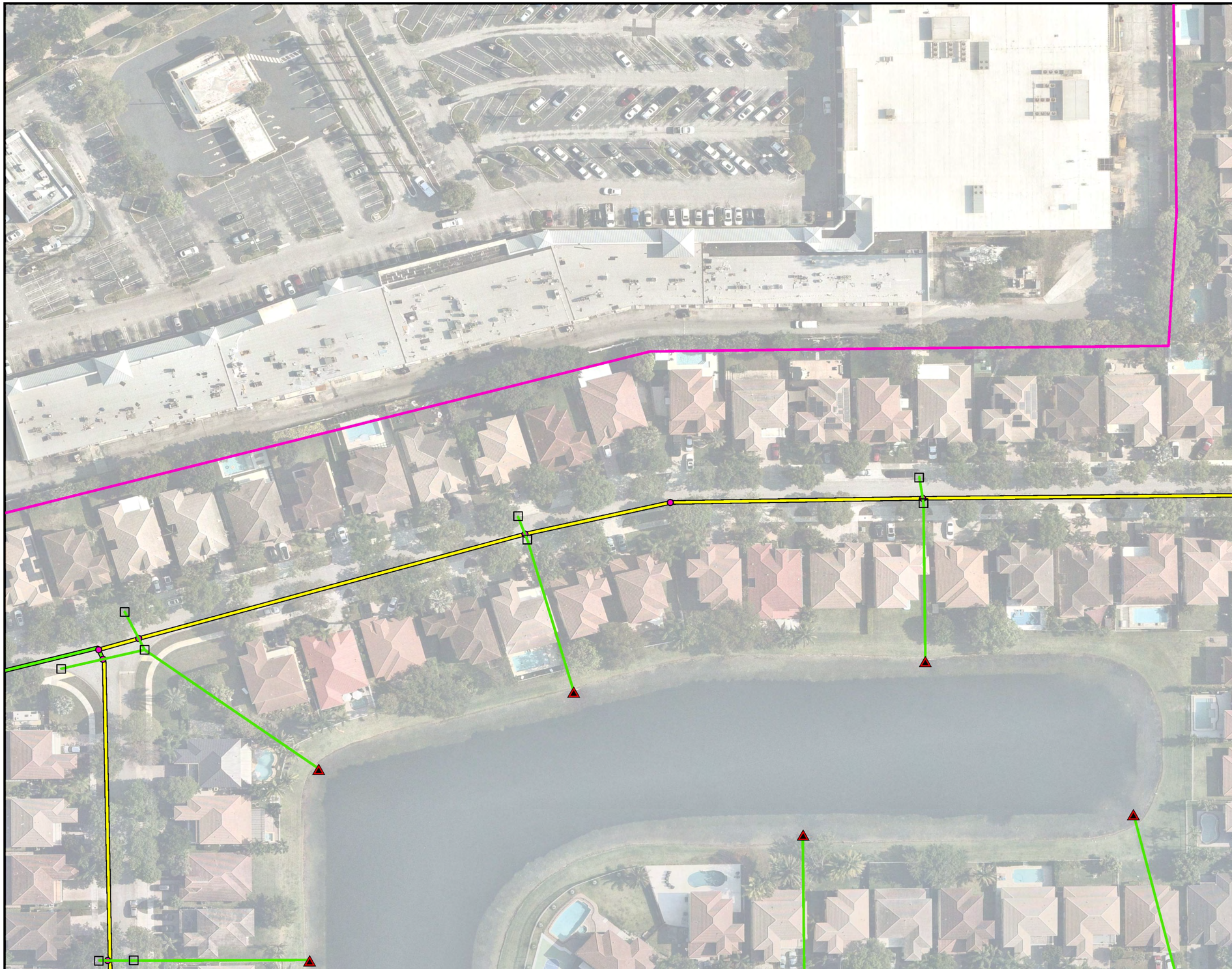
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

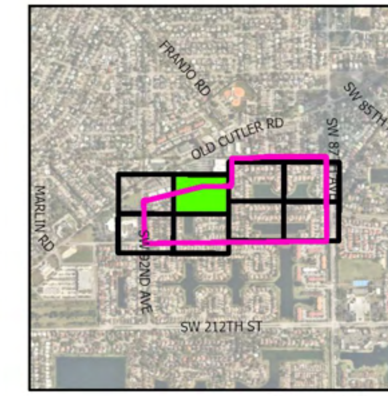
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

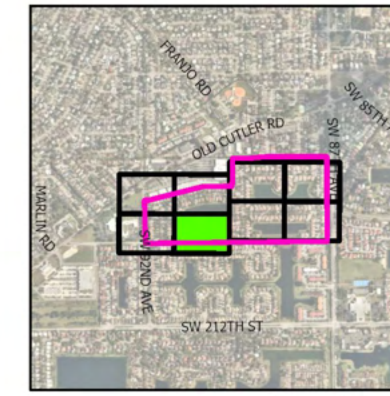
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3



Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Outfall

Existing Storm Pipe

Proposed

Proposed Manhole

Proposed Exfiltration Trench

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

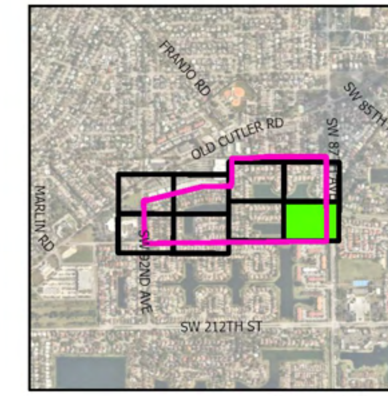
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

4



Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Outfall

Existing Storm Pipe

Proposed

Proposed Manhole

Proposed Exfiltration Trench

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

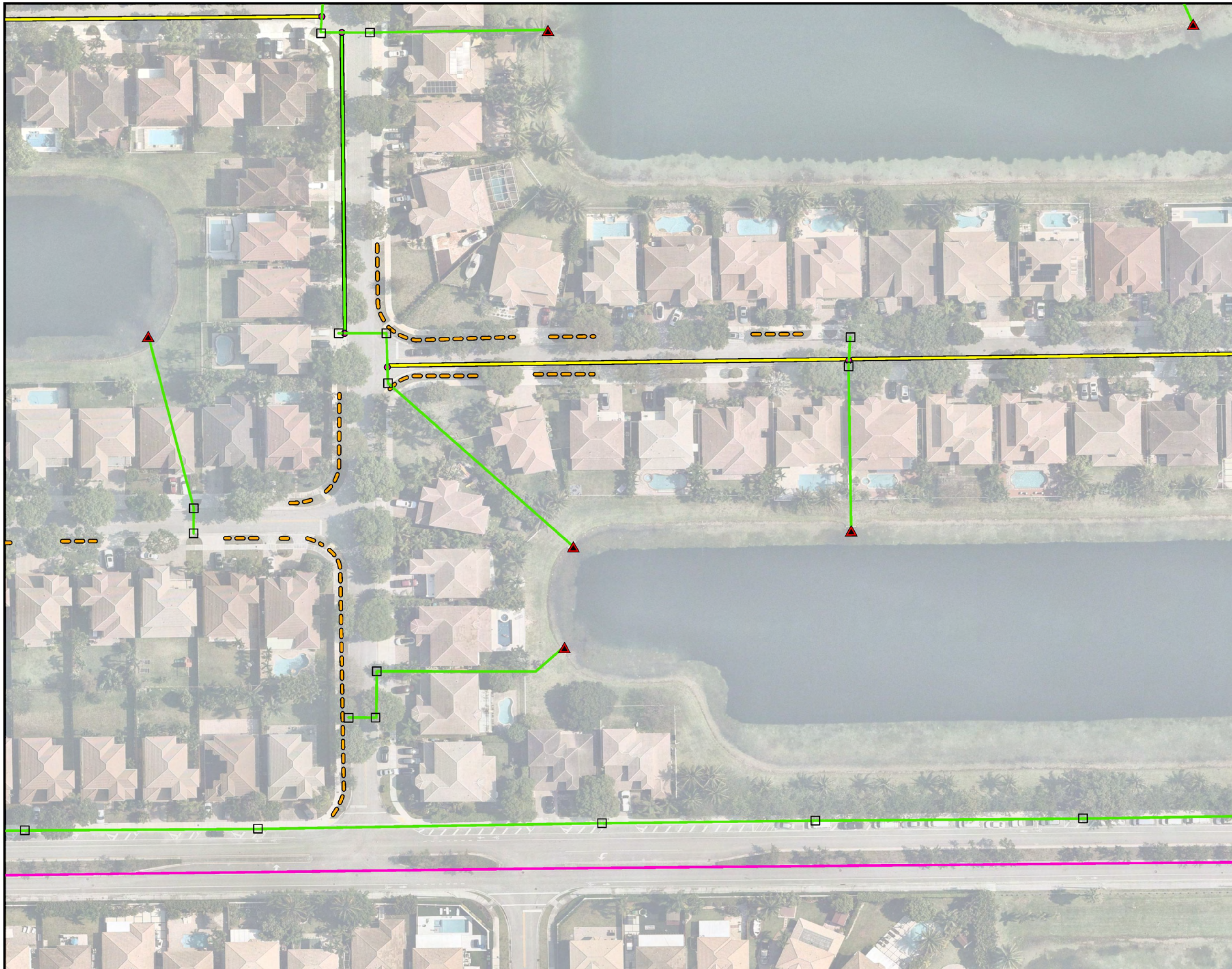
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

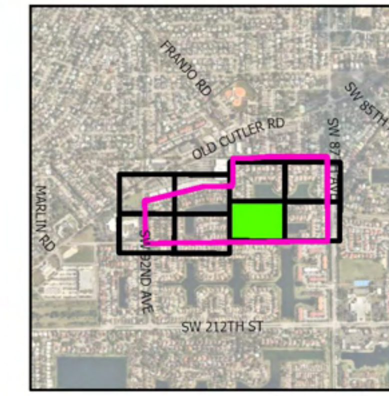
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

5





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

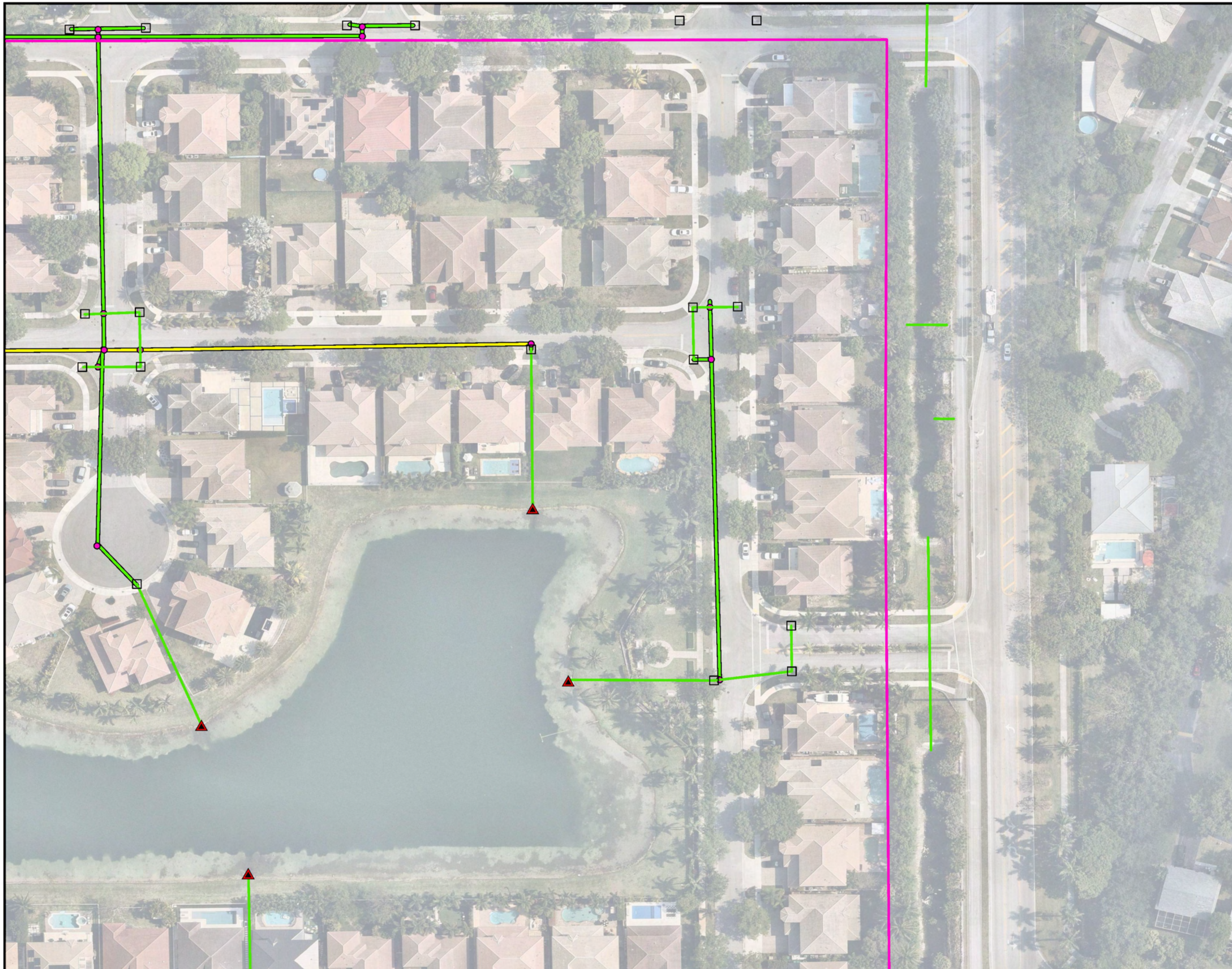
CUTLER BAY STORMWATER MASTER PLAN

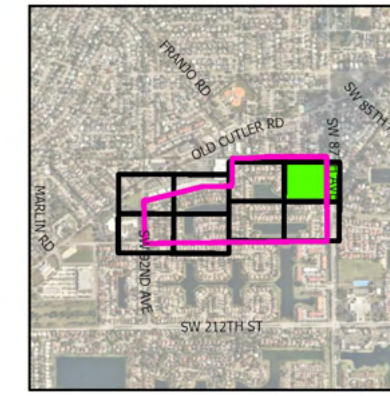
Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
6





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

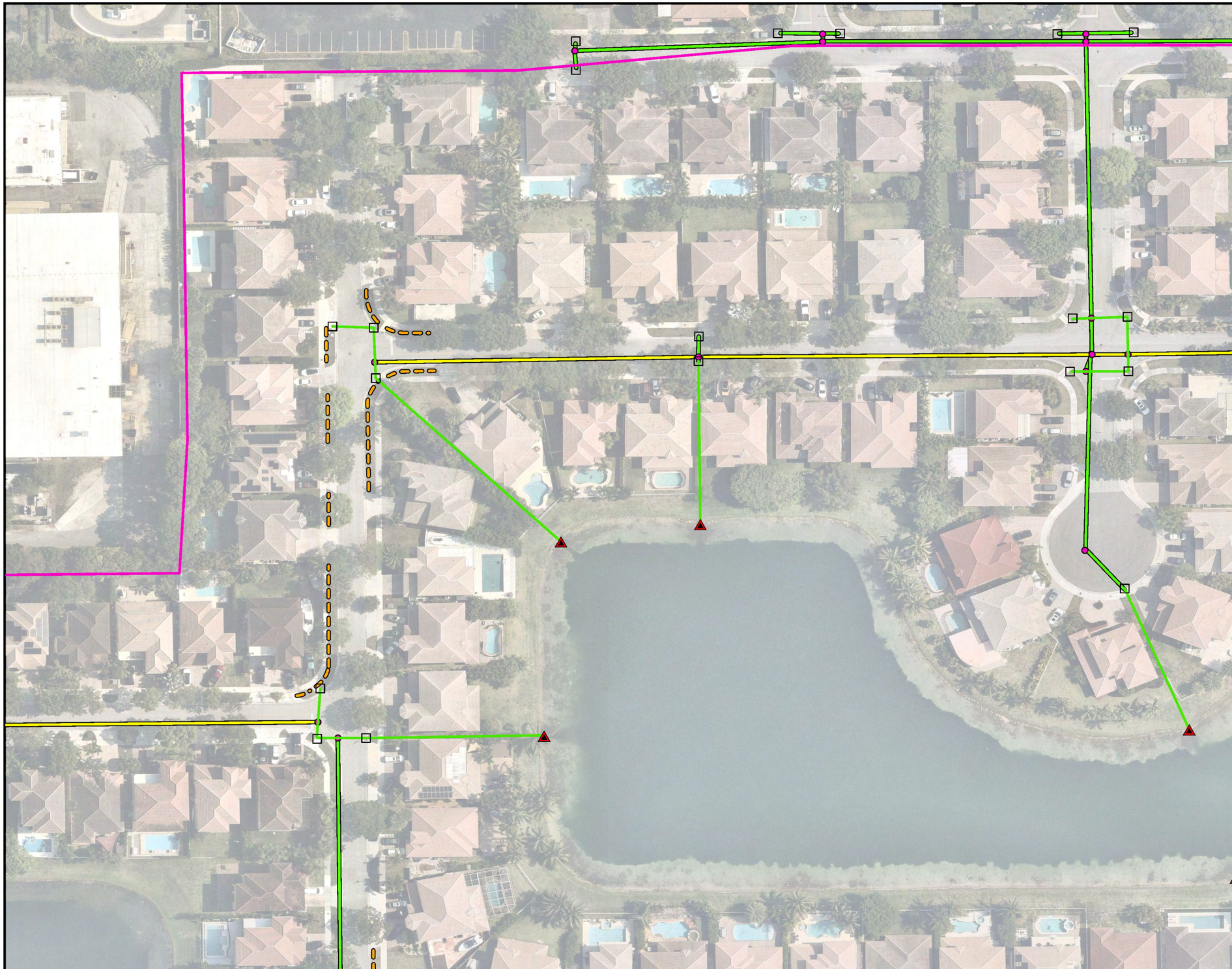
Prepared for:
Town of Cutler Bay

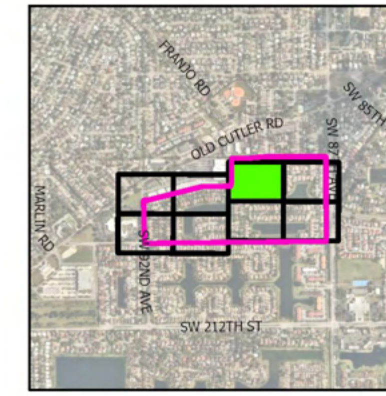
CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

7





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Outfall

Existing Storm Pipe

Proposed

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

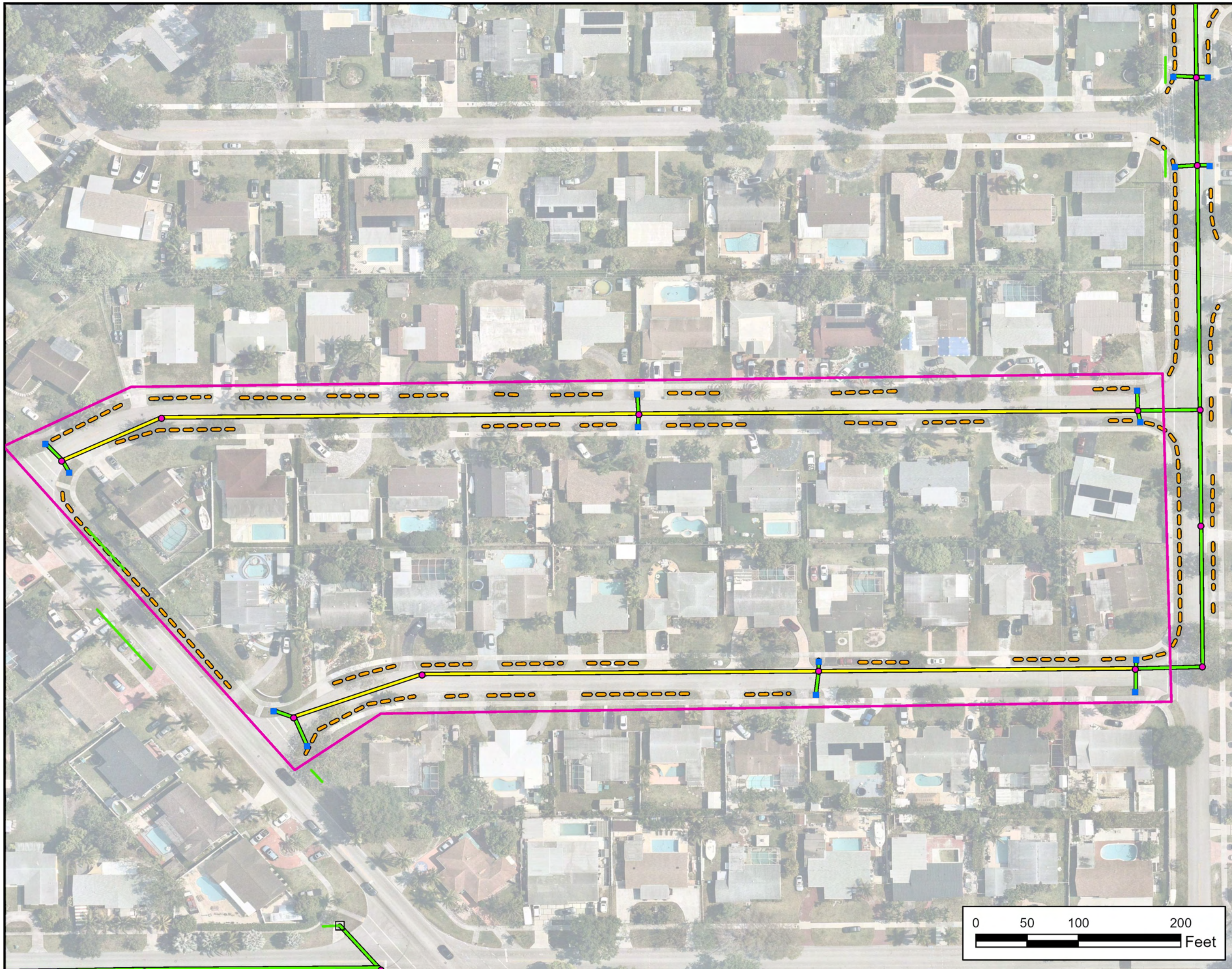
N

CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

CANTAMAR IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
8



Key Map

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CUTLER RIDGE PINES 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	042602101

SHEET
1

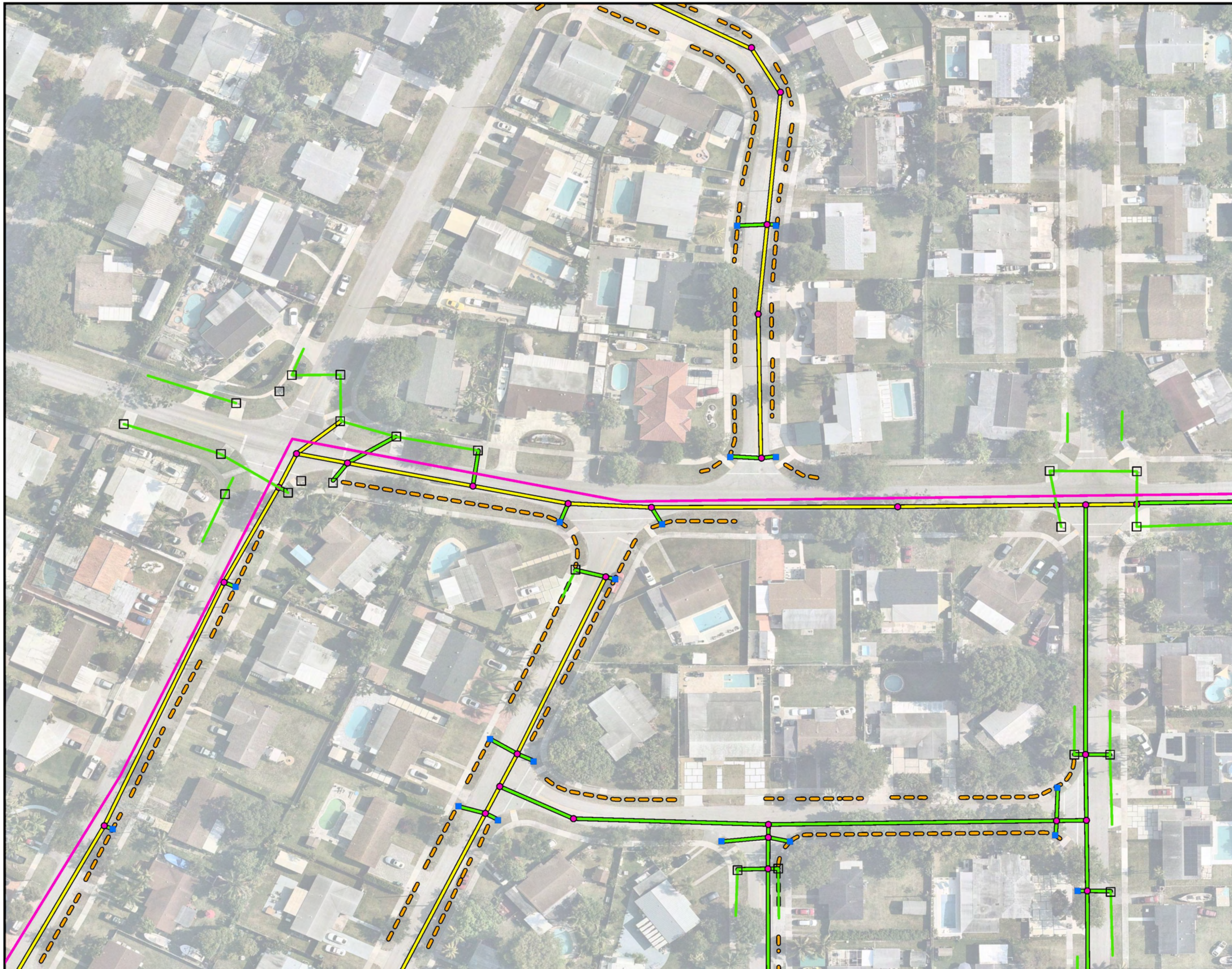
Legend

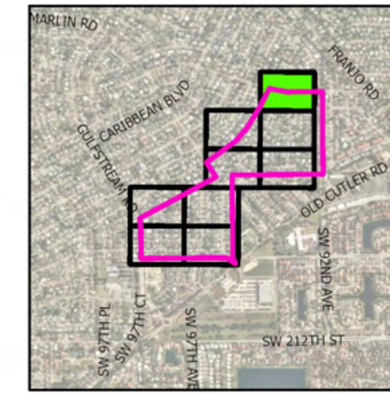
Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale
- Roadway Restoration Project





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

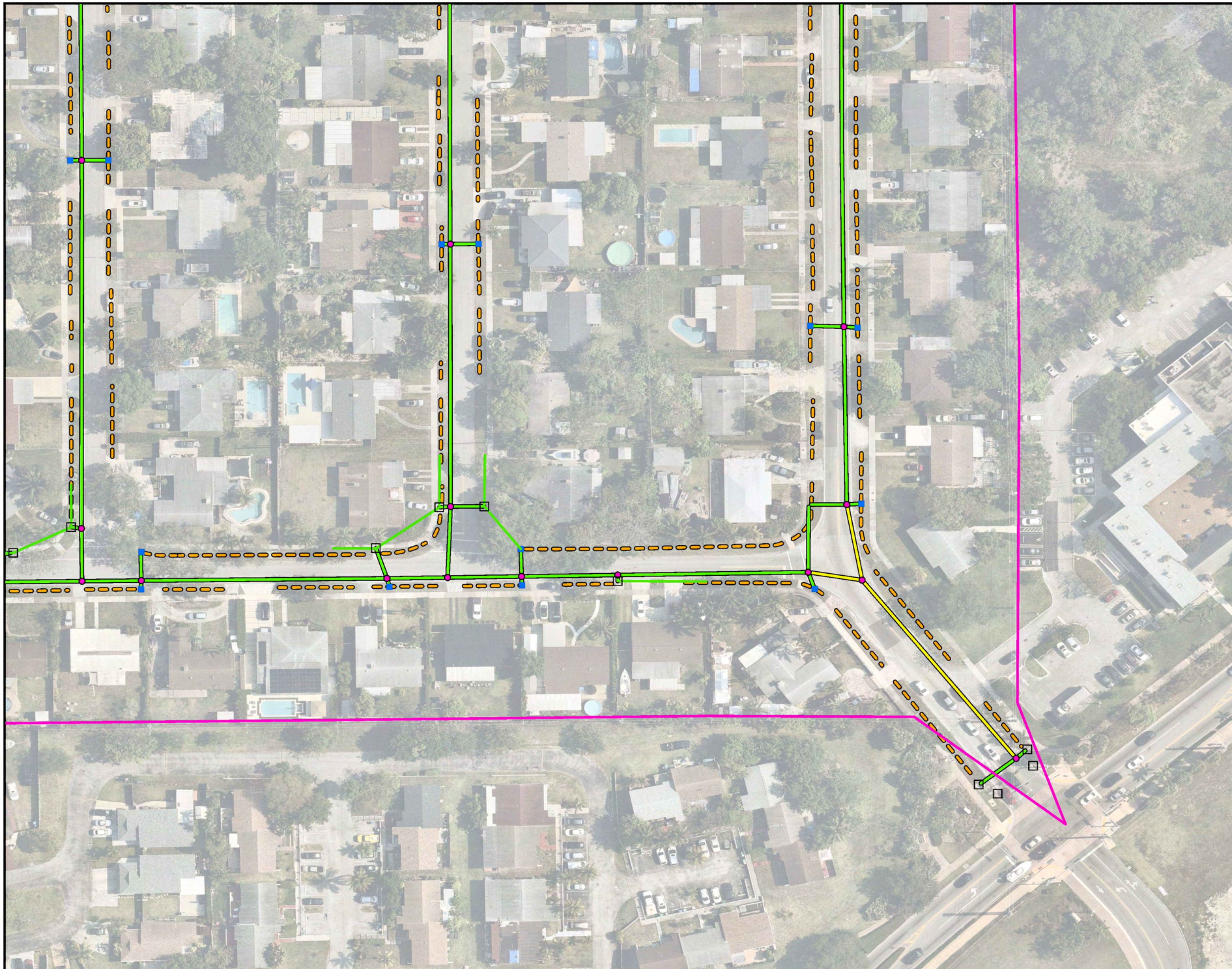
Prepared for:
Town of Cutler Bay

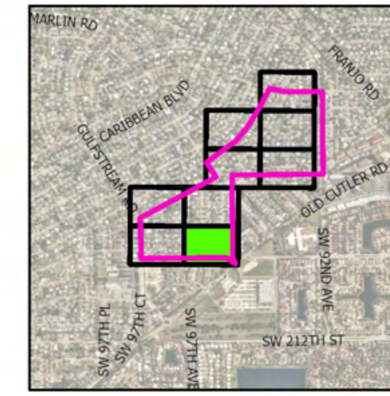
CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

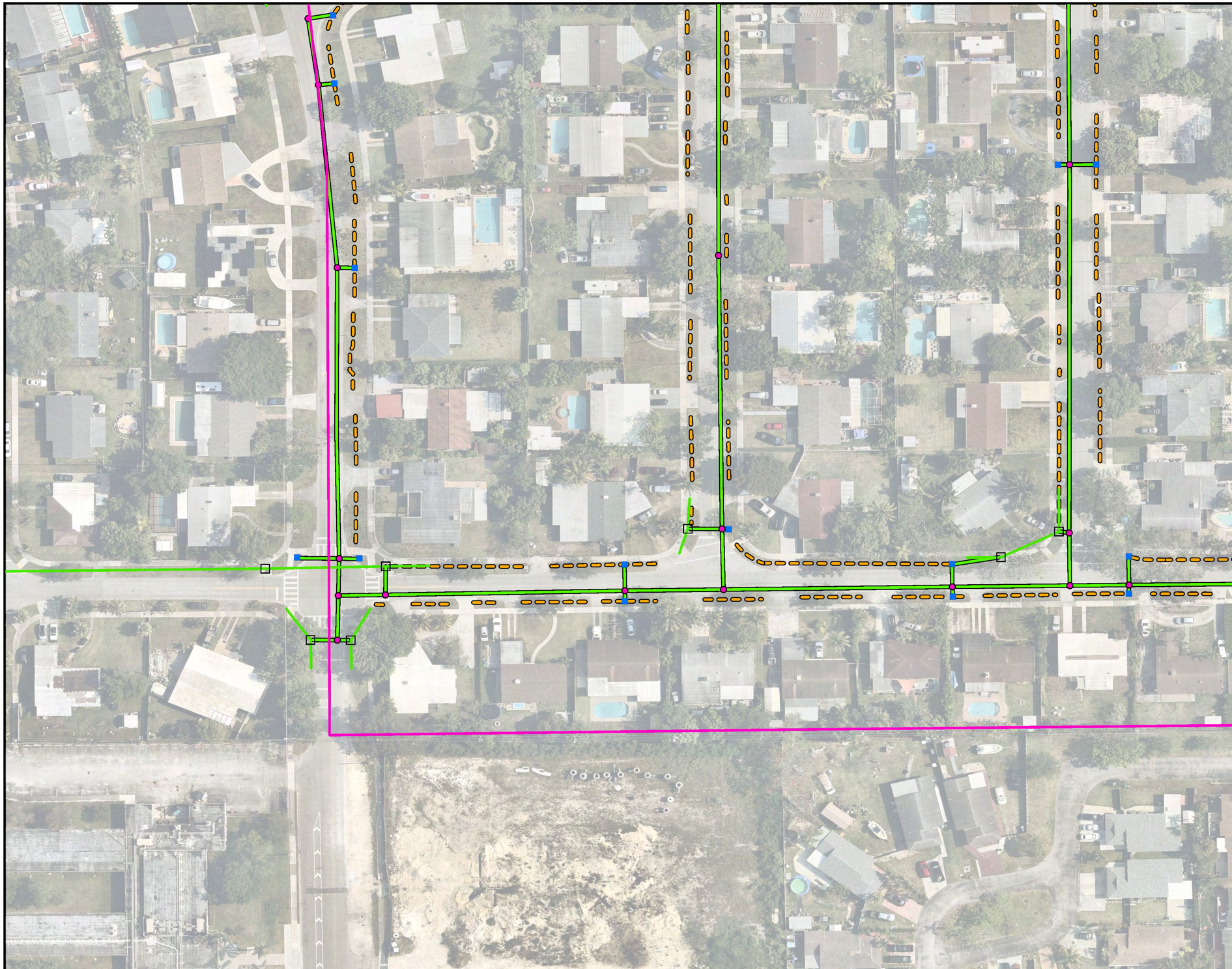
Prepared for:
Town of Cutler Bay

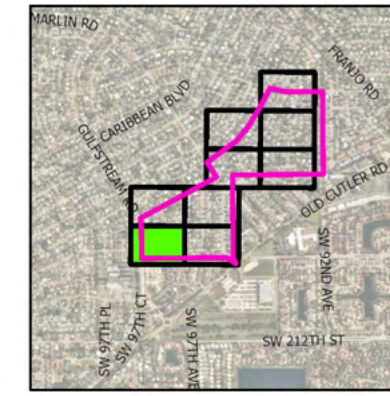
CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

2





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

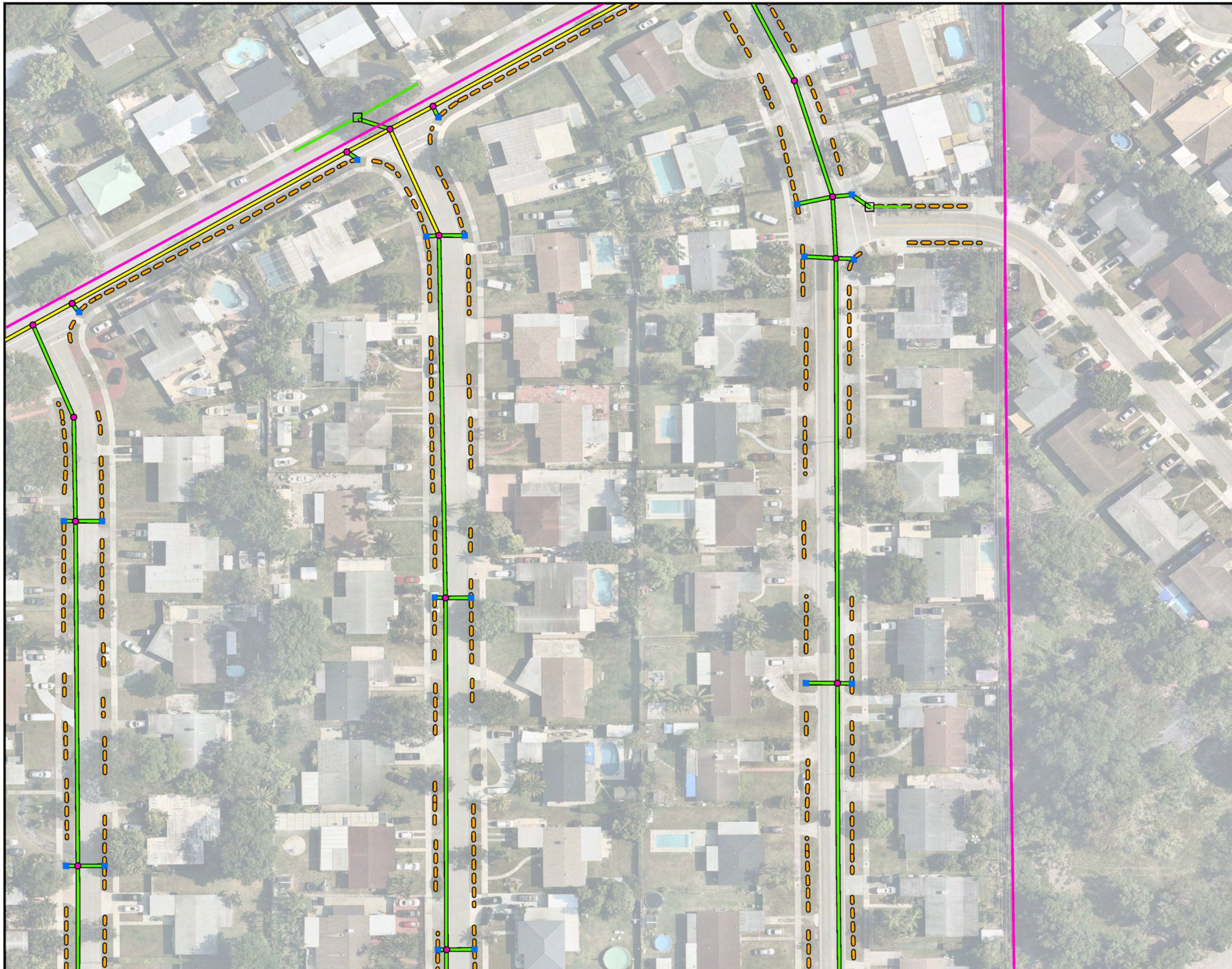
CUTLER BAY STORMWATER MASTER PLAN

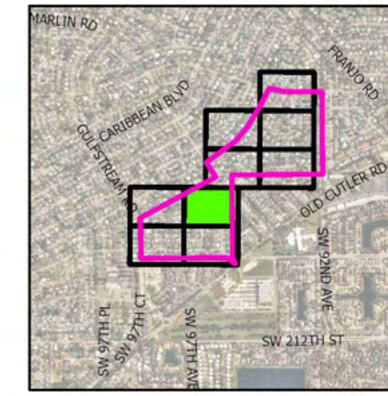
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

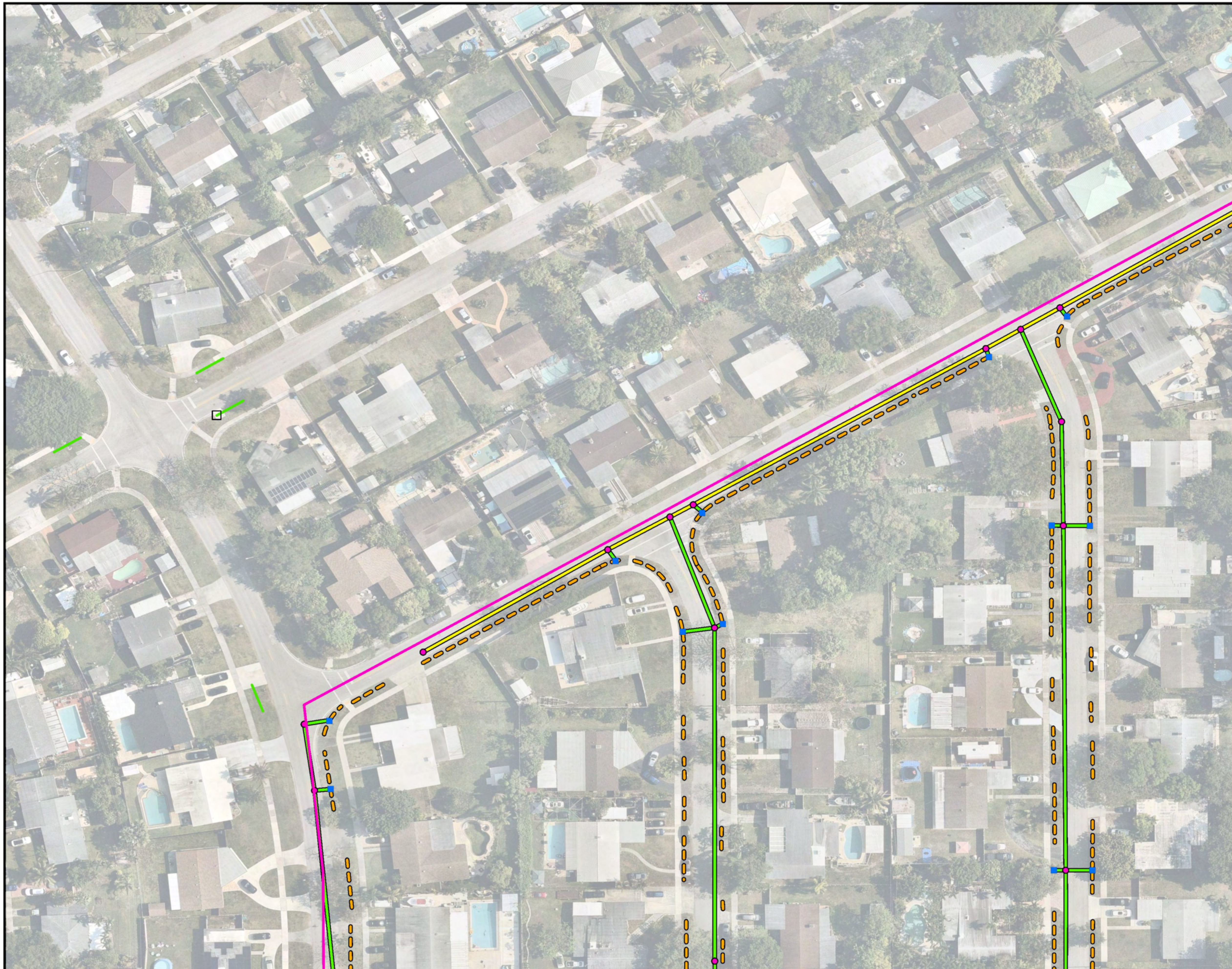
CUTLER BAY STORMWATER MASTER PLAN

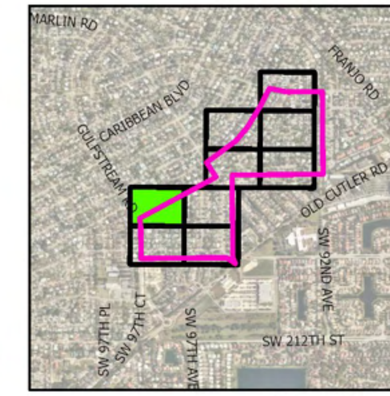
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

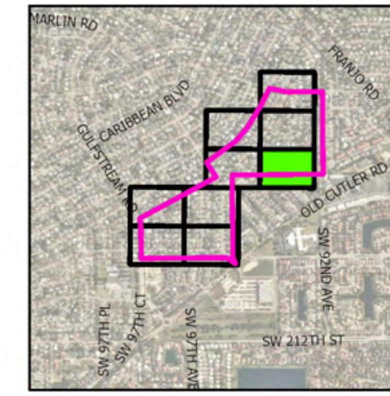
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5



Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

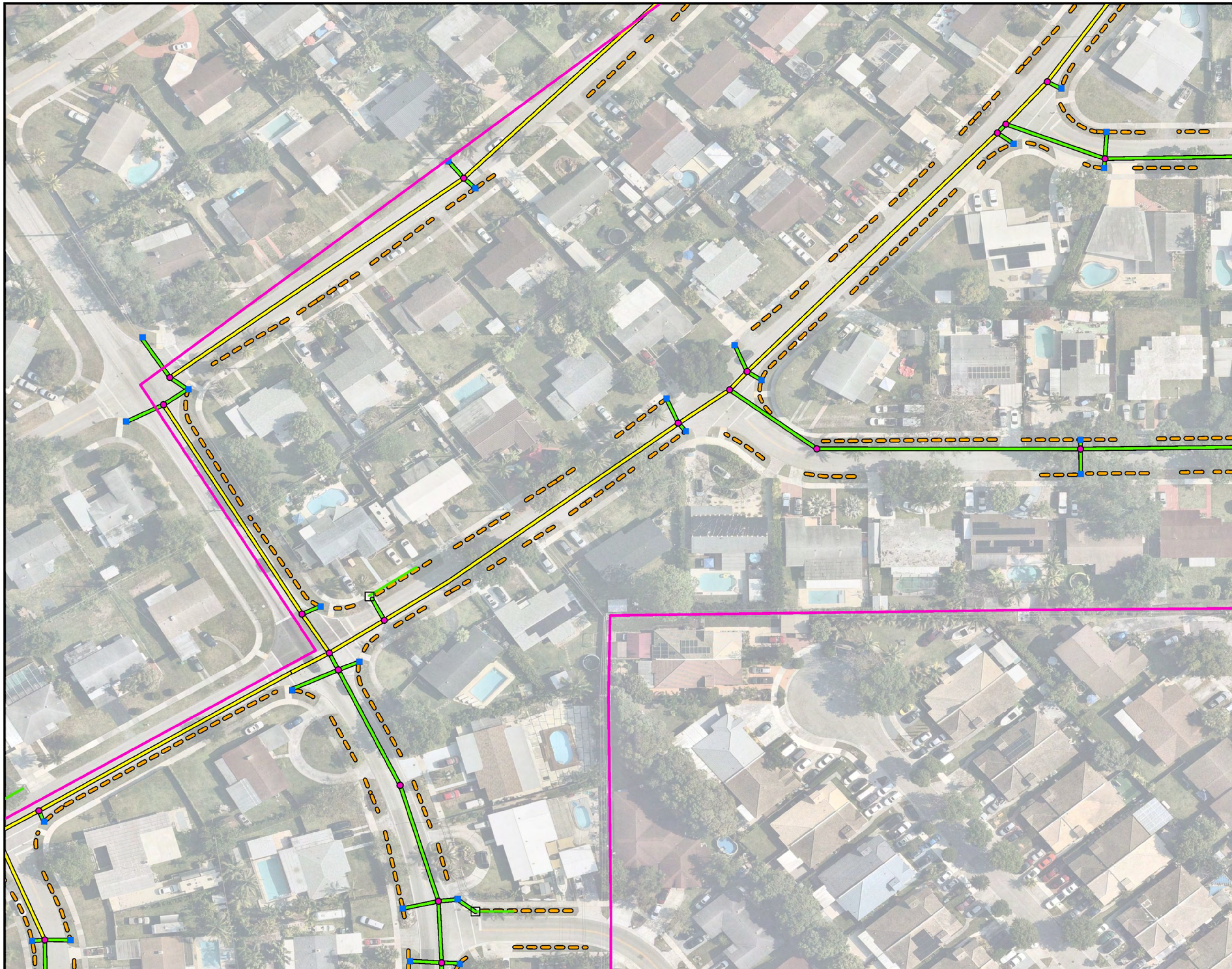
N

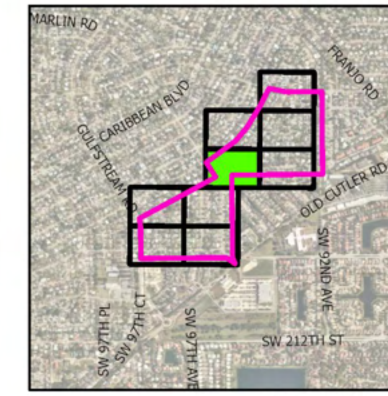
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
6





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

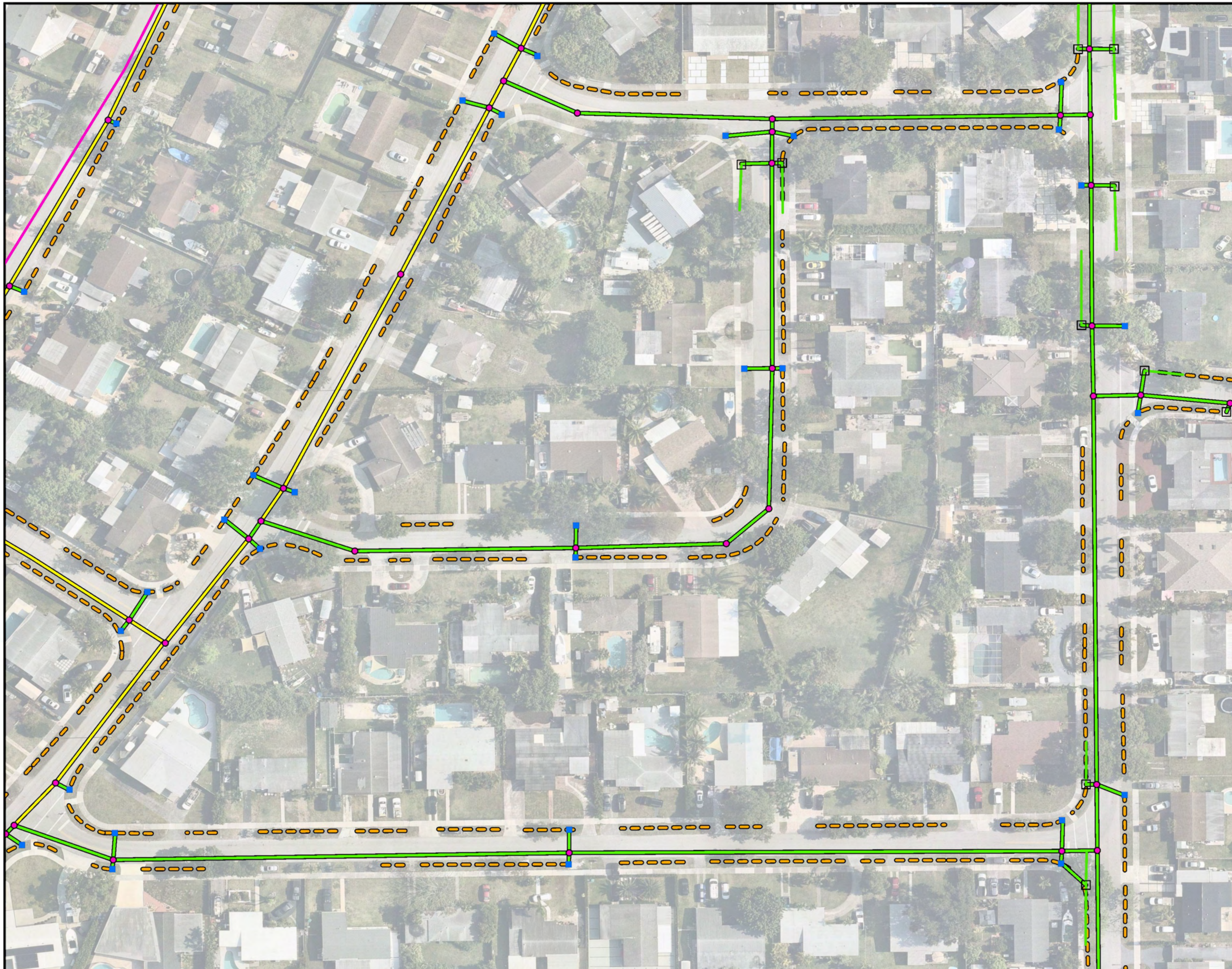
Prepared for:
Town of Cutler Bay

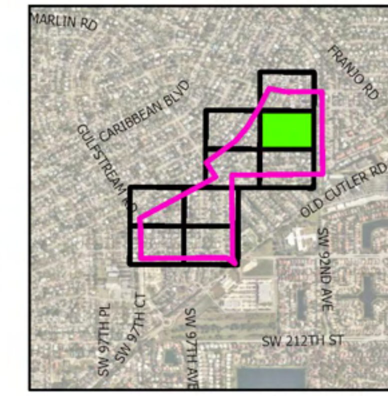
CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

7





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

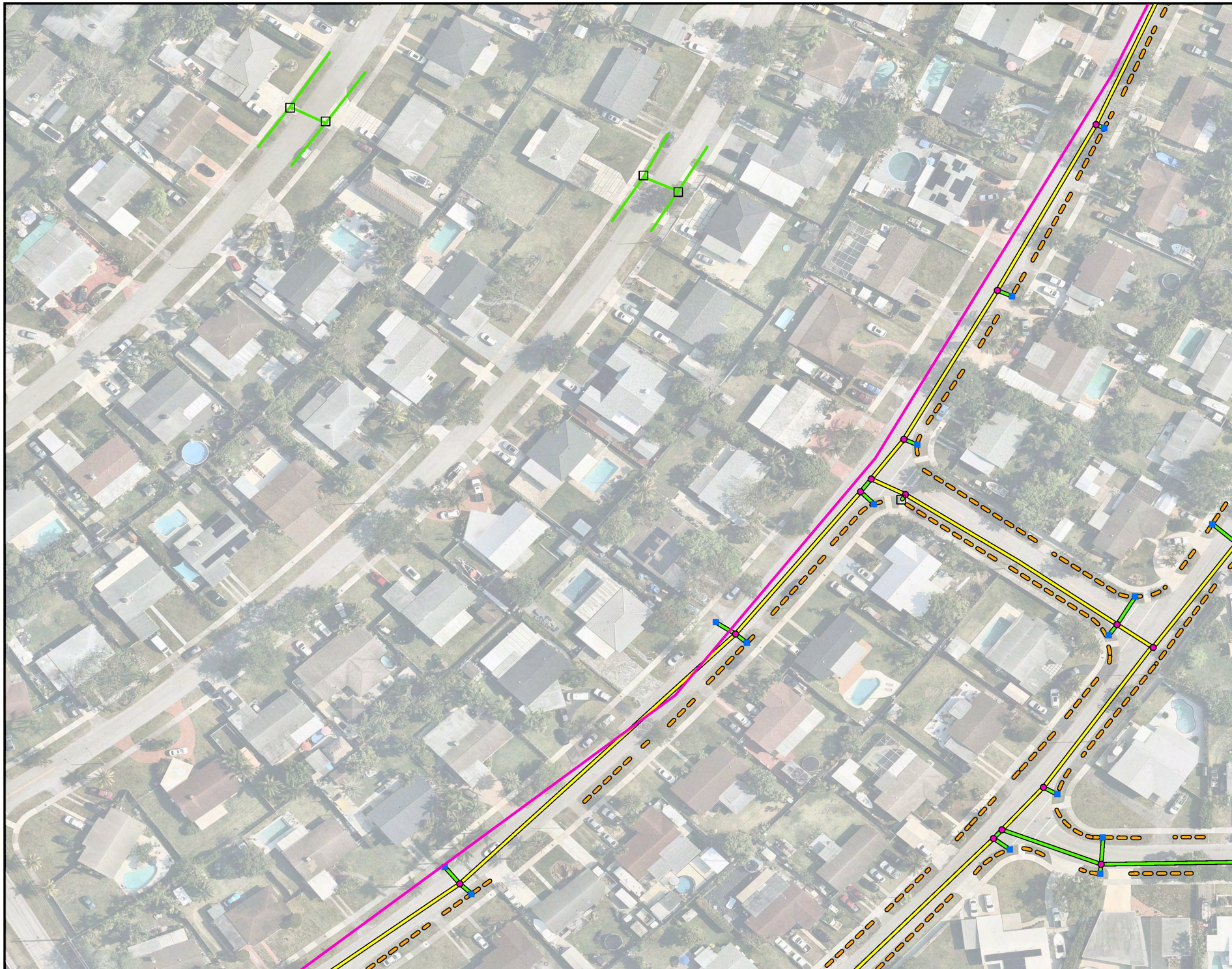
N

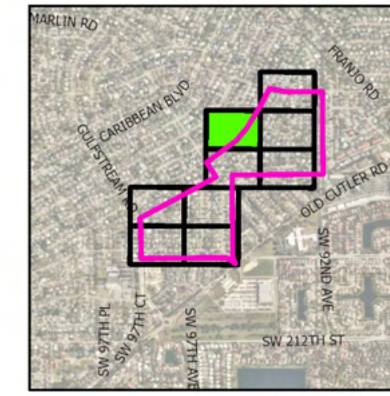
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
8





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

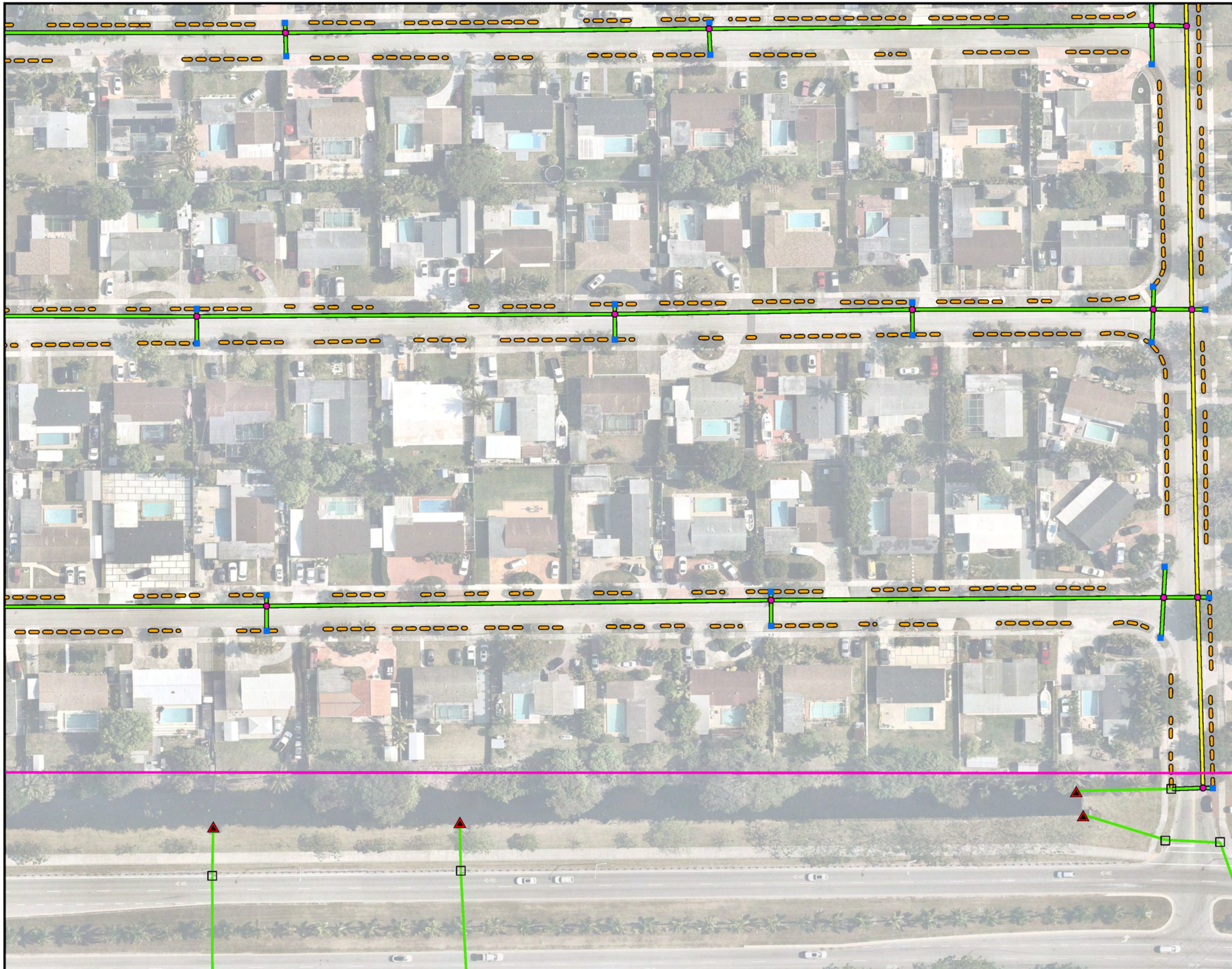
CUTLER BAY STORMWATER MASTER PLAN

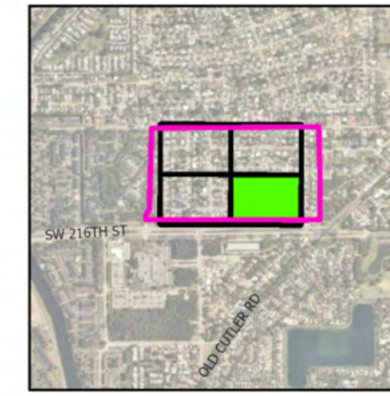
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 4 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
9





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

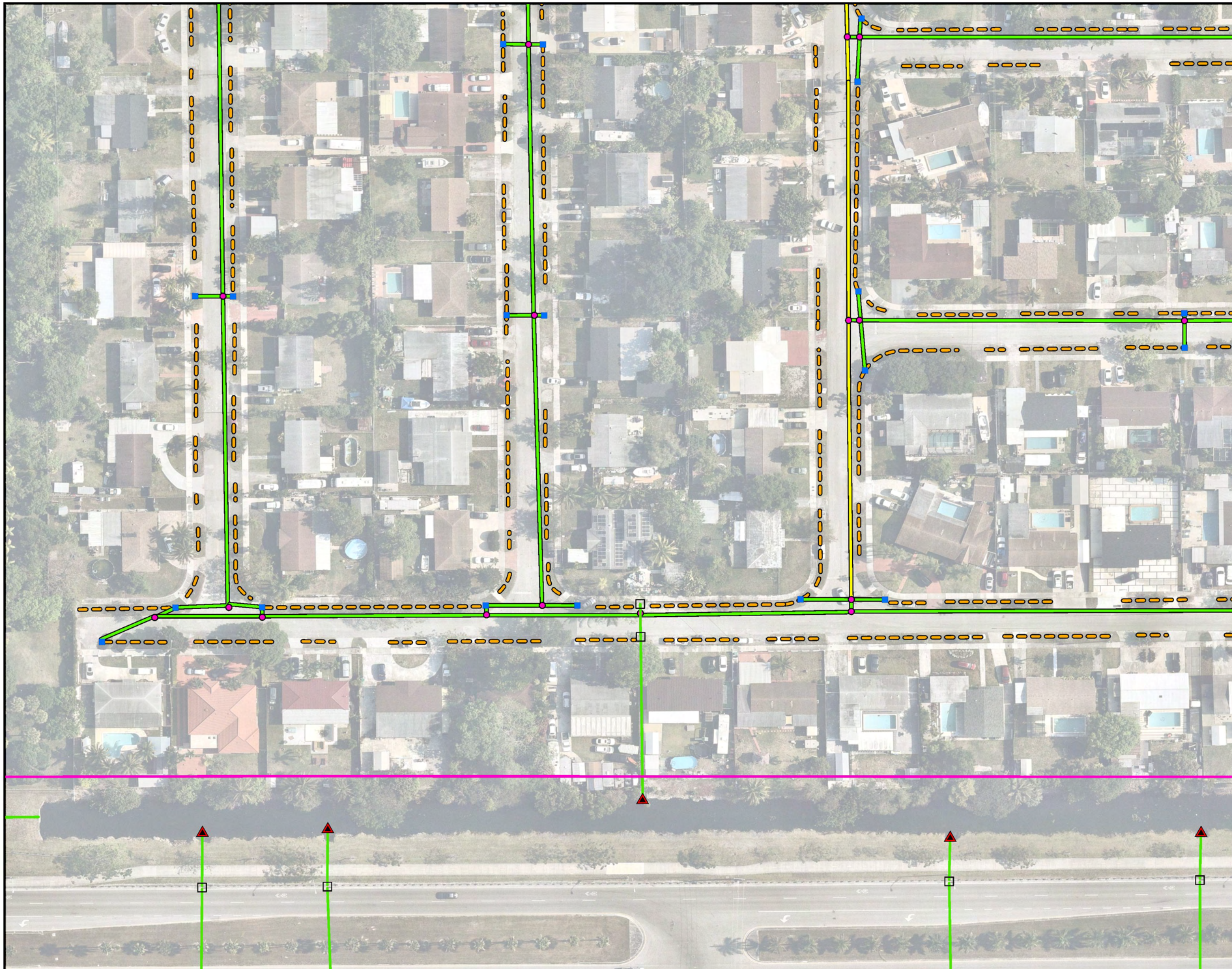
Prepared for:
Town of Cutler Bay

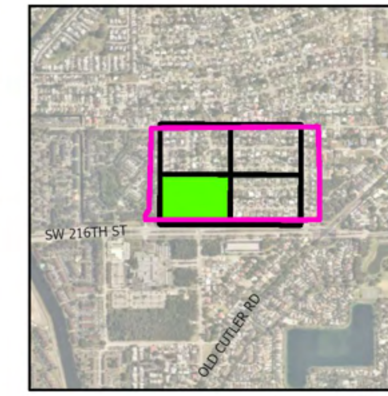
CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

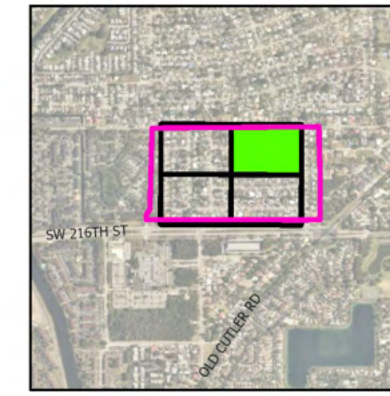
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2



Key Map

Legend

PriorityYr

2023

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

CUTLER BAY STORMWATER MASTER PLAN

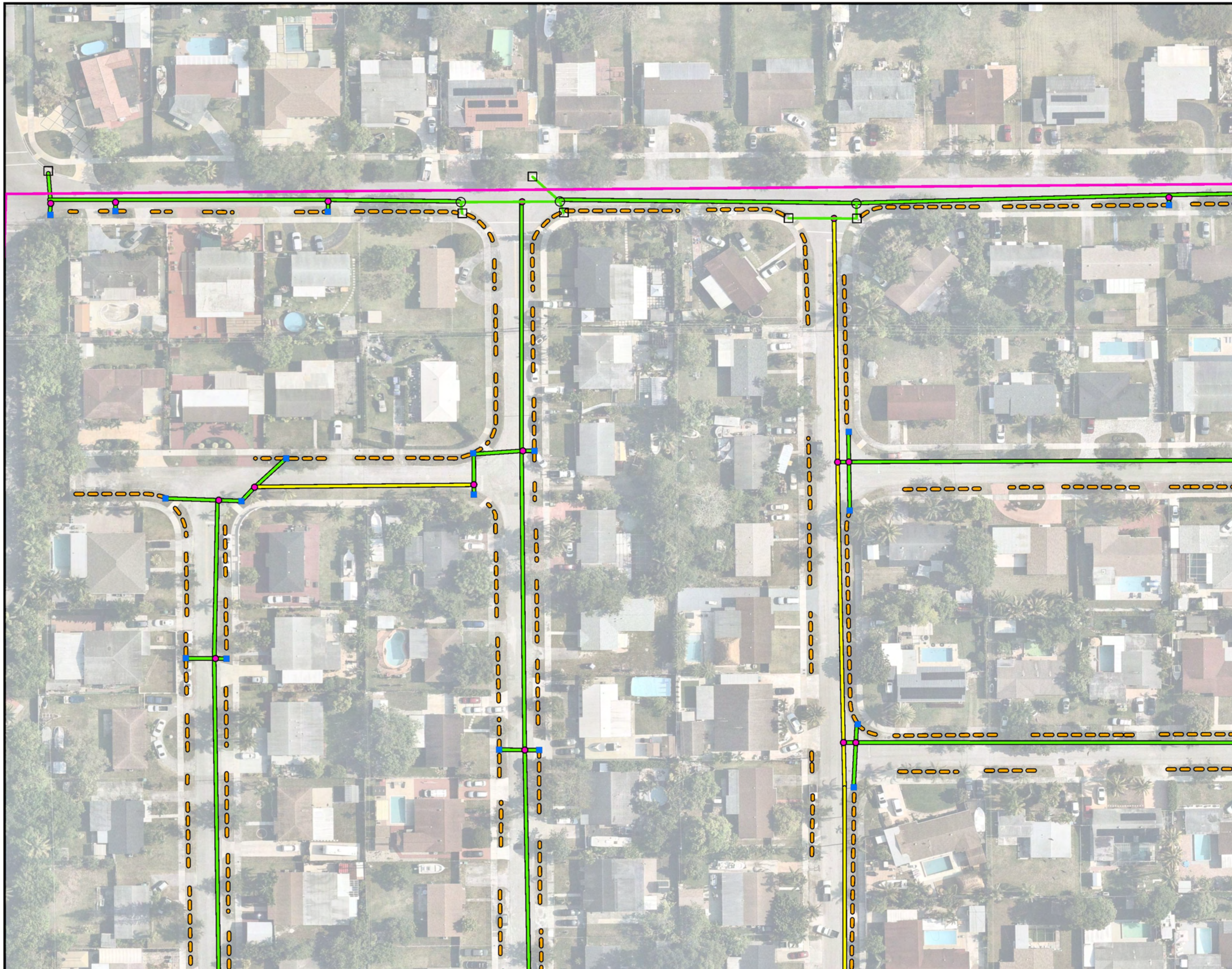
Prepared for:
Town of Cutler Bay

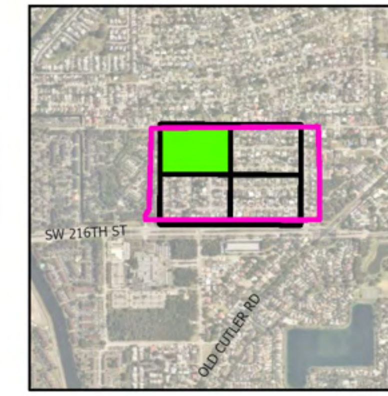
CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

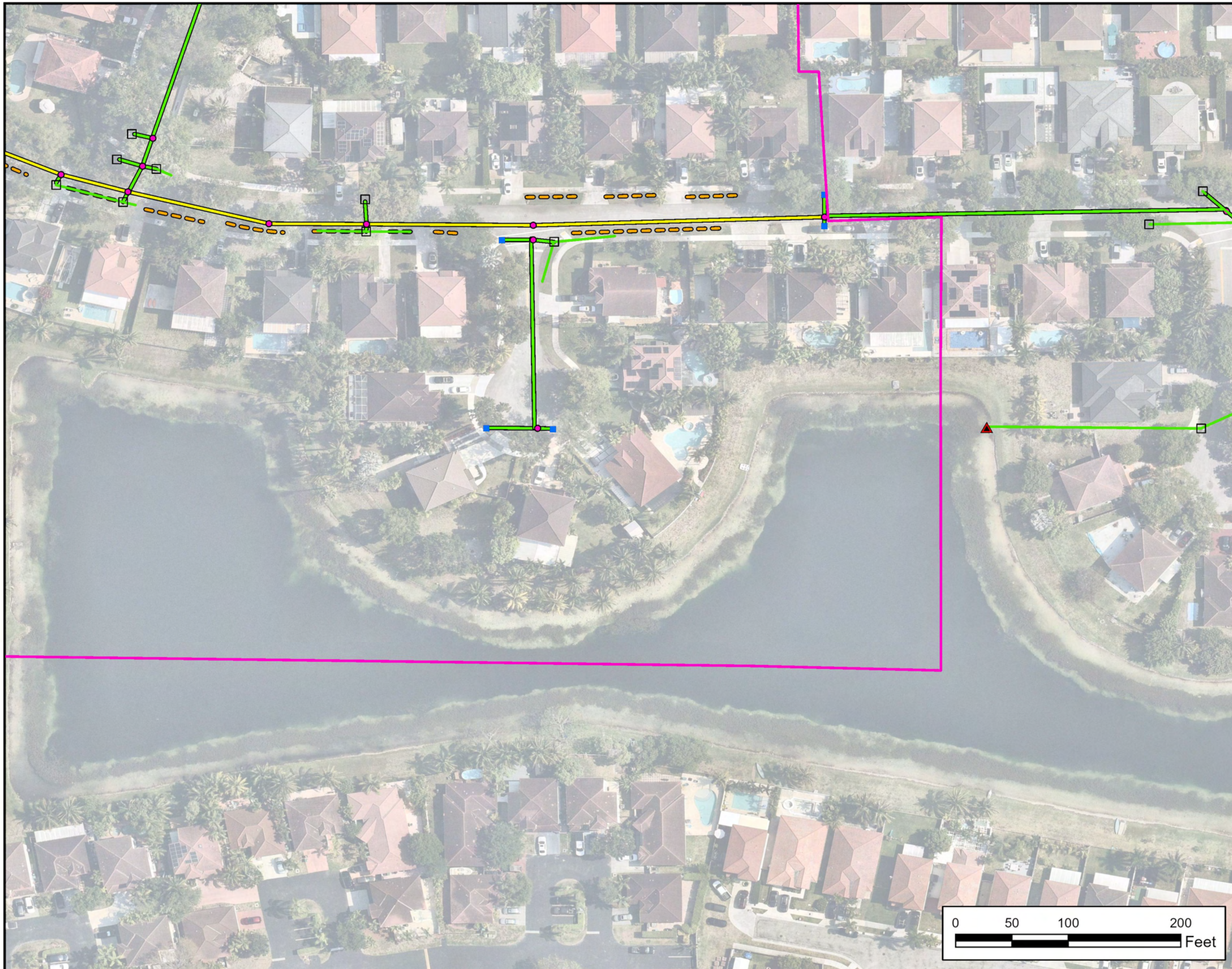
CUTLER BAY STORMWATER MASTER PLAN

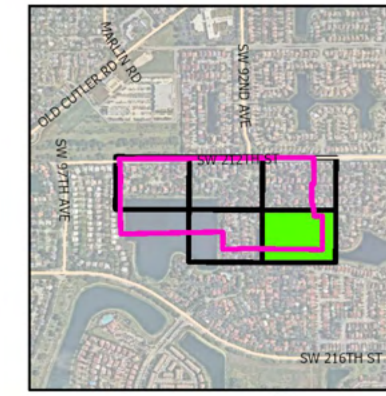
Prepared for:
Town of Cutler Bay

CUTLER RIDGE SEC 7 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Outfall
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

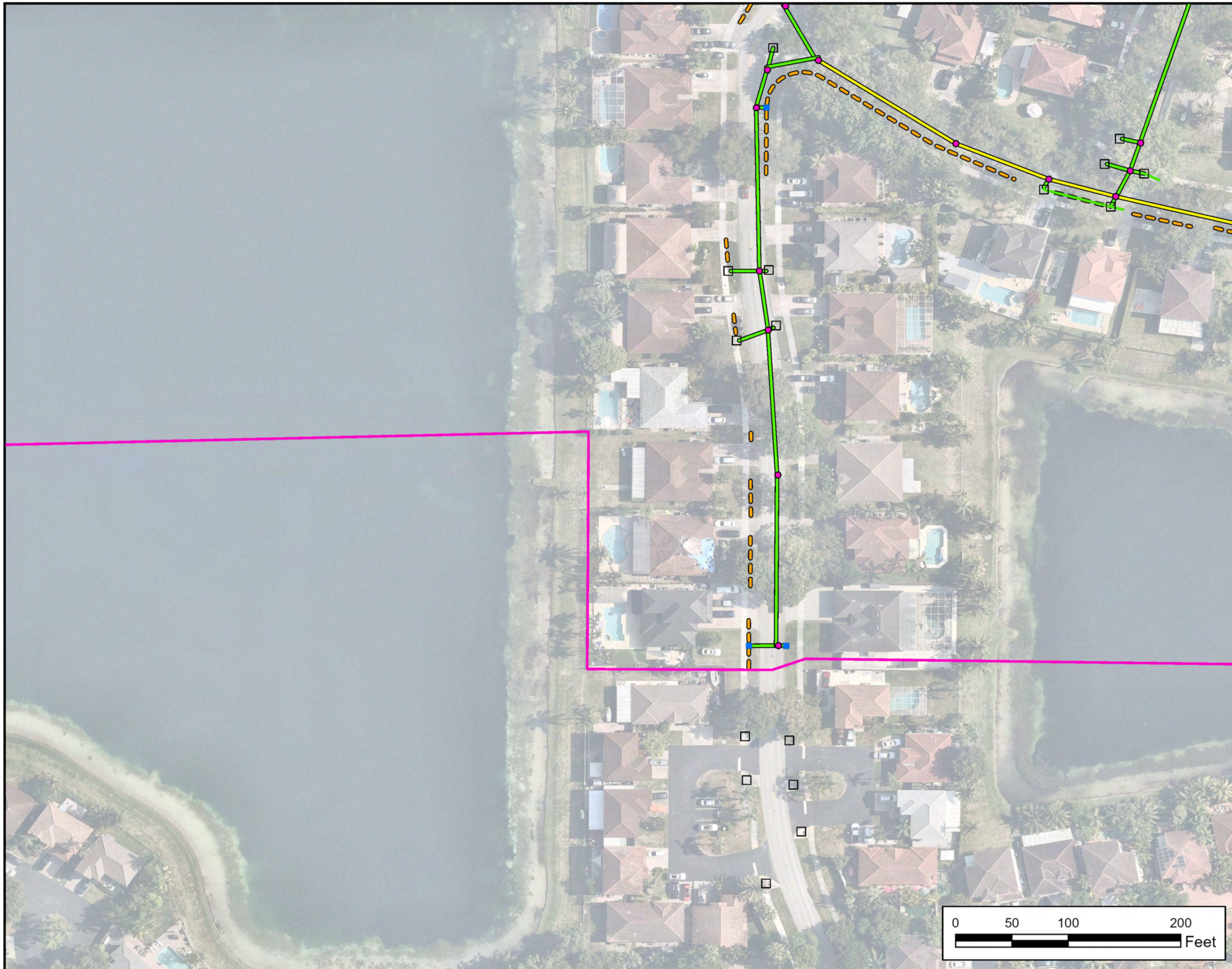
CUTLER BAY STORMWATER MASTER PLAN

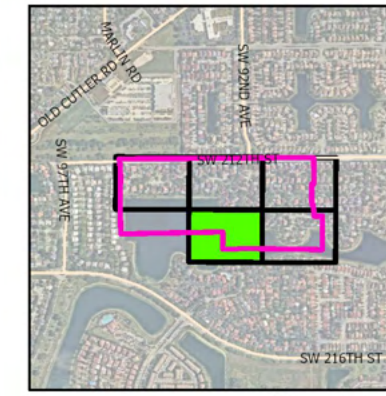
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

0 50 100 200 Feet

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

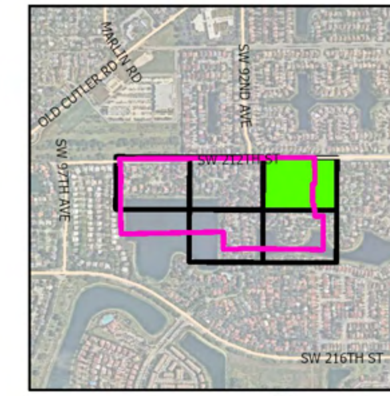
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

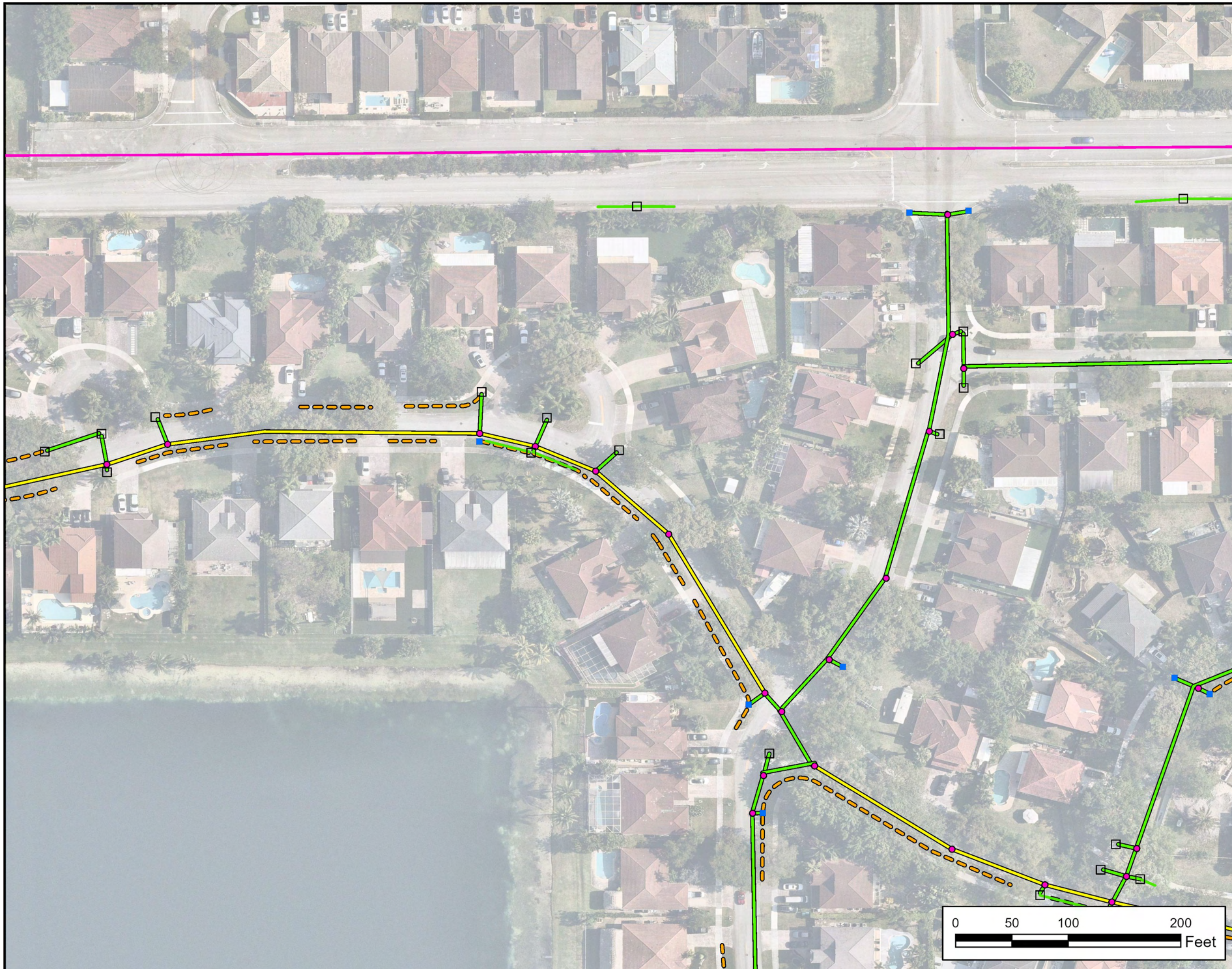
CUTLER BAY STORMWATER MASTER PLAN

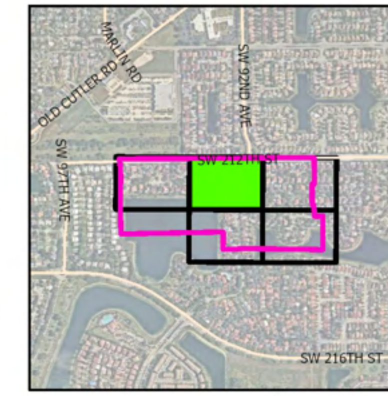
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3





Key Map

Legend

PriorityYr
- 2023

Existing
- Existing Catch Basin
- Existing Storm Pipe

Proposed
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

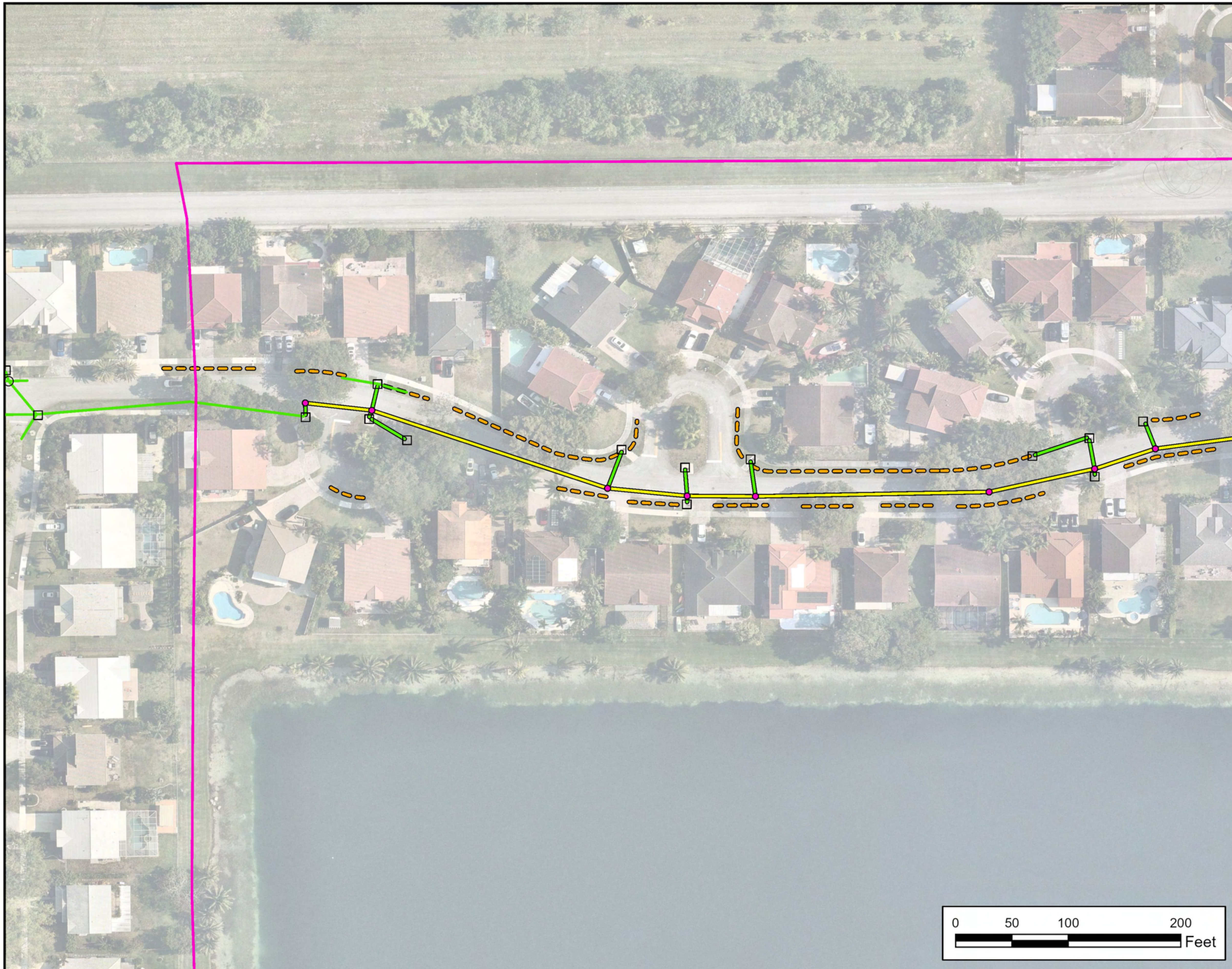
N

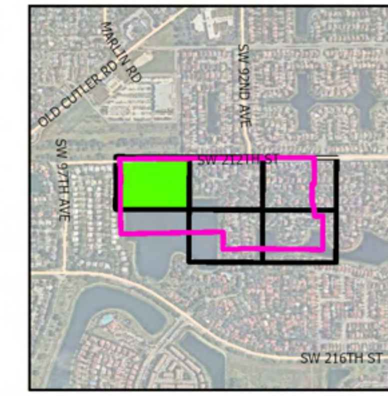
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10
IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
4





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

0 50 100 200 Feet

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

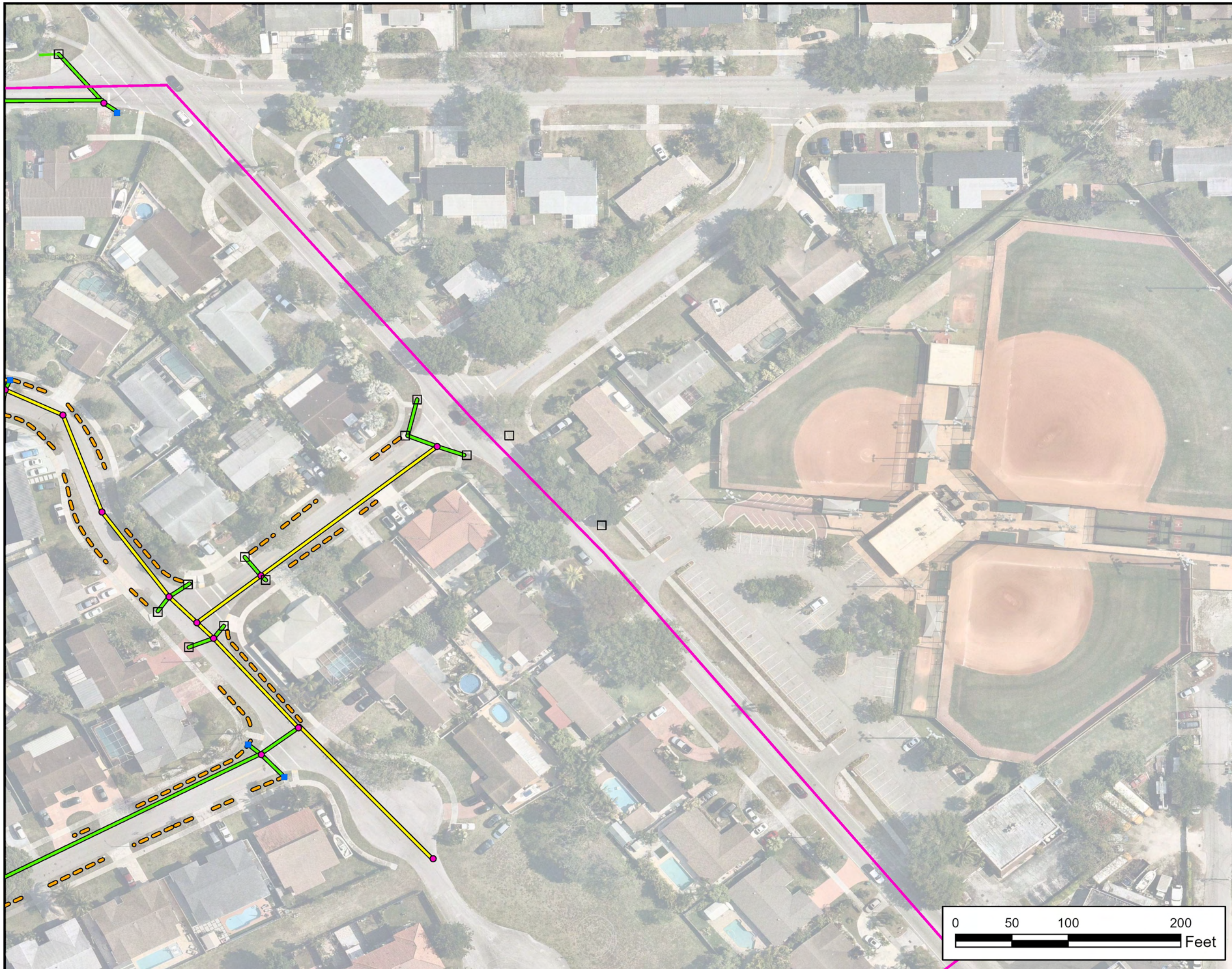
CUTLER BAY STORMWATER MASTER PLAN

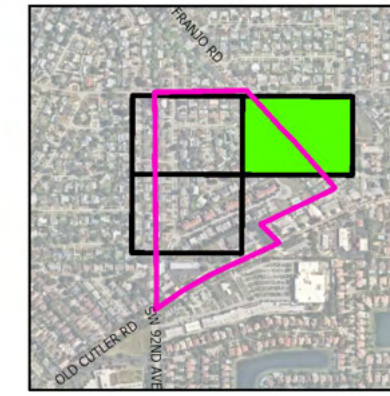
Prepared for:
Town of Cutler Bay

LAKES BY THE BAY SEC 10 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5





Key Map

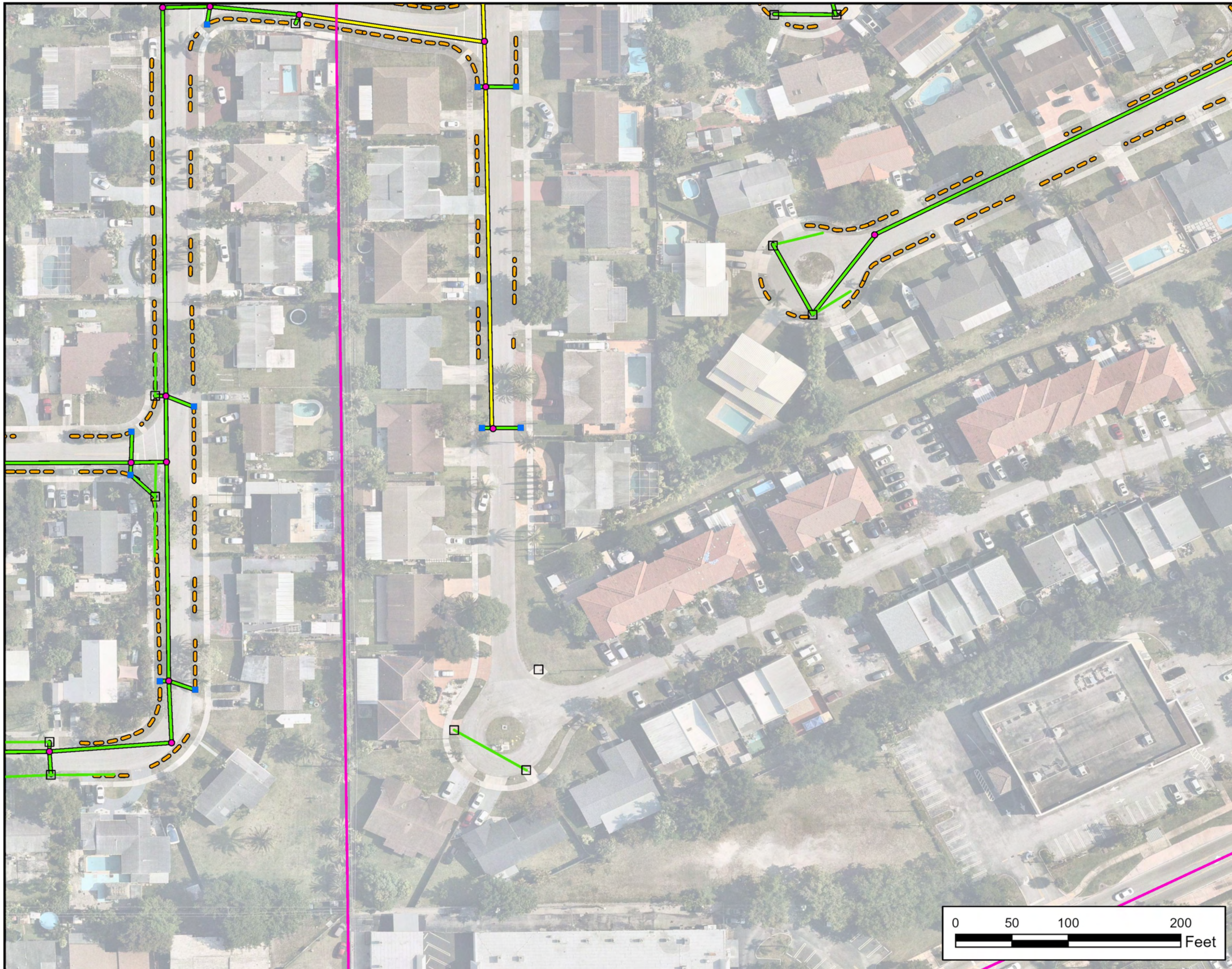
Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

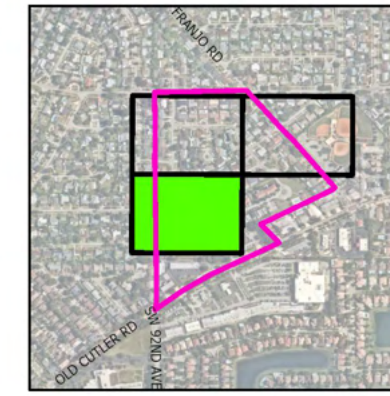
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

OLD CUTLER COVE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

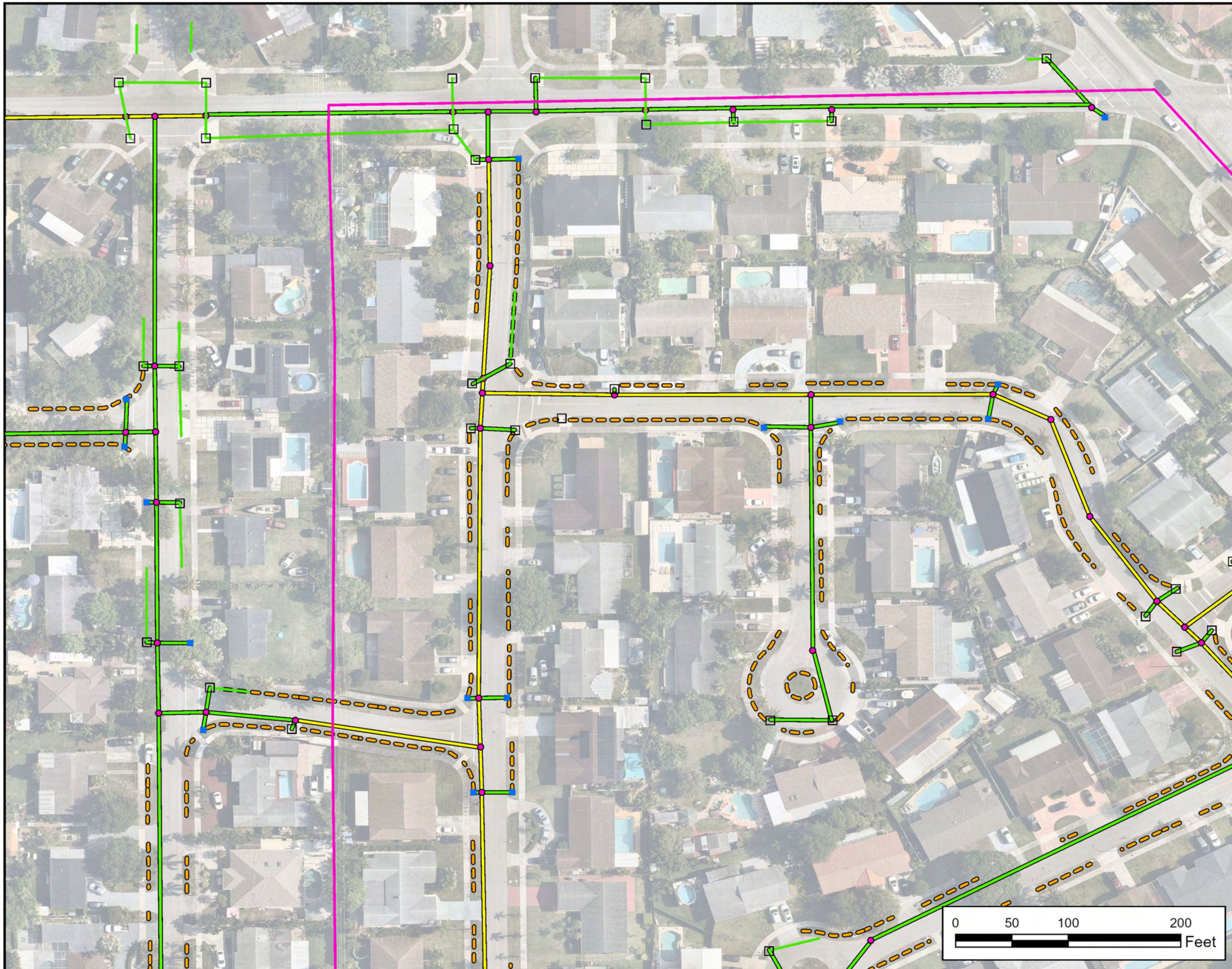
CUTLER BAY STORMWATER MASTER PLAN

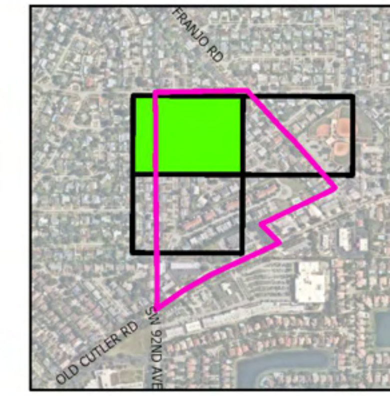
Prepared for:
Town of Cutler Bay

OLD CUTLER COVE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

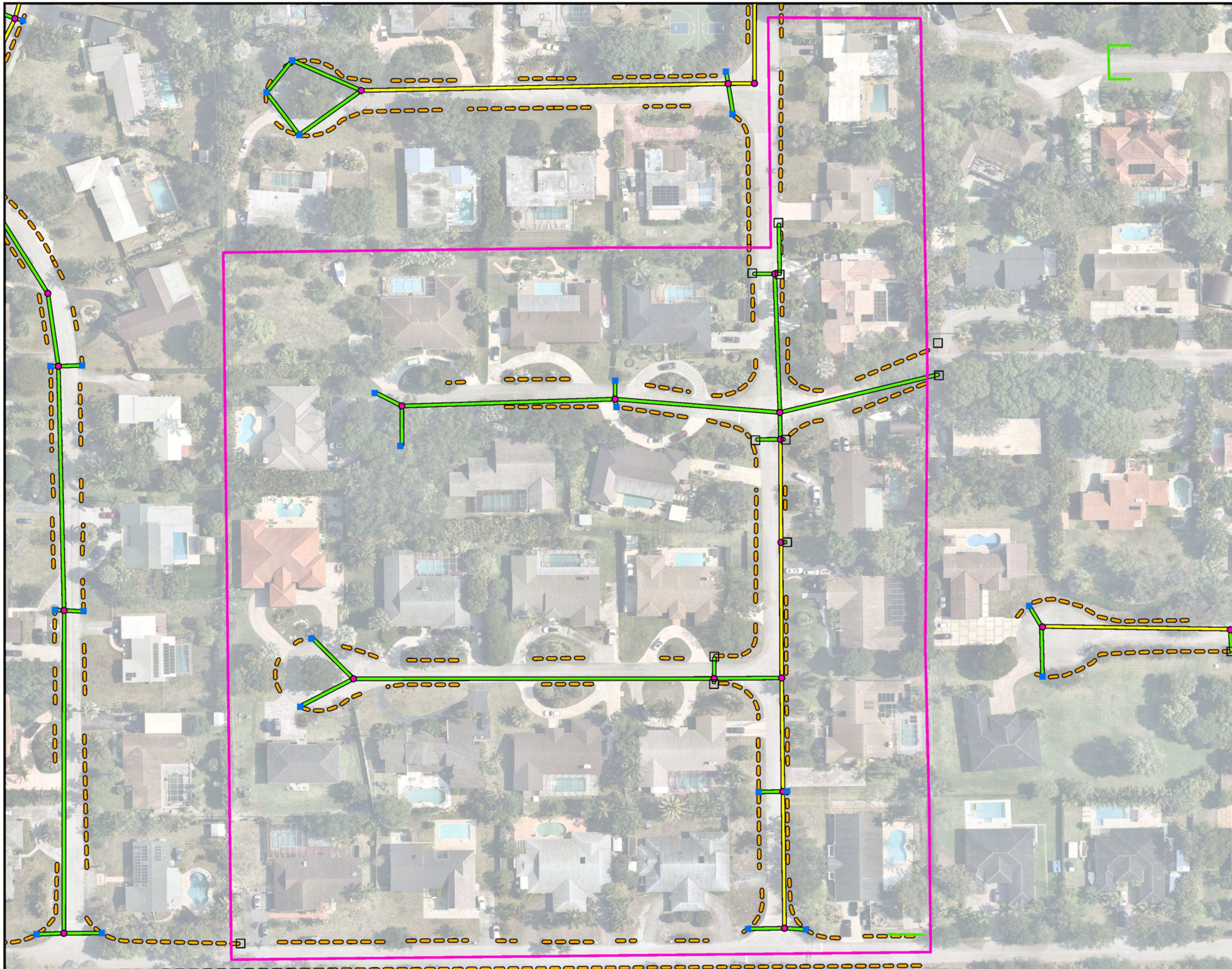
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

OLD CUTLER COVE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

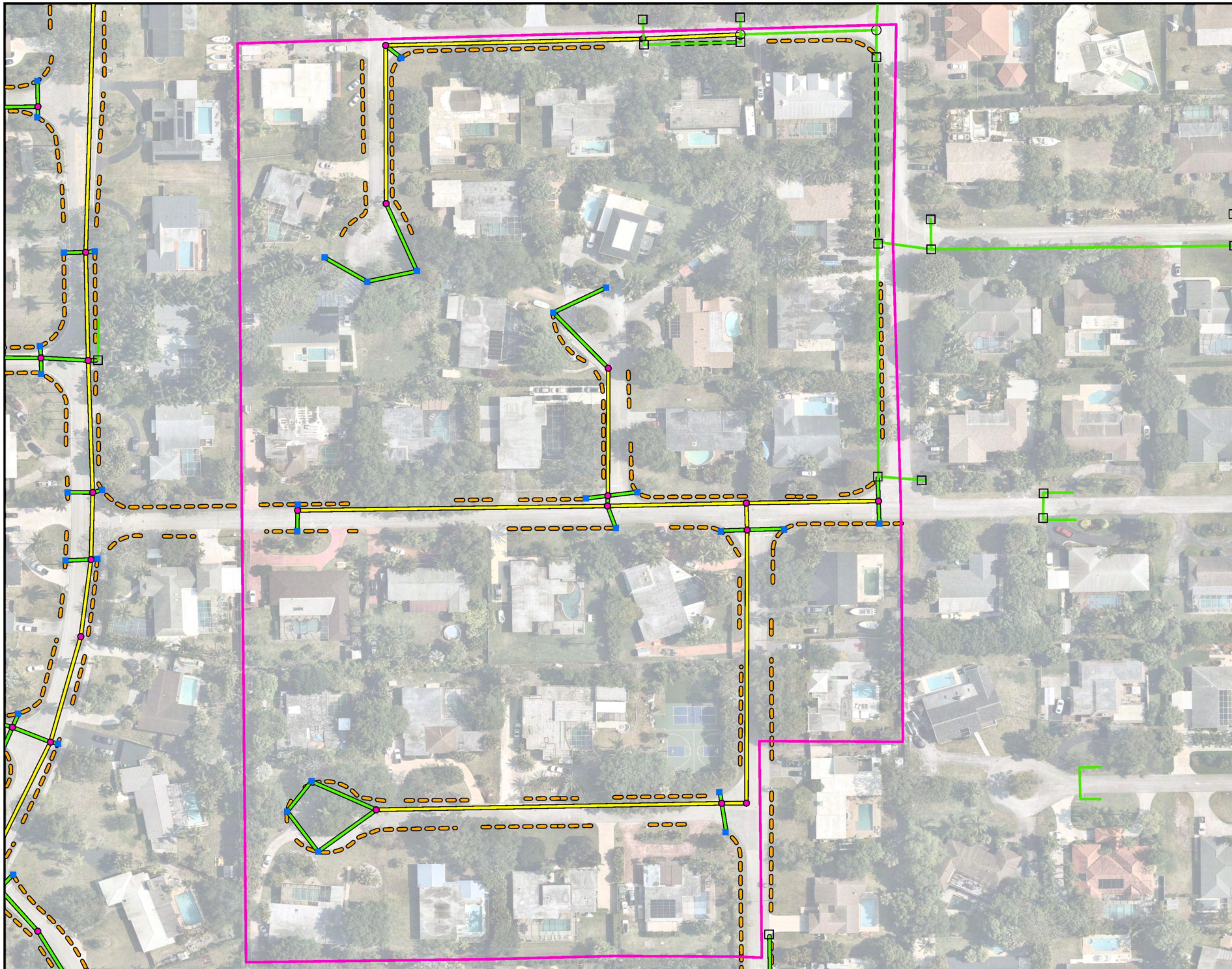
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

OLD CUTLER OMNI PINES IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

TOWN OF CUTLER BAY STORMWATER MASTER PLAN

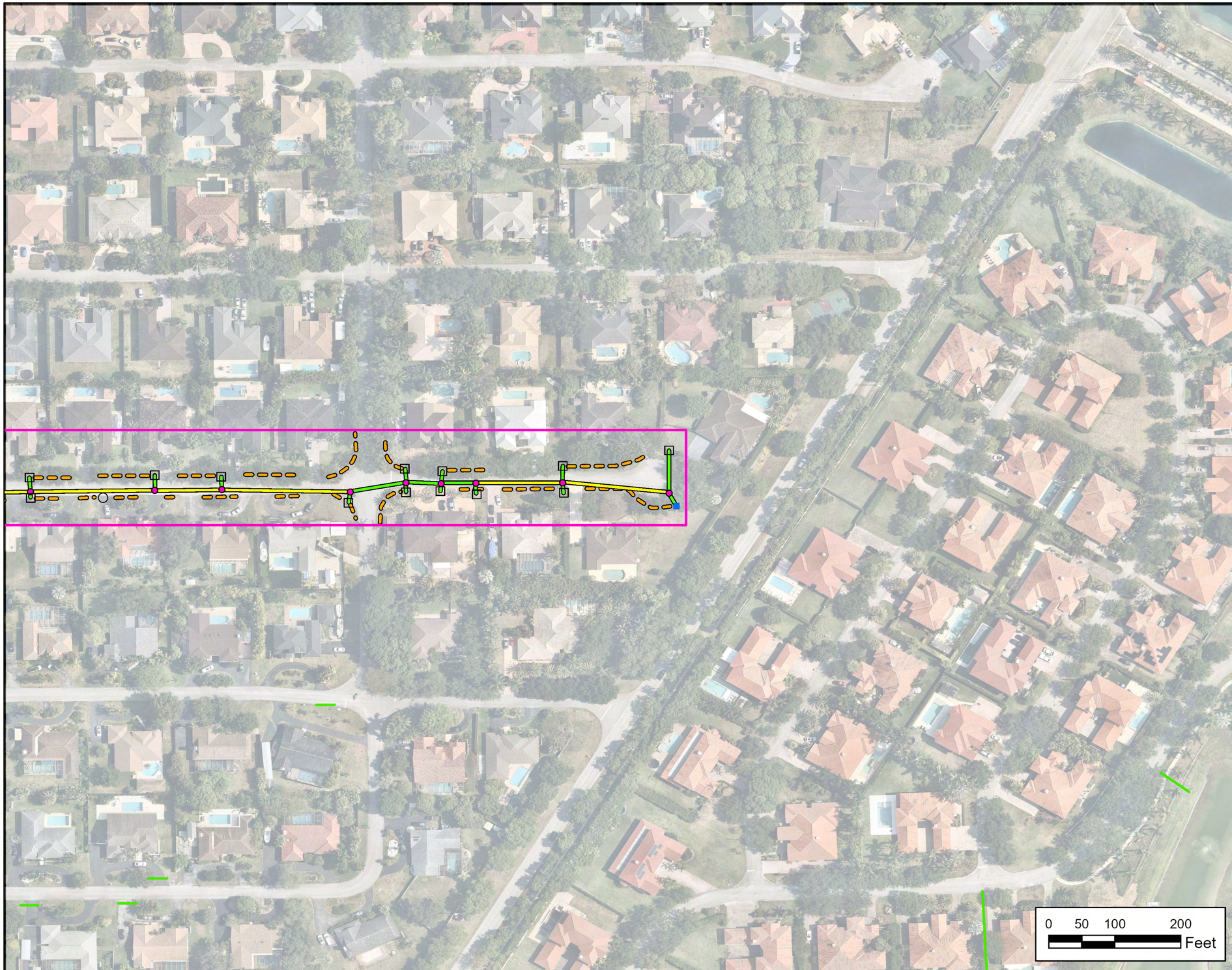
Prepared for:
Town of Cutler Bay

OMNI ESTATES IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1



Key Map

Legend

- Roadway Project Area

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

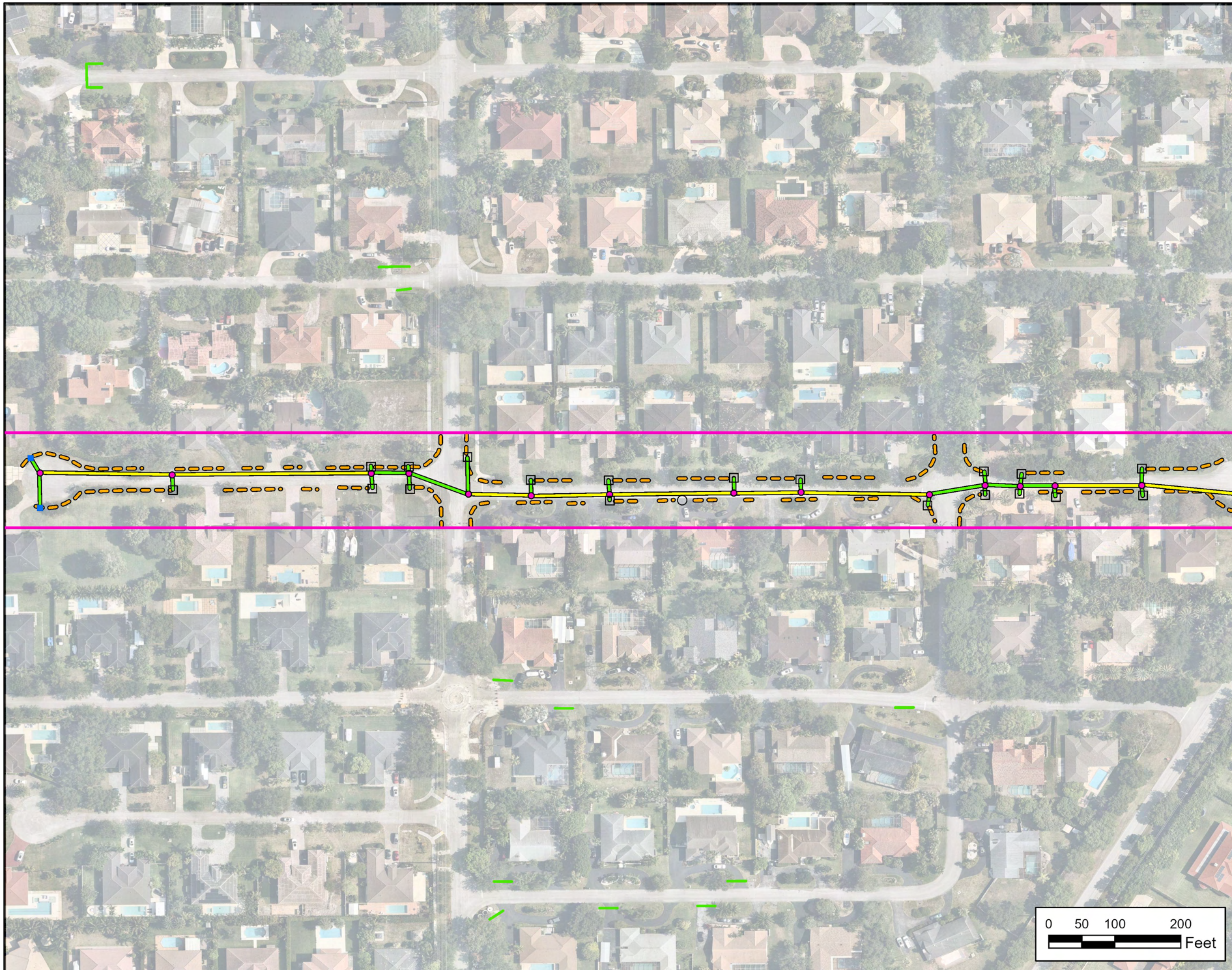
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 187TH TERRACE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Legend

Roadway Project Area

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

0 50 100 200 Feet

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

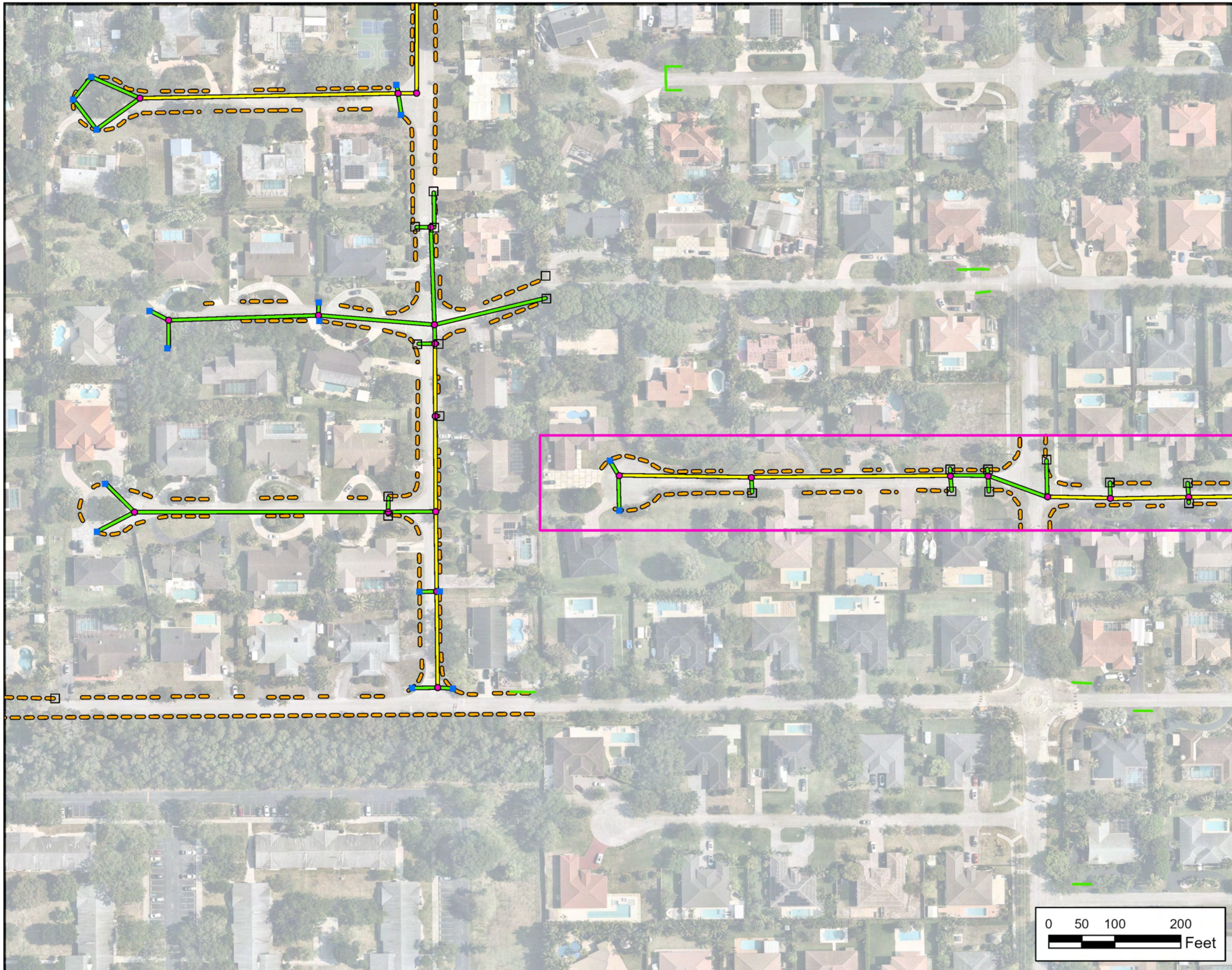
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 187TH TERRACE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2



Key Map

Legend

Roadway Project Area

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

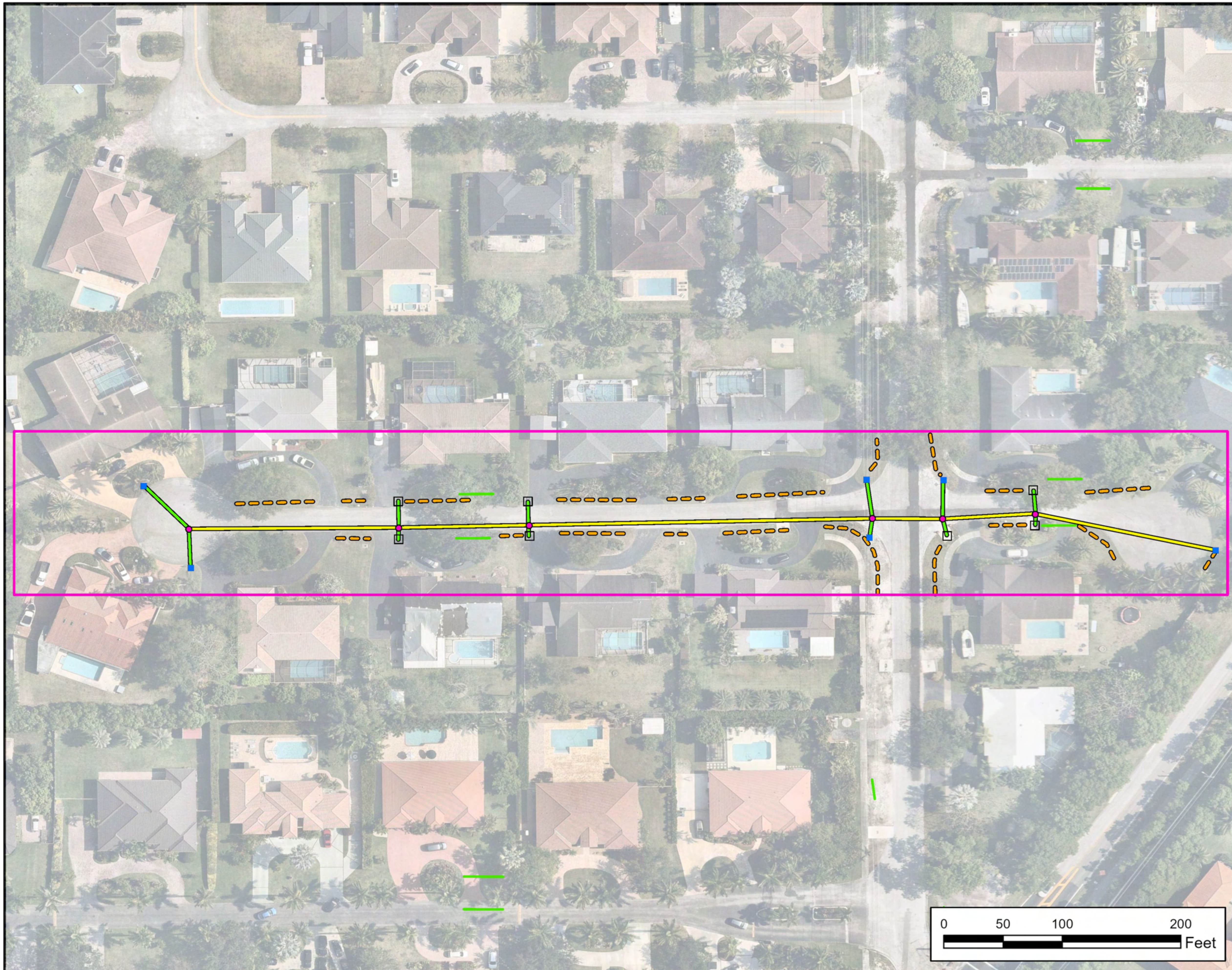
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 187TH TERRACE IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
3



Key Map

Legend

- Roadway Project Area

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

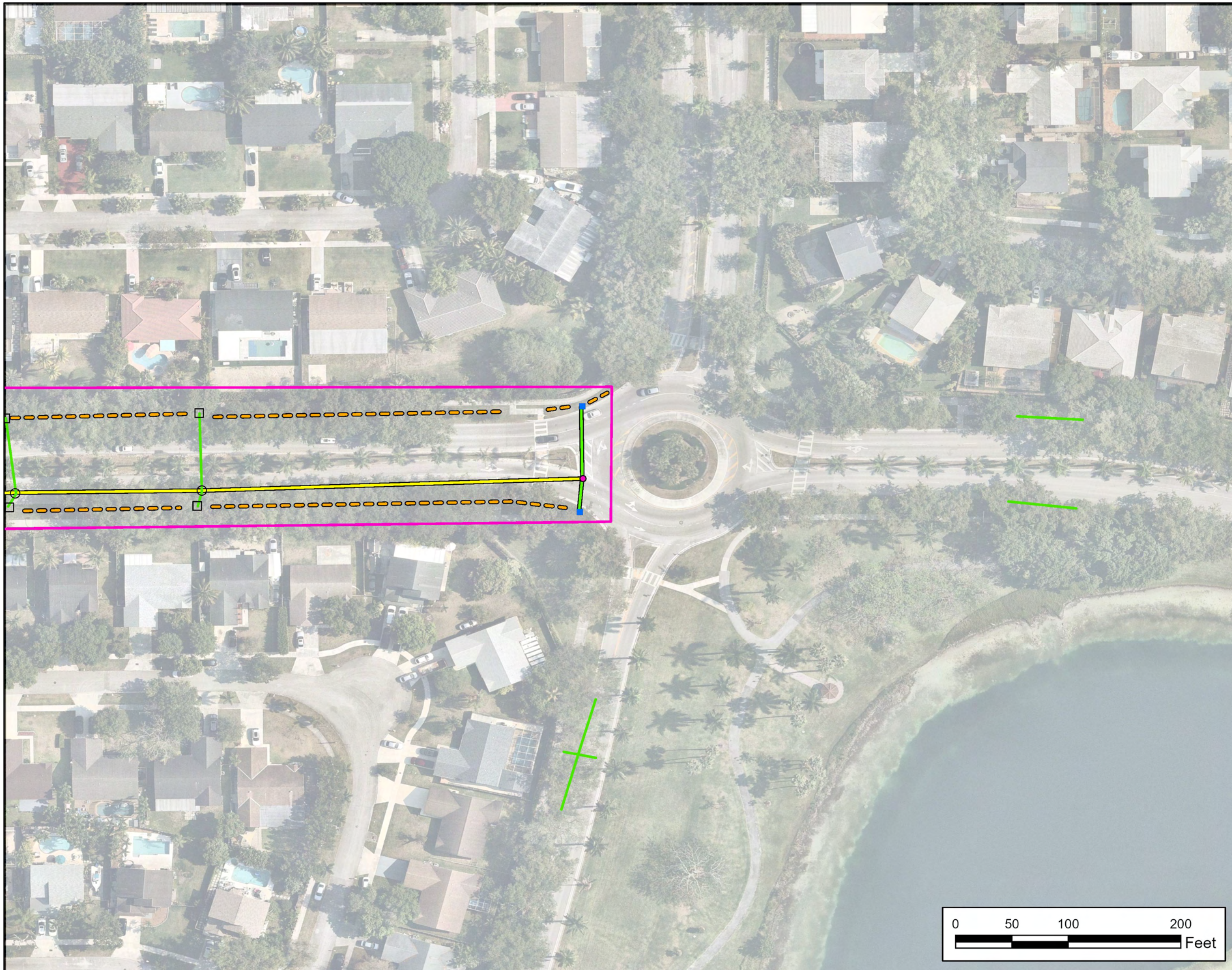
CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

SW 192ND STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1



Key Map

Legend

Roadway Project Area

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

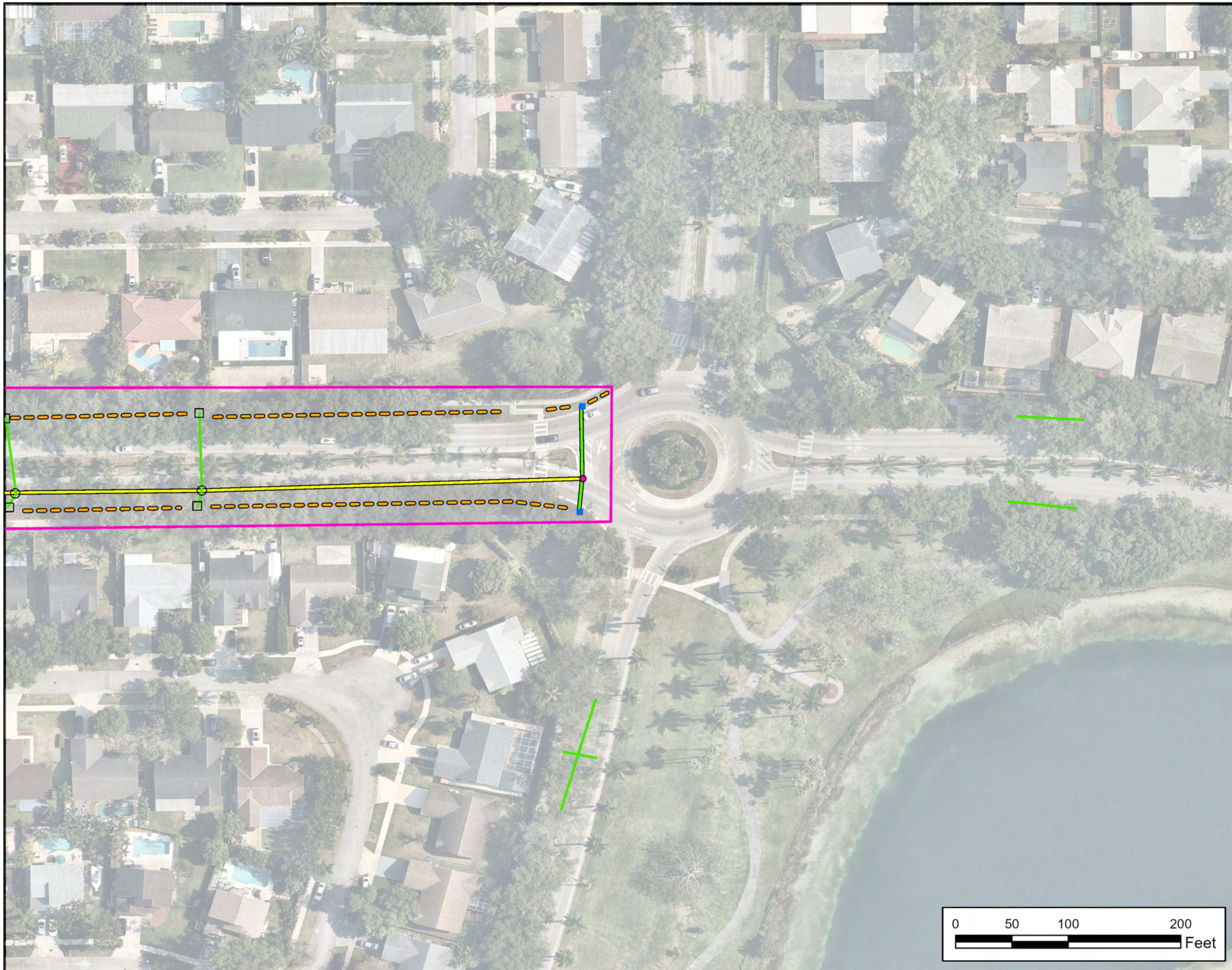
Prepared for:
Town of Cutler Bay

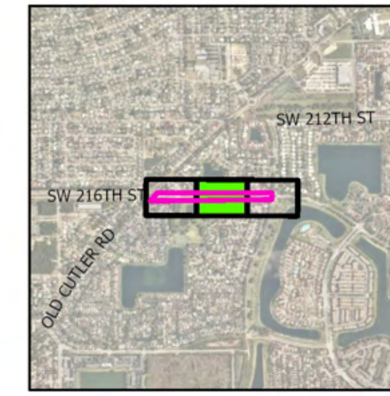
SW 216TH STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

1





Key Map

Legend

Roadway Project Area

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

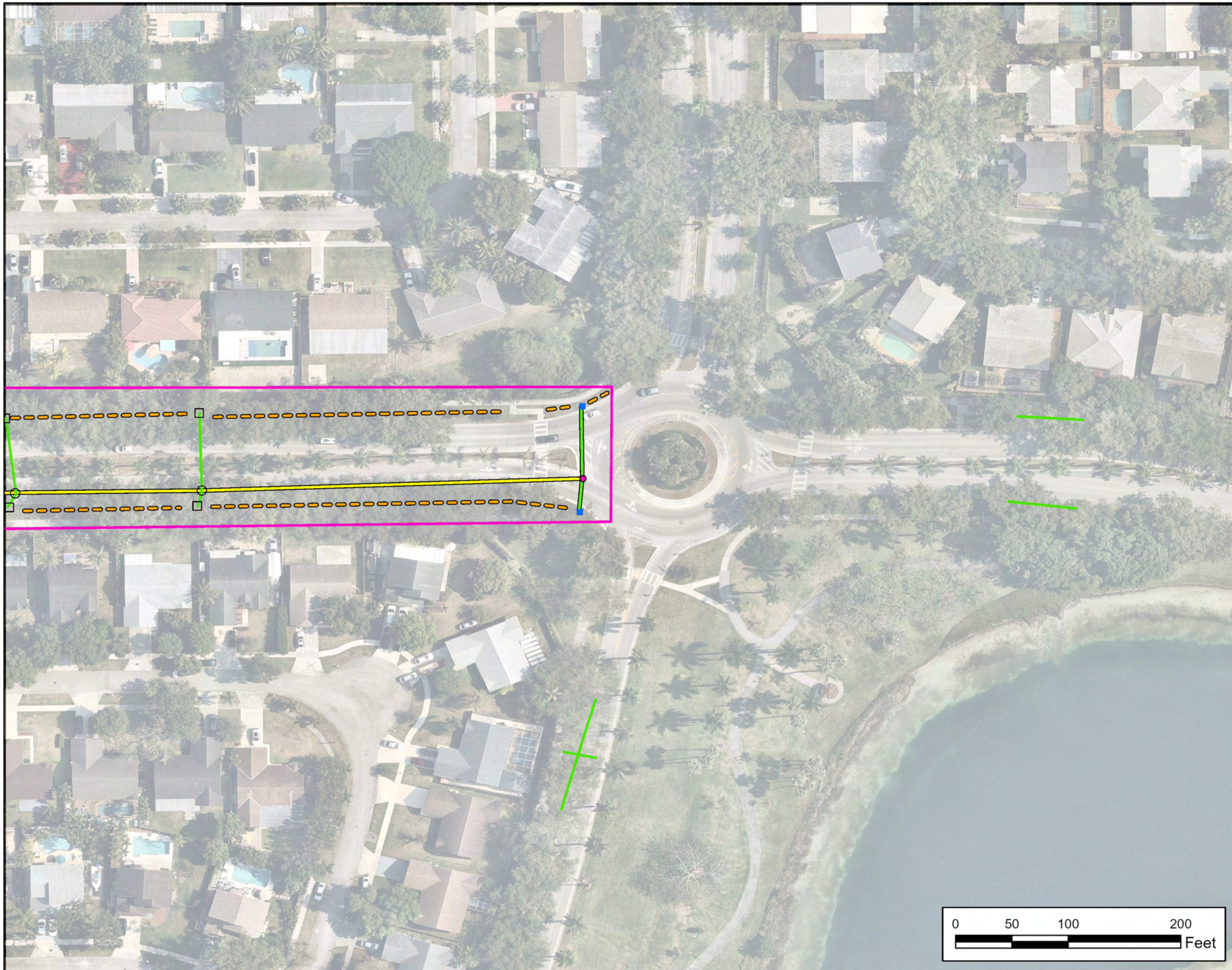
CUTLER BAY STORMWATER MASTER PLAN

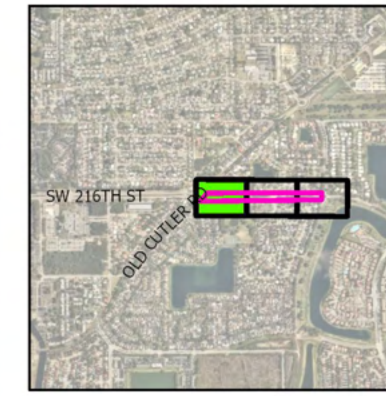
Prepared for:
Town of Cutler Bay

SW 216TH STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
2





Key Map

Legend

Roadway Project Area

Existing

Existing Catch Basin

Existing Manhole

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

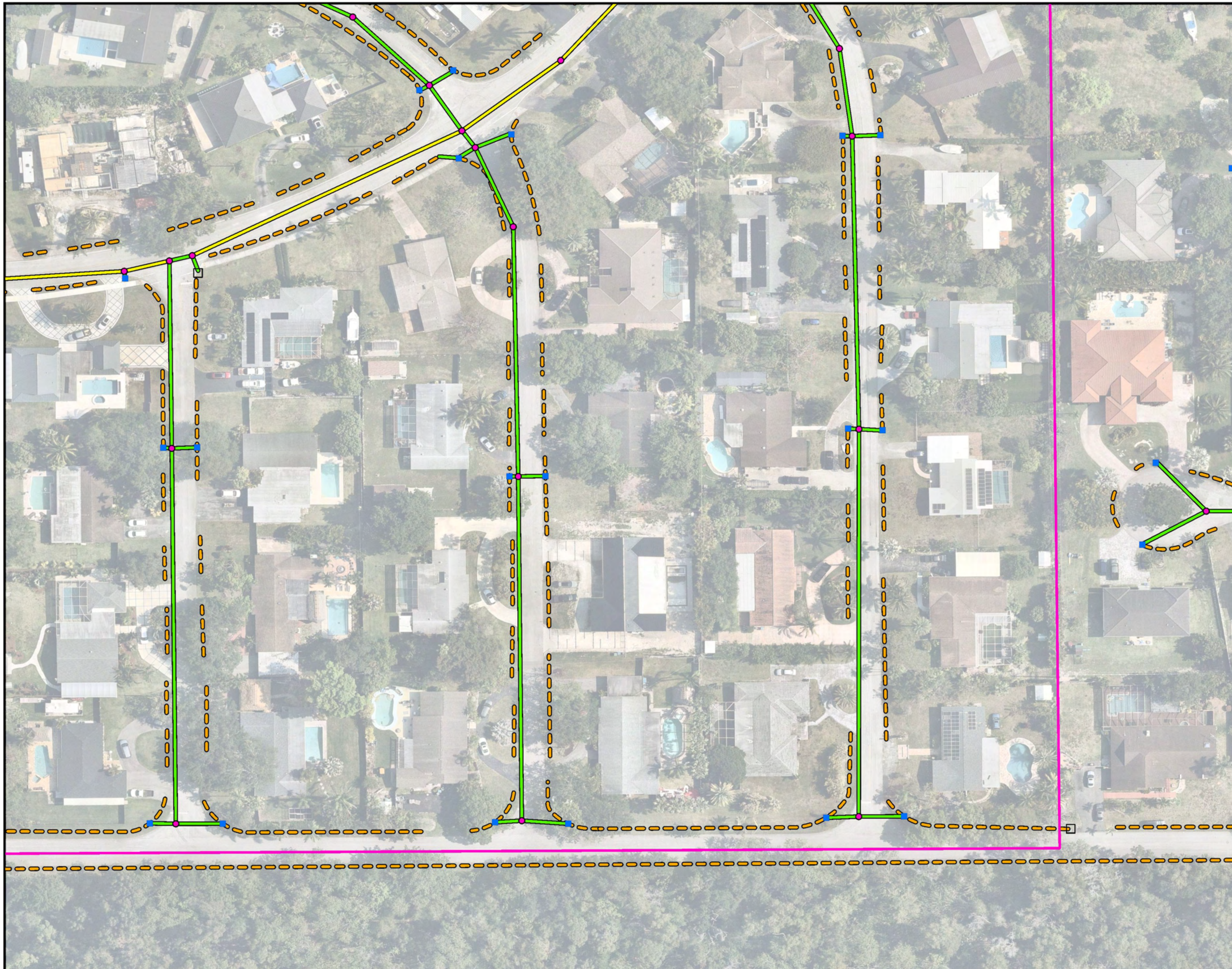
Prepared for:
Town of Cutler Bay

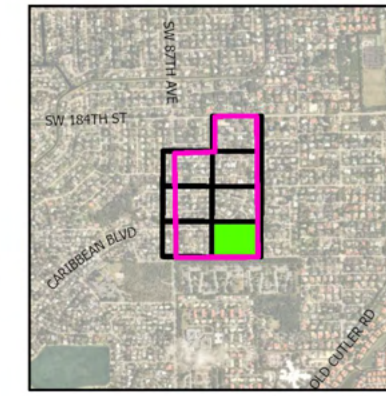
SW 216TH STREET IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

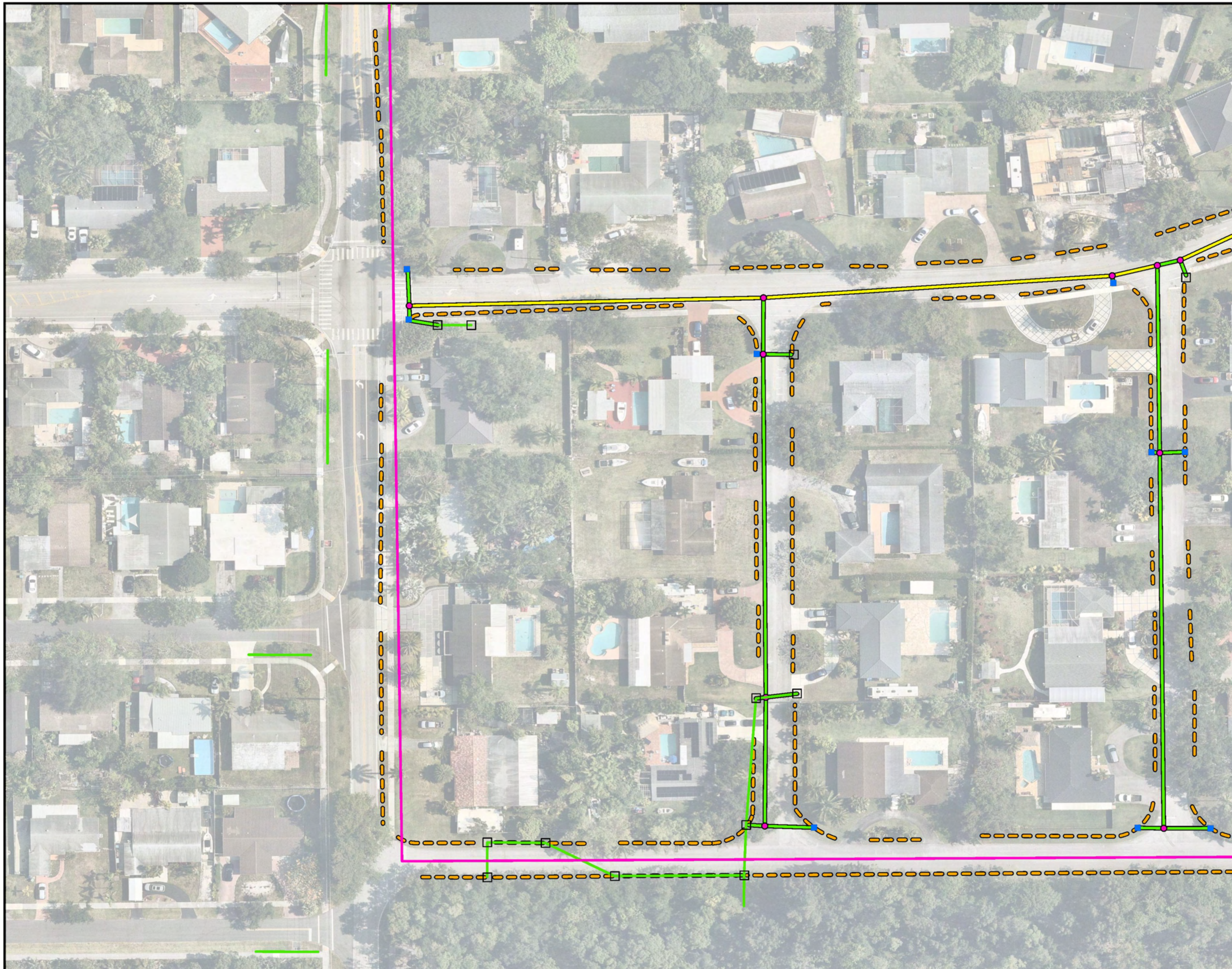
CUTLER BAY STORMWATER MASTER PLAN

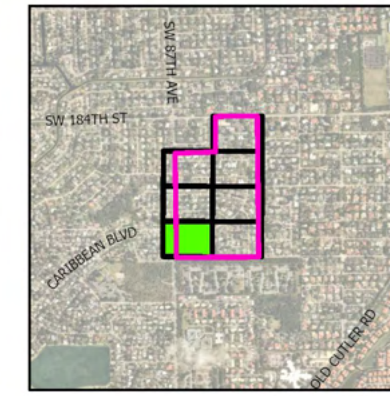
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
1





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Existing Storm Pipe

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

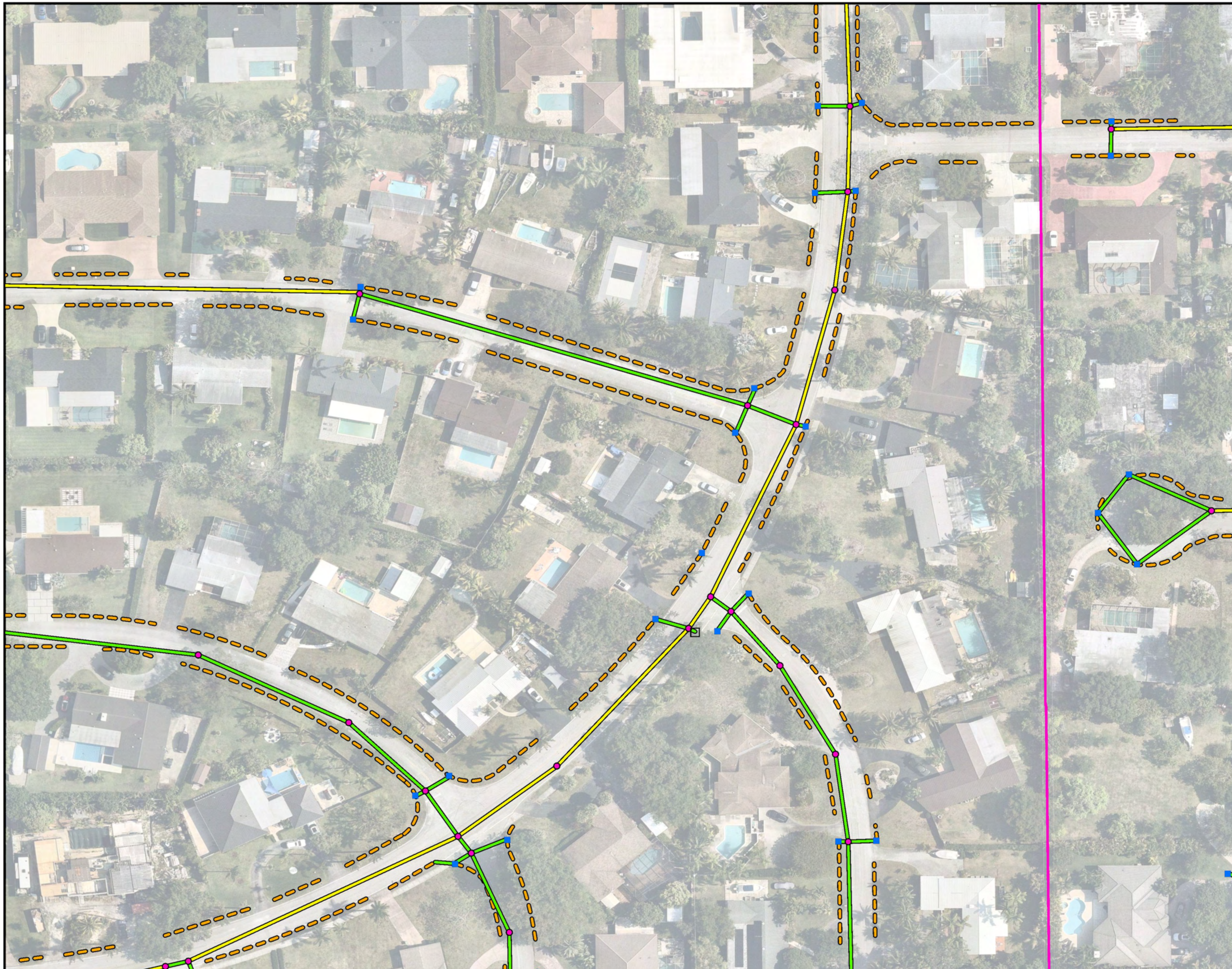
Prepared for:
Town of Cutler Bay

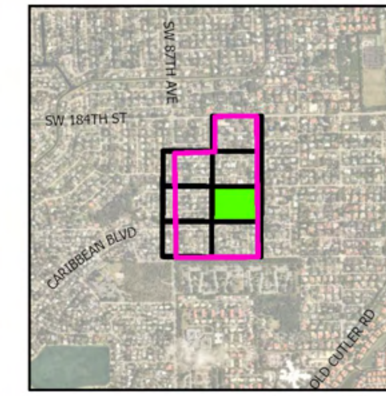
WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

2





Key Map

Legend

PriorityYr

2023

Existing

Existing Catch Basin

Proposed

Proposed Catch Basin

Proposed Manhole

Proposed Exfiltration Trench

Proposed Storm Pipe

Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

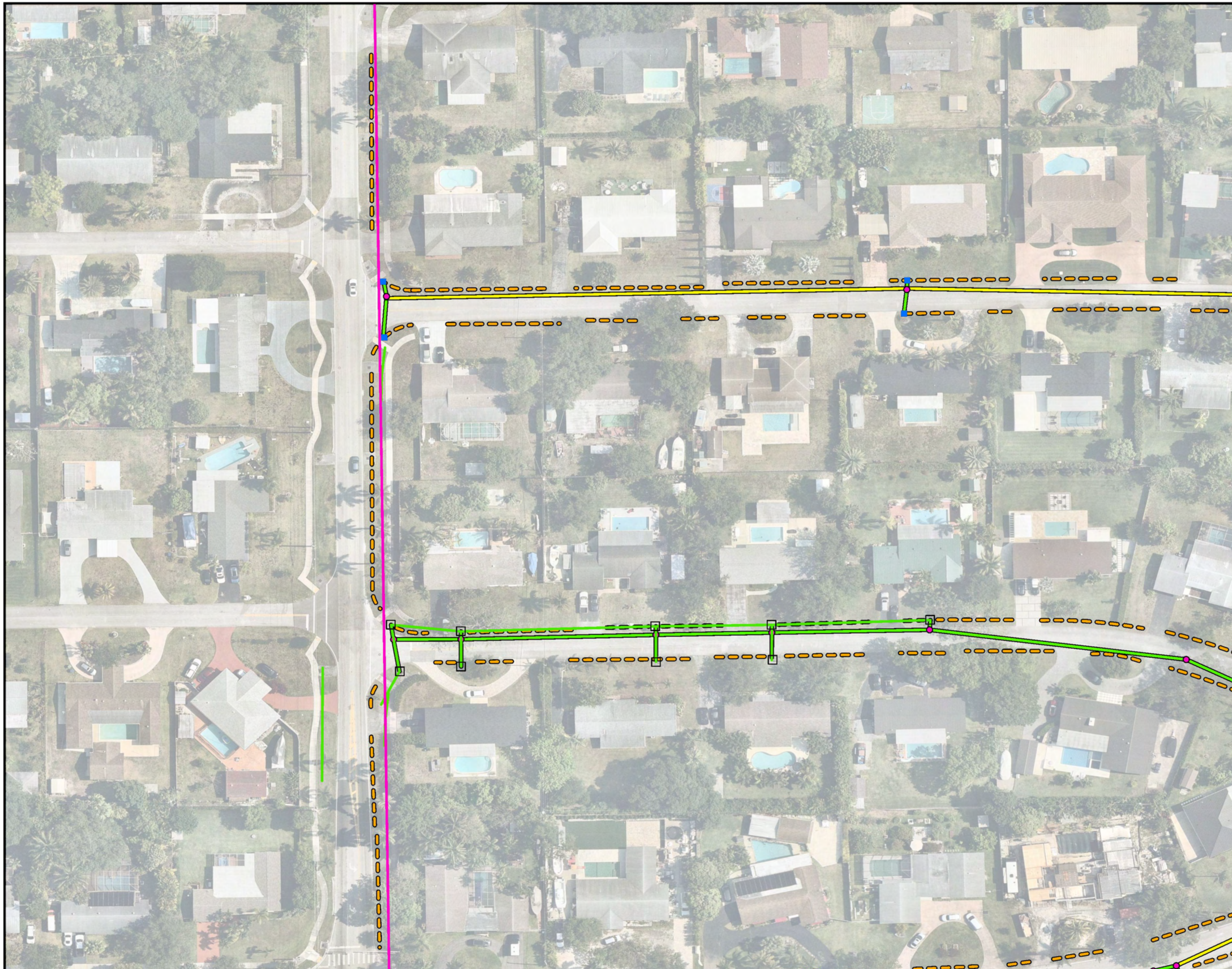
CUTLER BAY
STORMWATER MASTER PLAN
Prepared for:
Town of Cutler Bay

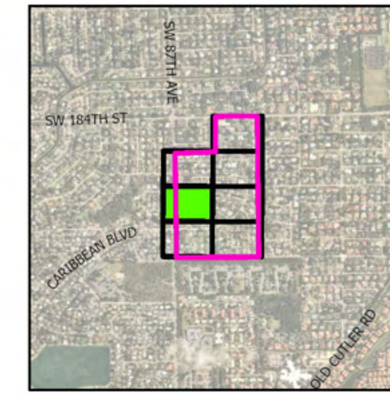
WHISPERING PINES ESTATES SEC 1
IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

3





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

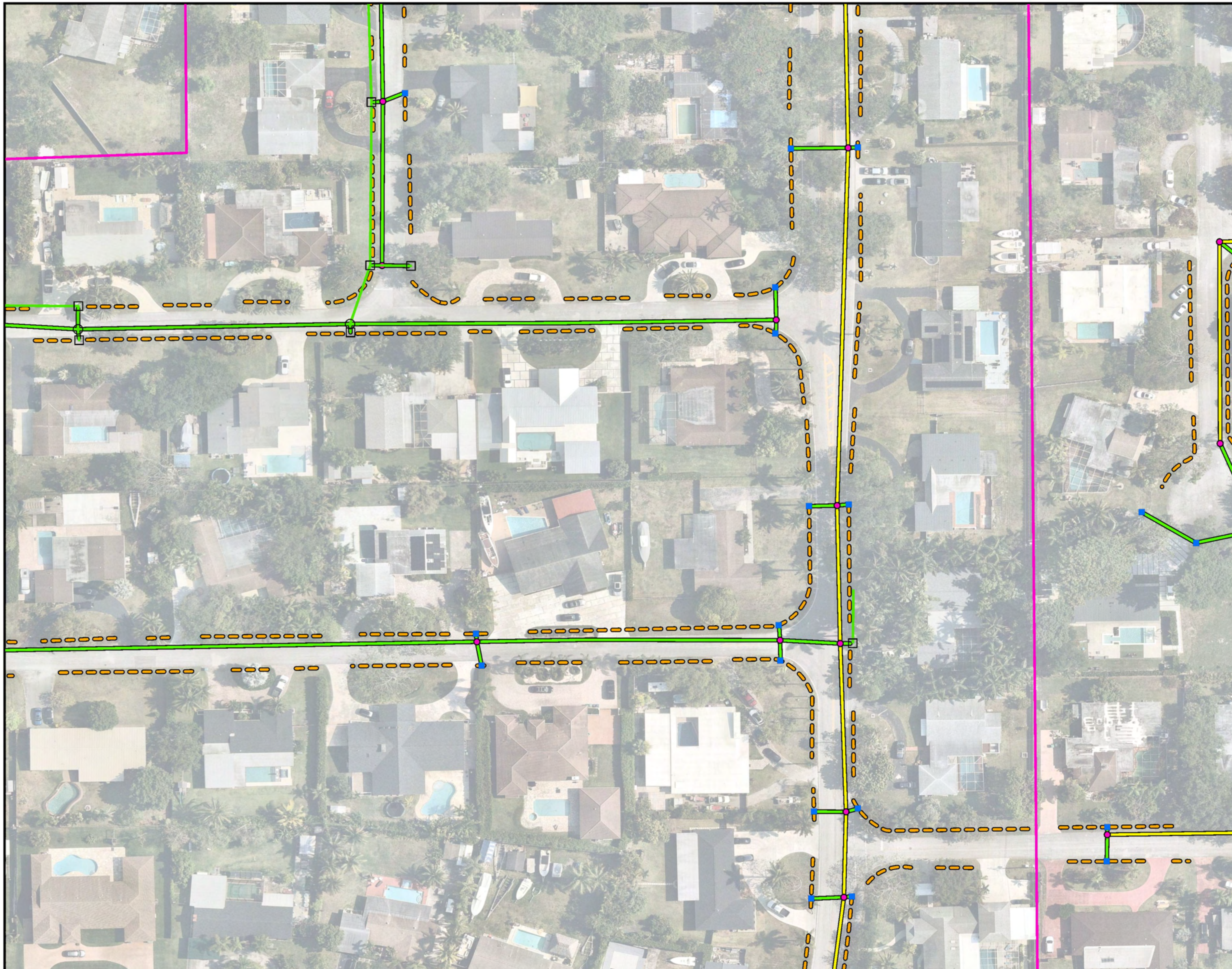
Prepared for:
Town of Cutler Bay

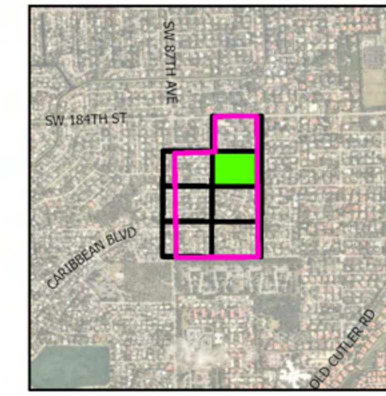
WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET

4





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

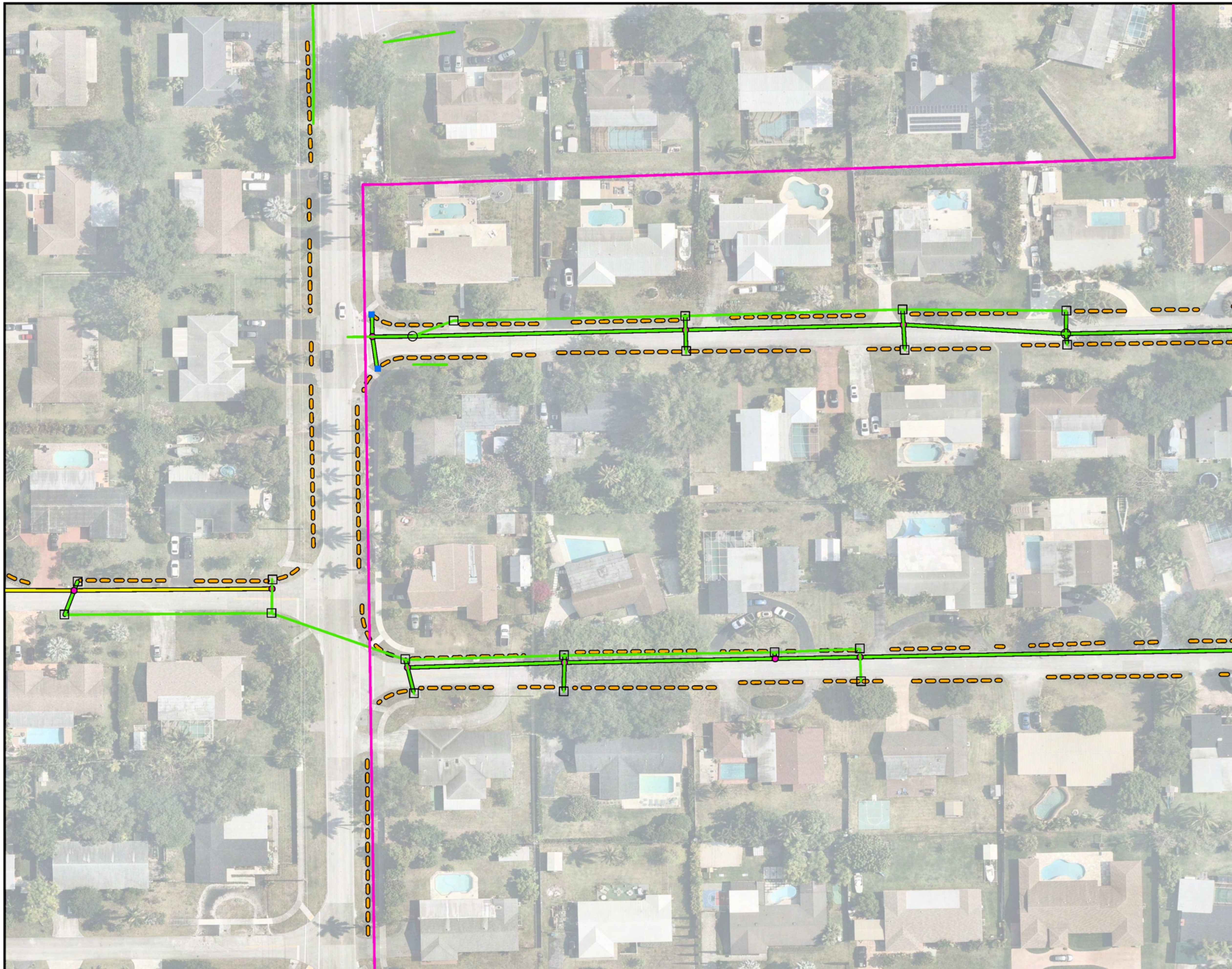
CUTLER BAY STORMWATER MASTER PLAN

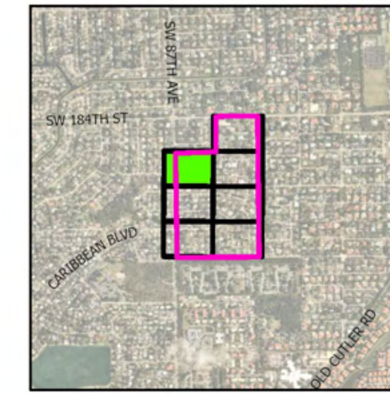
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
5





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Manhole
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

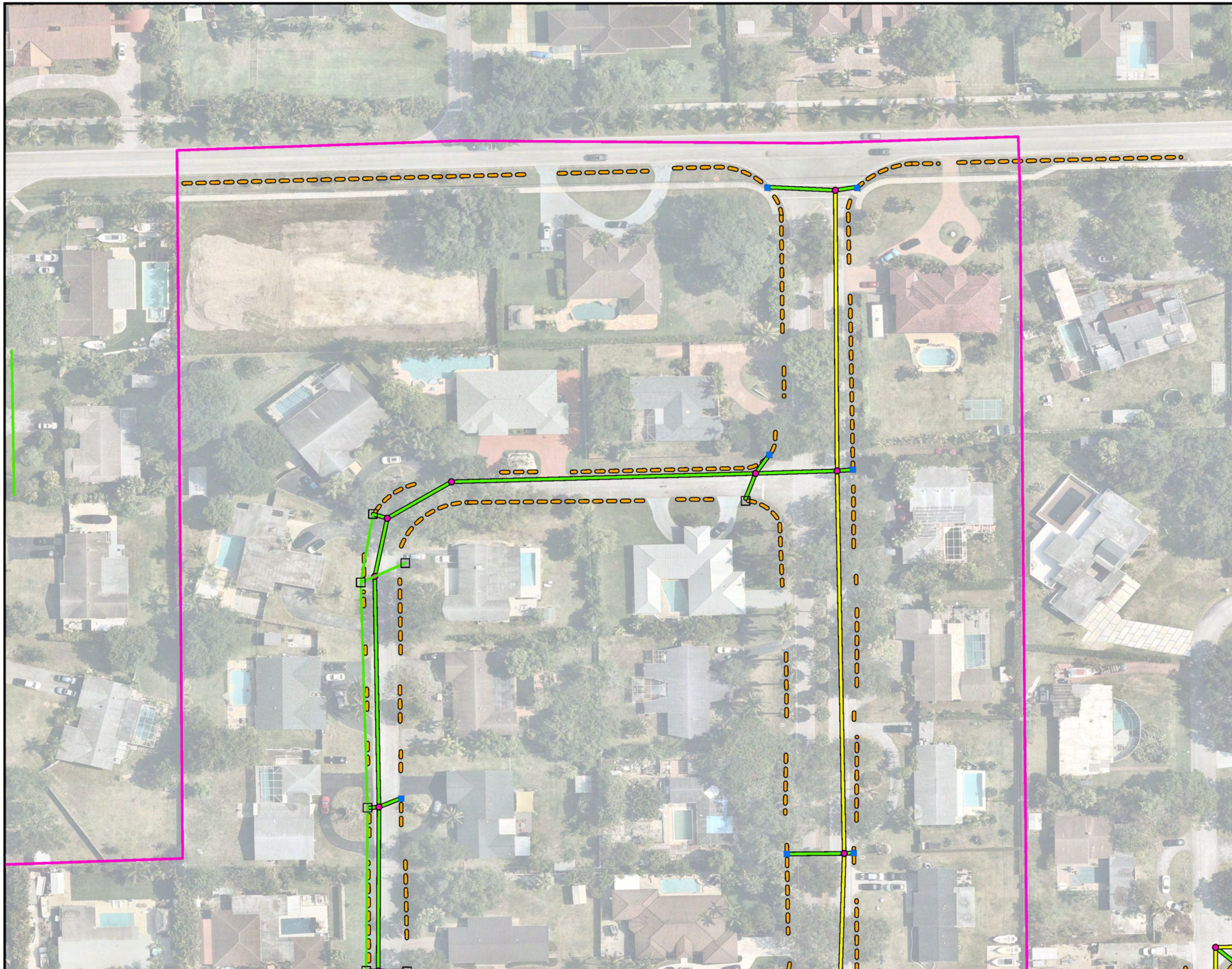
CUTLER BAY STORMWATER MASTER PLAN

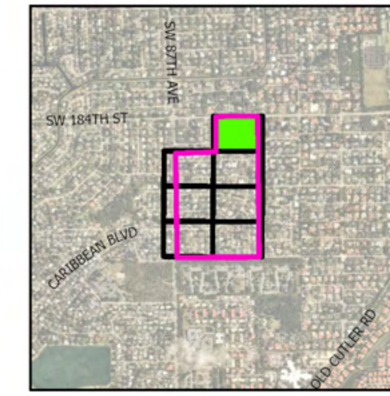
Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
6





Key Map

Legend

PriorityYr

- 2023

Existing

- Existing Catch Basin
- Existing Storm Pipe

Proposed

- Proposed Catch Basin
- Proposed Manhole
- Proposed Exfiltration Trench
- Proposed Storm Pipe
- Proposed Swale

Kimley»Horn
8201 Peters Road
Suite 2200
Plantation, FL 33324
(954) 535-5100 Phone

N

CUTLER BAY STORMWATER MASTER PLAN

Prepared for:
Town of Cutler Bay

WHISPERING PINES ESTATES SEC 1 IMPROVEMENTS

DATE:	AUGUST 2024
DESIGN:	DIM
DRAWN:	DIM
CHECKED:	TS
KH NO.:	043145109

SHEET
7

Roadway Drainage Projects

Gomez Estates

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$32,000	**$32,000**
2	Stormwater Pollution Prevention	1	L.S.	$4,000	**$4,000**
3	Inlet Apron	160	S.Y.	$45	**$8,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	210	L.F.	$125	**$27,000**
5	Exfiltration Trench w/ Trench Restoration	1,090	L.F.	$180	**$197,000**
6	Pollution Retardant Baffle	16	EA.	$600	**$10,000**
7	Catch Basin	14	EA.	$6,000	**$84,000**
8	Manhole	9	EA.	$7,000	**$63,000**
9	Swale Restoration	440	S.Y.	$25	**$11,000**
10	Utility Sleeves and Adjustments	1	L.S.	$8,700	**$9,000**
11	Professional Services	1	L.S.	$89,000	**$89,000**
12	15% Contingency	1	L.S.	$80,100	**$81,000**
TOTAL					**$615,000**

Bel Aire Sec 1.1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$84,000	**$84,000**
2	Stormwater Pollution Prevention	1	L.S.	$10,500	**$11,000**
3	Inlet Apron	275	S.Y.	$45	**$13,000**
4	Driveway/Sidewalk Restoration	25	S.Y.	$45	**$2,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,200	L.F.	$125	**$150,000**
6	Exfiltration Trench w/ Trench Restoration	2,910	L.F.	$180	**$524,000**
7	Pollution Retardant Baffle	22	EA.	$600	**$14,000**
8	Catch Basin	28	EA.	$6,000	**$168,000**
9	Manhole	19	EA.	$7,000	**$133,000**
10	Core Drill Existing Structure	3	EA.	$1,000	**$3,000**
11	Swale Restoration	1690	S.Y.	$25	**$43,000**
12	Utility Sleeves and Adjustments	1	L.S.	$22,550	**$23,000**
13	Professional Services	1	L.S.	$233,600	**$234,000**
14	15% Contingency	1	L.S.	$210,300	**$211,000**
				TOTAL	**$1,613,000**

Belle Aire Sec 3.1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$50,320	**$51,000**
2	Stormwater Pollution Prevention	1	L.S.	$6,290	**$7,000**
3	Inlet Apron	195	S.Y.	$45	**$9,000**
4	Driveway/Sidewalk Restoration	10	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	600	L.F.	$125	**$75,000**
6	Exfiltration Trench w/ Trench Restoration	1,600	L.F.	$180	**$288,000**
7	Pollution Retardant Baffle	15	EA.	$600	**$9,000**
8	Catch Basin	15	EA.	$6,000	**$90,000**
9	Manhole	18	EA.	$7,000	**$126,000**
10	Core Drill Existing Structure	3	EA.	$1,000	**$3,000**
11	Swale Restoration	1100	S.Y.	$25	**$28,000**
12	Utility Sleeves and Adjustments	1	L.S.	$14,550	**$15,000**
13	Professional Services	1	L.S.	$140,400	**$141,000**
14	15% Contingency	1	L.S.	$126,450	**$127,000**
				TOTAL	**$970,000**

Belle Aire Sec 3.2

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$52,880	**$53,000**
2	Stormwater Pollution Prevention	1	L.S.	$6,610	**$7,000**
3	Inlet Apron	210	S.Y.	$45	**$10,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,065	L.F.	$125	**$134,000**
5	Exfiltration Trench w/ Trench Restoration	1,370	L.F.	$180	**$247,000**
6	Pollution Retardant Baffle	19	EA.	$600	**$12,000**
7	Catch Basin	20	EA.	$6,000	**$120,000**
8	Manhole	16	EA.	$7,000	**$112,000**
9	Swale Restoration	1010	S.Y.	$25	**$26,000**
10	Utility Sleeves and Adjustments	1	L.S.	$18,300	**$19,000**
11	Professional Services	1	L.S.	$148,000	**$148,000**
12	15% Contingency	1	L.S.	$133,200	**$134,000**
				TOTAL	**$1,022,000**

Belle Aire Sec 3.3

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$39,440	**$40,000**
2	Stormwater Pollution Prevention	1	L.S.	$4,930	**$5,000**
3	Inlet Apron	12	S.Y.	$45	**$1,000**
4	Driveway/Sidewalk Restoration	20	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,075	L.F.	$125	**$135,000**
6	Exfiltration Trench w/ Trench Restoration	1,030	L.F.	$180	**$186,000**
7	Pollution Retardant Baffle	15	EA.	$600	**$9,000**
8	Catch Basin	10	EA.	$6,000	**$60,000**
9	Manhole	14	EA.	$7,000	**$98,000**
10	Core Drill Existing Structure	3	EA.	$1,000	**$3,000**
11	Utility Sleeves and Adjustments	1	L.S.	$3,500	**$4,000**
12	Professional Services	1	L.S.	$108,400	**$109,000**
13	15% Contingency	1	L.S.	$97,650	**$98,000**
				TOTAL	**$749,000**

Belle Aire Sec 14

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$42,640	**$43,000**
2	Stormwater Pollution Prevention	1	L.S.	$5,330	**$6,000**
3	Inlet Apron	80	S.Y.	$45	**$4,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,660	L.F.	$125	**$333,000**
5	Catch Basin	14	EA.	$6,000	**$84,000**
6	Manhole	11	EA.	$7,000	**$77,000**
7	Swale Restoration	1390	S.Y.	$25	**$35,000**
8	Utility Sleeves and Adjustments	1	L.S.	$24,700	**$25,000**
9	Professional Services	1	L.S.	$121,400	**$122,000**
10	15% Contingency	1	L.S.	$109,350	**$110,000**
				TOTAL	**$839,000**

Belle Aire Sec 15

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$46,480	**$47,000**
2	Stormwater Pollution Prevention	1	L.S.	$5,810	**$6,000**
3	Inlet Apron	140	S.Y.	$45	**$7,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,060	L.F.	$125	**$133,000**
5	Exfiltration Trench w/ Trench Restoration	1,340	L.F.	$180	**$242,000**
6	Pollution Retardant Baffle	9	EA.	$600	**$6,000**
7	Catch Basin	14	EA.	$6,000	**$84,000**
8	Manhole	12	EA.	$7,000	**$84,000**
9	Core Drill Existing Structure	1	EA.	$1,000	**$1,000**
10	Swale Restoration	940	S.Y.	$25	**$24,000**
11	Utility Sleeves and Adjustments	1	L.S.	$15,050	**$16,000**
12	Professional Services	1	L.S.	$130,000	**$130,000**
13	15% Contingency	1	L.S.	$117,000	**$117,000**
				TOTAL	**$897,000**

Whispering Pines Estates Sec 4 Phase 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$65,200	**$66,000**
2	Stormwater Pollution Prevention	1	L.S.	$8,150	**$9,000**
3	Inlet Apron	273	S.Y.	$45	**$13,000**
4	Driveway/Sidewalk Restoration	20	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,450	L.F.	$125	**$182,000**
6	Exfiltration Trench w/ Trench Restoration	2,050	L.F.	$180	**$369,000**
7	Pollution Retardant Baffle	23	EA.	$600	**$14,000**
8	Curb Inlet Catch Basin	2	EA.	$10,500	**$21,000**
9	Catch Basin	26	EA.	$6,000	**$156,000**
10	Manhole	25	EA.	$7,000	**$175,000**
11	Core Drill Existing Structure	2	EA.	$1,000	**$2,000**
12	Swale Restoration	1240	S.Y.	$25	**$31,000**
13	Utility Sleeves and Adjustments	1	L.S.	$25,650	**$26,000**
14	Professional Services	1	L.S.	$213,000	**$213,000**
15	15% Contingency	1	L.S.	$191,700	**$192,000**
				TOTAL	**$1,470,000**

Whispering Pines Estates Sec 4 Phase 2

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$65,200	**$66,000**
2	Stormwater Pollution Prevention	1	L.S.	$8,150	**$9,000**
3	Inlet Apron	205	S.Y.	$45	**$10,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,370	L.F.	$125	**$297,000**
5	Exfiltration Trench w/ Trench Restoration	950	L.F.	$180	**$171,000**
6	Pollution Retardant Baffle	6	EA.	$600	**$4,000**
7	Catch Basin	21	EA.	$6,000	**$126,000**
8	Manhole	18	EA.	$7,000	**$126,000**
9	Core Drill Existing Structure	4	EA.	$1,000	**$4,000**
10	Swale Restoration	3050	S.Y.	$25	**$77,000**
11	Utility Sleeves and Adjustments	1	L.S.	$27,450	**$28,000**
12	Professional Services	1	L.S.	$183,600	**$184,000**
13	15% Contingency	1	L.S.	$165,300	**$166,000**
				TOTAL	**$1,268,000**

Whispering Pines Estates Sec 3 Phase 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$99,040	**$100,000**
2	Stormwater Pollution Prevention	1	L.S.	$12,380	**$13,000**
3	Inlet Apron	320	S.Y.	$45	**$15,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,420	L.F.	$125	**$303,000**
5	Exfiltration Trench w/ Trench Restoration	2,210	L.F.	$180	**$398,000**
6	Pollution Retardant Baffle	21	EA.	$600	**$13,000**
7	Catch Basin	31	EA.	$6,000	**$186,000**
8	Manhole	25	EA.	$7,000	**$175,000**
9	Core Drill Existing Structure	3	EA.	$1,000	**$3,000**
10	Swale Restoration	1810	S.Y.	$25	**$46,000**
11	Utility Sleeves and Adjustments	1	L.S.	$33,200	**$34,000**
12	Professional Services	1	L.S.	$257,200	**$258,000**
13	15% Contingency	1	L.S.	$231,600	**$232,000**
				TOTAL	**$1,776,000**

Whispering Pines Estates Sec 3 Phase 2

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$99,040	**$100,000**
2	Stormwater Pollution Prevention	1	L.S.	$12,380	**$13,000**
3	Inlet Apron	275	S.Y.	$45	**$13,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,800	L.F.	$125	**$350,000**
5	Exfiltration Trench w/ Trench Restoration	2,560	L.F.	$180	**$461,000**
6	Pollution Retardant Baffle	22	EA.	$600	**$14,000**
7	Catch Basin	28	EA.	$6,000	**$168,000**
8	Manhole	25	EA.	$7,000	**$175,000**
9	Core Drill Existing Structure	4	EA.	$1,000	**$4,000**
10	Swale Restoration	2090	S.Y.	$25	**$53,000**
11	Utility Sleeves and Adjustments	1	L.S.	$34,650	**$35,000**
12	Professional Services	1	L.S.	$277,200	**$278,000**
13	15% Contingency	1	L.S.	$249,600	**$250,000**
				TOTAL	**$1,914,000**

Bel Aire Sec 4

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$40,240	**$41,000**
2	Stormwater Pollution Prevention	1	L.S.	$5,030	**$6,000**
3	Inlet Apron	205	S.Y.	$45	**$10,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,110	L.F.	$125	**$139,000**
5	Exfiltration Trench w/ Trench Restoration	685	L.F.	$180	**$124,000**
6	Pollution Retardant Baffle	11	EA.	$600	**$7,000**
7	Catch Basin	18	EA.	$6,000	**$108,000**
8	Manhole	13	EA.	$7,000	**$91,000**
9	Core Drill Existing Structure	3	EA.	$1,000	**$3,000**
10	Swale Restoration	805	S.Y.	$25	**$21,000**
11	Utility Sleeves and Adjustments	1	L.S.	$16,900	**$17,000**
12	Professional Services	1	L.S.	$113,400	**$114,000**
13	15% Contingency	1	L.S.	$102,150	**$103,000**
				TOTAL	**$784,000**

Cutler Ridge Sec 5

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$69,280	**$70,000**
2	Stormwater Pollution Prevention	1	L.S.	$8,660	**$9,000**
3	Inlet Apron	335	S.Y.	$45	**$16,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,150	L.F.	$125	**$269,000**
5	Exfiltration Trench w/ Trench Restoration	1,225	L.F.	$180	**$221,000**
6	Pollution Retardant Baffle	12	EA.	$600	**$8,000**
7	Catch Basin	30	EA.	$6,000	**$180,000**
8	Manhole	18	EA.	$7,000	**$126,000**
9	Core Drill Existing Structure	4	EA.	$1,000	**$4,000**
10	Swale Restoration	1660	S.Y.	$25	**$42,000**
11	Utility Sleeves and Adjustments	1	L.S.	$28,750	**$29,000**
12	Professional Services	1	L.S.	$194,800	**$195,000**
13	15% Contingency	1	L.S.	$175,350	**$176,000**
				TOTAL	**$1,345,000**

S Coral Homes Sec 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$46,160	**$47,000**
2	Stormwater Pollution Prevention	1	L.S.	$5,770	**$6,000**
3	Inlet Apron	235	S.Y.	$45	**$11,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	490	L.F.	$125	**$62,000**
5	Exfiltration Trench w/ Trench Restoration	1,575	L.F.	$180	**$284,000**
6	Pollution Retardant Baffle	20	EA.	$600	**$12,000**
7	Catch Basin	16	EA.	$6,000	**$96,000**
8	Manhole	12	EA.	$7,000	**$84,000**
9	Core Drill Existing Structure	8	EA.	$1,000	**$8,000**
10	Swale Restoration	780	S.Y.	$25	**$20,000**
11	Utility Sleeves and Adjustments	1	L.S.	$12,100	**$13,000**
12	Professional Services	1	L.S.	$128,600	**$129,000**
13	15% Contingency	1	L.S.	$115,800	**$116,000**
				TOTAL	**$888,000**

Pointe Rotal Sec 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$57,600	**$58,000**
2	Stormwater Pollution Prevention	1	L.S.	$7,200	**$8,000**
3	Inlet Apron	235	S.Y.	$45	**$11,000**
4	Driveway/Sidewalk Restoration	60	S.Y.	$45	**$3,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,420	L.F.	$125	**$303,000**
6	Exfiltration Trench w/ Trench Restoration	620	L.F.	$180	**$112,000**
7	Pollution Retardant Baffle	8	EA.	$600	**$5,000**
8	Curb Inlet Catch Basin	2	EA.	$10,500	**$21,000**
9	Catch Basin	21	EA.	$6,000	**$126,000**
10	Manhole	16	EA.	$7,000	**$112,000**
11	Core Drill Existing Structure	7	EA.	$1,000	**$7,000**
12	Swale Restoration	770	S.Y.	$25	**$20,000**
13	Utility Sleeves and Adjustments	1	L.S.	$28,100	**$29,000**
14	Professional Services	1	L.S.	$163,000	**$163,000**
15	15% Contingency	1	L.S.	$146,700	**$147,000**
				TOTAL	**$1,125,000**

Benson Manor 1 Phase 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$92,640	**$93,000**
2	Stormwater Pollution Prevention	1	L.S.	$11,580	**$12,000**
3	Inlet Apron	215	S.Y.	$45	**$10,000**
4	Driveway/Sidewalk Restoration	10	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,835	L.F.	$125	**$355,000**
6	Exfiltration Trench w/ Trench Restoration	2,190	L.F.	$180	**$395,000**
7	Pollution Retardant Baffle	16	EA.	$600	**$10,000**
8	Catch Basin	30	EA.	$6,000	**$180,000**
9	Manhole	21	EA.	$7,000	**$147,000**
10	Core Drill Existing Structure	3	EA.	$1,000	**$3,000**
11	Swale Restoration	2280	S.Y.	$25	**$57,000**
12	Utility Sleeves and Adjustments	1	L.S.	$34,100	**$35,000**
13	Professional Services	1	L.S.	$259,600	**$260,000**
14	15% Contingency	1	L.S.	$233,700	**$234,000**
				TOTAL	**$1,792,000**

Benson Manor 1 Phase 2

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$70,960	**$71,000**
2	Stormwater Pollution Prevention	1	L.S.	$8,870	**$9,000**
3	Inlet Apron	275	S.Y.	$45	**$13,000**
4	Driveway/Sidewalk Restoration	20	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	3,170	L.F.	$125	**$397,000**
6	Exfiltration Trench w/ Trench Restoration	455	L.F.	$180	**$82,000**
7	Pollution Retardant Baffle	6	EA.	$600	**$4,000**
8	Catch Basin	28	EA.	$6,000	**$168,000**
9	Manhole	25	EA.	$7,000	**$175,000**
10	Core Drill Existing Structure	2	EA.	$1,000	**$2,000**
11	Swale Restoration	1785	S.Y.	$25	**$45,000**
12	Utility Sleeves and Adjustments	1	L.S.	$37,000	**$37,000**
13	Professional Services	1	L.S.	$200,800	**$201,000**
14	15% Contingency	1	L.S.	$180,750	**$181,000**
				TOTAL	**$1,386,000**

Pine Tree Manor Sec 3

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$92,480	**$93,000**
2	Stormwater Pollution Prevention	1	L.S.	$11,560	**$12,000**
3	Inlet Apron	375	S.Y.	$45	**$17,000**
4	Driveway/Sidewalk Restoration	20	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,455	L.F.	$125	**$307,000**
6	Exfiltration Trench w/ Trench Restoration	1,930	L.F.	$180	**$348,000**
7	Pollution Retardant Baffle	21	EA.	$600	**$13,000**
8	Catch Basin	33	EA.	$6,000	**$198,000**
9	Manhole	30	EA.	$7,000	**$210,000**
10	Core Drill Existing Structure	7	EA.	$1,000	**$7,000**
11	Swale Restoration	2200	S.Y.	$25	**$55,000**
12	Utility Sleeves and Adjustments	1	L.S.	$35,750	**$36,000**
13	Professional Services	1	L.S.	$259,400	**$260,000**
14	15% Contingency	1	L.S.	$233,550	**$234,000**
				TOTAL	**$1,791,000**

Pine Tree Manor Sec 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$122,000	**$122,000**
2	Stormwater Pollution Prevention	1	L.S.	$15,250	**$16,000**
3	Inlet Apron	420	S.Y.	$45	**$19,000**
4	Driveway/Sidewalk Restoration	10	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	2,810	L.F.	$125	**$352,000**
6	Exfiltration Trench w/ Trench Restoration	3,200	L.F.	$180	**$576,000**
7	Pollution Retardant Baffle	34	EA.	$600	**$21,000**
8	Catch Basin	42	EA.	$6,000	**$252,000**
9	Manhole	32	EA.	$7,000	**$224,000**
10	Core Drill Existing Structure	2	EA.	$1,000	**$2,000**
11	Swale Restoration	3085	S.Y.	$25	**$78,000**
12	Utility Sleeves and Adjustments	1	L.S.	$41,400	**$42,000**
13	Professional Services	1	L.S.	$341,000	**$341,000**
14	15% Contingency	1	L.S.	$306,900	**$307,000**
				TOTAL	**$2,353,000**

Pine Tree Manor Sec 4

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$75,360	**$76,000**
2	Stormwater Pollution Prevention	1	L.S.	$9,420	**$10,000**
3	Inlet Apron	285	S.Y.	$45	**$13,000**
4	Driveway/Sidewalk Restoration	10	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	4,165	L.F.	$125	**$521,000**
6	Catch Basin	29	EA.	$6,000	**$174,000**
7	Manhole	25	EA.	$7,000	**$175,000**
8	Swale Restoration	2290	S.Y.	$25	**$58,000**
9	Utility Sleeves and Adjustments	1	L.S.	$43,500	**$44,000**
10	Professional Services	1	L.S.	$214,400	**$215,000**
11	15% Contingency	1	L.S.	$193,050	**$194,000**
				TOTAL	**$1,481,000**

Cutler Ridge Manor Estates 1

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$15,120	**$16,000**
2	Stormwater Pollution Prevention	1	L.S.	$1,890	**$2,000**
3	Inlet Apron	80	S.Y.	$45	**$4,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	360	L.F.	$125	**$45,000**
5	Exfiltration Trench w/ Trench Restoration	285	L.F.	$180	**$52,000**
6	Pollution Retardant Baffle	4	EA.	$600	**$3,000**
7	Catch Basin	7	EA.	$6,000	**$42,000**
8	Manhole	5	EA.	$7,000	**$35,000**
9	Core Drill Existing Structure	1	EA.	$1,000	**$1,000**
10	Swale Restoration	255	S.Y.	$25	**$7,000**
11	Utility Sleeves and Adjustments	1	L.S.	$6,100	**$7,000**
12	Professional Services	1	L.S.	$42,800	**$43,000**
13	15% Contingency	1	L.S.	$38,550	**$39,000**
				TOTAL	**$296,000**

Whispering Pines Estates Sec 4 South

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$111,280	**$112,000**
2	Stormwater Pollution Prevention	1	L.S.	$13,910	**$14,000**
3	Inlet Apron	365	S.Y.	$45	**$17,000**
4	Driveway/Sidewalk Restoration	20	S.Y.	$45	**$1,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	3,315	L.F.	$125	**$415,000**
6	Exfiltration Trench w/ Trench Restoration	2,475	L.F.	$180	**$446,000**
7	Pollution Retardant Baffle	23	EA.	$600	**$14,000**
8	Catch Basin	37	EA.	$6,000	**$222,000**
9	Manhole	29	EA.	$7,000	**$203,000**
10	Core Drill Existing Structure	4	EA.	$1,000	**$4,000**
11	Swale Restoration	2760	S.Y.	$25	**$69,000**
12	Utility Sleeves and Adjustments	1	L.S.	$42,000	**$42,000**
13	Professional Services	1	L.S.	$311,800	**$312,000**
14	15% Contingency	1	L.S.	$280,650	**$281,000**
				TOTAL	**$2,152,000**

Pine Tree Manor Sec 2

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$16,480	**$17,000**
2	Stormwater Pollution Prevention	1	L.S.	$2,060	**$3,000**
3	Inlet Apron	60	S.Y.	$45	**$3,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	120	L.F.	$125	**$15,000**
5	Exfiltration Trench w/ Trench Restoration	540	L.F.	$180	**$98,000**
6	Pollution Retardant Baffle	4	EA.	$600	**$3,000**
7	Catch Basin	6	EA.	$6,000	**$36,000**
8	Manhole	6	EA.	$7,000	**$42,000**
9	Swale Restoration	360	S.Y.	$25	**$9,000**
10	Utility Sleeves and Adjustments	1	L.S.	$4,650	**$5,000**
11	Professional Services	1	L.S.	$46,200	**$47,000**
12	15% Contingency	1	L.S.	$41,700	**$42,000**
				TOTAL	**$320,000**

Saga Bay Townhomes

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$35,200	**$36,000**
2	Stormwater Pollution Prevention	1	L.S.	$4,400	**$5,000**
3	Inlet Apron	100	S.Y.	$45	**$5,000**
4	Driveway/Sidewalk Restoration	40	S.Y.	$45	**$2,000**
5	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,330	L.F.	$125	**$167,000**
6	Exfiltration Trench w/ Trench Restoration	710	L.F.	$180	**$128,000**
7	Pollution Retardant Baffle	6	EA.	$600	**$4,000**
8	Catch Basin	6	EA.	$6,000	**$36,000**
9	Manhole	9	EA.	$7,000	**$63,000**
10	Core Drill Existing Structure	8	EA.	$1,000	**$8,000**
11	Swale Restoration	1060	S.Y.	$25	**$27,000**
12	Utility Sleeves and Adjustments	1	L.S.	$13,300	**$14,000**
13	Professional Services	1	L.S.	$99,000	**$99,000**
14	15% Contingency	1	L.S.	$89,100	**$90,000**
				TOTAL	**$684,000**

Cutler Ridge Sec 3

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$11,200	**$12,000**
2	Stormwater Pollution Prevention	1	L.S.	$1,400	**$2,000**
3	Inlet Apron	60	S.Y.	$45	**$3,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	125	L.F.	$125	**$16,000**
5	Exfiltration Trench w/ Trench Restoration	305	L.F.	$180	**$55,000**
6	Pollution Retardant Baffle	4	EA.	$600	**$3,000**
7	Catch Basin	6	EA.	$6,000	**$36,000**
8	Manhole	3	EA.	$7,000	**$21,000**
9	Swale Restoration	205	S.Y.	$25	**$6,000**
10	Utility Sleeves and Adjustments	1	L.S.	$3,650	**$4,000**
11	Professional Services	1	L.S.	$31,600	**$32,000**
12	15% Contingency	1	L.S.	$28,500	**$29,000**
				TOTAL	**$219,000**

Lincoln City Sec G

Item	Description	Qty.	Units	Unit Price	Sub-total
1	Mobilization/ MOT/ Clearing & Grubbing	1	L.S.	$50,960	**$51,000**
2	Stormwater Pollution Prevention	1	L.S.	$6,370	**$7,000**
3	Inlet Apron	205	S.Y.	$45	**$10,000**
4	Drainage Pipe (18" HDPE) w/ Trench Restoration	1,340	L.F.	$125	**$168,000**
5	Exfiltration Trench w/ Trench Restoration	1,090	L.F.	$180	**$197,000**
6	Pollution Retardant Baffle	11	EA.	$600	**$7,000**
7	Catch Basin	19	EA.	$6,000	**$114,000**
8	Manhole	15	EA.	$7,000	**$105,000**
9	Core Drill Existing Structure	2	EA.	$1,000	**$2,000**
10	Swale Restoration	1330	S.Y.	$25	**$34,000**
11	Utility Sleeves and Adjustments	1	L.S.	$19,350	**$20,000**
12	Professional Services	1	L.S.	$143,000	**$143,000**
13	15% Contingency	1	L.S.	$128,700	**$129,000**
				TOTAL	**$987,000**

APPENDIX B-HYDRAULIC AND HYDROLOGIC CALCULATIONS

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
Bel Aire Sec 2.1	0.23	60%	21.12	2.86	2.86	Coastal	10.70	7.84	9.20	10.70
TOTAL:	0.23									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
Bel Aire Sec 2.1	0.02	0.01	0.02	0.01

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
TOF3	4.00	13.50	1.56E-03	-	-	825	2.18	-	-	-	-	4.00	0.50		-	-	2.18
TOTAL:				**-**	**-**	**825**	**2.18**				-				-		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	4.23	96.0%	0.17	4.06
Phosphorus	0.67	96.0%	0.03	0.64

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	25.0	ft
Additional Length of Trench (Ladd)	800.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.50	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	1.64	ft
Unsaturated Trench Depth (Du)	1.64	ft
Saturated Trench Depth (Ds)	11.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.066	ac-ft
Additional Volume Provided (Vadd)	2.109	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	125.0	ft
Additional Length of Trench (Ladd)	700.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.50	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	1.14	ft
Unsaturated Trench Depth (Du)	1.14	ft
Saturated Trench Depth (Ds)	11.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.234	ac-ft
Additional Volume Provided (Vadd)	1.309	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
Bel Aire Sec 2.1	Bel Aire Sec 2.1	9.20	6.51	6.50	6.50	10.70	6.66	6.62	6.63	6.62	6.62	6.62	6.63

Discharge

	Performance Goals	Discharge			
	Storm Event	25-Year Storm (cfs)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed + 6"
Bel Aire Sec 2.1	Canal	15.28	15.28	13.88	13.84

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Bel Aire Sec 2.1	0.01	0.02	2.18

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
BelAire13.1	1.02	80%	9.95	2.86	2.79	Coastal	7.15	4.29	6.50	8.00
TOTAL:	1.02									

Bel Aire Sec 13.1 - Water Quality Required

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
BelAire13.1	0.08	0.17	0.17	0.04

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
BelAire13.1	4.00	13.50	1.56E-03	-	-	211	0.38	4.00	0.50	-	-	4.00	0.50	1,785.00	0.04	-	0.42
TOTAL:				**-**	**-**	**211**	**0.38**				-				0.04		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	5.54	96.0%	0.22	5.32
Phosphorus	0.875	96.0%	0.035	0.84

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	211.0	ft
Additional Length of Trench (Ladd)	435.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.00	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	1.14	ft
Unsaturated Trench Depth (Du)	1.64	ft
Saturated Trench Depth (Ds)	11.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.378	ac-ft
Additional Volume Provided (Vadd)	0.779	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	211.0	ft
Additional Length of Trench (Ladd)	435.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.00	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	0.64	ft
Unsaturated Trench Depth (Du)	1.14	ft
Saturated Trench Depth (Ds)	11.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.216	ac-ft
Additional Volume Provided (Vadd)	0.446	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed +6"	Required (min)	Existing	Proposed	Proposed +6"	Required (max)	Existing	Proposed	Proposed +6"
BelAire13.1	Bel Aire Sec 13.1	6.50	6.50	6.50	6.50	8.00	6.50	6.50	6.50	6.50	6.50	6.50	6.50

Discharge

	Performance Goals	Discharge			
	Storm Event	25-Year Storm (cfs)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed +6"
BelAire13.1	Canal	11.92	11.92	6.50	6.5

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
BelAire13.1	0.04	0.17	0.42

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
BelAire23	14.39	80%	47.34	2.86	3.50	Coastal	7.70	4.84	6.20	7.70
TOTAL:	14.39									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
BelAire23	1.20	34.51	34.51	0.60

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
BelAire23	4.00	13.50	1.56E-03	-	-	7,475	34.55	-	-	-	-	4.00	0.50	13,520.00	0.31	-	34.86
TOTAL:				**-**	**-**	**7,475**	**34.55**				-				0.31		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	78.16	96.0%	3.13	75.04
Phosphorus	12.35	96.0%	0.49	11.85

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	7,475.0	ft
Additional Length of Trench (Ladd)		ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	5.60	NGVD
Lowest Rim Elevation	5.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	3.50	NGVD
Bottom of Trench Elevation	-9.50	NGVD
Distance from EL_{inv} and CE (H_2)	2.74	ft
Unsaturated Trench Depth (Du)	0.64	ft
Saturated Trench Depth (Ds)	12.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	34.548	ac-ft
Additional Volume Provided (Vadd)	0.000	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	7,475.0	ft
Additional Length of Trench (Ladd)		ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	5.60	NGVD
Lowest Rim Elevation	5.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	3.50	NGVD
Bottom of Trench Elevation	-9.50	NGVD
Distance from EL_{inv} and CE (H_2)	2.24	ft
Unsaturated Trench Depth (Du)	0.14	ft
Saturated Trench Depth (Ds)	12.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	28.330	ac-ft
Additional Volume Provided (Vadd)	0.000	ac-ft

**Does not include credit*

Basin Results

Water Quantity

Performance Goals		Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
Storm Event		10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
BelAire23	Bel Aire 23	6.20	8.42	5.50	5.50	7.70	9.83	5.50	5.50	9.83	9.83	5.50	5.50

Discharge

Performance Goals		Discharge			
Storm Event		25-Year Storm (cfs)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed + 6"
BelAire23	Canal	0.00	0.00	0.00	0

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
BelAire23	0.60	34.51	34.86

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
Cantamar	7.20	60%	46.68	2.86	1.60	Coastal	7.90	5.04	6.40	7.90
TOTAL:	7.20									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
Cantamar	0.60	6.48	6.48	0.30

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
Cantamar	4.00	13.50	1.56E-03	-	-	2,250	6.49	-	-	-	-	-	-	-	-	-	6.49
TOTAL:				**-**	**-**	**2,250**	**6.49**				-				-		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	39.08	96.0%	1.56	37.52
Phosphorus	6.17	96.0%	0.25	5.93

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	2,250.0	ft
Additional Length of Trench (Ladd)	1,600.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.60	NGVD
Lowest Rim Elevation	6.00	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.00	NGVD
Bottom of Trench Elevation	-9.00	NGVD
Distance from EL_{inv} and CE (H_2)	1.74	ft
Unsaturated Trench Depth (Du)	1.14	ft
Saturated Trench Depth (Ds)	11.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	6.490	ac-ft
Additional Volume Provided (Vadd)	4.615	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	3,115.0	ft
Additional Length of Trench (Ladd)	385.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.60	NGVD
Lowest Rim Elevation	6.00	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.00	NGVD
Bottom of Trench Elevation	-9.00	NGVD
Distance from EL_{inv} and CE (H_2)	1.24	ft
Unsaturated Trench Depth (Du)	0.64	ft
Saturated Trench Depth (Ds)	12.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	6.495	ac-ft
Additional Volume Provided (Vadd)	0.803	ac-ft

**Does not include credit*

Basin Results

Water Quantity

Performance Goals		Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
Storm Event		10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
Cantamar	Cantamar	6.40	6.20	6.20	6.20	7.90	6.37	6.20	6.20	6.37	6.37	6.20	6.20

Discharge

Performance Goals		Discharge			
Storm Event		25-Year Storm (cfs)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed + 6"
Cantamar	Retention Ponds	76.62	76.62	34.74	32.30

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Cantamar	0.30	6.48	6.49

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
Cutler Ridge Pines	0.09	60%	6.88	2.86	2.86	Coastal	10.03	7.17	8.53	10.03
TOTAL:	0.09									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
Cutler Ridge Pines	0.01	0.00	0.01	0.00

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
Cutler Ridge Pines	4.00	13.50	1.56E-03	-	-	1,702	14.27	-	-	-	-	4.00	0.50	1676	0.04	-	14.30
TOTAL:				**-**	**-**	**1,702**	**14.27**				-				0.04		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	4.23	96.0%	0.17	4.06
Phosphorus	0.67	96.0%	0.03	0.64

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	25.0	ft
Additional Length of Trench (Ladd)	1,677.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	n/a	NGVD
Lowest Rim Elevation	8.20	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	6.20	NGVD
Bottom of Trench Elevation	-6.80	NGVD
Distance from EL_{inv} and CE (H_2)	5.34	ft
Unsaturated Trench Depth (Du)	3.34	ft
Saturated Trench Depth (Ds)	9.66	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.210	ac-ft
Additional Volume Provided (Vadd)	14.057	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	125.0	ft
Additional Length of Trench (Ladd)	1,577.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	n/a	NGVD
Lowest Rim Elevation	8.20	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	6.20	NGVD
Bottom of Trench Elevation	-6.80	NGVD
Distance from EL_{inv} and CE (H_2)	4.84	ft
Unsaturated Trench Depth (Du)	2.84	ft
Saturated Trench Depth (Ds)	10.16	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.966	ac-ft
Additional Volume Provided (Vadd)	12.184	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
Cutler Ridge Pines	Cutler Ridge Pines	8.53	11.09	8.20	8.20	10.03	12.24	8.20	8.20	8.20	8.20	8.20	8.20

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Cutler Ridge Pines	0.00	0.01	14.30

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Watre Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
CutlerRidge4	6.84	80%	63.50	3.50	3.50	Coastal	7.35	3.85	6.70	8.20
TOTAL:	6.84									

Water Quality Required

Sub-Basin Area	(1) Water Quality-First 1" of Runoff (acre-ft)	(2) Water Quality-2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
CutlerRidge4	0.57	7.79	7.79	0.28

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
CutlerRidge4	4.00	13.50	1.56E-03	-	-	1,548	9.32	-	-	-	-	4.00	0.50	15200	0.35	-	9.67
TOTAL:				-	-	1,548	9.32				-				0.35		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	37.13	96.0%	1.49	35.64
Phosphorus	5.865	96.0%	0.235	5.63

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	1,548.3	ft
Additional Length of Trench (Ladd)	2,000.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	3.64	ft
Unsaturated Trench Depth (Du)	1.64	ft
Saturated Trench Depth (Ds)	11.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	9.318	ac-ft
Additional Volume Provided (Vadd)	12.037	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	1,483.3	ft
Additional Length of Trench (Ladd)	2,065.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	3.14	ft
Unsaturated Trench Depth (Du)	1.14	ft
Saturated Trench Depth (Ds)	11.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	7.790	ac-ft
Additional Volume Provided (Vadd)	10.845	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
CutlerRidge4	Cutler Ridge Sec 4	6.70	9.10	6.56	6.56	8.20	10.06	8.46	8.18	10.06	10.06	8.46	8.18

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
CutlerRidge4	0.28	7.79	9.67

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
CutlerRidge7	5.30	60%	44.94	2.86	3.50	Coastal	9.20	6.34	7.70	9.20
TOTAL:	5.30									

Water Quality Required

Sub-Basin Area	(1) Water Quality-First 1" of Runoff (acre-ft)	(2) Water Quality-2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
CutlerRidge7	0.44	3.51	3.51	0.22

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	**Width (feet)**	**Depth (feet)**	**Hydraulic Conductivity (cfs/ft2*ft head)**	**Existing Length (feet)**	**Existing Volume Provided (acre-feet)**	**Proposed Length (feet)**	**Proposed Volume Provided (acre-feet)**	**Existing Swale Width (feet)**	**Existing Swale Depth (feet)**	**Existing Swale Length (feet)**	**Existing Swale Volume (acre-feet)**	**Proposed Swale Width (feet)**	**Proposed Swale Depth (feet)**	**Proposed Swale Length (feet)**	**Proposed Swale Volume (acre-feet)**	**Total Existng Volume (acre-feet)**	**Total Proposed Volume (acre-feet)**
CutlerRidge7	4.00	13.50	1.56E-03	-	-	5,531	8.97	-	-	-	-	4.00	0.50	11,200.00	0.26	-	9.23
TOTAL:				**-**	**-**	**5,531**	**8.97**				-				0.26		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	28.77	96.0%	1.15	27.62
Phosphorus	4.545	96.0%	0.182	4.363

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	5,531.0	ft
Additional Length of Trench (Ladd)	169.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	3.90	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	1.04	ft
Unsaturated Trench Depth (Du)	1.64	ft
Saturated Trench Depth (Ds)	11.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	8.970	ac-ft
Additional Volume Provided (Vadd)	0.274	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)		ft
Additional Length of Trench (Ladd)	5,700.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	3.90	NGVD
Lowest Rim Elevation	6.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	4.50	NGVD
Bottom of Trench Elevation	-8.50	NGVD
Distance from EL_{inv} and CE (H_2)	0.54	ft
Unsaturated Trench Depth (Du)	1.14	ft
Saturated Trench Depth (Ds)	11.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.000	ac-ft
Additional Volume Provided (Vadd)	0.000	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	5-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed +6"	Required (min)	Existing	Proposed	Proposed +6"	Required (max)	Existing	Proposed	Proposed +6"
CutlerRidge7	Cutler Ridge Sec 7	7.70	7.37	7.36	7.36	9.20	7.95	7.36	7.36	7.95	7.95	7.36	7.36

Discharge

	Performance Goals	Discharge			
	Storm Event	25-Year Storm (cfs)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed + 6"
CutlerRidge7	Canal	35.07	35.07	26.51	30.86

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
CutlerRidge7	0.22	3.51	9.23

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Watre Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
LakesbytheBay10	4.37	80%	29.97	3.50	3.50	Coastal	7.05	3.55	6.40	7.90
TOTAL:	4.37									

Water Quality Required

Sub-Basin Area	**(1) Water Quality- First 1" of Runoff (acre-ft)**	**(2) Water Quality- 2.5" x's % Impervious (acre-ft)**	**Required Water Quality Volume*** (acre-ft)**	**Required 1/2" Pre-treatment Volume (acre-ft)**
LakesbytheBay10	0.36	3.19	3.19	0.18

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
LakesbytheBay10	4.00	13.50	1.56E-03	-	-	1,175	3.20	-	-	-	-	4.00	0.50	2600	0.06	-	3.26
TOTAL:				**-**	**-**	**1,175**	**3.20**				-				0.06		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	23.72	96.0%	0.95	22.77
Phosphorus	3.747	96.0%	0.15	3.597

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	1,175.0	ft
Additional Length of Trench (Ladd)	714.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.50	NGVD
Lowest Rim Elevation	5.95	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	3.95	NGVD
Bottom of Trench Elevation	-9.05	NGVD
Distance from EL_{inv} and CE (H_2)	1.64	ft
Unsaturated Trench Depth (Du)	1.09	ft
Saturated Trench Depth (Ds)	11.91	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	3.198	ac-ft
Additional Volume Provided (Vadd)	1.943	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	1,889.0	ft
Additional Length of Trench (Ladd)	0.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	4.50	NGVD
Lowest Rim Elevation	5.95	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	3.95	NGVD
Bottom of Trench Elevation	-9.05	NGVD
Distance from EL_{inv} and CE (H_2)	1.14	ft
Unsaturated Trench Depth (Du)	0.59	ft
Saturated Trench Depth (Ds)	12.41	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	3.637	ac-ft
Additional Volume Provided (Vadd)	0.000	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
LakesbytheBay10	Lakes by the Bay Sec 10	6.40	5.43	5.43	5.43	7.90	5.95	5.95	5.95	5.95	5.95	5.95	5.95

Discharge

	Performance Goals	Discharge			
	Storm Event	25-Year Storm (cfs)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed + 6"
LakesbytheBay10	Retention Pond	30.63	30.63	2.21	2.28

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
LakesbytheBay10	0.18	3.19	3.26

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
OldCutlerCove	3.32	80%	28.44	2.86	2.86	Coastal	7.45	4.59	6.80	8.30
TOTAL:	3.32									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
OldCutlerCove	0.28	1.84	1.84	0.14

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
OldCutlerCove	4.00	13.50	1.56E-03	-	-	360	1.86	-	-	-	-	4.00	0.50	2304	0.05	-	1.92
TOTAL:				**-**	**-**	**360**	**1.86**				-				0.05		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	18.02	96.0%	0.72	17.30
Phosphorus	2.847	96.0%	0.114	2.733

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	360.0	ft
Additional Length of Trench (Ladd)	1,840.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	5.95	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	3.95	NGVD
Bottom of Trench Elevation	-9.05	NGVD
Distance from EL_{inv} and CE (H_2)	3.09	ft
Unsaturated Trench Depth (Du)	1.09	ft
Saturated Trench Depth (Ds)	11.91	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	1.862	ac-ft
Additional Volume Provided (Vadd)	9.519	ac-ft

**Does not include credit*

Proposed Exfiltration Trench +1

Length of Trench for Water Quality (Lwq)	420.0	ft
Additional Length of Trench (Ladd)	1,780.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	5.95	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	3.95	NGVD
Bottom of Trench Elevation	-9.05	NGVD
Distance from EL_{inv} and CE (H_2)	2.59	ft
Unsaturated Trench Depth (Du)	0.59	ft
Saturated Trench Depth (Ds)	12.41	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	1.836	ac-ft
Additional Volume Provided (Vadd)	7.780	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
OldCutlerCove	Old Cutler Cove	6.80	9.45	6.19	6.19	8.30	10.48	6.83	6.20	10.48	10.48	6.83	6.20

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
OldCutlerCove	0.14	1.84	1.92

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
Old Cutler Omni Pines	1.29	80%	11.13	3.50	3.50	Coastal	13.25	9.75	12.60	14.10
TOTAL:	1.29									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
Old Cutler Omni Pines	0.11	0.28	0.28	0.05

DRAINAGE CALCULATIONS

Cutler Bay Stormwater Master Plan-Update #1

Sub-Basin- Old Cutler Omni Pines

Cutler Bay, Florida

1/16/2024

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
Old Cutler Omni Pines	4.00	13.50	1.56E-03	-	-	24	0.35	-	-	-	-	4.00	0.50	2250	0.05	-	0.40
TOTAL:				**-**	**-**	**24**	**0.35**				-				0.05		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	7.00	96.0%	0.28	6.72
Phosphorus	1.106	96.0%	0.044	1.062

EXFILTRATION TRENCH CALCULATIONS

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	24.0	ft
Additional Length of Trench (Ladd)	926.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	11.80	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	9.80	NGVD
Bottom of Trench Elevation	-3.20	NGVD
Distance from EL_{inv} and CE (H_2)	8.94	ft
Unsaturated Trench Depth (Du)	6.94	ft
Saturated Trench Depth (Ds)	6.06	ft
Formula Used	Regular	
Volume Provided for Water Quality* (Vwq)	0.347	ac-ft
Additional Volume Provided (Vadd)	13.401	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	27.0	ft
Additional Length of Trench (Ladd)	923.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	11.80	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	9.80	NGVD
Bottom of Trench Elevation	-3.20	NGVD
Distance from EL_{inv} and CE (H_2)	8.44	ft
Unsaturated Trench Depth (Du)	6.44	ft
Saturated Trench Depth (Ds)	6.56	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.317	ac-ft
Additional Volume Provided (Vadd)	10.822	ac-ft

**Does not include credit*

Basin Results

Water Quantity

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
Old Cutler Omni Pines	Old Cutler Omni Pines	12.60	14.14	11.80	11.80	14.10	14.99	11.80	11.80	14.99	14.99	11.80	11.80

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Old Cutler Omni Pines	0.05	0.28	0.40

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Watre Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
Omni Estates	1.50	80%	13.76	2.86	2.86	Coastal	12.00	9.14	10.50	12.00
TOTAL:	1.50									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
Omni Estates	0.13	0.38	0.38	0.06

Water Quality Provided

	Exfiltration Trench								Swale								TOTAL	
				Existing		Proposed		Existing				Proposed						
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
Omni	4.00	13.50	1.56E-03	-	-	41	0.41	-	-	-	-	4.00	0.50	3300	0.08	-	0.49
TOTAL:				-	-	41	0.41				-				0.08		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	8.14	96.0%	0.33	7.82
Phosphorus	1.29	96.0%	0.05	1.24

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	41.3	ft
Additional Length of Trench (Ladd)	1,958.7	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	9.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	7.50	NGVD
Bottom of Trench Elevation	-5.50	NGVD
Distance from EL_{inv} and CE (H_2)	6.64	ft
Unsaturated Trench Depth (Du)	4.64	ft
Saturated Trench Depth (Ds)	8.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.410	ac-ft
Additional Volume Provided (Vadd)	19.461	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	47.9	ft
Additional Length of Trench (Ladd)	1,952.1	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	9.50	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	7.50	NGVD
Bottom of Trench Elevation	-5.50	NGVD
Distance from EL_{inv} and CE (H_2)	6.14	ft
Unsaturated Trench Depth (Du)	4.14	ft
Saturated Trench Depth (Ds)	8.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	0.448	ac-ft
Additional Volume Provided (Vadd)	18.281	ac-ft

**Does not include credit*

Basin Results

Water Quantity

Performance Goals		Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
Storm Event		10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (max)	Existing	Proposed	Proposed +1	Required (max)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
Omni Estates	Omni Estates	10.50	11.64	9.50	0.00	12.00	12.67	9.50	0.00	12.67	12.67	9.50	0.00

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Omni Estates	0.06	0.38	0.49

Basin Data

Sub-Basin Area	Total Project Area (acres)	Project Area % Impervious	Total Contributing Area (acres)	Water Table Elev.	Control Water Elev.	Soil Type	Avg. Elev.	Depth to Water Table (feet)	Roadway Low CL Elev.	Assumed Building Elev.
Whispering Pines Ests Sec 1	6.46	80%	59.86	3.50	3.50	Coastal	9.15	5.65	8.50	10.00
TOTAL:	6.46									

Water Quality Required

Sub-Basin Area	(1) Water Quality- First 1" of Runoff (acre-ft)	(2) Water Quality- 2.5" x's % Impervious (acre-ft)	Required Water Quality Volume*** (acre-ft)	Required 1/2" Pre-treatment Volume (acre-ft)
Whispering Pines Ests Sec 1	0.54	6.96	6.96	0.27

Water Quality Provided

	Exfiltration Trench							Swale								TOTAL	
				Existing		Proposed		Existing				Proposed					
Sub-Basin Area	Width (feet)	Depth (feet)	Hydraulic Conductivity (cfs/ft2*ft head)	Existing Length (feet)	Existing Volume Provided (acre-feet)	Proposed Length (feet)	Proposed Volume Provided (acre-feet)	Existing Swale Width (feet)	Existing Swale Depth (feet)	Existing Swale Length (feet)	Existing Swale Volume (acre-feet)	Proposed Swale Width (feet)	Proposed Swale Depth (feet)	Proposed Swale Length (feet)	Proposed Swale Volume (acre-feet)	Total Existng Volume (acre-feet)	Total Proposed Volume (acre-feet)
Whispering Pines Ests Sec 1	4.00	13.50	1.56E-03	-	-	860	6.99	-	-	-	-	4.00	0.50	18000	0.41	-	7.40
TOTAL:				**-**	**-**	**860**	**6.99**				-				0.41		

Nutrient Loading Analysis

Pollutant	Load (kg/yr)	Treatment	Surface Discharge (kg/yr)	Mass Reduction (kg/yr)
Nitrogen	35.06	96.0%	1.40	33.66
Phosphorus	5.539	96.0%	0.222	5.318

Basin #1

Exfiltration Trench Inputs

Hydraulic Conductivity (K)	1.56E-03	cfs/ft^2-ft
Pavement Section Thickness	2.0	ft
Factor of Safety (FS)	2.0	

Proposed Exfiltration Trench

Length of Trench for Water Quality (Lwq)	860.0	ft
Additional Length of Trench (Ladd)	2,690.0	ft
Control Elevation (CE)	2.86	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	8.00	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	6.00	NGVD
Bottom of Trench Elevation	-7.00	NGVD
Distance from EL_{inv} and CE (H_2)	5.14	ft
Unsaturated Trench Depth (Du)	3.14	ft
Saturated Trench Depth (Ds)	9.86	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	6.986	ac-ft
Additional Volume Provided (Vadd)	21.853	ac-ft

**Does not include credit*

Proposed Exfiltration Trench + 6"

Length of Trench for Water Quality (Lwq)	935.0	ft
Additional Length of Trench (Ladd)	2,615.0	ft
Control Elevation (CE)	3.36	NGVD
Lowest Weir/Bleeder Elevations (EL_{inv})	N/A	NGVD
Lowest Rim Elevation	8.00	NGVD
Trench Width (W)	4.00	ft
Depth of Trench (D)	13.00	ft
Top of Trench Elevation	6.00	NGVD
Bottom of Trench Elevation	-7.00	NGVD
Distance from EL_{inv} and CE (H_2)	4.64	ft
Unsaturated Trench Depth (Du)	2.64	ft
Saturated Trench Depth (Ds)	10.36	ft
Formula Used	Conservative	
Volume Provided for Water Quality* (Vwq)	6.970	ac-ft
Additional Volume Provided (Vadd)	19.493	ac-ft

**Does not include credit*

	Performance Goals	Crown of Roadway				Building Finished Floor Elevation				Equivalent Storage			
	Storm Event	10-Year Storm Stage (ft-NGVD)[1]				100-Year Storm Stage (ft-NGVD)				100-Year Storm Stage (ft-NGVD)			
Sub-Basin Area	Node	Required (min)	Existing	Proposed	Proposed + 6"	Required (min)	Existing	Proposed	Proposed + 6"	Required (max)	Existing	Proposed	Proposed + 6"
Whispering Pines Ests Sec 1	Whispering Pines Ests Sec 1	8.50	10.68	8.00	8.00	10.00	11.69	9.96	9.95	11.69	11.69	9.96	9.95

Water Quality

Sub-Basin Area	Required Pre-Treatment (ac-ft)	Required (ac-ft)	Provided (ac-ft)
Whispering Pines Ests Sec 1	0.27	6.96	7.40

APPENDIX C-POLLUTANT LOADING CALCULATION SUMMARY

Summary Treatment Report Version: 4.3.5

Project: Bel Aire Sec 2.1

Analysis Type: Net Improvement

Date:1/16/2024

BMP Types:

Catchment 1 - (Catchment 1) Exfiltration Trench

Based on % removal values to the nearest percent

Routing Summary

Catchment 1 Routed to Outlet

Total nitrogen target removal met? **Yes**

Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	1.25 kg/yr	
Total N post load	1.25 kg/yr	
Target N load reduction	%	
Target N discharge load	1.25 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.05 kg/yr	.11 lb/yr
Provided N load removed	1.2 kg/yr	2.64 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	.197 kg/yr	
Total P post load	.197 kg/yr	
Target P load reduction	%	
Target P discharge load	.197 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.008 kg/yr	.02 lb/yr
Provided P load removed	.189 kg/yr	.417 lb/yr

Summary Treatment Report Version: 4.0.0

Project: Bel Aire Sec 13.1

Date:6/28/2023

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	5.54 kg/yr	
Total N post load	5.54 kg/yr	
Target N load reduction	%	
Target N discharge load	5.54 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.22 kg/yr	.49 lb/yr
Provided N load removed	5.32 kg/yr	11.72 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	.875 kg/yr
Total P post load	.875 kg/yr
Target P load reduction	%

Target P discharge load	.875 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.035 kg/yr	.08 lb/yr
Provided P load removed	.84 kg/yr	1.851 lb/yr

From Pre-Condition Loads

Existing N Discharge	5.54 (kg/yr)
Existing P Discharge	.875 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Bel Aire Sec 23
Date: 11/17/2023 10:15:49 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	14.40
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	30.624
Nitrogen Loading (kg/yr)	78.162
Phosphorus Loading (kg/yr)	12.347

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	14.40
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327

Runoff Volume (ac-ft/yr)	30.624
Nitrogen Loading (kg/yr)	78.162
Phosphorus Loading (kg/yr)	12.347

Catchment Number: 1 Name: Catchment 1

Project: Bel Aire Sec 23
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	12,320.0
Trench Width (ft)	4.0
Trench Depth (ft)	13.5
Trench Length (ft)	7,320.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	429.23
Retention Depth (in over CA)	357.691

Watershed Characteristics

Catchment Area (acres)	14.40
Contributing Area (acres)	14.400
Non-DCIA Curve Number	75.00
DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	75.035
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	11.853
TP Concentration (mg/L)	0.000

Load Diagram for Exfiltration Trench (stand-alone)

Load		Treatment		Surface Discharge
N: 78.16 kg/yr	→	N: 96 %	→	N: 3.13 kg/yr
P: 12.35 kg/yr		P: 96 %		P: 0.49 kg/yr

↓

Mass Reduction
N: 75.04 kg/yr
P: 11.85 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes	Load		Treatment		Mass Discharged
None	N: 78.16 kg/yr	→	N: 96.0 %	→	N: 3.13 kg/yr
	P: 12.35 kg/yr		P: 96.0 %		P: 0.49 kg/yr
	Q: 30.62 ac-ft				Q: 1.22 ac-ft

↓

Mass Removed
N: 75.04 kg/yr
P: 11.85 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Bel Aire Sec 23 Date:11/17/2023

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Catchment 1) Exfiltration Trench

Total nitrogen target removal met? **Yes**
Total phosphorus target removal met? **Yes**

Routing Summary
Catchment 1 Routed to Outlet

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	78.16 kg/yr	
Total N post load	78.16 kg/yr	
Target N load reduction	%	
Target N discharge load	78.16 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	3.13 kg/yr	6.89 lb/yr
Provided N load removed	75.04 kg/yr	165.45 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	12.347 kg/yr	
Total P post load	12.347 kg/yr	
Target P load reduction	%	
Target P discharge load	12.347 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.494 kg/yr	1.09 lb/yr
Provided P load removed	11.853 kg/yr	26.137 lb/yr

From Pre-Condition Loads

Existing N Discharge	78.16 (kg/yr)
Existing P Discharge	12.347 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Cantamar
Date: 11/17/2023 10:05:31 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	7.20
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	15.312
Nitrogen Loading (kg/yr)	39.081
Phosphorus Loading (kg/yr)	6.174

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	7.20
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	15.312
Nitrogen Loading (kg/yr)	39.081
Phosphorus Loading (kg/yr)	6.174

Catchment Number: 1 Name: Catchment 1

Project: Cantamar
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	7,880.0
Trench Width (ft)	4.0
Trench Depth (ft)	13.0
Trench Length (ft)	3,850.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	214.13
Retention Depth (in over CA)	356.890

Watershed Characteristics

Catchment Area (acres)	7.20
Contributing Area (acres)	7.200
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	4.790
TN Mass Load (kg/yr)	37.518
TN Concentration (mg/L)	2.070
TP Mass Load (kg/yr)	5.927
TP Concentration (mg/L)	0.327

Load Diagram for Exfiltration Trench (stand-alone)

Load
N: 39.08 kg/yr
P: 6.17 kg/yr

Treatment
N: 96 %
P: 96 %

Surface Discharge
N: 1.56 kg/yr
P: 0.25 kg/yr

Mass Reduction
N: 37.52 kg/yr
P: 5.93 kg/yr

Into Media
N: 37.518 kg/yr
P: 5.927 kg/yr

GW Treatment
N: %
P: %

GW Discharge
N: 37.518 kg/yr
P: 5.927 kg/yr

Retained
N: 0.00 kg/yr
P: 0.00 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes
None

Load
N: 39.08 kg/yr
P: 6.17 kg/yr
Q: 15.31 ac-ft

Treatment
N: 96.0 %
P: 96.0 %

Mass Discharged
N: 1.56 kg/yr
P: 0.25 kg/yr
Q: 0.61 ac-ft

Mass Removed
N: 37.52 kg/yr
P: 5.93 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Cantamar

Date:11/17/2023

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	39.08 kg/yr	
Total N post load	39.08 kg/yr	
Target N load reduction	%	
Target N discharge load	39.08 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	1.56 kg/yr	3.45 lb/yr
Provided N load removed	37.52 kg/yr	82.73 lb/yr

Groundwater Discharge

Average Annual Recharge	4.79 MG/yr	
Provided N recharge load	37.518 kg/yr	82.73 lb/yr
Provided N Concentration	2.069 mg/l	

Phosphorus

Surface Water Discharge

Total P pre load	6.174 kg/yr	
Total P post load	6.174 kg/yr	
Target P load reduction	%	
Target P discharge load	6.174 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.247 kg/yr	.54 lb/yr
Provided P load removed	5.927 kg/yr	13.068 lb/yr

Groundwater Discharge

Average Annual Recharge	4.79 MG/yr	
Provided P recharge load	5.9267 kg/yr	13.0684 lb/yr
Provided P Concentration	.3269 mg/l	

From Pre-Condition Loads

Existing N Discharge	39.08 (kg/yr)
Existing P Discharge	6.174 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Cutler Ridge Pines - Roadway
Date: 11/17/2023 11:11:36 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	0.09
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	0.191
Nitrogen Loading (kg/yr)	0.489
Phosphorus Loading (kg/yr)	0.077

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	0.09
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	0.191
Nitrogen Loading (kg/yr)	0.489
Phosphorus Loading (kg/yr)	0.077

Catchment Number: 1 Name: 1

Project: Cutler Ridge Pines - Roadway
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	560.0
Trench Width (ft)	4.0
Trench Depth (ft)	13.5
Trench Length (ft)	560.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	33.60
Retention Depth (in over CA)	4,479.674

Watershed Characteristics

Catchment Area (acres)	0.09
Contributing Area (acres)	0.090
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	0.469
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	0.074
TP Concentration (mg/L)	0.000

Load Diagram for Exfiltration Trench (stand-alone)

Load
N: 0.49 kg/yr
P: 0.08 kg/yr

→

Treatment
N: 96 %
P: 96 %

→

Surface Discharge
N: 0.02 kg/yr
P: 0.00 kg/yr

↓

Mass Reduction
N: 0.47 kg/yr
P: 0.07 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes
None

Load
N: 0.49 kg/yr
P: 0.08 kg/yr
Q: 0.19 ac-ft

→

Treatment
N: 96.0 %
P: 96.0 %

→

Mass Discharged
N: 0.02 kg/yr
P: 0.00 kg/yr
Q: 0.01 ac-ft

↓

Mass Removed
N: 0.47 kg/yr
P: 0.07 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Cutler Ridge Pines - Roadway

Date:11/17/2023

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	.49 kg/yr	
Total N post load	.49 kg/yr	
Target N load reduction	%	
Target N discharge load	.49 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.02 kg/yr	.04 lb/yr
Provided N load removed	.47 kg/yr	1.03 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	.077 kg/yr	
Total P post load	.077 kg/yr	
Target P load reduction	%	
Target P discharge load	.077 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.003 kg/yr	.01 lb/yr
Provided P load removed	.074 kg/yr	.163 lb/yr

From Pre-Condition Loads

Existing N Discharge	.49 (kg/yr)
Existing P Discharge	.077 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Cutler Ridge Sect-4
Date: 11/17/2023 9:59:39 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	6.84
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	14.546
Nitrogen Loading (kg/yr)	37.127
Phosphorus Loading (kg/yr)	5.865

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	6.84
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	14.546
Nitrogen Loading (kg/yr)	37.127
Phosphorus Loading (kg/yr)	5.865

Catchment Number: 1 Name: Catchment 1

Project: Cutler Ridge Sect-4
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	18,385.0
Trench Width (ft)	3.0
Trench Depth (ft)	14.0
Trench Length (ft)	6,419.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	272.91
Retention Depth (in over CA)	478.789

Watershed Characteristics

Catchment Area (acres)	6.84
Contributing Area (acres)	6.840
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	4.551
TN Mass Load (kg/yr)	35.642
TN Concentration (mg/L)	2.070
TP Mass Load (kg/yr)	5.630
TP Concentration (mg/L)	0.327

Load Diagram for Exfiltration Trench (stand-alone)

Load		Treatment		Surface Discharge
N: 37.13 kg/yr	→	N: 96 %	→	N: 1.49 kg/yr
P: 5.86 kg/yr		P: 96 %		P: 0.23 kg/yr

↓

Mass Reduction
N: 35.64 kg/yr
P: 5.63 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes	Load		Treatment		Mass Discharged
None	N: 37.13 kg/yr	→	N: 96.0 %	→	N: 1.49 kg/yr
	P: 5.86 kg/yr		P: 96.0 %		P: 0.23 kg/yr
	Q: 14.55 ac-ft				Q: 0.58 ac-ft

↓

Mass Removed
N: 35.64 kg/yr
P: 5.63 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Cutler Ridge Sect-4

Date:11/17/2023

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	37.13 kg/yr	
Total N post load	37.13 kg/yr	
Target N load reduction	%	
Target N discharge load	37.13 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	1.49 kg/yr	3.27 lb/yr
Provided N load removed	35.64 kg/yr	78.59 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	5.865 kg/yr	
Total P post load	5.865 kg/yr	
Target P load reduction	%	
Target P discharge load	5.865 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.235 kg/yr	.52 lb/yr
Provided P load removed	5.63 kg/yr	12.415 lb/yr

From Pre-Condition Loads

Existing N Discharge	37.13 (kg/yr)
Existing P Discharge	5.865 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Cutler Ridge Sec 7
Date: 11/17/2023 10:10:39 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	5.30
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	11.271
Nitrogen Loading (kg/yr)	28.768
Phosphorus Loading (kg/yr)	4.545

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	5.30
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	11.271
Nitrogen Loading (kg/yr)	28.768
Phosphorus Loading (kg/yr)	4.545

Catchment Number: 1 Name: Catchment 1

Project: Cutler Ridge Sec 7
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	11,325.0
Trench Width (ft)	3.0
Trench Depth (ft)	14.0
Trench Length (ft)	3,500.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	146.22
Retention Depth (in over CA)	331.065

Watershed Characteristics

Catchment Area (acres)	5.30
Contributing Area (acres)	5.300
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	3.526
TN Mass Load (kg/yr)	27.617
TN Concentration (mg/L)	2.070
TP Mass Load (kg/yr)	4.363
TP Concentration (mg/L)	0.327

Load Diagram for Exfiltration Trench (stand-alone)

Load
N: 28.77 kg/yr
P: 4.54 kg/yr

→

Treatment
N: 96 %
P: 96 %

→

Surface Discharge
N: 1.15 kg/yr
P: 0.18 kg/yr

↓

Mass Reduction
N: 27.62 kg/yr
P: 4.36 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes
None

Load
N: 28.77 kg/yr
P: 4.54 kg/yr
Q: 11.27 ac-ft

→

Treatment
N: 96.0 %
P: 96.0 %

→

Mass Discharged
N: 1.15 kg/yr
P: 0.18 kg/yr
Q: 0.45 ac-ft

↓

Mass Removed
N: 27.62 kg/yr
P: 4.36 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Cutler Ridge Sec 7

Date:11/17/2023

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	28.77 kg/yr	
Total N post load	28.77 kg/yr	
Target N load reduction	%	
Target N discharge load	28.77 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	1.15 kg/yr	2.54 lb/yr
Provided N load removed	27.62 kg/yr	60.9 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	4.545 kg/yr	
Total P post load	4.545 kg/yr	
Target P load reduction	%	
Target P discharge load	4.545 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.182 kg/yr	.4 lb/yr
Provided P load removed	4.363 kg/yr	9.62 lb/yr

From Pre-Condition Loads

Existing N Discharge	28.77 (kg/yr)
Existing P Discharge	4.545 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Lakes by the Bay Sec 10
Date: 11/17/2023 10:03:21 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	4.37
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	9.294
Nitrogen Loading (kg/yr)	23.720
Phosphorus Loading (kg/yr)	3.747

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	4.37
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	9.294
Nitrogen Loading (kg/yr)	23.720
Phosphorus Loading (kg/yr)	3.747

Catchment Number: 1 Name: Catchment 1

Project: Lakes by the Bay Sec 10
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	6,075.0
Trench Width (ft)	3.0
Trench Depth (ft)	14.0
Trench Length (ft)	1,890.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	79.04
Retention Depth (in over CA)	217.042

Watershed Characteristics

Catchment Area (acres)	4.37
Contributing Area (acres)	4.370
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	2.907
TN Mass Load (kg/yr)	22.771
TN Concentration (mg/L)	2.070
TP Mass Load (kg/yr)	3.597
TP Concentration (mg/L)	0.327

Load Diagram for Exfiltration Trench (stand-alone)

Load
N: 23.72 kg/yr
P: 3.75 kg/yr

→

Treatment
N: 96 %
P: 96 %

→

Surface Discharge
N: 0.95 kg/yr
P: 0.15 kg/yr

↓

Mass Reduction
N: 22.77 kg/yr
P: 3.60 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes
None

Load
N: 23.72 kg/yr
P: 3.75 kg/yr
Q: 9.29 ac-ft

→

Treatment
N: 96.0 %
P: 96.0 %

→

Mass Discharged
N: 0.95 kg/yr
P: 0.15 kg/yr
Q: 0.37 ac-ft

↓

Mass Removed
N: 22.77 kg/yr
P: 3.60 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Lakes by the Bay Sec 10

Date:11/17/2023

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	23.72 kg/yr	
Total N post load	23.72 kg/yr	
Target N load reduction	%	
Target N discharge load	23.72 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.95 kg/yr	2.09 lb/yr
Provided N load removed	22.77 kg/yr	50.21 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	3.747 kg/yr	
Total P post load	3.747 kg/yr	
Target P load reduction	%	
Target P discharge load	3.747 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.15 kg/yr	.33 lb/yr
Provided P load removed	3.597 kg/yr	7.932 lb/yr

From Pre-Condition Loads

Existing N Discharge	23.72 (kg/yr)
Existing P Discharge	3.747 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Old Cutler Cove
Date: 11/17/2023 10:08:37 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	3.32
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	7.061
Nitrogen Loading (kg/yr)	18.021
Phosphorus Loading (kg/yr)	2.847

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	3.32
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	7.061
Nitrogen Loading (kg/yr)	18.021
Phosphorus Loading (kg/yr)	2.847

Catchment Number: 1 Name: Catchment 1

Project: Old Cutler Cove
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	5,925.0
Trench Width (ft)	3.0
Trench Depth (ft)	14.0
Trench Length (ft)	2,070.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	88.02
Retention Depth (in over CA)	318.128

Watershed Characteristics

Catchment Area (acres)	3.32
Contributing Area (acres)	3.320
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	2.209
TN Mass Load (kg/yr)	17.300
TN Concentration (mg/L)	2.070
TP Mass Load (kg/yr)	2.733
TP Concentration (mg/L)	0.327

Load Diagram for Exfiltration Trench (stand-alone)

Load
N: 18.02 kg/yr
P: 2.85 kg/yr

Treatment
N: 96 %
P: 96 %

Surface Discharge
N: 0.72 kg/yr
P: 0.11 kg/yr

Mass Reduction
N: 17.30 kg/yr
P: 2.73 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes
None

Load
N: 18.02 kg/yr
P: 2.85 kg/yr
Q: 7.06 ac-ft

Treatment
N: 96.0 %
P: 96.0 %

Mass Discharged
N: 0.72 kg/yr
P: 0.11 kg/yr
Q: 0.28 ac-ft

Mass Removed
N: 17.30 kg/yr
P: 2.73 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Old Cutler Cove

Date:11/17/2023

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	18.02 kg/yr	
Total N post load	18.02 kg/yr	
Target N load reduction	%	
Target N discharge load	18.02 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.72 kg/yr	1.59 lb/yr
Provided N load removed	17.3 kg/yr	38.15 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	2.847 kg/yr	
Total P post load	2.847 kg/yr	
Target P load reduction	%	
Target P discharge load	2.847 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.114 kg/yr	.25 lb/yr
Provided P load removed	2.733 kg/yr	6.026 lb/yr

From Pre-Condition Loads

Existing N Discharge	18.02 (kg/yr)
Existing P Discharge	2.847 (kg/yr)

Summary Treatment Report Version: 4.0.0

Project: Old Cutler Omni Pines

Date:6/29/2023

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary

Catchment 1 Routed to Outlet

Total nitrogen target removal met? **Yes**

Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	7 kg/yr	
Total N post load	7 kg/yr	
Target N load reduction	%	
Target N discharge load	7 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.28 kg/yr	.62 lb/yr
Provided N load removed	6.72 kg/yr	14.82 lb/yr

Groundwater Discharge

Average Annual Recharge	.858 MG/yr	
Provided N recharge load	6.722 kg/yr	14.82 lb/yr
Provided N Concentration	2.069 mg/l	

Phosphorus

Surface Water Discharge

Total P pre load	1.106 kg/yr	
Total P post load	1.106 kg/yr	
Target P load reduction	%	
Target P discharge load	1.106 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.044 kg/yr	.1 lb/yr
Provided P load removed	1.062 kg/yr	2.341 lb/yr

Groundwater Discharge

Average Annual Recharge	.858 MG/yr	
Provided P recharge load	1.0619 kg/yr	2.3414 lb/yr
Provided P Concentration	.3269 mg/l	

From Pre-Condition Loads

Existing N Discharge	7 (kg/yr)
Existing P Discharge	1.106 (kg/yr)

Summary Treatment Report Version: 4.0.0

Project: Omni Estates

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Catchment 1) Exfiltration Trench

Date:6/29/2023

Routing Summary

Catchment 1 Routed to Outlet

Total nitrogen target removal met? **Yes**

Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	8.14 kg/yr	
Total N post load	8.14 kg/yr	
Target N load reduction	%	
Target N discharge load	8.14 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	.33 kg/yr	.72 lb/yr
Provided N load removed	7.82 kg/yr	17.23 lb/yr

Groundwater Discharge

Average Annual Recharge	.998 MG/yr	
Provided N recharge load	7.816 kg/yr	17.23 lb/yr
Provided N Concentration	2.069 mg/l	

Phosphorus

Surface Water Discharge

Total P pre load	1.286 kg/yr	
Total P post load	1.286 kg/yr	
Target P load reduction	%	
Target P discharge load	1.286 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.051 kg/yr	.11 lb/yr
Provided P load removed	1.235 kg/yr	2.723 lb/yr

Groundwater Discharge

Average Annual Recharge	.998 MG/yr	
Provided P recharge load	1.2347 kg/yr	2.7226 lb/yr
Provided P Concentration	.3269 mg/l	

From Pre-Condition Loads

Existing N Discharge	8.14 (kg/yr)
Existing P Discharge	1.286 (kg/yr)

Complete Report (not including cost) Ver 4.0.0

Project: Whispering Pines Est Sec 1
Date: 11/17/2023 10:13:04 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Catchment 1
Rainfall Zone	Florida Zone 5
Annual Mean Rainfall	55.00

Pre-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	6.46
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00
DCIA Percent (0-100)	50.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	13.738
Nitrogen Loading (kg/yr)	35.064
Phosphorus Loading (kg/yr)	5.539

Post-Condition Landuse Information

Landuse	Single-Family: TN=2.070 TP=0.327
Area (acres)	6.46
Rational Coefficient (0-1)	0.46
Non DCIA Curve Number	75.00

DCIA Percent (0-100)	50.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	2.070
Phosphorus EMC (mg/l)	0.327
Runoff Volume (ac-ft/yr)	13.738
Nitrogen Loading (kg/yr)	35.064
Phosphorus Loading (kg/yr)	5.539

Catchment Number: 1 Name: Catchment 1

Project: Whispering Pines Est Sec 1
Date: 11/17/2023

Exfiltration Trench Design

Pipe Span (in)	18.0
Pipe Rise (in)	18.0
Pipe Length (ft)	13,360.0
Trench Width (ft)	3.0
Trench Depth (ft)	14.0
Trench Length (ft)	3,608.0
Aggregate Void %	50.00
Storage Volume (Ac-ft)	147.38
Retention Depth (in over CA)	273.774

Watershed Characteristics

Catchment Area (acres)	6.46
Contributing Area (acres)	6.460
Non-DCIA Curve Number	75.00

DCIA Percent	50.00
Rainfall Zone	Florida Zone 5
Rainfall (in)	55.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	4.298
TN Mass Load (kg/yr)	33.662
TN Concentration (mg/L)	2.070
TP Mass Load (kg/yr)	5.318
TP Concentration (mg/L)	0.327

Load Diagram for Exfiltration Trench (stand-alone)

Load
N: 35.06 kg/yr
P: 5.54 kg/yr

→

Treatment
N: 96 %
P: 96 %

→

Surface Discharge
N: 1.40 kg/yr
P: 0.22 kg/yr

↓

Mass Reduction
N: 33.66 kg/yr
P: 5.32 kg/yr

Load Diagram for Exfiltration (As Used In Routing)

Upstream Nodes
None

Load
N: 35.06 kg/yr
P: 5.54 kg/yr
Q: 13.74 ac-ft

→

Treatment
N: 96.0 %
P: 96.0 %

→

Mass Discharged
N: 1.40 kg/yr
P: 0.22 kg/yr
Q: 0.55 ac-ft

↓

Mass Removed
N: 33.66 kg/yr
P: 5.32 kg/yr

Summary Treatment Report Version: 4.0.0

Project: Whispering Pines Est Sec 1

Date:11/17/2023

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Catchment 1) Exfiltration Trench

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? Yes
Total phosphorus target removal met? Yes

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	35.06 kg/yr	
Total N post load	35.06 kg/yr	
Target N load reduction	%	
Target N discharge load	35.06 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	1.4 kg/yr	3.09 lb/yr
Provided N load removed	33.66 kg/yr	74.22 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	5.539 kg/yr	
Total P post load	5.539 kg/yr	
Target P load reduction	%	
Target P discharge load	5.539 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.222 kg/yr	.49 lb/yr
Provided P load removed	5.318 kg/yr	11.725 lb/yr

From Pre-Condition Loads

Existing N Discharge	35.06 (kg/yr)
Existing P Discharge	5.539 (kg/yr)

APPENDIX D-MODEL INPUTS AND RESULTS

Manual Basin: Bel Aire Sec 2.1

Scenario: Existing Conditions
Node: Bel Aire Sec 2.1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 21.1200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2300	ROW	Bel Aire Sec 2.1			
20.8900	Low Density	Bel Aire Sec 2.1			

Comment:

Manual Basin: Bel Aire Sec 2.1

Scenario: Proposed Conditions
Node: Bel Aire Sec 2.1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 21.1200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2300	ROW	Bel Aire Sec 2.1			
20.8900	Low Density	Bel Aire Sec 2.1			

Comment:

Manual Basin: Bel Aire Sec 2.1

Scenario: Proposed Conditions + 6"
Node: Bel Aire Sec 2.1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256

Peaking Factor: 256.0
Area: 21.1200 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2300	ROW	Bel Aire Sec 2.1			
20.8900	Low Density	Bel Aire Sec 2.1			

Comment:

Node: Bel Aire Sec 2.1

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 6.28 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.28	0.0006	25
6.50	0.0075	325
7.00	1.1100	48350
7.50	5.0528	220100
8.00	9.9902	435175
8.50	15.8368	689850
9.00	20.5349	894500
9.50	21.2402	925225
10.00	21.3381	929487
10.50	21.3381	929487

Comment:

Node: Canal

Scenario: Existing Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Bel Aire Sec 2.1

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 6.28 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.28	0.0006	25
6.50	0.0075	325
7.00	1.1100	48350
7.50	5.0528	220100
8.00	9.9902	435175
8.50	15.8368	689850
9.00	20.5349	894500
9.50	21.2402	925225
10.00	21.3381	929487
10.50	21.3381	929487

Comment:

Node: Canal

Scenario: Proposed Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
3.68	1.09	47371

Stage [ft]	Volume [ac-ft]	Volume [ft3]
4.50	2.17	94743

Comment:

Node: Bel Aire Sec 2.1

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 6.28 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.28	0.0006	25
6.50	0.0075	325
7.00	1.1100	48350
7.50	5.0528	220100
8.00	9.9902	435175
8.50	15.8368	689850
9.00	20.5349	894500
9.50	21.2402	925225
10.00	21.3381	929487
10.50	21.3381	929487

Comment:

Node: Canal

Scenario: Proposed Conditions + 6"
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Exfiltration

Scenario: Proposed Conditions + 6"

Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.93	0.77	33607
4.50	1.54	67213

Comment: Resiliency for 6" Sea Level Rise

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Existing Conditions	Invert:	4.50 ft	Invert:	4.50 ft
From Node:	Bel Aire Sec 2.1	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Canal	Geometry: Circular		Geometry: Circular	
Link Count:	2	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	0	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	406.92 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.00	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	2	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.50 ft	Op Table:	
Control Elevation:	6.50 ft	Ref Node:	
Max Depth:	999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	4.50 ft	Invert:	4.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	Geometry: Circular		Geometry: Circular	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	2	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	406.92 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	4.50 ft	Op Table:	
Control Elevation:	4.50 ft	Ref Node:	
Max Depth:	2.00 ft	Discharge Coefficients	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	4.50 ft	Invert:	4.50 ft
		Manning's N:	0.0120	Manning's N:	0.1200
From Node:	Bel Aire Sec 2.1	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft

Link Count:	29	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	175.32 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.50 ft	Op Table:	
Control Elevation:	6.50 ft	Ref Node:	
Max Depth:	999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	4.50 ft	Invert:	4.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	2	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	406.92 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	

Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
		Bottom Clip	
Weir:	1		
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
		Top Clip	
Weir Type:	Sharp Crested Vertical		
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	4.50 ft	Op Table:	
Control Elevation:	4.50 ft	Ref Node:	
		Discharge Coefficients	
Max Depth:	2.00 ft		
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	4.50 ft	Invert:	4.50 ft
		Manning's N:	0.0120	Manning's N:	0.1200
From Node:	Bel Aire Sec 2.1	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	29	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	175.32 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
		Bottom Clip	
Weir:	1		
Weir Count:	1	Default:	0.00 ft

Weir Flow Direction:	Both		
Damping:	0.0000 ft	Op Table:	
Weir Type:	Horizontal	Ref Node:	
Geometry Type:	Rectangular	**Top Clip**	
Invert:	6.50 ft	Default:	0.00 ft
Control Elevation:	6.50 ft	Op Table:	
Max Depth:	999.00 ft	Ref Node:	
Max Width:	10.00 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions
Run Date/Time: 11/9/2023 10:13:49 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario: Existing Conditions
Run Date/Time: 11/9/2023 10:15:00 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Reference ET Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: Site

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Site

Roughness Set:

Crop Coef Set:

Fillable Porosity Set:

Conductivity Set:

Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 11/9/2023 10:16:45 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.70 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 11/9/2023 11:48:06 AM

Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/9/2023 11:49:44 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 12.30 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions
Run Date/Time:	11/9/2023 11:52:56 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/9/2023 11:55:59 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/9/2023 11:57:36 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/9/2023 12:00:52 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.70 in
Storm Duration: 72.0000 hr

Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Scenario	Sim	Node Name	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Bel Aire Sec 2.1	16.08
Existing Conditions	010yr-24hr	Canal	16.11
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	Bel Aire Sec 2.1	16.08
Proposed Conditions	010yr-24hr	Canal	13.96
Proposed Conditions	010yr-24hr	Exfiltration	28.62
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	Bel Aire Sec 2.1	16.08
Proposed Conditions + 6"	010yr-24hr	Canal	14.33
Proposed Conditions + 6"	010yr-24hr	Exfiltration	28.33
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0020DS~N	0.00
Existing Conditions	025yr-72hr	Bel Aire Sec 2.1	12.91
Existing Conditions	025yr-72hr	Canal	15.28
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	Bel Aire Sec 2.1	12.91
Proposed Conditions	025yr-72hr	Canal	13.88
Proposed Conditions	025yr-72hr	Exfiltration	23.27
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	~~D~L-0020DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	Bel Aire Sec 2.1	12.91
Proposed Conditions + 6"	025yr-72hr	Canal	13.84
Proposed Conditions + 6"	025yr-72hr	Exfiltration	23.88
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	~~D~L-0020DS~N	0.00
Existing Conditions	100yr-72hr	Bel Aire Sec 2.1	17.56
Existing Conditions	100yr-72hr	Canal	17.55
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	100yr-72hr	Bel Aire Sec 2.1	17.56
Proposed Conditions	100yr-72hr	Canal	16.71
Proposed Conditions	100yr-72hr	Exfiltration	30.96
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	Bel Aire Sec 2.1	17.56
Proposed Conditions + 6"	100yr-72hr	Canal	16.77
Proposed Conditions + 6"	100yr-72hr	Exfiltration	30.90
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	~~D~L-0020DS~N	0.00

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Bel Aire Sec 2.1	6.51	16.08
Existing Conditions	010yr-24hr	Canal	2.79	16.11
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	6.50	0.00
Proposed Conditions	010yr-24hr	Bel Aire Sec 2.1	6.50	16.08
Proposed Conditions	010yr-24hr	Canal	2.79	13.96
Proposed Conditions	010yr-24hr	Exfiltration	6.30	28.62
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	6.22	0.00
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	6.50	0.00
Proposed Conditions + 6"	010yr-24hr	Bel Aire Sec 2.1	6.50	16.08
Proposed Conditions + 6"	010yr-24hr	Canal	2.79	14.33
Proposed Conditions + 6"	010yr-24hr	Exfiltration	6.33	28.33
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	6.25	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0020DS~N	6.50	0.00
Existing Conditions	025yr-72hr	Bel Aire Sec 2.1	6.51	12.91
Existing Conditions	025yr-72hr	Canal	2.79	15.28
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	6.50	0.00
Proposed Conditions	025yr-72hr	Bel Aire Sec 2.1	6.50	12.91
Proposed Conditions	025yr-72hr	Canal	2.79	13.88
Proposed Conditions	025yr-72hr	Exfiltration	6.29	23.27
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	6.22	0.00
Proposed Conditions	025yr-72hr	~~D~L-0020DS~N	6.50	0.00
Proposed Conditions + 6"	025yr-72hr	Bel Aire Sec 2.1	6.50	12.91
Proposed Conditions + 6"	025yr-72hr	Canal	2.79	13.84
Proposed Conditions + 6"	025yr-72hr	Exfiltration	6.29	23.88
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	6.21	0.00
Proposed Conditions + 6"	025yr-72hr	~~D~L-0020DS~N	6.50	0.00
Existing Conditions	100yr-72hr	Bel Aire Sec 2.1	6.66	17.56
Existing Conditions	100yr-72hr	Canal	2.79	17.55
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	6.66	0.00
Proposed Conditions	100yr-72hr	Bel Aire Sec 2.1	6.62	17.56
Proposed Conditions	100yr-72hr	Canal	2.79	16.71
Proposed Conditions	100yr-72hr	Exfiltration	6.62	30.96
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	6.57	0.00
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	6.62	0.00
Proposed Conditions + 6"	100yr-72hr	Bel Aire Sec 2.1	6.63	17.56
Proposed Conditions + 6"	100yr-72hr	Canal	2.79	16.77
Proposed Conditions + 6"	100yr-72hr	Exfiltration	6.62	30.90
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	6.58	0.00
Proposed Conditions + 6"	100yr-72hr	~~D~L-0020DS~N	6.63	0.00

Manual Basin: Bel Aire Sec 13.1

Scenario: Existing Conditions
Node: Bel Aire Sec 13.1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 10.9731 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
9.9542	Low Density	Bel Aire Sec 13.1			
1.0189	ROW	Bel Aire Sec 13.1			

Comment:

Manual Basin: Bel Aire Sec 13.1

Scenario: Proposed Conditions
Node: Bel Aire Sec 13.1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 10.9731 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
9.9542	Low Density	Bel Aire Sec 13.1			
1.0189	ROW	Bel Aire Sec 13.1			

Comment:

Manual Basin: Bel Aire Sec 13.1

Scenario: Proposed Conditions + 6"
Node: Bel Aire Sec 13.1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256

Peaking Factor: 256.0
Area: 10.9731 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
9.9542	Low Density	Bel Aire Sec 13.1			
1.0189	ROW	Bel Aire Sec 13.1			

Comment:

Node: Bel Aire Sec 13.1

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 5.63 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.63	0.0006	25
6.00	0.0050	217
6.50	0.0792	3450
7.00	1.1651	50750
7.50	2.8363	123550
8.00	6.2121	270600
8.50	9.3136	405700
9.00	10.7295	467375
9.50	10.9731	477987
10.00	10.9731	477987

Comment:

Node: Canal

Scenario: Existing Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Bel Aire Sec 13.1

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 5.63 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.63	0.0006	25
6.00	0.0050	217
6.50	0.0792	3450
7.00	1.1651	50750
7.50	2.8363	123550
8.00	6.2121	270600
8.50	9.3136	405700
9.00	10.7295	467375
9.50	10.9731	477987
10.00	10.9731	477987

Comment:

Node: Canal

Scenario: Proposed Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
4.00	0.58	25199

Stage [ft]	Volume [ac-ft]	Volume [ft3]
4.50	1.16	50399

Comment:

Node: Bel Aire Sec 13.1

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 5.63 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.63	0.0006	25
6.00	0.0050	217
6.50	0.0792	3450
7.00	1.1651	50750
7.50	2.8363	123550
8.00	6.2121	270600
8.50	9.3136	405700
9.00	10.7295	467375
9.50	10.9731	477987
10.00	10.9731	477987

Comment:

Node: Canal

Scenario: Proposed Conditions + 6"
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Exfiltration

Scenario: Proposed Conditions + 6"

Type:	Stage/Volume
Base Flow:	0.00 cfs
Initial Stage:	3.36 ft
Warning Stage:	0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.93	0.33	14418
4.50	0.66	28837

Comment: Resiliency for 6" Sea Level Rise

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Existing Conditions	Invert:	2.50 ft	Invert:	-2.50 ft
From Node:	Bel Aire Sec 13.1	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Canal	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	0	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	1000.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.00	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	3	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.50 ft	Op Table:	
Control Elevation:	3.50 ft	Ref Node:	
Max Depth:	9999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	2.50 ft	Invert:	-2.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	Geometry: Circular		Geometry: Circular	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	1000.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	9	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.30 ft	Op Table:	
Control Elevation:	6.30 ft	Ref Node:	
Max Depth:	9999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Weir Component			
Weir:	2	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft

Invert:	4.50 ft		
Control Elevation:	4.50 ft	Op Table:	
Max Depth:	1.00 ft	Ref Node:	
Max Width:	4.00 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Assumed to have a 24" pipe for baffle sizing.

Drop Structure Comment:

Weir Link: L-0020W			
Scenario:	Proposed Conditions	**Bottom Clip**	
From Node:	Bel Aire Sec 13.1	Default:	0.00 ft
To Node:	Exfiltration	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	**Top Clip**	
Damping:	0.0000 ft	Default:	0.00 ft
Weir Type:	Horizontal	Op Table:	
Geometry Type:	Rectangular	Ref Node:	
Invert:	6.50 ft	**Discharge Coefficients**	
Control Elevation:	6.50 ft	Weir Default:	2.800
Max Depth:	9999.00 ft	Weir Table:	
Max Width:	10.00 ft	Orifice Default:	0.600
Fillet:	0.00 ft	Orifice Table:	

Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	2.50 ft	Invert:	-2.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	1000.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				

Bend Location: 0.00 dec
Energy Switch: Energy

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	9	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.30 ft	Op Table:	
Control Elevation:	6.30 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Weir Component			
Weir:	2	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	4.50 ft	Op Table:	
Control Elevation:	4.50 ft	Ref Node:	
Max Depth:	1.00 ft	**Discharge Coefficients**	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Assumed to have a 24" pipe for baffle sizing.

Drop Structure Comment:

Weir Link: L-0020W			
Scenario:	Proposed Conditions + 6"	**Bottom Clip**	
From Node:	Bel Aire Sec 13.1	Default:	0.00 ft
To Node:	Exfiltration	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	**Top Clip**	
Damping:	0.0000 ft	Default:	0.00 ft

Weir Type:	Horizontal		
Geometry Type:	Rectangular	Op Table:	
Invert:	6.50 ft	Ref Node:	
Control Elevation:	6.50 ft	Discharge Coefficients	
Max Depth:	9999.00 ft	Weir Default:	2.800
Max Width:	10.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions

Run Date/Time: 5/16/2023 5:34:44 PM

Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario: Existing Conditions
Run Date/Time: 5/16/2023 5:35:23 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global

Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.20 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 5/16/2023 5:36:38 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart:	False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions
Run Date/Time:	11/14/2023 9:44:26 AM
Program Version:	ICPR4 4.07.04

General

Run Mode:	Normal

Year	Month	Day	Hour [hr]

Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/14/2023 9:45:19 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.20 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/14/2023 9:47:06 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Reference ET Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: Site

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Site

Roughness Set:

Crop Coef Set:

Fillable Porosity Set:

Conductivity Set:

Leakage Set:

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

IA Recovery Time: 24.0000 hr

ET for Manual Basins: False

Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/14/2023 9:50:23 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/14/2023 9:51:05 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.20 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/14/2023 9:52:25 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.70 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Scenario	Sim	Node Name	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Bel Aire Sec 13.1	7.64
Existing Conditions	010yr-24hr	Canal	13.46
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	Bel Aire Sec 13.1	7.64
Proposed Conditions + 6"	010yr-24hr	Canal	7.50
Proposed Conditions + 6"	010yr-24hr	Exfiltration	14.66
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	Bel Aire Sec 13.1	7.64
Proposed Conditions	010yr-24hr	Canal	6.61
Proposed Conditions	010yr-24hr	Exfiltration	16.07
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Existing Conditions	025yr-72hr	Bel Aire Sec 13.1	6.52
Existing Conditions	025yr-72hr	Canal	11.92
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	Bel Aire Sec 13.1	6.52
Proposed Conditions + 6"	025yr-72hr	Canal	6.53
Proposed Conditions + 6"	025yr-72hr	Exfiltration	14.50
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	Bel Aire Sec 13.1	6.52
Proposed Conditions	025yr-72hr	Canal	6.50
Proposed Conditions	025yr-72hr	Exfiltration	14.16
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Existing Conditions	100yr-72hr	Bel Aire Sec 13.1	9.02
Existing Conditions	100yr-72hr	Canal	13.94
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	Bel Aire Sec 13.1	9.02
Proposed Conditions + 6"	100yr-72hr	Canal	9.06
Proposed Conditions + 6"	100yr-72hr	Exfiltration	19.66
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	100yr-72hr	Bel Aire Sec 13.1	9.02
Proposed Conditions	100yr-72hr	Canal	9.02
Proposed Conditions	100yr-72hr	Exfiltration	19.89
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	0.00

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Bel Aire Sec 13.1	6.50	7.64
Existing Conditions	010yr-24hr	Canal	2.79	13.46
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	6.50	0.00
Proposed Conditions + 6"	010yr-24hr	Bel Aire Sec 13.1	6.50	7.64
Proposed Conditions + 6"	010yr-24hr	Canal	2.79	7.50
Proposed Conditions + 6"	010yr-24hr	Exfiltration	4.88	14.66
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	4.50	0.00
Proposed Conditions	010yr-24hr	Bel Aire Sec 13.1	6.50	7.64
Proposed Conditions	010yr-24hr	Canal	2.79	6.61
Proposed Conditions	010yr-24hr	Exfiltration	4.85	16.07
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	4.50	0.00
Existing Conditions	025yr-72hr	Bel Aire Sec 13.1	6.50	6.52
Existing Conditions	025yr-72hr	Canal	2.79	11.92
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	6.50	0.00
Proposed Conditions + 6"	025yr-72hr	Bel Aire Sec 13.1	6.50	6.52
Proposed Conditions + 6"	025yr-72hr	Canal	2.79	6.53
Proposed Conditions + 6"	025yr-72hr	Exfiltration	4.85	14.50
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	4.50	0.00
Proposed Conditions	025yr-72hr	Bel Aire Sec 13.1	6.50	6.52
Proposed Conditions	025yr-72hr	Canal	2.79	6.50
Proposed Conditions	025yr-72hr	Exfiltration	4.85	14.16
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	4.50	0.00
Existing Conditions	100yr-72hr	Bel Aire Sec 13.1	6.50	9.02
Existing Conditions	100yr-72hr	Canal	2.79	13.94
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	6.50	0.00
Proposed Conditions + 6"	100yr-72hr	Bel Aire Sec 13.1	6.50	9.02
Proposed Conditions + 6"	100yr-72hr	Canal	2.79	9.06
Proposed Conditions + 6"	100yr-72hr	Exfiltration	4.93	19.66
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	4.50	0.00
Proposed Conditions	100yr-72hr	Bel Aire Sec 13.1	6.50	9.02
Proposed Conditions	100yr-72hr	Canal	2.79	9.02
Proposed Conditions	100yr-72hr	Exfiltration	4.93	19.89
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	4.50	0.00

Manual Basin: Bel Aire Sec 23

Scenario:	Existing Conditions
Node:	Bel Aire 23
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	66.9309 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
47.3363	Low Density	Bel Aire Sec 23	Bel Aire Sec 23		
14.3931	ROW	Bel Aire Sec 23	Bel Aire Sec 23		
5.2015	Parks and Recreation	Bel Aire Sec 23	Bel Aire Sec 23		

Comment:

Manual Basin: Bel Aire Sec 23

Scenario:	Proposed Conditions
Node:	Bel Aire 23
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	66.9309 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
47.3363	Low Density	Bel Aire Sec 23	Bel Aire Sec 23		
14.3931	ROW	Bel Aire Sec 23	Bel Aire Sec 23		
5.2015	Parks and Recreation	Bel Aire Sec 23	Bel Aire Sec 23		

Comment:

Manual Basin: Bel Aire Sec 23

Scenario:	Proposed Conditions + 6"
Node:	Bel Aire 23
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number

Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 66.9309 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
47.3363	Low Density	Bel Aire Sec 23	Bel Aire Sec 23		
14.3931	ROW	Bel Aire Sec 23	Bel Aire Sec 23		
5.2015	Parks and Recreation	Bel Aire Sec 23	Bel Aire Sec 23		

Comment:

Node: Bel Aire 23

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 3.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.86	0.0006	25
4.00	0.0011	50
4.50	0.0115	500
5.00	0.0362	1575
5.50	0.1710	7450
6.00	1.5966	69550
6.50	8.3701	364600
7.00	13.3448	581300
7.50	18.0934	788150
8.00	23.2989	1014900
8.50	28.4992	1241425
9.00	33.2099	1446625
9.50	38.3534	1670675
10.00	45.1831	1968175
10.50	55.6876	2425750
11.00	63.0688	2747275
11.50	65.4396	2850550
12.00	66.2293	2884950
12.50	66.6804	2904600
13.00	66.8153	2910475
13.50	66.8364	2911395
14.00	66.8364	2911395

Comment:

Node: Bel Aire 23

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 3.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.86	0.0006	25
4.00	0.0011	50
4.50	0.0115	500
5.00	0.0362	1575
5.50	0.1710	7450
6.00	1.5966	69550
6.50	8.3701	364600
7.00	13.3448	581300
7.50	18.0934	788150
8.00	23.2989	1014900
8.50	28.4992	1241425
9.00	33.2099	1446625
9.50	38.3534	1670675
10.00	45.1831	1968175
10.50	55.6876	2425750
11.00	63.0688	2747275
11.50	65.4396	2850550
12.00	66.2293	2884950
12.50	66.6804	2904600
13.00	66.8153	2910475
13.50	66.8364	2911395
14.00	66.8364	2911395

Comment:

Node: Canal

Scenario: Proposed Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.79 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	9999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
3.18	17.27	752455
3.50	34.55	1504911

Comment:

Node: Bel Aire 23

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 3.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
3.86	0.0006	25
4.00	0.0011	50
4.50	0.0115	500
5.00	0.0362	1575
5.50	0.1710	7450
6.00	1.5966	69550
6.50	8.3701	364600
7.00	13.3448	581300
7.50	18.0934	788150
8.00	23.2989	1014900
8.50	28.4992	1241425
9.00	33.2099	1446625
9.50	38.3534	1670675
10.00	45.1831	1968175
10.50	55.6876	2425750
11.00	63.0688	2747275
11.50	65.4396	2850550
12.00	66.2293	2884950
12.50	66.6804	2904600
13.00	66.8153	2910475
13.50	66.8364	2911395
14.00	66.8364	2911395

Comment:

Node: Canal

Scenario:	Proposed Conditions + 6"
Type:	Time/Stage
Base Flow:	0.00 cfs
Initial Stage:	2.79 ft
Warning Stage:	0.00 ft
Boundary Stage:	

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.79
0	0	0	9999.0000	2.79

Comment: Canal stage taken from DB Hydro Station S122H. October average: 2.79'

Node: Exfiltration

Scenario:	Proposed Conditions + 6"
Type:	Stage/Volume
Base Flow:	0.00 cfs
Initial Stage:	3.36 ft
Warning Stage:	0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.43	14.17	617027
3.50	28.33	1234055

Comment: Resiliency for 6" Sea Level Rise

Drop Structure Link: L-0050DS

Scenario:	Proposed Conditions
From Node:	Bel Aire 23
To Node:	Exfiltration
Link Count:	151
Flow Direction:	Both
Solution:	Combine
Increments:	0
Pipe Count:	1
Damping:	0.0000 ft
Length:	20.00 ft
FHWA Code:	0
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec

	Upstream Pipe	Downstream Pipe
Invert:	2.20 ft	2.10 ft
Manning's N:	0.0120	0.0120
Geometry:	Circular	Circular
Max Depth:	2.00 ft	2.00 ft
Bottom Clip		
Default:	0.00 ft	0.00 ft
Op Table:		
Ref Node:		
Manning's N:	0.0000	0.0000
Top Clip		
Default:	0.00 ft	0.00 ft
Op Table:		
Ref Node:		
Manning's N:	0.0000	0.0000

Energy Switch:	Energy

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Lengths of pipe are assumed to be the average run between CBs and exfiltration trenches.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.50 ft	Op Table:	
Control Elevation:	5.50 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevation estimated from Lidar.

Drop Structure Comment: 151 Links include:
124 existing CBs along with 27 proposed CBs

Drop Structure Link: L-0060DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	2.10 ft	Invert:	1.35 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	155.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	**Bottom Clip**	

Weir Count:	1		
Weir Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Sharp Crested Vertical	Ref Node:	
Geometry Type:	Rectangular	**Top Clip**	
Invert:	5.60 ft	Default:	0.00 ft
Control Elevation:	5.60 ft	Op Table:	
Max Depth:	2.00 ft	Ref Node:	
Max Width:	4.00 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0050DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	2.20 ft	Invert:	2.10 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Bel Aire 23	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	151	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	20.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Lengths of pipe are assumed to be the average run between CBs and exfiltration trenches.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft

Invert:	5.50 ft		
Control Elevation:	5.50 ft	Op Table:	
Max Depth:	9999.00 ft	Ref Node:	
Max Width:	10.00 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevation estimated from Lidar.

Drop Structure Comment: 151 Links include:
124 existing CBs along with 27 proposed CBs

Drop Structure Link: L-0060DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	2.10 ft	Invert:	1.35 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	155.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.60 ft	Op Table:	
Control Elevation:	5.60 ft	Ref Node:	
Max Depth:	2.00 ft	**Discharge Coefficients**	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario:	Existing Conditions
Run Date/Time:	8/28/2023 8:09:35 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Reference ET Folder:

Unit Hydrograph

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: Site

Folder:		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Existing Conditions
Run Date/Time: 8/28/2023 8:10:05 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 12.30 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft

Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 8/28/2023 8:11:52 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Lookup Tables

Boundary Stage Set:

Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 11/2/2023 4:58:59 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000

Max Calculation Time: 30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr

Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/2/2023 5:00:17 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources	
Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables	
Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions
Run Date/Time:	11/2/2023 5:02:53 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

Hydrology [sec]	Surface Hydraulics	Groundwater [sec]

		[sec]	
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72

		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/2/2023 5:05:21 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/2/2023 5:06:04 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global

Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/2/2023 5:08:15 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart:	False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Node Name	Sim	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	Bel Aire 23	010yr-24hr	8.42	48.60
Proposed Conditions + 6"	Bel Aire 23	010yr-24hr	5.50	48.60
Proposed Conditions + 6"	Canal	010yr-24hr	2.79	0.00
Proposed Conditions + 6"	Exfiltration	010yr-24hr	3.53	139.40
Proposed Conditions + 6"	~~D~L-0050DS~N	010yr-24hr	5.50	0.00
Proposed Conditions + 6"	~~D~L-0060DS~N	010yr-24hr	3.53	0.00
Proposed Conditions	Bel Aire 23	010yr-24hr	5.50	48.60
Proposed Conditions	Canal	010yr-24hr	2.79	0.00
Proposed Conditions	Exfiltration	010yr-24hr	3.49	139.55
Proposed Conditions	~~D~L-0050DS~N	010yr-24hr	5.50	0.00
Proposed Conditions	~~D~L-0060DS~N	010yr-24hr	3.49	0.00
Existing Conditions	Bel Aire 23	025yr-72hr	9.20	40.07
Proposed Conditions + 6"	Bel Aire 23	025yr-72hr	5.50	40.07
Proposed Conditions + 6"	Canal	025yr-72hr	2.79	0.00
Proposed Conditions + 6"	Exfiltration	025yr-72hr	3.65	122.27
Proposed Conditions + 6"	~~D~L-0050DS~N	025yr-72hr	5.50	0.00
Proposed Conditions + 6"	~~D~L-0060DS~N	025yr-72hr	3.65	0.00
Proposed Conditions	Bel Aire 23	025yr-72hr	5.50	40.07
Proposed Conditions	Canal	025yr-72hr	2.79	0.00
Proposed Conditions	Exfiltration	025yr-72hr	3.95	121.18
Proposed Conditions	~~D~L-0050DS~N	025yr-72hr	5.50	0.00
Proposed Conditions	~~D~L-0060DS~N	025yr-72hr	3.95	0.00
Existing Conditions	Bel Aire 23	100yr-72hr	9.83	54.86
Proposed Conditions + 6"	Bel Aire 23	100yr-72hr	5.50	54.86
Proposed Conditions + 6"	Canal	100yr-72hr	2.79	0.00
Proposed Conditions + 6"	Exfiltration	100yr-72hr	3.76	159.36
Proposed Conditions + 6"	~~D~L-0050DS~N	100yr-72hr	5.50	0.00
Proposed Conditions + 6"	~~D~L-0060DS~N	100yr-72hr	3.76	0.00
Proposed Conditions	Bel Aire 23	100yr-72hr	5.50	54.86
Proposed Conditions	Canal	100yr-72hr	2.79	0.00
Proposed Conditions	Exfiltration	100yr-72hr	4.36	158.33
Proposed Conditions	~~D~L-0050DS~N	100yr-72hr	5.50	0.00
Proposed Conditions	~~D~L-0060DS~N	100yr-72hr	4.36	0.00

Manual Basin: Cantamar

Scenario:	Existing Conditions
Node:	Cantamar
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	65.3901 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
46.6784	Low Density	Cantamar			
7.1953	ROW	Cantamar			
11.5164	Water	Cantamar			

Comment:

Manual Basin: Cantamar

Scenario:	Proposed Conditions
Node:	Cantamar
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	65.3901 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
46.6784	Low Density	Cantamar			
7.1953	ROW	Cantamar			
11.5164	Water	Cantamar			

Comment:

Manual Basin: Cantamar

Scenario:	Proposed Conditions + 6"
Node:	Cantamar
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs

Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 65.3901 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
46.6784	Low Density	Cantamar			
7.1953	ROW	Cantamar			
11.5164	Water	Cantamar			

Comment:

Node: Cantamar

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 2.00 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
2.00	0.5900	25699
2.50	0.7197	31349
3.00	0.9923	43224
3.50	1.3418	58449
4.00	1.6093	70099
4.50	1.9559	85199
5.00	2.2905	99774
5.50	2.6067	113549
6.00	2.9964	130524
6.50	6.4193	279624
7.00	17.4891	761824
7.50	23.3482	1017049
8.00	30.7828	1340899
8.50	39.2711	1710649
9.00	47.3163	2061099
9.50	51.2328	2231699
10.00	53.7012	2339224
10.50	53.8801	2347016
11.00	53.8801	2347016

Comment:

Node: Retention Ponds

Scenario: Existing Conditions
Type: Stage/Area

Base Flow: 0.00 cfs
Initial Stage: 1.60 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
1.60	11.5100	501376
450.00	11.5100	501376
999.00	11.5100	501376

Comment: Lake elevation set from LiDAR

Node: Cantamar

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 2.00 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
2.00	0.5900	25699
2.50	0.7197	31349
3.00	0.9923	43224
3.50	1.3418	58449
4.00	1.6093	70099
4.50	1.9559	85199
5.00	2.2905	99774
5.50	2.6067	113549
6.00	2.9964	130524
6.50	6.4193	279624
7.00	17.4891	761824
7.50	23.3482	1017049
8.00	30.7828	1340899
8.50	39.2711	1710649
9.00	47.3163	2061099
9.50	51.2328	2231699
10.00	53.7012	2339224
10.50	53.8801	2347016
11.00	53.8801	2347016

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs

Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
3.43	5.55	241867
4.00	11.11	483734

Comment:

Node: Retention Ponds

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 1.60 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
1.60	11.5100	501376
450.00	11.5100	501376
999.00	11.5100	501376

Comment: Retention pond elevations were estimated by taking the average of each pond's elevation off the GIS Lidar.

Node: Cantamar

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 2.00 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
2.00	0.5900	25699
2.50	0.7197	31349
3.00	0.9923	43224
3.50	1.3418	58449
4.00	1.6093	70099
4.50	1.9559	85199
5.00	2.2905	99774
5.50	2.6067	113549
6.00	2.9964	130524
6.50	6.4193	279624
7.00	17.4891	761824
7.50	23.3482	1017049
8.00	30.7828	1340899

Stage [ft]	Area [ac]	Area [ft2]
8.50	39.2711	1710649
9.00	47.3163	2061099
9.50	51.2328	2231699
10.00	53.7012	2339224
10.50	53.8801	2347016
11.00	53.8801	2347016

Comment:

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.68	3.65	158950
4.00	7.30	317901

Comment:

Node: Retention Ponds

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 2.20 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
2.20	11.5100	501376
450.00	11.5100	501376
999.00	11.5100	501376

Comment: Retention pond elevations were estimated by taking the average of each pond's elevation off the GIS Lidar.

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Existing Conditions	Invert:	2.30 ft	Invert:	1.50 ft
From Node:	Cantamar	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Retention Ponds	Geometry: Circular		Geometry: Circular	

Link Count:	20	Max Depth:	2.00 ft	Max Depth:	2.00 ft
		Bottom Clip			
Flow Direction:	Both				
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	0	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
		Top Clip			
Length:	160.00 ft				
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.00	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
		Bottom Clip	
Weir:	1		
Weir Count:	2	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
		Top Clip	
Weir Type:	Horizontal		
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.20 ft	Op Table:	
Control Elevation:	6.20 ft	Ref Node:	
		Discharge Coefficients	
Max Depth:	9999.00 ft		
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	2.30 ft	Invert:	1.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		**Geometry: Circular**	
From Node:	Exfiltration				
To Node:	Retention Ponds	Max Depth:	2.00 ft	Max Depth:	2.00 ft
		Bottom Clip			
Link Count:	20				
Flow Direction:	Positive	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
		Top Clip			
Damping:	0.0000 ft				
Length:	160.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	

Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	4.60 ft	Op Table:	
Control Elevation:	4.60 ft	Ref Node:	
Max Depth:	2.00 ft	Discharge Coefficients	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Assumed to have a 24" pipe for baffle sizing.

Drop Structure Comment:

Drop Structure Link: L-0040DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	2.40 ft	Invert:	2.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Cantamar	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	79	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	15.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
		Bottom Clip	
Weir:	1	Default:	0.00 ft
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft	Top Clip	
Weir Type:	Horizontal	Default:	0.00 ft
Geometry Type:	Rectangular	Op Table:	
Invert:	6.20 ft	Ref Node:	
Control Elevation:	6.20 ft	Discharge Coefficients	
Max Depth:	9999.00 ft	Weir Default:	3.200
Max Width:	10.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment: 69 existing CBs

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	2.30 ft	Invert:	1.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	Geometry: Circular		Geometry: Circular	
To Node:	Retention Ponds	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	20	Bottom Clip			
Flow Direction:	Positive	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	160.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
		Bottom Clip	
Weir:	1	Default:	0.00 ft
Weir Count:	1	Op Table:	
Weir Flow Direction:	Both	Ref Node:	
Damping:	0.0000 ft		

Weir Type:	Sharp Crested Vertical		
Geometry Type:	Rectangular	Top Clip	
Invert:	4.60 ft	Default:	0.00 ft
Control Elevation:	4.60 ft	Op Table:	
Max Depth:	2.00 ft	Ref Node:	
Max Width:	4.00 ft	Discharge Coefficients	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Assumed to have a 24" pipe for baffle sizing.

Drop Structure Comment:

Drop Structure Link: L-0040DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	2.40 ft	Invert:	2.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Cantamar	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	79	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	15.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	6.20 ft	Op Table:	
Control Elevation:	6.20 ft	Ref Node:	

Max Depth:	9999.00 ft
Max Width:	10.00 ft
Fillet:	0.00 ft

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment: 69 existing CBs

Simulation: 010yr-24hr

Scenario:	Existing Conditions
Run Date/Time:	6/28/2023 5:40:38 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	6/28/2023 5:41:21 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global

Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 6/28/2023 5:42:52 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 11/2/2023 3:29:58 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

Year	Month	Day	Hour [hr]

Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Reference ET Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: Site

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Site

Roughness Set:

Crop Coef Set:

Fillable Porosity Set:

Conductivity Set:

Leakage Set:

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

IA Recovery Time: 24.0000 hr

ET for Manual Basins: False

dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/2/2023 3:30:56 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart:	False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions
Run Date/Time:	11/2/2023 3:32:29 PM
Program Version:	ICPR4 4.07.04

General

Run Mode:	Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/2/2023 3:33:52 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File	
Save Restart:	False

Resources & Lookup Tables

Resources	
Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables	
Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/2/2023 3:34:38 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Reference ET Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: Site

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: Site

Roughness Set:

Crop Coef Set:

Fillable Porosity Set:

Conductivity Set:

Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/2/2023 3:35:56 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.70 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Scenario	Sim	Node Name	Maximum Total Inflow Rate [cfs]
Existing Conditions	005yr-24hr	Cantamar	33.81
Existing Conditions	005yr-24hr	Retention Ponds	74.01
Existing Conditions	005yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	005yr-24hr	Cantamar	33.81
Proposed Conditions	005yr-24hr	Exfiltration	72.61
Proposed Conditions	005yr-24hr	Retention Ponds	13.39
Proposed Conditions	005yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	005yr-24hr	~~D~L-0040DS~N	0.00
Proposed Conditions + 6"	005yr-24hr	Cantamar	33.81
Proposed Conditions + 6"	005yr-24hr	Exfiltration	43.48
Proposed Conditions + 6"	005yr-24hr	Retention Ponds	34.01
Proposed Conditions + 6"	005yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	005yr-24hr	~~D~L-0040DS~N	0.00
Existing Conditions	010yr-24hr	Cantamar	41.10
Existing Conditions	010yr-24hr	Retention Ponds	91.98
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	Cantamar	41.10
Proposed Conditions	010yr-24hr	Exfiltration	92.28
Proposed Conditions	010yr-24hr	Retention Ponds	9.69
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	~~D~L-0040DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	Cantamar	41.10
Proposed Conditions + 6"	010yr-24hr	Exfiltration	100.61
Proposed Conditions + 6"	010yr-24hr	Retention Ponds	13.32
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0040DS~N	0.00
Existing Conditions	025yr-72hr	Cantamar	32.94
Existing Conditions	025yr-72hr	Retention Ponds	76.62
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	Cantamar	32.94
Proposed Conditions	025yr-72hr	Exfiltration	82.23
Proposed Conditions	025yr-72hr	Retention Ponds	34.74
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	~~D~L-0040DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	Cantamar	32.94
Proposed Conditions + 6"	025yr-72hr	Exfiltration	86.07
Proposed Conditions + 6"	025yr-72hr	Retention Ponds	32.30
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	~~D~L-0040DS~N	0.00
Existing Conditions	100yr-72hr	Cantamar	44.80
Existing Conditions	100yr-72hr	Retention Ponds	100.86
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	0.00

Scenario	Sim	Node Name	Maximum Total Inflow Rate [cfs]
Proposed Conditions	100yr-72hr	Cantamar	44.80
Proposed Conditions	100yr-72hr	Exfiltration	120.18
Proposed Conditions	100yr-72hr	Retention Ponds	45.58
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	100yr-72hr	~~D~L-0040DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	Cantamar	44.80
Proposed Conditions + 6"	100yr-72hr	Exfiltration	116.12
Proposed Conditions + 6"	100yr-72hr	Retention Ponds	42.44
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	~~D~L-0040DS~N	0.00

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Cantamar	6.20	41.10
Existing Conditions	010yr-24hr	Retention Ponds	3.43	91.98
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	6.20	0.00
Proposed Conditions	010yr-24hr	Cantamar	6.20	41.10
Proposed Conditions	010yr-24hr	Exfiltration	4.71	92.28
Proposed Conditions	010yr-24hr	Retention Ponds	1.84	9.69
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	4.60	0.00
Proposed Conditions	010yr-24hr	~~D~L-0040DS~N	6.20	0.00
Proposed Conditions + 6"	010yr-24hr	Cantamar	6.20	41.10
Proposed Conditions + 6"	010yr-24hr	Exfiltration	4.74	100.61
Proposed Conditions + 6"	010yr-24hr	Retention Ponds	2.78	13.32
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	4.60	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0040DS~N	6.20	0.00
Existing Conditions	025yr-72hr	Cantamar	6.20	32.94
Existing Conditions	025yr-72hr	Retention Ponds	4.85	76.62
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	6.20	0.00
Proposed Conditions	025yr-72hr	Cantamar	6.20	32.94
Proposed Conditions	025yr-72hr	Exfiltration	4.86	82.23
Proposed Conditions	025yr-72hr	Retention Ponds	3.41	34.74
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	4.60	0.00
Proposed Conditions	025yr-72hr	~~D~L-0040DS~N	6.20	0.00
Proposed Conditions + 6"	025yr-72hr	Cantamar	6.20	32.94
Proposed Conditions + 6"	025yr-72hr	Exfiltration	4.85	86.07
Proposed Conditions + 6"	025yr-72hr	Retention Ponds	4.27	32.30
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	4.60	0.00
Proposed Conditions + 6"	025yr-72hr	~~D~L-0040DS~N	6.20	0.00
Existing Conditions	100yr-72hr	Cantamar	6.37	44.80
Existing Conditions	100yr-72hr	Retention Ponds	6.37	100.86
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	6.37	0.00
Proposed Conditions	100yr-72hr	Cantamar	6.20	44.80
Proposed Conditions	100yr-72hr	Exfiltration	4.92	120.18
Proposed Conditions	100yr-72hr	Retention Ponds	4.75	45.58
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	4.75	0.00
Proposed Conditions	100yr-72hr	~~D~L-0040DS~N	6.20	0.00
Proposed Conditions + 6"	100yr-72hr	Cantamar	6.20	44.80
Proposed Conditions + 6"	100yr-72hr	Exfiltration	5.23	116.12
Proposed Conditions + 6"	100yr-72hr	Retention Ponds	5.23	42.44
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	5.23	0.00
Proposed Conditions + 6"	100yr-72hr	~~D~L-0040DS~N	6.20	0.00

Manual Basin: Cutler Ridge Pines

Scenario: Existing Conditions
Node: Cutler Ridge Pines
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 6.9700 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0900	ROW	Cutler Ridge Pines			
6.8800	Low Density	Cutler Ridge Pines			

Comment:

Manual Basin: Cutler Ridge Pines

Scenario: Proposed Conditions
Node: Cutler Ridge Pines
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 6.9700 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0900	ROW	Cutler Ridge Pines			
6.8800	Low Density	Cutler Ridge Pines			

Comment:

Manual Basin: Cutler Ridge Pines

Scenario: Proposed Conditions + 6"
Node: Cutler Ridge Pines
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256

Peaking Factor: 256.0
Area: 6.9700 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0900	ROW	Cutler Ridge Pines			
6.8800	Low Density	Cutler Ridge Pines			

Comment:

Node: Cutler Ridge Pines

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 8.00 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
8.00	0.0006	25
8.50	0.1240	5400
9.00	0.4540	19775
9.50	1.0531	45875
10.00	1.8337	79875
10.50	2.5740	112125
11.00	3.0119	131200
11.50	4.0002	174250
12.00	5.3438	232775
12.50	6.2408	271850
13.00	6.7826	295450
13.50	6.8405	297973
14.00	6.8848	299901
14.50	6.8848	299901

Comment:

Node: Cutler Ridge Pines

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 8.00 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
8.00	0.0006	25
8.50	0.1240	5400
9.00	0.4540	19775

Stage [ft]	Area [ac]	Area [ft2]
9.50	1.0531	45875
10.00	1.8337	79875
10.50	2.5740	112125
11.00	3.0119	131200
11.50	4.0002	174250
12.00	5.3438	232775
12.50	6.2408	271850
13.00	6.7826	295450
13.50	6.8405	297973
14.00	6.8848	299901
14.50	6.8848	299901

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
4.53	7.13	310713
6.20	14.27	621427

Comment:

Node: Cutler Ridge Pines

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 8.00 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
8.00	0.0006	25
8.50	0.1240	5400
9.00	0.4540	19775
9.50	1.0531	45875
10.00	1.8337	79875
10.50	2.5740	112125
11.00	3.0119	131200
11.50	4.0002	174250

Stage [ft]	Area [ac]	Area [ft2]
12.00	5.3438	232775
12.50	6.2408	271850
13.00	6.7826	295450
13.50	6.8405	297973
14.00	6.8848	299901
14.50	6.8848	299901

Comment:

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
4.53	6.58	286407
6.20	13.15	572814

Comment:

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	4.20 ft	Invert:	4.20 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Cutler Ridge Pines	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	12	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	235.03 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component

Weir:	1		
Weir Count:	1	**Bottom Clip**	
Weir Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Horizontal	Ref Node:	
Geometry Type:	Rectangular	**Top Clip**	
Invert:	8.20 ft	Default:	0.00 ft
Control Elevation:	0.00 ft	Op Table:	
Max Depth:	999.00 ft	Ref Node:	
Max Width:	10.00 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	4.20 ft	Invert:	4.20 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Cutler Ridge Pines	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	12	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	235.03 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	8.20 ft	Op Table:	
Control Elevation:	0.00 ft	Ref Node:	

Max Depth: 999.00 ft
Max Width: 10.00 ft
Fillet: 0.00 ft

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions
Run Date/Time: 11/13/2023 10:42:15 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	11/9/2023 10:15:00 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global

Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 11/13/2023 10:42:59 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 11/13/2023 10:44:29 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

Year	Month	Day	Hour [hr]

Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions
Run Date/Time: N/A
Program Version: N/A

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart:	False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions
Run Date/Time:	11/13/2023 10:45:14 AM
Program Version:	ICPR4 4.07.04

General

Run Mode:	Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/13/2023 10:50:23 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: N/A
Program Version: N/A

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/13/2023 10:51:33 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.70 in
Storm Duration: 72.0000 hr

Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Cutler Ridge Pines	11.09	5.31
Proposed Conditions + 6"	010yr-24hr	Cutler Ridge Pines	8.20	5.31
Proposed Conditions + 6"	010yr-24hr	Exfiltration	4.02	9.73
Proposed Conditions + 6"	010yr-24hr	~~D~L-0020DS~N	8.20	0.00
Proposed Conditions	010yr-24hr	Cutler Ridge Pines	8.20	5.31
Proposed Conditions	010yr-24hr	Exfiltration	3.79	9.60
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	8.20	0.00
Existing Conditions	025yr-72hr	Bel Aire Sec 2.1	6.51	12.91
Existing Conditions	025yr-72hr	Canal	2.79	15.28
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	6.50	0.00
Existing Conditions	100yr-72hr	Cutler Ridge Pines	12.24	5.79
Proposed Conditions + 6"	100yr-72hr	Cutler Ridge Pines	8.20	5.79
Proposed Conditions + 6"	100yr-72hr	Exfiltration	5.07	10.44
Proposed Conditions + 6"	100yr-72hr	~~D~L-0020DS~N	8.20	0.00
Proposed Conditions	100yr-72hr	Cutler Ridge Pines	8.20	5.79
Proposed Conditions	100yr-72hr	Exfiltration	4.98	10.48
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	8.20	0.00

Manual Basin: Cutler Ridge Sec 4

Scenario:	Existing Conditions
Node:	Cutler Ridge Sec 4
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	70.3351 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
63.4958	Low Density	CutlerRidge4			
6.8393	ROW	CutlerRidge4			

Comment:

Manual Basin: Cutler Ridge Sec 4

Scenario:	Proposed Conditions
Node:	Cutler Ridge Sec 4
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	70.3351 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
63.4958	Low Density	CutlerRidge4			
6.8393	ROW	CutlerRidge4			

Comment:

Manual Basin: Cutler Ridge Sec 4

Scenario:	Proposed Conditions + 6"
Node:	Cutler Ridge Sec 4
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256

Peaking Factor: 256.0
Area: 70.3351 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
63.4958	Low Density	CutlerRidge4			
6.8393	ROW	CutlerRidge4			

Comment:

Node: Cutler Ridge Sec 4

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 6.01 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.01	0.0006	25
6.50	0.0436	1900
7.00	1.5329	66775
7.50	7.0793	308375
8.00	14.0616	612525
8.50	24.6086	1071950
9.00	40.5039	1764350
9.50	52.9603	2306950
10.00	61.8647	2694825
10.50	68.2891	2974675
11.00	70.1108	3054025
11.50	70.2875	3061725
12.00	70.3020	3062354
12.50	70.3041	3062448
13.00	70.3075	3062593
13.50	70.3103	3062717
14.00	70.3351	3063798
14.50	70.3351	3063798

Comment:

Node: Cutler Ridge Sec 4

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 6.01 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.01	0.0006	25
6.50	0.0436	1900
7.00	1.5329	66775
7.50	7.0793	308375
8.00	14.0616	612525
8.50	24.6086	1071950
9.00	40.5039	1764350
9.50	52.9603	2306950
10.00	61.8647	2694825
10.50	68.2891	2974675
11.00	70.1108	3054025
11.50	70.2875	3061725
12.00	70.3020	3062354
12.50	70.3041	3062448
13.00	70.3075	3062593
13.50	70.3103	3062717
14.00	70.3351	3063798
14.50	70.3351	3063798

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
3.68	10.68	465134
4.50	21.36	930267

Comment:

Node: Cutler Ridge Sec 4

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 6.01 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
6.01	0.0006	25

Stage [ft]	Area [ac]	Area [ft2]
6.50	0.0436	1900
7.00	1.5329	66775
7.50	7.0793	308375
8.00	14.0616	612525
8.50	24.6086	1071950
9.00	40.5039	1764350
9.50	52.9603	2306950
10.00	61.8647	2694825
10.50	68.2891	2974675
11.00	70.1108	3054025
11.50	70.2875	3061725
12.00	70.3020	3062354
12.50	70.3041	3062448
13.00	70.3075	3062593
13.50	70.3103	3062717
14.00	70.3351	3063798
14.50	70.3351	3063798

Comment:

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.93	9.32	405870
4.50	18.64	811741

Comment: Resiliency for 6" Sea Level Rise

Weir Link: L-0020W

Scenario: Proposed Conditions
From Node: Cutler Ridge Sec 4
To Node: Exfiltration
Link Count: 120
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Horizontal
Geometry Type: Rectangular
Invert: 6.50 ft

Bottom Clip

Default: 0.00 ft
Op Table:
Ref Node:

Top Clip

Default: 0.00 ft
Op Table:
Ref Node:

Discharge Coefficients

Control Elevation:	6.50 ft		
Max Depth:	9999.00 ft	Weir Default:	2.800
Max Width:	10.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Comment:

Weir Link: L-0020W

Scenario:	Proposed Conditions + 6"	**Bottom Clip**	
From Node:	Cutler Ridge Sec 4	Default:	0.00 ft
To Node:	Exfiltration	Op Table:	
Link Count:	120	Ref Node:	
Flow Direction:	Both	**Top Clip**	
Damping:	0.0000 ft	Default:	0.00 ft
Weir Type:	Horizontal	Op Table:	
Geometry Type:	Rectangular	Ref Node:	
Invert:	6.50 ft	**Discharge Coefficients**	
Control Elevation:	6.50 ft	Weir Default:	2.800
Max Depth:	9999.00 ft	Weir Table:	
Max Width:	10.00 ft	Orifice Default:	0.600
Fillet:	0.00 ft	Orifice Table:	

Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions
Run Date/Time: 5/17/2023 5:31:33 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 5/17/2023 5:32:16 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:

Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions
Run Date/Time:	10/31/2023 5:07:30 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2

Energy Switch (2D): Energy

Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 10/31/2023 5:08:24 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site

Folder:		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	10/31/2023 5:10:34 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft

Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 10/31/2023 5:11:27 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Lookup Tables

Boundary Stage Set:

Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Cutler Ridge Sec 4	9.10	51.36
Proposed Conditions + 6"	010yr-24hr	Cutler Ridge Sec 4	6.50	51.36
Proposed Conditions + 6"	010yr-24hr	Exfiltration	5.69	236.11
Proposed Conditions	010yr-24hr	Cutler Ridge Sec 4	6.50	51.36
Proposed Conditions	010yr-24hr	Exfiltration	5.78	236.11
Existing Conditions	100yr-72hr	Cutler Ridge Sec 4	10.06	58.18
Proposed Conditions + 6"	100yr-72hr	Cutler Ridge Sec 4	8.19	99.58
Proposed Conditions + 6"	100yr-72hr	Exfiltration	8.19	376.75
Proposed Conditions	100yr-72hr	Cutler Ridge Sec 4	8.47	76.67
Proposed Conditions	100yr-72hr	Exfiltration	8.47	312.09

Manual Basin: Cutler Ridge Sec 7

Scenario: Existing Conditions
Node: Cutler Ridge Sec 7
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 50.2398 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
44.9351	Low Density	Cutler Ridge 7			
5.3047	ROW	Cutler Ridge 7			

Comment:

Manual Basin: Cutler Ridge Sec 7

Scenario: Proposed Conditions
Node: Cutler Ridge Sec 7
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 50.2398 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
44.9351	Low Density	Cutler Ridge 7			
5.3047	ROW	Cutler Ridge 7			

Comment:

Manual Basin: Cutler Ridge Sec 7

Scenario: Proposed Conditions +1
Node: Cutler Ridge Sec 7
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256

Peaking Factor: 256.0
Area: 50.2398 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
44.9351	Low Density	Cutler Ridge 7			
5.3047	ROW	Cutler Ridge 7			

Comment:

Node: Canal

Scenario: Existing Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.65 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.65
0	0	0	999.0000	2.65

Comment: Canal stage taken from DB Hydro Station S148 T
October Average: 2.65'

Node: Cutler Ridge Sec 7

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 4.76 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.76	0.0006	25
5.00	0.0018	79
5.50	0.0070	306
6.00	0.0130	564
6.50	0.0254	1107
7.00	0.1222	5325
7.50	0.6503	28325
8.00	4.3010	187350
8.50	13.0843	569950
9.00	24.0387	1047125
9.50	35.1142	1529575
10.00	43.4946	1894625
10.50	47.6125	2074000

Stage [ft]	Area [ac]	Area [ft2]
11.00	49.5558	2158650
11.50	50.1940	2186450
12.00	50.2388	2188403
12.50	50.2388	2188403

Comment:

Node: Canal

Scenario: Proposed Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.65 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.65
0	0	0	999.0000	2.65

Comment: Canal stage taken from DB Hydro Station S148 T
October Average: 2.65'

Node: Cutler Ridge Sec 7

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 4.76 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.76	0.0006	25
5.00	0.0018	79
5.50	0.0070	306
6.00	0.0130	564
6.50	0.0254	1107
7.00	0.1222	5325
7.50	0.6503	28325
8.00	4.3010	187350
8.50	13.0843	569950
9.00	24.0387	1047125
9.50	35.1142	1529575
10.00	43.4946	1894625
10.50	47.6125	2074000
11.00	49.5558	2158650

Stage [ft]	Area [ac]	Area [ft2]
11.50	50.1940	2186450
12.00	50.2388	2188403
12.50	50.2388	2188403

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.50	0.00	0
4.00	1.81	78844
4.50	3.62	157687

Comment:

Node: Canal

Scenario: Proposed Conditions +1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.65 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.65
0	0	0	999.0000	2.65

Comment: Canal stage taken from DB Hydro Station S148 T
October Average: 2.65'

Node: Cutler Ridge Sec 7

Scenario: Proposed Conditions +1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 4.76 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
4.76	0.0006	25
5.00	0.0018	79
5.50	0.0070	306
6.00	0.0130	564
6.50	0.0254	1107
7.00	0.1222	5325
7.50	0.6503	28325
8.00	4.3010	187350
8.50	13.0843	569950
9.00	24.0387	1047125
9.50	35.1142	1529575
10.00	43.4946	1894625
10.50	47.6125	2074000
11.00	49.5558	2158650
11.50	50.1940	2186450
12.00	50.2388	2188403
12.50	50.2388	2188403

Comment:

Node: Exfiltration

Scenario: Proposed Conditions +1
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 4.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
4.50	0.00	0
5.00	0.00	0
5.50	0.00	0

Comment: Resiliency for 12" Sea Level Rise

Drop Structure Link: L-0010DS

Scenario: Existing Conditions
From Node: Cutler Ridge Sec 7
To Node: Canal
Link Count: 1
Flow Direction: Both
Solution: Combine
Increments: 0
Pipe Count: 1

	Upstream Pipe	Downstream Pipe
Invert:	3.45 ft	2.76 ft
Manning's N:	0.0120	0.0120
Geometry:	Circular	Circular
Max Depth:	2.00 ft	2.00 ft
Bottom Clip		
Default:	0.00 ft	0.00 ft
Op Table:		
Ref Node:		

Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	138.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.00	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	2	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	7.36 ft	Op Table:	
Control Elevation:	7.36 ft	Ref Node:	
Max Depth:	9999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations are estimated from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	2.67 ft	Invert:	2.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	Geometry: Circular		Geometry: Circular	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	2	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	138.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	7.36 ft	Op Table:	
Control Elevation:	7.36 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations are estimated from Lidar

Weir Component			
Weir:	2	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	3.90 ft	Op Table:	
Control Elevation:	3.90 ft	Ref Node:	
Max Depth:	3.00 ft	**Discharge Coefficients**	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	3.45 ft	Invert:	2.67 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Cutler Ridge Sec 7	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	62	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000

Damping:	0.0000 ft	**Top Clip**			
Length:	138.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	7.36 ft	Op Table:	
Control Elevation:	7.36 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar.

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions +1	Invert:	2.67 ft	Invert:	2.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Canal	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	2	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	138.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	7.36 ft	Op Table:	
Control Elevation:	7.36 ft	Ref Node:	
Max Depth:	9999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations are estimated from Lidar

Weir Component			
Weir:	2	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	3.90 ft	Op Table:	
Control Elevation:	3.90 ft	Ref Node:	
Max Depth:	3.00 ft	Discharge Coefficients	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions +1	Invert:	3.45 ft	Invert:	2.67 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Cutler Ridge Sec 7	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	62	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			

Length:	138.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component

Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Horizontal
Geometry Type:	Rectangular
Invert:	7.36 ft
Control Elevation:	7.36 ft
Max Depth:	9999.00 ft
Max Width:	10.00 ft
Fillet:	0.00 ft

Bottom Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar.

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario:	Existing Conditions
Run Date/Time:	5/17/2023 1:34:52 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	6/28/2023 4:55:18 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site

Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	6/28/2023 4:56:27 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area 100 ft2

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.70 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area 100 ft2

(2D):		(1D):	
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 5/17/2023 1:40:20 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	

Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Proposed Conditions
Run Date/Time:	6/28/2023 4:59:14 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 12.30 in
Storm Duration: 72.0000 hr

Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 6/28/2023 5:00:36 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Lookup Tables

Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions +1
Run Date/Time:	N/A
Program Version:	N/A

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]

Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in

Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions +1
Run Date/Time: 8/28/2023 10:09:31 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources	
Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables	
Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions +1
Run Date/Time:	8/28/2023 10:11:24 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global

Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.70 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Sim	Node Name	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Canal	35.60
Existing Conditions	010yr-24hr	Cutler Ridge Sec 7	36.71
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	Canal	19.44
Proposed Conditions	010yr-24hr	Cutler Ridge Sec 7	36.71
Proposed Conditions	010yr-24hr	Exfiltration	25.25
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	0.00
Existing Conditions	025yr-72hr	Canal	35.07
Existing Conditions	025yr-72hr	Cutler Ridge Sec 7	30.43
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions +1	025yr-72hr	Canal	30.86
Proposed Conditions +1	025yr-72hr	Cutler Ridge Sec 7	30.43
Proposed Conditions +1	025yr-72hr	Exfiltration	37.95
Proposed Conditions +1	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions +1	025yr-72hr	~~D~L-0020DS~N	0.00
Proposed Conditions	025yr-72hr	Canal	26.51
Proposed Conditions	025yr-72hr	Cutler Ridge Sec 7	30.43
Proposed Conditions	025yr-72hr	Exfiltration	82.98
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	~~D~L-0020DS~N	0.00
Existing Conditions	100yr-72hr	Canal	38.65
Existing Conditions	100yr-72hr	Cutler Ridge Sec 7	41.56
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions +1	100yr-72hr	Canal	42.07
Proposed Conditions +1	100yr-72hr	Cutler Ridge Sec 7	41.56
Proposed Conditions +1	100yr-72hr	Exfiltration	50.69
Proposed Conditions +1	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions +1	100yr-72hr	~~D~L-0020DS~N	0.00
Proposed Conditions	100yr-72hr	Canal	35.49
Proposed Conditions	100yr-72hr	Cutler Ridge Sec 7	41.56
Proposed Conditions	100yr-72hr	Exfiltration	109.64
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	0.00

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Canal	2.65	35.60
Existing Conditions	010yr-24hr	Cutler Ridge Sec 7	7.44	36.71
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	7.44	0.00
Proposed Conditions	010yr-24hr	Canal	2.65	19.44
Proposed Conditions	010yr-24hr	Cutler Ridge Sec 7	8.01	36.71
Proposed Conditions	010yr-24hr	Exfiltration	6.07	25.25
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	5.46	0.00
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	8.01	0.00
Existing Conditions	025yr-72hr	Canal	2.65	35.07
Existing Conditions	025yr-72hr	Cutler Ridge Sec 7	7.37	30.43
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	7.36	0.00
Proposed Conditions +1	025yr-72hr	Canal	2.65	30.86
Proposed Conditions +1	025yr-72hr	Cutler Ridge Sec 7	7.36	30.43
Proposed Conditions +1	025yr-72hr	Exfiltration	5.30	37.95
Proposed Conditions +1	025yr-72hr	~~D~L-0010DS~N	4.83	0.00
Proposed Conditions +1	025yr-72hr	~~D~L-0020DS~N	7.36	0.00
Proposed Conditions	025yr-72hr	Canal	2.65	26.51
Proposed Conditions	025yr-72hr	Cutler Ridge Sec 7	7.36	30.43
Proposed Conditions	025yr-72hr	Exfiltration	5.08	82.98
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	4.56	0.00
Proposed Conditions	025yr-72hr	~~D~L-0020DS~N	7.36	0.00
Existing Conditions	100yr-72hr	Canal	2.65	38.65
Existing Conditions	100yr-72hr	Cutler Ridge Sec 7	7.95	41.56
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	7.95	0.00
Proposed Conditions +1	100yr-72hr	Canal	2.65	42.07
Proposed Conditions +1	100yr-72hr	Cutler Ridge Sec 7	7.36	41.56
Proposed Conditions +1	100yr-72hr	Exfiltration	5.79	50.69
Proposed Conditions +1	100yr-72hr	~~D~L-0010DS~N	5.36	0.00
Proposed Conditions +1	100yr-72hr	~~D~L-0020DS~N	7.36	0.00
Proposed Conditions	100yr-72hr	Canal	2.65	35.49
Proposed Conditions	100yr-72hr	Cutler Ridge Sec 7	7.36	41.56
Proposed Conditions	100yr-72hr	Exfiltration	5.50	109.64
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	5.05	0.00
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	7.36	0.00

Manual Basin: Lakes by the Bay Sec 10

Scenario:	Existing Conditions
Node:	Lakes by the Bay Sec 10
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	57.7236 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
43.1229	Low Density	Lakes by the Bay Sec 10			
4.3732	ROW	Lakes by the Bay Sec 10			
10.2276	Water	Lakes by the Bay Sec 10			

Comment:

Manual Basin: Lakes by the Bay Sec 10

Scenario:	Proposed Conditions
Node:	Lakes by the Bay Sec 10
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	57.7236 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
43.1229	Low Density	Lakes by the Bay Sec 10			
4.3732	ROW	Lakes by the Bay Sec 10			
10.2276	Water	Lakes by the Bay Sec 10			

Comment:

Manual Basin: Lakes by the Bay Sec 10

Scenario: Proposed Conditions + 6"
Node: Lakes by the Bay Sec 10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 57.7236 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
43.1229	Low Density	Lakes by the Bay Sec 10			
4.3732	ROW	Lakes by the Bay Sec 10			
10.2276	Water	Lakes by the Bay Sec 10			

Comment:

Node: Lakes by the Bay Sec 10

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 3.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
1.49	2.7933	121675
1.50	2.7944	121725
2.00	13.3735	582550
2.50	13.5112	588550
3.00	13.6823	596000
3.50	13.9147	606125
4.00	14.1162	614900
4.50	14.3687	625900
5.00	14.6338	637450
5.50	14.8479	646775
6.00	15.1865	661525
6.50	17.0282	741750
7.00	21.3745	931075
7.50	25.4735	1109625
8.00	29.0812	1266775
8.50	37.5029	1633625
9.00	44.9501	1958025
9.50	46.9238	2044000

Stage [ft]	Area [ac]	Area [ft2]
10.00	47.4805	2068250
10.50	47.4960	2068928
11.00	47.4960	2068928

Comment:

Node: Retention Pond

Scenario: Existing Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.50 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.50
0	0	0	999.0000	1.50

Comment: Pond elevation estimated from Lidar. 1.5'

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
3.41	2.57	111971
3.95	5.14	223942

Comment:

Node: Lakes by the Bay Sec 10

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 3.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
1.49	2.7933	121675
1.50	2.7944	121725
2.00	13.3735	582550
2.50	13.5112	588550
3.00	13.6823	596000
3.50	13.9147	606125
4.00	14.1162	614900
4.50	14.3687	625900
5.00	14.6338	637450
5.50	14.8479	646775
6.00	15.1865	661525
6.50	17.0282	741750
7.00	21.3745	931075
7.50	25.4735	1109625
8.00	29.0812	1266775
8.50	37.5029	1633625
9.00	44.9501	1958025
9.50	46.9238	2044000
10.00	47.4805	2068250
10.50	47.4960	2068928
11.00	47.4960	2068928

Comment: Water Table at 3.5'

Node: Retention Pond

Scenario: Proposed Conditions
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.50 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.50
0	0	0	9999.0000	1.50

Comment: Pond elevation estimated from Lidar. 1.5'

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.66	1.83	79606
3.95	3.66	159212

Comment: Resiliency for 6" Sea Level Rise

Node: Lakes by the Bay Sec 10

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 3.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
1.49	2.7933	121675
1.50	2.7944	121725
2.00	13.3735	582550
2.50	13.5112	588550
3.00	13.6823	596000
3.50	13.9147	606125
4.00	14.1162	614900
4.50	14.3687	625900
5.00	14.6338	637450
5.50	14.8479	646775
6.00	15.1865	661525
6.50	17.0282	741750
7.00	21.3745	931075
7.50	25.4735	1109625
8.00	29.0812	1266775
8.50	37.5029	1633625
9.00	44.9501	1958025
9.50	46.9238	2044000
10.00	47.4805	2068250
10.50	47.4960	2068928
11.00	47.4960	2068928

Comment: Water Table at 3.5'

Node: Retention Pond

Scenario: Proposed Conditions + 6"
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 2.00 ft

Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	2.00
0	0	0	9999.0000	2.00

Comment: Pond elevation estimated from Lidar. 1.5' plus 6" rise in GWT

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Existing Conditions	Invert:	3.95 ft	Invert:	3.95 ft
From Node:	Lakes by the Bay Sec 10	Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
To Node:	Retention Pond	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	46	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	174.26 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment:

Weir Component			
		Bottom Clip	
Weir:	1		
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.95 ft	Op Table:	
Control Elevation:	5.95 ft	Ref Node:	
Max Depth:	999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	1.95 ft	Invert:	1.88 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Lakes by the Bay Sec 10	Geometry: Circular		Geometry: Circular	
		Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	Exfiltration	Bottom Clip			
Link Count:	46	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Solution:	Combine	Ref Node:		Ref Node:	
Increments:	0	Manning's N:	0.0000	Manning's N:	0.0000
Pipe Count:	1	Top Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	15.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.95 ft	Op Table:	
Control Elevation:	5.95 ft	Ref Node:	
Max Depth:	9999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment: 46 total CBs
33 existing CBs
13 proposed CBs

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	1.87 ft	Invert:	0.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	Geometry: Circular		Geometry: Circular	
To Node:	Retention Pond	Max Depth:	2.00 ft	Max Depth:	2.00 ft

Link Count:	1	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	375.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	4.50 ft	Op Table:	
Control Elevation:	4.50 ft	Ref Node:	
Max Depth:	2.00 ft	Discharge Coefficients	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Assumed to have a 24" pipe for baffle sizing.

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	1.95 ft	Invert:	1.88 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Lakes by the Bay Sec 10	Geometry: Circular		Geometry: Circular	
		Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	Exfiltration	Bottom Clip			
Link Count:	46	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Solution:	Combine	Ref Node:		Ref Node:	
Increments:	0	Manning's N:	0.0000	Manning's N:	0.0000
Pipe Count:	1	Top Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	15.00 ft	Op Table:		Op Table:	

FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.95 ft	Op Table:	
Control Elevation:	5.95 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment: 46 total CBs
33 existing CBs
13 proposed CBs

Drop Structure Link: L-0020DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	1.87 ft	Invert:	0.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Exfiltration	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Retention Pond	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	375.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	4.50 ft	Op Table:	
Control Elevation:	4.50 ft	Ref Node:	
Max Depth:	2.00 ft	**Discharge Coefficients**	
Max Width:	4.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Assumed to have a 24" pipe for baffle sizing.

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions
Run Date/Time: 11/2/2023 10:07:20 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	11/2/2023 10:07:52 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	11/2/2023 10:10:00 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.30 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions
Run Date/Time:	11/2/2023 9:44:41 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	

		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 025yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/2/2023 9:45:21 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 12.30 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions
Run Date/Time:	11/2/2023 9:46:54 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/2/2023 9:49:29 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 025yr-72hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/2/2023 9:50:14 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	12.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/2/2023 9:51:46 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-72
Rainfall Amount: 16.30 in
Storm Duration: 72.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Scenario	Sim	Node Name	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Lakes by the Bay Sec 10	36.21
Existing Conditions	010yr-24hr	Retention Pond	0.00
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	Exfiltration	0.00
Proposed Conditions + 6"	010yr-24hr	Lakes by the Bay Sec 10	36.21
Proposed Conditions + 6"	010yr-24hr	Retention Pond	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0020DS~N	0.00
Proposed Conditions	010yr-24hr	Exfiltration	0.00
Proposed Conditions	010yr-24hr	Lakes by the Bay Sec 10	36.21
Proposed Conditions	010yr-24hr	Retention Pond	0.00
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	0.00
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	0.00
Existing Conditions	025yr-72hr	Lakes by the Bay Sec 10	29.03
Existing Conditions	025yr-72hr	Retention Pond	30.63
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	Exfiltration	29.03
Proposed Conditions + 6"	025yr-72hr	Lakes by the Bay Sec 10	29.03
Proposed Conditions + 6"	025yr-72hr	Retention Pond	2.28
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	025yr-72hr	~~D~L-0020DS~N	0.00
Proposed Conditions	025yr-72hr	Exfiltration	29.03
Proposed Conditions	025yr-72hr	Lakes by the Bay Sec 10	29.03
Proposed Conditions	025yr-72hr	Retention Pond	2.21
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	025yr-72hr	~~D~L-0020DS~N	0.00
Existing Conditions	100yr-72hr	Lakes by the Bay Sec 10	38.54
Existing Conditions	100yr-72hr	Retention Pond	40.62
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	Exfiltration	38.54
Proposed Conditions + 6"	100yr-72hr	Lakes by the Bay Sec 10	38.54
Proposed Conditions + 6"	100yr-72hr	Retention Pond	15.36
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions + 6"	100yr-72hr	~~D~L-0020DS~N	0.00
Proposed Conditions	100yr-72hr	Exfiltration	38.54
Proposed Conditions	100yr-72hr	Lakes by the Bay Sec 10	38.54
Proposed Conditions	100yr-72hr	Retention Pond	17.54
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	0.00
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	0.00

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Lakes by the Bay Sec 10	5.43	36.21
Existing Conditions	010yr-24hr	Retention Pond	1.50	0.00
Existing Conditions	010yr-24hr	~~D~L-0010DS~N	5.43	0.00
Proposed Conditions + 6"	010yr-24hr	Exfiltration	3.36	0.00
Proposed Conditions + 6"	010yr-24hr	Lakes by the Bay Sec 10	5.43	36.21
Proposed Conditions + 6"	010yr-24hr	Retention Pond	2.00	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	5.43	0.00
Proposed Conditions + 6"	010yr-24hr	~~D~L-0020DS~N	3.36	0.00
Proposed Conditions	010yr-24hr	Exfiltration	2.86	0.00
Proposed Conditions	010yr-24hr	Lakes by the Bay Sec 10	5.43	36.21
Proposed Conditions	010yr-24hr	Retention Pond	1.50	0.00
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	5.43	0.00
Proposed Conditions	010yr-24hr	~~D~L-0020DS~N	2.86	0.00
Existing Conditions	025yr-72hr	Lakes by the Bay Sec 10	5.95	29.03
Existing Conditions	025yr-72hr	Retention Pond	1.50	30.63
Existing Conditions	025yr-72hr	~~D~L-0010DS~N	5.95	0.00
Proposed Conditions + 6"	025yr-72hr	Exfiltration	4.82	29.03
Proposed Conditions + 6"	025yr-72hr	Lakes by the Bay Sec 10	5.95	29.03
Proposed Conditions + 6"	025yr-72hr	Retention Pond	2.00	2.28
Proposed Conditions + 6"	025yr-72hr	~~D~L-0010DS~N	5.95	0.00
Proposed Conditions + 6"	025yr-72hr	~~D~L-0020DS~N	4.50	0.00
Proposed Conditions	025yr-72hr	Exfiltration	4.81	29.03
Proposed Conditions	025yr-72hr	Lakes by the Bay Sec 10	5.95	29.03
Proposed Conditions	025yr-72hr	Retention Pond	1.50	2.21
Proposed Conditions	025yr-72hr	~~D~L-0010DS~N	5.95	0.00
Proposed Conditions	025yr-72hr	~~D~L-0020DS~N	4.50	0.00
Existing Conditions	100yr-72hr	Lakes by the Bay Sec 10	5.95	38.54
Existing Conditions	100yr-72hr	Retention Pond	1.50	40.62
Existing Conditions	100yr-72hr	~~D~L-0010DS~N	5.95	0.00
Proposed Conditions + 6"	100yr-72hr	Exfiltration	5.63	38.54
Proposed Conditions + 6"	100yr-72hr	Lakes by the Bay Sec 10	5.95	38.54
Proposed Conditions + 6"	100yr-72hr	Retention Pond	2.00	15.36
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	5.95	0.00
Proposed Conditions + 6"	100yr-72hr	~~D~L-0020DS~N	4.50	0.00
Proposed Conditions	100yr-72hr	Exfiltration	5.73	38.54
Proposed Conditions	100yr-72hr	Lakes by the Bay Sec 10	5.95	38.54
Proposed Conditions	100yr-72hr	Retention Pond	1.50	17.54
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	5.95	0.00
Proposed Conditions	100yr-72hr	~~D~L-0020DS~N	4.50	0.00

Manual Basin: Old Cutler Cove

Scenario: Existing Conditions
Node: Old Cutler Cove
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 31.7651 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
28.4442	Estate Density	Old Cutler Cove			
3.3209	ROW	Old Cutler Cove			

Comment:

Manual Basin: Old Cutler Cove

Scenario: Proposed Conditions
Node: Old Cutler Cove
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 31.7651 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
28.4442	Estate Density	Old Cutler Cove			
3.3209	ROW	Old Cutler Cove			

Comment:

Manual Basin: Old Cutler Cove

Scenario: Proposed Conditions + 6"
Node: Old Cutler Cove
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256

Peaking Factor: 256.0
Area: 31.7651 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
28.4442	Estate Density	Old Cutler Cove			
3.3209	ROW	Old Cutler Cove			

Comment:

Node: Old Cutler Cove

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 5.96 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.96	0.0006	25
6.00	0.0022	95
6.50	0.1693	7375
7.00	1.3435	58525
7.50	3.2404	141150
8.00	5.2812	230050
8.50	8.7093	379375
9.00	13.2163	575700
9.50	17.5247	763375
10.00	22.1872	966475
10.50	26.7218	1164000
11.00	30.0574	1309300
11.50	31.5634	1374900
12.00	31.7651	1383689
12.50	31.7651	1383689

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
3.41	5.69	247900

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.95	11.38	495800

Comment:

Node: Old Cutler Cove

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 5.96 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.96	0.0006	25
6.00	0.0022	95
6.50	0.1693	7375
7.00	1.3435	58525
7.50	3.2404	141150
8.00	5.2812	230050
8.50	8.7093	379375
9.00	13.2163	575700
9.50	17.5247	763375
10.00	22.1872	966475
10.50	26.7218	1164000
11.00	30.0574	1309300
11.50	31.5634	1374900
12.00	31.7651	1383689
12.50	31.7651	1383689

Comment:

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
3.66	4.81	209436
3.95	9.62	418873

Comment: Resiliency for 6" Sea Level Rise

Node: Old Cutler Cove

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 5.96 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
5.96	0.0006	25
6.00	0.0022	95
6.50	0.1693	7375
7.00	1.3435	58525
7.50	3.2404	141150
8.00	5.2812	230050
8.50	8.7093	379375
9.00	13.2163	575700
9.50	17.5247	763375
10.00	22.1872	966475
10.50	26.7218	1164000
11.00	30.0574	1309300
11.50	31.5634	1374900
12.00	31.7651	1383689
12.50	31.7651	1383689

Comment:

Drop Structure Link: L-0010DS

Scenario: Proposed Conditions
From Node: Old Cutler Cove
To Node: Exfiltration
Link Count: 49
Flow Direction: Both
Solution: Combine
Increments: 0
Pipe Count: 1
Damping: 0.0000 ft
Length: 30.00 ft
FHWA Code: 0
Entr Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.00
Bend Location: 0.00 dec
Energy Switch: Energy

	Upstream Pipe	Downstream Pipe
Invert:	5.95 ft	5.80 ft
Manning's N:	0.0120	0.0120
Geometry:	Circular	Circular
Max Depth:	2.00 ft	2.00 ft
Bottom Clip		
Default:	0.00 ft	0.00 ft
Op Table:		
Ref Node:		
Manning's N:	0.0000	0.0000
Top Clip		
Default:	0.00 ft	0.00 ft
Op Table:		
Ref Node:		
Manning's N:	0.0000	0.0000

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component		Bottom Clip	
Weir:	1		
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
		Top Clip	
Weir Type:	Horizontal		
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.95 ft	Op Table:	
Control Elevation:	5.95 ft	Ref Node:	
		Discharge Coefficients	
Max Depth:	9999.00 ft		
Max Width:	40.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	5.95 ft	Invert:	5.80 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Old Cutler Cove	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	49	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	30.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component		Bottom Clip	
Weir:	1		
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
		Top Clip	
Weir Type:	Horizontal		
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	5.95 ft	Op Table:	

Control Elevation:	5.95 ft
Max Depth:	9999.00 ft
Max Width:	40.00 ft
Fillet:	0.00 ft

Ref Node:	

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario:	Existing Conditions
Run Date/Time:	10/31/2023 2:11:54 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 10/31/2023 2:12:40 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000

End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain	Global

		Opt:	
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 11/1/2023 3:41:22 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions

Run Date/Time: 11/1/2023 4:33:41 PM

Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight 0.5 dec

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Fact:			
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/1/2023 3:45:26 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/1/2023 3:46:33 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site

Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Old Cutler Cove	9.45	24.60
Proposed Conditions + 6"	010yr-24hr	Exfiltration	4.55	24.68
Proposed Conditions + 6"	010yr-24hr	Old Cutler Cove	6.19	24.60
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	6.19	0.00
Proposed Conditions	010yr-24hr	Exfiltration	4.72	24.72
Proposed Conditions	010yr-24hr	Old Cutler Cove	6.19	24.60
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	6.19	0.00
Existing Conditions	100yr-72hr	Old Cutler Cove	10.48	25.82
Proposed Conditions + 6"	100yr-72hr	Exfiltration	5.94	26.01
Proposed Conditions + 6"	100yr-72hr	Old Cutler Cove	6.20	25.82
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	6.20	0.00
Proposed Conditions	100yr-72hr	Exfiltration	6.83	30.99
Proposed Conditions	100yr-72hr	Old Cutler Cove	6.83	25.82
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	6.83	0.00

Manual Basin: Old Cutler Omni Pines

Scenario: Existing Conditions
Node: Old Cutler Omni Pines
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 12.4224 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
11.1300	Estate Density	Old Cutler Omni Pines			
1.2924	ROW	Old Cutler Omni Pines			

Comment:

Manual Basin: Old Cutler Omni Pines

Scenario: Proposed Conditions
Node: Old Cutler Omni Pines
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 12.4224 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
11.1300	Estate Density	Old Cutler Omni Pines			
1.2924	ROW	Old Cutler Omni Pines			

Comment:

Manual Basin: Old Cutler Omni Pines

Scenario: Proposed Conditions + 6"
Node: Old Cutler Omni Pines
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number

Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 12.4224 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
11.1300	Estate Density	Old Cutler Omni Pines			
1.2924	ROW	Old Cutler Omni Pines			

Comment:

Node: Old Cutler Omni Pines

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 10.67 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.67	0.0006	25
11.00	0.0050	219
11.50	0.0930	4050
12.00	0.5992	26100
12.50	1.6925	73725
13.00	3.2725	142550
13.50	4.8278	210300
14.00	5.9808	260525
14.50	7.1252	310375
15.00	8.5382	371925
15.50	9.9099	431675
16.00	11.3005	492250
16.50	12.1907	531025
17.00	12.3967	540000
17.50	12.4224	541122
18.00	12.4224	541122

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume

Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
6.33	6.87	299431
9.80	13.75	598863

Comment:

Node: Old Cutler Omni Pines

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 10.67 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.67	0.0006	25
11.00	0.0050	219
11.50	0.0930	4050
12.00	0.5992	26100
12.50	1.6925	73725
13.00	3.2725	142550
13.50	4.8278	210300
14.00	5.9808	260525
14.50	7.1252	310375
15.00	8.5382	371925
15.50	9.9099	431675
16.00	11.3005	492250
16.50	12.1907	531025
17.00	12.3967	540000
17.50	12.4224	541122
18.00	12.4224	541122

Comment:

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
6.58	5.57	242607
9.80	11.14	485215

Comment: Resiliency for 6" Sea Level Rise

Node: Old Cutler Omni Pines

Scenario:	Proposed Conditions + 6"
Type:	Stage/Area
Base Flow:	0.00 cfs
Initial Stage:	10.67 ft
Warning Stage:	0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.67	0.0006	25
11.00	0.0050	219
11.50	0.0930	4050
12.00	0.5992	26100
12.50	1.6925	73725
13.00	3.2725	142550
13.50	4.8278	210300
14.00	5.9808	260525
14.50	7.1252	310375
15.00	8.5382	371925
15.50	9.9099	431675
16.00	11.3005	492250
16.50	12.1907	531025
17.00	12.3967	540000
17.50	12.4224	541122
18.00	12.4224	541122

Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	7.80 ft	Invert:	7.65 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Old Cutler Omni Pines	Geometry: Circular		Geometry: Circular	
		Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	Exfiltration	Bottom Clip			
Link Count:	23	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Solution:	Combine	Ref Node:		Ref Node:	
Increments:	0	Manning's N:	0.0000	Manning's N:	0.0000
Pipe Count:	1	Top Clip			

Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	30.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	11.80 ft	Op Table:	
Control Elevation:	11.80 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	7.80 ft	Invert:	7.65 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Old Cutler Omni Pines	**Geometry: Circular**		**Geometry: Circular**	
		Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	Exfiltration	**Bottom Clip**			
Link Count:	23	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Solution:	Combine	Ref Node:		Ref Node:	
Increments:	0	Manning's N:	0.0000	Manning's N:	0.0000
Pipe Count:	1	**Top Clip**			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	30.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				

Energy Switch: Energy

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component

Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Horizontal
Geometry Type:	Rectangular
Invert:	11.80 ft
Control Elevation:	11.80 ft
Max Depth:	9999.00 ft
Max Width:	10.00 ft
Fillet:	0.00 ft

Bottom Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario:	Existing Conditions
Run Date/Time:	11/14/2023 9:25:46 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Existing Conditions
Run Date/Time:	11/14/2023 9:26:49 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	13.80 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions
Run Date/Time:	11/14/2023 9:28:55 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/14/2023 9:29:59 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	13.80 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/14/2023 9:31:31 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/14/2023 9:32:50 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	13.80 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Old Cutler Omni Pines	14.14	9.62
Proposed Conditions	010yr-24hr	Exfiltration	6.34	23.87
Proposed Conditions	010yr-24hr	Old Cutler Omni Pines	11.80	9.62
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	11.80	0.00
Proposed Conditions + 6"	010yr-24hr	Exfiltration	7.28	24.84
Proposed Conditions + 6"	010yr-24hr	Old Cutler Omni Pines	11.80	9.62
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	11.80	0.00
Existing Conditions	100yr-72hr	Old Cutler Omni Pines	14.99	5.74
Proposed Conditions	100yr-72hr	Exfiltration	9.37	16.21
Proposed Conditions	100yr-72hr	Old Cutler Omni Pines	11.80	5.74
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	11.80	0.00
Proposed Conditions + 6"	100yr-72hr	Exfiltration	10.64	16.77
Proposed Conditions + 6"	100yr-72hr	Old Cutler Omni Pines	11.80	5.74
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	11.80	0.00

Manual Basin: Omni Estates

Scenario:	Existing Conditions
Node:	Omni Estates
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	15.2645 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
13.7636	Estate Density	Omni Estates			
1.5009	ROW	Omni Estates			

Comment:

Manual Basin: Omni Estates

Scenario:	Proposed Conditions
Node:	Omni Estates
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	15.2645 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
13.7636	Estate Density	Omni Estates			
1.5009	ROW	Omni Estates			

Comment:

Manual Basin: Omni Estates

Scenario:	Proposed Conditions +1
Node:	Omni Estates
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256

Peaking Factor: 256.0
Area: 15.2645 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
13.7636	Estate Density	Omni Estates			
1.5009	ROW	Omni Estates			

Comment:

Node: Omni Estates

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 8.35 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
8.35	0.0006	25
8.50	0.0057	250
9.00	0.2175	9475
9.50	0.7237	31525
10.00	1.7223	75025
10.50	3.3339	145225
11.00	6.1501	267900
11.50	8.2203	358075
12.00	9.9707	434325
12.50	11.9668	521275
13.00	13.6002	592425
13.50	14.5208	632525
14.00	14.9455	651025
14.50	15.1946	661875
15.00	15.2795	665577
15.50	15.2808	665631
16.00	15.2808	665631

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.50	0.00	0
4.00	9.20	400687
4.50	18.40	801373

Comment:

Node: Omni Estates

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 8.35 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
8.35	0.0006	25
8.50	0.0057	250
9.00	0.2175	9475
9.50	0.7237	31525
10.00	1.7223	75025
10.50	3.3339	145225
11.00	6.1501	267900
11.50	8.2203	358075
12.00	9.9707	434325
12.50	11.9668	521275
13.00	13.6002	592425
13.50	14.5208	632525
14.00	14.9455	651025
14.50	15.1946	661875
15.00	15.2795	665577
15.50	15.2808	665631
16.00	15.2808	665631

Comment:

Node: Exfiltration

Scenario: Proposed Conditions +1
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 4.50 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
4.50	0.00	0
5.00	7.94	345845

Stage [ft]	Volume [ac-ft]	Volume [ft3]
5.50	15.88	691689

Comment:

Node: Omni Estates

Scenario: Proposed Conditions +1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 8.35 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
8.35	0.0006	25
8.50	0.0057	250
9.00	0.2175	9475
9.50	0.7237	31525
10.00	1.7223	75025
10.50	3.3339	145225
11.00	6.1501	267900
11.50	8.2203	358075
12.00	9.9707	434325
12.50	11.9668	521275
13.00	13.6002	592425
13.50	14.5208	632525
14.00	14.9455	651025
14.50	15.1946	661875
15.00	15.2795	665577
15.50	15.2808	665631
16.00	15.2808	665631

Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions	Invert:	5.50 ft	Invert:	5.35 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Omni Estates	Geometry: Circular		Geometry: Circular	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	25	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	Top Clip			
Length:	30.00 ft	Default:	0.00 ft	Default:	0.00 ft

FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	9.50 ft	Op Table:	
Control Elevation:	0.00 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions +1	Invert:	5.50 ft	Invert:	5.35 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Omni Estates	**Geometry: Circular**		**Geometry: Circular**	
To Node:	Exfiltration	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	25	**Bottom Clip**			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Solution:	Combine	Op Table:		Op Table:	
Increments:	0	Ref Node:		Ref Node:	
Pipe Count:	1	Manning's N:	0.0000	Manning's N:	0.0000
Damping:	0.0000 ft	**Top Clip**			
Length:	30.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	0	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component

Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	9.50 ft	Op Table:	
Control Elevation:	0.00 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimated from Lidar

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions
Run Date/Time: 8/28/2023 1:53:42 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions

Run Date/Time: 8/28/2023 1:53:59 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario: Proposed Conditions
Run Date/Time: 8/28/2023 1:54:49 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 8/28/2023 1:55:10 PM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions +1
Run Date/Time:	8/28/2023 1:56:05 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-72hr

Scenario:	Proposed Conditions +1
Run Date/Time:	8/28/2023 1:56:25 PM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Omni Estates	11.64	11.82
Proposed Conditions +1	010yr-24hr	Exfiltration	5.03	31.91
Proposed Conditions +1	010yr-24hr	Omni Estates	9.50	11.82
Proposed Conditions +1	010yr-24hr	~~D~L-0010DS~N	9.50	0.00
Proposed Conditions	010yr-24hr	Exfiltration	3.94	28.51
Proposed Conditions	010yr-24hr	Omni Estates	9.50	11.82
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	9.50	0.00
Existing Conditions	100yr-72hr	Omni Estates	12.67	12.41
Proposed Conditions +1	100yr-72hr	Exfiltration	5.65	33.93
Proposed Conditions +1	100yr-72hr	Omni Estates	9.50	12.41
Proposed Conditions +1	100yr-72hr	~~D~L-0010DS~N	9.50	0.00
Proposed Conditions	100yr-72hr	Exfiltration	4.53	32.77
Proposed Conditions	100yr-72hr	Omni Estates	9.50	12.41
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	9.50	0.00

Manual Basin: Whispering Pines Ests Sec 1

Scenario:	Existing Conditions
Node:	Whispering Pines Ests Sec 1
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	66.3152 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
59.8559	Estate Density	Whispering Pines Ests Sec 1			
6.4593	ROW	Whispering Pines Ests Sec 1			

Comment:

Manual Basin: Whispering Pines Ests Sec 1

Scenario:	Proposed Conditions
Node:	Whispering Pines Ests Sec 1
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	66.3152 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
59.8559	Estate Density	Whispering Pines Ests Sec 1			
6.4593	ROW	Whispering Pines Ests Sec 1			

Comment:

Manual Basin: Whispering Pines Ests Sec 1

Scenario:	Proposed Conditions + 6"
Node:	Whispering Pines Ests Sec 1
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number

Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 66.3152 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
59.8559	Estate Density	Whispering Pines Ests Sec 1			
6.4593	ROW	Whispering Pines Ests Sec 1			

Comment:

Node: Whispering Pines Ests Sec 1

Scenario: Existing Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 7.19 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
7.19	0.0006	25
7.50	0.0151	658
8.00	0.4471	19475
8.50	2.5126	109450
9.00	7.9276	345325
9.50	15.3679	669425
10.00	24.4588	1065425
10.50	34.5632	1505575
11.00	43.8527	1910225
11.50	51.6730	2250875
12.00	57.3778	2499375
12.50	61.0870	2660950
13.00	63.8694	2782150
13.50	65.4649	2851650
14.00	66.0411	2876750
14.50	66.2753	2886950
15.00	66.3070	2888332
15.50	66.3152	2888692
16.00	66.3152	2888692

Comment:

Node: Exfiltration

Scenario: Proposed Conditions
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 2.86 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
2.86	0.00	0
4.43	14.42	628113
6.00	28.84	1256227

Comment:

Node: Whispering Pines Ests Sec 1

Scenario: Proposed Conditions
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 7.19 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
7.19	0.0006	25
7.50	0.0151	658
8.00	0.4471	19475
8.50	2.5126	109450
9.00	7.9276	345325
9.50	15.3679	669425
10.00	24.4588	1065425
10.50	34.5632	1505575
11.00	43.8527	1910225
11.50	51.6730	2250875
12.00	57.3778	2499375
12.50	61.0870	2660950
13.00	63.8694	2782150
13.50	65.4649	2851650
14.00	66.0411	2876750
14.50	66.2753	2886950
15.00	66.3070	2888332
15.50	66.3152	2888692
16.00	66.3152	2888692

Comment:

Node: Exfiltration

Scenario: Proposed Conditions + 6"
Type: Stage/Volume
Base Flow: 0.00 cfs
Initial Stage: 3.36 ft
Warning Stage: 0.00 ft

Stage [ft]	Volume [ac-ft]	Volume [ft3]
3.36	0.00	0
4.68	13.23	576364
6.00	26.46	1152728

Comment:

Node: Whispering Pines Ests Sec 1

Scenario: Proposed Conditions + 6"
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 7.19 ft
Warning Stage: 0.00 ft

Stage [ft]	Area [ac]	Area [ft2]
7.19	0.0006	25
7.50	0.0151	658
8.00	0.4471	19475
8.50	2.5126	109450
9.00	7.9276	345325
9.50	15.3679	669425
10.00	24.4588	1065425
10.50	34.5632	1505575
11.00	43.8527	1910225
11.50	51.6730	2250875
12.00	57.3778	2499375
12.50	61.0870	2660950
13.00	63.8694	2782150
13.50	65.4649	2851650
14.00	66.0411	2876750
14.50	66.2753	2886950
15.00	66.3070	2888332
15.50	66.3152	2888692
16.00	66.3152	2888692

Comment:

Drop Structure Link: L-0010DS	Upstream Pipe	Downstream Pipe
Scenario: Proposed	Invert: 4.00 ft	Invert: 1.50 ft

	Conditions	Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Whispering Pines Ests Sec 1	Geometry: Circular		Geometry: Circular	
		Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	Exfiltration	Bottom Clip			
Link Count:	106	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Solution:	Combine	Ref Node:		Ref Node:	
Increments:	0	Manning's N:	0.0000	Manning's N:	0.0000
Pipe Count:	1	Top Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	500.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component			
Weir:	1	Bottom Clip	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	8.00 ft	Op Table:	
Control Elevation:	8.00 ft	Ref Node:	
Max Depth:	9999.00 ft	Discharge Coefficients	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimate from Lidar

Drop Structure Comment:

Drop Structure Link: L-0010DS		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed Conditions + 6"	Invert:	4.00 ft	Invert:	1.50 ft
		Manning's N:	0.0120	Manning's N:	0.0120
From Node:	Whispering Pines Ests Sec 1	Geometry: Circular		Geometry: Circular	
		Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	Exfiltration	Bottom Clip			
Link Count:	106	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Solution:	Combine	Ref Node:		Ref Node:	

Increments:	0	Manning's N:	0.0000	Manning's N:	0.0000
Pipe Count:	1	**Top Clip**			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	500.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Pipe Comment: Top of pipe was estimated to be 2' below grade. With the inverts at top of pipe elevation minus the diameter of pipe.

Weir Component

Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Weir Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	8.00 ft	Op Table:	
Control Elevation:	8.00 ft	Ref Node:	
Max Depth:	9999.00 ft	**Discharge Coefficients**	
Max Width:	10.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment: Rim elevations estimate from Lidar

Drop Structure Comment:

Simulation: 010yr-24hr

Scenario: Existing Conditions
Run Date/Time: 8/28/2023 10:15:13 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in
Storm Duration: 24.0000 hr

Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Existing Conditions
Run Date/Time: 8/28/2023 10:15:36 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Lookup Tables

Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr

Scenario:	Proposed Conditions
Run Date/Time:	11/2/2023 8:43:12 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]

Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.75 in

Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions
Run Date/Time: 11/2/2023 8:43:53 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources	
Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables	
Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	Site
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	Site
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options			
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-24hr	
Scenario:	Proposed Conditions + 6"
Run Date/Time:	11/2/2023 8:47:46 AM
Program Version:	ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	36.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: Site
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Site
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global

Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.75 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-72hr

Scenario: Proposed Conditions + 6"
Run Date/Time: 11/2/2023 8:49:15 AM
Program Version: ICPR4 4.07.04

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	96.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	Site
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	Site
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-72
		Rainfall Amount:	16.30 in
Edge Length Option:	Automatic	Storm Duration:	72.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Scenario	Sim	Node Name	Maximum Stage [ft]	Maximum Total Inflow Rate [cfs]
Existing Conditions	010yr-24hr	Whispering Pines Ests Sec 1	10.68	51.37
Proposed Conditions + 6"	010yr-24hr	Exfiltration	7.06	136.38
Proposed Conditions + 6"	010yr-24hr	Whispering Pines Ests Sec 1	8.00	51.37
Proposed Conditions + 6"	010yr-24hr	~~D~L-0010DS~N	8.00	0.00
Proposed Conditions	010yr-24hr	Exfiltration	6.92	133.78
Proposed Conditions	010yr-24hr	Whispering Pines Ests Sec 1	8.00	51.37
Proposed Conditions	010yr-24hr	~~D~L-0010DS~N	8.00	0.00
Existing Conditions	100yr-72hr	Whispering Pines Ests Sec 1	11.69	53.91
Proposed Conditions + 6"	100yr-72hr	Exfiltration	9.95	103.48
Proposed Conditions + 6"	100yr-72hr	Whispering Pines Ests Sec 1	9.95	53.91
Proposed Conditions + 6"	100yr-72hr	~~D~L-0010DS~N	9.95	0.00
Proposed Conditions	100yr-72hr	Exfiltration	9.96	104.99
Proposed Conditions	100yr-72hr	Whispering Pines Ests Sec 1	9.96	53.91
Proposed Conditions	100yr-72hr	~~D~L-0010DS~N	9.96	0.00