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Estero Sewer Feasibility Study

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Table of Contents

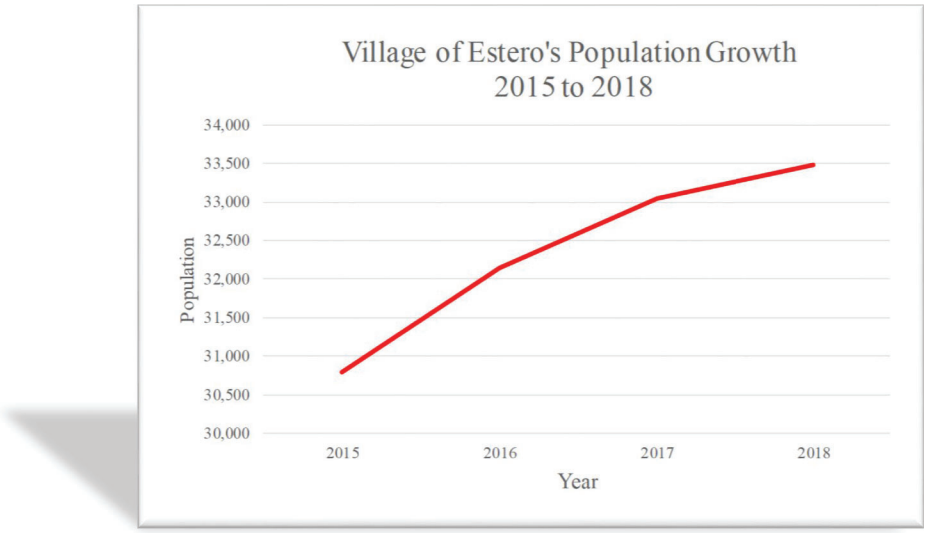
I. Introduction

An effort is underway throughout Florida to improve and protect the water quality and work to reduce red tide, algae blooms, and blue-green algae. More than two thirds of all Florida residents live in coastal counties that rely on water quality for their quality of life. The state's waters and ecology are being impacted by bacteria, algae blooms, decreasing water clarity, low dissolved oxygen, and excess nutrients. Helping to restore our natural resources, ecosystems, fisheries, marine habitats, and coastal wetlands by reducing land-based pollution is essential. The major industries in Southwest Florida, tourism and real estate are directly affected by water quality.

In the summer of 2019, the Estero Village Council approved a Florida Gulf Coast University (FGCU) research project to help identify the source of bacteria in the Estero River. The study plans to test for human waste, nitrogen compounds, and bacteria. The Village of Estero has also reached out to Banks Engineering to prepare this preliminary feasibility study that will look at the number of homes that are currently not connected to central sewer, how best to connect these homes (including layout, sizing, and capacity), and approximately how much it could cost to build this new infrastructure.

Background

The Village of Estero has been growing for many years. In just three years the Village of Estero population has increased by approximately 2,700 residents which correlates to approximately 900 new residents per year.



In Estero, many properties with septic tanks are located along the river. Many of these homes were built prior to the establishment of current septic tank standards. These standards involve the septic tank's distance from surface waters and from the underground water table to improve septic tank performance.

Several researchers have shown relationships between the human population and human waste in the surface waters. Human waste contains nitrogen, and this nitrogen can be identified and measured using sewage tracers such as fecal bacteria, nitrogen isotopes, and sucralose

concentrations. In 2015 the Florida Health Department submitted a final Legislative Report on the *Florida Onsite Sewage Nitrogen Reduction Strategies Study* to the Governor, Speaker of the House, and President of the Senate. This report stated that approximately twenty-eight pounds of Total Nitrogen (TN) per year left the septic tanks from the study. Other pertinent scientific research papers in this field include Howarth et al., 2000, Ursin and Roeder, 2008, Risk et al., 2009, Green et al., 2015 and even Lapointe, 2016 whose study areas were in Charlotte County just to the north. In each of these studies the increased levels of sewage tracers strongly correlated to the increase in population and septic system installations.

The Estero Bay Tributaries are classified as a "Special Waters" Outstanding Florida Water (OFW). An OFW is a water with natural attributes that the Federal Government has designated worthy of special protection. OFWs that are not state or federally managed are usually designated as a "special water" OFW. This means that the Florida Department of Environmental Protection (FDEP) and the South Florida Water Management District (SFWMD) have put protections in place to guarantee that there are no new point sources of pollution allowed.

Existing Conditions

The study areas are mostly single-family homes or mobile home parks that are not on central sewer and treat their wastes on site. This means that the human waste is treated in a septic tank or in a package wastewater treatment plant. Many of these areas are also close to the Estero River, a tributary of Estero Bay.

II. Lee County Utility Specifications

Sewer Layouts

The proposed central sewer systems were laid out to minimize both the length of pipe and the number of pump stations needed. Deciding where to put the pump stations so that the sewer runs were not too deep, while finding an appropriate piece of land for installation was also a priority design consideration. Each of the systems were designed to meet the Lee County Utility standards and technical specifications. Design considerations consisted of:

Gravity Sewer

- The minimum allowable size for any gravity sewer pipes shall be 8" in diameter.
- All gravity sewers pipes shall be designed at slopes providing minimum velocities of not less than 2 fps when flowing full, based on Manning's formula (minimum slope for 8" pipe = 0.40% ~ 0.004 ft/ft)
- Gravity mains shall be installed with straight alignment and grade between manholes.
- Manholes are to be located in the center of the roadway unless otherwise approved by LCU.
- Manhole spacing not to exceed 400 feet (per 10 State Standards).
- Manholes shall be constructed at all changes in size, direction and/or termination of gravity mains.
- Flow direction changes greater than or equal to 45 degrees at a manhole require a minimum line drop of 0.1 feet to be provided across the manhole.
- Service connections shall be a minimum of:
    - 4" diameter for single family residential

- 6" diameter for double residential services and
- 6” diameter for commercial/industrial facilities.

Force Mains

- Sanitary sewer force mains shall be installed at the edge of the road right-of-way or within an LCU Easement abutting the road right-of-way opposite of potable water mains unless otherwise approved by LCU.
- Force mains shall be 4" minimum diameter unless approved by LCU
- In order to provide adequate pipeline cleansing, force main flow velocity shall not be less than 2 feet per second (fps) at minimum pumping capacity, nor greater than 6 fps at ultimate maximum design pumping capacity.
- A representative of LCU must be present at all tie-ins and wet taps. Forty-eight hours advance notification is required.

Lifts Stations

- Pump Stations shall be installed outside of any road right-of-way.
- Pump station sites shall have adequate area provided for operation and maintenance of facility.
- For operation and maintenance purposes, pump station sites are to be readily accessible by LCU vehicles.
- All sewage pump stations shall be provided with a potable water service and reduced pressure cross connection assembly.
- Sufficient lighting shall be provided for nighttime emergency work.
- An Electric Meter shall be supplied by the company providing power to the station.
- Pumping stations with a design peak hour flow of 1500 gpm or less shall include a minimum of two (2) pumps.
- The wet well top slab must be set at or above the elevation designated by the Federal Insurance Administration 25-year 3-day FEMA flood water surface elevation.
- The force main exiting the master pump station shall be the only connection to LCU’s existing facilities.

Water Layouts

The proposed central water systems were laid out to minimize the length of pipe while creating a looped system to provide potable water and fire protection. The location of the existing services and infrastructure was a priority design consideration. Each of the systems were designed to meet the Lee County Utility standards and technical specifications. Design considerations consisted of:

Potable Water

- Water main extensions are to conform to the existing water main design layout. and be installed on the same side of the road as the existing main unless otherwise approved by LCU.

- Water mains and related appurtenance shall be installed at least 10 feet horizontally from any existing or proposed sewer main.
- Water mains crossing sewer mains shall be installed to provide a minimum vertical separation of 18 inches.
- Drainage inlets shall be located no closer than (5) feet from proposed or existing water mains.
- All 4" through 12” diameter PVC pipe shall be rated per AWWA, C900, DR18, minimum Class 150.
- Single family and duplex dwelling unit developments shall be no less than 8” in diameter.
- All commercial developments shall be no less than 10” in diameter.
- HDPE may be used for water main crossings of roadways, ditches, environmentally sensitive lands and subaqueous crossings.
- Water meter boxes shall be installed within the road R-O-W or within LCU Easements on the ‘parcel’ side of the main unless otherwise approved by LCU
- Gate valves shall be provided at all locations necessary to provide an operable, easily maintained and repaired water distribution system
- Cast iron valve boxes shall be provided for all valves installed underground
- A representative of LCU must be present at all tie-ins and wet taps. Forty-eight hours advance notification is required.

Fire

- All fire hydrants shall be designed for a working pressure of 150 psi.
- Hydrants for single-family and duplex dwelling unit developments shall be 800 feet apart as measured along the centerline of the street.
- Hydrants for commercial developments shall be 400 feet apart as measured along the centerline of the street.
- For water quality purposes, fire hydrants shall be installed at the terminal end of all dead-end water mains 6” in diameter or greater
- Guard posts/bollards will be required for all hydrants located in areas subject to traffic flow and maneuvering issues.

III. Study Overview

Study Process

Banks Engineering was provided the general study area by The Village of Estero, which identified areas without central sewer systems that were also relatively close to the Estero River or other drainageway. Banks Engineering then requested additional utility information including the GIS pipe overlay and the hydraulic model from Lee County Utilities (LCU). The first stage was to combine the available information into a single illustration to start planning.

The second step consisted of dividing the study areas into smaller sections, usually requiring only one pump station to connect to the existing system. These smaller areas generally reflect the shared infrastructure used to connect to the existing sewer and water systems. There are areas that will share some infrastructure costs but can still be constructed as a separate phase to connect to the existing system.

Next, the pipes were laid out to connect all the homes to central sewer. Calculations were then made to determine the lengths and probable depths for each area, with additional revisions to the layout and area limits when depths were not feasible or additional pump stations were required.

The final stage was to prepare cost estimates, also known as opinion of probable cost (OPC), for each area based on the preliminary layouts. Then the exhibits, tables, and report were created. As revisions to the layout occurred the documentation was updated. The OPCs for each area have been included in this report

Measurements and Counts

Identified areas included single-family residential on septic tanks or recreational vehicle or mobile home parks relying on package wastewater treatment plants for treatment. There are some areas along US 41 that also include commercial properties. The number of lots proposed to be connected to central sewer within the study area totaled approximately 1,614 lots with over 680 acres of area covered. The number of lots connected to central water was smaller due to the fact that there were some areas and lots already connected to water. Please see the area descriptions below and the attached maps with quantity tables at the end of this report for specific measurements and counts.

These water and sewer projects are anticipated to contribute an additional 376,000 GPD to the LCU's Three Oaks Wastewater Treatment Plant after all lots are connected. More flow will be added when some of the large vacant lots are developed. LCU has confirmed that it can handle the additional capacity.

IV. Area Descriptions

Broadway West & Charing Cross

Broadway West

The area named Broadway West consists of 89.4 acres of single-family residences located on the south side of Broadway Avenue West, just before The Estero Bay Preserve State Park. This area includes the communities of Estero River Heights and Quarterdeck Cove. It is bordered on the south by the Estero River and shares a border with Charing Cross to the east. Broadway West and Charing Cross are separated by an FPL easement approximately one hundred feet wide. There is a large park in the center of the area.

Two streets on the west side of this area (Armada Court and Porthole Court) already have water service, as well as most of the properties that front Broadway Avenue West. The residences on the interior of this area, comprising the majority of lots, do not have water service. There is an eight-inch water main located on the north side of Broadway Avenue West. There is no gravity sewer in this area, but GIS shows an eight-inch force main located on the north side of Broadway Avenue West.

The current layout for this area includes a shared master manhole, pump station, and force main with Charing Cross. Both systems will connect to the existing eight-inch force main. These shared costs have been broken out and prorated based on lots served. The Broadway West's proportion of the shared costs is 80%.

The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Charing Cross

The Charing Cross area consists of 52.1 acres of single-family residences located on the south side of Broadway Avenue West, just after the FPL easement and before the paved road ends. It is bordered on the south by the Estero River, shares a border with Broadway West to the west, and shares a border with Sherrill & Luettich to the east. The average lot size in the area is larger than in either Broadway West or Sherrill & Luettich. The shared pump station for these areas is proposed on a 0.36-acre triangular parcel located along Broadway Ave West, just east of the FPL easement.

The properties that front Broadway Avenue West currently have water service. The residences not located on Broadway Ave. West, which comprise the majority of lots, do not have water service. There is an existing ten-inch water main located on the north side of Broadway Avenue West. There is no gravity sewer in this area, but GIS shows an eight-inch force main located on the north side of Broadway Avenue West.

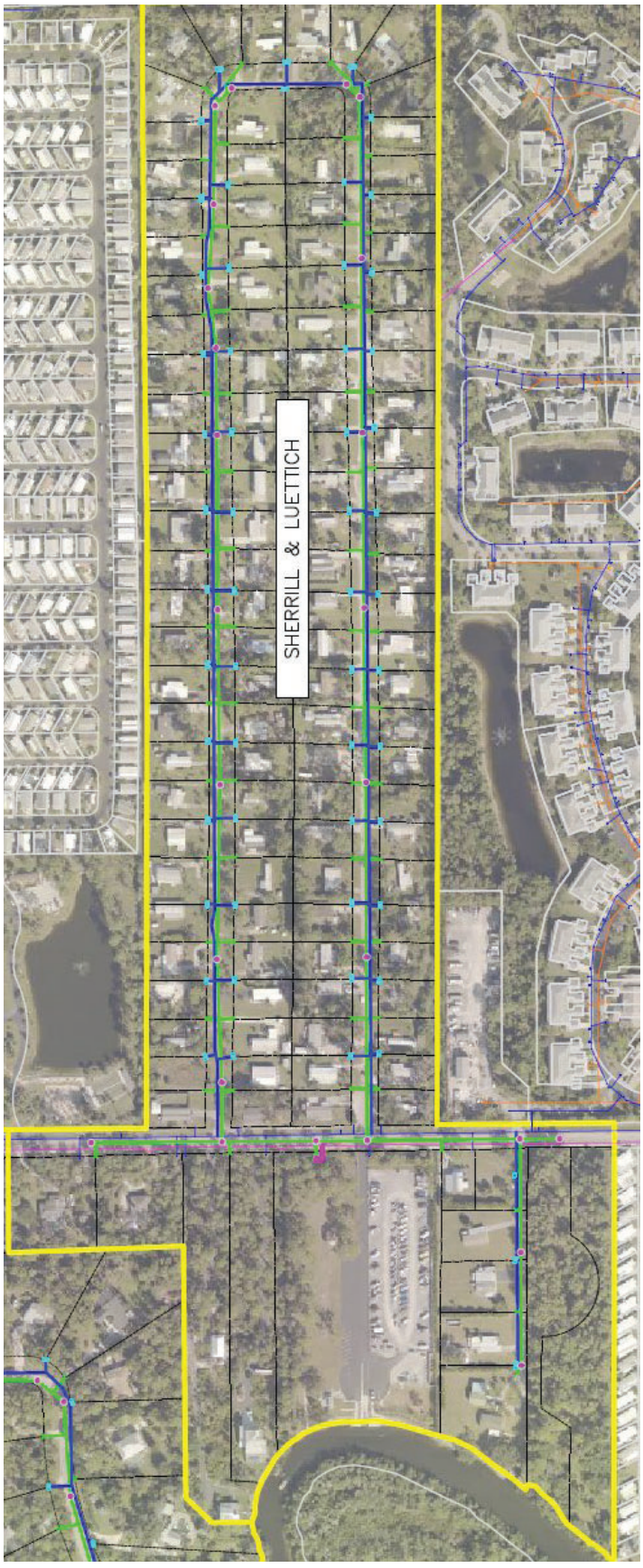
The proposed layout includes a master manhole, pump station, and force main shared with Broadway West that are proposed to connect to the existing eight-inch force main. These shared costs have been broken out and prorated based on lots served. The Charing Cross area's proportion of the shared costs is 20%. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Sherrill & Luettich

The area named Sherrill & Luettich encompasses 39.5- acres of mobile home single family residences located on both sides of Broadway Ave. West. This area is located between the River Woods Plantation and Breckenridge communities. Additional costs are anticipated in this area due to the lack of drainage. Roadway improvements are also anticipated, and the drainage and roadway improvements have been added to the cost.

The properties along Broadway Avenue West already have water service. The residences along Sherrill Lane, Luettich Lane, and Holiday Drive do not have water services, but there is an existing ten-inch water main located on the north side of Broadway Avenue West. There is no gravity sewer in this area, but GIS shows an eight-inch force main located along the south side of Broadway Avenue West.

The proposed location for the pump station serving this area is on the west corner of the boat storage and launch parcel owned by Riverwoods Plantation RV. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.



Estero Bay Village

The Estero Bay Village is 34.3 acres of mobile home residences located on the south side of Broadway Avenue West. It is bordered on the south by the Estero River, the west by Mariners Cove and the land to the east is a preserve owned by Lee County and the State of Florida.

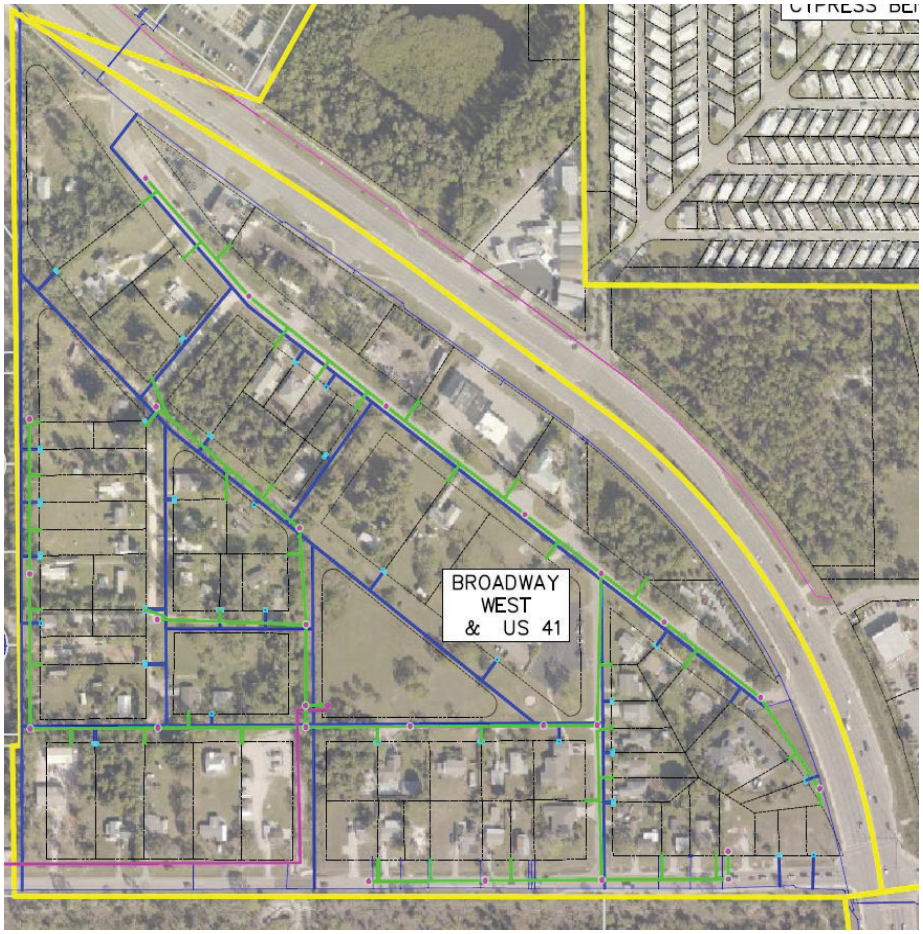
The Estero Bay Village is connected to the central water system, but the sewage is treated at an on-site package wastewater treatment plant. In order to connect this area to central sewer, a pump station and force main will be needed to connect to the existing six-inch force main located on the north side of Broadway Ave. West. A lump sum cost was added to this area's costs to provide for the expense of abandoning or removing the existing on-site package wastewater treatment plant. The cost per lot was based on the number of mobile homes within the community.

A private pump station may be most advantageous for the residents in this area as it is understood to be more cost efficient than a publicly owned pump station on the property. A private pump station is owned, installed, operated, and maintained by the community it is in, while a public pump station is owned, operated, and maintained by LCU. Since LCU would own, operate, and maintain a public pump station, the pump station would have to be designed to meet their standards, which could increase the cost of the pump station and installation. A public utility easement may be required in the property to the east along the proposed route.

The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Broadway West & US 41 and Cypress Bend

Broadway West & US 41



The area named Broadway West & US 41 consists of 58.3 acres of single-family residences with commercial properties along US 41. It is located north west of the Broadway Avenue West and US 41 intersection. Additional costs are anticipated in this area due to the lack of drainage. Roadway improvements are also anticipated, and the drainage and roadway improvements have been added to the cost.

The properties along Broadway Avenue West and US 41 have water services, but the residences on the interior of this area comprising the majority of lots do not have water service. There is an existing ten-inch water main located on the south side of Broadway Avenue West and a twelve-inch water main along the west side on US 41. There is no gravity sewer in this area, but GIS shows an eight-inch force main located approximately 1,575 feet to the west of where the force main from this area would connect.

The current layout includes a potential pump station in the southwest corner of the undeveloped property belonging to the First Baptist Church of Estero. This area contains a mix of residential and commercially zoned property. Multiple lots in the commercial area could be combined and developed as one property. Determining accurate water and sewer demands for the commercial properties is not possible until the uses are determined. For the purposes of this study and the cost analysis, each commercial lot is assumed to pay connection fees equal to one single-family lot.

The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Cypress Bend

The Cypress Bend area contains 39.2 acres of mobile home residences and recreational vehicle pads located on the east side of US 41. It is mostly bordered by undeveloped land and the Seminole Gulf Railway. There are large parcels of land to the south east of Cypress Bend that are owned by the CH Estero Land LP and are part of the Southland Village MPD. These properties will be addressed separately at the time of development.

The Cypress Bend area is connected to the central water system, but the sewage is treated at an on-site package wastewater treatment plant located east of the railroad tracks, just south of Estero Parkway. In order to connect this area to central sewer a pump station, force main, and directional drill under Estero Parkway will be needed to connect to the existing twelve-inch force main located on the north side of Estero Parkway. A lump sum cost was added to this area's costs to provide for the expense of abandoning or removing the existing on-site package wastewater treatment plant.

A private pump station may be most advantageous for the residents in this area as it is understood to be more cost efficient than a publicly owned pump station on the property. A private pump station is owned, installed, operated, and maintained by the community it is in, while a public pump station is owned, operated, and maintained by LCU. Since LCU would own, operate, and maintain a public pump station, the pump station would have to be designed to meet their standards, which could increase the cost of the pump station and installation.

The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Sunny Groves

Sunny Groves is 37.2 acres of mobile home residences and recreational vehicle pads on the west side of US 41. It is bordered on the south by the Estero River and Koreshan State Park, on the north and west by a single-family residence on 26 acres, and on the east by US 41.

Sunny Groves is connected to the central water system, but the sewage is treated at an on-site package wastewater treatment plant. In order to connect this area to central sewer a pump station and force main will be needed to connect to the existing eight-inch force main located at the corner of Corkscrew Road and US 41. A lump sum cost was added to this area's costs to provide for the expense of abandoning or removing the existing on-site package wastewater treatment plant. The cost per lot was based on the number of mobile homes. A stub-out will be constructed to the Koreshan State Park portion, but the onsite connection to the building are the owners' responsibility, and LCU's ownership ends at the property line.

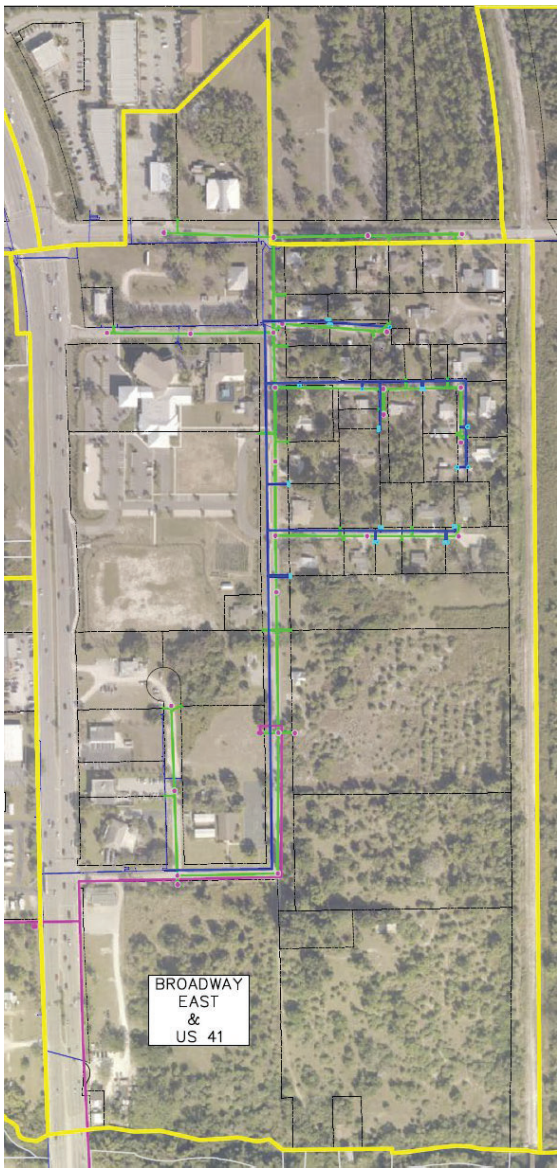
A private pump station may be advantageous in this area as it is understood to be more cost efficient than a publicly owned pump station on the property. A private pump station is owned, installed, operated, and maintained by the community it is in while a public pump station is owned, operated, and maintained by LCU. Since LCU would own, operate, and maintain a public pump station the pump station would be designed to meet their standards which could increase the cost of the pump station and installation. A public utility easement will be required in the property to the south to ensure no demolition in the area.

The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

This area shares a proposed force main with the Broadway East & US 41 area. A single shared force main is required to connect both areas to the existing force main at US 41 and Corkscrew Road. The proposed force main will cross the Estero River. The additional cost for this bridge crossing cost has been include in the shared cost. These shared costs have been broken out and prorated based on lots served. The Sunny Groves' proportion of the shared costs is 79 %.

Broadway East & 41, Sandy Lane & The Groves, and Tanglewood

Broadway East & US 41



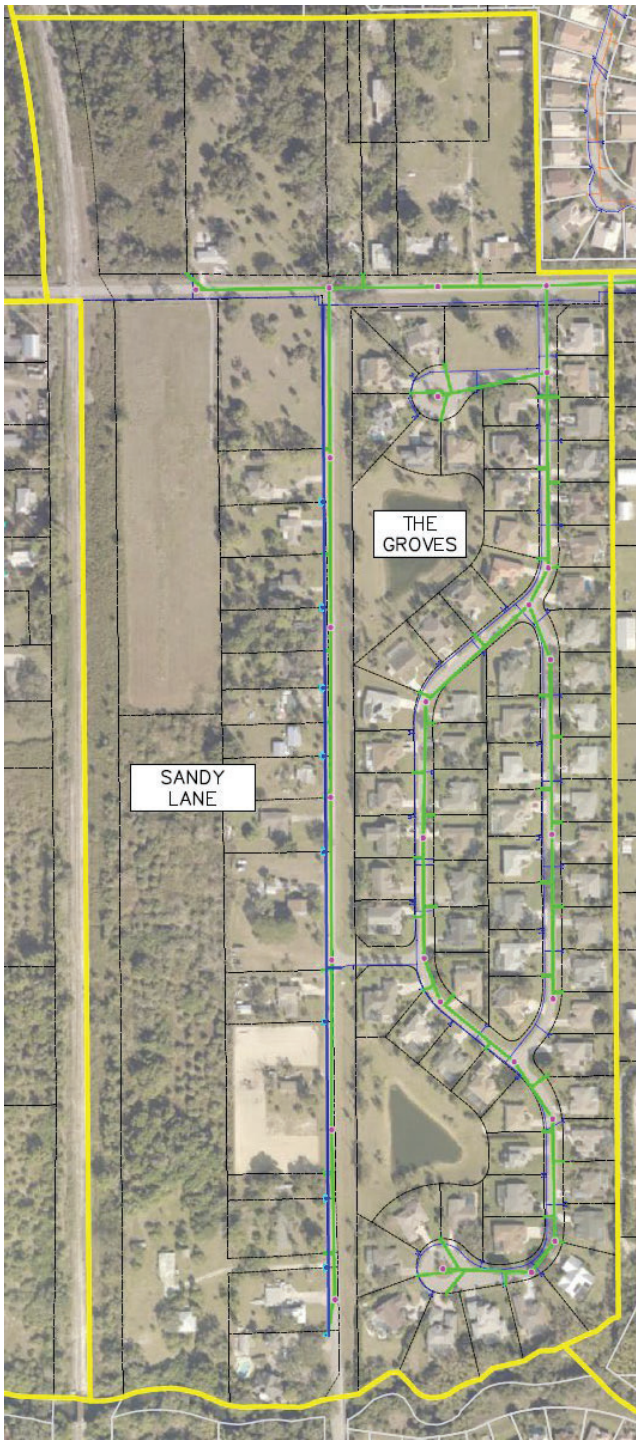
The area named Broadway East & US 41 consists of 87.7 acres of single-family residences with commercial properties located east of US 41. It is located at the intersection of Broadway Avenue East and US 41, mostly on the south side of Broadway Avenue East. It is bordered on the south by the Estero River and to the east by Seminole Gulf Railroad.

The parcels located along Broadway Avenue East and Lord's Way Street are provide water service by and existing ten-inch watermain. There is also a ten-inch water main on Estero Court. The majority of lots in this area do not have water service, but there is a ten-inch water main along the south side of Broadway Avenue East. An eight-inch force main is shown on the GIS located at the corner of at Corkscrew Rd and US 41, and the closest gravity sewer in this area is within the Cascades of Estero community to the east. The proposed pump station for this area is located on the west side Highland's Avenue on the property currently owned by the Village of Estero. This property is also included in the Estero River MPD. This area contains a mix of residential and commercially zoned property. Multiple lots in the commercial area could be combined and developed as one property. It is difficult to determine or predict the water and sewer demands for the commercial properties until the use is known. The purposes of this study and the cost analysis, each commercial lot is assumed to pay connection fees equal to one single-family lot.

The current layout includes a shared a force main with the Sunny Groves area. The shared force main will provide connection to the existing force main located at US 41 and Corkscrew Road. The force main will cross the Estero River. The costs associated with this bridge crossing is included in shared costs. The shared costs have been broken out and prorated based on lots served. The Broadway East proportion of costs is 21 %. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Sandy Lane & The Groves

Sandy Lane & The Groves encompasses 91.3 acres of single-family residences located on both sides of Broadway Avenue East, to the east of the Seminole Gulf Railroad property. The Sandy Lane & The Groves area is bordered on the south by the Estero River and shares a border with the Tanglewood area to the east. Sandy Lane & The Groves are separated from the Broadway East & US 41area by the Seminole Gulf Railroad.



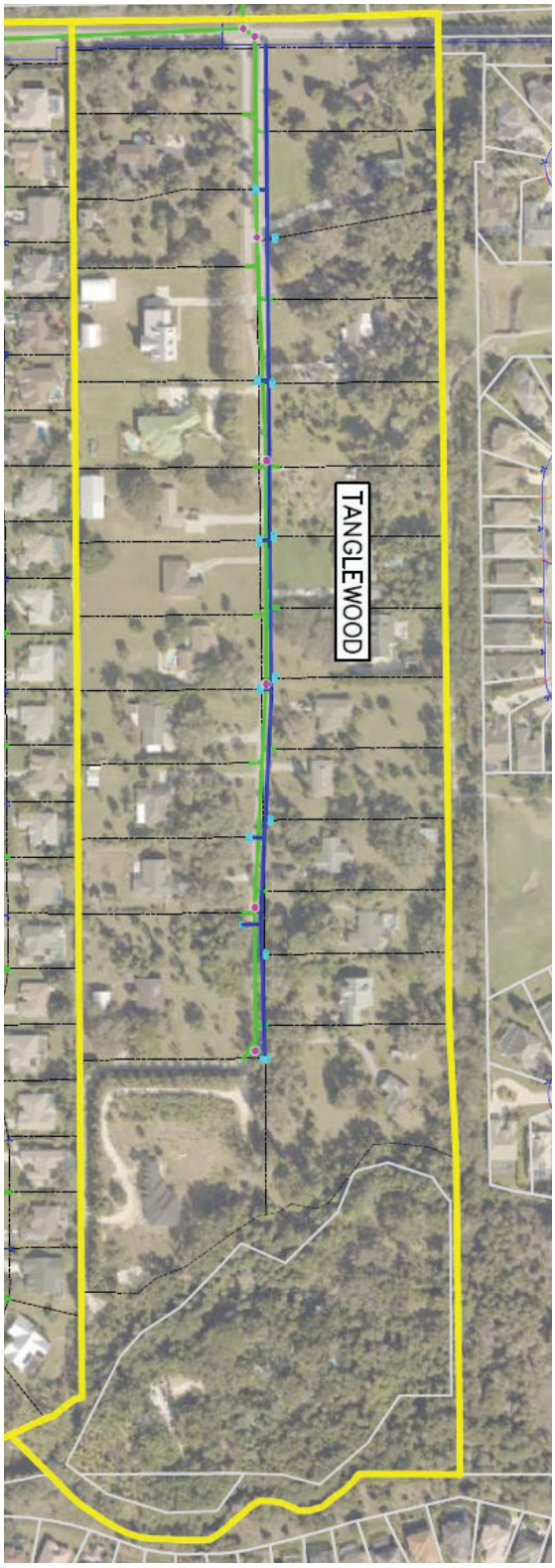
The parcels in The Groves have water service, as well as most of the properties that front Broadway Avenue East. The residences along Sandy Lane do not have water service, but there is a water main located on the north side of Broadway Avenue East. The closest gravity sewer in this area is to the north east within the Cascades of Estero community.

The proposed sewer layout for this area includes a shared master manhole, pump station, and force main with Tanglewood and connects to a proposed pump station located across Broadway Avenue East. The proposed force main out of the proposed pump station would then connect and discharge into a manhole inside the existing gravity sewer system located within the Cascades at Estero community. A shared cost for an upgrade to the existing pumps at Cascades has been applied to both the Sandy Lane & The Groves and Tanglewood areas. These shared costs have been broken out and prorated based on lots served and Sandy Lane & The Groves' proportion of costs is 78%.

The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Tanglewood

The area named Tanglewood consists of 40.9 acres of single-family residences located on the south side of Broadway Avenue East, west of The Groves. It is bordered on the south by the Estero River and to the east by the Village at Country Creek Community.



The residences along Tanglewood Lane do not have water service, but there is a water main located on the north side of Broadway Avenue East. The closest gravity sewer in this area is within the Cascades of Estero community to the north.

The proposed layout for this area shares a master manhole, pump station, and force main with the Sandy Lane & The Groves area and connect to a proposed pump station located on the north side of Broadway Avenue East. The proposed force main out of the proposed pump station would then connect and discharge into a manhole inside the existing gravity sewer system located within the Cascades at Estero community. A shared cost for an upgrade to the existing pumps within The Cascades has been applied to both Tanglewood and the Sandy Lane & The Groves areas. These shared costs have been broken out and prorated based on lots served and Broadway West's proportion of the cost is 22%. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

A large residential parcel at the south end of Tanglewood is surrounded by the Estero River and a service at the end of the road will be provided for this property owner, although it will be their responsibility to provide any directional drilling, pipe extensions, or private pump stations necessary to connect.

Cypress Park & See See

Cypress Park

Cypress Park consists of a 11.3-acre neighborhood of single-family residences, mobile homes, and one motel located on Cypress Park Circle. This area is located on the north side of Corkscrew Road just of the Village at Country Creek.

The residences in this area do not have water service. There is an existing water main located to the east at The Villages of Country Creek entrance. There is no gravity sewer in this area, but GIS indicates there is an existing twelve-inch force main located on the north side of Corkscrew Rd.

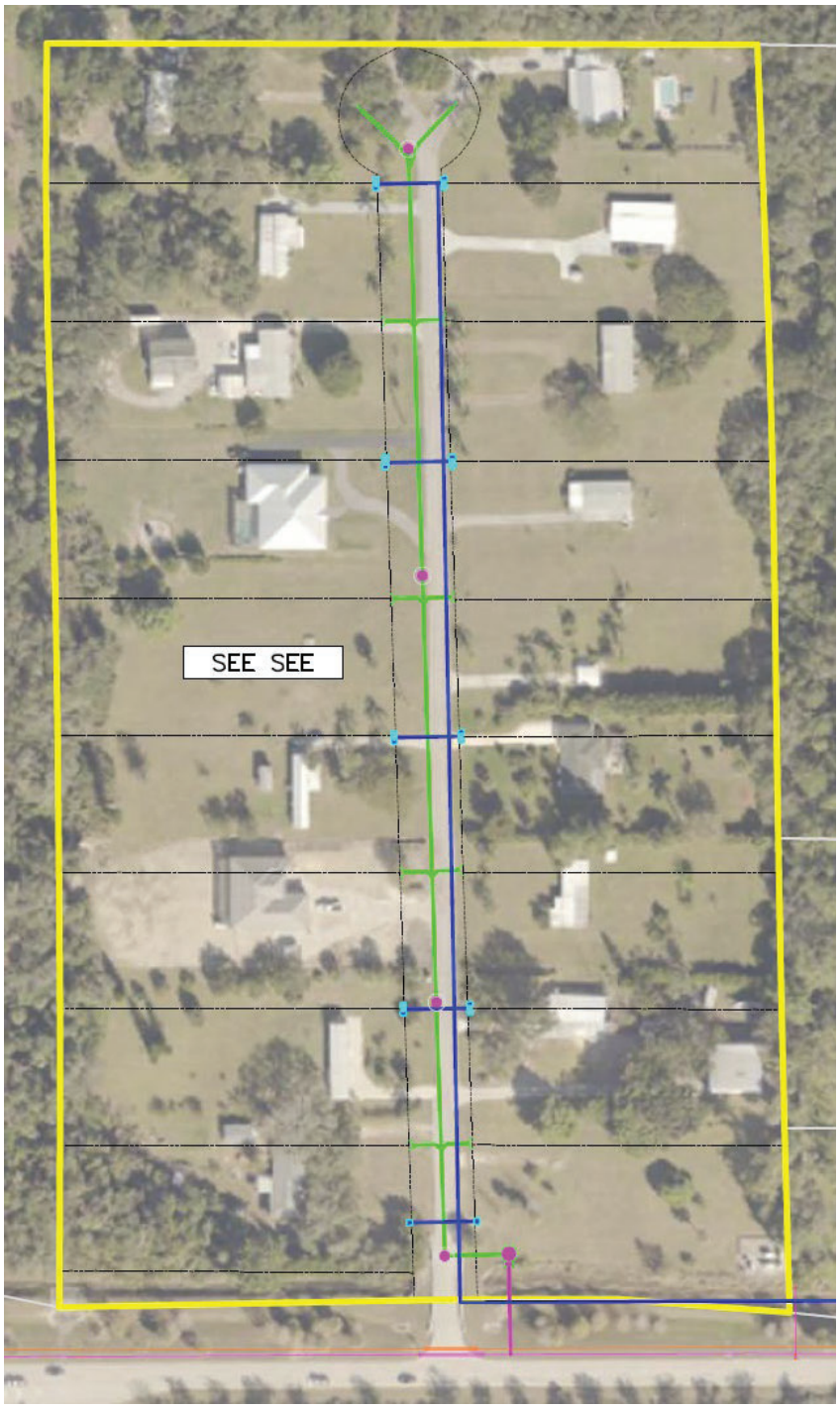
The proposed layout, the lift station is proposed to be located on a 1.46-acre parcel located along Corkscrew Road and owned by JR Properties LLC. Additional costs are anticipated in this area to address current roadway and drainage conditions. Additional costs have been included in the cost estimate. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

This area contains a mix of residential and commercially zoned property. A large commercial parcel to the west of the Cypress Park area is not connected to central sewer and a stub out has been assumed for this property, although it will be their responsibility to provide any extension or private pumps station necessary to connect. It is difficult to determine or predict the water and sewer demands for the commercial properties until the use is determined. For the purposes of this study and the cost analysis, each commercial lot is assumed to pay connection fees equal to one single-family lot.

A large irregularly shaped residential parcel in the northernmost portion of Cypress Park is separated by the Estero River and a service at the end of the road will be provided for this property owner, although it will be their responsibility to provide any extension or private pump station necessary to connect.

See See

See See consists of an 18.3-acre neighborhood of single-family residences and mobile homes. This area is located along See See Street on the north side of Corkscrew Road.

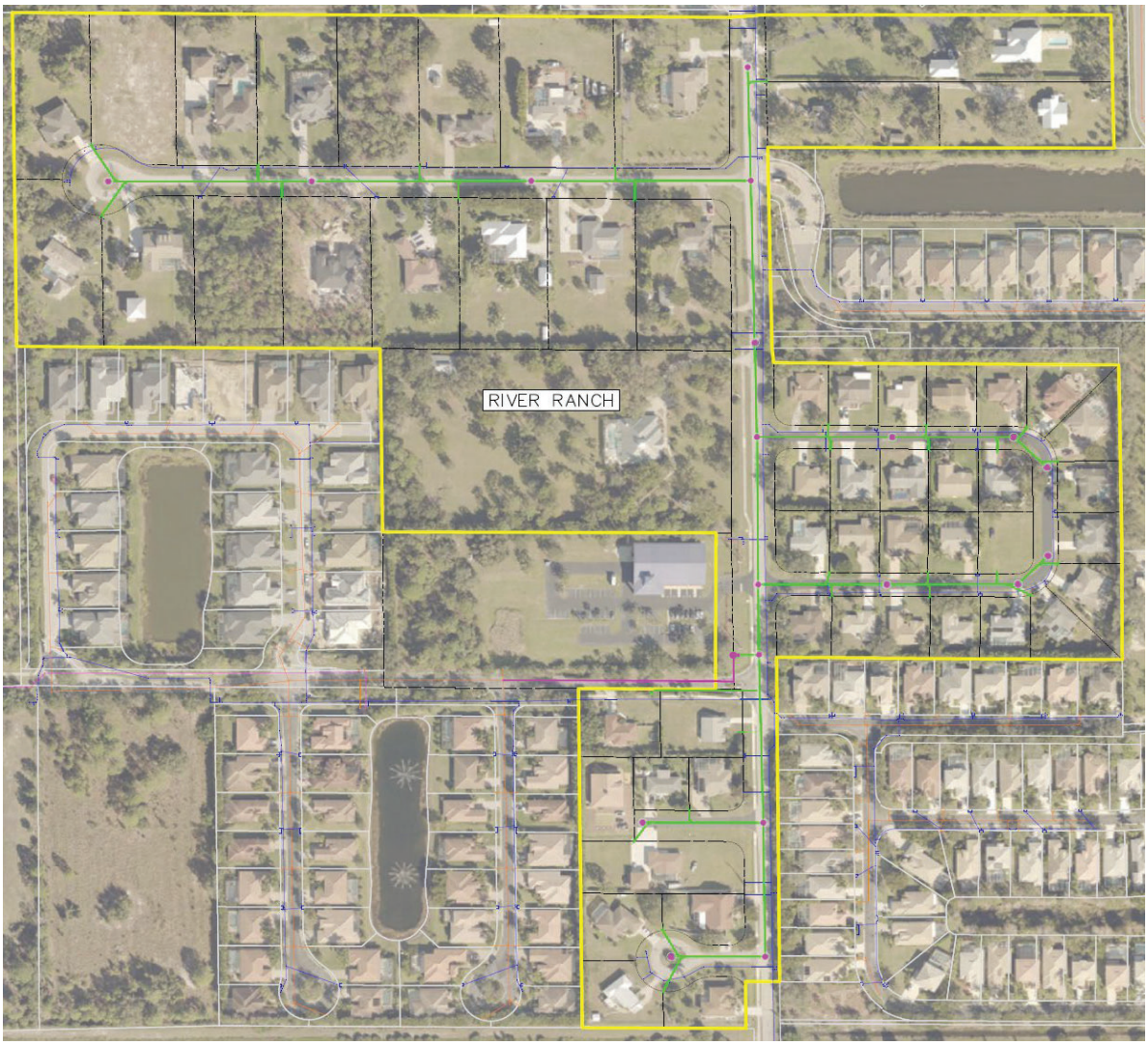


The residences in this area do not have water service, but there is a water main located approximately seven-hundred feet away at a commercial development on the corner of Three Oaks Parkway and Corkscrew Road. The existing pipe is at the exit of this plaza along Corkscrew Rd. There is no gravity sewer in this area, but GIS shows a sixteen-inch force main along the north side of Corkscrew Rd.

The proposed sewer layout includes a pump station on the 0.99-acre undeveloped parcel located along Corkscrew Road. The property is owned by Embarq Florida Inc.

This area contains a mix of residential and commercially zoned property and it is difficult to determine or predict the water and sewer demands for the commercial properties until the use is determined. For the purposes of this study and the cost analysis, each commercial lot is assumed to pay connection fees equal to one single-family lot. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

River Ranch



River Ranch consists of 44.6 acres of single-family residences encompassing three neighborhoods along River Ranch Road, located south of Corkscrew Road.

This area already has water service. There is gravity sewer in the gated communities surrounding the area, and an eight-inch gravity main is shown on the GIS to the west of Spring Ridge Circle along Block Ln. The force main from the proposed pump station would connect and discharge into the gravity sewer system currently servicing the Palms of Estero development to the west of this area on Block Lane.

The proposed pump station for this area is located at the southeast corner of the River of Life Assembly of God property at 21580 River Ranch Road. A cost for an upgrade to the existing receiving system at the Palms of Estero has been included in the project costs. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Estero Springs & Williams West

While both of these areas are within the Bonita Springs Utility (BSU) service area, the closest infrastructure belongs to LCU and the system connections spoken of below will be to the existing LCU systems.

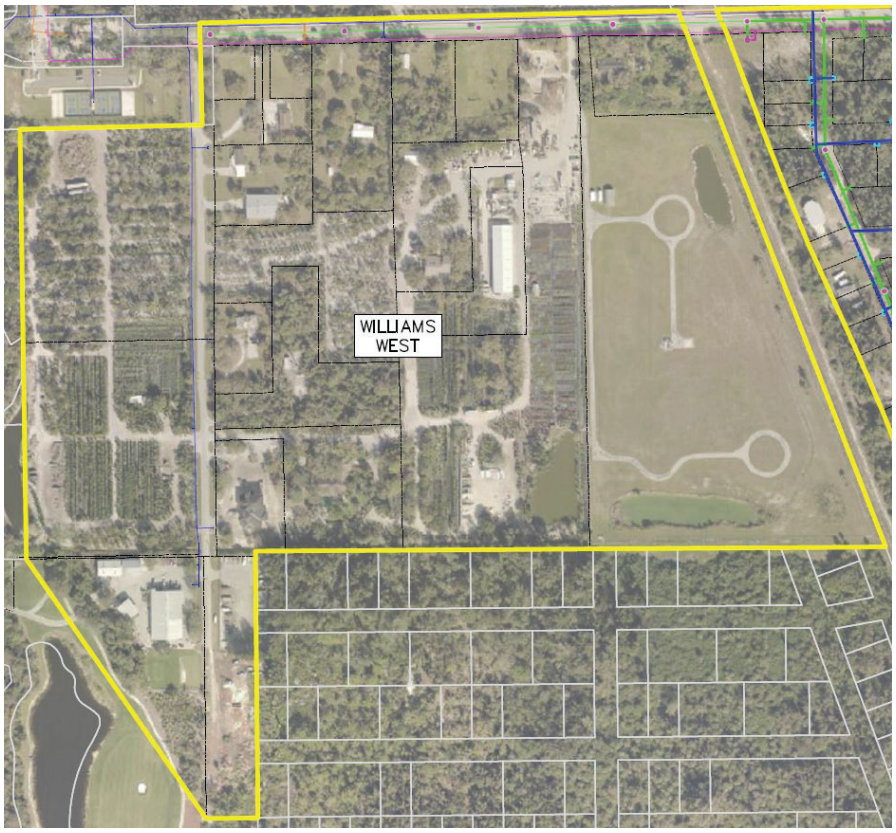
Estero Springs

The area named Estero Springs consists of 38.9 acres of single-family residences located on the south side of Williams Road, west of US 41.

Some of the properties that front Williams Rd already have water service. The residences on the interior of this area comprising the majority of lots do not have water service. There is an existing LCU water main located on the north side of Williams Rd. It is assumed that there is gravity sewer in the gated communities surrounding the area and a twelve-inch force main is shown on the GIS along the south side of Williams Rd.

The proposed sewer layout includes a share a master manhole, pump station, and force main with Williams West. These shared costs have been broken out and prorated based on lots served and Estero Springs' proportion of costs is 80 %. Additional costs are anticipated in this area due to the lack of roadways and drainage. Drainage and roadway improvements have been added to the project costs. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

Williams West



The area named Williams West encompasses of 66.1 acres of single-family residences, commercial properties, and the 14-acre Lee County Mosquito Control parcel. This area is located on the south side of Williams Road, to the west of Estero Springs. It is surrounded by multi-family developments and undeveloped land and separated from Estero Springs by a large FPL easement.

The parcels on Kings Road have water service, as well as some of the properties that front Williams Rd. The residences on the interior of this area comprising the majority of lots do not have water service, but there is a water main located on the north side of Williams Rd. It is assumed that there is gravity sewer in the gated communities surrounding the area and a twelve-inch force main is shown on the GIS along the south side of Williams Rd.

The proposed sewer layout includes shared master manhole, pump station, and force main with Estero Springs. These shared costs have been broken out and prorated based on lots served and Williams West's proportion of costs is 20 %. Several of the parcels are owned by the same entities. The roadways in this area are still unpaved and the area may be developed sometime in the future. For this reason, water and sewer improvements down the dirt roadways is not recommended. Gravity sewer will extend the length of the Williams Road with opportunities for future connections. The onsite connection to the home or building will be the property owners' responsibility. This would include abandoning septic tanks and installing water and sewer service lines for the LCU improvements to the home or business. LCU's ownership will end at the property/right of way line. These private costs are not included in the cost estimates as they will vary from lot to lot.

While the area to the south is undeveloped it has already been platted into individual lots owned by multiple entities and future services will be needed when it develops. Currently there is no official access to these parcels, no roadways, and no infrastructure. It would be beneficial to start examining the utility possibilities before the roadways and drainage are placed to avoid having to demolish and restore.

V. Results

Sewer

The gravity sewer for these projects incorporates 8" PVC piping at different depths, 4' and 6' manholes, and pump stations. The study includes a total of 58,645 linear feet of 8" PVC pipe, 223 manholes, and 9 new lift stations to connect the areas that are currently serviced by septic tanks. Force mains are required to connect the pump stations to the receiving systems and in some cases these force mains are shared by multiple areas. The anticipated amount of force mains to connect the gravity sewer to the system is 5,770 linear feet.

The developments with package wastewater treatment plants require only 4" or 6" PVC pipe force mains and pump stations. The study includes 4,705 LF of 4" or 6" PVC force main and 3 new pump stations. Directional drilling will be necessary for some of the project areas. The study proposes new mains under US 41 and Estero Pkwy.

Water

There are many areas that are not currently connected to central water and it has been shown to be cost effective to install both water and sewer at the same time. This allows for a sharing of the costs accrued by mobilization, maintenance of traffic (MOT), and restoration and decreases the amount of time residents are inconvenienced by construction. The approximate length of water main required to connect the areas not currently on central water is 38,250 linear feet.

Cost

The preliminary estimated cost of each area was calculated. The estimated costs range from approximately $467,000 to $6,300,000 per area. The total estimate for all areas is approximately $40,553,000. These costs do not include impact fees for LCU as they will vary per lot, please see table.

LCU Impact Fees		
Connection Fees		
Residential	*Water*	*Sewer*
Single Family	$2,440.00	$2,660.00
Multi-family per Unit (Includes Mobile Homes)	$1,952.00	$2,128.00
Recreational Vehicles	$976.00	$1,064.00
Commercial		
Costs Based on per GPD (Minimum 250 GPD)	$9.76	$10.64
Meter Fees		
Residential		
Costs Based on Meter Size (Drop Fee and Tap Fee Applicable)		
Commercial		
Meter Size	*Drop Fee*	*Tap Fee*
5/8 in	$260.00	$1,025.00
1 in	$325.00	$1,090.00
1.5 in	$525.00	$1,650.00
2 in	$595.00	$1,800.00
3-10 in	Actual Cost	Actual Cost

List of Costs	
Area	*Area Cost*
Broadway West	$ 6,302,854.00
Charing Cross	$ 2,421,761.00
Sherrill & Luettich	$ 5,064,777.00
Estero Bay Village	$ 588,288.00
Broadway West & US 41	$ 5,724,597.00
Cypress Bend	$ 466,637.00
Sunny Groves	$ 700,630.00
Broadway East & US 41	$ 3,465,153.00
Sandy Lane & The Groves	$ 4,195,468.00
Tanglewood	$ 1,214,924.00
Cypress Park	$ 1,814,334.00
See See	$ 1,062,585.00
River Ranch	$ 2,360,720.00
Estero Springs	$ 5,069,862.00
Williams West	$ 711,339.00

VI. Limitations of Study

- Hydraulic modeling using the WaterCAD program will be performed to size the force mains in the study area.
- Additional improvements outside the study limits maybe be required to accommodate additional flows. This could include larger force mains and/or larger pumps. Additional modeling will be required to better understand those additional improvements.
- Sewer layouts are preliminary. As detailed designs are prepared, revised layouts and additional pump stations should be considered to determine if they could reduce overall costs.
- Non-quantitative aspects such as average age of septic tanks (regulation change in 1983 increased separation from water table and setback from surface water), proximity of development to surface water, and probable nitrogen loading rates based on population can be used to help narrow down priority areas.
- Background water samples can help when applying for grants to establish background concentration. If background concentrations are not known, additional sampling is recommended.
- Public education is crucial to any Septic to Sewer project. Public meetings are recommended throughout the planning and design process.
- Cost estimates from OPCs are preliminary. They should be updated as the designs are refined.

VII. Exhibits

1. *Estero Water and Sewer Extension Maps*
2. *Broadway West & Charing Cross Sewer Layout and OPCs*
3. *Sherrill & Luettich Sewer Layout and OPC*
4. *Estero Bay Village Sewer Layout and OPC*
5. *Broadway West & US 41 and Cypress Bend Sewer Layout and OPCs*
6. *Sunny Groves Sewer Layout and OPC*
7. *Broadway East & US 41, Sandy Lane & The Groves, and Tanglewood Sewer Layout and OPCs*
8. *Cypress Park & See See Sewer Layout and OPCs*
9. *River Ranch Sewer Layout and OPC*
10. *Estero Springs & Williams West Sewer Layout and OPCs*

9401 CORKSCREW PALMS CIRCLE
ESTERO,FL 33928
P: 239.221.5035
http://estero-fl.gov

NOTES:

1. 2019 AERIAL IMAGES FROM LEE COUNTY
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE FLORIDA WEST FIPS 0902 FEET

ESTERO WATER AND SEWER EXPANSION

VILLAGE OF ESTERO

The Village of ESTERO

9401 CORKSCREW PALMS CIRCLE
ESTERO,FL 33928
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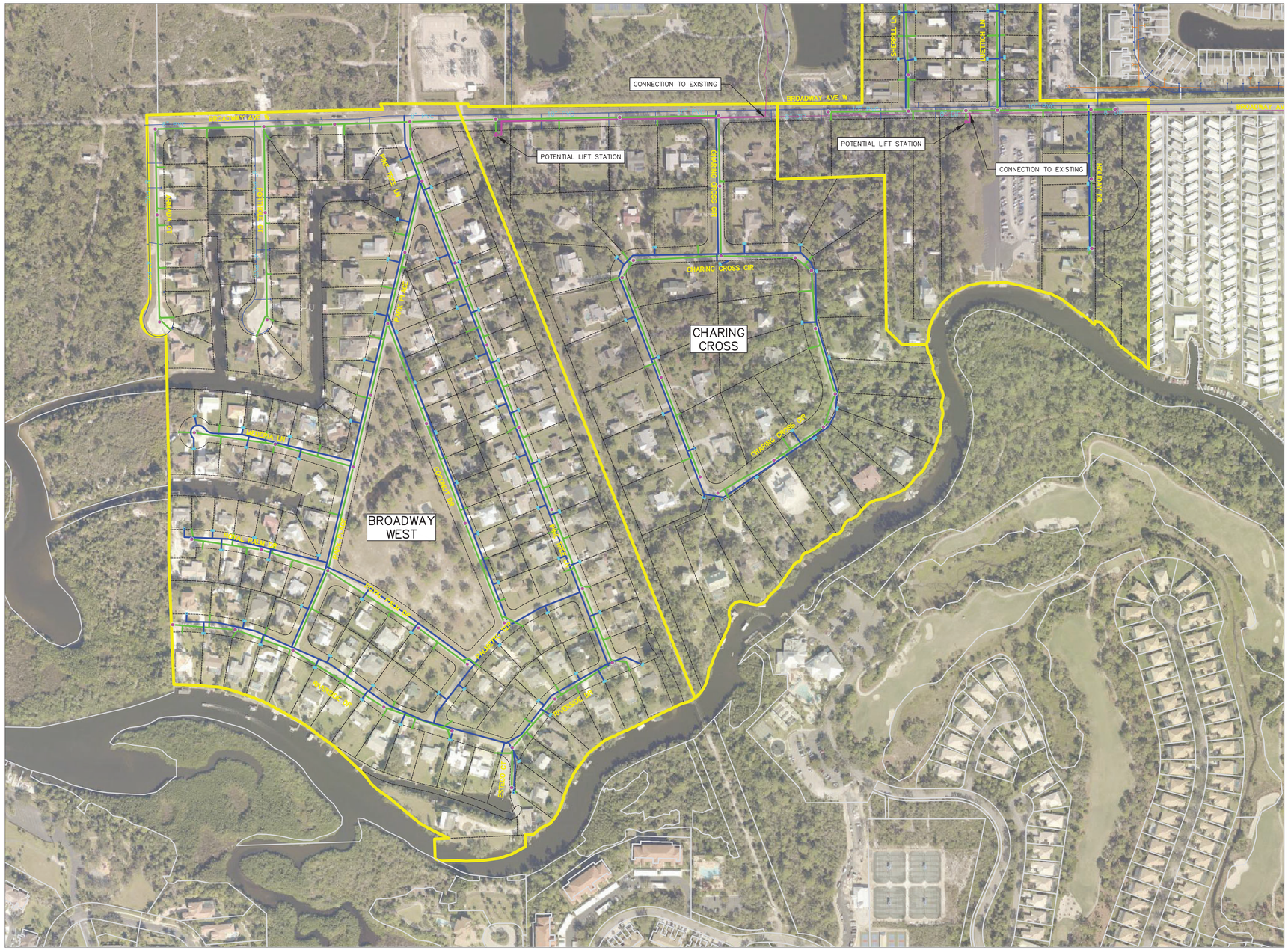
NOTES:

1. 2019 AERIAL IMAGES FROM LEE COUNTY
2. COORDINATE SYSTEM: NAD 1983 STATE PLANE FLORIDA WEST FIPS 0902 FEET

ESTERO WATER AND SEWER EXPANSION

VILLAGE OF ESTERO



GRAPHIC SCALE 1"= 200'
(SCALE SET FOR 24x36)

BROADWAY WEST SUMMARY	
AREA COVERED	89.4 AC
LOTS INCLUDED	157
8" GRAVITY SEWER LENGTH	10,645 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	9,620 FT
NUMBER OF MANHOLES	38
NUMBER OF LIFT STATIONS	SHARED
APPROXIMATE COST	$6,302,854.00

CHARING CROSS SUMMARY	
AREA COVERED	51.2 AC
LOTS INCLUDED	40
8" GRAVITY SEWER LENGTH	4,035 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	3,165 FT
NUMBER OF MANHOLES	16
NUMBER OF LIFT STATIONS	SHARED
APPROXIMATE COST	$2,421,761.00

KEY	
—	EXISTING FORCE MAIN
—	EXISTING WATER MAIN
—	EXISTING GRAVITY SEWER
—	PROPOSED GRAVITY SEWER
—	PROPOSED FORCE MAIN
—	PROPOSED 8" WATER MIAN
●	PROPOSED LIFT STATION
●	PROPOSED MANHOLE

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AREA
BROADWAY WEST & CHARING CROSS
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=200'	

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - Broadway West

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	10,645	LF	$100.00	$1,064,500.00
2	Right of Way Reconstruction (Water)	9,620	LF	$50.00	$481,000.00
3	Survey	10,645	LF	$15.00	$159,675.00
4	Dewatering	10,645	LF	$80.00	$851,600.00
					$2,556,775.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	9,620	LF	$35.00	$336,700.00
2	Water Service	157	EA	$700.00	$109,900.00
3	Fire Hydrant (Complete Assembly)	20	EA	$4,465.00	$89,300.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$538,900.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	1,750	LF	$30.00	$52,500.00
2	8" PVC Sanitary Sewer (6-8' Cut)	4,065	LF	$40.00	$162,600.00
3	8" PVC Sanitary Sewer (8-10' Cut)	2,305	LF	$50.00	$115,250.00
4	8" PVC Sanitary Sewer (10-12' Cut)	1,385	LF	$60.00	$83,100.00
5	8" PVC Sanitary Sewer (12-14' Cut)	930	LF	$80.00	$74,400.00
6	8" PVC Sanitary Sewer (>14' Cut)	210	LF	$100.00	$21,000.00
7	Manhole 4' Diameter (0-6')	12	EA	$5,000.00	$60,000.00
8	Manhole 4' Diameter (6-8')	9	EA	$5,600.00	$50,400.00
9	Manhole 4' Diameter (8-10')	5	EA	$8,500.00	$42,500.00
10	Manhole 4' Diameter (10-12')	4	EA	$9,100.00	$36,400.00
11	Manhole 4' Diameter (12-14')	2	EA	$9,600.00	$19,200.00
12	Manhole 4' Diameter (>14')	6	EA	$10,000.00	$60,000.00
13	Sewer Service	157	EA	$1,200.00	$188,400.00
					$965,750.00
D.	**SHARED INFRASTRUCTURE COSTS**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	1050	LF	$40.00	$42,000.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
3	Master Manhole 6' Diameter (>14)	1	EA	$15,000.00	$15,000.00
					$261,000.00
	80% Pro-Rated by Lots				**$208,800.00**
				Sub Total	**$4,270,225.00**
E.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$341,618.00
2	Mobilization 10% OF TOTAL	1	LS		$427,023.00
3	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$213,512.00
4	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$213,512.00
					$982,153.00
				Sub-Total	**$5,252,378.00**
F.	**20% Contingency**				**$1,050,476.00**
				TOTAL	**$6,302,854.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

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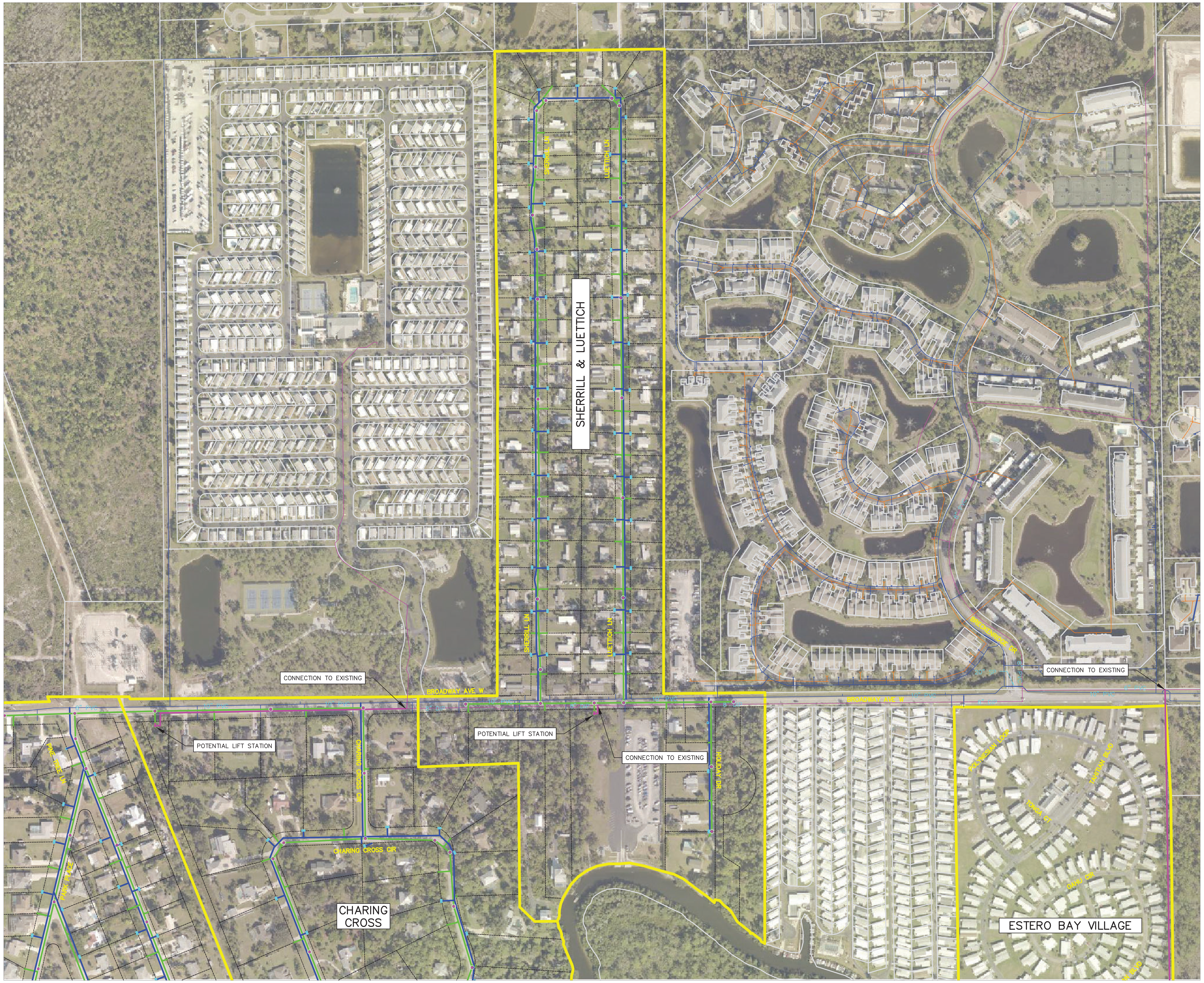
PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Charing Cross Circle

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	4,035	LF	$100.00	$403,500.00
2	Right of Way Reconstruction (Water)	3,165	LF	$50.00	$158,250.00
3	Survey	4,035	LF	$15.00	$60,525.00
4	Dewatering	4,035	LF	$80.00	$322,800.00
					$945,075.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	3,165	LF	$35.00	$110,775.00
2	Water Service	40	EA	$700.00	$28,000.00
3	Fire Hydrant (Complete Assembly)	7	EA	$4,465.00	$31,255.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$173,030.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	432	LF	$30.00	$12,960.00
2	8" PVC Sanitary Sewer (6-8' Cut)	900	LF	$40.00	$36,000.00
3	8" PVC Sanitary Sewer (8-10' Cut)	870	LF	$50.00	$43,500.00
4	8" PVC Sanitary Sewer (10-12' Cut)	535	LF	$60.00	$32,100.00
5	8" PVC Sanitary Sewer (12-14' Cut)	445	LF	$80.00	$35,600.00
6	8" PVC Sanitary Sewer (>14' Cut)	850	LF	$100.00	$85,000.00
7	Manhole 4' Diameter (0-6')	2	EA	$5,000.00	$10,000.00
8	Manhole 4' Diameter (6-8')	4	EA	$5,600.00	$22,400.00
9	Manhole 4' Diameter (8-10')	5	EA	$8,500.00	$42,500.00
10	Manhole 4' Diameter (10-12')	1	EA	$9,100.00	$9,100.00
11	Manhole 4' Diameter (12-14')	2	EA	$9,600.00	$19,200.00
12	Manhole 4' Diameter (>14')	1	EA	$10,000.00	$10,000.00
13	Sewer Service	40	EA	$1,200.00	$48,000.00
					$406,360.00
D.	**SHARED INFRASTRUCTURE COSTS**				
1	Lift Station	1.0	EA	$200,000.00	$200,000.00
2	PVC Force Main	1,050	LF	$40.00	$42,000.00
3	Connect to Existing	1.0	EA	$4,000.00	$4,000.00
3	Master Manhole 6' Diameter (>14)	1.0	EA	$15,000.00	$15,000.00
					$261,000.00
	20% Pro-Rated by Lots				**$52,200.00**
				Sub Total	**$1,576,665.00**
E.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$126,134.00
2	Mobilization 10% OF TOTAL	1	LS		$157,667.00
3	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$78,834.00
4	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$78,834.00
					$441,469.00
				Sub-Total	**$2,018,134.00**
F.	**20% Contingency**				**$403,627.00**
				TOTAL	**$2,421,761.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.



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0 200' 400' 600'
GRAPHIC SCALE 1"= 200'
(SCALE SET FOR 24x36)

SHERRILL AND LUETTICH SUMMARY	
AREA COVERED	39.5 AC
LOTS INCLUDED	125.0
8" GRAVITY SEWER LENGTH	6,505 FT
FORCE MAIN LENGTH	35 FT
8" WATER MAIN LENGTH	5,680 FT
NUMBER OF MANHOLES	25.0
NUMBER OF LIFT STATIONS	1.0
APPROXIMATE COST	$5,064,777.00

KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

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AREA
SHERRILL & LUETTICH
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=200'	

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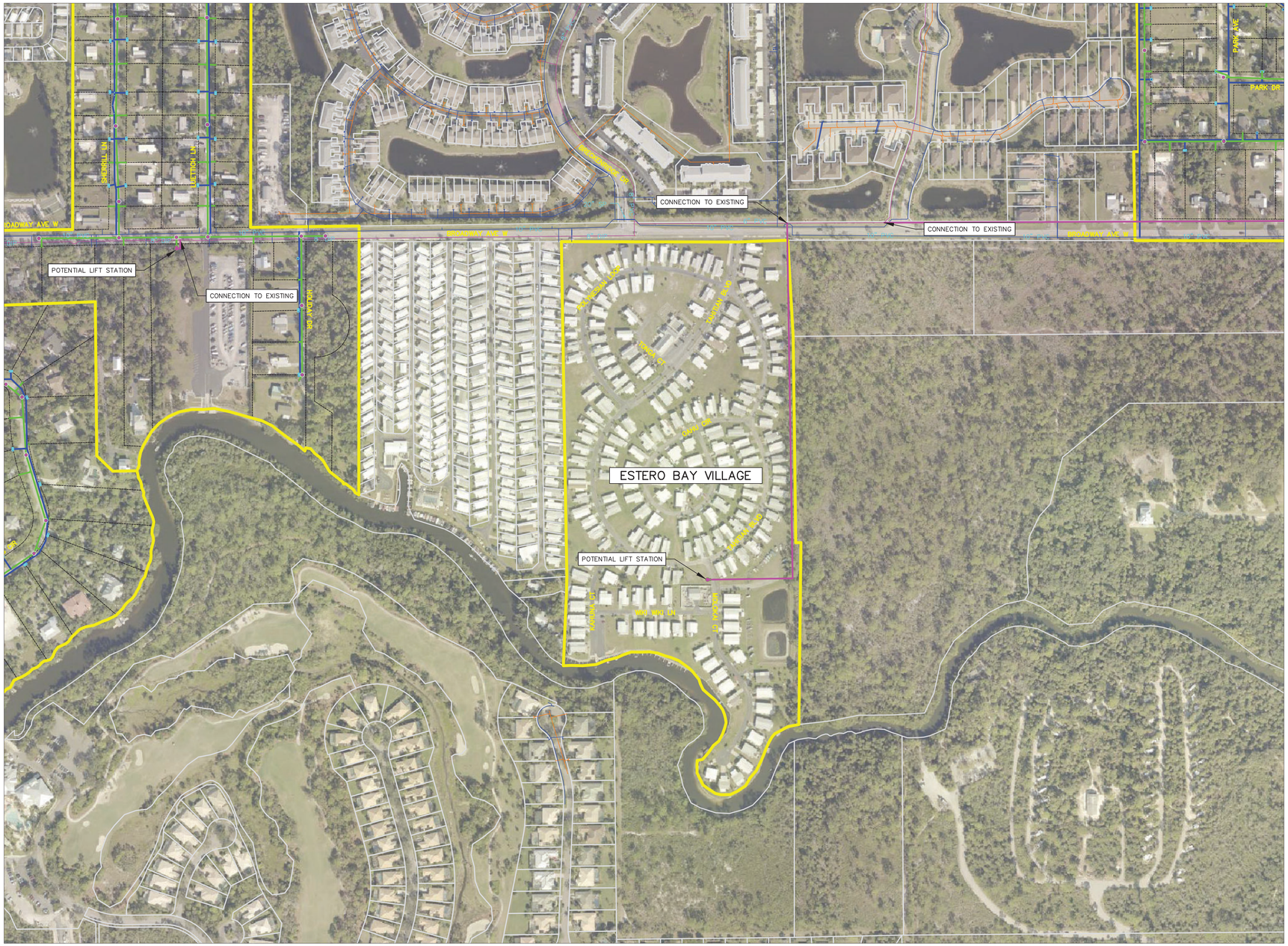
PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - Sherrill & Luettich

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	6,505	LF	$100.00	$650,500.00
2	Road & Drainage Improvements	6,505	LF	$75.00	$487,875.00
3	Right of Way Reconstruction (Water)	5,680	LF	$50.00	$284,000.00
4	Survey	6,505	LF	$15.00	$97,575.00
5	Dewatering	6,505	LF	$80.00	$520,400.00
					$2,040,350.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	5,680	LF	$35.00	$198,800.00
2	Water Service	125	EA	$700.00	$87,500.00
3	Fire Hydrant (Complete Assembly)	12	EA	$4,465.00	$53,580.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$342,880.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	885	LF	$30.00	$26,550.00
2	8" PVC Sanitary Sewer (6-8' Cut)	1,650	LF	$40.00	$66,000.00
3	8" PVC Sanitary Sewer (8-10' Cut)	1,150	LF	$50.00	$57,500.00
4	8" PVC Sanitary Sewer (10-12' Cut)	875	LF	$60.00	$52,500.00
5	8" PVC Sanitary Sewer (12-14' Cut)	975	LF	$80.00	$78,000.00
6	8" PVC Sanitary Sewer (>14' Cut)	970	LF	$100.00	$97,000.00
6	Manhole 4' Diameter (0-6')	7	EA	$5,000.00	$35,000.00
7	Manhole 4' Diameter (6-8')	6	EA	$5,600.00	$33,600.00
8	Manhole 4' Diameter (8-10')	2	EA	$8,500.00	$17,000.00
9	Manhole 4' Diameter (10-12')	4	EA	$9,100.00	$36,400.00
10	Manhole 4' Diameter (12-14')	2	EA	$9,600.00	$19,200.00
11	Manhole 4' Diameter (>14')	4	EA	$10,000.00	$40,000.00
12	Lift Station	1	EA	$200,000.00	$200,000.00
13	PVC Force Main	35	LF	$40.00	$1,400.00
14	Connect to Existing	1	LF	$4,000.00	$4,000.00
15	Sewer Service	125	EA	$1,200.00	$150,000.00
					$914,150.00
				Sub-Total	**$3,297,380.00**
D.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$263,791.00
3	Mobilization 10% OF TOTAL	1	LS		$329,738.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$164,869.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$164,869.00
					$923,267.00
				Sub-Total	**$4,220,647.00**
E.	**20% Contingency**				**$844,130.00**
				TOTAL	**$5,064,777.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.



GRAPHIC SCALE 1"= 200'
(SCALE SET FOR 24x36)

ESTERO BAY VILLAGE SUMMARY	
AREA COVERED	34.3 AC
LOTS INCLUDED	204
8" GRAVITY SEWER LENGTH	0 FT
FORCE MAIN LENGTH	1,650 FT
8" WATER MAIN LENGTH	0 FT
NUMBER OF MANHOLES	0
NUMBER OF LIFT STATIONS	1
APPROXIMATE COST	$588,288.00

KEY	
—	EXISTING FORCE MAIN
—	EXISTING WATER MAIN
—	EXISTING GRAVITY SEWER
—	PROPOSED GRAVITY SEWER
—	PROPOSED FORCE MAIN
—	PROPOSED 8" WATER MIAN
●	PROPOSED LIFT STATION
●	PROPOSED MANHOLE

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AREA
ESTERO BAY VILLAGE
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09–27–2019		8198U		RJV		1"=200'	

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study- Estero Bay Village

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Restoration	1,600	LF	$10.00	$16,000.00
2	Abandoment/Removal of Existing Treatment System	1	LS	$50,000.00	$50,000.00
3	Survey	1,600	LF	$15.00	$24,000.00
4	Dewatering	1	LS	$20,000.00	$20,000.00
					$110,000.00
B.	**SANITARY SEWER CONSTRUCTION**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	1,600	LF	$40.00	$64,000.00
3	Directional Drill	50	LF	$100.00	$5,000.00
4	Connect to Existing	1	EA	$4,000.00	$4,000.00
					$273,000.00
				Sub Total	**$383,000.00**
C.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$30,640.00
3	Mobilization 10% OF TOTAL	1	LS		$38,300.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$19,150.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$19,150.00
					$107,240.00
				Sub-Total	**$490,240.00**
D.	**20% Contingency**				**$98,048.00**
				TOTAL	**$588,288.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

N

0 200' 400' 600'
GRAPHIC SCALE 1"= 200'
(SCALE SET FOR 24x36)

BROADWAY WEST & US 41 SUMMARY	
AREA COVERED	58.3 AC
LOTS INCLUDED	77
8" GRAVITY SEWER LENGTH	6,835 FT
FORCE MAIN LENGTH	2,010 FT
8" WATER MAIN	9,920 FT
NUMBER OF MANHOLES	26.0
NUMBER OF LIFT STATIONS	1.0
APPROXIMATE COST	$5,724,597.00

CYPRESS BEND SUMMARY	
AREA COVERED	39.2 AC
LOTS INCLUDED	411
8" GRAVITY SEWER LENGTH	0 FT
FORCE MAIN LENGTH	340 FT
8" WATER MAIN LENGTH	0 FT
NUMBER OF MANHOLES	0.0
NUMBER OF LIFT STATIONS	1.0
APPROXIMATE COST	$466,637.00

KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

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AREA
BROADWAY WEST & US 41, CYPRESS BEND
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=200'	

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - Broadway West & US 41

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	6,835	LF	$100.00	$683,500.00
2	Road & Drainage Improvements	6,835	LF	$75.00	$512,625.00
3	Right of Way Reconstruction (Water)	9,920	LF	$50.00	$496,000.00
4	Survey	6,835	LF	$15.00	$102,525.00
5	Dewatering	6,835	LF	$80.00	$546,800.00
				Sub Total	**$2,341,450.00**
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	9,920	LF	$35.00	$347,200.00
2	Water Service	77	EA	$700.00	$53,900.00
3	Fire Hydrant (Complete Assembly)	20	EA	$4,465.00	$89,300.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
				Sub Total	**$493,400.00**
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	945	LF	$30.00	$28,350.00
2	8" PVC Sanitary Sewer (6-8' Cut)	2,835	LF	$40.00	$113,400.00
3	8" PVC Sanitary Sewer (8-10' Cut)	1,565	LF	$50.00	$78,250.00
4	8" PVC Sanitary Sewer (10-12' Cut)	560	LF	$60.00	$33,600.00
5	8" PVC Sanitary Sewer (12-14' Cut)	450	LF	$80.00	$36,000.00
6	8" PVC Sanitary Sewer (>14' Cut)	480	LF	$100.00	$48,000.00
7	Manhole 4' Diameter (0-6')	7	EA	$5,000.00	$35,000.00
8	Manhole 4' Diameter (6-8')	9	EA	$5,600.00	$50,400.00
9	Manhole 4' Diameter (8-10')	4	EA	$8,500.00	$34,000.00
10	Manhole 4' Diameter (10-12')	1	EA	$9,100.00	$9,100.00
11	Manhole 4' Diameter (12-14')	2	EA	$9,600.00	$19,200.00
12	Manhole 4' Diameter (>14')	3	EA	$10,000.00	$30,000.00
13	Lift Station	1	EA	$200,000.00	$200,000.00
14	PVC Force Main	2,010	LF	$40.00	$80,400.00
15	Connect to Existing	1	EA	$4,000.00	$4,000.00
16	Sewer Service	77	EA	$1,200.00	$92,400.00
					$892,100.00
				Sub Total	**$3,726,950.00**
D.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$298,156.00
3	Mobilization 10% OF TOTAL	1	LS		$372,695.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$186,348.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$186,348.00
					$1,043,547.00
				Sub-Total	**$4,770,497.00**
E.	**20% Contingency**				**$954,100.00**
				TOTAL	**$5,724,597.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Cypress Bend

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Restoration	340	LF	$15.00	$5,100.00
2	Abandoment/Removal of Existing Treatment System	1	LS	$50,000.00	$50,000.00
3	Survey	340	LF	$15.00	$5,100.00
4	Dewatering	1	LS	$20,000.00	$20,000.00
					$80,200.00
B.	**SANITARY SEWER CONSTRUCTION**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	240	LF	$40.00	$9,600.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
4	Directional Drill	100	LF	$100.00	$10,000.00
					$223,600.00
				Sub Total	**$303,800.00**
C.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$24,304.00
3	Mobilization 10% OF TOTAL	1	LS		$30,380.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$15,190.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$15,190.00
					$85,064.00
				Sub-Total	**$388,864.00**
D.	**20% Contingency**				**$77,773.00**
				TOTAL	**$466,637.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

N

0 100' 200' 300'

GRAPHIC SCALE 1" = 100'

(SCALE SET FOR 24x36)

SUNNY GROVES SUMMARY	
AREA COVERED	37.2 AC
LOTS INCLUDED	205.0
8" GRAVITY SEWER LENGTH	0 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN	0 FT
NUMBER OF MANHOLES	0.0
NUMBER OF LIFT STATIONS	1.0
APPROXIMATE COST	$700,630.00

NOTE:
THIS AREA PROPOSES TO CONNECT TO A PROPOSED PARALLEL FORCEMAIN ALONG US 41. TIMING OF CONSTRUCTION MAY REQUIRE SUNNY GROVES TO CONSTRUCT THE FORCEMAIN EXTENSION TO CORKSCREW ROAD.

KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

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AREA
SUNNY GROVES
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=100'	

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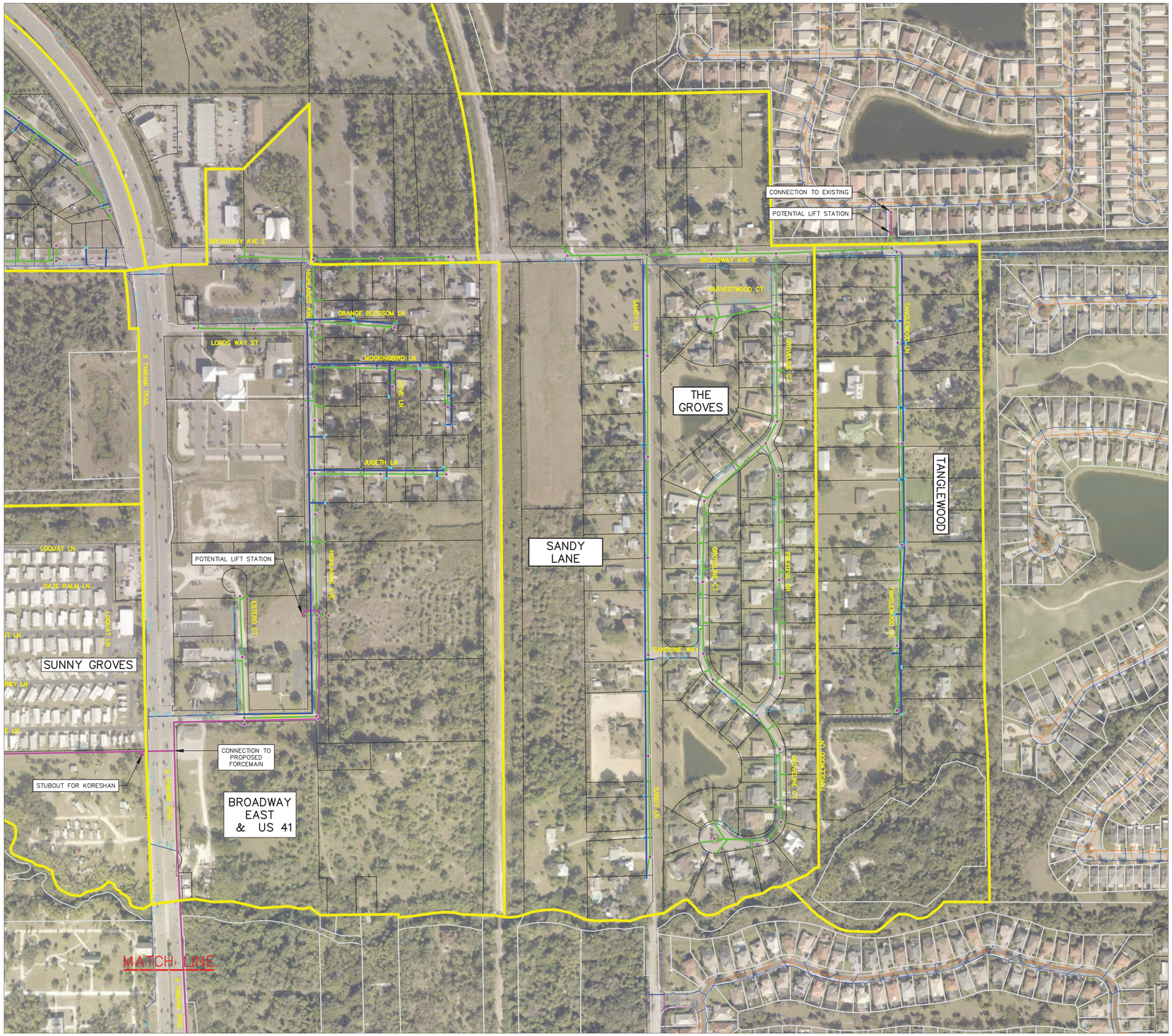
PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Sunny Groves

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Restoration	1,060	LF	$10.00	$10,600.00
2	Abandoment/Removal of Existing Treatment System	1	LS	$50,000.00	$50,000.00
3	Survey	1,060	LF	$15.00	$15,900.00
4	Dewatering	1	LS	$20,000.00	$20,000.00
					$96,500.00
B.	**SANITARY SEWER CONSTRUCTION**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	835	LF	$40.00	$33,400.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
4	Directional Drill	225	LF	$100.00	$22,500.00
					$259,900.00
C.	**SHARED INFRASTRUCTURE COSTS**				
1	PVC Force Main	1,920	LF	$50.00	$96,000.00
2	DIP Bridge Crossing	175	LF	$150.00	$26,250.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
					$126,250.00
	79% Pro-Rated by Lots				**$99,738.00**
				Sub Total	**$456,138.00**
D.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$36,492.00
3	Mobilization 10% OF TOTAL	1	LS		$45,614.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$22,807.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$22,807.00
					$127,720.00
				Sub-Total	**$583,858.00**
E.	**20% Contingency**				**$116,772.00**
				TOTAL	**$700,630.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.



N

0 200' 400' 600'

GRAPHIC SCALE 1"= 200'

(SCALE SET FOR 24x36)

BROADWAY EAST & US 41 SUMMARY	
AREA COVERED	87.7 AC
LOTS INCLUDED	54
8" GRAVITY SEWER LENGTH	5,620 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN	3,555 FT
NUMBER OF MANHOLES	26
NUMBER OF LIFT STATIONS	1
APPROXIMATE COST	$3,465,153.00

SANDY LANE & THE GROVES SUMMARY	
AREA COVERED	91.3 AC
LOTS INCLUDED	96
8" GRAVITY SEWER LENGTH	7,655 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	2,430 FT
NUMBER OF MANHOLES	26
NUMBER OF LIFT STATIONS	SHARED
APPROXIMATE COST	$4,280,409.00

TANGLEWOOD SUMMARY	
AREA COVERED	40.9 AC
LOTS INCLUDED	27
8" GRAVITY SEWER LENGTH	1,890 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	1,815 FT
NUMBER OF MANHOLES	7
NUMBER OF LIFT STATIONS	SHARED
APPROXIMATE COST	$1,214,924.00

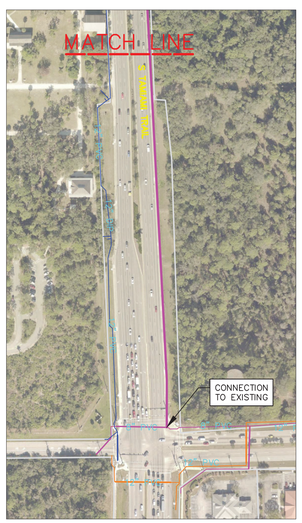
KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

N

0 200' 400' 600'

GRAPHIC SCALE 1"= 200'

(SCALE SET FOR 24x36)



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AREA

BROADWAY EAST & US 41

ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=200'	

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - Broadway East & US 41

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	5,620	LF	$100.00	$562,000.00
2	Right of Way Reconstruction (Water)	3,555	LF	$50.00	$177,750.00
3	Survey	5,620	LF	$15.00	$84,300.00
4	Dewatering	5,620	LF	$80.00	$449,600.00
					$1,273,650.00
B.	**POTABLE WATER CONSTRUCTION**				
1	10" PVC Water Main	1,865	LF	$35.00	$65,275.00
2	8" PVC Water Main	1,690	LF	$50.00	$84,500.00
3	Water Service	54	EA	$700.00	$37,800.00
4	Fire Hydrant (Complete Assembly)	8	EA	$4,465.00	$35,720.00
5	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$226,295.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	1,700	LF	$30.00	$51,000.00
2	8" PVC Sanitary Sewer (6-8' Cut)	2,060	LF	$40.00	$82,400.00
3	8" PVC Sanitary Sewer (8-10' Cut)	1,035	LF	$50.00	$51,750.00
4	8" PVC Sanitary Sewer (10-12' Cut)	450	LF	$60.00	$27,000.00
5	8" PVC Sanitary Sewer (12-14' Cut)	375	LF	$80.00	$30,000.00
6	Manhole 4' Diameter (0-6')	10	EA	$5,000.00	$50,000.00
7	Manhole 4' Diameter (6-8')	9	EA	$5,600.00	$50,400.00
8	Manhole 4' Diameter (8-10')	3	EA	$8,500.00	$25,500.00
9	Manhole 4' Diameter (10-12')	3	EA	$9,100.00	$27,300.00
10	Manhole 4' Diameter (12-14')	1	EA	$9,600.00	$9,600.00
11	Lift Station	1	EA	$200,000.00	$200,000.00
12	PVC Force Main	1,195	LF	$50.00	$59,750.00
13	Sewer Service	54	EA	$1,200.00	$64,800.00
					$729,500.00
C.	**SHARED INFRASTRUCTURE COSTS**				
1	PVC Force Main	1,920	LF	$50.00	$96,000.00
2	DIP Bridge Crossing	175	LF	$150.00	$26,250.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
					$126,250.00
	21% Pro-Rated by Lots				**$26,513.00**
				Sub Total	**$2,255,958.00**
D.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$180,477.00
3	Mobilization 10% OF TOTAL	1	LS		$225,596.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$112,798.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$112,798.00
					$631,669.00
				Sub-Total	**$2,887,627.00**
E.	**20% Contingency**				**$577,526.00**
				TOTAL	**$3,465,153.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Sandy Lane & The Groves

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	7,655	LF	$100.00	$765,500.00
2	Right of Way Reconstruction (Water)	2,430	LF	$50.00	$121,500.00
3	Survey	7,655	LF	$15.00	$114,825.00
4	Dewatering	7,655	LF	$80.00	$612,400.00
					$1,614,225.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	2,430	LF	$35.00	$85,050.00
2	Water Service	17	EA	$700.00	$11,900.00
3	Fire Hydrant (Complete Assembly)	5	EA	$4,465.00	$22,325.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$122,275.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	1,240	LF	$30.00	$37,200.00
2	8" PVC Sanitary Sewer (6-8' Cut)	1,495	LF	$40.00	$59,800.00
3	8" PVC Sanitary Sewer (8-10' Cut)	1,115	LF	$50.00	$55,750.00
4	8" PVC Sanitary Sewer (10-12' Cut)	925	LF	$60.00	$55,500.00
5	8" PVC Sanitary Sewer (12-14' Cut)	935	LF	$80.00	$74,800.00
6	8" PVC Sanitary Sewer (>14' Cut)	1,945	LF	$100.00	$194,500.00
7	Manhole 4' Diameter (0-6')	6	EA	$5,000.00	$30,000.00
8	Manhole 4' Diameter (6-8')	4	EA	$5,600.00	$22,400.00
9	Manhole 4' Diameter (8-10')	5	EA	$8,500.00	$42,500.00
10	Manhole 4' Diameter (10-12')	3	EA	$9,100.00	$27,300.00
11	Manhole 4' Diameter (12-14')	2	EA	$9,600.00	$19,200.00
12	Manhole 4' Diameter (>14')	6	EA	$10,000.00	$60,000.00
13	Sewer Service	96	EA	$1,200.00	$115,200.00
					$794,150.00
D.	**SHARED INFRASTRUCTURE COSTS**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	85	LF	$40.00	$3,400.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
4	Master Manhole 6' Diameter (>14)	1	EA	$15,000.00	$15,000.00
5	8" PVC Sanitary Sewer (>14' Cut)	50	LF	$100.00	$5,000.00
6	Receiving System Pump Upgrade	1	LS	$30,000.00	$30,000.00
					$257,400.00
	78% Pro-Rated by Lots				**$200,772.00**
				Sub Total	**$2,731,422.00**
E.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$218,514.00
2	Mobilization 10% OF TOTAL	1	LS		$273,143.00
3	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$136,572.00
4	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$136,572.00
					$764,801.00
				Sub-Total	**$3,496,223.00**
F.	**20% Contingency**				**$699,245.00**
				TOTAL	$4,195,468.00

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

BANKS ENGINEERING

Professional Engineers, Planners & Land Surveyors

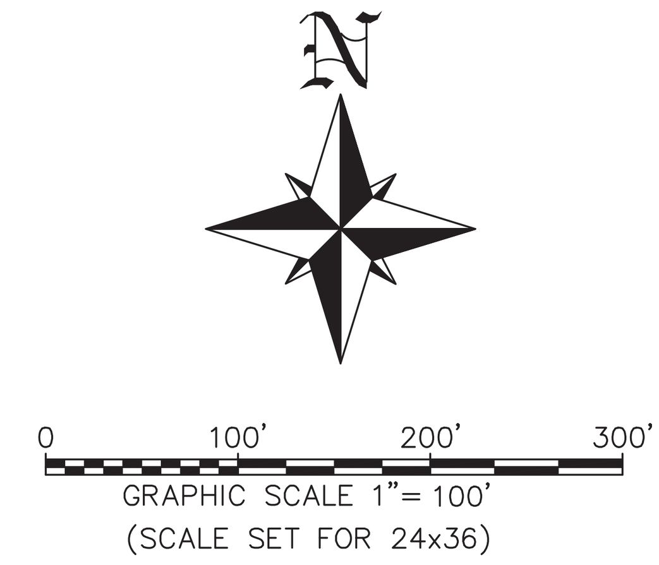
PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Tanglewood Lane

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	1,890	LF	$100.00	$189,000.00
2	Right of Way Reconstruction (Water)	1,815	LF	$50.00	$90,750.00
3	Survey	1,890	LF	$15.00	$28,350.00
4	Dewatering	1,890	LF	$80.00	$151,200.00
					$459,300.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	1,815	LF	$35.00	$63,525.00
2	Water Service	27	EA	$700.00	$18,900.00
3	Fire Hydrant (Complete Assembly)	4	EA	$4,465.00	$17,860.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$103,285.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	250	LF	$30.00	$7,500.00
2	8" PVC Sanitary Sewer (6-8' Cut)	450	LF	$40.00	$18,000.00
3	8" PVC Sanitary Sewer (8-10' Cut)	475	LF	$50.00	$23,750.00
4	8" PVC Sanitary Sewer (10-12' Cut)	475	LF	$60.00	$28,500.00
5	8" PVC Sanitary Sewer (12-14' Cut)	210	LF	$80.00	$16,800.00
6	8" PVC Sanitary Sewer (>14' Cut)	25	LF	$100.00	$2,500.00
7	Manhole 4' Diameter (0-6')	1	EA	$5,000.00	$5,000.00
8	Manhole 4' Diameter (6-8')	2	EA	$5,600.00	$11,200.00
9	Manhole 4' Diameter (8-10')	1	EA	$8,500.00	$8,500.00
10	Manhole 4' Diameter (10-12')	1	EA	$9,100.00	$9,100.00
11	Manhole 4' Diameter (12-14')	1	EA	$9,600.00	$9,600.00
12	Sewer Service	27	EA	$1,200.00	$32,400.00
					$172,850.00
D.	**SHARED INFRASTRUCTURE COSTS**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	85	LF	$40.00	$3,400.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
3	Master Manhole 6' Diameter (>14)	1	EA	$15,000.00	$15,000.00
4	Receiving System Pump Upgrade	1	LS	$30,000.00	$30,000.00
					$252,400.00
	22% Pro-Rated by Lots				**$55,528.00**
				Sub Total	**$790,963.00**
E.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$63,278.00
2	Mobilization 10% OF TOTAL	1	LS		$79,097.00
3	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$39,549.00
4	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$39,549.00
					$221,473.00
				Sub-Total	**$1,012,436.00**
F.	**20% Contingency**				**$202,488.00**
				TOTAL	**$1,214,924.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.



CYPRESS PARK SUMMARY	
AREA COVERED	11.3 AC
LOTS INCLUDED	34
8" GRAVITY SEWER LENGTH	2,000 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	2,565 FT
NUMBER OF MANHOLES	10
NUMBER OF LIFT STATIONS	1
APPROXIMATE COST	$1,814,334.00

SEE SEE SUMMARY	
AREA COVERED	18.3 AC
LOTS INCLUDED	18
8" GRAVITY SEWER LENGTH	1,100 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	1,675 FT
NUMBER OF MANHOLES	4
NUMBER OF LIFT STATIONS	1
APPROXIMATE COST	$1,062,585.00

KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

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AREA
CYPRESS PARK & SEE SEE
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=100'	

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - Cypress Park

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	2,000	LF	$100.00	$200,000.00
2	Road & Drainage Improvements	2,000	LF	$75.00	$150,000.00
3	Right of Way Reconstruction (Water)	2,260	LF	$50.00	$113,000.00
4	Survey	2,000	LF	$15.00	$30,000.00
5	Dewatering	2,000	LF	$80.00	$160,000.00
					$653,000.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	2,565	LF	$35.00	$89,775.00
2	Water Service	34	EA	$700.00	$23,800.00
3	Fire Hydrant (Complete Assembly)	6	EA	$4,465.00	$26,790.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$143,365.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	240	LF	$30.00	$7,200.00
2	8" PVC Sanitary Sewer (6-8' Cut)	950	LF	$40.00	$38,000.00
3	8" PVC Sanitary Sewer (8-10' Cut)	680	LF	$50.00	$34,000.00
4	8" PVC Sanitary Sewer (10-12' Cut)	130	LF	$60.00	$7,800.00
5	Manhole 4' Diameter (0-6')	3	EA	$80.00	$240.00
6	Manhole 4' Diameter (6-8')	3	EA	$5,600.00	$16,800.00
7	Manhole 4' Diameter (8-10')	3	EA	$8,500.00	$25,500.00
8	Manhole 4' Diameter (10-12')	1	EA	$9,100.00	$9,100.00
9	Lift Station	1	EA	$200,000.00	$200,000.00
10	PVC Force Main	35	LF	$40.00	$1,400.00
11	Connect to Existing	1	EA	$4,000.00	$4,000.00
12	Sewer Service	34	EA	$1,200.00	$40,800.00
					$384,840.00
				Sub-Total	**$1,181,205.00**
D.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$94,497.00
3	Mobilization 10% OF TOTAL	1	LS		$118,121.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$59,061.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$59,061.00
					$330,740.00
				Sub-Total	**$1,511,945.00**
E.	**20% Contingency**				**$302,389.00**
				TOTAL	**$1,814,334.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

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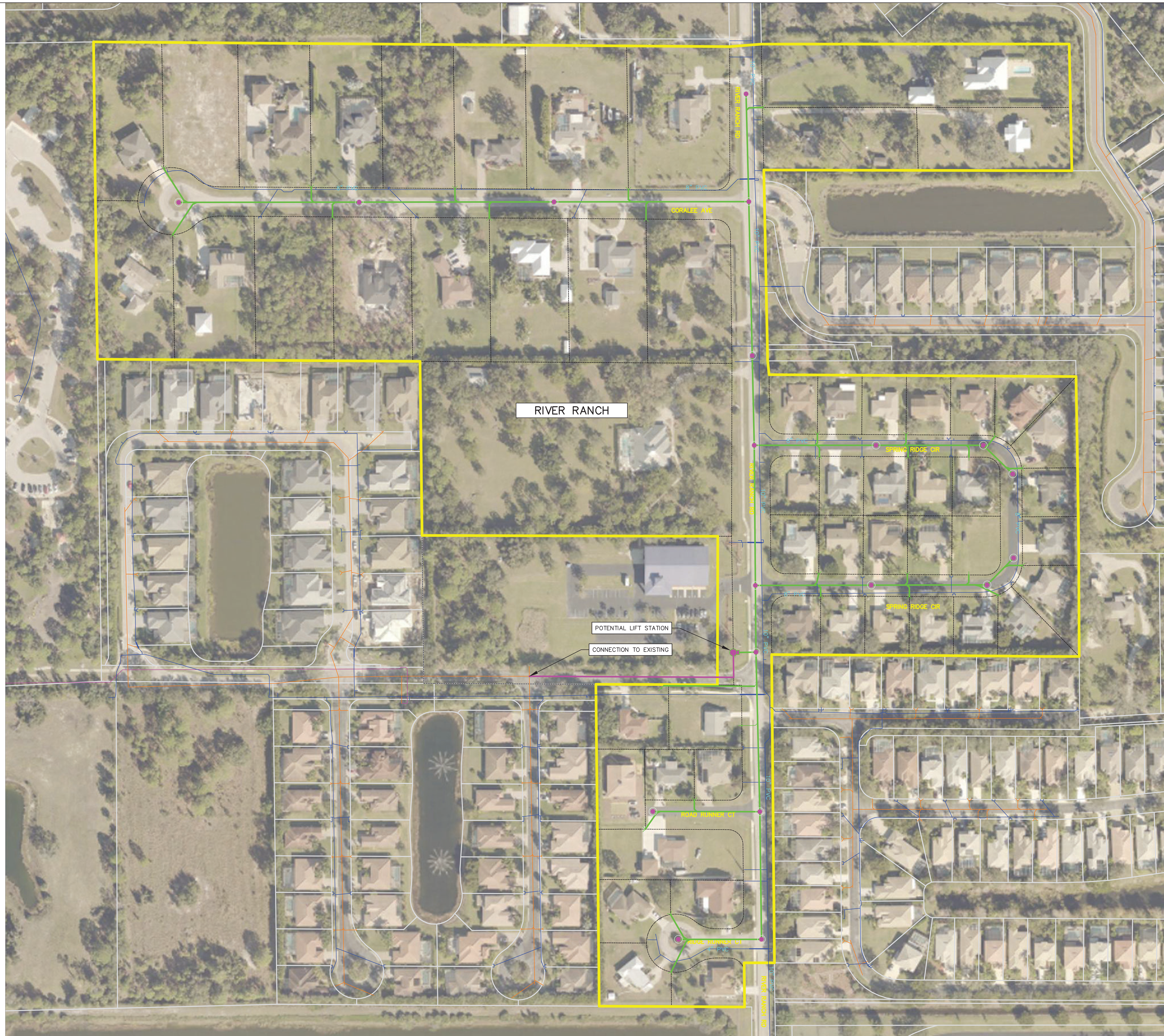
PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - See See

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	1,100	LF	$100.00	$110,000.00
2	Right of Way Reconstruction (Water)	1,675	LF	$50.00	$83,750.00
3	Survey	1,100	LF	$15.00	$16,500.00
4	Dewatering	1,100	LF	$80.00	$88,000.00
				Sub Total	**$298,250.00**
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	1,675	LF	$35.00	$58,625.00
2	Water Service	18	EA	$700.00	$12,600.00
3	Fire Hydrant (Complete Assembly)	4	EA	$4,465.00	$17,860.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
	.				**$92,085.00**
C	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	260	LF	$30.00	$7,800.00
2	8" PVC Sanitary Sewer (6-8' Cut)	475	LF	$40.00	$19,000.00
3	8" PVC Sanitary Sewer (8-10' Cut)	365	LF	$50.00	$18,250.00
4	Manhole 4' Diameter (0-6')	1	EA	$5,000.00	$5,000.00
5	Manhole 4' Diameter (6-8')	1	EA	$5,600.00	$5,600.00
6	Manhole 4' Diameter (8-10')	2	EA	$8,500.00	$17,000.00
7	Lift Station	1	EA	$200,000.00	$200,000.00
8	PVC Force Main	80	LF	$40.00	$3,200.00
9	Connect to Existing	1	EA	$4,000.00	$4,000.00
10	Sewer Service	18	EA	$1,200.00	$21,600.00
					$301,450.00
				Sub-Total	**$691,785.00**
C.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$55,343.00
3	Mobilization 10% OF TOTAL	1	LS		$69,179.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$34,590.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$34,590.00
					$193,702.00
				Sub-Total	**$885,487.00**
D.	**20% Contingency**				**$177,098.00**
				TOTAL	**$1,062,585.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.



N

0 100' 200' 300'
GRAPHIC SCALE 1"= 100'
(SCALE SET FOR 24x36)

RIVER RANCH SUMMARY	
AREAS COVERED	44.6 AC
LOTS INCLUDED	56
8" GRAVITY SEWER LENGTH	4,455 FT
FORCE MAIN LENGTH	475 FT
8" WATER MAIN	0 FT
NUMBER OF MANHOLES	19
NUMBER OF LIFT STATIONS	1
APPROXIMATE COST	$2,360,720.00

KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

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AREA
RIVER RANCH
ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=100'	

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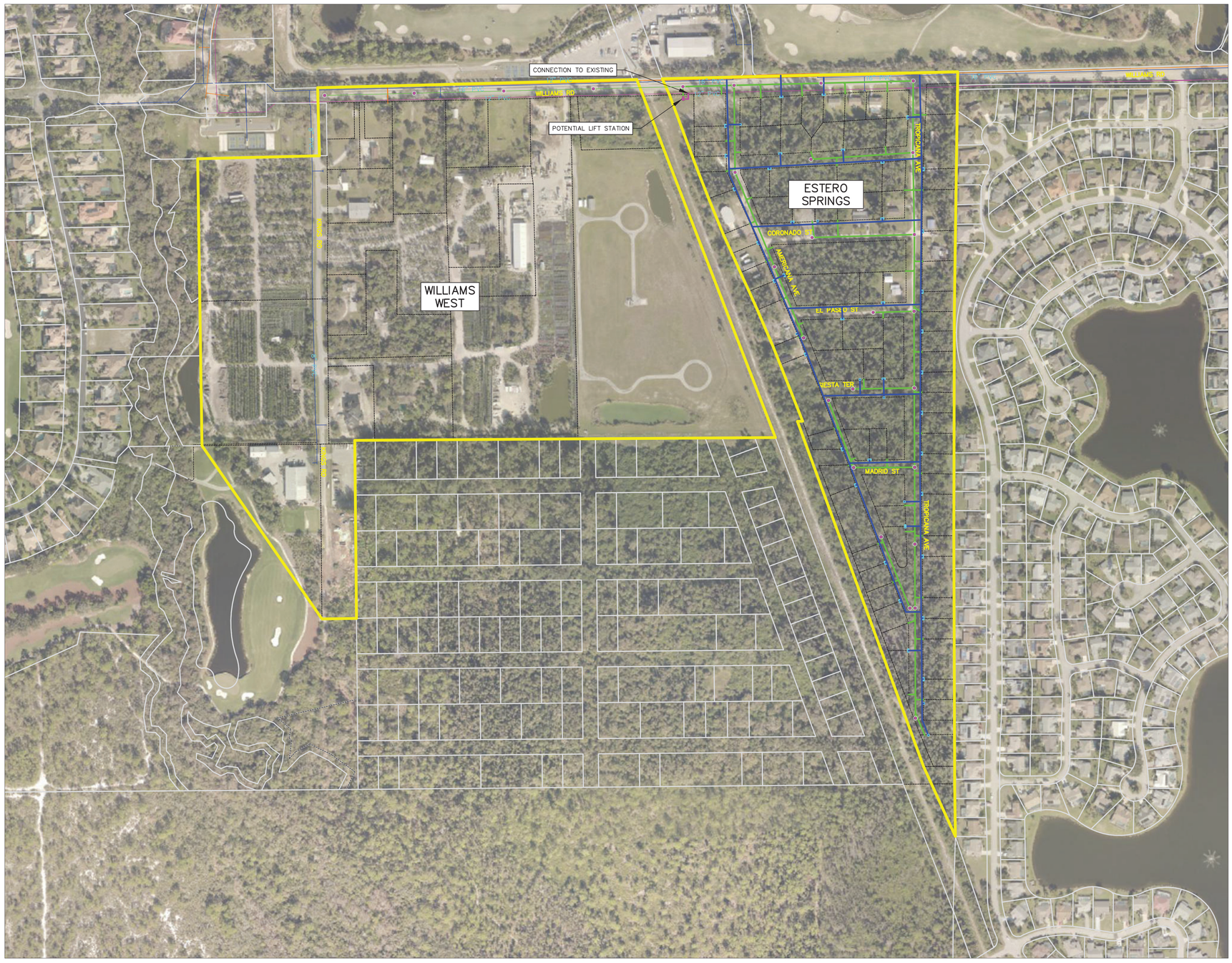
PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study - River Ranch

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	4,455	LF	$100.00	$445,500.00
2	Survey	4,455	LF	$15.00	$66,825.00
3	Dewatering	4,455	LF	$80.00	$356,400.00
					$868,725.00
B.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	895	LF	$30.00	$26,850.00
2	8" PVC Sanitary Sewer (6-8' Cut)	1,615	LF	$40.00	$64,600.00
3	8" PVC Sanitary Sewer (8-10' Cut)	535	LF	$50.00	$26,750.00
4	8" PVC Sanitary Sewer (10-12' Cut)	470	LF	$60.00	$28,200.00
5	8" PVC Sanitary Sewer (12-14' Cut)	940	LF	$80.00	$75,200.00
6	Manhole 4' Diameter (0-6')	8	EA	$5,000.00	$40,000.00
7	Manhole 4' Diameter (6-8')	4	EA	$5,600.00	$22,400.00
8	Manhole 4' Diameter (8-10')	2	EA	$8,500.00	$17,000.00
9	Manhole 4' Diameter (10-12')	2	EA	$9,100.00	$18,200.00
10	Manhole 4' Diameter (12-14')	3	EA	$9,600.00	$28,800.00
11	Lift Station	1	EA	$200,000.00	$200,000.00
12	PVC Force Main	475	LF	$40.00	$19,000.00
13	Connect to Existing	1	EA	$4,000.00	$4,000.00
14	Sewer Service	56	EA	$1,200.00	$67,200.00
15	Receiving System Pump Upgrade	1	LS	$30,000.00	$30,000.00
					$668,200.00
				Sub Total	**$1,536,925.00**
C.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$122,954.00
3	Mobilization 10% OF TOTAL	1	LS		$153,693.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$76,847.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$76,847.00
					$430,341.00
				Sub-Total	**$1,967,266.00**
D.	**20% Contingency**				**$393,454.00**
				TOTAL	**$2,360,720.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.



N

0 200' 400' 600'

GRAPHIC SCALE 1"= 200'
(SCALE SET FOR 24x36)

ESTERO SPRINGS SUMMARY	
AREA COVERED	38.9 AC
LOTS INCLUDED	88.0
8" GRAVITY SEWER LENGTH	6,505 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	7,445 FT
NUMBER OF MANHOLES	23.0
NUMBER OF LIFT STATIONS	SHARED
APPROXIMATE COST	$5,069,862.00

WILLIAMS WEST SUMMARY	
AREA COVERED	66.1 AC
LOTS INCLUDED	22.0
8" GRAVITY SEWER LENGTH	1,400 FT
FORCE MAIN LENGTH	SHARED
8" WATER MAIN LENGTH	0 FT
NUMBER OF MANHOLES	4.0
NUMBER OF LIFT STATIONS	SHARED
APPROXIMATE COST	$711,339.00

KEY	
	EXISTING FORCE MAIN
	EXISTING WATER MAIN
	EXISTING GRAVITY SEWER
	PROPOSED GRAVITY SEWER
	PROPOSED FORCE MAIN
	PROPOSED 8" WATER MIAN
	PROPOSED LIFT STATION
	PROPOSED MANHOLE

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PARCEL

ESTERO SPRINGS & WILLIAMS WEST

ESTERO, FLORIDA

DATE	PROJECT	DRAWING	DESIGN	DRAWN	CHECKED	SCALE	SHEET
09-27-2019		8198U		RJV		1"=200'	

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Estero Springs

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	6,505	LF	$100.00	$650,500.00
2	Road & Drainage Improvements	6,505	LF	$75.00	$487,875.00
3	Right of Way Reconstruction (Water)	7,445	LF	$50.00	$372,250.00
4	Survey	6,505	LF	$15.00	$97,575.00
5	Dewatering	6,505	LF	$80.00	$520,400.00
					$2,128,600.00
B.	**POTABLE WATER CONSTRUCTION**				
1	8" PVC Water Main	7,445	LF	$35.00	$260,575.00
2	Water Service	88	EA	$700.00	$61,600.00
3	Fire Hydrant (Complete Assembly)	15	EA	$4,465.00	$66,975.00
4	Connect to Existing	1	EA	$3,000.00	$3,000.00
					$392,150.00
C.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	1,815	LF	$30.00	$54,450.00
2	8" PVC Sanitary Sewer (6-8' Cut)	1,930	LF	$40.00	$77,200.00
3	8" PVC Sanitary Sewer (8-10' Cut)	835	LF	$50.00	$41,750.00
4	8" PVC Sanitary Sewer (10-12' Cut)	450	LF	$60.00	$27,000.00
5	8" PVC Sanitary Sewer (12-14' Cut)	475	LF	$80.00	$38,000.00
6	8" PVC Sanitary Sewer (>14' Cut)	1,000	LF	$100.00	$100,000.00
7	Manhole 4' Diameter (0-6')	2	EA	$5,000.00	$10,000.00
8	Manhole 4' Diameter (6-8')	10	EA	$5,600.00	$56,000.00
9	Manhole 4' Diameter (8-10')	3	EA	$8,500.00	$25,500.00
10	Manhole 4' Diameter (10-12')	2	EA	$9,100.00	$18,200.00
11	Manhole 4' Diameter (12-14')	1	EA	$9,600.00	$9,600.00
12	Manhole 4' Diameter (>14')	4	EA	$10,000.00	$40,000.00
13	Sewer Service	88	EA	$1,200.00	$105,600.00
					$603,300.00
D.	**SHARED INFRASTRUCTURE COSTS**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	45	LF	$40.00	$1,800.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
3	Master Manhole 6' Diameter (>14)	1	EA	$15,000.00	$15,000.00
					$220,800.00
	80% Pro-Rated by Lots				**$176,640.00**
				Sub Total	**$3,300,690.00**
E.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$264,056.00
3	Mobilization 10% OF TOTAL	1	LS		$330,069.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$165,035.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$165,035.00
					$924,195.00
				Sub-Total	**$4,224,885.00**
F.	**20% Contingency**				**$844,977.00**
				TOTAL	**$5,069,862.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.

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PRELIMINARY ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
FOR REQUIRED UTILITY IMPROVEMENTS

Estero Study-Williams West

10/2020

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	**SITE WORK**				
1	Road Reconstruction (Sewer)	1,700	LF	$100.00	$170,000.00
2	Right of Way Reconstruction (Water)	0	LF	$50.00	$0.00
3	Survey	1,700	LF	$15.00	$25,500.00
4	Dewatering	1,700	LF	$80.00	$136,000.00
					$331,500.00
B.	**SANITARY SEWER CONSTRUCTION**				
1	8" PVC Sanitary Sewer (0-6' Cut)	250	LF	$30.00	$7,500.00
2	8" PVC Sanitary Sewer (6-8' Cut)	450	LF	$40.00	$18,000.00
3	8" PVC Sanitary Sewer (8-10' Cut)	475	LF	$50.00	$23,750.00
4	8" PVC Sanitary Sewer (10-12' Cut)	225	LF	$60.00	$13,500.00
5	Manhole 4' Diameter (0-6')	1	EA	$5,000.00	$5,000.00
6	Manhole 4' Diameter (6-8')	2	EA	$5,600.00	$11,200.00
7	Manhole 4' Diameter (8-10')	1	EA	$8,500.00	$8,500.00
					$87,450.00
D.	**SHARED INFRASTRUCTURE COSTS**				
1	Lift Station	1	EA	$200,000.00	$200,000.00
2	PVC Force Main	45	LF	$40.00	$1,800.00
3	Connect to Existing	1	EA	$4,000.00	$4,000.00
3	Master Manhole 6' Diameter (>14)	1	EA	$15,000.00	$15,000.00
					$220,800.00
	20% Pro-Rated by Lots				**$44,160.00**
				Sub Total	**$463,110.00**
E.	**GENERAL**				
1	Design & Permitting 8% OF TOTAL	1	LS		$37,049.00
3	Mobilization 10% OF TOTAL	1	LS		$46,311.00
4	Maintenance of Traffic (MOT) 5% OF TOTAL	1	LS		$23,156.00
2	Construction Engineering & Inspection (CEI) 5% OF TOTAL	1	LS		$23,156.00
					$129,672.00
				Sub-Total	**$592,782.00**
F.	**20% Contingency**				**$118,557.00**
				TOTAL	**$711,339.00**

Note: The above "Engineer's Opinion of Probable Costs" DOES NOT include any Land Aquisition costs.