**Sponsored by:** Puto

**CITY OF MARATHON, FLORIDA**
**RESOLUTION 2007-77**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MARATHON, FLORIDA, RELATING TO THE FLORIDA DEPARMENT OF ENVIRONMENTAL PROTECTION (FDEP) STATE REVOLVING FUND (SRF), ADOPTION OF THE STORMWATER FACILITY PLAN FOR THE IMPLEMENTATION OF STORMWATER COLLECTION, TREATMENT AND DISPOSAL IMPROVEMENTS**

**WHEREAS,** Florida Statutes provide for grants to local government agencies to finance the construction of stormwater facilities; and Florida Administrative Code requires the formal authorization by City Council to formally adopt a facility plan outlining necessary stormwater treatment facility improvements to comply with State of Florida funding requirements; and

**WHEREAS**, formal adoption of the proposed Facility Plan is required for the City of Marathon to participate in the State Revolving Loan Fund Program; and

**WHEREAS**, the City Council of the City of Marathon, Florida agrees with the recitals and summary of necessary improvements as outlined in the Facility Plan for the purpose of stormwater collection, treatment, and disposal.

**NOW, THEREFORE, B E IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MARATHON, FLORIDA, THAT**:

**Section 1.** The above recitals are true and correct and incorporated herein.

**Section 2.** The City of Marathon, Florida, is authorized to approve the proposed Facility Plan. The City Manager is hereby designated as the authorized representative to provide the assurances and commitments that will be required by the Facility Plan. The Mayor is hereby designated as the authorized representative to execute the Facility Plan which will become the foundation of all activities related to the stormwater facility improvements. The Mayor is authorized to represent the City in carrying out the City's responsibilities under the Facility Plan. The Mayor is authorized to delegate responsibility to appropriate City Staff to carry out technical, financial, and administrative activities associated with the Facility Plan.

**Section 3.** The legal authority for adoption of this Facility Plan is pursuant to the City Charter, City Code of Ordinances, and the Laws of the State of Florida.

**Section 4.** All Resolutions or part of Resolutions in conflict with any of the provisions of this Resolution are hereby repealed.

**Section 5.** If any section or portion of a section of this Resolution proves to be invalid, unlawful, or unconstitutional, it shall not be held to invalidated or impair the validity, force, or effect or any other section or part of this Resolution.

**Section 6.** This resolution shall take effect immediately upon its adoption.

**PASSED AND APPROVED** by the City Council of the city of Marathon, Florida, this 31st day of May, 2007.

**THE CITY OF MARATHON, FLORIDA**

**Christopher M. Bull, Mayor**

AYES: Cinque, Tempest, Vasil, Worthington, Bull
NOES: None
ABSENT: None
ABSTAIN: None

**ATTEST:**

Diane Clavier
City Clerk

(City Seal)

**APPROVED AS TO FORM AND LEGALITY FOR THE USE AND RELIANCE OF THE CITY OF MARATHON, FLORIDA ONLY:**

City Attorney

# Section 1
# Executive Summary

## 1.1 Background

The Florida Keys are comprised of a chain of more than 800 individual islands located at the southern tip of Florida, extending from Soldier Key at the northeastern point, to the Dry Tortugas at the southwestern point. The more developed islands are connected by U.S. Highway 1, a 110-mile stretch of roadway from Key Largo to Key West. A significant portion of the waters adjacent to the islands has been designated as Outstanding Florida Waters, and includes the 2,800-square nautical mile Florida Keys National Marine Sanctuary (FKNMS) the second largest in the United States. The ecosystem and coral reefs within the Keys are complex and dynamic systems and one of earth's most precious resources. Nevertheless, wastewater and stormwater practices in the islands have placed the marine ecosystem under stress. Ongoing research has determined that continued discharge of nutrients into the nearshore waters (attributable to improperly treated wastewater and to stormwater runoff) is a major direct cause of the degradation of the Keys' nearshore and coastal waters. The unique geological and hydrological characteristics of the Keys, as well as the protected status of the waters surrounding the islands, mandate the need to construct facilities to treat and dispose of wastewater and stormwater to help restore the health and economic vitality of the Keys' marine community.

The contribution of pollutants to nearshore waters by stormwater runoff in the Florida Keys and the Marathon area has been well documented. Portions of the Marathon Stormwater Master Plan are included as Attachment A to this section to provide additional demonstration of the need for this project.

## 1.2 Project Purpose and Scope

The Marathon Stormwater Project originated from recognition of two major needs. First, the reduction of flooding is necessary in the public right of way. Second, in order to restore the health and economic vitality of near shore waters, runoff of untreated stormwater into the coastal waters within the City of Marathon must be reduced.
The goals of this project is to reduce nuisance flooding in the streets and reduce or eliminate discharges through surface runoff and through existing stormwater outfalls by collecting and treating stormwater. The purpose of this facilities plan is to define the most cost-effective, environmentally sound, and most simply implemented program for the management of existing and future stormwater pollutants that act, or will act, to deteriorate the Keys' water quality in the Marathon area. This plan has been adopted by the City of Marathon.

## 1.3 Potential Financing and Funding Sources

Funding for this project is being sought through FDEP State Revolving Loan Fund (SRF) program as well as through grant appropriations from state and federal agencies. Local funding is currently provided through the collection of Non-Ad Valorem assessments, through the City Stormwater Utility, on properties within the Marathon city limits.

## 1.4 Project Description

This proposed project provides an affordable long term solution to meeting the City's stormwater needs. To determine the best approach various technologies and various configurations of service areas were examined. The City of Marathon service area is defined as the east end of the Seven Mile Bridge extending eastward to Tom's Harbor Bridge and includes the following: Knight's Key, Vaca Key, Boot Key, the Sombrero area, Fat Deer Key, Coco Plum, Long Point Key, Little Crawl Key, Crawl Key, Valhalla Island, and Grassy Key. The entire service area is shown in figure 1-1, individual service area maps follow in figures 1-2 through 1-8.

A number of existing documents were examined to provide an understanding of the geographical and population characteristics of the City of Marathon. These documents include the 1998 Marathon Facilities Plan prepared by CH2M Hill, the Monroe County Stormwater Master Plan prepared by CDM, The City of Marathon Stormwater Master Plan prepared by CGA and the Marathon SRF Planning Documents Wastewater Facilities Plan prepared in 2006 by The Weiler Engineering Corporation. It was determined from the examination of these documents that management of stormwater in the City of Marathon could best be planned and managed by division of the City into service areas as defined in the 2006 wastewater facilities plan. In this approach, the City has seven basins, defined largely by naturally occurring boundaries. The division of the City into smaller basins following geographical boundaries allows for the design and construction of infrastructure to be phased in multiple projects.

Having defined the service basins, the next step was to determine the most cost effective means of collecting and treating the stormwater in the public right of way. It was determined that the only practical means of collection of stormwater was through conventional gravity systems consisting of catch basins located to gather stormwater from areas defined by naturally occurring grade lines or by construction of drainage swales to direct the water to the catch basins. In this type of system, some degree of treatment is provided by the baffling within the catch basins that trap floatable and settled debris, discharging the treated stormwater to the disposal system.

Three disposal methods were examined, all of which provide further treatment and reduce discharges to surface waters. These three alternatives are; 1) Discharge into shallow injection wells; 2) Discharge into exfiltration trenches constructed solely for that purpose; and 3) Discharge into exfiltration trenches constructed as part of the sanitary sewer construction projects. The shallow injection system consists of a 90 foot deep well case 60 feet. Drainage is taken from the catch basins to a well control structure and discharged into the well. The head above the top of the well provides the force necessary for the water to go down the well. An exfiltration trench is built by digging a trench and bedding perforated pipe in rock. The stormwater is discharged from the catch basins into the perforated pipe which acts as a manifold, distributing the stormwater throughout the length of the trench. The porosity of the rock bedding provides a conduit to conduct the stormwater away from the pipe to the trench bottom and walls where the stormwater percolates out through the rock and soils. In the Marathon area, the base material is coral limestone which has a high coefficient of hydraulic conductivity, allowing the stormwater to percolate at acceptable rates to control flooding. The rock and soils also provide further treatment through the actions of filtration and adsorption, lowering the levels of suspended solids, nutrients, metals and other pollutants associated with stormwater runoff.

The third alternative listed is an innovated approach to providing stormwater disposal proposed by Weiler Engineering. In this alternative, the stormwater design and construction is combined with the sanitary wastewater project. This approach has the advantage of reducing design costs since the survey and geotechnical data, the plan and profile drawings and many of the technical specifications are common to both projects. Generally, wastewater and stormwater designs are produced separately, generating redundant design costs for the common elements. Construction costs in this approach are

also substantially reduced since the trench that is dug for placing the wastewater infrastructure is also used as the exfiltration trench for the stormwater disposal system. This results in a reduction in excavation costs, bedding costs, restoration costs and other construction costs. Since both the wastewater and stormwater construction elements are to be bid and constructed as a single project, costs for administration, mobilization, bonding and insurance will be reduced. It also has a practical advantage to the public in that disruption caused by work within the right of way will be limited to single construction project, eliminating the need to come back later to install the stormwater infrastructure.

## 1.4a Service Area Briefs

Service Area 1, Knight's Key, is currently in process of re-development by a private developer. The developer will be required to provide stormwater management on his portion of the island. The remainder of the island will be provided with a trench drain system.

Service Area 2, Boot Key, currently has one small facility surrounding the radio tower complex. The complex comprises less than 0.1% of the 856 acre island. There will be no stormwater improvements done in this service area.

Service Area 3, Vaca Key (west), includes both ocean side and bayside from 11$^{th}$ Street up to 33$^{rd}$ Street. The low topography in this area lends itself to the use of underdrains for the collection and disposal of the stormwater.

Service Area 4, Vaca Key (central), includes both ocean side and bayside from 33$^{rd}$ Street through 60$^{th}$ Street as well as all of the Sombrero area. The low topography in this area lends itself to the use of underdrains for the collection and disposal of the stormwater.

Service Area 5, Vaca Key (east), includes both ocean side and bayside from 60$^{th}$ Street through Vaca Cut and includes the Little Venice Area. The low topography in this area lends itself to the use of underdrains for the collection and disposal of the stormwater.

Service Area 6, Fat Deer Key (west), includes both ocean side and bayside from Vaca Cut to Coco Plum and down Coco Plum Drive to its end. The low topography in this area lends itself to the use of underdrains for the collection and disposal of the stormwater.

Service Area 7, Grassy Key, includes both ocean side and bayside from the east end of Fat Deer Key through to the east end of Grassy Key. The low topography in this area lends itself to the use of underdrains for the collection and disposal of the stormwater.

Table 1-1: City of Marathon Proposed Sewer Service Areas

| Service Area # | Description | Boundaries |
|---|---|---|
| 1 | Knight's Key | Entire Island |
| 2 | Boot Key | Entire Island |
| 3 | Vaca Key - West | 11$^{th}$ Street to 33$^{rd}$ Street |
| 4 | Vaca Key - Central | 33$^{rd}$ Street to 60$^{th}$ Street including the entire Sombrero area |
| 5 | Vaca Key - East | 60$^{th}$ Street to Vaca Cut including |

| | | |
|---|---|---|
| | | Little Venice |
| 6 | Fat Deer Key (West) - Coco Plum | Vaca Cut to Coco Plum – south to the end of Coco Plum drive |
| 7 | Grassy Key | Fat Deer Key east through Grassy Key |

Table 1- 2: Service Area: Selected Collection Treatment and Disposal Alternatives

| Service Area # | Collection System Alternative | Treatment System Alternative | Effluent Disposal Alternative |
|---|---|---|---|
| 1 | Roadside ditch | Roadside ditch | Underdrain |
| 2 | None | None | None |
| 3 | Roadside ditch | Roadside ditch | Underdrain |
| 4 | Roadside ditch | Roadside ditch | Underdrain |
| 5 | Roadside ditch | Roadside ditch | Underdrain |
| 6 | Roadside ditch | Roadside ditch | Underdrain |
| 7 | Roadside ditch | Roadside ditch | Underdrain |

## 1.5 Preliminary Cost Estimates

Capital costs and operation and maintenance (O&M) costs were determined for each alternative system evaluated in this report. Actual costs for any given system will depend on actual labor and materials costs, market conditions, project scope, implementation schedule, and other factors.

O&M costs were based on unit costs for labor, as appropriate for the Florida Keys. These are also order-of-magnitude estimates and are believed to be accurate within the same range as the capital cost estimates.

Although estimates have a fairly wide range of uncertainty, they were developed with similar methodologies and assumptions. Therefore, for purposes of comparing alternatives, the costs of alternative systems are considered significantly different if they differ by more than 10 percent. If costs or present values are within 10 percent they are considered the same.

## 1.6 Project Justification

The need for reduction in the stormwater runoff to the nearshore waters of the Florida Keys is well documented. Presently, the City does not allow any new development to discharge the 25 year 72 hour storm offsite. The drainage must either be discharged through exfiltration trenches or injection wells. The project brings the City into compliance with their (or the) requirements for new developments.

## 1.7 Project Period

This project is currently in the planning and design phase. Construction began in the spring of 2006. This phased implementation project is estimated to run through the end of 2010.

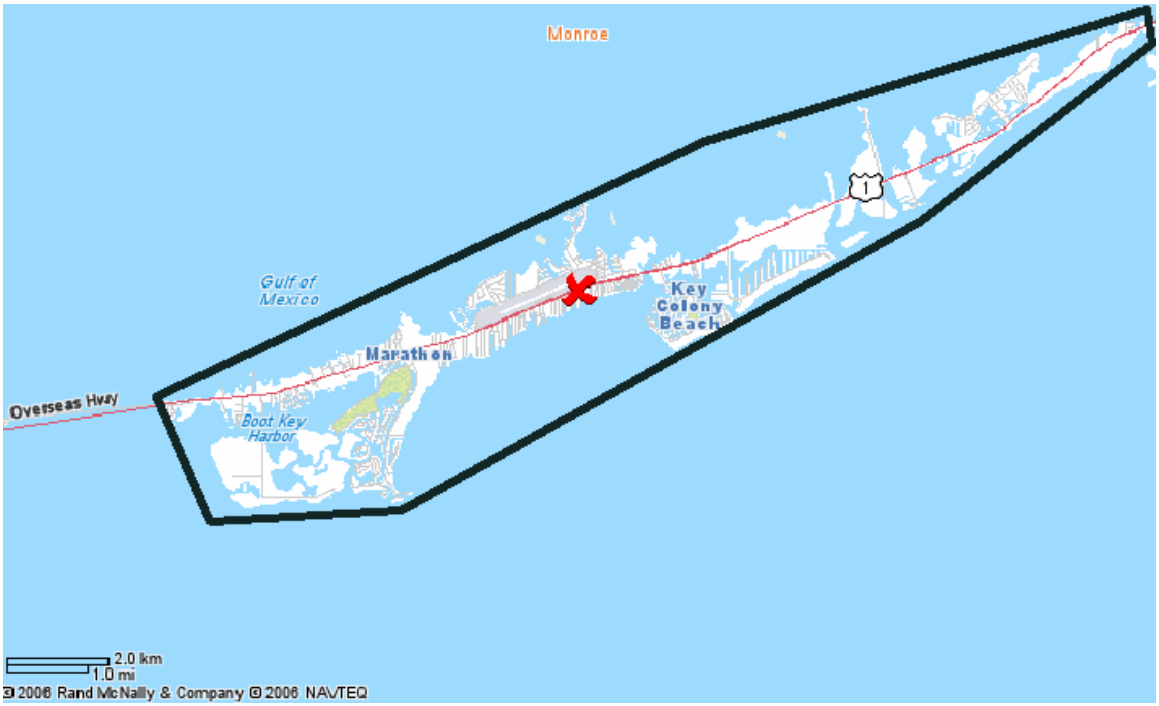


Figure 1-1: City of Marathon Service Area Map

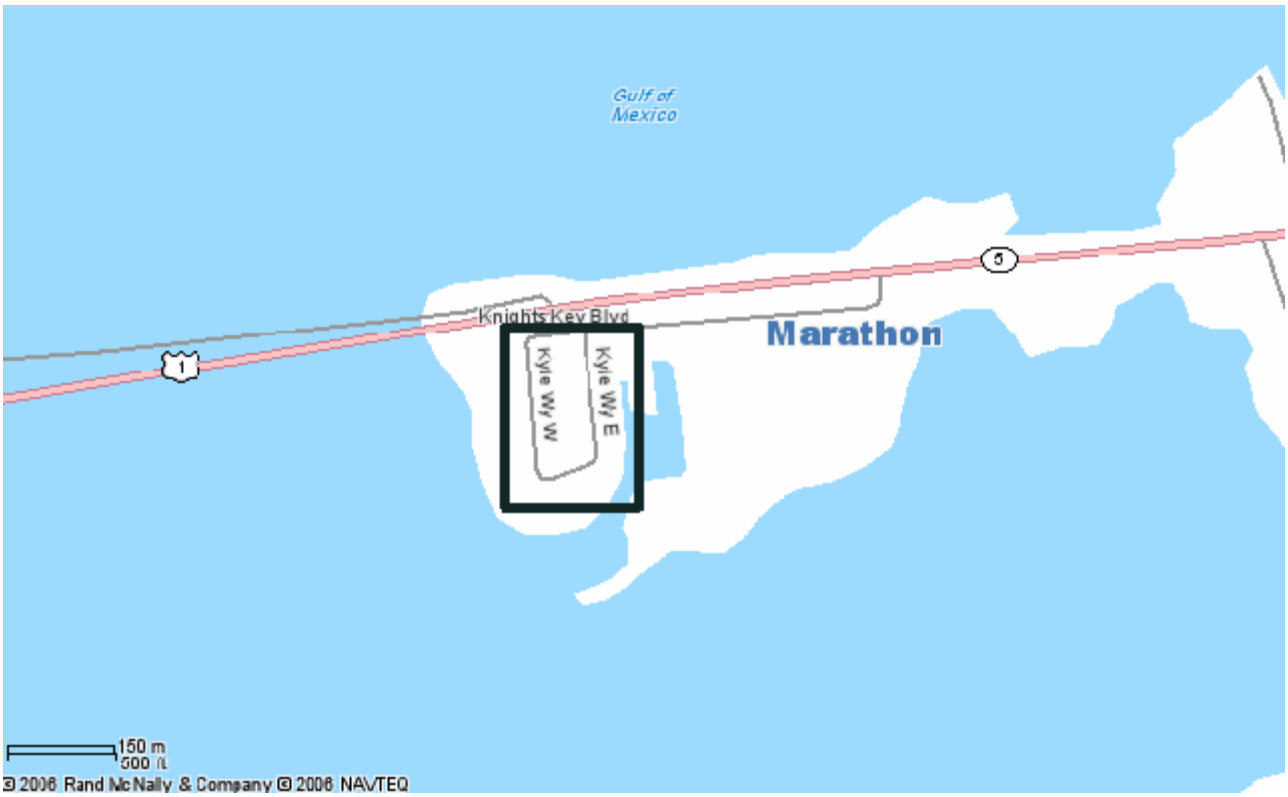


Figure 1-2: Service Area 1 Map, Knight's Key

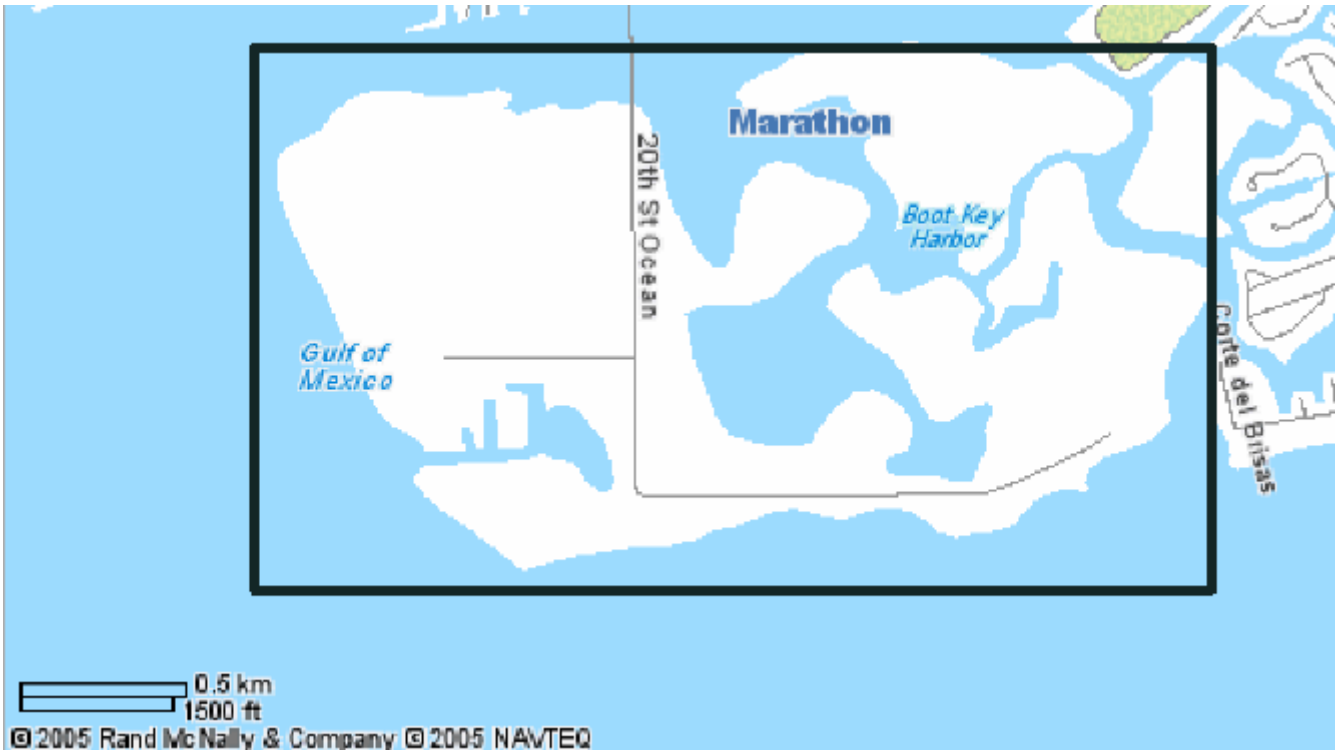


Figure 1-3: Service Area 2 Map, Boot Key

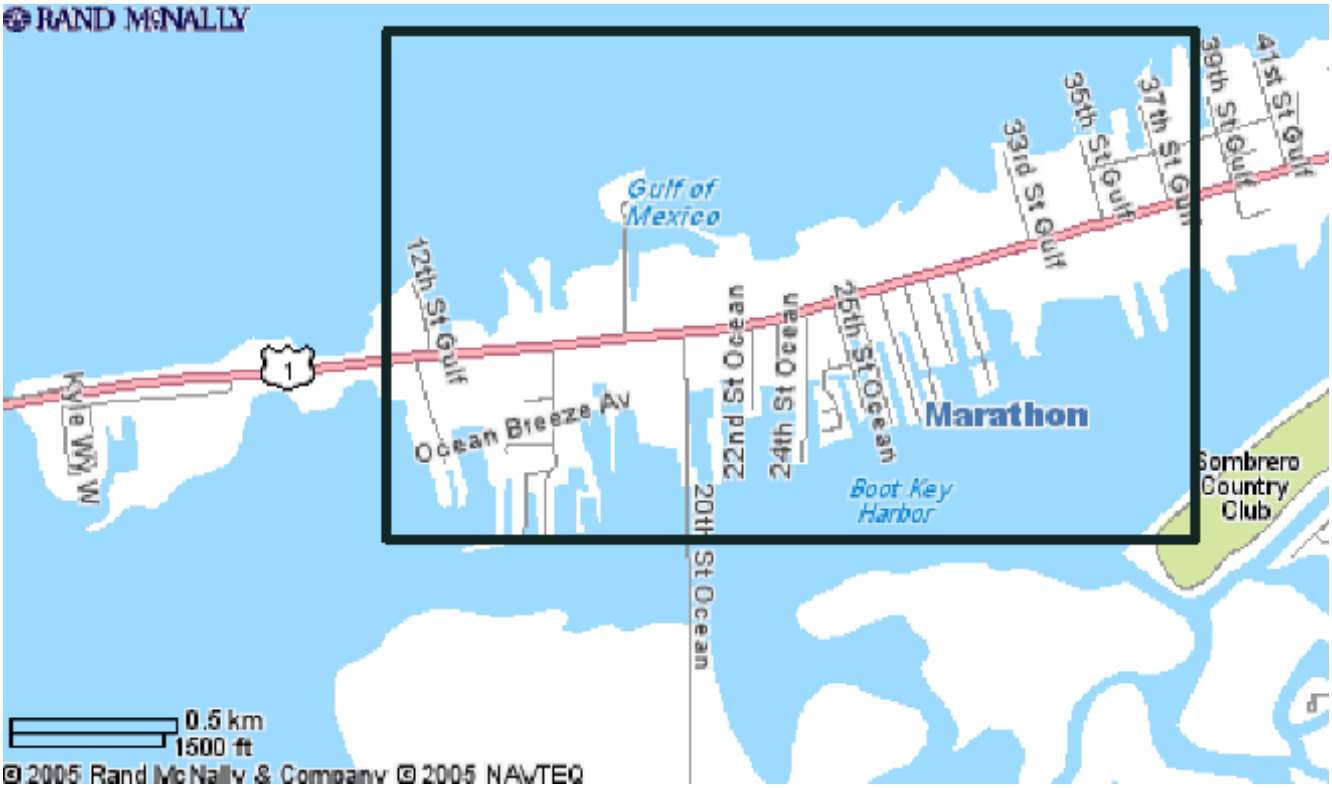


Figure 1-4: Service Area 3 Map, western Vaca Key (Knight's Key not included)


Figure 1-4: Service Area 5 Map, central Vaca Key including Sombrero area

Figure 1-6:  Service Area 5 Map, eastern Vaca Key (Key Colony Beach not included)

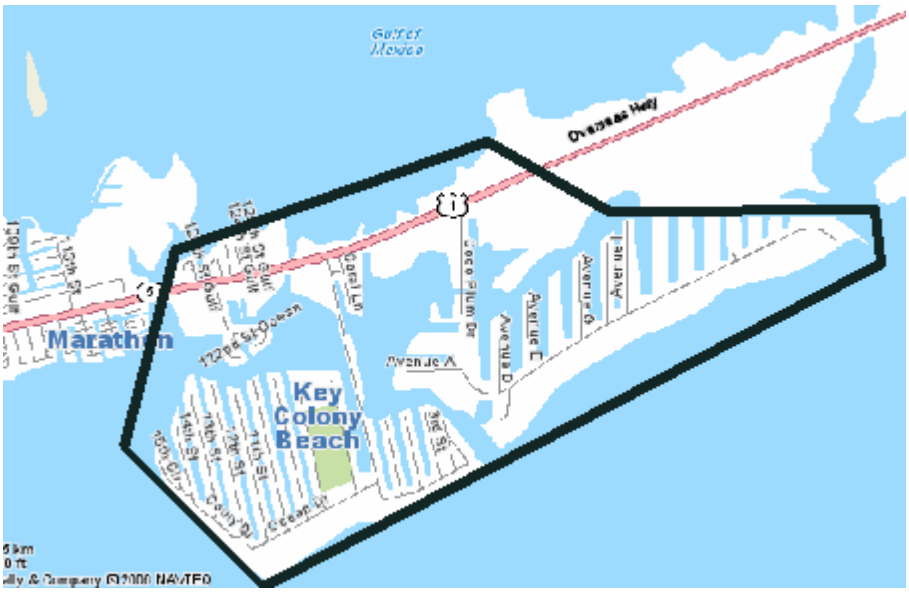


Figure 1-7: Service Area 6 Map, Fat Deer Key and Coco Plum (Key Colony Beach not included)

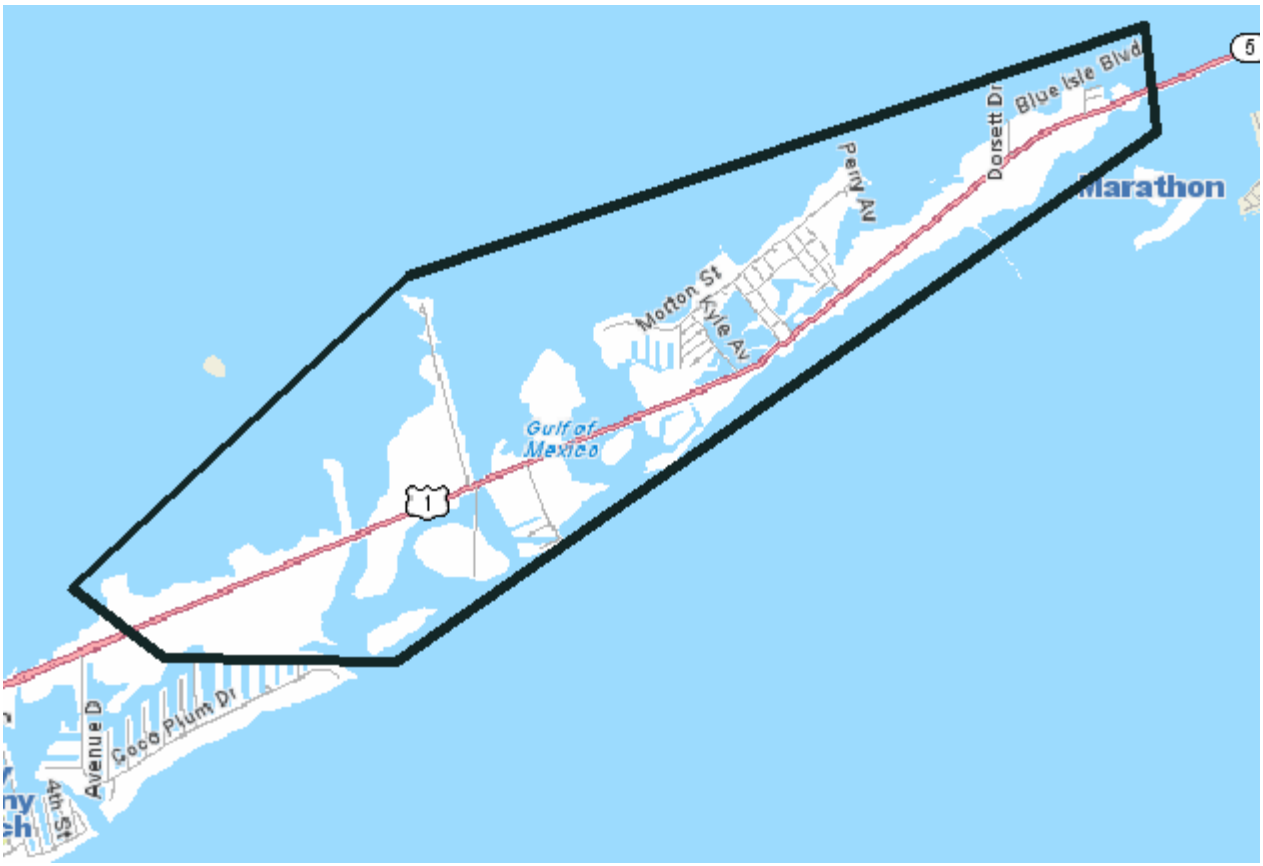


Figure 1-8: Service Area 7 Map, Little Crawl Key and Grassy Key

## 2.1 City of Marathon Stormwater System Alternative Analysis

The construction of a system for collection and disposal of stormwater in the City of Marathon is a major undertaking. Due to the low elevation of the islands, some methods of collection and disposal used on the mainland are not practical. The lay of the land and the porosity of the bedrock make the use of roadside ditches with catch basins and underdrains the most reliable and cost effective approach to managing stormwater in Marathon. This project consists of providing drainage to areas that are primarily already developed. There will be no net increase in impervious area by this project. Therefore, the project will provide as much treatment to the stormwater as is possible given the existing condition but will not be able to provide the 1 inch of treatment over the entire project area or 2.5 inches over the impervious. This would require complete rebuilding of the infrastructure system within the City and the cost is not justified.

Conceptual designs for two alternative means of providing stormwater collection and disposal were generated. Types, sizes and quantities of infrastructure for each alternative were estimated. The analytical spreadsheets shown in the following pages summarize the needed quantities of materials. Realistic 2005 prices were input into the spreadsheets to estimate the cost of construction for the alternatives. All new quantities and layouts were used in this review. These spreadsheets were used to evaluate the different collection system alternatives for each service area at today's prices.

The following tables show the updated pricing for each collection system alternative for each individual service area as previously discussed.

Project: Marathon Stormwater Project Collection Alternative Analysis

Service Area 1: Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | 5,200 | LF | 10 | 52000 | $5,200.00 | $57,200.00 |
| 2 | Injection Wells | 2 | EA | $60,000.00 | $120,000.00 | $12,000.00 | $132,000.00 |
| | Total Construction Cost | | | | $120,000.00 | $12,000.00 | $189,200.00 |

Table 2 - 1

Service Area 1: Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 900 | LF | $75.00 | $67,500.00 | $6,750.00 | $74,250.00 |
| 2 | 18" Tees | 10 | EA | $250.00 | $2,500.00 | $250.00 | $2,750.00 |
| 3 | 18" Drain Pipe | 250 | LF | $65.00 | $16,250.00 | $1,625.00 | $17,875.00 |
| 4 | 18" End Caps | 11 | EA | $150.00 | $1,650.00 | $165.00 | $1,815.00 |
| 5 | Ditch Restoration | 5,200 | LF | $10.00 | $52,000.00 | $5,200.00 | $57,200.00 |
| 6 | Drop Inlets | 10 | EA | $2,000.00 | $20,000.00 | $2,000.00 | $22,000.00 |
| | Total Construction Cost | | | | $159,900.00 | $15,990.00 | $175,890.00 |

Table 2 - 2

Project: Marathon Stormwater Project Collection Alternative Analysis

Service Area 1: Trench Drain System without Sewer - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 900 | LF | $75.00 | $67,500.00 | $6,750.00 | $74,250.00 |
| 2 | 18" Tees | 10 | EA | $250.00 | $2,500.00 | $250.00 | $2,750.00 |
| 3 | 18" Drain Pipe | 250 | LF | $65.00 | $16,250.00 | $1,625.00 | $17,875.00 |
| 4 | 18" End Caps | 11 | EA | $150.00 | $1,650.00 | $165.00 | $1,815.00 |
| 5 | Ditch Restoration | 5,200 | LF | $10.00 | $52,000.00 | $5,200.00 | $57,200.00 |
| 6 | Drop Inlets | 10 | EA | $2,000.00 | $20,000.00 | $2,000.00 | $22,000.00 |
| 7 | Right-of-way Restoration | 2,600 | LF | $10.00 | $26,000.00 | $2,600.00 | $28,600.00 |
| 8 | Overlay | 2,600 | LF | $15.00 | $39,000.00 | $3,900.00 | $42,900.00 |
| | Total Construction Cost | | | | $159,900.00 | $15,990.00 | $247,390.00 |

Table 2 – 3

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 2: Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | | | | | | |
| 2 | Injection Wells | | | | NON APPLICABLE | | |
| | Total Construction Cost | | | | | | |

Table 2 - 4

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 2: Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | | | | | | |
| 2 | 18" Tees | | | | | | |
| 3 | 18" Drain Pipe | | | | | | |
| 4 | 18" End Caps | | | | NON APPLICABLE | | |
| 5 | Ditch Restoration | | | | | | |
| 6 | Drop Inlets | | | | | | |
| | Total Construction Cost | | | | | | |

Table 2 - 5

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 2: Trench Drain System without Sewer- Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | | | | | | |
| 2 | 18" Tees | | | | | | |
| 3 | 18" Drain Pipe | | | | | | |
| 4 | 18" End Caps | | | | | | |
| 5 | Ditch Restoration | | | | NON APPLICABLE | | |
| 6 | Drop Inlets | | | | | | |
| 7 | Restoration | | | | | | |
| 8 | Overlay | | | | | | |
| | Total Construction Cost | | | | | | |

Table 2 - 6

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 3: Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | 49,420 | LF | 10 | 494200 | $49,420.00 | $543,620.00 |
| 2 | Injection Wells | 35 | EA | $60,000.00 | $2,100,000.00 | $210,000.00 | $2,310,000.00 |
| | Total Construction Cost | | | | $2,100,000.00 | $210,000.00 | $2,853,620.00 |

Table 2 - 7

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 3: Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 8,500 | LF | $75.00 | $637,500.00 | $63,750.00 | $701,250.00 |
| 2 | 18" Tees | 90 | EA | $250.00 | $22,500.00 | $2,250.00 | $24,750.00 |
| 3 | 18" Drain Pipe | 2,300 | LF | $65.00 | $149,500.00 | $14,950.00 | $164,450.00 |
| 4 | 18" End Caps | 104 | EA | $150.00 | $15,600.00 | $1,560.00 | $17,160.00 |
| 5 | Ditch Restoration | 49,420 | LF | $10.00 | $494,200.00 | $49,420.00 | $543,620.00 |
| 6 | Drop Inlets | 90 | EA | $2,000.00 | $180,000.00 | $18,000.00 | $198,000.00 |
| | Total Construction Cost | | | | $1,499,300.00 | $149,930.00 | $1,649,230.00 |

Table 2 - 8

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 3: Trench Drain System without Sewer- Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 8,500 | LF | $75.00 | $637,500.00 | $63,750.00 | $701,250.00 |
| 2 | 18" Tees | 90 | EA | $250.00 | $22,500.00 | $2,250.00 | $24,750.00 |
| 3 | 18" Drain Pipe | 2,300 | LF | $65.00 | $149,500.00 | $14,950.00 | $164,450.00 |
| 4 | 18" End Caps | 104 | EA | $150.00 | $15,600.00 | $1,560.00 | $17,160.00 |
| 5 | Ditch Restoration | 49,420 | LF | $10.00 | $494,200.00 | $49,420.00 | $543,620.00 |
| 6 | Drop Inlets | 90 | EA | $2,000.00 | $180,000.00 | $18,000.00 | $198,000.00 |
| 7 | Right-of-way Restoration | 24,710 | LF | $10.00 | $247,100.00 | $24,710.00 | $271,810.00 |
| 8 | Overlay | 24,710 | LF | $15.00 | $370,650.00 | $37,065.00 | $407,715.00 |
| | Total Construction Cost | | | | $1,499,300.00 | $149,930.00 | $2,328,755.00 |

Table 2 - 9

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 4: Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | 79,700 | LF | 10 | 797000 | $79,700.00 | $876,700.00 |
| 2 | Injection Wells | 60 | EA | $60,000.00 | $3,600,000.00 | $360,000.00 | $3,960,000.00 |
| | Total Construction Cost | | | | $3,600,000.00 | $360,000.00 | $4,836,700.00 |

Table 2 - 10

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 4: Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 1,700 | LF | $75.00 | $127,500.00 | $12,750.00 | $140,250.00 |
| 2 | 18" Tees | 179 | EA | $250.00 | $44,750.00 | $4,475.00 | $49,225.00 |
| 3 | 18" Drain Pipe | 4,600 | LF | $65.00 | $299,000.00 | $29,900.00 | $328,900.00 |
| 4 | 18" End Caps | 208 | EA | $150.00 | $31,200.00 | $3,120.00 | $34,320.00 |
| 5 | Ditch Restoration | 79,700 | LF | $10.00 | $797,000.00 | $79,700.00 | $876,700.00 |
| 6 | Drop Inlets | 144 | EA | $2,000.00 | $288,000.00 | $28,800.00 | $316,800.00 |
| | Total Construction Cost | | | | $1,587,450.00 | $158,745.00 | $1,746,195.00 |

Table 2 - 11

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 4: Trench Drain System without Sewer - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 1,700 | LF | $75.00 | $127,500.00 | $12,750.00 | $140,250.00 |
| 2 | 18" Tees | 179 | EA | $250.00 | $44,750.00 | $4,475.00 | $49,225.00 |
| 3 | 18" Drain Pipe | 4,600 | LF | $65.00 | $299,000.00 | $29,900.00 | $328,900.00 |
| 4 | 18" End Caps | 208 | EA | $150.00 | $31,200.00 | $3,120.00 | $34,320.00 |
| 5 | Ditch Restoration | 79,700 | LF | $10.00 | $797,000.00 | $79,700.00 | $876,700.00 |
| 6 | Drop Inlets | 144 | EA | $2,000.00 | $288,000.00 | $28,800.00 | $316,800.00 |
| 7 | Right-of-way Restoration | 39,850 | LF | $10.00 | $398,500.00 | $39,850.00 | $438,350.00 |
| 8 | Overlay | 39,850 | LF | $15.00 | $597,750.00 | $59,775.00 | $657,525.00 |
| | Total Construction Cost | | | | $1,587,450.00 | $158,745.00 | $2,842,070.00 |

Table 2 - 12

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 5: Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | 153,220 | LF | 10 | 1532200 | $153,220.00 | $1,685,420.00 |
| 2 | Injection Wells | 100 | EA | $60,000.00 | $6,000,000.00 | $600,000.00 | $6,600,000.00 |
| | Total Construction Cost | | | | $6,000,000.00 | $600,000.00 | $8,285,420.00 |

Table 2 - 13

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 5: Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 26,300 | LF | $75.00 | $1,972,500.00 | $197,250.00 | $2,169,750.00 |
| 2 | 18" Tees | 276 | EA | $250.00 | $69,000.00 | $6,900.00 | $75,900.00 |
| 3 | 18" Drain Pipe | 7,200 | LF | $65.00 | $468,000.00 | $46,800.00 | $514,800.00 |
| 4 | 18" End Caps | 322 | EA | $150.00 | $48,300.00 | $4,830.00 | $53,130.00 |
| 5 | Ditch Restoration | 153,220 | LF | $10.00 | $1,532,200.00 | $153,220.00 | $1,685,420.00 |
| 6 | Drop Inlets | 276 | EA | $2,000.00 | $552,000.00 | $55,200.00 | $607,200.00 |
| | Total Construction Cost | | | | $4,642,000.00 | $464,200.00 | $5,106,200.00 |

Table 2 - 14

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 5: Trench Drain System without Sewer - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 26,300 | LF | $75.00 | $1,972,500.00 | $197,250.00 | $2,169,750.00 |
| 2 | 18" Tees | 276 | EA | $250.00 | $69,000.00 | $6,900.00 | $75,900.00 |
| 3 | 18" Drain Pipe | 7,200 | LF | $65.00 | $468,000.00 | $46,800.00 | $514,800.00 |
| 4 | 18" End Caps | 322 | EA | $150.00 | $48,300.00 | $4,830.00 | $53,130.00 |
| 5 | Ditch Restoration | 153,220 | LF | $10.00 | $1,532,200.00 | $153,220.00 | $1,685,420.00 |
| 6 | Drop Inlets | 276 | EA | $2,000.00 | $552,000.00 | $55,200.00 | $607,200.00 |
| 7 | Right-of-way Restoration | 76,610 | LF | $10.00 | $766,100.00 | $76,610.00 | $842,710.00 |
| 8 | Overlay | 76,610 | LF | $15.00 | $1,149,150.00 | $114,915.00 | $1,264,065.00 |
| | Total Construction Cost | | | | $4,642,000.00 | $464,200.00 | $7,212,975.00 |

Table 2 - 15

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 6 : Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | 54,400 | LF | 10 | $544,000.00 | $54,400.00 | $598,400.00 |
| 2 | Injection Wells | 40 | EA | $60,000.00 | $2,400,000.00 | $240,000.00 | $2,640,000.00 |
| | Total Construction Cost | | | | $2,400,000.00 | $240,000.00 | $3,238,400.00 |

Table 2 - 16

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 6 : Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 9,400 | LF | $75.00 | $705,000.00 | $70,500.00 | $775,500.00 |
| 2 | 18" Tees | 98 | EA | $250.00 | $24,500.00 | $2,450.00 | $26,950.00 |
| 3 | 18" Drain Pipe | 2,600 | LF | $65.00 | $169,000.00 | $16,900.00 | $185,900.00 |
| 4 | 18" End Caps | 115 | EA | $150.00 | $17,250.00 | $1,725.00 | $18,975.00 |
| 5 | Ditch Restoration | 54,400 | LF | $10.00 | $544,000.00 | $54,400.00 | $598,400.00 |
| 6 | Drop Inlets | 98 | EA | $2,000.00 | $196,000.00 | $19,600.00 | $215,600.00 |
| | Total Construction Cost | | | | $950,750.00 | $95,075.00 | $1,821,325.00 |

Table 2 - 17

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 6 : Trench Drain System without Sewer - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 9,400 | LF | $75.00 | $705,000.00 | $70,500.00 | $775,500.00 |
| 2 | 18" Tees | 98 | EA | $250.00 | $24,500.00 | $2,450.00 | $26,950.00 |
| 3 | 18" Drain Pipe | 2,600 | LF | $65.00 | $169,000.00 | $16,900.00 | $185,900.00 |
| 4 | 18" End Caps | 115 | EA | $150.00 | $17,250.00 | $1,725.00 | $18,975.00 |
| 5 | Ditch Restoration | 54,400 | LF | $10.00 | $544,000.00 | $54,400.00 | $598,400.00 |
| 6 | Drop Inlets | 98 | EA | $2,000.00 | $196,000.00 | $19,600.00 | $215,600.00 |
| 7 | Right-of-way Restoration | 27,200 | LF | $10.00 | $272,000.00 | $27,200.00 | $299,200.00 |
| 8 | Overlay | 27,200 | LF | $15.00 | $408,000.00 | $40,800.00 | $448,800.00 |
| | Total Construction Cost | | | | $950,750.00 | $95,075.00 | $2,569,325.00 |

Table 2 - 18

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 7: Shallow Injection Well System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | Trench Restoration | 7,800 | LF | 10 | 78000 | $7,800.00 | $85,800.00 |
| 2 | Injection Wells | 7 | EA | $60,000.00 | $420,000.00 | $42,000.00 | $462,000.00 |
| | Total Construction Cost | | | | $420,000.00 | $42,000.00 | $547,800.00 |

Table 2 - 19

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 7: Trench Drain System - Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 1,400 | LF | $75.00 | $105,000.00 | $10,500.00 | $115,500.00 |
| 2 | 18" Tees | 15 | EA | $250.00 | $3,750.00 | $375.00 | $4,125.00 |
| 3 | 18" Drain Pipe | 400 | LF | $65.00 | $26,000.00 | $2,600.00 | $28,600.00 |
| 4 | 18" End Caps | 17 | EA | $150.00 | $2,550.00 | $255.00 | $2,805.00 |
| 5 | Ditch Restoration | 7,800 | LF | $10.00 | $78,000.00 | $7,800.00 | $85,800.00 |
| 6 | Drop Inlets | 15 | EA | $2,000.00 | $30,000.00 | $3,000.00 | $33,000.00 |
| | Total Construction Cost | | | | $245,300.00 | $24,530.00 | $269,830.00 |

Table 2 - 20

Project: Marathon Stormwater Project Collection Alternative Analysis
Service Area 7: Trench Drain System without Sewer- Construction Costs

| # | Description | Quantity | Unit | Unit Cost | Subtotal | Contingency, 10% | Total |
|---|---|---|---|---|---|---|---|
| 1 | 18" Perforated Trench Drain | 1,400 | LF | $75.00 | $105,000.00 | $10,500.00 | $115,500.00 |
| 2 | 18" Tees | 15 | EA | $250.00 | $3,750.00 | $375.00 | $4,125.00 |
| 3 | 18" Drain Pipe | 400 | LF | $65.00 | $26,000.00 | $2,600.00 | $28,600.00 |
| 4 | 18" End Caps | 17 | EA | $150.00 | $2,550.00 | $255.00 | $2,805.00 |
| 5 | Ditch Restoration | 7,800 | LF | $10.00 | $78,000.00 | $7,800.00 | $85,800.00 |
| 6 | Drop Inlets | 15 | EA | $2,000.00 | $30,000.00 | $3,000.00 | $33,000.00 |
| 7 | Right-of-way Restoration | 3,900 | LF | $10.00 | $39,000.00 | $3,900.00 | $42,900.00 |
| 8 | Overlay | 3,900 | LF | $15.00 | $58,500.00 | $5,850.00 | $64,350.00 |
| | Total Construction Cost | | | | $245,300.00 | $24,530.00 | $377,080.00 |

Table 2 - 21

## 2.2 City of Marathon Stormwater Operation and Maintenance Cost Estimates

The cost of operating and maintaining stormwater collection and treatment facilities must be recovered in the yearly fees collected as part of the Stormwater Utility and should be considered when planning the stormwater facilities. The City's stormwater engineers, Weiler Engineering (WEC) has many years of experience with estimating O&M costs and has prepared estimates for WEC's proposed approach.

The cost of maintenance for a stormwater system is primarily labor and equipment necessary to maintain ditches and cleanout drop inlets and pipes should they become clogged. The cost model developed by WEC addresses these two components of the O&M costs:

- **Labor costs**: The required labor for maintenance is estimated based upon the size of the service area. The man-hours are inputs in the cost estimating spreadsheet. Wages for each position are in a data field. The model computes the costs of health insurance, workers compensation, payroll taxes, vacation time, holidays, etc. and determines a true hourly cost for each position. Overtime is estimated as a percentage of regular hours for certain positions. The model then calculates the direct cost for labor, benefits and overtime as shown on the summary sheets.
- **Vehicle and Equipment Expense**: Vehicle expense for the maintenance staff are calculated using the required man-hours. An hourly vehicle cost is estimated by amortizing the cost new over 7 years and adding anticipated fuel consumption, repairs, insurance, etc.

We used the model to estimate annual costs for six of the seven service areas anticipated in our plan. The Boot Key service area was excluded since the area is largely undeveloped and will not have any significant infrastructure to maintain. The annual cost is based upon the assumption that the selected stormwater system infrastructure would be cleaned once each year. Under actual conditions, it is likely that some infrastructure may need to be cleaned more frequently while others may need to be cleaned less frequently, depending on the location, amount of stormwater captured and other variables. The assumption of cleaning the entire system once per year allows for a comparison of the O&M costs for the options under consideration, with the realization that the actual frequency of cleaning needed may vary. A summary page of the cost estimate models for each of the service areas is attached, followed by a summary of the estimated annual O&M cost for the entire City.

# Marathon Service Area 1 Stormwater O&M Costs

**Injection Well Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 2 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $732.00 | $183.00 | $915.00 |
| Benefits | $300.23 | $75.06 | $375.29 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $36.60 | $9.15 | $45.75 |
| Operating Supplies | $73.20 | $18.30 | $91.50 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $18.30 | $4.58 | $22.88 |
| Water | $7.32 | $1.83 | $9.15 |
| Vehicle Expense | $346.97 | $86.74 | $433.72 |
| | | **Total Annual** | **$1,893.28** |

Table 2-21: Area 1 Injection Well O&M Costs

# Marathon Service Area 1 Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 10 |
| Drain Pipes | LF | 250 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $1,372.50 | $343.13 | $1,715.63 |
| Benefits | $562.94 | $140.73 | $703.67 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $68.63 | $17.16 | $85.78 |
| Operating Supplies | $137.25 | $34.31 | $171.56 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $34.31 | $8.58 | $42.89 |
| Water | $13.73 | $3.43 | $17.16 |
| Vehicle Expense | $650.57 | $162.64 | $813.22 |
| | | **Total Annual** | **$3,549.90** |

Table 2-22: Area 1 Exfiltration Trench O&M Cost

# Marathon Service Area 2 Stormwater O&M Costs

**Injection Well Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $0.00 | $0.00 | $0.00 |
| Benefits | $0.00 | $0.00 | $0.00 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $0.00 | $0.00 | $0.00 |
| Operating Supplies | $0.00 | $0.00 | $0.00 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $0.00 | $0.00 | $0.00 |
| Water | $0.00 | $0.00 | $0.00 |
| Vehicle Expense | $0.00 | $0.00 | $0.00 |
| | | **Total Annual** | **$0.00** |

Table 2-23: Area 2 Injection Well O&M Cost

# Marathon Service Area 2 Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $0.00 | $0.00 | $0.00 |
| Benefits | $0.00 | $0.00 | $0.00 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $0.00 | $0.00 | $0.00 |
| Operating Supplies | $0.00 | $0.00 | $0.00 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $0.00 | $0.00 | $0.00 |
| Water | $0.00 | $0.00 | $0.00 |
| Vehicle Expense | $0.00 | $0.00 | $0.00 |
| | | **Total Annual** | **$0.00** |

Table 2-24: Area 2 Exfiltration Trench O&M Cost

# Marathon Service Area 3 Stormwater O&M Costs

**Injection Well Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 35 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $12,810.00 | $3,202.50 | $16,012.50 |
| Benefits | $5,254.08 | $1,313.52 | $6,567.60 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $640.50 | $160.13 | $800.63 |
| Operating Supplies | $1,281.00 | $320.25 | $1,601.25 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $320.25 | $80.06 | $400.31 |
| Water | $128.10 | $32.03 | $160.13 |
| Vehicle Expense | $6,072.02 | $1,518.00 | $7,590.02 |
| | | **Total Annual** | **$33,132.43** |

Table 2-25: Area 3 Injection Well O&M Cost

# Marathon Service Area 3 Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 90 |
| Drain Pipes | LF | 2300 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $12,352.50 | $3,088.13 | $15,440.63 |
| Benefits | $5,066.43 | $1,266.61 | $6,333.04 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $617.63 | $154.41 | $772.03 |
| Operating Supplies | $1,235.25 | $308.81 | $1,544.06 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $308.81 | $77.20 | $386.02 |
| Water | $123.53 | $30.88 | $154.41 |
| Vehicle Expense | $5,855.16 | $1,463.79 | $7,318.95 |
| | | **Total Annual** | **$31,949.13** |

Table 2-26: Area 3 Exfiltration Trench O&M Cost

# Marathon Service Area 4 Stormwater O&M Costs

**Injection Well Option**

Table 2-27: Area 4 Injection Well O&M Cost

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 60 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $21,960.00 | $5,490.00 | $27,450.00 |
| Benefits | $9,006.99 | $2,251.75 | $11,258.74 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $1,098.00 | $274.50 | $1,372.50 |
| Operating Supplies | $2,196.00 | $549.00 | $2,745.00 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $549.00 | $137.25 | $686.25 |
| Water | $219.60 | $54.90 | $274.50 |
| Vehicle Expense | $10,409.18 | $2,602.29 | $13,011.47 |
| | | **Total Annual** | **$56,798.46** |

# Marathon Service Area 4 Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 144 |
| Drain Pipes | LF | 4600 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $19,764.00 | $4,941.00 | $24,705.00 |
| Benefits | $8,106.29 | $2,026.57 | $10,132.86 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $988.20 | $247.05 | $1,235.25 |
| Operating Supplies | $1,976.40 | $494.10 | $2,470.50 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $494.10 | $123.53 | $617.63 |
| Water | $197.64 | $49.41 | $247.05 |
| Vehicle Expense | $9,368.26 | $2,342.06 | $11,710.32 |
| | | **Total Annual** | **$51,118.61** |

Table 2-28: Area 4 Exfiltration Trench O&M Cost

# Marathon Service Area 5 Stormwater O&M Costs

**Injection Well Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 100 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $36,600.00 | $9,150.00 | $45,750.00 |
| Benefits | $15,011.65 | $3,752.91 | $18,764.56 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $1,830.00 | $457.50 | $2,287.50 |
| Operating Supplies | $3,660.00 | $915.00 | $4,575.00 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $915.00 | $228.75 | $1,143.75 |
| Water | $366.00 | $91.50 | $457.50 |
| Vehicle Expense | $17,348.63 | $4,337.16 | $21,685.78 |
| | | **Total Annual** | **$94,664.09** |

Table 2-29: Area 5 Injection Well O&M Cost

# Marathon Service Area Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 276 |
| Drain Pipes | LF | 7200 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $37,881.00 | $9,470.25 | $47,351.25 |
| Benefits | $15,537.06 | $3,884.26 | $19,421.32 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $1,894.05 | $473.51 | $2,367.56 |
| Operating Supplies | $3,788.10 | $947.03 | $4,735.13 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $947.03 | $236.76 | $1,183.78 |
| Water | $378.81 | $94.70 | $473.51 |
| Vehicle Expense | $17,955.83 | $4,488.96 | $22,444.79 |
| | | **Total Annual** | **$97,977.34** |

Table 2-30: Area 5 Exfiltration Trench O&M Cost

# Marathon Service Area 6 Stormwater O&M Costs

**Injection Well Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 40 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $14,640.00 | $3,660.00 | $18,300.00 |
| Benefits | $6,004.66 | $1,501.16 | $7,505.82 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $732.00 | $183.00 | $915.00 |
| Operating Supplies | $1,464.00 | $366.00 | $1,830.00 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $366.00 | $91.50 | $457.50 |
| Water | $146.40 | $36.60 | $183.00 |
| Vehicle Expense | $6,939.45 | $1,734.86 | $8,674.31 |
| | | **Total Annual** | **$37,865.64** |

Table 2-31: Area 6 Injection Well O&M Cost

# Marathon Service Area 6 Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 98 |
| Drain Pipes | LF | 2600 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $13,450.50 | $3,362.63 | $16,813.13 |
| Benefits | $5,516.78 | $1,379.20 | $6,895.98 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $672.53 | $168.13 | $840.66 |
| Operating Supplies | $1,345.05 | $336.26 | $1,681.31 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $336.26 | $84.07 | $420.33 |
| Water | $134.51 | $33.63 | $168.13 |
| Vehicle Expense | $6,375.62 | $1,593.91 | $7,969.53 |
| | | **Total Annual** | **$34,789.05** |

Table 2-32: Area 6 Exfiltration Trench O&M Cost

# Marathon Service Area 7 Stormwater O&M Costs

**Injection Well Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 0 |
| Drain Pipes | LF | 0 |
| Injection Wells | Ea | 7 |

Margin % = 0.25

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $2,562.00 | $640.50 | $3,202.50 |
| Benefits | $1,050.82 | $262.70 | $1,313.52 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $128.10 | $32.03 | $160.13 |
| Operating Supplies | $256.20 | $64.05 | $320.25 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $64.05 | $16.01 | $80.06 |
| Water | $25.62 | $6.41 | $32.03 |
| Vehicle Expense | $1,214.40 | $303.60 | $1,518.00 |
| | | **Total Annual** | **$6,626.49** |

Table 2-33: Area 7 Injection Well O&M Cost

# Marathon Service Area 7 Stormwater O&M Costs

**Exfiltration Trench Option**

## Infrastructure Inputs

| Description | Units | Quantity |
|---|---|---|
| Catch Basins | Ea | 15 |
| Drain Pipes | LF | 400 |
| Injection Wells | Ea | 0 |

Margin % = 25%

| **Stormwater O&M Costs** | | **Margin $** | **Total $** |
|---|---|---|---|
| Labor | $2,058.75 | $514.69 | $2,573.44 |
| Benefits | $844.41 | $211.10 | $1,055.51 |
| Overtime | $0.00 | $0.00 | $0.00 |
| Office Supplies | $102.94 | $25.73 | $128.67 |
| Operating Supplies | $205.88 | $51.47 | $257.34 |
| Postage & Freight | $0.00 | $0.00 | $0.00 |
| Telephone | $51.47 | $12.87 | $64.34 |
| Water | $20.59 | $5.15 | $25.73 |
| Vehicle Expense | $975.86 | $243.97 | $1,219.83 |
| | | **Total Annual** | **$5,324.86** |

Table 2-34: Area 7 Exfiltration Trench O&M Cost

# Environmental Effects

## 3.1 Project Area Characteristics

### 3.1a Project Area

The Marathon Stormwater Project service area is defined as the east end of the Seven Mile Bridge extending eastward to Tom's Harbor Bridge and includes the following: Knight's Key, Boot Key, Vaca Key, the entire Sombrero area, Fat Deer Key, Coco Plum, Long Point Key, Little Crawl Key, Crawl Key, Valhalla Island, and Grassy Key. The entire service area is shown in figure 1-1, individual service area maps are shown in figures 1-2 through 1-8.

### 3.1b Geology

The Floridian Plateau, which is characterized by chemically or biologically produced sediments, underlies the Everglades, Florida Bay, and the Florida Keys, as well as a large portion of the west Florida continental shelf. The islands of the Florida Keys represent elevated remnants of a Pleistocene coral reef tract that extends from Soldier Key through Key West. The Florida Keys can be divided into two physiographic provinces distinguished by the shape, orientation, and lithology of the banks and islands in each. The northernmost province of the Florida Keys (Key Biscayne through Marathon) is characterized by long, narrow islands oriented northeast to southwest. These narrow islands and the man-made land bridges between them restrict water exchange between the Atlantic, Florida Bay, and the various sounds in this area. It is here that the Florida Reef Tract is best developed. These islands are formed of an aerially weathered and re-crystallized limestone known as Key Largo Limestone. The southwestern province of the Florida Keys (Bahia Honda through Key West) is characterized by roughly triangular islands oriented in a northwest to southeast direction, or at right angles to the Florida Reef Tract. These islands are built on an extension of the older Miami Oolite Formation and their northwest-southeast orientation results from the directional movement of tidal currents over differing sea-level stands in the Gulf of Mexico and the Straits of Florida.

### 3.1c Topography

Generally, the islands of the Florida Keys lie only 0.6 to 1.0 m (2 to 3 feet) above mean high tide. Maximum elevations, seen in the Key Largo area, reach only 5.5 m (18 feet) above sea level.

### 3.1d Climate

The Marathon area has a mild semitropical maritime climate with a small daily range in temperature. Water temperatures and salinities vary seasonally and are affected by individual storms and seasonal events. The winds that affect the Florida Keys are generally southeast to easterly and they bring in moist tropical air over the area. Major storms, including hurricanes, historically have affected the area on an average of once every seven years. During winter, cold fronts occasionally push rapidly through the area, and may cause rapid drops in temperature and high winds from the northwest. These winter conditions generally last 4 to 5 days. There is a relatively long, and sometimes severe, dry season

(November through April) and a wet season. Approximately 50 to 80 percent of the annual rainfall is received during the May through October wet season. These wet/dry seasonal precipitation levels, coupled with the winter increase in population seen throughout the Florida Keys, have numerous ramifications in terms of freshwater resource allocation and potential nearshore pollution problems within the Marathon area.

### 3.1e Hydrology

In the Florida Keys, physical oceanographic processes (including tides, currents, and surface waves) force local and regional circulation and, as a result, drive water-mass transport and exchange, embayment flushing, and bottom sediment transport. Working separately or in combination, these processes affect the local water quality by transporting potential pollutants (polluted waters or sediments) into or out of the region, or by maintaining them in place. The Florida Current sweeps through the Straits of Florida and dominates the offshore transport of the entire region. Surface measurements at 5 km offshore of Marathon and Miami recorded mean flows to the east and north at 20 cm/s. A deep countercurrent (below 400 m) has been observed in the northern Keys and off the eastern Florida mainland; however, this does not affect the shallow coastal waters. Cyclonic eddies that spin off the western edge of the Florida Current have been observed east of Miami and are probably common throughout the northern Keys. These eddies are 20 to 30 km long (north-south) and 10 km across (east-west) and they move northward through the coastal waters with translation speeds of 25 cm/s.

Two principal aquifers underlie Monroe County. These are the Biscayne Aquifer, commonly referred to as the Surficial Aquifer System, and the Floridan Aquifer, which is a confined or artesian aquifer system.

The Biscayne Aquifer is an unconfined aquifer system under water-table conditions. Aquifers under water-table conditions are free to rise and fall in the direct relation to regional and local recharge mechanisms, such as precipitation, diurnal and seasonal tidal fluctuations, or discharges into canal systems, the latter of which constitute groundwater loss. The Biscayne Aquifer System is regarded as the primary sole source aquifer of potable water throughout most of southeastern Florida, but in the Florida Keys it is designated as a non-potable water source because of its excessive chloride content. It is one of the most productive and permeable aquifer systems in the world.

The elevation, or mean distance to the surface, of the Biscayne Aquifer closely mimics surface elevation contours of the Florida Keys and averages approximately 1 m (3 feet) below surface grade. These elevations vary seasonally in response to periods of increased and/or decreased rainfall amounts, and vary on a daily/seasonal basis due to tidal fluctuations. On some of the larger Keys, with areas of high topographical relief (i.e., Big Pine Key, Key West, Sugarloaf Key, and Cudjoe Key), there are thin lenses of non-potable freshwater that typically average 6 m (20 feet) in thickness. The dimensions of these lenses vary seasonally, but are not sufficient to meet the local population's demand for drinking water. Consequently, the residents of the Florida Keys, despite an abundant supply of non-potable water, must receive all of their potable water from Dade County via the Florida Keys Aqueduct Authority.

Beneath the Florida Keys, the Biscayne Aquifer runs through the Miami Limestone, Key Largo Limestone, and Tamiami Formations. The Tamiami Formation underlies the Key Largo Limestone in the northern Keys. This formation grades downward in a poorly hardened limestone and calcareous sand of low permeability into a more highly permeable sandy fossiliferous limestone intermixed with clastic sediments. The Hawthorne Group forms the boundary between the upper Biscayne and deeper Floridan Aquifer systems.

The Floridan Aquifer runs between 244 and 670 m (800 and 2,200 feet) below ground in the Marathon area. It is also considered a non-potable water source in the Florida Keys. The 670 m lower boundary of the Floridan Aquifer is described as the Boulder Zone and is generally considered the lower boundary of Floridan Plateau sediments.

## 3.2 Marine Biological Communities

Broadly speaking, the Florida Keys National Marine Sanctuary (FKNMS) contains three unique and critically important marine biological communities:

1. The mangrove forest lining its shores;
2. The extensive seagrass meadows, estimated to be some of the largest in the world, which lie on both sides of the island chain and extend offshore to the reef tract itself; and
3. The Florida Reef Tract, which contains the only shallow-water coral reef ecosystem within the continental United States.

All these communities are tremendously complex within themselves, and each is made up of a vast number of interacting organisms. As is the case with the redwood forests of California, a few key plant and animal species define each community. These species, the mangroves, seagrasses, and hard corals, actually build and define the habitat, providing the structure that supports each community's countless individual inhabitants. Most of the fish and invertebrate species that contribute so heavily to Florida's sports and commercial fishing economy, as well as the majority of other mobile reef species, utilize all these different habitats at varying stages of their development.

The marine biological communities off Marathon form an integrated part of the FKNMS ecosystem. These marine biological resources are unique within the United States, and it is the objective of the National Marine Sanctuary Program to preserve and enhance them for future generations.

## 3.3 Institutional Structure

The entire project area lies within the City of Marathon. Institutional services within the bulk of the Marathon population center are provided by the City, Monroe County, or various state agencies such as the Florida Department of Environmental Protection, South Florida Water Management District, Florida Department of Health and Rehabilitative Services, Florida Highway Patrol, and the Florida Fish and Wildlife Commission. Several small stormwater projects including 39$^{th}$ Street Stormwater Project and the Sombrero Beach Stormwater Project provide for stormwater collection and disposal within the public right-of-way. The only other stormwater systems are on private developments.

## 3.4 Environmentally Sensitive Resources

Characteristics of the project area, such as geology, topography, climate, and hydrology are discussed above. Environmentally sensitive resources within the project area include upland hardwood hammock communities, mangrove shoreline and wetland communities, marine grass communities in the nearshore ocean waters and throughout Florida Bay, and live coral reef systems. The coral reef systems extend almost continuously for the full length of the project area and, with the exception of near-shore patch reefs, are located 5 to 6 miles offshore on the ocean side. Both the marine grass communities and the reef systems require very high water quality, particularly with regard to suspended sediments and nutrients. Nutrient enrichment of these waters, some of which is attributable to present wastewater and

stormwater management practices in the planning area and throughout the Keys, has contributed to the decline of these marine systems.

## 3.5 Environmental Impacts of Construction

Construction of stormwater collection systems will require installation of approximately 66 miles of ditch work and 12 miles of underdrain in the service areas. Pipe diameters are normally 18 inches buried with 5 to 6 feet of cover. The drain lines will be installed in the same trench as the sanitary sewer which will result in minimizing construction impacts. This construction activity will result in land disturbance, traffic interruptions, noise, and some short term pollution of water and air.

### 3.5a Land Disturbance

Land disturbance resulting from constructing the vacuum and pressure sewers, and stormdrains should not result in any adverse hydrogeologic or groundwater quality impacts. Some of the excavation will occur through thin surface soils or fill, but most will be into the Key Largo Limestone. Trenches will be backfilled with the material removed and clean gravel and the hydrology of the upper part of the Key Largo Limestone will not be significantly affected. Turbidity in shallow groundwater caused by the excavation and backfilling should not migrate far from the backfilled trench and should not have any adverse impacts on surface waters.

### 3.5b Noise

Noise will be generated by excavation equipment, other heavy machinery, pumps, and truck traffic during construction activities. These short-term nuisance impacts are unavoidable. Construction activities associated with the system should not penetrate any upland hardwood or mangrove communities and wildlife in these areas should not be significantly impacted by noise. Noise impacts on residents in the construction areas can be minimized by controlling work hours and utilizing noise reduction measures.

### 3.5c Air Quality

Potential sources of air pollution during construction activities include fugitive dust emissions and engine exhaust emissions. Some emission of fugitive dust is unavoidable, particularly during prolonged dry periods or in windy conditions. Fugitive dust emissions can be controlled to some extent by altering excavation techniques and wetting down or otherwise stabilizing areas with high potential for dust generation. These control methods should be considered for construction in close proximity to residences or businesses. Engine exhaust emissions are unavoidable and should not be significant in comparison to exhaust emissions generated by traffic on US Highway 1 and other roads in the construction area.

### 3.5d Surface Water

The greatest potential impact to surface waters resulting from construction activities is the potential transport of sediment, turbidity, and other pollutants to nearshore marine waters by stormwater runoff from disturbed areas. This impact can not be entirely eliminated, but can be controlled by employing proper construction and sediment control practices. Construction practices that will minimize sediment loading to surface waters include quick restoration of trenches and adjacent areas and recirculation of

dewatering discharges into other trench sections. Sediment control practices, such as utilization of silt fences and turbidity booms, should also be used extensively to minimize sediment loading to surface waters. Other potential adverse impacts to surface waters, such as fuel or chemical spills, can be minimized by using proper fuel and chemical handling and storage methods.

## 3.5e Traffic

Traffic impacts caused by construction of the collection system are unavoidable. All of the lines will be constructed within public roads and right-of-ways or private roadway easements. Unsafe traffic conditions and inconveniences to residents and businesses can be minimized by timely completion of construction segments and implementation of a traffic control plan approved by the Florida Department of Transportation and The City of Marathon.

## 3.5f Historical and Archaeological Resources

Construction and operation of stormwater collection and disposal systems should not have any significant impacts on historic or archaeological resources. All construction of the system will occur within developed, public and private right-of-way (road and highway shoulders). Nearly all of these construction areas have been previously disturbed or filled and have very low potential for containing significant archaeological sites. No historic structures will be impacted by these construction activities.

## 3.6 Long-Term Environmental Impacts of Operation

Long-term operation of the stormwater facilities will cause minimal long-term impacts as there is no mechanical equipment associated with the operation except maintenance equipment.

## 3.7 Secondary Impacts

A beneficial secondary impact of this project will be a gradual improvement in confined and nearshore water quality within the service area. Once the wastewater and stormwater systems are on-line and all existing septic tanks and cesspits are emptied, cleaned and abandoned, wastewater nutrient loading to the canals and nearshore waters should be eliminated. Improvement in water quality should be noticeable first in confined canals, particularly previously-identified “hot spots”.

Further away from these confined waters, water quality improvement may be less dramatic and take longer to occur, but will occur over time as a result of the decrease in nutrient loading.

One potential secondary impact that Marathon residents have expressed concern about in public meetings is that the development of publicly owned wastewater and stormwater facilities will cause an increase in the rate of growth. The rate of growth in Marathon and all of Monroe County is very strictly controlled by the Monroe County Rate of Growth Ordinance (ROGO), and the development of publicly owned wastewater facilities will not cause an increase in this controlled growth rate. The original ROGO development allocation of 255 units per year throughout Monroe County was based on hurricane evacuation time requirements and not wastewater facility availability.

# Section 4
# Selected Alternative

## 4.1 City of Marathon Selected Stormwater System Construction Estimate Summary

The Weiler Engineering Corporation (WEC) has applied its depth of experience in stormwater planning, design, construction and operation in the Florida Keys to developing our approach for the City of Marathon. The following is a discussion of how the construction cost estimates were prepared for the City.

The first step in the construction estimate process was to determine the system project approach which is discussed in the executive summary. Once the service areas were established each area was looked at individually for the specific needs of that area. Some areas had existing facilities available and other areas had such a low density that only on-site systems would be cost effective in these areas.

The second step included acquiring aerial maps of each service area. These maps were red lined and the number of lineal feet of pipe needed in each service area was determined. Current local prices were used to determine the actual pipe costs, installation costs, and restoration costs.

Next, Weiler determined the appropriate stormwater collection and disposal system for each area. The cost modeling was done with the appropriate equipment for each service area. System costs include piping, trenching, restoration, pumps, and drop inlets to name a few. Geographical differences and density issues were also taken into account while cost modeling. Operation and maintenance costs were also considered while selecting the appropriate stormwater system for each service area. The O&M cost for either alternative using exfiltration trenches is identical since the only difference in the systems is the location of the perforated storm drainage pipe. The difference in the O&M costs between the injection well alternative and the exfiltration trench alternatives was found to be negligible, as shown in Table 4-2. The selection of the appropriate alternative was therefore driven solely by the capital cost of construction.

## 4.2 Selected Collection Systems and Service Areas

Based upon cost comparisons and existing condition it is determined that the underdrain system is the best for almost all of Marathon. The system is installed in the same trench as the wastewater piping and does not require a large amount of hydraulic head to work.

### 4.2a Service Area 1

Boundaries

Service Area 1 includes all of Knight's Key. This area includes all residential and commercial property on the Island.

Description

Service Area 1 consists of residential units, condominiums, and a commercial area that is currently an RV resort, but is soon to be redeveloped into resort-style condominiums by Earthmark Companies, LLC.

Proposed Collection System Alternative

The proposed development will be required to provide a complete stormwater system by SFWMD. The remainder of the service area will be provided with roadside ditches and catch basins.

Proposed Disposal Alternative

The catch basins will be connected to an underdrain system for disposal where the percolation rate allows. When the percolation does not allow, wells will be installed.

## 4.2b Service Area 2

Boundaries

Service Area 2 includes all of Boot Key. This area includes all property on the Island.

Description

Service Area 2 consists of one developed area located around the base of the radio tower. The facilities consist of a radio station and a boat basin and trap yard.

Proposed Collection System Alternative

No collection system is needed in this area.

## 4.2c Service Area 3

Boundaries

Service Area 3 includes the area beginning just east of Knight's Key and extending up to approximately 33rd Street including both ocean and bay sides of the Overseas Highway but excluding Boot Key.

Description

Service Area 3 consists of a multitude of developments including: restaurants, resorts, marinas, commercial properties, condominiums, motels, residential areas, the hospital, and continuing development.

Proposed Collection System Alternative

The service area will be provided with roadside ditches and catch basins.

Proposed Disposal Alternative

The catch basins will be connected to an underdrain system for disposal where the percolation rate allows. When the percolation does not allow, wells will be installed.

## 4.2d Service Area 4

Boundaries

Service Area 4 will serve the area from approximately 33rd Street up to 60th Street and includes both ocean and bay sides of the Overseas Highway as well as all of the entire Sombrero area including the golf course. It would also include the Kmart Plaza, the HUD Eastwind Apartments, and Winn Dixie.

Description

Service Area 4 consists of a many developments including: marinas, motels, condominiums, restaurants, shopping centers, low income housing, residential units, and continuing development.

Proposed Collection System Alternative

The service area will be provided with roadside ditches and catch basins.

Proposed Disposal Alternative

The catch basins will be connected to an underdrain system for disposal where the percolation rate allows. When the percolation does not allow, wells will be installed.

## 4.2e Service Area 5

Boundaries

Service Area 5 includes the area beginning at 60th Street and extending to Vaca Cut both ocean and bay sides included.

Description

Service Area 5 consists of a multitude of developments including: resorts, an airport, marinas, commercial properties, condominiums, motels, residential areas, restaurants, the City of Marathon offices, and continuing development.

Proposed Collection System Alternative

The service area will be provided with roadside ditches and catch basins.

Proposed Disposal Alternative

The catch basins will be connected to an underdrain system for disposal where the percolation rate allows. When the percolation does not allow, wells will be installed.

## 4.2f Service Area 6

Boundaries

Service Area 6 includes the area east of Vaca Cut to Coco Plum Drive and extending down to the end of Coco Plum Drive.

Description

Service Area 6 consists of a multitude of developments including: resorts, marinas, commercial properties, motels, residential areas, restaurants, and continuing development.

Proposed Collection System Alternative

The service area will be provided with roadside ditches and catch basins.

Proposed Disposal Alternative

The catch basins will be connected to an underdrain system for disposal where the percolation rate allows. When the percolation does not allow, wells will be installed.

## 4.2h Service Area 7

Boundaries

Service Area 7 includes the entire Grassy Key area including the Crawl Keys, Valhalla Island, and Long Point Key.

Description

Service Area 7 consists of numerous developments including: trailer parks, resorts, commercial properties, condominiums, residential areas, restaurants, and minimal continued development.

Proposed Collection System Alternative

The service area will be provided with roadside ditches and catch basins.

Proposed Disposal Alternative

The catch basins will be connected to an underdrain system for disposal where the percolation rate allows. When the percolation does not allow, wells will be installed.

### Table 4 - 1 Marathon Stormwater Costs - All Service Areas

| Service Area | Underdrain Total LF | Underdrain Costs Total | Collection Costs Total | Drop Inlet Cost Total | General Conditions & Contingency | Totals |
|---|---|---|---|---|---|---|
| 1 | 900 | $87,900 | $52,000 | $20,000 | $22,386 | $182,286 |
| 2 | 0 | $0 | $0 | $0 | $0 | $0 |
| 3 | 8,500 | $825,100 | $494,200 | $180,000 | $209,902 | $1,709,202 |
| 4 | 17,000 | $1,639,950 | $797,000 | $288,000 | $381,493 | $3,106,443 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **5** | **26,300** | **$2,557,800** | **$1,532,200** | **$552,000** | **$649,880** | **$5,291,880** |
| **6** | **9,400** | **$915,750** | **$544,000** | **$196,000** | **$231,805** | **$1,887,555** |
| **7** | **1,400** | **$137,300** | **$78,000** | **$30,000** | **$34,342** | **$279,642** |
| **Totals** | **63,500** | **$6,163,800** | **$3,497,400** | **$1,266,000** | **$1,529,808** | **$12,457,008** |

Table 4-1: Summary of estimated construction costs for the selected alternatives.

**Stormwater O&M Cost Comparison**
**Entire Service Area**

| | **Injection Well Option** | **Exfiltration Trench Option** |
|---|---|---|
| Labor | $111,630.00 | $108,599.06 |
| Benefits | $45,785.53 | $44,542.37 |
| Overtime | $0.00 | $0.00 |
| Office Supplies | $5,581.50 | $5,429.95 |
| Operating Supplies | $11,163.00 | $10,859.91 |
| Postage & Freight | $0.00 | $0.00 |
| Telephone | $2,790.75 | $2,714.98 |
| Water | $1,116.30 | $1,085.99 |
| Vehicle Expense | $52,913.31 | $51,476.63 |
| **Annual Total** | **$230,980.39** | **$224,708.89** |

Table 4-2: Summary Comparison of O&M Costs

# Section 5
# Public Participation Process

## 5.1 Public Involvement

# CAPITAL FINANCING PLAN Exhibit WWFS-01Lb

City of Marathon
(Project Sponsor)
Michael Puto, City Manager
(Authorized Representative and Title)
Marathon, FL 33040
(City, State, and Zip Code)

Peter Rosasco, CPA, Finance Director 305-743-6586
(Capital Financing Plan Contact, Title and Telephone Number)
Bishop, Rosasco & Co., P.O. Box 1502
(Mailing Address)
Islamorada, FL 33036
(City, State, and Zip Code)

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

The sources of revenues being dedicated to repayment of the SRF loan are Stomrwater Non-Ad Valorem Assessments

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

**Estimate of Proposed SRF Loan Debt Service**

| | |
|---|---|
| Capital Cost* | **$ 13,665,881** |
| Loan Repayment Reserve (3% of capital cost) | **-0-** |
| Loan Service Fee (2% of capital cost) | **273,318** |
| Subtotal | **13,939,199** |
| Capitalized Interest** | **443,015** |
| Total Cost to be Amortized | **14,382,214** |
| Interest Rate | **2.36%** |
| Annual Debt Service | **910,421** |
| Annual Debt Service Including Coverage Factor*** | **1,046,984** |

* Capital Cost = Allowances + Construction Cost (including a 10% contingency) + Technical Services after Bid Opening.
** Estimated Capitalized Interest = Subtotal times Interest Rate times construction time in years divided by two.
*** Coverage Factor is generally 15%. However, it may be higher if other than utility operating revenues are pledged.

# SCHEDULE OF PRIOR AND PARITY LIENS

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

IDENTIFY EACH OBLIGATION

| | | |
|---|---|---|
| **#1 N/A**<br>**Coverage %**<br>**Insured (Yes/No)** | **#2 N/A**<br>**Coverage %**<br>**Insured (Yes/No)** | **#3 N/A**<br>**Coverage %**<br>**Insured (Yes/No)** |
| **#4**<br>**Coverage %**<br>**Insured (Yes/No)** | **#5**<br>**Coverage %**<br>**Insured (Yes/No)** | **#6**<br>**Coverage %**<br>**Insured (Yes/No)** |

| Fiscal Year | Annual Debt Service (Principal + Interest) | | | | | | Total Non-SRF Debt Service w/coverage | Total SRF Debt Service w/coverage |
|---|---|---|---|---|---|---|---|---|
| | **#1** | **#2** | **#3** | **#4** | **#5** | **#6** | | |
| 1999 | | | | | | | | |
| 2000 | | | | | | | | |
| 2001 | | | | | | | | |
| 2002 | | | | | | | | |
| 2003 | | | | | | | | |
| 2004 | | | | | | | | |
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| 2020 | | | | | | | | |
| 2021 | | | | | | | | |
| 2022 | | | | | | | | |
| 2023 | | | | | | | | |
| 2024 | | | | | | | | |
| 2025 | | | | | | | | |

**SCHEDULE OF ACTUAL REVENUES AND DEBT COVERAGE**
**FOR PLEDGED REVENUE**

(Provide information for the two fiscal years preceding the anticipated date of the SRF loan agreement)

| | | **FY** | **FY** |
|---|---|---|---|
| (a) | Operating Revenues (Identify) | | |
| | _____ | _____ | _____ |
| | _____ | _____ | _____ |
| (b) | Interest Income | _____ | _____ |
| (c) | Other Incomes or Revenues (Identify) | | |
| | _____ | _____ | _____ |
| | _____ | _____ | _____ |
| (d) | Total Revenues | _____ | _____ |
| (e) | Operating Expenses (excluding interest on debt, depreciation, and other non-cash items) | _____ | _____ |
| (f) | **Net Revenues (f = d – e)** | _____ | _____ |
| (g) | Debt Service (including coverage) Excluding SRF Loans | _____ | _____ |
| (h) | Debt Service (including coverage) for Outstanding SRF Loans | _____ | _____ |
| (i) | **Net Revenues After Debt Service (i = f – g – h)** | _____ | _____ |

| Source: |
|---|
| Notes: |

**SCHEDULE OF PROJECTED REVENUES AND DEBT COVERAGE**
**FOR PLEDGED REVENUE**
(Begin with the fiscal year preceding first anticipated semiannual loan payment)

| | | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2011 |
|---|---|---|---|---|---|---|
| (a) | Operating Revenues (Identify) | | | | | |
| | Utility Fund Equity from Prior Fiscal Year | 216,000 | 686,438 | 595,475 | 399,133 | 468,814 |
| (b) | Interest Income | 6,438 | 6,631 | 6,830 | 9,375 | 12,500 |
| (c) | Other Incomes or Revenues (Identify) Stormwater Non-Ad Valorem Assessments | 515,000 | 530,450 | 546,364 | 750,000 | 1,000,000 |
| (d) | Total Revenues | **737,438** | **1,223,518** | **1,148,668** | **1,158,508** | **1,481,314** |
| (e) | Operating Expenses[1] | 5,000 | 22,670 | 59,747 | 137,451 | 220,203 |
| (f) | **Net Revenues (f = d - e)** | **732,438** | **1,200,848** | **1,088,922** | **1,021,057** | **1,261,111** |
| (g) | Existing Debt Service on Non-SRF Projects (including coverage) | 0 | 0 | 0 | 0 | 0 |
| (h) | Existing SRF Loan Debt Service (including coverage) | 0 | 0 | 0 | 0 | 0 |
| (i) | **Total Existing Debt Service (i = g + h)** | **0** | **0** | **0** | **0** | **0** |
| (j) | Projected Debt Service on Non-SRF Future Projects (including coverage) | 0 | 0 | 0 | 0 | 0 |
| (k) | Projected SRF Loan Debt Service (including coverage) See Note (1) | 0 | 105,372 | 189,789 | 552,243 | 1,046,984 |
| (l) | **Total Debt Service (Existing and Projected) (l = i + j + k)** | **0** | **105,372** | **189,789** | **552,243** | **1,046,984** |
| (m) | **Net Revenues After Debt Service (m = f – l)** | **732,438** | **1,095,475** | **899,133** | **468,814** | **214,126** |

Source:

Notes: (i.e. rate increases, explanations, etc.)
1. For existing and proposed facilities, excluding interest on debt, depreciation, and other non-cash items.

(1) Projected SRF debt service coverage requirements based on separate SRF loan repayments for each individual Service Area
beginning 6 months after construction completion for that Service Area

# CERTIFICATION

I, __Peter Rosasco, CPA_____, certify that I have reviewed the information
Chief Financial Officer (please print)

included in the preceding capital financing plan worksheets, and to the best of my knowledge, this

information accurately reflects the financial capability of _City of Marathon___.
Local Government

I further certify that __City of Marathon___ has the financial capability to ensure
Local Government

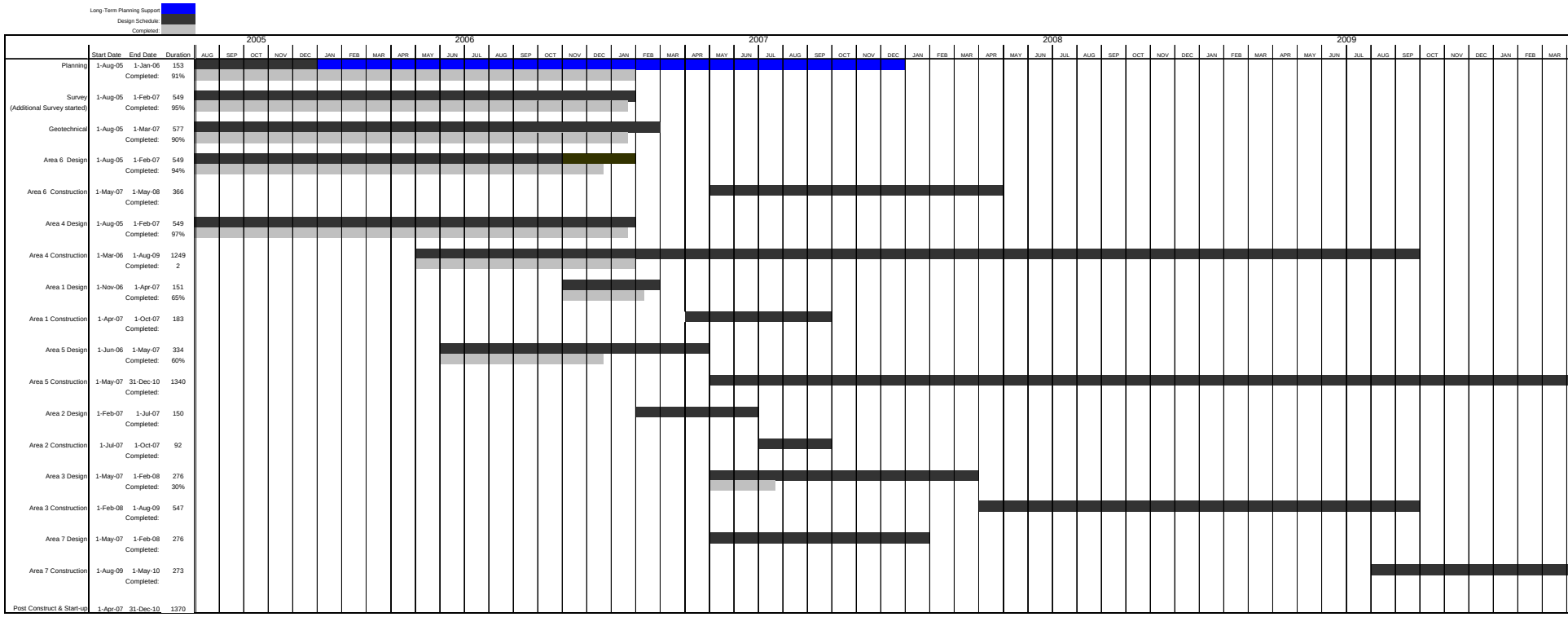
adequate construction, operation, and maintenance of the system, including this SRF project.

Signature

2-26-7
Date

# Section 7

# Schedule



# Section 8

# Adopting Resolution

## 8.1 Specific Authorization for Implementation