

# City of Marathon – Wastewater Treatment Project Scope

## Project Description

The entire 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 following service area briefs give a description of each service area and the selected wastewater treatment and collection alternatives for each.

## Service Area Briefs

*Service Area 1, Knight's Key*, is currently in process of re-development by a private developer. The year 2015 estimated wastewater flows are .023 MGD. The City of Marathon intends to partner with the developer to provide a new best achievable treatment (BAT) plant to handle the flows from the entire island. The city would then design and construct a collection system to convey the existing properties' sewage to the new BAT wastewater treatment plant located in the new development. Effluent disposal will be through Class V shallow injection wells.

*Service Area 2, Boot Key*, currently has one small facility surrounding the radio tower complex. The year 2015 estimated wastewater flows are .0006 MGD. The rest of the island is not able to be developed. The best way to provide service here is a small BAT on-site unit located such that gravity flow will provide the only needed conveyance. Effluent disposal will be through Class V shallow injection wells, subsurface drip irrigation, or a conventional drain field.

*Service Area 3, Vaca Key (west)*, includes both ocean side and bayside from 11<sup>th</sup> Street up to 39<sup>th</sup> Street. The year 2015 estimated wastewater flows are .247 MGD. The density in this area allows a vacuum collection system to be cost effective. Treatment will be provided by a new .250 MGD nutrient removal wastewater treatment plant constructed in this area. Pine Island will be served with an on-site system. Effluent disposal will be through Class V shallow injection wells.

*Service Area 4, Vaca Key (central)*, includes both ocean side and bayside from 39<sup>th</sup> Street through 60<sup>th</sup> Street as well as all of the Sombrero area. The year 2015 estimated wastewater flows are .399 MGD. The density in this area allows a vacuum collection system to be cost effective. A new .400 MGD nutrient removal wastewater treatment plant will be constructed in this area to provide needed treatment. The effluent disposal will be primarily re-use on the Sombrero Country Club, alternate Class V shallow injection wells will also be provided.

*Service Area 5, Vaca Key (east)*, includes both ocean side and bayside from 60<sup>th</sup> Street through Vaca Cut and includes the Little Venice Area. The year 2015 estimated wastewater flows are .490 MGD. The density in this area allows an expansion of the existing vacuum collection system to be cost effective. The existing Little Venice advanced wastewater treatment plant will be expanded to .499 MGD to provide

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treatment.. Effluent disposal will be a combination of re-use on the City of Marathon parks and events fields and through Class V shallow injection wells.

*Combined 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 it's end. The year 2015 estimated wastewater flows are .155 MGD. This area was re-addressed in December of 2005 once it was determined that some of the flow from these areas would not be pumped to the City of Key Colony Beach WWTP. The original conclusion of grinder pump collection system for this area is still marginally the most economical, as shown in Section 2, however, with the increase in flow and service area size, a vacuum collection system became much more attractive for this area. Value engineering during this review has also reduced the construction cost estimate. The inability to provide back-up power and 24 hour retention volumes for hundreds of pump stations has made the vacuum collection system the recommendation in this area. The treatment will be provided by upgrading an existing package plant both in capacity and in treatment to meet advanced wastewater treatment standards. Effluent disposal will be through Class V shallow injection wells.

*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 year 2015 estimated wastewater flows for this area are .063 MGD. The large geographic size and distance between properties in this area requires that a combination of systems be used in this area to be economically feasible. The two areas at the east end of the island where the trailer parks are located have the greatest density. These areas will be served by re-location of at least two (2) BAT WWTPs from existing facilities that will be served by new proposed facilities. The collection system here will consist of existing gravity systems as well as liftstations to redirect the flow to the new plants. The other less dense areas are proposed to be served through a combination of on-site and cluster systems thus eliminating the need for costly vacuum systems and forcemains.