5.0 EVALUATION OF VARIOUS TREATMENT TECHNOLOGIES FOR OPEN CANALS

5.1 INTRODUCTION

The canal assessment and inventory produced a Keys-wide comprehensive database on the canal physical attributes and water quality conditions. The classification provides a methodology for grouping of canals by design features most likely to impact water quality, thus offers a method for design-based assessment of treatment technologies for individual canal systems.

The goal of this project was to build a desktop GIS database with the ability to review the canals by a classification system, and develop a strategy for selecting canal-specific treatment technologies that would improve the water quality. The technology selection is a preliminary screening to identify the technologies that are most applicable and cost-effective for a group of canals based upon the physical attributes in the database. This project is not a substitute for the landscape or regional initiatives needed to protect the fragile island ecology of the Florida Keys. Advanced Waste Water Systems with centralized sewage treatment facilities address the problem of nutrient loading in residential canals, but do not totally eliminate the problem. This project, and the canal database, represent one critical strategy in the larger picture of natural resource management and restoration in the Florida Keys.

This project and its desktop GIS products are aimed to meet the needs for local neighborhoods and homeowner associations wishing to improve the local water quality of their canal systems. Each canal can be examined individually, and in all cases, there are actions that can be taken to improve water quality from simply trimming vegetation to sophisticated algal nutrient-stripping systems. Everyone in the Keys that lives on a canal should be examining the options to improve their stewardship of canal systems. The selection of treatment technologies is only a guide, and the database information can be updated or improved with new information. The methods outlined in this section present a methodology for prioritizing canals based on available funding or immediate interests of a local neighborhood to "do something" to improve canal water quality.

Funding for local neighborhood canal treatment programs can come from three sources:

- Neighborhood associations and individual homeowners (this is especially true for property changes in perimeter vegetation, swale-and-berm treatments or removal of exotic vegetation)
- Government assistance to neighborhoods for upgrades or demonstration projects (county, state or federal programs might fund this)
- Private foundation funding from environmental or conservation organizations (this would likely be matching to government or homeowner funds).

In a "Least-Cost Analysis" of pollution treatment, the ideal approach would be to select the canals that are the simplest, and least expensive to improve. Keys-wide, the least-cost analysis approach will give the overall greatest improvement to nearshore water quality per dollar spent on mitigation efforts. This section illustrates the method of selecting the criteria used in the treatment technology screening, and the application of the powerful GIS tool with its associated query function features. As new data and technologies become available, the database should be updated to allow for better utilization of this tool.

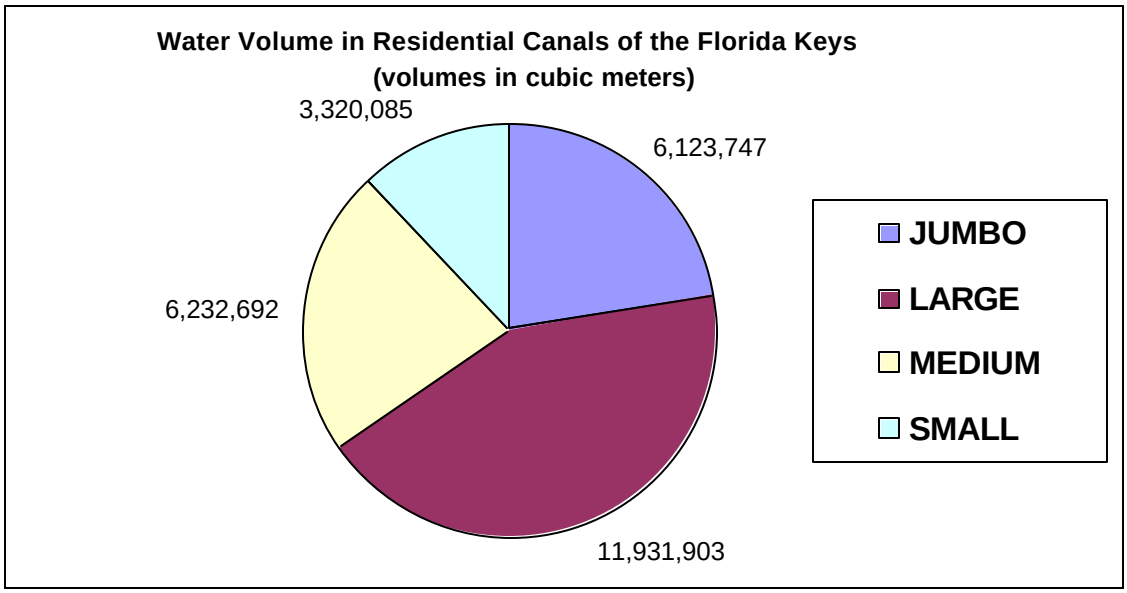
First, there are some important Keys-wide trends revealed in the compilation of information on all 481 residential canals:

1. Most of the jumbo and large canal systems are in the Lower Keys. Many of these systems are a mixture of both residential and commercial uses (perimeter length is *mostly* residential). These very large canals will be the most expensive to treat. Small and medium sized canals hold less water in individual canals but collectively make up 34% of the total volume of water in the canals (**Figure 5-1**). Smaller canals can be more cost-effective to improve, and treating many smaller canals may have a greater overall improvement on Keys nearshore water quality.

2. There is no simple grouping of canals – there is a diversity of canal "types" and there are not likely to be broad, single technology treatments. In short, every possible combination of canal exists, and each canal type has specific design criteria for treatment technologies. Significant improvements in water quality will be realized with an individualized approach to improving nutrient loading and circulation in each canal.

3. The database allows the grouping of canals by island or municipalities, and there are clearly some "best practices" and good stewardship practices (e.g. no cleaning fish in canals) that can benefit all canal systems.

Figure 5-1: Large canals make up the largest percentage of enclosed waters of residential canal systems. Because of the large number of small and medium canals, these make up about 1/3 of the total volume of enclosed canal waters.



5.2 OVERVIEW OF TREATMENT TECHNOLOGIES

Water quality degradation in residential canals is affected by two major processes:

1) The rate and amount of pollutant loadings (primarily organic material and inorganic nutrients), and
2) The rate and degree of water turn-over or circulation within the canal system.

By definition, all canals receive inputs of pollutant loadings ***in excess*** of the natural coastal systems loading. The physical size, structure and shape of a canal determine its flushing rate, and thus, determine the rate and severity of the water quality degradation. Water quality degradation in residential canals is a chronic process, and its impacts are cumulative. Acute events such as storms, high winds or extreme temperatures can sometimes exacerbate the problems, and bring acute symptoms such as fish kills to our immediate attention. However, the degradation usually progresses with little notice from the casual observer over the course of years to decades. It is important to remember in the mitigation of water quality in canals that solutions will also take years to be fully realized.

The discussion of technologies is organized into two sections: first, reducing the pollution loading, and second, increasing circulation and water turn-over. Treatment technologies need to be applied in the evaluation of these two, linked approaches. The technologies that are presented and evaluated for application in this report are focused at a canal level implementation.

The treatment technologies that were identified as applicable to improving the water quality in the canals in the FL Keys and are included in the technology selection presented in this report are:

Regional and Keys-wide applicability:

- Advanced Waste Water Treatment/Storm Water Management
- Best Management Practices in Relation to the Canals

Canal-design and size-dependent applicability:

- Technologies that Reduce the Input of Seaward Loading
- Technologies that Increase Flushing by Pumping
- Technologies that Increase Flushing by Adding a Physical Connection
- Canal Backfilling
- Circulation Devices
- Technologies that Remove Nutrients from the Water.

5.3 OVERVIEW OF TREATMENT TECHNOLOGY SELECTION

Each of the treatment technologies were evaluated to determine which canal physical attributes and canal classifications were best suited to an effective application of that technology. This selection process is not a definitive selection of the only treatment technologies for a canal classification. It is meant to be a tool to assist in selecting the most effective technologies based upon feasibility, implementability, and cost.

An overview of the major physical attributes that were determined to be the most important in the selection process for each technology is shown in **Table 5-1**. The physical attributes that were utilized to develop the canal classifications are the primary initial criteria used in the technology selection. These include: size, energy at outfall, percent development, area to length ratio, and orientation of the canal mouth, among others.

A more in depth selection of the most applicable technologies for each canal was performed through the use of query functions and the entire GIS canal layer database. The results of the technologies selected as most applicable for each canal are shown on the GIS Attribute Table included in **Appendix B.4.** A table showing a summary of the canal attributes and the recommended treatment technologies for each canal is presented in **Table 5-2.**

The following section provides a description of each technology, the sorting criteria utilized for the query selection and presents the canals that were determined to be the best candidates for implementation. It must be repeated, that this selection is only a guide showing the application of the powerful tool that is provided in the GIS database and associated query function.

5.4 TREATMENT TECHNOLOGY SELECTION

The process of treatment technology selection proceeded in three steps:

1.) Information compilation: This consisted of identification of the applicable technologies, and review of the descriptions and design criteria for each technology.
2.) Assessment of implementation costs: This entailed contacting local or state companies capable of doing the work to assist in developing preliminary costs.
3.) Evaluation of canal physical attributes: The GIS database was utilized to review and select canals most appropriate for the implementation and cost effectiveness of a given technology.

The canal water quality classification was based on a hypothesis of how canals accumulate pollutants, and thus treatment selections were based on this hypothesis. Any comprehensive initiative to improve canal water quality should start with these preliminary selections and establish demonstration projects to document the actual cost and time for implementation balanced against real and measured improvements in water quality parameters. Depth of a canal is an important criteria in technology selection and costing; however, actual depth information in the data base is approximate, based on permit records.

The following sections discuss each technology separately providing the descriptions, preliminary rough cost estimates and the results of the queries of the most applicable canals for implementation of that technology.

5.4.1 Advanced Waste Water Treatment/ Storm Water Management Technology Description

Advanced waste water treatment (AWWT) units and storm water management (SWM) should be implemented in order to reduce the land-based loadings either in conjunction with other technologies or as the primary treatment. AWWT by definition is tertiary treatment of waste waters, and removal of organic and nutrient loading (**Figure 5-2**).

AWWT technology can include on-site units such as dry-composing toilets or waste water hydroponic gardens or centralized sewage treatment facilities. This is perhaps the most complicated (and expensive) of the reviewed treatment technologies. An in depth review of the range of technologies is not presented here. SWM measures include porous pavement, retention basins, baffle boxes, dry wells with pretreatment, oil and grease separators, storm water wetlands, buffer strips, and vegetated swales.

Figure 5-2: AWWT will be a major component in the effort to improve canal water quality

The overall impact of AWWT and SWM is to prevent the addition of pollutants into the canal systems, including the discharge of fresh water not naturally present. Costing of Keys-wide AWWT and storm water controls is beyond the scope of this project. Individual homeowner application of some storm water management practices is discussed under Best Management Practices (Section 5.4.2). Information on dry-composting toilets is included in **Attachment A.1**.

Application

These technologies are applicable to all of the Keys canals. This is a regional approach, but does not remove the need for better stewardship, and treatments at the individual canal level.

5.4.2 Best Management Practices in Relation to Canals

Technology Description

Poor management practices are a major contributor to canal water quality degradation. Implementation of best management practices by the landowners should be implemented in all canals to assist in the reduction of landbased nutrient and pollutant loadings. Best management practices (BMPs) relating to the canals include no dumping into canals, no cleaning of fish in the canals, and the prevention of bank runoff, among others. BMPs discussed in this report relate to overall management of lands surrounding the canals and not just storm water BMPs.

The landscaping and land use measures presented by the Florida Yards and Neighborhoods Program should be included in the best management practices. Runoff and land-based pollutants are naturally intercepted by coastal wetlands and coastal plant communities. This filtering effect can be achieved along canals by the construction of a berm and swale between developed lots and canals. The berm and swale slows water runoff allowing vegetation to filter the rainwater and remove sediments and other pollutants. Berms should be planted with native, low maintenance

plants. There are a variety of vines, small trees, grasses and herbs that occur naturally in the coastal zone, and are attractive in landscaping for the Keys. The Monroe County Extension Service and the Nature Conservancy can assist with the appropriate plant selection. The web address for the Monroe County Florida Keys Friendly Landscaping is http://monroe.ifas.ufl.edu/fyn.htm. **Attachment A.2** contains information on the Florida Yards and Neighborhoods Program and suggested native plants to be used for runoff control in the Florida Keys.

Figure 5-3A: The Florida Yard and Neighborhoods Program will assist in canal water quality improvements.

Figure 5-3B: Native plantings can used to help filter runoff before it enters the water.

The effectiveness of this technology can be increased if homeowners take additional measures to reduce harmful runoff, such as reducing irrigation, reducing impervious surfaces, using mulches around plantings, and reducing the use of pesticides and fertilizers, etc, as has been presented in the Florida Yards and Neighborhoods Program in Hillsborough, Manatee, Pinellas and Sarasota counties. These additional measures can be implemented to reduce storm water runoff even on lots that are too small for the installation of a berm and swale.

An extensive outreach and educational program will be required to assist in the application of best management practices.

Application

BMPs are applicable to all canals in the Keys. The use of berms and swales, however, is more applicable to certain types of canals and a query function was utilized to identify these canals.

Creation of vegetated berms and swales are best suited for canals with high inputs of non-point source seepage and land based runoff and limited natural flushing abilities. Canals with large volumes of water and relatively small perimeters (basin like shape) that are easier to modify are best suited to this technology. The canals that are most suited to this technology have the following physical attributes:

- **Jumbo and large canals**
- **High development, and**
- **Area a to length ratio greater than 8.**

Or

- **Medium canals**
- **High development, and**
- **Area to length ratio greater than 4.**

- Based upon the physical attributes of the canals in the Keys there are **10 jumbo and large canals** that fall into this classification and **14 medium canals (Table 5-3)** that have these attributes. Additionally the use of berms and swales may be applicable to **7** jumbo and large canals that either have low development (1 and 5 Ocean Reef Club) or low A/L ratios (17, 18, 42, 47 Key Largo and 77 Rock Harbor). These canals are also included in **Table 5-3**. Examples of canals where this treatment technology would assist in improving the water quality are **461 Key Haven** and **132 Plantation Key**.

5.4.3 Technologies that Reduce Input of Seaward Loading

Technology Description

Swinging Weed Gates

Swinging weed gates (or booms) are mechanical devices that physically block seaweed from passing through the device. The weed gates were designed to prevent floating, wind-driven flotsum from entering and accumulating in man-made canals where it typically sinks and fouls with water. Weed gates consist of a floating arm that contains hanging flaps often made of rubber. The gates are placed at a canal mouth to prevent floating seaweed from entering the canal. The gate swings open when applied with slight pressure to allow access for boat traffic. **Figure 5-4** shows an example of a weed gate installed on Big Pine Key. Usually, the physical removal and disposal of the flotsum outside the weed gate is needed. This treatment technology may cause an increase in weed wrack to canals located downgradient.

Figure 5-4A: swinging weed gate located on a canal in Big Pine Key

System components consist of PVC piping and hanging flaps, concrete anchors, and supporting hardware. Access to the canal mouth for pouring the concrete anchors is required. It is estimated that installation costs will be in the range of $2,000 to $5,000 depending upon the complexity, specifications, and installation contractor. Some maintenance is required to ensure continued effective operation. **Attachment A.3** contains costing information.

Air (bubble) Curtains

Air curtains are aeration devices that are a unique configuration and application. Air curtains consist of perforated piping connected to a blower. They are typically installed at the mouth of a canal in order to keep weed wrack from entering the canal. The overall effect is meant to be the same as the swinging weed gates described above. Air curtains seem less effective with high wind or storm conditions. This treatment technology may cause an increase in weed wrack to canals located downgradient.

The design components consist of perforated PVC pipe, a blower, control panel, electric, and protective pump housing. The PVC pipe is installed on the canal bottom across the entire canal mouth and anchored in place. The pipe is connected to a blower located on the adjacent shore. Blower selection strongly influences the capital and operation and maintenance costs of the system. Costs may range from $10,000 to $15,000 for air curtains 30 feet long. Noise may be an issue with pump operation and a sound enclose may be needed. Additional requirements include land to place the pump and electric (possibly 3 phase). **Attachment A.3** contains some costing information for one blower type; however many other types of equipment may be used.

Physical Removal

Physical removal consists of removing debris or trash from canals to improve water circulation or water quality from decaying organic material. Canals without weed gates or air curtains can have accumulated floating seaweed removed by backhoe or specialized weed removal boats.

The estimated cost for physical removal is $1,800/half day for land-based equipment and crew to remove the debris. Additional costs may be incurred for turbidity curtains and off-site transportation and disposal of materials. **AttachmentA.3** contains costing information provided by a local Keys contractor.

Application

Technologies that reduce the input of seaward loading into a canal are most applicable to canals that are subject to high loadings of seaweed and flotsam. It is assumed that the seaweed and flotsam loading is a serious problem and the loading occurs on an episodic time scale associated with storm events, and that it is an immediate and acute problem.

The physical attributes that produce high seaweed loadings in a canal are:

- **high energy at the outfall, and**
- **a mouth opening orie nted between 270 degrees and 30 degrees.**

As discussed in section 4 this orientation opening onto to Florida Bay has been noted to be one of the most problematic for flotsam; however, other canal orientations may benefit from this technology. Based upon the above physical attributes of the canals in the keys there are **28** canals that fall into this classification. **Table 5-4** shows the canals that were identified through a query of having both of these physical attributes. Examples of canals where this treatment technology would greatly assist in improving the water quality are: **259 Big Pine** , which already has a weed gate, and **305/306/307 Sugarloaf Key**.

5.4.4 Technologies that Increase Flushing by Pumping

Technology Description

Pumps can be installed to promote water circulation within a canal. Water can be pumped from a 'dead end' canal to another adjacent canal or mangrove creek to increase turnover of water at the end of a canal system. Pump installation must be designed to prevent adverse secondary effects such as resuspension of sediments or bottom scouring. These technologies must be designed in such a way that they do not produce negative impacts to the nearshore waters which are designated Outstanding Florida Waters. Permitting may be difficult because of this concern. Circulation studies by a qualified coastal engineer would be needed to provide an effective design.

In order to design a pumping system certain design criteria are required. These include the volume of water in the canal, the required water turnover rate and the total dynamic head from the inlet to the outlet. In order to develop a rough cost estimate for this report, a water turnover rate of 14 days within the largest (Summerland 365) and smallest (Summerland 382) canals selected as best candidates for this technology, and a dynamic head of less than 20 feet were utilized to select a pump. For the smaller canal a 1HP semi-vortex Sea Water Pump would meet these requirements, while 2 of the 1 HP pumps would be required for the larger canal. Grundos pumps could also be used that could be placed inside of a slotted PVC pipe mounted along a seawall. The cost for one pump is approximately $1,200. Complete system components would consist of the pump, outlet piping, pump station, electric and controls. Costs for installation may range from $5,000 - $10,000 depending up number of pumps and distance to the discharge point. Operating costs are estimated to range from $75 to $150 per month depending upon pump size, and there will be some pump maintenance costs. These costs assume trenching is less than 100 feet and that it is not through hard rock. Trenching costs will be the most variable component of these costs. **Attachment A.4** contains information of pump specifications and costs.

Application

Pumping can be used to assist in the circulation of canal water only in very small canals, ie. total length less than 246 feet (75 meters). The volume of water that would require pumping in larger canals makes this technique impractical. The canals that are most suited to this technology have the following physical attributes:

- **Length less than 246 feet (75 meters)**
- **No convolutions**
- **Low energy shoreline, and**
- **High development.**

Table 5-5 shows the **11** canals that were identified through a query of having all of the above physical attributes. This technology may also be applicable to **3 additional** canals although medium in size if a cost evaluation determines that it is practical. These canals are also included in **Table 5-5**. Examples of canal where this treatment technology would assist in improving the water quality are: **12/15/16 Key Largo** in the upper keys and **455 Geiger Key** in the lower keys.

5.4.5 Technologies that Increase Flushing through Adding a Physical Connection

Technology Description

Several types of physical connections can be constructed which will increase flushing in a canal. These include flushing channels, culverts and sill excavation. These technologies must be designed in such a way that they do not produce negative impacts to the nearshore waters which are designated Outstanding Florida Waters. Permitting may be difficult because of this concern.

Construct Flushing Channels

Flushing within canals can be improved by constructing channels between them. This alternative consists of trenching the ground so that adjacent canals are joined and then placing a precast concrete cover over the trench. This would only be applicable in canals with suitable lithology (e.g. not hard rock) and would only be practical where there was sufficient energy (ex: tidal variation) to promote flushing such as a channel at the mouth outfall. These channels are prone to clogging, and residents often request gates or bars over the mouth of the channel for safety reasons. Thus, there is some maintenance involved after installation.

A cost estimate for installation of a flushing channel in the Keys, as provided by a local contractor (refer to **Attachment A.3**), ranges from $50,000 to $100,000 for up to a 20 foot connection distance. Smaller scale projects may be selected with a corresponding lower cost. Detailed engineering designs are required and will dictate the actual cost.

Culvert Installation

Culverts could be installed between canals or between canals and thin land strips to improve flushing within them in a similar fashion to flushing channels. Based on canal-specific hydrology, larger or smaller diameter culverts may be more applicable. Culverts could be installed in any lithology, but would still need an energy source to induce flushing such as a channel at the outfall mouth. Like channels, culverts are even more prone to clogging, and require maintenance. Residents in Key Largo have complained that culverts serve as ideal habitats for the American crocodile, expanding its range south from the northern Key Largo sanctuary. Thus, this technology may include some wildlife management issues.

The estimated cost for culvert installation is $750 to $1,000 per linear foot of installed culvert (refer to **Attachment A.3**). Turbidity controls may cost an additional $8,000. Costs may be higher if traffic control is required, if utility interferences are present or additional design features are required. Engineering designs and location will dictate the actual costs.

Excavation of Canal Sills

Excavation of a shallow canal sill or 'restructuring of the canal mouth' can enhance the flushing of the canal. This technology is not applicable for canals with great depths and is only applicable for canals with shallow sills. Excavation of sills is only successful if the canal itself is near a natural tidal channel and can benefit increased circulation energy. If these technologies involve connection directly to nearshore waters the potential negative effect on these waters and the outer reef system must be considered. Due to this potential negative effect these technologies may be difficult to permit.

The excavation will need to be done utilizing floating equipment such as a barge and clamshell. A day rate for this equipment is $5,000 with a $10,000 mobilization charge. Turbidity controls may cost an additional $8,000. **Attachment A3** contains the cost information provided by a local contractor.

Application

Lack of flushing is a problem especially in large and jumbo canals due to the long length of the canal from the end to the mouth. All three of the above technologies (culvert installation, installation of flushing channels and sill excavation) are designed to increase the flushing in these larger canals.

These technologies are only applicable to canals that have an adjacent channel outside their outfall that will allow the complete flushing of the canal water. The canals that are most suited to these technologies have the following physical attributes:

- **Large to jumbo canals**
- **Medium to high energy adjacent shorelines**
- **Dredge canals in hard rock, and**
- **Natural channel located adjacent to the mouth.**

Based upon the physical attributes of the canals in the keys there are **7** canals that fall into this classification. **Table 5-6** shows the canals that were identified through a query of having all of the above physical attributes. Example of a canal where this treatment technology would potentially assist in improving the water quality is **262 Big Torch Key**.

5.4.6 Canal Backfilling

Technology Description

Canal backfilling would be performed in order to decrease the depth of a canal to promote flushing and reduce/eliminate stratification. Filling in of abrupt changes in depth or sink areas would assist in increasing circulation. Backfilling attempts to mimic the hydrology of a mangrove creek, with

the shallowest depth at the landward end of the canal, and greatest depth at the mouth of the canal. Flushing is typically hindered by the fact that both the canal sill and the waters surrounding the Keys are typically shallower than the canal bottom. This difference in depth hinders mixing in the lower depths of the canals. This option would work best in canals where there was sufficient energy, either from tidal fluctuations or wind force, to promote flushing. Naturally there may be some restrictions to the size of boats that can utilize filled canals.

The estimated cost for canal backfilling is $50 per cubic yard. This unit cost includes labor, material, and equipment to place fill material based upon building an access road of fill in the middle of the canal that is later removed (refer to **Attachment A.3**). The unit cost does not include turbidity curtains, which may cost an additional $8,000, or other measures that will be needed to safeguard the environment (ex: manatee monitoring).

Application

Canal backfilling can be performed in order to decrease the depth of a canal to promote flushing and reduce/eliminate stratification. This option works best in canals where there is sufficient energy, either from tidal fluctuations or wind force, to promote flushing. This treatment option is only cost effective for small canals. Canals that are most suited to this technology have the following physical attributes:

- **Dredged**
- **Small, and**
- **Less than 0.097 acres.**

The depth of the canal is also a critical factor as the deeper canals are a higher priority and the depth controls the cost. The current depth data in the attribute table is not sufficiently field checked to be used in this query.

Table 5-7 shows the **46** canals that were identified through a query of having the above physical attributes. This technology may also be applicable to **3 additional** canals although medium in size if a cost evaluation determines that it is practical. These canals are also included in **Table 5-7**.

Examples of canals where this treatment technology would assist in improving the water quality are **Marathon canals 211, 221, 222, 224, 225, 226, 227, 228**.

Figure 5-5: Marathon canal showing an example of a canal that may be suited for backfilling

5.4.7 Circulation Devices

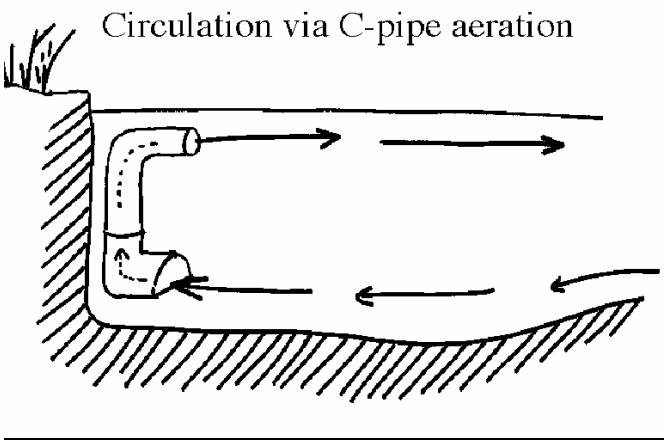
Technology Description

Aeration can be used in smaller canals to facilitate circulation just as airstones are used in home aquaria. The design of aeration systems must be aimed at moving water out of the canal, not merely vertical mixing of the water column. Circulation improvement needs to be coupled with reducing the pollution loading within the canal. There are real concerns about exporting nutrients from in the canal to outside nearshore environments.

One group of circulation devices are specialized aeration devices that could be installed to increase both the transfer of oxygen to the water as well as the horizontal movement of water out of the canal. Stagnant water with high biological oxygen demand (BOD) in canals causes low or no dissolved oxygen conditions, (eg. hypoxic and anoxic conditions). Under these conditions, hydrogen sulfide and other anoxic metabolites can accumulate. Fish, seagrass and algae can not flourish under these conditions. In addition, the increase in microbial activity in canal waters can present a public health threat in the propagation of pathogens. Circulation devices can help prevent hypoxic/anoxic conditions to a limited extent and promote aerobic processing of nutrients.

There are limits to the amount of nutrients that can be processed by additional aeration, and the key feature of the design is the facilitation of circulation by a C-pipe design (see **Figure 5-6**) that is similar to aquarium below-gravel filter systems. This system is EXTREMELY LIMITED in capacity, and can likely be applied to small, basin-shaped canals.

Figure 5.6: Diagram of circulation in small canals facilitated by a C-pipe aeration system. The design would help improve water quality in very small canals where other measures were already in place to minimize nutrient loading (e.g. natural vegetation buffers, storm water run-off management and centralized sewage treatment facilities).



Costs for a circulation system will be comparable to the costs for increasing flushing by pumping and may range from $5,000 to $10,000 (**Attachment A.4**). Engineering design specifications need to be done to efficiently determine the location, flow requirements and appropriate pump.

Application

Circulation devices can be used to assist in the circulation of canal water only in very small canals, (e.g. total length less than 250 feet or 75 meters). The volume of water in larger canals makes this technique less effective. The canals that are most suited to this technology have the following physical attributes:

- **Small canals**
- **Length less than 246 feet (75 meters)**
- **Single mouth**
- **No convolutions, and**
- **Medium to high energy shoreline**

Table 5-8 shows the **15** canals that were identified through this query. This technology may also be applicable to **25 additional** canals although medium in size if a cost evaluation determines that it is practical. These canals are also included in **Table 5-8**. Examples of canals where this treatment technology would assist in improving the water quality are **53 and 54 Key Largo**, and **356 and 365 Summerland Key**.

5.4.8 Technologies that Remove Nutrients from the Water

Technology Description

Nutrient removal from canal waters is a developing technology area that can consist of simple devices such as bioropes and AquaMats, to more sophisticated nutrient removal systems. 'Nutrient Strippers' are one technology that consists of pumping the water to a structure that supports the growth of algae that utilize nutrients from the water. Special macroalgae species in the genus Gracilaria or the "mossman" algae have been used effectively in small scale nutrient stripping experiments in the Keys. Water is circulated through shallow troughs exposed to sunlight with small starter colonies of algae. Often airstones are used to vigorously circulate the water and stimulate nutrient uptake by the algae. The algae must be periodically harvested (and possibly sold). The water is recycled back to the canal after treatment with lowered nutrient content. This technology would likely work best on small canals with high inorganic nutrient loading. Literature on nutrient strippers was not available. Cost estimates were also not available and will need to be developed as more systems are installed and operated. To date these systems have only been operated on a test basis.

AquaMats are a commercially sold nutrient control device that provide aquatic habitat and in situ biofiltration. They resemble aquatic grass in appearance (**Figure 5.7**) and provide a medium for growth of aquatic organisms that extract nutrients from the water for growth. Floating or bottom supported units are available. To design a system for a canal the following information is needed: length of treatment area, nutrient input rate, nutrient removal goal, and flow rate of water across the devices. Multiple units would be required. Lake applications are in the order of 48 units per

acre of lake bottom. Individual AquaMats cost between $75 and $120. Literature on AquaMats is included in **Attachment A.6.**

Figure 5-7: A photograph of an Aqua Mat

Application

Canals that are best suited to technologies that remove nutrients from the water, such as stripping devices, are those that are very small and basin shaped. These attributes make for easier and cost effective installations. The canals that are most suited to this technology have the following physical attributes:

- **Small canals**
- **Length less than 246 feet (75 meters), and**
- **Area to length ratio greater than 1.3.**

Table 5-9 shows the **19** canals that were identified through a query of having the above physical attributes. This technology may also be applicable to **25 additional medium sized canals** if a cost evaluation determines that it is practical. These canals are also included in **Table 5-9**.

An example of a canal where this treatment technology is the most applicable is **356 Summerland Key**.

5.5 EXAMPLE OF TECHNOLOGY SELECTION PROCESS

How can this treatment technology selection process be applied? One quick example will be discussed for a group of canals in Tavernier, at the lower end of Key Largo.

Figure 5-8 illustrates the canals around the Tavernier area. The area illustrated has 19 canals: 1 large canal, 4 medium and 14 small canals. The canals range in size from 0.77 to 0.083 acres. The classification scheme indicates that the poorest water quality will be in the largest canals, particularly the large, basin-shaped canal (104 Tavernier). Two canal systems have a high degree of convolutions (104 Tavernier and 101 Tavernier - Sunset Acres). All of the canals have a high level of development along the perimeter, and there is a very high population density around each system. The treatment technology recommendations for specific canals can be viewed on **Table 5.10**.

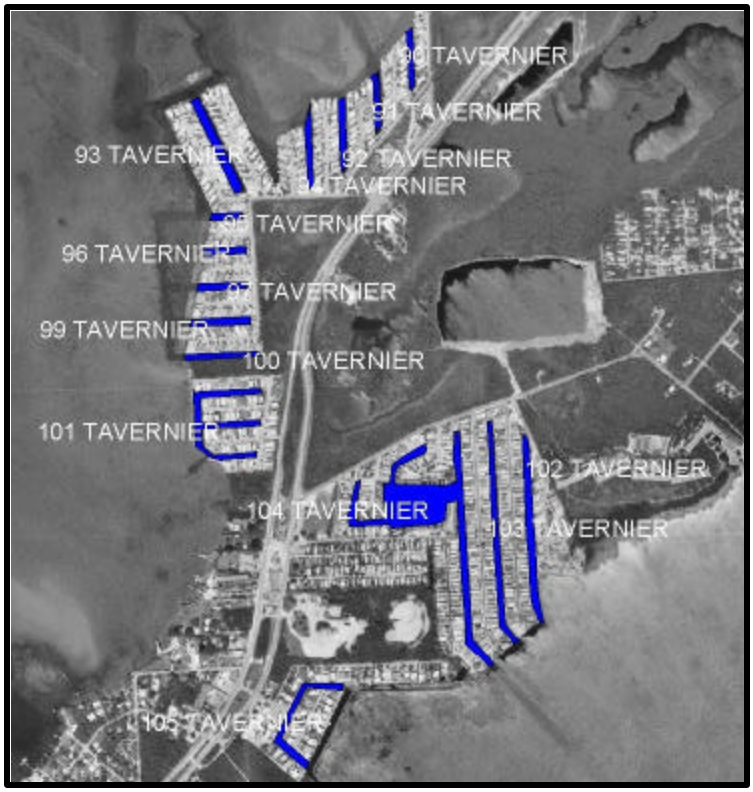


Figure 5-8 Canals in Tavernier

The canal water quality classification can assist in prioritizing the order for initiating mitigation projects. The canal with the worst water quality designation is Tavernier 104. Tavernier canals 93, 95, 100, 101, 102, and 103 have a fair water quality designation. Of these, Tavernier 101 (Sunset Acres) has the highest number of convolutions and may have more of a problem with natural circulation. Additionally, this canal was plugged for many years and the water quality is more degraded due to this. The close proximity of canals 102, 103 and 104 would make these canals good candidates for a community-wide project with nutrient stripping technologies, and increasing vertical as well as horizontal circulation. Reducing the loadings to these canals, through application of AWWT/SWM and BMPs, will first be essential prior to implementing these more aggressive technologies. The smallest canals (8 in total) may show adequate water quality improvement through the application of AWWT/SWM and BMPs only.

Once specific canals are identified for technology application, the next step would be to field verify for each canal the canal attributes that influenced the technology selection to ensure that they are correct and to determine if there are other canal specific information that would assist in technology selection. This information would include access to areas for pumps, closest electric source, and actual canal depth, among others. A site visit by a local engineer or contractor to discuss site-specific applications could assist in evaluating costs and identifying issues that might affect technology application and selection. Preparing a remedial plan with associated costs would be the next step. The level of detail for engineering specifications and permits will vary with the technology.

5.6 CONCLUSIONS

Overall, there are no simple solutions, and improved water quality (and ecological health) of the canals may take a number of technologies combined, and take time (decades) for water quality in the canals to reach acceptable levels. The canal systems have accumulated nutrients over decades and these accumulated loadings will slow the impact of treatment technologies focused just at reducing the nutrient loading of today.

Table 5-1
MONROE COUNTY RESIDENTIAL CANALS
TREATMENT TECHNOLOGY BY SORTING CRITERIA

TREATMENT	SIZE	ENERGY	DEVELOPMENT	AREA to LENGTH RATIO	ORIENTATION of MOUTH	OTHER
AWWT/STORM WATER MANAGEMENT	ALL	ALL	ALL, HIGH ESPECIALLY			
BEST MANAGEMENT PRACTICES	ALL	ALL	ALL			
BERM AND SWALE/ Larger Canals	JUMBO or LARGE	ANY	HIGH	8 or greater, basin shaped	ANY	
BERM AND SWALE/Smaller Canals	MEDIUM	ANY	HIGH	4 or greater, basin shaped	ANY	
WEED GATE, BUBBLE CURTAIN, PHYSICAL REMOVAL	ANY	HIGH	ANY	ANY	> 270 degrees, Less than 30 degrees	
PUMPING	VERY SMALL	LOW	HIGH			Length less than 246 feet No Convolutions
FLUSHING, NEW CONNECTIONS	LARGE TO JUMBO	MEDIUM to HIGH				DREDGED in rock CHANNEL adjacent to mouth
BACKFILLING	SMALL					Length less than 246 feet Less than 0.097 acres Dredged
CIRCULATION DEVICES	VERY SMALL	MEDIUM to HIGH	ANY	LOW	ANY	1 mouth Length less than 246 feet No convolutions
NUTRIENT REMOVAL	VERY SMALL			1.3 or greater		Length less than 246 feet

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
1 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	Med	Angle Fish Creek	Channel	10	Fill	3	Medium	45, 90,355	2.58	5.49	2047.252
2 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Hawk Channel	Shallow Nearshore	5.5	Fill	1	Medium	135	2.001	10.6	821.961
3 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Card sound	Dredged	12.5	Fill	3	Medium	0, 270, 270	4.202	15.03	1217.625
4 OCEAN REEF CLUB	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Hawk Channel	Dredged	7	Fill	2	Medium	225, 135	2.063	6.27	1432.798
5 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.C	III.B	Med	Little Dispatch Creek	Channel	3.5	Fill	1	Low	90	2.914	6.92	1833.657
6 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	0	0.023	1.06	92.889
7 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	1	Fill	1	Low	0	0.065	1.6	176.466
8 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	0	0.03	1.27	102.467
9 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	0	0.021	0.97	95.197
10 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	0	0.022	1.12	85.247
11 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	0	0.024	1.2	87.619
12 KEY LARGO	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.019	1.56	53.132
13 KEY LARGO	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Manatee Bay	Dredged	12	Fill	1	Low	180	0.468	4.91	415.604
14 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	170	0.178	2.35	329.684
15 KEY LARGO	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.017	1.39	51.958
16 KEY LARGO	Pumping, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.01	0.9	48.539
17 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Barnes Sound	Shallow Nearshore	0	Dredge	1	Medium	270	0.637	6.47	428.778
18 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Barnes Sound	Shallow Nearshore	0	Dredge	1	Medium	270	1.09	6.92	685.944
19 KEY LARGO	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Low	Hawk Channel	Dredged	3	Dredge	1	Medium	90	0.261	2.62	434.236
20 KEY LARGO	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Hawk Channel	Plugged	2	Dredge	0	Medium	NA	0.511	1.59	1401.158
21 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lake Surprise	Dredged	4	Fill	1	Low	0	0.418	7.93	229.855
22 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Garden Cove	Shallow Nearshore	0	Fill	1	Medium	90	0.235	2.5	409.398
23 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Garden Cove	Shallow Nearshore	0	Fill	1	Medium	90	0.184	2.23	359.025
24 KEY LARGO	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	6	Fill	1	Medium	270	0.679	3.99	741.626
25 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	270	0.062	1.29	210.953
26 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	3.5	Fill	1	Medium	325	0.24	2.74	381.769
27 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	0	0.067	1.58	184.469
28 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	1	Fill	1	Medium	270	0.146	1.79	356.189
29 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	270	0.071	1.41	217.91
30 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	270	0.119	1.43	362.171
31 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	1.5	Fill	1	Medium	315	0.254	2.13	520.594
32 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	0	0.043	1.59	118.021
33 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	270	0.193	1.1	762.771
34 KEY LARGO	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Blackwater Sound	Shallow Nearshore	0	Dredge	1	Medium	270	0.077	1.83	182.787
35 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	North Creek	Channel	2	Fill	1	Low	180	0.085	1.54	240.376
36 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	North Creek	Channel	0	Fill	1	Low	90	0.017	0.85	88.585
37 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	North Creek	Channel	0	Fill	1	Low	90	0.087	1.49	254.781
38 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Largo Sound	Dredged	0.6	Fill	2	Medium	225, 90	0.215	2.34	399.249
39 KEY LARGO	Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	1	Fill	1	Medium	315	0.017	4.42	16.736
40 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	1	Fill	1	Medium	315	0.027	1.06	111.367
41 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0	Fill	1	Medium	315	0.018	1.02	76.537

Table 5-2

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Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
42 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Blackwater Sound,Larg	Shallow Nearshore	0.5	Dredge	2	Medium	315,90	0.485	2.54	829.832
43 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	3.5	Fill	1	Medium	350	0.212	2.47	373.165
44 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	0.3	Fill	1	Medium	0	0.209	1.74	522.337
45 KEY LARGO	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	16	Fill	1	Medium	355	0.898	4.75	823.292
46 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Largo Sound	Dredged	2.3	Fill	1	Medium	135	0.235	7.22	141.706
47 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	Med	Blackwater Sound	Shallow Nearshore	5	Fill	1	Medium	0	1.048	3.46	1320.245
48 KEY LARGO	Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Largo Sound	Shallow Nearshore	1	Dredge	1	Medium	90	0.033	2.17	66.903
49 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	0	Fill	1	Medium	270	0.039	1.23	138.816
50 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Pennekamp Bay	Shallow Nearshore	4	Fill	1	Low	180	0.286	2.97	418.45
51 KEY LARGO	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Pennekamp Bay	Dredged	6	Fill	1	Low	165	0.569	3.28	755.958
52 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	2	Fill	1	Medium	0	0.065	1.51	187.007
53 KEY LARGO	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	0	Fill	1	Medium	0	0.018	1.17	65.446
54 KEY LARGO	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	0	Fill	1	Medium	0	0.014	1.12	56.028
55 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Pennekamp Bay	Dredged	0	Fill	1	Low	85	0.025	1.23	88.903
56 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	6	Fill	1	Medium	0	0.321	3.23	433.354
57 KEY LARGO	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Pennekamp Bay	Dredged	0	Fill	1	Low	135	0.213	3.5	265.737
58 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Buttonwood Sound	Shallow Nearshore	0	Fill	1	Medium	270	0.104	1.83	248.341
59 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Buttonwood Sound	Shallow Nearshore	1	Fill	1	Medium	270	0.091	1.26	315.044
60 KEY LARGO	BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Hawk Channel	Dredged	11	Fill	1	Medium	185	2.866	7.77	1607.413
61 KEY LARGO	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Hawk Channel	Dredged	0	Fill	1	Medium	90	0.066	1	289.455
62 ROCK HARBOR	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	0	Low	NA	1.027	5.73	780.145
63 ROCK HARBOR	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Hawk Channel	Dredged	7	Fill	1	Medium	135	0.927	5.41	746.98
64 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Buttonwood Sound	Shallow Nearshore	0	Fill	1	Medium	0	0.032	1.71	80.442
65 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Buttonwood Sound	Shallow Nearshore	0.5	Fill	1	Medium	0	0.085	1.02	363.3
66 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	Med	Rock Harbor	Dredged	1	Fill	1	Low	270	0.085	1.49	249.29
67 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Buttonwood Sound	Shallow Nearshore	0	Fill	1	Medium	0	0.095	1.56	265.61
68 ROCK HARBOR	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Rock Harbor	Dredged	5	Fill	1	Low	225	0.415	3.78	478.255
69 ROCK HARBOR	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Hawk Channel	Dredged	4	Fill	1	Medium	135	0.473	3.63	567.567
70 ROCK HARBOR	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Buttonwood Sound	Shallow Nearshore	0	Fill	1	Medium	0	0.236	2.47	415.88
71 ROCK HARBOR	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Low	180	0.631	6.45	426.081
72 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Rock Harbor	Dredged	0.5	Fill	1	Low	135	0.077	1.29	260.484
73 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Rock Harbor	Dredged	0	Fill	1	Low	135	0.05	1.13	192.886
74 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Rock Harbor	Dredged	0	Fill	1	Low	135	0.061	1.43	184.28
75 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	2	Dredge	1	Medium	135	0.103	1.27	351.46
76 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.151	1.78	370.381
77 ROCK HARBOR	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Florida Bay	Shallow Nearshore	3	Dredge	2	Medium	315, 315	0.467	2.93	693.758
78 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	4	Dredge	1	Medium	135	0.173	2.56	294.548
79 ROCK HARBOR	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.085	1.47	252.791
80 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.098	1.77	242.069
81 ROCK HARBOR	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.077	1.41	238.273
82 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.161	1.93	361.976
83 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.123	1.76	303.025
84 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.099	1.62	265.442

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85 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	3	Dredge	1	Medium	135	0.198	3.46	250.186
86 ROCK HARBOR	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	2	Dredge	1	Medium	135	0.036	1.44	109.971
87 ROCK HARBOR	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	2	Dredge	1	Medium	135	0.033	1.37	104.911
88 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Dredged	1.3	Fill	1	Medium	270	0.123	1.65	323.936
89 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Dove Creek	Channel	0	Fill	1	Low	80	0.083	1.06	342.903
90 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.051	1.36	163.927
91 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.045	1.25	156.308
92 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.073	1.59	199.828
93 TAVERNIER	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	340	0.144	2.31	271.626
94 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.068	1.33	222.944
95 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.033	1.63	86.691
96 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.044	1.68	114.106
97 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.053	1.72	135.02
98 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.098	1.19	359.254
99 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	270	0.07	1.91	158.888
100 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.059	1.31	197.517
101 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Florida Bay	Dredged	3	Dredge	1	Medium	225	0.206	2.78	321.848
102 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	160	0.209	1.86	489.551
103 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0.3	Dredge	1	Medium	160	0.191	1.43	583.081
104 TAVERNIER	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Hawk Channel	Dredged	4	Dredge	1	Medium	160	0.774	3.99	845.127
105 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Hawk Channel	Dredged	2	Fill	2	Medium	90, 135	0.131	1.63	349.936
106 PLANTATION KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Taverier Creek	Channel	1	Fill	1	Medium	350	0.088	1.83	208.793
107 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Taverier Creek	Channel	4.5	Fill	1	Medium	30	0.376	3.32	493.119
108 PLANTATION KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Taverier Creek	Channel	0	Fill	1	Medium	85	0.061	3.24	82.417
109 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Florida Bay	Shallow Nearshore	3	Fill	1	Low	270	0.34	3.38	438.211
110 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Taverier Creek	Channel	2	Fill	1	Medium	80	0.274	1.74	683.972
111 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Florida Bay	Shallow Nearshore	1	Fill	1	Low	0	0.19	2.3	360.969
112 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	270	0.172	2.65	282.852
113 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Taverier Creek	Channel	3.5	Fill	1	Medium	90	0.326	2.83	502.247
114 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Taverier Creek	Dredged	0.6	Fill	1	Medium	90	0.265	1.89	611.803
115 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Taverier Creek	Dredged	0	Fill	1	Medium	90	0.171	1.7	437.821
116 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Taverier Creek	Dredged	0	Fill	1	Medium	90	0.219	2.99	45.434
117 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	30	0.187	1.6	506.337
118 PLANTATION KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Florida Bay	Shallow Nearshore	7	Fill	2	Medium	355, 270	1.365	3.71	1601.195
119 PLANTATION KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Hawk Channel	Dredged	0.5	Fill	1	Medium	135	0.118	2.11	244.012
120 PLANTATION KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Cow Pen Basin	Shallow Nearshore	9	Fill	1	Medium	315	1.045	3.89	1170.247
121 PLANTATION KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	cow pen basin	Dredged	1	Dredge	1	Medium	235	0.157	2.04	335.645
122 PLANTATION KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	hawk channel	Shallow Nearshore	2	Dredge	0	Medium	NA	0.066	1.21	239.535
123 PLANTATION KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	hawk channel	Dredged	0	Dredge	1	Medium	135	0.032	1.15	123.189
124 PLANTATION KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	Med	Snake Creek	Channel	3	Fill	1	Medium	240	0.471	3	682.766
125 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.237	2.54	407.735
126 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.283	3.05	405.217
127 PLANTATION KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Cow Pen Basin	Shallow Nearshore	5	Fill	0	Low	NA	0.71	6.08	508.511
128 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.273	2.96	401.674
129 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Cow Pen Basin	Shallow Nearshore	2.5	Fill	0	Low	NA	0.239	1.85	563.283
130 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.286	2.99	417.695
131 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.304	3.04	436.331

Attributes of Canals.shp

Table 5-2
Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
132 PLANTATION KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.438	5.49	347.48
133 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.303	2.88	457.771
134 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.288	2.83	443.046
135 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.275	2.93	409.444
136 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.248	2.73	395.387
137 PLANTATION KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Hawk Channel	Dredged	0	Fill	1	Medium	170	0.47	5.65	362.767
138 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	0	Fill	1	Medium	240	0.246	2.74	391.188
139 PLANTATION KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Snake Creek	Channel	1.5	Fill	1	Medium	240	0.292	2.67	476.097
140 PLANTATION KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Shell Key Bay	Shallow Nearshore	0	Fill	1	Medium	265	0.058	2.37	106.256
141 PLANTATION KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Shell Key Bay	Shallow Nearshore	0	Fill	1	Medium	300	0.075	1.52	213.548
142 PLANTATION KEY	Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Shell Key Bay	Shallow Nearshore	1	Fill	1	Medium	300	0.033	2.85	50.467
143 UPPER MATECUMBE	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	lignumvitae channel	Channel	1	Fill	1	Medium	225	0.206	4.03	222.637
144 LOWER MATECUMBE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Med	Peterson Key Bank	Channel	4	Fill	1	Low	90	0.181	2.65	297.662
145 LOWER MATECUMBE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.194	1.56	540.858
146 LOWER MATECUMBE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Matecumbe bight	Shallow Nearshore	0	Dredge	1	Medium	315	0.057	2.46	100.992
147 LOWER MATECUMBE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.056	0.99	245.425
148 LOWER MATECUMBE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.088	1.38	277.297
149 LOWER MATECUMBE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	matecumbe bight	Dredged	4	Fill	1	Medium	90	1.352	7.45	790.345
150 LOWER MATECUMBE KEY	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	A.JUMBO	II.A	III.B	High	Florida Bay	Dredged	16	Fill	1	High	330	4.245	13.06	1415.488
151 LOWER MATECUMBE KEY	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	matecumbe bight	Dredged	2	Fill	1	Medium	70	1.2	8.17	639.677
152 LOWER MATECUMBE KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	4	Fill	1	High	315	0.902	4.15	947.498
153 LOWER MATECUMBE KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	Med	Florida Bay	Dredged	1	Fill	1	High	315	0.298	2.39	543.621
154 LOWER MATECUMBE KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	5	Fill	1	High	285	0.498	4.26	509.475
155 LOWER MATECUMBE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	matecumbe harbor	Channel	6	Fill	1	Medium	285	0.81	4.94	714.889
156 LOWER MATECUMBE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	matecumbe harbor	Channel	0	Fill	1	Medium	265	0.093	3.21	126.234
157 LOWER MATECUMBE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	hawk channel	Dredged	1.5	Fill	1	Medium	225	0.635	2.84	971.607
158 LOWER MATECUMBE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	matecumbe harbor	Channel	0	Fill	1	Medium	265	0.068	3.27	90.712
159 LONG KEY/LAYTON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Long Key Creek	Channel	4	Fill	1	Low	180	0.433	3.56	530.275
160 LONG KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Long Key Creek	Channel	0	Fill	1	Low	180	0.111	1.54	312.611
161 LONG KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Long Key Creek	Channel	0	Fill	1	Low	180	0.077	1.54	217.269
162 LONG KEY/LAYTON	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	2	High	80,350	0.196	2.37	359.569
163 LONG KEY/LAYTON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	1	High	350	0.179	2.31	337.124
164 DUCK KEY	BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Hawk Channel	Dredged	6	Fill	4	Medium	##########	4.689	6.83	2989.139
165 GRASSY KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	Low	Grassy Key bight	Plugged	4	Fill	0	Low	NA	0.493	3.56	602.688
166 GRASSY KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	grassy Key bight	Shallow Nearshore	3.5	Fill	0	Low	NA	0.347	3.02	500.188
167 CRAWL KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	crawl key channel	Shallow Nearshore	0	Fill	0	Low	NA	0.193	2.85	293.785
168 CRAWL KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	crawl key channel	Shallow Nearshore	0	Fill	0	Low	NA	0.299	3.74	347.577
169 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.A	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	0	High	NA	0.07	2.9	105.491
170 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Shallow Nearshore	2	Fill	1	High	315	0.529	4.47	515.236
171 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	Med	Florida Bay	Shallow Nearshore	2	Fill	1	Medium	200	0.205	2.3	389.317

Attributes of Canals.shp

Table 5-2
Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
172 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.059	2.72	94.691
173 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.103	3.16	141.949
174 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.162	3.85	183.437
175 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	180	0.111	3.34	144.425
176 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.246	4.37	244.784
177 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.416	5.72	316.4
178 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.363	5.58	283.302
179 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.277	3.97	303.211
180 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	20	0.17	4.73	156.885
181 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.634	5.54	498.672
182 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	170	0.155	4.01	168.633
183 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Vaca Cut	Channel	0	Fill	1	Medium	350	0.069	2.03	147.976
184 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Florida Bay	Shallow Nearshore	6	Fill	1	Medium	350	0.513	4.51	495.529
185 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.495	4.83	446.664
186 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	320	0.049	1.38	154.055
187 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	Med	Key Colony Harbor	Dredged	0	Fill	1	Low	180	0.1	3.65	119.498
188 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	150	0.061	1.68	159.39
189 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	150	0.13	3.05	185.171
190 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.512	4.79	466.049
191 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	7	Fill	1	High	325	1.452	9.2	687.335
192 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	2	Fill	1	Low	80	0.292	14.46	87.908
193 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.476	4.75	437.208
194 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	270	0.247	4.52	238.357
195 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.497	4.9	441.775
196 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Vaca Cut	Channel	4	Fill	4	Medium	0, 160, 60, 60	0.348	2.92	517.881
197 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.339	4.24	347.645
198 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.A	High	Florida Bay	Dredged	2	Dredge	2	High	0, 0	0.484	1.87	1127.48
199 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Key Colony Harbor	Dredged	1.5	Fill	1	Low	150	0.1	3.71	117.667
200 MARATHON	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	2	Medium	160, 160	0.161	1.6	437.763
201 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	270	0.307	4.21	317.958
202 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.029	1.3	95.986
203 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.088	1.4	274.536
204 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	1	Medium	180	0.1	1.7	255.296
205 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.796	6.02	576.539
206 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	1	Fill	1	High	315	1.236	8.18	658.33
207 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Plugged	0	Dredge	0	Medium	NA	0.053	0.91	255.181
208 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.118	1.6	320.454
209 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.266	2.93	395.933
210 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.657	3.71	771.039
211 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.046	1.07	188.249

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
212 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.298	3.22	403.638
213 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.623	3.3	823.641
214 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	Low	Vaca Cut	Channel	0	Fill	1	Medium	340	0.45	3.23	607.768
215 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.337	3.48	422.351
216 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	Med	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.515	2.6	861.144
217 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.679	3.66	808.716
218 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	Low	Vaca Cut	Channel	0	Fill	1	Medium	340	0.182	2.97	266.8
219 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	340	0.493	2.43	882.663
220 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	Med	Florida Bay	Shallow Nearshore	0	Fill	1	High	315	0.122	3	177.551
221 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	1	Dredge	1	Medium	180	0.061	1.31	203.33
222 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	1	Dredge	1	Medium	180	0.071	1.53	202.075
223 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	1	High	315	0.487	32.26	65.766
224 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.067	1.32	218.984
225 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.052	1.35	166.743
226 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.022	1.83	52.577
227 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.097	1.43	296.815
228 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.079	1	341.632
229 BIG PINE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Pine Channel	Dredged	11	Fill	1	Medium	270	0.738	4.74	677.871
230 MARATHON	Circulation Devices, Backfilling, Nutrient Removal,AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.021	1.42	65.902
231 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.044	1.63	116.913
232 MARATHON	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	1	Medium	180	0.165	1.79	402.122
233 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	1	Fill	1	Medium	270	0.063	1.35	202.948
234 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.021	1.19	75.656
235 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	High	0	0.038	1.35	124.28
236 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	0	0.049	1.44	148.916
237 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	0	0.051	1.26	175.168
238 BIG PINE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Pine Channel	Dredged	23	Fill	1	Medium	270	1.648	5.27	1361.637
239 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Vaca Key Bight	Dredged	0	Fill	1	Medium	180	0.123	1.61	333.303
240 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Vaca Key Bight	Dredged	0	Fill	1	Medium	180	0.133	1.72	336.603
241 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	High	0	0.212	2.97	311.276
242 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Vaca Key Bight	Dredged	0	Fill	1	Medium	180	0.231	1.86	542.345
243 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Boot Key Harbor	Dredged	6	Fill	1	Low	185	0.905	4.88	808.018
244 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	0	0.06	1.76	149.176
245 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Boot Key Harbor	Dredged	0	Fill	1	Low	165	0.076	1.43	231.307
246 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Boot Key Harbor	Dredged	0	Fill	1	Low	165	0.158	2.06	335.173
247 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Boot Key Harbor	Dredged	1	Fill	1	Low	165	0.111	1.84	262.594
248 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Boot Key Harbor	Dredged	2	Fill	2	Low	165,165	0.186	2.84	285.212
249 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Boot Key Harbor	Dredged	0	Fill	1	Low	165	0.098	1.62	262.584
250 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Boot Key Harbor	Dredged	1	Fill	1	Low	165	0.084	1.53	237.63
251 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Sombrero Key Basins	Dredged	3	Fill	2	Low	280, 225	0.904	3.46	1137.749
252 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Knight Key Channel	Dredged	2	Fill	1	Medium	195	0.218	3.65	259.82

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
253 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Sombrero Key Basins	Dredged	1	Fill	2	Low	280, 190	0.53	3.13	737.058
254 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Sombrero Key Basins	Dredged	0	Fill	2	Low	180, 355	0.678	3.94	750.454
255 BIG PINE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Bogie Channel	Dredged	7	Fill	1	Medium	90	0.454	3.42	577.974
256 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Sister Creek	Channel	10	Fill	2	Medium	280, 225	2.442	10.74	990.802
257 MARATHON	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Vaca Key Bight	Dredged	2	Fill	2	Medium	90, 90	0.767	3.62	922.526
258 BIG PINE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Bogie Channel	Dredged	4.5	Fill	1	High	90	0.47	2.73	750.301
259 BIG PINE	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Bogie Channel	Dredged	1	Fill	1	High	5	0.096	3.34	124.952
260 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Sombrero Key Basins	Dredged	2	Fill	1	Low	315	0.456	3.64	546.15
261 No Name Key	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Big Spanish Channel	Channel	6	Fill	2	Medium	0, 0	0.703	4.37	700.916
262 BIG TORCH KEY	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Med	Niles Channel	Dredged	1	Dredge	1	Medium	270	0.546	1.86	1280.705
263 BIG PINE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Bogie Channel	Channel	4	Fill	1	Medium	90	0.314	2.58	530.007
264 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Sister Creek	Channel	5.5	Fill	1	Medium	330	1.032	8.28	542.604
265 No Name Key	Circulation Devices, Nutrient Removal, BMPs, AWWT	Fair	C.MEDIUM	II.B	III.A	High	Big Spanish Channel	Channel	0	Dredge	1	Medium	90	0.202	3.19	274.891
266 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Bogie Channel	Channel	0	Fill	1	Medium	90	0.082	0.9	394.698
267 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bogie Channel	Dredged	0	Fill	1	Low	280	0.052	1.48	153.119
268 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Hawk Channel	Shallow Nearshore	4	Fill	1	Medium	225	0.409	4.97	359.138
269 MARATHON	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Hawk Channel	Shallow Nearshore	1	Fill	1	Medium	225	0.188	3.06	267.604
270 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bogie Channel	Dredged	0	Fill	1	Low	280	0.03	1.3	101.557
271 MARATHON	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Hawk Channel	Shallow Nearshore	0	Fill	1	Medium	100	0.062	2.21	123.023
272 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bogie Channel	Dredged	0	Fill	1	Low	280	0.034	1.4	106.531
273 BIG PINE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Doctors Arm	Dredged	6	Fill	1	Medium	180	0.213	1.26	738.924
274 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bogie Channel	Dredged	0	Fill	1	Low	280	0.034	1.33	109.467
275 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bogie Channel	Dredged	0	Fill	1	Low	280	0.026	1.03	108.287
276 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Bogie Channel	Dredged	0	Fill	1	Low	280	0.034	1.37	109.909
277 BIG PINE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Bogie Channel	Dredged	9	Fill	1	Low	90	0.502	3.86	567.196
278 BIG PINE KEY	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Pine Channel	Dredged	25	Dredge	1	Medium	270	1.941	6	1410.414
279 LITTLE TORCH KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Pine Channel	Dredged	0	Fill	1	High	270	0.045	1.3	151.627
280 LITTLE TORCH KEY	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Pine Channel	Dredged	3	Fill	0	High	NA	0.234	2.68	380.131
281 LITTLE TORCH KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Pine Channel	Dredged	1	Fill	1	High	10	0.156	1.15	592.23
282 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Med	Doctors Arm	Shallow Nearshore	3	Dredge	1	Medium	45	0.215	1.9	492.821
283 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	Low	Doctors Arm	Shallow Nearshore	0	Dredge	1	Medium	45	0.037	1.5	108.499
284 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	2	Dredge	1	Medium	0	0.272	3.04	389.074
285 LITTLE TORCH KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Channel	2	Dredge	1	Medium	90	0.147	3.54	180.374
286 BIG PINE KEY	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Bogie Channel	Channel	5	Dredge	1	Medium	45	0.481	2.75	761.583
287 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.124	1.63	329.976
288 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.171	1.8	413.986
289 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Med	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.267	1.76	660.949

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
290 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.05	1.17	186.277
291 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.189	1.33	618.228
292 LITTLE TORCH KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Pine Channel	Dredged	9	Fill	1	Medium	90	0.639	6.19	449.974
293 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.103	1.87	239.69
294 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.19	1.45	571.452
295 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.028	1.32	92.452
296 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.153	1.22	544.742
297 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.062	1.99	135.592
298 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.15	1.31	498.263
299 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.043	1.61	116.538
300 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.055	1.69	142.188
301 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.13	1.28	442.244
302 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.084	0.94	388.811
303 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	Med	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.128	1.8	309.467
304 SUGARLOAF KEY	Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.016	0.88	77.749
305 SUGARLOAF KEY	Circulation Devices, Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.015	1.27	52.407
306 SUGARLOAF KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.024	1.55	68.43
307 SUGARLOAF KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.164	1.35	530.448
308 SUGARLOAF KEY	Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.021	0.91	98.233
309 BIG PINE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Pine Channel	Dredged	12	Fill	1	Medium	270	1.151	5.53	906.788
310 RAMROD KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	New Found Harbor	Plugged	1	Fill	0	Low	NA	0.112	1.12	433.895
311 RAMROD KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	New Found Harbor	Dredged	0	Fill	1	Low	0	0.08	1.04	336.395
312 CUDJOE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Kemp Channel	Dredged	0	Dredge	1	Medium	90	0.207	1.77	509.789
313 CUDJOE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Kemp Channel	Dredged	0	Dredge	1	Medium	90	0.255	2.12	524.1
314 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	Low	Cudjoe Bay	Plugged	0	Fill	0	Medium	NA	0.023	1.27	78.687
315 322 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	Low	Bogie Channel	Channel	0	Fill	1	Medium	90	0.052		
316 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	Low	Cudjoe Bay	Plugged	0	Fill	0	Medium	NA	0.026	1.34	83.794
317 LITTLE TORCH KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Pine Channel	Dredged	10	Fill	1	Medium	90	0.707	4.09	753.013
318 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	Med	Bow Channel	Channel	0	Dredge	1	Medium	90	0.103	0.71	627.902
319 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	270	0.022	0.93	104.206
320 SUMMERLAND KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	90	0.108	1.86	252.996
321 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	270	0.02	0.72	123.535
322 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	90	0.105	1.92	237.976
323 SUMMERLAND KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	90	0.269	2.42	482.993
324 CUDJOE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Cudjo Bay	Dredged	0	Fill	1	Medium	180	0.196	1.76	484.456
325 SUGARLOAF KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Bow Channel	Channel	0	Dredge	1	Medium	90	0.078	0.88	386.082
326 CUDJOE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Cudjoe Bay	Dredged	9	Fill	1	Medium	180	0.604	2.42	1086.863
327 BIG PINE KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	270	0.02	1.2	74.161

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
328 SUMMERLAND KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Summerland Key Bight	Dredged	1	Fill	1	Medium	180	0.08	1.76	198.3
329 CUDJOE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Bow Channel	Dredged	8	Fill	1	Medium	200	0.801	5.27	661.711
330 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	90	0.076	1.38	240.185
331 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	90	0.102	1.76	253.402
332 CUDJOE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Bow Channel	Dredged	0	Fill	1	Medium	270	0.165	1.64	438.529
333 SUMMERLAND KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	Low	Niles Channel	Dredged	2	Dredge	1	Medium	70	0.125	3.01	180.388
334 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	90	0.099	1.8	238.693
335 CUDJOE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Cudjoe Bay	Dredged	5	Fill	1	Medium	270	0.46	2.33	859.286
336 CUDJOE KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Bow Channel	Dredged	9.5	Fill	1	Medium	225	1.027	3.64	1228.112
337 CUDJOE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Bow Channel	Dredged	0	Fill	1	Medium	270	0.162	1.82	388.464
338 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	90	0.081	1.54	229.593
339 LITTLE TORCH KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Pine Channel	Dredged	7	Fill	1	Medium	90	0.681	3.75	790.514
340 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Bow Channel	Dredged	0	Fill	1	Medium	270	0.131	1.61	353.963
341 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	90	0.086	1.61	231.971
342 BIG PINE KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	270	0.011	1.11	42.354
343 CUDJOE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Kemp Channel	Dredged	1	Fill	1	Medium	90	0.147	3.1	206.496
344 CUDJOE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Bow Channel	Dredged	2	Fill	1	Medium	270	0.147	1.89	339.13
345 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.045	0.92	211.881
346 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	315	0.029	2.76	46.366
347 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	1	Fill	1	Medium	90	0.063	1.79	154.124
348 BIG PINE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	315	0.051		
349 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.038	1.02	163.472
350 RAMROD KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	New Found Harbor	Dredged	18	Fill	1	Medium	90	1.497	3.56	1832.282
351 SUMMERLAND KEY	BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Summerland Key Bight	Dredged	11	Fill	7	Medium	180,315,270, 340 340,000,000	2.37	3.98	2595.532
352 CUDJOE KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Kemp Channel	Dredged	3	Fill	1	Medium	90	0.18	2.28	343.778
353 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.032	1.11	125.862
354 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.027	1.19	99.06
355 CUDJOE KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Kemp Channel	Dredged	2	Fill	1	Medium	90	0.352	4.69	326.804
356 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	70	0.079	5.35	64.245
357 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.027	1.25	95.54
358 SUMMERLAND KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	80	0.034	1.74	85.255
359 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.04	1.52	114.795
360 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	135	0.074	1.84	174.716
361 SUMMERLAND KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	100	0.029	1.3	98.02
362 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.03	1.01	126.908
363 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	2	Fill	1	Medium	135	0.114	2.81	176.515
364 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.051	1.42	156.773
365 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.045	2.72	71.275
366 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	135	0.091	2.1	189.867
367 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.068	1.47	202.137
368 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	1	Fill	1	Medium	135	0.084	1.9	192.499
369 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	270	0.069	1.34	225.761
370 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	135	0.053	1.98	116.386
371 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	320	0.034	1.09	137.267

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
372 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	320	0.035	1.22	126.002
373 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	180	0.056	1.47	167.108
374 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	320	0.031	0.95	140.365
375 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	180	0.065	1.33	213.92
376 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	320	0.056	1.57	155.94
377 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Cudjoe Bay	Dredged	0	Fill	1	Medium	320	0.048	1.15	179.664
378 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	180	0.085	1.5	245.671
379 SUMMERLAND KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Summerland Key Bight	Dredged	0	Fill	1	Medium	225	0.061	1.91	139.655
380 CUDJOE KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Kemp Channel	Dredged	0	Fill	1	Medium	180	0.067	1.43	205.838
381 SUMMERLAND KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Summerland Key Bight	Dredged	0	Fill	1	Medium	225	0.112	1.68	289.415
382 SUMMERLAND	Circulation Devices, Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.011	0.91	52.09
383 SUMMERLAND	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	1	Dredge	1	Medium	135	0.071	2.29	135.148
384 SUGARLOAF KEY	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	5	Fill	1	Low	80	0.543	4.17	566.363
385 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.06	2.08	124.796
386 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.036	1.49	106.103
387 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.061	2.96	89.422
388 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	2	Fill	1	Low	135	0.361	3.06	513.365
389 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.051	1.64	135.032
390 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	1	Fill	1	Low	225	0.1	2.1	208.225
391 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.047	1.74	117.859
392 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	1	Fill	1	Low	225	0.226	3.42	287.614
393 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.023	1.43	71.246
394 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.036	1.34	115.748
395 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.126	2.07	265.993
396 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	165	0.06	1.93	136.069
397 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.029	1.5	84.75
398 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	165	0.026	2.12	54.102
399 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.096	1.87	223.406
400 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.056	1.93	125.697
401 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.115	2.23	225.625
402 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.051	2.12	104.106
403 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.112	2.17	225.357
404 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.032	1.91	71.88
405 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.023	1.73	57.612
406 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.124	2.14	252.964
407 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.101	1.83	240.397
408 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.087	2.07	183.018
409 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	2	Low	45, 225	0.108	1.62	289.364
410 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.023	1.55	63.547
411 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	90	0.138	2.18	276.873
412 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.077	2.38	141.503
413 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.046	1.9	104.934
414 SUGARLOAF KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	2	Fill	1	Low	45	0.23	4.63	216.626
415 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.074	2.14	150.617
416 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	180	0.026	1.55	72.27

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
417 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.122	2.05	260.277
418 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	180	0.032	1.45	96.72
419 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.056	2.05	120.036
420 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	1	Fill	1	Low	45	0.22	3.51	272.958
421 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.038	1.9	87.162
422 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	0	Fill	1	Low	45	0.135	2.28	257.418
423 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.021	1.67	54.122
424 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	1	Fill	1	Low	45	0.234	2.88	352.684
425 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.07	2.13	143.048
426 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	Low	Upper Sugarloaf Sound	Dredged	0	Fill	0	Low	NA	0.072	1.86	168.031
427 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.223	2.49	390.847
428 SUGARLOAF KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.158	2.76	249.197
429 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.096	2.03	205.748
430 SUGARLOAF KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	Med	Upper Sugarloaf Sound	Dredged	0	Fill	0	Low	NA	0.085	0.95	389
431 SUGARLOAF	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	Low	Upper Sugarloaf Sound	Dredged	1.5	Fill	1	Low	315	0.147	0.35	1840.93
432 SADDLEBUNCH KEYS	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0.5	Fill	1	Low	270	0.148	1.69	382.706
433 SADDLEBUNCH KEYS	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	180	0.087	2.91	130.824
434 SADDLEBUNCH KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0.5	Fill	1	Low	200	0.125	2.13	255.799
435 SADDLEBUNCH KEYS	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	180	0.258	2.02	556.644
436 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	55	0.048	1.86	112.242
437 BIG COPPITT	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Halfmoon Key Bight	Dredged	3	Fill	1	High	0	0.288	2.23	563.438
438 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.084	1.73	210.778
439 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.072	1.46	214.539
440 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	55	0.029	1.06	119.041
441 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.111	1.67	289.094
442 BIG COPPITT	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.018	1.68	46.85
443 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.121	1.51	350.32
444 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.127	1.41	393.237
445 BIG COPPITT KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.163	2	355.457
446 BIG COPPITT KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.175	2.24	339.752
447 BIG COPPITT KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	1	Fill	1	Medium	45	0.122	2.34	227.17
448 BIG COPPITT KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	Low	Similair Sound	Dredged	0	Fill	0	Medium	NA	0.224	2.88	337.959
449 BIG COPPITT KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Rockland Channel	Dredged	0	Fill	1	Medium	250	0.39	4.48	379.484
450 ROCKLAND	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Rockland Channel	Dredged	0	Fill	1	Medium	0	0.221	1.71	561.364
451 BOCA CHICA KEY	Reduction in Seaweed Loading, Physical Connection, BMPs, AWWT/SWM	Poor	A.JUMBO	II.A	III.A	Low	Boca Chica Channel	Dredged	7.5	Dredge	1	High	280	3.585	15.62	999.566
452 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	270	0.024	1.03	101.113
453 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	270	0.054	1.56	151.124
454 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	270	0.04	1.49	115.715
455 GEIGER KEY	Pumping, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	270	0.02	1.22	70.269
456 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	110	0.049	1.71	124.316
457 KEY HAVEN	BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Boca Chica Channel	Dredged	6	Fill	1	High	80	0.567	4.38	564.114
458 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	110	0.023	1.26	81.01
459 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	110	0.019	0.86	96.771
460 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	30	0.064	2.01	138.582
461 KEY HAVEN	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Boca Chica Channel	Dredged	2	Fill	1	High	30	1.599	11.24	619.802

Table 5-2

Summary of Attributes Relating to Treatment Technology Selection (Matrix)

Attributes of Canals.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
462 GEIGER KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Geiger Key Sound	Dredged	2	Fill	1	Low	315	0.2	2.07	419.103
463 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	30	0.108	1.37	344.574
464 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	1	Fill	1	Low	30	0.1	1.36	320.193
465 GEIGER KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	30	0.012	0.85	59.051
466 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	2	Fill	1	Medium	30	0.111	1.51	320.701
467 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	30	0.033	0.94	154.186
468 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	30	0.02	0.93	94.62
469 KEY HAVEN	BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Boca Chica Channel	Dredged	5	Fill	0	High	NA	0.573	3.64	685.708
470 GEIGER KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Geiger Key Sound	Dredged	5	Fill	1	Low	325	0.325	2.88	490.956
471 KEY HAVEN	BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Boca Chica Channel	Dredged	8	Fill	1	High	45	1.243	6.99	774.928
472 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	180	0.042	0.95	193.035
473 KEY HAVEN	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Boca Chica Channel	Dredged	0	Fill	1	High	45	0.187	2.9	280.44
474 GEIGER KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	180	0.018	1.14	68.193
475 GEIGER KEY	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Similar Sound	Dredged	2	Fill	0	Medium	NA	0.214	1.53	612.437
476 GEIGER KEY	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	1	Fill	1	Medium	180	0.032	1.42	97.068
477 KEY WEST	BMPs, AWWT/SWM	Poor	B.LARGE	II.C	III.B	High	Florida Bay	Dredged	1	Fill	2	Low	45, 135	1.116	4.93	987.441
478 STOCK ISLAND	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Cow Key Channel	Channel	0	Dredge	1	Medium	270	0.111	1.92	251.47
479 STOCK ISLAND	BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	Med	Cow Key Channel	Channel	0	Fill	1	Medium	270	0.722	7.29	431.13
480 KEY WEST	Physical Connection, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.A	High	Cow Key Channel	Channel	9	Dredge	2	Medium	60, 320	3.179	4.29	3228.551

Table 5-3
Summary of Attributes Relating to Treatment Technology Selection (Berm and Swales)

Attributes of jumbo large, high dev A/L ratio >= 8.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
2 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Hawk Channel	Shallow Nearshore	5.5	Fill	1	Medium	135	2.001	10.6	821.961
3 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Card sound	Dredged	12.5	Fill	3	Medium	0, 270, 270	4.202	15.03	1217.625
150 LOWER MATECUMBE KEY	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	A.JUMBO	II.A	III.B	High	Florida Bay	Dredged	16	Fill	1	High	330	4.245	13.06	1415.488
151 LOWER MATECUMBE KEY	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	matecumbe bight	Dredged	2	Fill	1	Medium	70	1.2	8.17	639.677
191 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	7	Fill	1	High	325	1.452	9.2	687.335
206 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	1	Fill	1	High	315	1.236	8.18	658.33
223 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	1	High	315	0.487	32.26	65.766
256 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	High	Sister Creek	Channel	10	Fill	2	Medium	280, 225	2.442	10.74	990.802
264 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	High	Sister Creek	Channel	5.5	Fill	1	Medium	330	1.032	8.28	542.604
461 KEY HAVEN	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Boca Chica Channel	Dredged	2	Fill	1	High	30	1.599	11.24	619.802

Berm and Swale technology applicable even though low development

1 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.B	Med	Angle Fish Creek	Channel	10	Fill	3	Medium	45, 90,355	2.58	5.49	2047.252
5 OCEAN REEF CLUB	Berm And Swale, BMPs, AWWT/SWM	Poor	A.JUMBO	II.C	III.B	Med	Little Dispatch Creek	Channel	3.5	Fill	1	Low	90	2.914	6.92	1833.657

Berm and Swale technology applicable even though low A/L ratio

17 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Barnes Sound	Shallow Nearshore	0	Dredge	1	Medium	270	0.637	6.47	428.778
18 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Barnes Sound	Shallow Nearshore	0	Dredge	1	Medium	270	1.09	6.92	685.944
42 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Blackwater Sound,Large	Shallow Nearshore	0.5	Dredge	2	Medium	315,90	0.485	2.54	829.832
47 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.B	Med	Blackwater Sound	Shallow Nearshore	5	Fill	1	Medium	0	1.048	3.46	1320.245
77 ROCK HARBOR	Berm And Swale, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Florida Bay	Shallow Nearshore	3	Dredge	2	Medium	315, 315	0.467	2.93	693.758

Table 5-3
Summary of Attributes Relating to Treatment Technology Selection (Berm and Swales)

Attrributes of medium size, high dev, A/L ratio greater than 4

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
21 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Lake Surprise	Dredged	4	Fill	1	Low	0	0.418	7.93	229.855
46 KEY LARGO	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Largo Sound	Dredged	2.3	Fill	1	Medium	135	0.235	7.22	141.706
132 PLANTATION KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.438	5.49	347.48
143 UPPER MATECUMBE	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	lignumvitae channel	Channel	1	Fill	1	Medium	225	0.206	4.03	222.637
180 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	20	0.17	4.73	156.885
182 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	170	0.155	4.01	168.633
192 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	2	Fill	1	Low	80	0.292	14.46	87.908
194 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	270	0.247	4.52	238.357
197 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Bonefish Bay	Dredged	0	Fill	1	Low	0	0.339	4.24	347.645
201 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Key Colony Harbor	Dredged	0	Fill	1	Low	270	0.307	4.21	317.958
268 MARATHON	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Hawk Channel	Shallow Nearshore	4	Fill	1	Medium	225	0.409	4.97	359.138
355 CUDJOE KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Kemp Channel	Dredged	2	Fill	1	Medium	90	0.352	4.69	326.804
414 SUGARLOAF KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.C	III.B	High	Upper Sugarloaf Sound	Dredged	2	Fill	1	Low	45	0.23	4.63	216.626
449 BIG COPPITT KEY	Berm And Swale, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Rockland Channel	Dredged	0	Fill	1	Medium	250	0.39	4.48	379.484

Table 5-4
Summary of Attributes Relating to Treatment Technology Selection (Reduction in Seaweed Loading)

Attributes of canals with high energy at the outfall and mouth opening between 30 and 270 degrees

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
150 LOWER MATECUMBE KEY	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	A.JUMBO	II.A	III.B	High	Florida Bay	Dredged	16	Fill	1	High	330	4.245	13.06	1415.488
152 LOWER MATECUMBE KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	4	Fill	1	High	315	0.902	4.15	947.498
153 LOWER MATECUMBE KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	Med	Florida Bay	Dredged	1	Fill	1	High	315	0.298	2.39	543.621
154 LOWER MATECUMBE KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	5	Fill	1	High	285	0.498	4.26	509.475
163 LONG KEY/LAYTON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	1	High	350	0.179	2.31	337.124
170 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Shallow Nearshore	2	Fill	1	High	315	0.529	4.47	515.236
186 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	320	0.049	1.38	154.055
191 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	7	Fill	1	High	325	1.452	9.2	687.335
198 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.A	High	Florida Bay	Dredged	2	Dredge	2	High	0, 0	0.484	1.87	1127.48
206 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Dredged	1	Fill	1	High	315	1.236	8.18	658.33
220 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	Med	Florida Bay	Shallow Nearshore	0	Fill	1	High	315	0.122	3	177.551
223 MARATHON	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	1	High	315	0.487	32.26	65.766
235 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	High	0	0.038	1.35	124.28
236 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	0	0.049	1.44	148.916
237 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	0	0.051	1.26	175.168
241 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	High	0	0.212	2.97	311.276
244 MARATHON	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Florida Bay	Dredged	0	Fill	1	High	0	0.06	1.76	149.176
259 BIG PINE	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Bogie Channel	Dredged	1	Fill	1	High	5	0.096	3.34	124.952
279 LITTLE TORCH KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.B	High	Pine Channel	Dredged	0	Fill	1	High	270	0.045	1.3	151.627
281 LITTLE TORCH KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Pine Channel	Dredged	1	Fill	1	High	10	0.156	1.15	592.23
304 SUGARLOAF KEY	Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.016	0.88	77.749
305 SUGARLOAF KEY	Circulation Devices, Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.015	1.27	52.407
306 SUGARLOAF KEY	Circulation Devices, Backfilling, Nutrient Removal, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.024	1.55	68.43
307 SUGARLOAF KEY	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.164	1.35	530.448
308 SUGARLOAF KEY	Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.021	0.91	98.233

Table 5-4

Summary of Attributes Relating to Treatment Technology Selection (Reduction in Seaweed Loading)

Attributes of canals with high energy at the outfall and mouth opening between 30 and 270 degrees

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
437 BIG COPPITT	Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	C.MEDIUM	II.A	III.B	High	Halfmoon Key Bight	Dredged	3	Fill	1	High	0	0.288	2.23	563.438
451 BOCA CHICA KEY	Reduction in Seaweed Loading, Physical Connection, BMPs, AWWT/SWM	Poor	A.JUMBO	II.A	III.A	Low	Boca Chica Channel	Dredged	7.5	Dredge	1	High	280	3.585	15.62	999.566
461 KEY HAVEN	Berm And Swale, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Poor	B.LARGE	II.A	III.B	High	Boca Chica Channel	Dredged	2	Fill	1	High	30	1.599	11.24	619.802

Table 5-5
Summary of Attributes Relating to Treatment Technology Selection (Pumping)

Attributes of small canals with length less than 75 meters, no convolutions and low energy shoreline

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
12 KEY LARGO	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.019	1.56	53.132
15 KEY LARGO	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.017	1.39	51.958
16 KEY LARGO	Pumping, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.01	0.9	48.539
393 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.023	1.43	71.246
398 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	165	0.026	2.12	54.102
404 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.032	1.91	71.88
405 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.023	1.73	57.612
410 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.023	1.55	63.547
416 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	180	0.026	1.55	72.27
423 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.021	1.67	54.122
455 GEIGER KEY	Pumping, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Geiger Key Sound	Dredged	0	Fill	1	Low	270	0.02	1.22	70.269

Attributes of medium canals with length less than 75 meters, no convolutions and low energy shoreline

162 LONG KEY/LAYTON	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	2	High	80,350	0.196	2.37	359.569
280 LITTLE TORCH KEY	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Pine Channel	Dredged	3	Fill	0	High	NA	0.234	2.68	380.131
473 KEY HAVEN	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Boca Chica Channel	Dredged	0	Fill	1	High	45	0.187	2.9	280.44

Table 5-6
Summary of Attributes Relating to Treatment Technology Selection (Physical Connection)

Attributes of Large to Jumbo, Medium to High Energy, Dredged, Natural

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
20 KEY LARGO	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Low	Hawk Channel	Plugged	2	Dredge	0	Medium	NA	0.511	1.59	1401.158
104 TAVERNIER	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Hawk Channel	Dredged	4	Dredge	1	Medium	160	0.774	3.99	845.127
262 BIG TORCH KEY	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	Med	Niles Channel	Dredged	1	Dredge	1	Medium	270	0.546	1.86	1280.705
278 BIG PINE KEY	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Pine Channel	Dredged	25	Dredge	1	Medium	270	1.941	6	1410.414
286 BIG PINE KEY	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Bogie Channel	Channel	5	Dredge	1	Medium	45	0.481	2.75	761.583
451 BOCA CHICA KEY	Reduction in Seaweed Loading, Physical Connection, BMPs, AWWT/SWM	Poor	A.JUMBO	II.A	III.A	Low	Boca Chica Channel	Dredged	7.5	Dredge	1	High	280	3.585	15.62	999.566
480 KEY WEST	Physical Connection, BMPs, AWWT/SWM	Poor	A.JUMBO	II.B	III.A	High	Cow Key Channel	Channel	9	Dredge	2	Medium	60, 320	3.179	4.29	3228.551

Table 5-7
Summary of Attributes Relating to Treatment Technology Selection (Backfilling)

Attributes of Dredge Small Less than 0.097 Acres.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
34 KEY LARGO	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Blackwater Sound	Shallow Nearshore	0	Dredge	1	Medium	270	0.077	1.83	182.787
48 KEY LARGO	Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Largo Sound	Shallow Nearshore	1	Dredge	1	Medium	90	0.033	2.17	66.903
79 ROCK HARBOR	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.085	1.47	252.791
81 ROCK HARBOR	Backfilling, , BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Hawk Channel	Shallow Nearshore	0	Dredge	1	Medium	135	0.077	1.41	238.273
86 ROCK HARBOR	Backfilling, , BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	2	Dredge	1	Medium	135	0.036	1.44	109.971
87 ROCK HARBOR	Backfilling, , BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	2	Dredge	1	Medium	135	0.033	1.37	104.911
95 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.033	1.63	86.691
96 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.044	1.68	114.106
97 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.053	1.72	135.02
100 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.059	1.31	197.517
122 PLANTATION KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Hawk Channel	Shallow Nearshore	2	Dredge	0	Medium	NA	0.066	1.21	239.535
123 PLANTATION KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	hawk channel	Dredged	0	Dredge	1	Medium	135	0.032	1.15	123.189
146 LOWER MATECUMBE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Matecumbe bight	Shallow Nearshore	0	Dredge	1	Medium	315	0.057	2.46	100.992
147 LOWER MATECUMBE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.056	0.99	245.425
148 LOWER MATECUMBE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.088	1.38	277.297
202 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.029	1.3	95.986
203 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.088	1.4	274.536
207 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Plugged	0	Dredge	0	Medium	NA	0.053	0.91	255.181
211 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.046	1.07	188.249
221 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	1	Dredge	1	Medium	180	0.061	1.31	203.33
222 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	1	Dredge	1	Medium	180	0.071	1.53	202.075
224 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.067	1.32	218.984
225 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.052	1.35	166.743
226 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.022	1.83	52.577
228 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.079	1	341.632
230 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.021	1.42	65.902
231 MARATHON	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.044	1.63	116.913
234 MARATHON	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.021	1.19	75.656
283 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	Low	Doctors Arm	Shallow Nearshore	0	Dredge	1	Medium	45	0.037	1.5	108.499
290 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.05	1.17	186.277
295 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.028	1.32	92.452
297 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.062	1.99	135.592
299 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.043	1.61	116.538
300 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.055	1.69	142.188
302 BIG PINE KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.084	0.94	388.811
304 SUGARLOAF KEY	Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.016	0.88	77.749
305 SUGARLOAF KEY	Circulation Devices, Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.015	1.27	52.407

Table 5-7
Summary of Attributes Relating to Treatment Technology Selection (Backfilling)

Attributes of Dredge Small Less than 0.097 Acres.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
306 SUGARLOAF KEY	Circulation Devices, Backfilling, Nutrient Removal, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.024	1.55	68.43
308 SUGARLOAF KEY	Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Good, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.021	0.91	98.233
325 SUGARLOAF KEY	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Bow Channel	Channel	0	Dredge	1	Medium	90	0.078	0.88	386.082
356 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	70	0.079	5.35	64.245
358 SUMMERLAND KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	80	0.034	1.74	85.255
361 SUMMERLAND KEY	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	100	0.029	1.3	98.02
365 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.045	2.72	71.275
382 SUMMERLAND	Circulation Devices, Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.011	0.91	52.09
383 SUMMERLAND	Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	1	Dredge	1	Medium	135	0.071	2.29	135.148

Medium canals with High Energy Shorelines that may be improved by Backfillinging after cost evaluation

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
162 LONG KEY/LAYTON	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Florida Bay	Shallow Nearshore	4	Fill	2	High	80,350	0.196	2.37	359.569
280 LITTLE TORCH KEY	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Pine Channel	Dredged	3	Fill	0	High	NA	0.234	2.68	380.131
473 KEY HAVEN	Pumping. Backfilling, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.A	III.B	High	Boca Chica Channel	Dredged	0	Fill	1	High	45	0.187	2.9	280.44

Table 5-8
Summary of Attributes Relating to Treatment Technology Selection (Circulation Devices)

Attributes of Small canals, length less than 75 meters, single mouth, no convolutions and medium to high energy shoreline

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
53 KEY LARGO	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	0	Fill	1	Medium	0	0.018	1.17	65.446
54 KEY LARGO	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Tarpon Basin	Shallow Nearshore	0	Fill	1	Medium	0	0.014	1.12	56.028
226 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.022	1.83	52.577
230 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.021	1.42	65.902
305 SUGARLOAF KEY	Circulation Devices, Backfilling, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.015	1.27	52.407
306 SUGARLOAF KEY	Circulation Devices, Backfilling, Nutrient Removal, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.024	1.55	68.43
327 BIG PINE KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	270	0.02	1.2	74.161
342 BIG PINE KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	270	0.011	1.11	42.354
346 BIG PINE KEY	Circulation Devices, Stripper, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	315	0.029	2.76	46.366
356 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	70	0.079	5.35	64.245
365 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.045	2.72	71.275
382 SUMMERLAND	Circulation Devices, Backfilling, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.011	0.91	52.09
442 BIG COPPITT	Circulation Devices, Stripper, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.018	1.68	46.85
465 GEIGER KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	30	0.012	0.85	59.051
474 GEIGER KEY	Circulation Devices, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similar Sound	Dredged	0	Fill	1	Medium	180	0.018	1.14	68.193

Attributes of Medium canals, length less than 75 meters, single mouth, no convolutions and medium to high energy shoreline

101 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Florida Bay	Dredged	3	Dredge	1	Medium	225	0.206	2.78	321.848
102 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	160	0.209	1.86	489.551
103 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0.3	Dredge	1	Medium	160	0.191	1.43	583.081
121 PLANTATION KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	cow pen basin	Dredged	1	Dredge	1	Medium	235	0.157	2.04	335.645
145 LOWER MATECUMBE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.194	1.56	540.858
19 KEY LARGO	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Low	Hawk Channel	Dredged	3	Dredge	1	Medium	90	0.261	2.62	434.236
200 MARATHON	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	2	Medium	160, 160	0.161	1.6	437.763
232 MARATHON	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	1	Medium	180	0.165	1.79	402.122
265 No Name Key	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Big Spanish Channel	Channel	0	Dredge	1	Medium	90	0.202	3.19	274.891
282 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Med	Doctors Arm	Shallow Nearshore	3	Dredge	1	Medium	45	0.215	1.9	492.821
284 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	2	Dredge	1	Medium	0	0.272	3.04	389.074

Table 5-8
Summary of Attributes Relating to Treatment Technology Selection (Circulation Devices)

Attributes of Small canals, length less than 75 meters, single mouth, no convolutions and medium to high energy shoreline

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
285 LITTLE TORCH KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Channel	2	Dredge	1	Medium	90	0.147	3.54	180.374
288 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.171	1.8	413.986
289 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Med	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.267	1.76	660.949
291 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.189	1.33	618.228
294 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.19	1.45	571.452
296 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.153	1.22	544.742
298 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.15	1.31	498.263
312 CUDJOE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Kemp Channel	Dredged	0	Dredge	1	Medium	90	0.207	1.77	509.789
313 CUDJOE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Kemp Channel	Dredged	0	Dredge	1	Medium	90	0.255	2.12	524.1
323 SUMMERLAND KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	90	0.269	2.42	482.993
76 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.151	1.78	370.381
78 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	4	Dredge	1	Medium	135	0.173	2.56	294.548
82 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.161	1.93	361.976
85 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	3	Dredge	1	Medium	135	0.198	3.46	250.186

Table 5-9
Summary of Attributes Relating to Treatment Technology Selection (Nutrient Removal)

Attributes of small, less than 75 meters, A/L greater than 1.shp

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
12 KEY LARGO	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.019	1.56	53.132
15 KEY LARGO	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Manatee Bay	Dredged	0	Fill	1	Low	90	0.017	1.39	51.958
39 KEY LARGO	Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Blackwater Sound	Shallow Nearshore	1	Fill	1	Medium	315	0.017	4.42	16.736
48 KEY LARGO	Backfillinging, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Largo Sound	Shallow Nearshore	1	Dredge	1	Medium	90	0.033	2.17	66.903
142 PLANTATION KEY	Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Shell Key Bay	Shallow Nearshore	1	Fill	1	Medium	300	0.033	2.85	50.467
226 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.022	1.83	52.577
230 MARATHON	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Vaca Key Bight	Dredged	0	Dredge	1	Medium	180	0.021	1.42	65.902
306 SUGARLOAF KEY	Circulation Devices, Backfilling, Nutrient Removal, Reduction in Seaweed Loading, BMPs, AWWT/SWM	Fair, Poor	D.SMALL	II.A	III.A	High	Bow Channel	Channel	0	Dredge	1	High	0	0.024	1.55	68.43
346 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Pine Channel	Dredged	0	Fill	1	Medium	315	0.029	2.76	46.366
356 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	70	0.079	5.35	64.245
365 SUMMERLAND KEY	Circulation Devices, Backfilling, Nutrient Removal, BMPs, AWWT/SWM	Fair, Good	D.SMALL	II.B	III.A	Med	Niles Channel	Dredged	0	Dredge	1	Medium	135	0.045	2.72	71.275
393 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.023	1.43	71.246
398 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	165	0.026	2.12	54.102
404 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.032	1.91	71.88
405 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.023	1.73	57.612
410 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	235	0.023	1.55	63.547
416 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	180	0.026	1.55	72.27
423 SUGARLOAF KEY	Pumping, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.C	III.B	High	Lower Sugarloaf Sound	Dredged	0	Fill	1	Low	225	0.021	1.67	54.122
442 BIG COPPITT	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.B	High	Similair Sound	Dredged	0	Fill	1	Medium	0	0.018	1.68	46.85

Table 5-9
Summary of Attributes Relating to Treatment Technology Selection (Nutrient Removal)

Medium sized canals that should be assigned Circulation Devices or Nutrient Removal after cost evaluation

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	Number of Mouths	Energy at Mouth	Orientation	Acres	A/L Ratio	Length (m)
19 KEY LARGO	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Low	Hawk Channel	Dredged	3	Dredge	1	Medium	90	0.261	2.62	434.236
76 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.151	1.78	370.381
78 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	4	Dredge	1	Medium	135	0.173	2.56	294.548
82 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	135	0.161	1.93	361.976
85 ROCK HARBOR	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	3	Dredge	1	Medium	135	0.198	3.46	250.186
101 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Florida Bay	Dredged	3	Dredge	1	Medium	225	0.206	2.78	321.848
102 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	160	0.209	1.86	489.551
103 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0.3	Dredge	1	Medium	160	0.191	1.43	583.081
121 PLANTATION KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Cow Pen Basin	Dredged	1	Dredge	1	Medium	235	0.157	2.04	335.645
145 LOWER MATECUMBE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.194	1.56	540.858
200 MARATHON	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	2	Medium	160, 160	0.161	1.6	437.763
232 MARATHON	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Vaca Key Bight	Dredged	2	Dredge	1	Medium	180	0.165	1.79	402.122
265 No Name Key	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Big Spanish Channel	Channel	0	Dredge	1	Medium	90	0.202	3.19	274.891
282 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Med	Doctors Arm	Shallow Nearshore	3	Dredge	1	Medium	45	0.215	1.9	492.821
284 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	2	Dredge	1	Medium	0	0.272	3.04	389.074
285 LITTLE TORCH KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Channel	2	Dredge	1	Medium	90	0.147	3.54	180.374
288 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Bogie Channel	Channel	0	Dredge	1	Medium	90	0.171	1.8	413.986
289 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	Med	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.267	1.76	660.949
291 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.189	1.33	618.228
294 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.19	1.45	571.452
296 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.153	1.22	544.742
298 BIG PINE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Pine Channel	Dredged	0	Dredge	1	Medium	270	0.15	1.31	498.263
312 CUDJOE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Kemp Channel	Dredged	0	Dredge	1	Medium	90	0.207	1.77	509.789
313 CUDJOE KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Kemp Channel	Dredged	0	Dredge	1	Medium	90	0.255	2.12	524.1
323 SUMMERLAND KEY	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Niles Channel	Dredged	0	Dredge	1	Medium	90	0.269	2.42	482.993

Table 5-10
Summary of Attributes Relating to Treatment Technology Selection (Tavernier Area)

Attributes of Canals in the Tavernier Area

Residential Name	Treatment	Water Quality	Level I	Level II	Level III	Level IV	Canal Outfall	Outfall Description	Degree of Convolution	Filled Mangrove or Dredged Rock	No. of Mouths	Energy at Mouths	Orientation	Acres	A/L Ratio	Length (m)
87 ROCK HARBOR	Backfilling, BMPs, AWWT/SWM	Fair, God	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	2	Dredge	1	Medium	135	0.033	1.37	104.911
88 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Dredged	1.3	Fill	1	Medium	270	0.123	1.65	323.936
89 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.C	III.B	High	Dove Creek	Channel	0	Fill	1	Low	80	0.083	1.06	342.903
90 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.051	1.36	163.927
91 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.045	1.25	156.308
92 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.073	1.59	199.828
93 TAVERNIER	BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	340	0.144	2.31	271.626
94 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Shallow Nearshore	0	Fill	1	Medium	0	0.068	1.33	222.944
95 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.033	1.63	86.691
96 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.044	1.68	114.106
97 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.053	1.72	135.02
98 ROCK HARBOR	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.A	High	Hawk Channel	Dredged	1	Dredge	1	Medium	135	0.098	1.19	359.254
99 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Florida Bay	Dredged	0	Fill	1	Medium	270	0.07	1.91	158.888
100 TAVERNIER	Backfilling, BMPs, AWWT/SWM	Fair	D.SMALL	II.B	III.A	High	Florida Bay	Dredged	0	Dredge	1	Medium	270	0.059	1.31	197.517
101 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Florida Bay	Dredged	3	Dredge	1	Medium	225	0.206	2.78	321.848
102 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0	Dredge	1	Medium	160	0.209	1.86	489.551
103 TAVERNIER	Circulation Devices, Nutrient Removal, BMPs, AWWT/SWM	Fair	C.MEDIUM	II.B	III.A	High	Hawk Channel	Dredged	0.3	Dredge	1	Medium	160	0.191	1.43	583.081
104 TAVERNIER	Physical Connection, BMPs, AWWT/SWM	Poor	B.LARGE	II.B	III.A	High	Hawk Channel	Dredged	4	Dredge	1	Medium	160	0.774	3.99	845.127
105 TAVERNIER	BMPs, AWWT/SWM	Good	D.SMALL	II.B	III.B	High	Hawk Channel	Dredged	2	Fill	2	Medium	90, 135	0.131	1.63	349.936