WATER QUALITY MONITORING PROJECT FOR DEMONSTRATION OF CANAL REMEDIATION METHODS FLORIDA KEYS

Report #1: Canal Water Characterization
FKNMS Canal Subcommittee Meeting
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Phase 1
Characterization of canal waters before remediation

Phase 2
Monitoring water quality changes after remediation.
# SELECTED CANALS FOR REMEDIATION AND CONTROL

Control canals highlighted in yellow

<table>
<thead>
<tr>
<th>Weed Barrier</th>
<th>Organic Removal</th>
<th>Weed Barrier &amp; Organic Removal</th>
<th>Pumping</th>
<th>Culvert Installation</th>
<th>Backfilling</th>
</tr>
</thead>
<tbody>
<tr>
<td>#137 Plantation Key Treasure Harbor</td>
<td>#148 Lower Matecumbe Key Mate-Lido Beach</td>
<td>#287 Big Pine Hollerich Subdivision</td>
<td>#290 Big Pine Between Ave I &amp; J</td>
<td>#278 Big Pine. Eden Pines Colony Subdivision</td>
<td>#277 Big Pine. Tropical Bay Subdivision</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>#459 Geiger. Boca Chica Ocean Shores Subdivision</td>
</tr>
<tr>
<td>#132 Plantation Key</td>
<td>#147 Matecumbe K</td>
<td>#293 Big Pine</td>
<td>#282 Big Pine</td>
<td>#458 Geiger</td>
<td>#28 Key Largo</td>
</tr>
</tbody>
</table>
CONCEPTUAL MODEL FOR MONITORING DESIGN

ACTION
- Reduction of weed wrack loading
- Removal of accumulated organic sediments
- Installation of culverts and/or pumps
- Backfilling of canals

GOAL
- Reduction of Organic Matter Load
- Reduction Benthic Flux
- Reduce Bottom Water Hypoxia
- Increase Water Exchange and Flushing
- Reduce Excessive Depth to Improve Circulation

PROBABLE CHANGES
- Bacterial Population
- Higher Seawater Contribution
- Mixing Rate
- Benthic Community
- DOM & POM
- H2S Reduction
- Nutrient Load
- Algae Bloom
- Stratification

INDEX
- qPCR
- TOC
- SAL
- H2S
- DO
- N & P
- CHLa
- TUR
- DOM
- CDOM Parafax
- pH
- PAM
- Kd

Legend
- Field
- Lab

BENTHIC COMMUNITY SURVEYS
- PROFILES
  - DEPTH
  - Kd
  - TEMP
  - SAL
  - DO
  - H2S
  - CHLa
  - TUR
  - pH
  - DOM
<table>
<thead>
<tr>
<th>Proposed Work</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>WQ Samples</td>
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<td>288</td>
<td>414</td>
<td>288</td>
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<tr>
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<td>41,886</td>
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<tr>
<td>Done</td>
<td>76</td>
<td>64</td>
<td>92</td>
<td>94</td>
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<td>17,636</td>
</tr>
<tr>
<td>Percentages</td>
<td>20%</td>
<td>22%</td>
<td>22%</td>
<td>33%</td>
</tr>
</tbody>
</table>
Phase 1
Characterization of canal waters before remediation
IS DONE

Phase 2
Monitoring water quality changes after remediation.
TO BE DONE
Strategies

- Monitoring will begin in remediated canals six month after remediation and will be performed quarterly.

- Non remediated canals will be monitored at least once per year