



Department of Environmental Protection

Jeb Bush
Governor

Rookery Bay National Estuarine Research Reserve
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Colleen M. Castille
Secretary

April 12, 2005

To: Hal Herbst, Senior Environmental Analyst
South Florida Water Management District

Project Description: Tarpon Bay Hydrologic Restoration Project

Standard General Permit No. 11-02063-P

Project Location: Collier County

Project: Mangrove replanting and monitoring

Dear Mr. Herbst:

Rookery Bay National Estuarine Research Reserve, managed by the Florida Department of Environmental Protection, installed a 10' X 10' culvert between Tarpon and Johnson Bays, located in Isles of Capri, Florida. Culvert construction concluded on April 2nd, 2004. The installation of this culvert required the excavation of fringe wetlands. South Florida Water Management District, as outlined in the above named permit, requires that disturbed vegetation, which consisted of red mangrove and some white mangrove, be replanted and a maintenance and monitoring program be instigated. Monitoring within the planting area, (limits of clearing), is to be conducted annually for three years until planted or naturally recruited mangroves equals or exceeds 80% coverage and exotic and nuisance vegetation is less than 5% coverage.

Please find attached the monitoring report and photo points.

Sincerely,

Cheryl J. Metzger
Project Manager, Tarpon Bay Hydrologic Restoration Project
Rookery Bay National Estuarine Research Reserve

cc: Keith Laakkonen, Resource Management Coordinator, Rookery Bay NERR

Tarpon Bay Hydrologic Restoration Project
Mangrove monitoring
Standard General Permit No. 11-02063-P

Four photo points were established at this site. These points are located at each corner of the culvert and labeled “NW”, “SW”, “SE” and “NE” to identify the referenced corner. Each photo point is directed looking from the edge of the culvert out toward each bay. In the photo point description, the number of mangroves is indicated in parenthesis. For example; “*The planted red mangroves (19) and the naturally recruiting red mangroves (86) can be seen in the riprap*” indicates that there are 19 planted red mangrove and 86 naturally recruiting red mangrove in the riprap.

Initially a total of 300 white mangrove liners (*Laguncularia racemosa*, 3-12 plants per liner), purchased from a retailer located in Loxahatchee Florida, and 42 red mangroves of previously collected free-floating red mangrove propagules (*Rhizophora mangle*) were planted. The red mangrove propagules were planted too high on the banks and all perished. In June, an additional 119 red mangroves were planted to replace the initial red mangroves. These red mangroves were donated to Rookery Bay National Estuarine Research Reserve (RBNERR) by Miami Dade College. In October 2004, 19 supplemental immature red mangroves, which were donated by a staff member and grown from local red mangrove propagules, were planted. It is difficult to determine the survival rate of these 19 mangroves because they are essentially the same size as the naturally recruiting propagules. However based on size, best estimate is 13 surviving mangroves from this batch. Reserve staff and volunteers planted all mangroves.

As of 3/30/05, there are 62 surviving white mangrove liners and 57 surviving red mangroves (from combined batches). Additionally, many red and white mangroves are naturally recruiting. There are approximately 503 naturally recruiting red mangrove and approximately 253 naturally recruiting white mangrove.

The high mortality of the 119 red mangroves had primarily to do with stunted root systems. These mangroves had outgrown the liners when donated to RBNERR and the root systems were tightly intertwined. Additional mortality resulted from planting stress, wash away by the tide, and bank erosion (at Southwest channel mouth). The high mortality of white mangroves was primarily a result of being walked on by pedestrians and frequent submerge from being planted too low on the bank.

Exotic vegetation has not taken hold on the property associated with the culvert channel and bank. The culvert is installed on Collier County Parks and Recreation property; any exotic vegetation beyond the bank is the responsibility of the county.

Along with the naturally recruiting red and white mangrove, sea purslane (*Sesuvium portulacastrum*) and seashore saltgrass (*Distichlis spicata*) is propagating. Additionally, spartina (*Spartina bakeri*) was planted by RBNERR staff and volunteers to assist with bank stabilization.

MANGROVES PRIOR TO PLANTING



300 White Mangrove liners – 3' to 5' height



119 Red Mangroves – 2 ½' to 3 ½' height

Photo point NW

Taken from the northwest corner of the
culvert looking toward Johnson Bay
April 2004



The planted red mangroves (36) can be seen above the top of the water. White mangroves, measuring 3" – 5" can be seen in the sandy area between the riprap edge and the grass. Natural propagation of red or white mangroves has not yet occurred in this area.

Photo point NW

Taken from the northwest corner of the
culvert looking toward Johnson Bay

April 2005



The surviving planted red mangroves (19) and the naturally recruiting red mangroves (86) can be seen in the riprap. The planted white mangroves (29) now measure 5" – 14" and can be seen in the sandy area between the riprap edge and the grass. Naturally recruiting white mangroves (55) are found mostly along the grass edge and measure 1" – 3". Planted spartina (not required by permit) is spreading and purslane is starting to fill in the sandy areas.

Close-up photo of NW photo point site
April 2005



Close-up photo of NW photo point site
April 2005



Planted white mangrove now measure up to 14" high. Naturally recruiting white mangrove and purslane is starting to grow on the bank

Close-up photo of NW photo point site
April 2005



Two planted red mangrove surrounded by naturally recruiting red mangroves

Close-up photo of NW photo point site
April 2005



Close-up photo of naturally recruiting red mangrove near channel mouth

Photo point SW

Taken from the southwest corner of the
culvert looking toward Johnson Bay
April 2004



The planted red mangroves (34) can be seen above the top of the water. White mangroves, measuring 3" – 5" can be seen in the sandy area between the riprap edge and the grass. Natural propagation of red or white mangroves has not yet occurred in this area.

Photo point SW

Taken from the southwest corner of the
culvert looking toward Johnson Bay
April 2005



The surviving planted red mangroves (15) and the naturally recruiting red mangroves (160) can be seen in the riprap. The planted white mangroves (25) now measure 5" – 13" and can be seen in the sandy area between the riprap edge and the grass. Naturally recruiting white mangroves (116) are found mostly along the grass edge and measure 1" – 3". Planted spartina (not required by permit) is spreading and purslane and seashore saltgrass are starting to fill in the sandy areas.

Close-up photo of SW photo point site
April 2005



Planted red mangrove surrounded by naturally recruiting red mangrove. White mangrove, purslane and seashore saltgrass on sandy bank

Close-up photo of SW photo point site
April 2005



Planted white mangrove now measure up to 13" high on sandy bank. Naturally recruiting white mangrove, purslane and seashore saltgrass is starting to grow into the sandy area

Close-up photo of SW photo point site
April 2005



Three planted red mangrove among naturally recruiting red mangrove in riprap

Photo point SE

Taken from the southeast corner of the
culvert looking toward Tarpon Bay
April 2004



The planted red mangroves (25) can be seen above the top of the water. White mangroves, measuring 3" – 5" can be seen in the sandy area between the riprap edge and the grass. Natural propagation of red or white mangroves has not yet occurred in this area.

Photo point SE

Taken from the southeast corner of the
culvert looking toward Tarpon Bay
April 2005



The surviving planted red mangroves (15) and the naturally recruiting red mangroves (147) can be seen in the riprap. The planted white mangroves (3) now measure 5" – 10" can be seen in the sandy area between the riprap and the grass. Naturally recruiting white mangroves (64) are found mostly along the grass edge and measure 1" – 3". Planted spartina (not required by permit) is spreading.

Close-up photo of SE photo point site
April 2005



Planted red mangrove surrounded by naturally recruiting red mangrove

Close-up photo of SE photo point site
April 2005



Red mangrove naturally recruiting in riprap at culvert mouth

Close-up photo of SE photo point site
April 2005



Photo point NE

Taken from the northeast corner of the
culvert looking toward Tarpon Bay
April 2004



The planted red mangroves (24) can be seen above the top of the water. White mangroves, measuring 3" – 5" can be seen in the sandy area between the riprap edge and the grass. Natural propagation of red or white mangroves has not yet occurred in this area.

Photo point NE

Taken from the northeast corner of the
culvert looking toward Tarpon Bay
April 2005



The surviving planted red mangroves (8) and the naturally recruiting red mangroves (110) can be seen in the riprap. The planted white mangroves (5) now measure 5" – 10" and can be seen in the sandy area between the riprap edge and the grass. Naturally recruiting white mangroves (18) are found mostly along the grass edge and measure 1" – 3". Planted spartina (not required by permit) is spreading.

Close-up photo of NE photo point site
April 2005



Planted red mangrove surrounded by naturally recruiting red mangrove in riprap. White mangrove, both planted and naturally recruiting, on sandy bank.

Close-up photo of NE photo point site



Red mangrove naturally recruiting in riprap at culvert mouth