LESSONS LEARNED

Invasive Species Management in 8.5 Square Mile Area, South Florida

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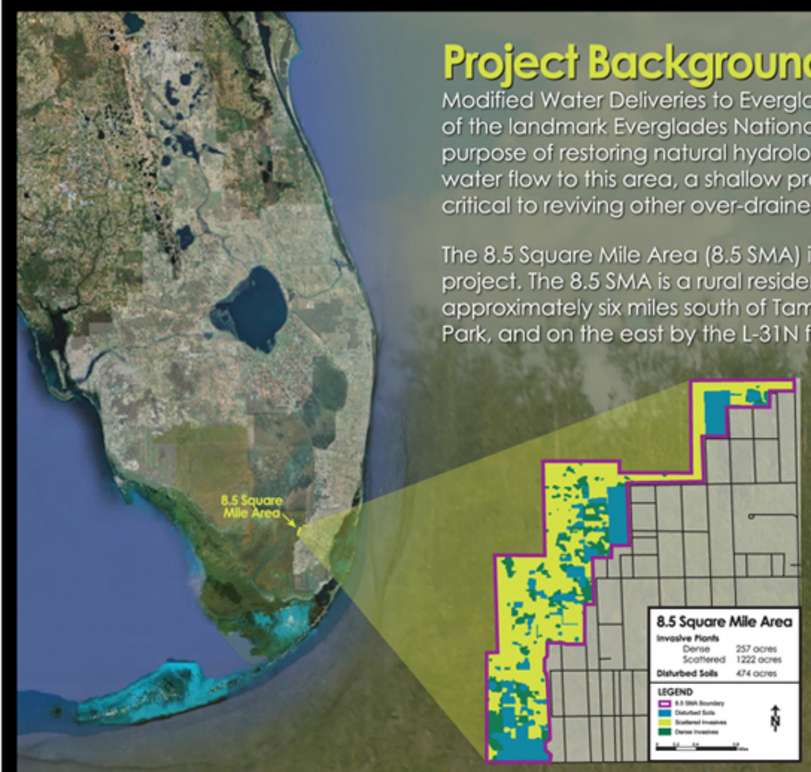

Project Background

Modified Water Deliveries to Everglades National Park (MWD) was authorized by Congress in 1989 as part of the landmark Everglades National Park Protection and Expansion Act. MWD was developed for the purpose of restoring natural hydrologic conditions in the newly acquired park expansion area. Restoring water flow to this area, a shallow productive area of freshwater flow called Northeast Shark River Slough, is critical to reviving other over-drained areas within Everglades National Park.

The 8.5 Square Mile Area (8.5 SMA) is one of the major components of the extremely complex MWD project. The 8.5 SMA is a rural residential/agricultural area located in southern Miami-Dade County, approximately six miles south of Tamiami Trail (U.S. 41). It is bounded on the west by Everglades National Park, and on the east by the L-31N flood protection levee.

As an operational component, invasive plant management was authorized and implemented to prevent the spread of these species into Everglades National Park. The total project area designated for invasive plant management was 1,953 acres. This area was further divided into three treatment areas:

- 257 acres of dense invasives including Australian Pine, Melaleuca and Brazilian Pepper.
- 1,222 acres of the invasive species above plus Napier Grass, Tropical Soda Apple, bamboo, Maiden Cane and other non-native plants.
- 474 acres of disturbed soils overrun by Brazilian Pepper.

Invasive Species Management

Treatment Procedures:

Initial and follow-up treatments covered 1,479 acres of undisturbed areas (dense and scattered treatment areas). Disturbed areas were not included in treatments conducted by the Corps, but treatment/soil removal will be undertaken by the South Florida Water Management District as outlined in the Land Management Plan. Work may begin prior to project transfer.

Utilized a systematic south to north and west to east approach.

Follow-up treatments will be conducted approximately 6 months after the initial treatment

Treatment Methods:

- Melaleuca: Cut stump, hack and squirt, pulling or a combination.
- Australian Pine: Cut stump method/frill and girdle.
- Other non-natives: Foliar applications and pulling.

Herbicides used include glyphosate, triclopyr and imazapyr, as well as a surfactant and/or basal oils.

Treatment Results:

The initial treatment of invasive flora, which started in May 2009, was completed September 2009. Follow-up treatments are scheduled for early 2010. The initial treatment required 36,000 plus man hours performed by a 60-man crew. Only one minor injury occurred. Treatment included 19 Category 1 and Category 2 invasive species. The following species were most prevalent in the project area:

- Melaleuca quinquenervia
- Brazilian Pepper: Schinus terebinthifolius
- Australian Pine: Casuarina spp.
- Luziola subintegra
- Wedelia trilobata
- Napier grass: Pennisetum purpureum
- Silk grass: Pityopsis graminifolia

Lessons Learned

1. The cost of the exotic vegetation management project increased due to a significant delay between the development of the scope of work (SOW) and award of the contract. In the case of 8.5 SMA, aerial and ground surveys were conducted to identify treatment needs. The information was used to develop the SOW and independent government estimate (IGE). Seven months passed between the initial surveys and the contract award. During this period, vegetation continued to grow and the infested areas expanded in acreage, increasing the cost of treatment.

Related Key Consideration:

Hydrological conditions and the invasive species present play key roles in determining the rate of expansion and control methods, when creating an SOW/IGE. When planning an invasive species management project, it is important to have a complete understanding of the project area conditions and the biology of the flora present. Although not scientifically proven, it is speculated the growth/increase in Melaleuca saplings between the initial survey and the first treatment may have been influenced by the two to three feet of standing water on parts of the project footprint. This may be an area for future studies/investigations and illustrates the importance of understanding the floras' life history.

When unfamiliar or not easily identified species are encountered during the initial survey, the location of those species should be noted and revisited to ensure non-native(s)/invasive(s) are not left unaccounted for or go untreated.

2. Ensure early coordination between the Corps Planning and Operations Divisions to achieve a successful plan of action. In the case of the 8.5 SMA project it was initially assumed the restoration of hydrology in the area would be sufficient to allow for restoration of the project area. It was not recognized, however, that to restore the area, rock plowed soils would have to be scraped and removed to control invasive species, primarily Brazilian pepper. The initial plan did not address the need for invasive vegetation management activities due to the assumption that hydrologic restoration would kill non-native vegetation. This caused both unanticipated increases in project cost as well as delays in the project completion date.

Other Key Considerations

1. Ensure that project boundaries are well defined by conducting thorough site survey. The site survey will define the extent of infestation and identify real estate boundary issues. The real estate boundaries of 8.5 SMA are extremely complicated. If land ownership is not clearly identified, some areas may go without maintenance, jeopardizing the restoration efforts of the project. This is the case of an area immediately north of the northern boundary of the 8.5 SMA project area. The area has gone untreated and serves as a seed source for re-infestation by invasive flora.

2. Maintaining an open line of communication and strong coordination between the Corps and all major stakeholders is crucial to success. At the onset of the project, all major stakeholders should have a clear understanding of the project purpose, process, transfer, and future maintenance requirements. As was found in this project, coordination for transfer of lands and future maintenance was critical to the success of the project. The vegetation management successes would be a wasted effort if the future land manager was not prepared to take over these responsibilities.