HORSE CREEK ENHANCEMENT PROJECT

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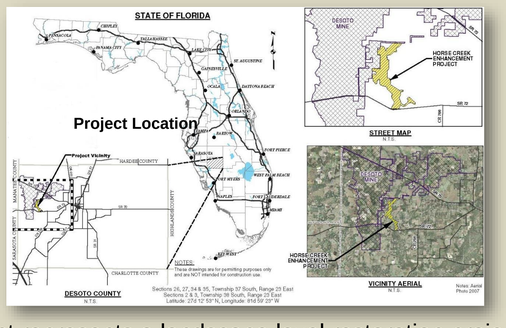
Abstract

- Mosaic's current approach to satisfy compensatory mitigation requirements include both onsite and offsite mitigation
- Offsite mitigation projects focus on benefits at a watershed management level incorporating the Integrated Habitat network (IHN) and the Charlotte Harbor National Estuary Program Comprehensive Conservation and Management Plan (CHNEP CCMP) priority actions

Offsite mitigation projects

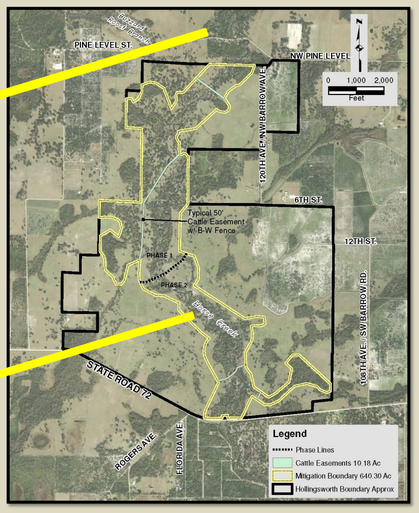
- are constructed prior to mining activities, reducing the temporal lag traditionally associated with onsite mitigation
- involve large, ecologically significant parcels
- incorporate rigorous scientific and technical analysis, planning and implementation
- require a significant investment of financial resources



- The Project represents a landscape level restoration project consisting of stream and habitat restoration within one of the more damaged sections of the Horse Creek corridor
- Historically, the site consisted of an intact forested riparian floodplain
- Site has been subject to extensive alterations resulting in a landscape dominated by improved pasture
- Ditches were constructed and natural streams altered to facilitate drainage
- Onsite wetlands are disturbed, subject to altered hydroperiods and exhibit encroachment by exotic and nuisance species
- For the approximate 5-mile length of Horse Creek that runs through the property, there are several areas where riparian corridor has been cleared right up to the bank, resulting in eroding banks

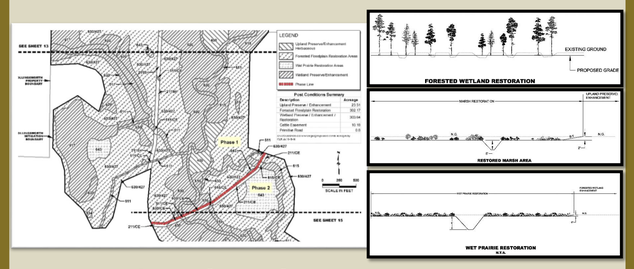
Eroded banks of Horse Creek in project area

Onsite average Horse Creek Riparian buffer = 800 ft.



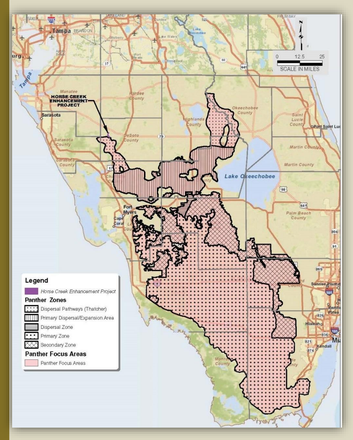
Mitigation Summary

- 640 acres placed under Conservation Easement
- Re-establishment / Restoration of 14 acres of wet prairie habitat
- Wetland Enhancement / Preservation of 290 acres
- Forested Floodplain & Stream Restoration of 302 acres of the Horse Creek Floodplain
- Upland Preservation & Enhancement of 24 acres of live oak and mixed hardwood forest



Horse Creek Enhancement – Listed Species

- Within U.S. Fish and Wildlife Service (FWS) Caracara Consultation Area
- Abuts FWS Florida Panther Dispersal Pathway
- Within 18.6 miles of 6 active wood stork colonies



Florida Panther

- Northern limit of dispersal pathway abuts project
- Addresses FWS recovery goals of helping expand breeding range and secure, maintain and restore habitat within the historic range

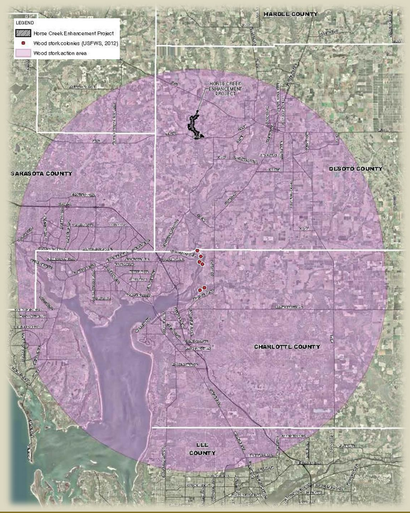
Northern Crested Caracara

Preserving & restoring caracara habitat addressing FWS recovery goals:

- Encourage natural colonization of restored habitats
- Encourage purchase of unprotected lands
- Restore habitat in currently unoccupied areas

Wood Stork

- Based on FWS' prey base evaluation, project will result in an increase in wood stork forage biomass



References

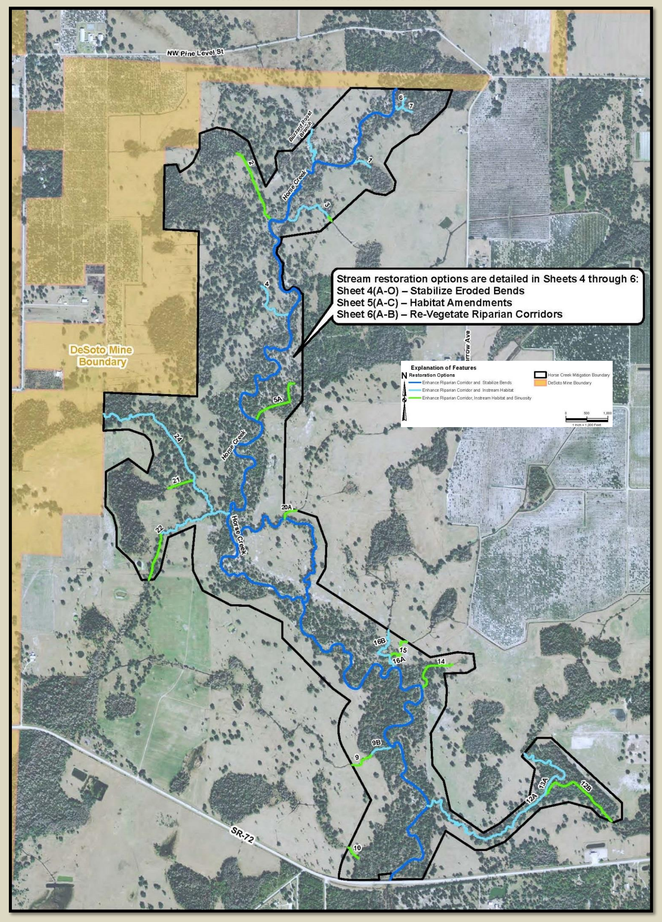
Amec Foster Wheeler Environment & Infrastructure. (2016). ***Horse Creek Enhancement Project-Stream Restoration Plan***

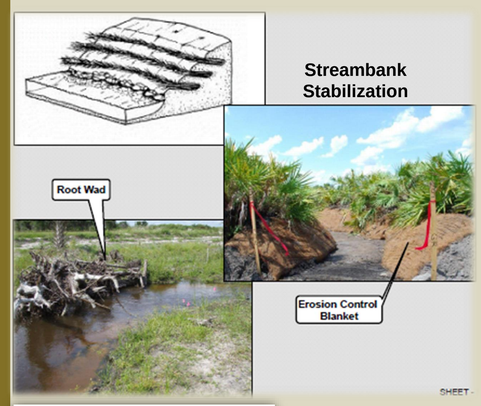
Johnson Engineering. (2015). ***Horse Creek Enhancement Project-Mitigation Assessment***

Stream Restoration Component

- Stabilize 25 eroded bends of Horse Creek & enhance riparian corridor (26,612 L.F)
- Enhanced riparian corridor and add in-stream habitat (13, 459)
- Enhanced riparian corridor, add in-Stream habitat and increased Sinuosity (7,428 L.F.)

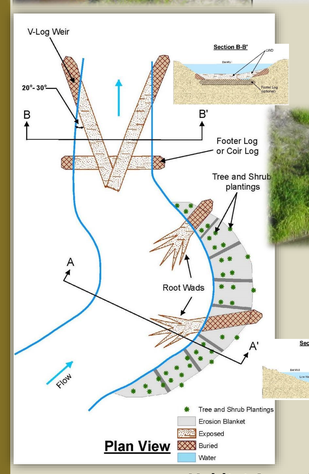
Stream Restoration Plan





Horse Creek Bank Stabilization:

- Bioengineering techniques used to re-shape to a more stable, natural slope
- Bank stabilization prevents sedimentation and smothering of fish and macroinvertebrate habitats

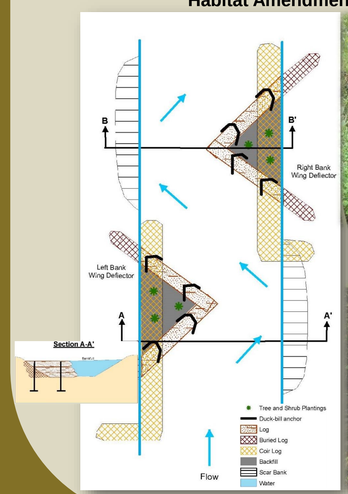


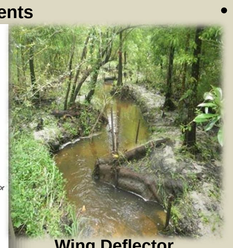
Habitat Amendments

In-Stream Habitat Amendments:

- Installation of v-log weirs to stimulate pool formation providing fish and macroinvertebrate habitat
- Installation of wing deflectors to create and enhance bends in ditched streams increasing sinuosity
- Installation of root woods for bank stabilization and provision of aquatic habitat
- Placement of Large Woody Debris (LWD) to increase the diversity of the of biological communities

V-Log Weir





Wing Deflector

Large Woody Debris