



**ENVIRONMENTAL SUPPORT FOR APPLICATION
OF THE
ENVIRONMENTAL RESOURCE PERMIT
AND
ENVIRONMENTAL RESOURCE LICENSE**

SIERRA RANCH

**TOWN OF DAVIE
BROWARD COUNTY, FLORIDA**

**June 2015
(Revised November 2015)
(Revised June 2016)
(Revised June 2017)**

Prepared by:

**EW CONSULTANTS, INC.
2581 Metrocentre Blvd, Suite 1
West Palm Beach, FL 33407
561-291-7950**

I. PROJECT DESCRIPTION

The subject parcel is undeveloped land located in Section 18, Township 50 South, Range 41 East, in Broward County, Florida and is depicted on the Location Maps (Figures 1 and 2) provided in the Appendix. The parcel is surrounded on the north and south by residential development, on the west by Southwest 112th Avenue (Hiatus Road) and on the east by the N-17 Canal and residential development.

The project involves the construction of a residential development on an approximately 89.1-acre site. An individual Environmental Resource Permit (ERP) is required from South Florida Water Management District (SFWMD) because wetland impacts are proposed. An individual permit will also be required from the U.S. Army Corps of Engineers (ACOE), and an Environmental Resource License is required from Broward County Environmental Protection and Growth Management Department.

II. TOPOGRAPHY/HYDROLOGY

The U.S. Geological Survey topographic quadrangle (Hialeah Quadrangle) shows the property is generally flat topographically, with approximate elevations of 5-6 feet NGVD. Field reconnaissance indicates that the topography is generally consistent with the USGS quadrangle. However, surface water hydroperiod on the site and project vicinity appears to have been substantially altered from historical conditions by surrounding development, regional drainage, and past land uses. The wetland areas on the site display signs of inappropriate hydrology such as soil subsidence and encroachment of exotic and transitional vegetative species.

III. SOILS

Mapped soils on the parcel comprise Hallandale fine sand, Lauderhill muck and Margate fine sand. Field tests confirmed the presence of mapped soils in some areas of the parcel. However, the majority of the property has been disturbed and the soils altered. A description of each soil type is listed below. This description is based upon the general characteristics for the soil type illustrated in the Soils Survey of Broward County Area, Florida and is not necessarily indicative of the exact characteristics found on this property. A soils map with the site boundary is attached as Figure 2.

Hallandale fine sand (12). Under natural conditions Hallamlale fine sand is a nearly level, poorly drained, sandy soil that is underlain by lime-stone at a depth of 7 to 20 inches. Most of the areas of this soil is in natural vegetation or improved pasture. Typical natural vegetation includes scattered slash pine and saw palmetto, pineland three-awn, paspalum, blue panicum, blue maidencane, and bluestem.

Lauderhill muck (18). Under natural conditions Lauderhill muck is a nearly level, very poorly drained, organic soil underlain by limestone at a depth of 20 to 40 inches. It is in broad flats in the Everglades. Typical natural vegetation consists of sawgrass. In some places where the sawgrass has been burned, melaleuca has become established.

Margate fine sand (19). Under natural conditions Margate fine sand is a nearly level, poorly drained, sandy soil that is underlain by limestone at a depth of 20 to 40 inches but has solution holes as deep as 60 inches. It is on nearly level, low terraces between the Everglades and the low, sandy Coastal Ridge. Typical natural vegetation consists of native grasses, wax myrtle, and a few cypress trees.

While the above soil descriptions include dominant vegetation that may be found under natural conditions, observations of actual dominant vegetation on the property are different. Much of the property is dominated by exotic and nuisance vegetative species, which is likely a result of the long-term passive agricultural uses and fluctuations in the hydrological conditions in this region.

IV. SITE CONDITIONS

The site is mostly vacant and undeveloped. The site is surrounded by highway, undeveloped land, pasture, and a single-family residence. Much of the site was historically used for agricultural uses such as row crops and later as pasture land for cows. Pedestrian transects were conducted on the site and vegetative communities were mapped on a recent aerial photograph of the site. A description of each community type is provided in the Habitat/Land Use section of this report.

V. HABITAT/LAND USE

Field reconnaissance has been conducted on the property between February 2012 and the present time, during which four distinct land cover types were identified and mapped throughout the property. The observed land cover types and vegetative communities have been categorized in accordance with the Florida Land Use, Cover and Forms Classification System (FLUCFCS, January 1999) published by Florida DOT with a description of each land cover type provided below. Acreage figures provided are estimates based on aerial photo interpretation, survey information and field reconnaissance and mapping with the assistance of hand held GPS equipment. A map depicting the location and extent of the identified land cover types is provided in the Appendix as Figure 3 –FLUCFCS Map.

422 Brazilian Pepper – 16.2 acres

This vegetative community is found near and around the property boundaries. Brazilian pepper dominates the canopy and subcanopy in this community. Also present are scattered schefflera, black olive, live oak, bishopwood, seaside mahoe, queen palm, earleaf acacia, areca palm, woman's tongue, java plum, mango, carrotwood, wild coffee, and Surinam cherry. Caesar weed, shrubby false buttonweed, crowfoot, milkweed, ragweed, dog fennel, Bahia grass, smutgrass, oyster plant, elephant ear, philodendron, spanish needle, wedelia, grape vine, and wild poinsettia occur within the ground cover.

510 Ditches – 3.7 acres

This land use is found in several areas of the property. The ditches run east- west and north-south on the subject parcel. There does not appear to be connection to offsite waters.

619 Exotic Wetland Hardwoods – 65.5 acres

This vegetative community is found throughout the property. The majority of the canopy and subcanopy vegetation is dominated by Brazilian pepper. Also present are scattered wax myrtle, salt bush, Carolina willow, broomsedge, rushes, water pennywort, water hyssop, marsh fleabane, royal fern, giant leather fern, Old-world climbing fern, melaleuca and primrose willow.

641 Freshwater Marsh – 3.7 acres

Aerial photographs show what may have been freshwater marsh wetlands have decreased in size over time, due to the encroachment of exotic and nuisance species. The dominant vegetative species in the freshwater marsh include broomsedge, white top sedge, torpedo grass, spikerush, water pennywort, water hyssop, wax myrtle, cattails, royal fern, leather fern, primrose willow, marsh fleabane, smartweed, saltbush, melaleuca, Brazilian pepper and Carolina willow.

VI. CRITICAL HABITAT/LISTED SPECIES OBSERVATION

The project site was reviewed for the presence of habitat conducive to federal and state listed flora and fauna. Observations were made for the presence of any wildlife species listed as Endangered, Threatened, or Species of Special Concern by Florida Fish and Wildlife Conservation Commission (FWC) and/or United States Fish and Wildlife Service (FWS). The observation methodology included meandering pedestrian transects, including areas adjacent to wetlands.

No animal species listed as protected by federal, state, or local environmental regulatory agencies, nor any signs of such animals, were observed on the parcel.

No listed plant species protected by federal, state, or local environmental regulatory agencies were observed within the parcel.

Non-listed wildlife observed include Jesus lizard, eastern gray squirrel, mourning dove, mocking bird, blue jay, zebra longwing butterfly and dragonflies.

VII. WETLANDS

State, Federal and Broward County jurisdictional wetlands comprise 69.2 acres and other surface waters comprise 3.7 acres as shown on Figures 4 and 5. An informal wetland pre-application meeting was conducted with SFWMD, COE and Broward County in February 2013 to confirm the jurisdictional boundaries.

Primary wetland impacts resulting from fill and excavation for site development will occur over 48.9 acres of wetland and 3.7 acre of surface waters.

VIII. REDUCTION AND ELIMINATION OF WETLAND IMPACTS

The applicant reviewed site plan alternatives in an effort to eliminate and reduce impacts to the wetland areas.

The quality of the 69.2-acres of wetland is poor and has been highly impacted by exotic vegetation and altered hydrologic conditions resulting from previous agricultural uses and surrounding regional development.

So after careful consideration of wetland impact minimization and on-site mitigation options for this project, it was determined that the majority of the mitigation for wetland impacts will consist of on-site wetland enhancement and restoration. The restored areas will then be maintained and preserved in perpetuity.

IX. MITIGATION PLAN

As compensation for unavoidable direct wetland impacts, on-site wetland enhancement and restoration will occur within a 23.86-acre on-site area. Wetland impacts and mitigation for impacts occurring on-site were calculated using the Uniform Mitigation Assessment Method (UMAM) (See Attachments). The small deficit of mitigation will be compensated for at an off-site mitigation bank.

There will be 23.86 acres of wetlands that will be enhanced and restored on-site. This mitigation area will be excavated and graded to create herbaceous wetlands with higher areas of tree islands interspersed among the lower areas (Figures 6 and 6A). The proposed wetland enhancement and restoration involves reducing drainage and contouring the area to provide appropriate water levels for each habitat type. An appropriate hydroperiod within the wetland area will sustain native wetland plants and greatly increase the potential forage base for a variety of wetland dependent reptilian, amphibian, mammalian, and wading bird species. Avian perches and duck boxes will be incorporated also to promote avian utilization.

Habitat quality of the enhanced and restored wetland will be maintained by the removal of exotic and nuisance vegetation. After the wetland has been scraped down and contoured, the herbaceous portions of the wetland will be planted with appropriate native vegetation, two and a half feet on center. Tree islands will be planted with trees 10 feet on center and shrubs and grasses planted five feet on center. The plantings on the tree islands will be larger material to ensure diversity and survivability.

Planting Plan:

Common Name	Species	Size	Density	Quantity
<u>Marsh (elevation 1.0 to 2.0 NGVD) 17.4 acres</u>				
Pickernelweed	<i>Pontedaria cordata</i>	bare-root	3' oc	6,500
Duck potato	<i>Sagittaria latifolia</i>	bare-root	3' oc	6,000
Knotted spikerush	<i>Eleocharis interstincta</i>	bare-root	3' oc	12,000
Alligator flag	<i>Thalia geniculata</i>	bare-root	3' oc	6,000
Blue flag iris	<i>Iris virginica</i>	bare-root	3' oc	6,000
Beak rush	<i>Rhynchospora microcarpa</i>	bare-root	3' oc	6,000
Maidencane	<i>Panicum hemitomon</i>	bare-root	3' oc	8,000

Soft rush	<i>Juncus effuses</i>	bare-root	3' oc	12,000
Sawgrass	<i>Cladium jamaicense</i>	bare-root	3' oc	15,000
Soft stem bulrush	<i>Scirpus validus</i>	bare-root	3' oc	10,000
Giant bulrush	<i>Scirpus spp.</i>	bare-root	3' oc	10,000

Hydric Tree Islands (elevation 2.5 to 4.5 NGVD) 1.0 acre

Dahoon holly	<i>Ilex cassine</i>	10 gallon	10' oc	126
Red maple	<i>Acer rubrum</i>	10 gallon	10' oc	126
Red bay	<i>Persea borbonia</i>	7 gallon	10' oc	126
Pond apple	<i>Annona glabra</i>	7 gallon	10' oc	126
Wax myrtle	<i>Myrica cerifera</i>	3 gallon	5' oc	1,010
Coco plum	<i>Chrysobalanus icaco</i>	3 gallon	5' oc	1,010
Sand cordgrass	<i>Spartina bakeri</i>	1 gallon	3' oc	2,800
Fakahatchee grass	<i>Tripsacum floridanum</i>	1 gallon	3' oc	2,800

Transitional Buffer (elevation 3.5 to 7.0 NGVD) 1.0 acre

Slash pine	<i>Pinus elliottii</i>	10 gallon	10' oc	450
Cabbage palm	<i>Sabal palmetto</i>	10-12'	10' oc	160
Firebush	<i>Hamelia patens</i>	7 gallon	5' oc	815
Coco plum	<i>Chrysobalanus icaco</i>	3 gallon	5' oc	815
Wax myrtle	<i>Myrica cerifera</i>	3 gallon	5' oc	815
Sand cordgrass	<i>Spartina bakeri</i>	1 gallon	3' oc	3,390
Fakahatchee grass	<i>Tripsacum floridanum</i>	1 gallon	3' oc	3,390

The wetland mitigation area will be placed in a conservation easement. The preserve area will be posted with permanent signs and boundary markers. Boundary markers will be placed at the back of lots abutting the preserve area. Signs will be at least 11 x 14 inches in size and will be posted in conspicuous locations along the preserve area boundary, at a frequency of no less than one sign per 500 feet.

X. MAINTENANCE AND MONITORING

The enhanced and restored wetland will be maintained in perpetuity and monitored for a period of five years. Annual monitoring reports will include vegetation analysis along established transects, panoramic photographs and water level data.

Monitoring of the on-site mitigation area will ensure success of the mitigation activities. The survival rate of planted vegetation is expected to be maintained at least 80 percent. The vegetative coverage is expected to reach at least 80 percent areal coverage by the end of the second year monitoring period, with at least 40 percent coverage achieved in the first year. Maintenance will be conducted in perpetuity to ensure that the wetland is free of exotic vegetation (as currently defined by the Florida Exotic Pest Plan Council) immediately following a maintenance activity and that total coverage of exotic and nuisance plant species should constitute no more than 3 percent of the total preserve area between maintenance activities.

The preserve area will be posted with signage alerting adjacent property owners of the conservation status. Signs are depicted on the Mitigation Monitoring Plan Map. The property owner's association will be responsible for the maintenance and monitoring of the preserve area. Monitoring will occur in compliance with SFWMD and Broward County wetland monitoring guidelines with annual report for five years to SFWMD and quarterly reports for five years to Broward County to document wetland functional success. Upon completion of construction activities, a time zero baseline report will be filed. Anticipated transect and monitoring station locations are shown in Figure 7.

XI. CONSTRUCTION SEQUENCE

Mitigation activities will occur commensurate with site construction activities. Site construction and mitigation activities will occur immediately upon permit issuance. A time zero baseline monitoring report will be submitted upon completion of all mitigation activities. Estimated dates for completion of these activities are as follows:

August 2017	Permit Issuance
December 2017	Recorded Conservation Easement and Financial Assurances Submitted
March 2018	Mitigation Area Grading complete, As-Built Submitted
May 2018	Completion of Mitigation Activities and Planting
May 2018	Time Zero Monitoring Report to SFWMD, Broward, and ACOE
May 2019	First Annual Monitoring Report to SFWMD, Broward and ACOE
May 2020	Second Annual Monitoring Report to SFWMD, Broward and ACOE
May 2021	Third Annual Monitoring Report to SFWMD, Broward and ACOE
May 2022	Fourth Annual Monitoring Report to SFWMD, Broward and ACOE
May 2023	Fifth Annual Monitoring Report to SFWMD, Broward and ACOE

XII. COST ESTIMATES

The estimated cost for mitigation activities including earthwork and grading, wetland enhancement, restoration and planting, buffer creation and planting, and required maintenance and monitoring is approximately \$718,744. The breakdown of these costs is as follows:

Description	Unit*	Quantity	Unit Cost	Estimated Cost
Wetland Earthwork / Scrape down	CY	116,644	\$ 3.50	\$ 408,254.00
Wetland Planting	AC	23.86	\$ 7,500	\$ 178,950.00
Wetland Maintenance	EA	20	\$ 2,500	\$ 50,000.00
Wetland Monitoring	EA	6	\$ 2,400	\$ 14,400.00
Subtotal				\$ 651,604.00
+10% =				\$ 716,764.40

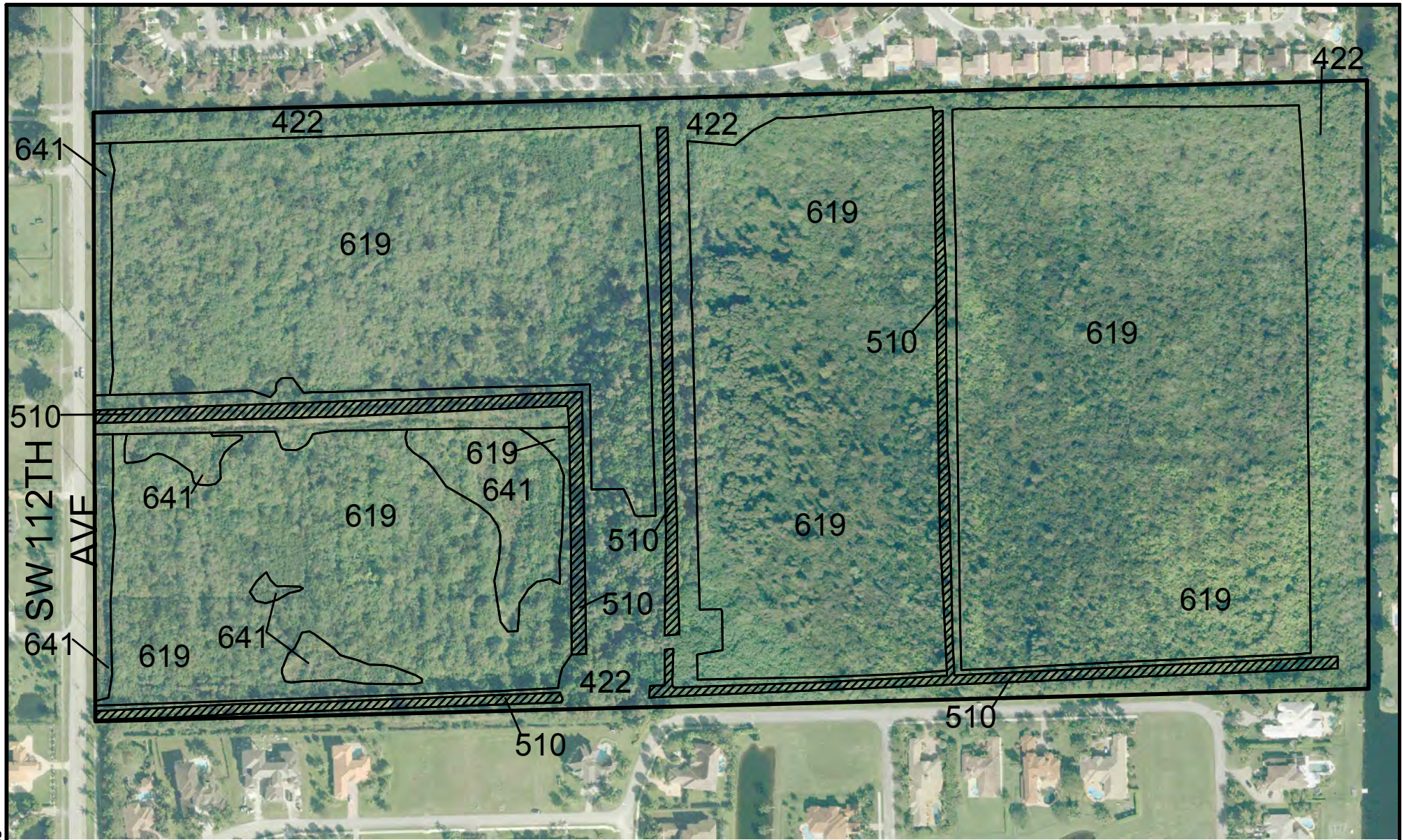
APPENDIX A

Maps and Figures:

Figure 1: Location Map
Figure 2: Quad Map
Figure 3: Aerial Map
Figure 4: FLUCFCS Map
Figure 5: Wetland Impact Map
Figure 6: Preserve Area Map
Figure 6A: Preserve Area Cross Sections
Figure 7: Wetland Monitoring Map



Attachments

Soils Report
UMAM Data Sheets and Summary



BROWARD COUNTY AERIALS DATED 2015

LEGEND

-  422 - BRAZILIAN PEPPER (16.2± AC)
-  510 - DITCHES (3.7± AC)
- 619 - EXOTIC WETLAND HARDWOODS (65.5± AC)
- 641 - FRESHWATER MARSHES (3.7± AC)

TOTAL SITE (89.1± AC)

0 300
SCALE IN FEET

SIERRA RANCH FLUCFCS MAP



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APRIL 2015

FIGURE

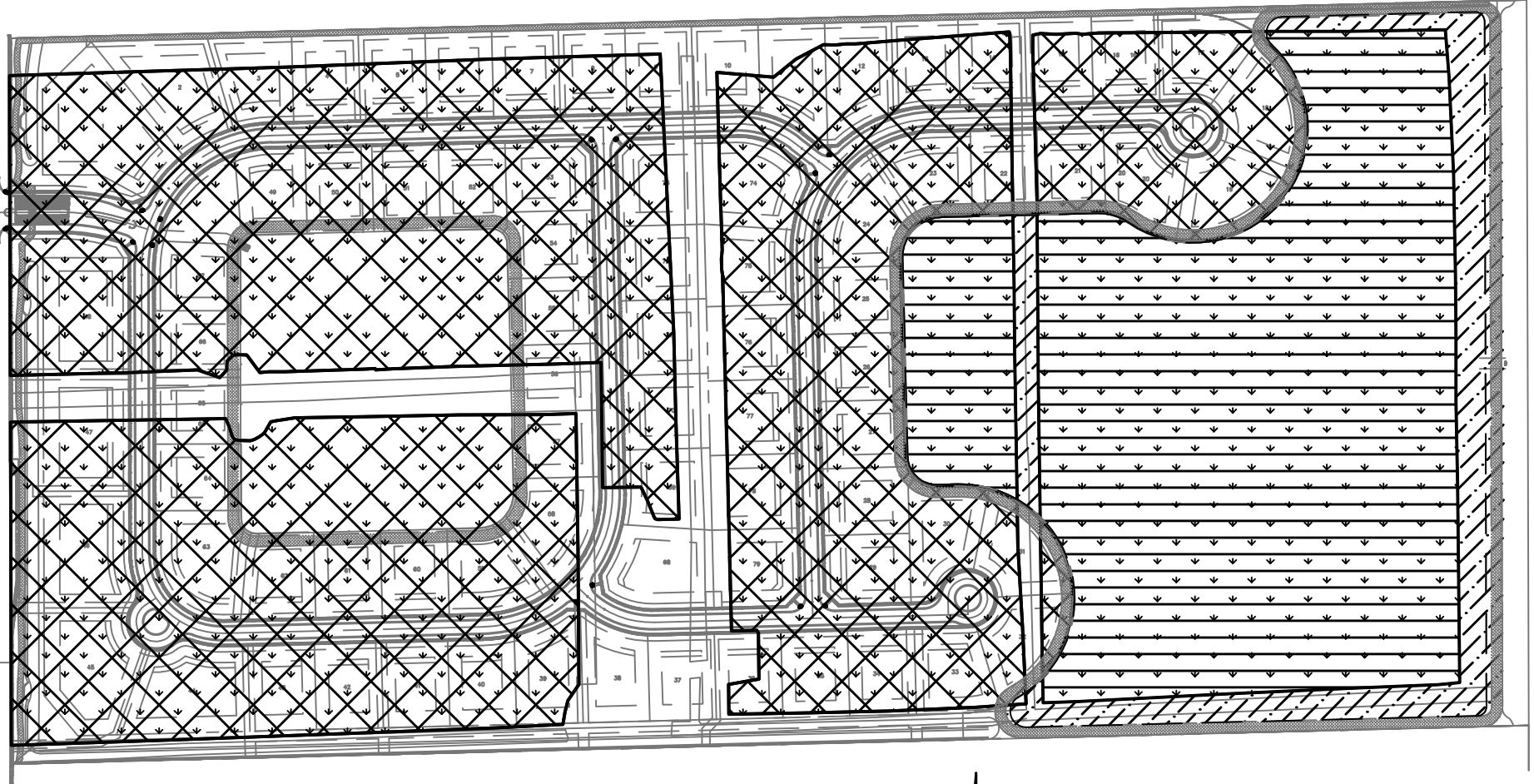
Permit No. 06-07569-P

Exhibit No. 3.0 ENV

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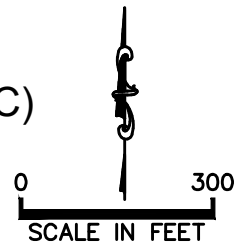
4

SW 112TH AVE



LEGEND

- WETLAND ENHANCEMENT (20.30± AC)
- WETLAND RESTORATION (3.56± AC)
- WETLAND IMPACT (48.90± AC)



Permit No. 06-07569-P

Exhibit No. 3.0 ENV

SIERRA RANCH WETLAND IMPACT



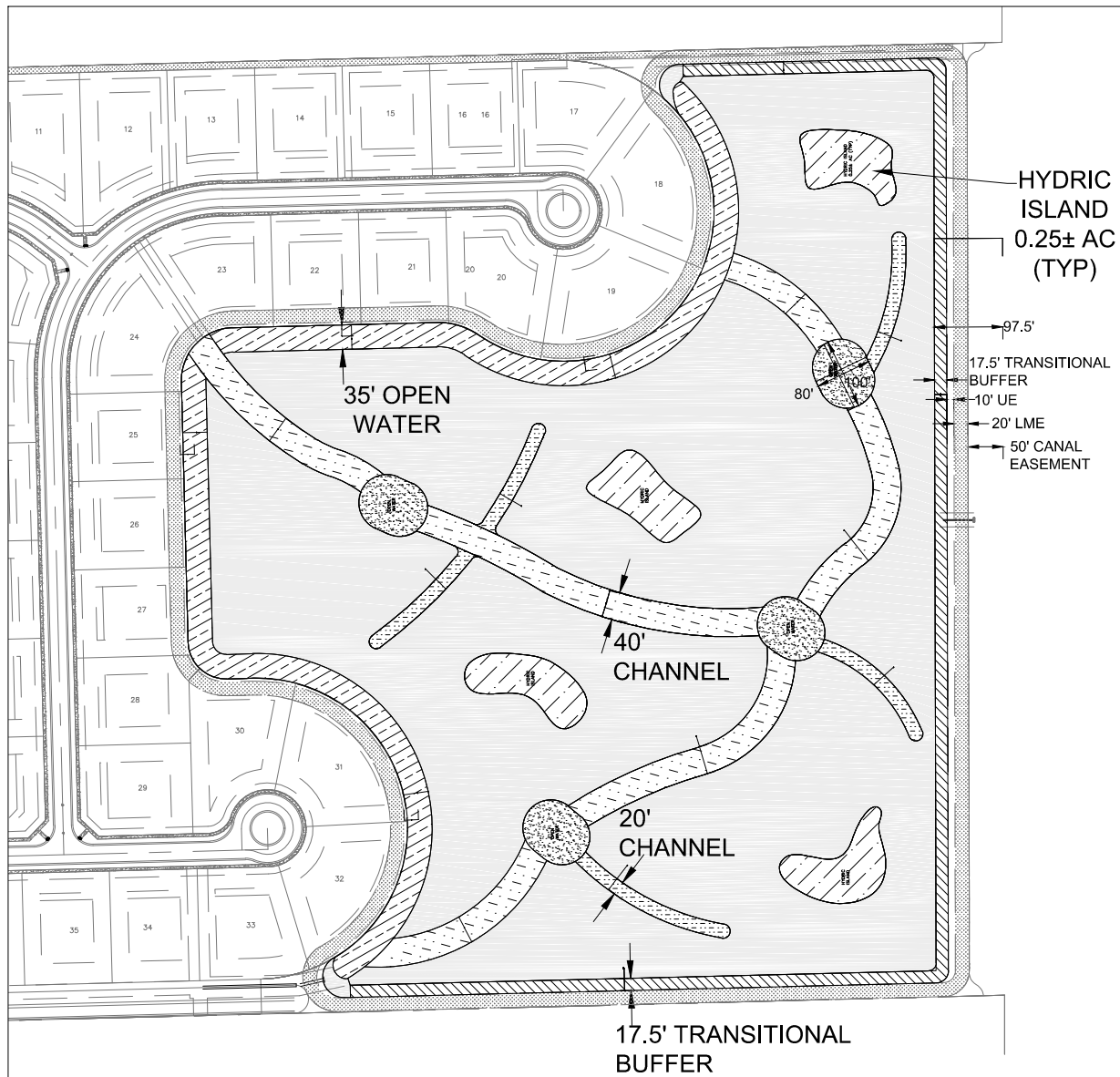
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JUNE 2017

FIGURE

5

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LEGEND

- HYDRIC ISLAND (0.98± AC)
- 80' x 100' OPEN WATER (0.61± AC)
- 20' SECONDARY CHANNELS (0.46± AC)
- 40' PRIMARY CHANNELS (1.86± AC)
- 17.5' TRANSITIONAL BUFFER (1.01± AC)
- MARSH AREA (17.20± AC)
- 35' OPEN WATER (1.74± AC)
- TOTAL (23.86± AC)**

0 250
SCALE IN FEET

SIERRA RANCH PRESERVE AREA LAYOUT



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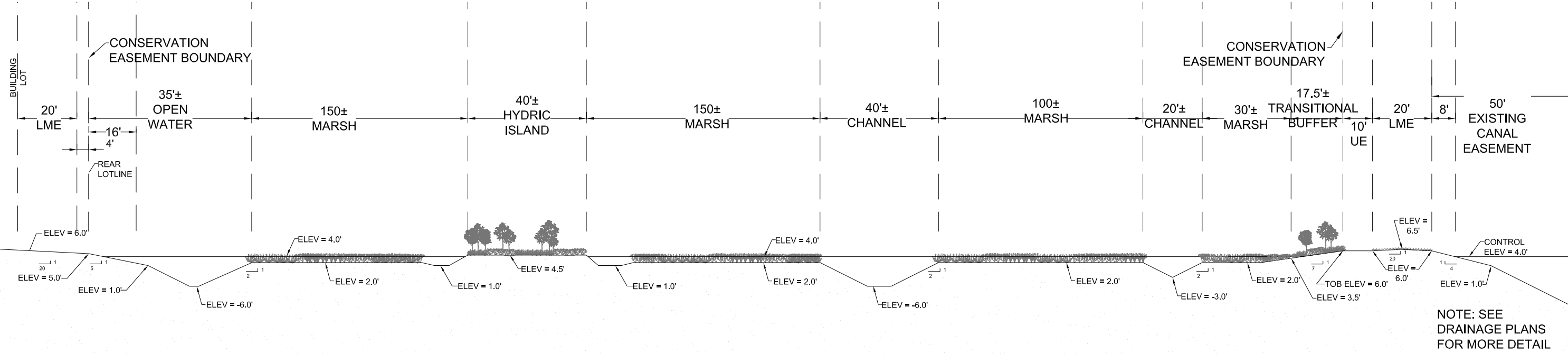
JUNE 2017

FIGURE

6

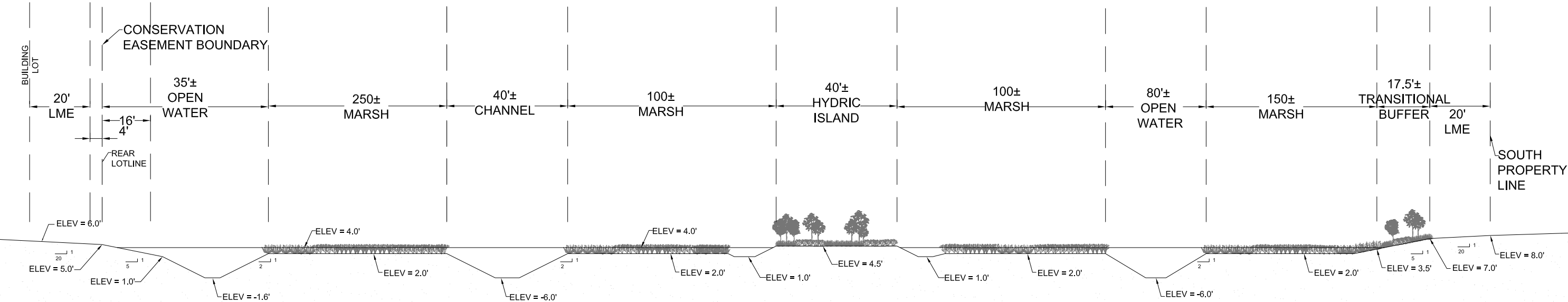
PRESERVE CROSS-SECTION A-A

NTS

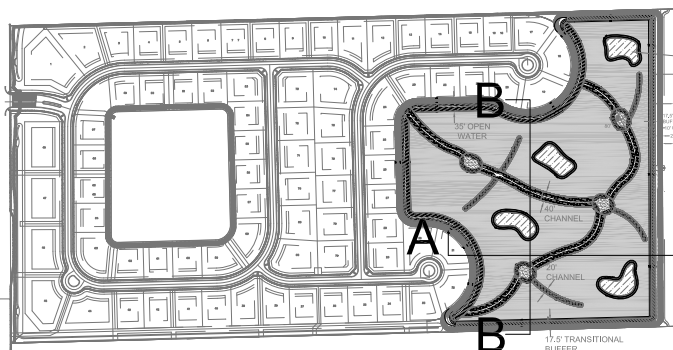


PRESERVE CROSS-SECTION B-B

NTS



KEY MAP



ALL ELEVATIONS SHOWN
ARE IN NGVD 1929 DATUM



SIERRA RANCH

PRESERVE AREA CROSS SECTION



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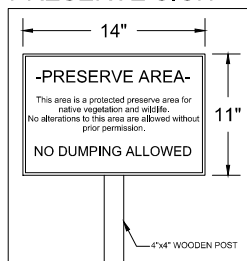
MAR 2017

FIGURE

6A



**TYPICAL
PRESERVE SIGN**



LEGEND

- - MONITORING TRANSECT WITH PHOTO STATIONS AT EACH END
- X - MONITORING QUADRAT
- ⊗ - PRESERVE SIGN
- - - - CONTINUOUS-READ MONITORING WELL

0 250
SCALE IN FEET

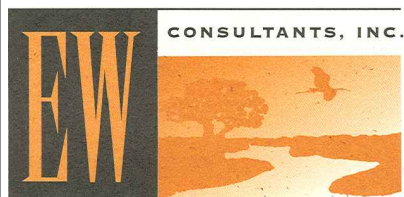
SIERRA RANCH MONITORING MAP

JUNE 2017

FIGURE

7

SIERRA RANCH 05-2017.dwg MONITORING MAP 8.5x11



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August 18, 2017

HD Sierra Ranch, LLC
4755 Technology Way, Suite 210
Boca Raton, FL 33431
Attn: David Schack, Director

**Re: Everglades Mitigation Bank Credit Reservation:
U. S. Army Corps of Engineers Permit Number SAJ-2004-01305,
South Florida Water Management District Permit Application Number
141223-14, Broward County Environmental Protection and Growth
Management Department Permit Number DF15-1259**

Please be advised that the Everglades Mitigation Bank (the "EMB") has reserved 10.86 Freshwater Herbaceous mitigation credits necessary to offset the unavoidable wetland impact for the above referenced project. Phase I of the EMB has a signed Mitigation Banking Instrument acknowledged by both FDEP and USACE and sufficient credits are currently available on the EMB ledger to offset the proposed impacts. **The EMB acknowledges receiving a deposit for the above referenced credits.**

Please contact me at 561-694-6388 for any additional information or questions regarding this matter.

Regards,

A handwritten signature in blue ink, appearing to read "Joseph R. Sicbaldi". The signature is stylized with large, flowing loops.

Joseph R. Sicbaldi
Everglades Mitigation Bank