

Exhibit H

ADMINISTRATIVE AMENDMENT (PD) ADD2021-00216

ADMINISTRATIVE AMENDMENT
LEE COUNTY, FLORIDA

WHEREAS, The Shoppes at Verdana Village, LLC filed an application for an administrative amendment to a Mixed Use Planned Development on a project known as The Shoppes at Verdana Village to request an additional access point on Verdana Village Boulevard; and

WHEREAS, the site is located east of the intersection of Alico Road and Corkscrew Road as described in the legal description (Exhibit A); and

WHEREAS, the 2,138.6 acre property was originally rezoned from Mixed Use Planned Development (MPD), Residential Planned Development (RPD), and Agricultural (AG-2) to MPD by Resolution Z-20-006 attached as Exhibit "C"; and

WHEREAS, the neighborhood commercial portion of the MPD is located in the Density Reduction/Groundwater Resource Future Land Use Category as designated by the Lee Plan; and

WHEREAS, the master concept plan was approved with one access to the commercial tract on the internal roadway currently known as Verdana Village Boulevard; and

WHEREAS, the applicant is requesting an additional access located approximately 287 feet to the north of the approved access on Verdana Village Boulevard and 462 feet to the south of the Corkscrew Road access (see Commercial Area Detail, Exhibit B); and

WHEREAS, Development Services and Department of Transportation reviewed the request and offered no objection to the request; and

WHEREAS, the Lee County Land Development Code provides for certain administrative changes to planned development master concept plans and planned unit development final development plans; and

WHEREAS, the subject application and plans have been reviewed by the Lee County Department of Community Development in accordance with applicable regulations for compliance with all terms of the administrative approval procedures; and

WHEREAS, it is found that the proposed amendment does not increase density or intensity within the development; does not decrease buffers or open space required by the LDC; does not underutilize public resources or infrastructure; does not reduce total open space, buffering, landscaping or preservation areas; and does not otherwise adversely impact on surrounding land uses.

NOW, THEREFORE, IT IS HEREBY DETERMINED that the application for administrative approval for an amendment to the Mixed Use Planned Development is **APPROVED**.

Approval is subject to the following conditions:

- 1. The Development must be in compliance with the amended Master Concept Plan, dated February 2022 (see Exhibit B). Master Concept Plan for ADD2021-00216 is hereby APPROVED and adopted.**
- 2. The terms and conditions of the original zoning resolutions remain in full force and effect.**
- 3. If it is determined that inaccurate or misleading information was provided to the County or if this decision does not comply with the LDC when rendered, then, at any time, the Zoning Manager may issue a modified decision that complies with the Code or revoke the decision. If the approval is revoked, the applicant may acquire the necessary approvals by filing an application for public hearing in accordance with Chapter 34.**

Duly passed, adopted, and electronically signed on 3/3/2022

Anthony R. Rodriguez, AICP, Zoning Manager

Exhibits

A - Legal

B - Amended Master Concept Plan, dated February 2022

C - Original Resolution Z-20-006

EXHIBIT A

CASE NUMBER: ADD2021-00216

LEGAL DESCRIPTION

TRACT C, REPLAT OF VERDANA VILLAGE PHASE 1A, A
SUBDIVISION, LOCATED IN SECTION 29, 30, 31, & 32 TOWNSHIP
46, RANGE 27 EAST AS RECORDED IN INSTRUMENT
#2021000064089, OF THE PUBLIC RECORDS OF LEE COUNTY,
FLORIDA

STRAP NUMBER

29-46-27-L1-0200C.0000

REVIEWED
ADD2021-00216
Hunter Searson, GIS
Planner
Lee County Government
2/21/2022

MASTER CONCEPT PLAN
FOR
VERDANA VILLAGE
MIXED USE PLANNED DEVELOPMENT

LOCATED IN LEE COUNTY, FLORIDA
PART OF SECTION 29, 30, 31 & 32, TOWNSHIP 46 SOUTH, RANGE 27 EAST

DEVELOPED BY

PROPERTY OWNER

TPL - LAND - SUB, LLC
4954 ROYAL GULF CIRCLE
FORT MYERS, FL 33966
(239) 425-8662

DEVELOPED BY

CAM VILLAGE DEVELOPMENT, LLC
4954 ROYAL GULF CIRCLE
FORT MYERS, FLORIDA 33966
PHONE: (239) 425-8662

PROPERTY INFORMATION

SITE ADDRESS

19500 CORKSCREW ROAD
ESTERO, FL 33928

FOLIO NUMBERS

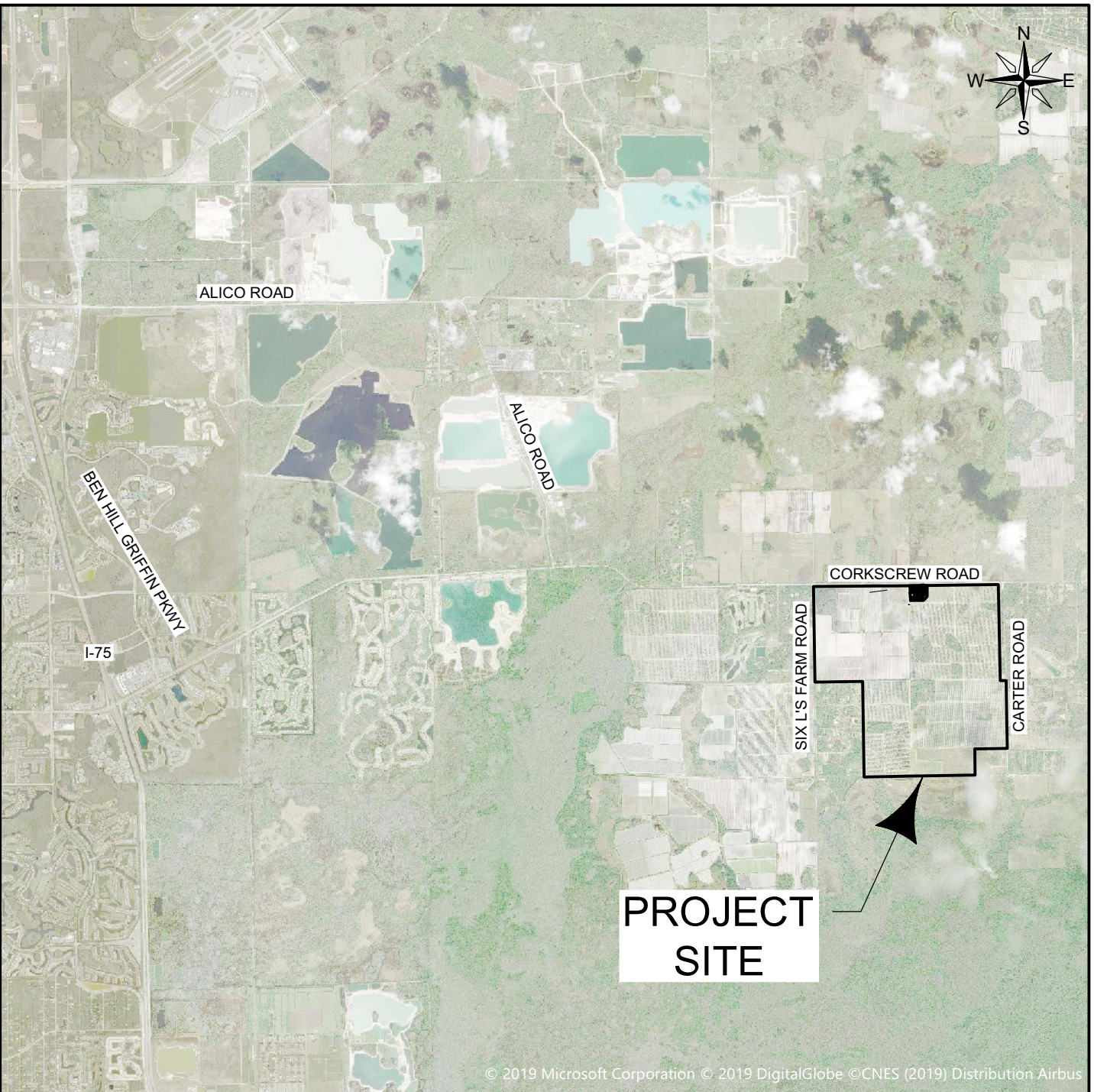
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FLOOD ZONE

ACCORDING TO THE FLOOD INSURANCE RATE MAP
NO. 12071C0625F (PANEL NOT PRINTED), EFFECTIVE
DATE: AUGUST 28, 2008, THE PROPERTY IS LOCATED
IN "NO SPECIAL FLOOD HAZARD AREA".

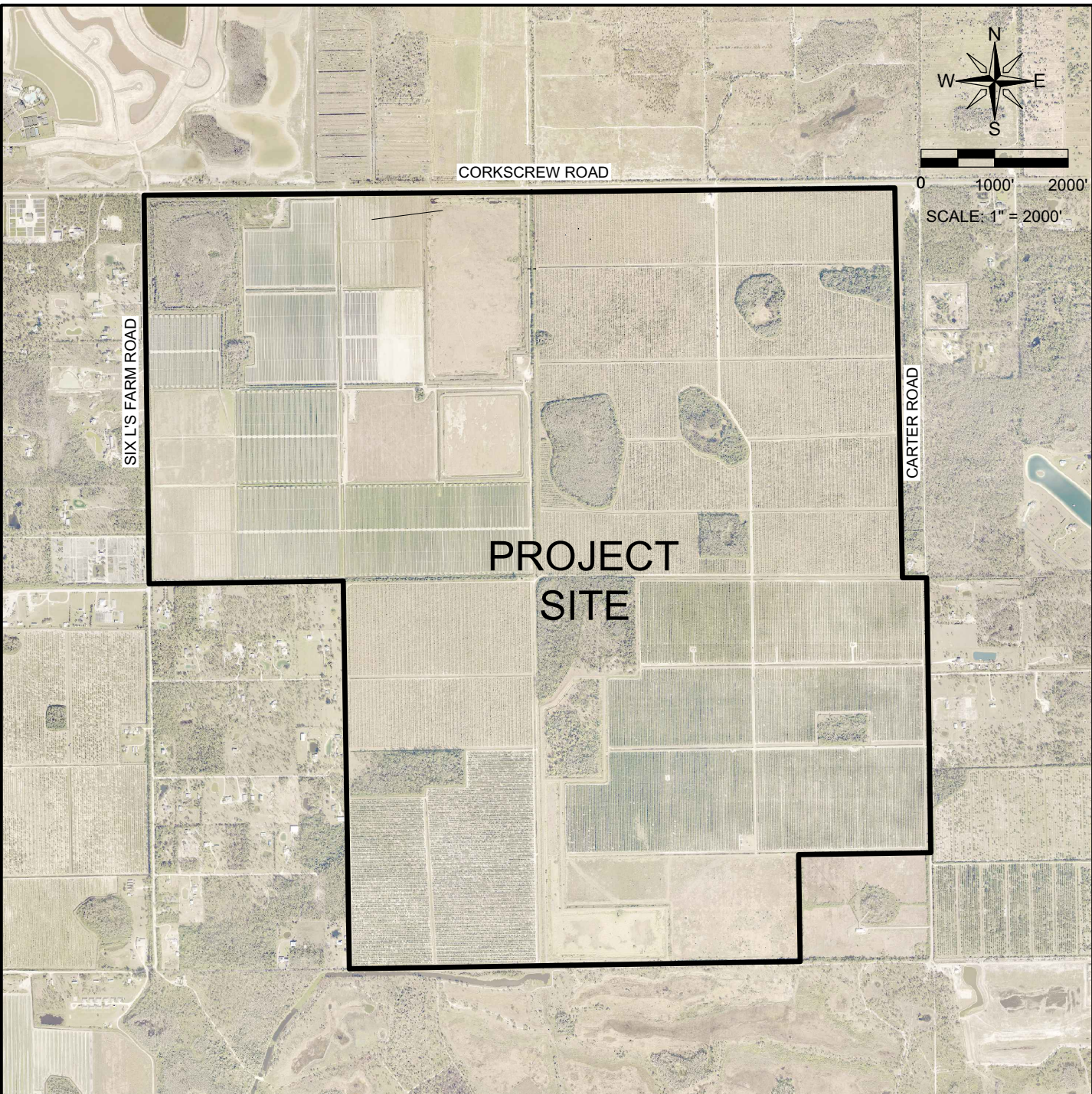
ZONING

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VICINITY MAP

N.T.S.



LOCATION MAP

SCALE: 1" = 2000'

INDEX OF SHEETS

- COVER SHEET
- MASTER CONCEPT PLAN ASSUMING CPA2019-00008 APPROVAL
- MASTER CONCEPT PLAN ASSUMING CPA2019-00008 DENIAL
- PROPERTY DETAILS & DEVELOPMENT REGULATIONS
- TYPICAL CROSS SECTIONS
- OPEN SPACE CALCULATIONS

VERDANA VILLAGE

COVER

#	DATE	REVISIONS	1ST SUBMITTAL (07/2019)
1	09/19	REVISED PER COUNTY COMMENTS	
2	11/19	REVISED PER COUNTY COMMENTS	
3	02/20	REVISED PER COUNTY COMMENTS	
4	02/22	REVISED PER COUNTY COMMENTS	

Exhibit B

 CONCEPTUAL SERVICE LOCATIONS

① TO ALLOW A 5' TYPE "A" BUFFER

- ### SCHEDULE OF EXISTING ACCESSSES

- ### LEGEND

-  EXISTING INDIGENOUS UPLAND
 EXISTING INDIGENOUS WETLAND
 RESTORATION AREA
 OPEN SPACE
 LAKE
 COMMERCIAL BUFFER AREA

REV. 02/05/2020

➔ ACCESS

#	DATE	REVISIONS	1ST SUBMITTAL (07-2019)
1	08/19	REVISED PER COUNTY COMMENTS	
2	11/19	REVISED PER COUNTY COMMENTS	
3	02/20	REVISED PER COUNTY COMMENTS	
4	02/22	REVISED PER COUNTY COMMENTS	

PROJECT #:	00450-05
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SHEET: 2

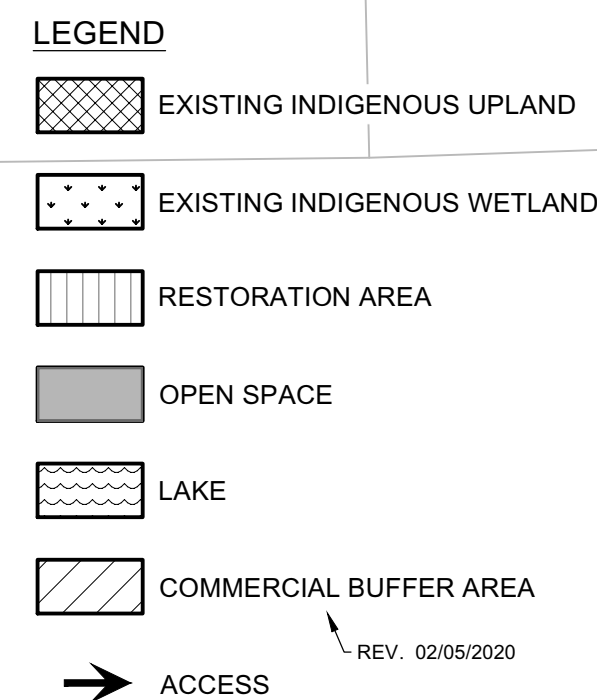
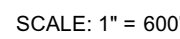


① TO ALLOW A 5' TYPE "A" BUFFER

-  **TO ALLOW THE PRESERVE PLANTINGS TO FUNCTION AS THE REQUIRED BUFFER ALONG THE NORTHERN BOUNDARY OF THE PROJECT ADJACENT TO THE RESIDENTIAL AND RESIDENTIAL AMENITY AREAS.**
-  **TO ALLOW THE PRESERVE PLANTINGS, AT MODIFIED PLANTING SIZE, TO FUNCTION AS THE REQUIRED BUFFER ALONG THE NORTHERN BOUNDARY OF THE PROJECT ADJACENT TO THE COMMERCIAL AREA.**

① EXISTING LEE COUNTY WELL ACCESS

- ② EXISTING CONSERVATION ACCESS
- ③ EXISTING CONSERVATION ACCESS
- ④ EXISTING CONSERVATION ACCESS
- ⑤ EXISTING LEE COUNTY WELL ACCESS
- ⑥ EXISTING CONSERVATION ACCESS
- ⑦ EXISTING CONSERVATION ACCESS
- ⑧ EXISTING CONSERVATION ACCESS
- ⑨ EXISTING LEE COUNTY WELL ACCESS
- ⑩ EXISTING CONSERVATION ACCESS
- ⑪ EXISTING CONSERVATION ACCESS
- ⑫ EXISTING CONSERVATION ACCESS
- ⑬ EXISTING CONSERVATION ACCESS



REV. 02/05/2020

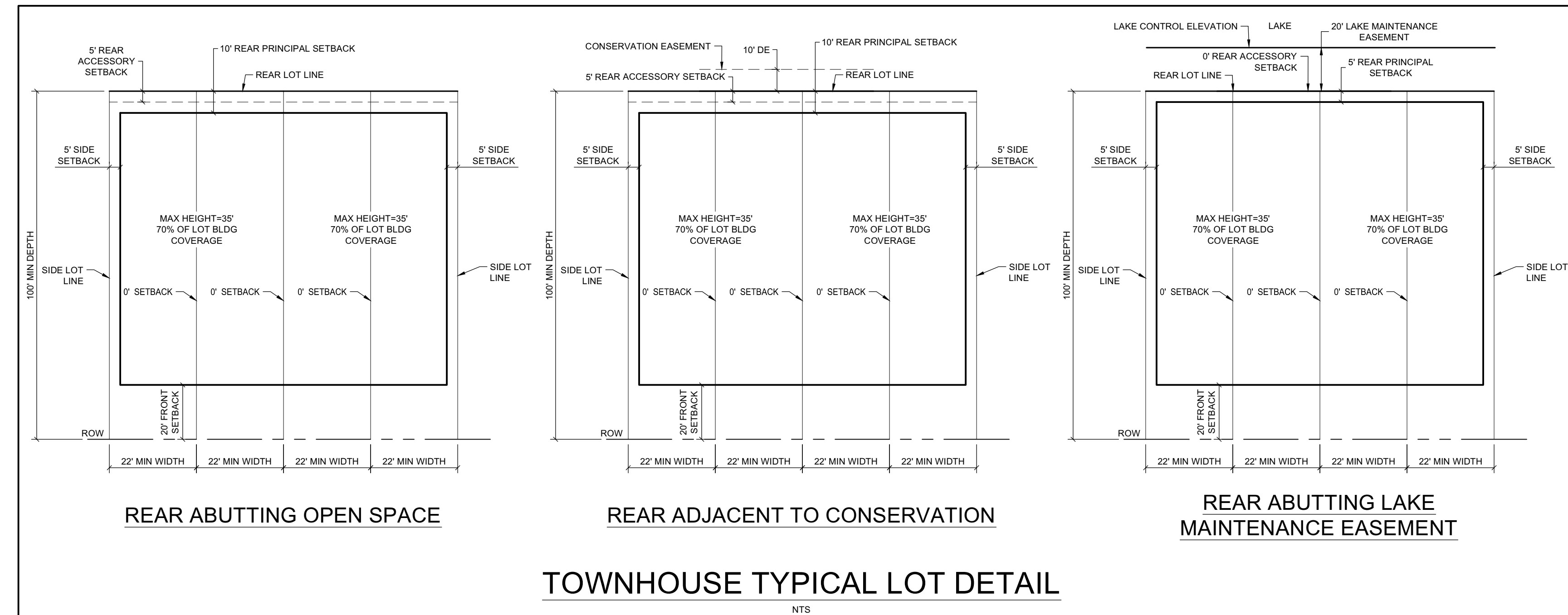
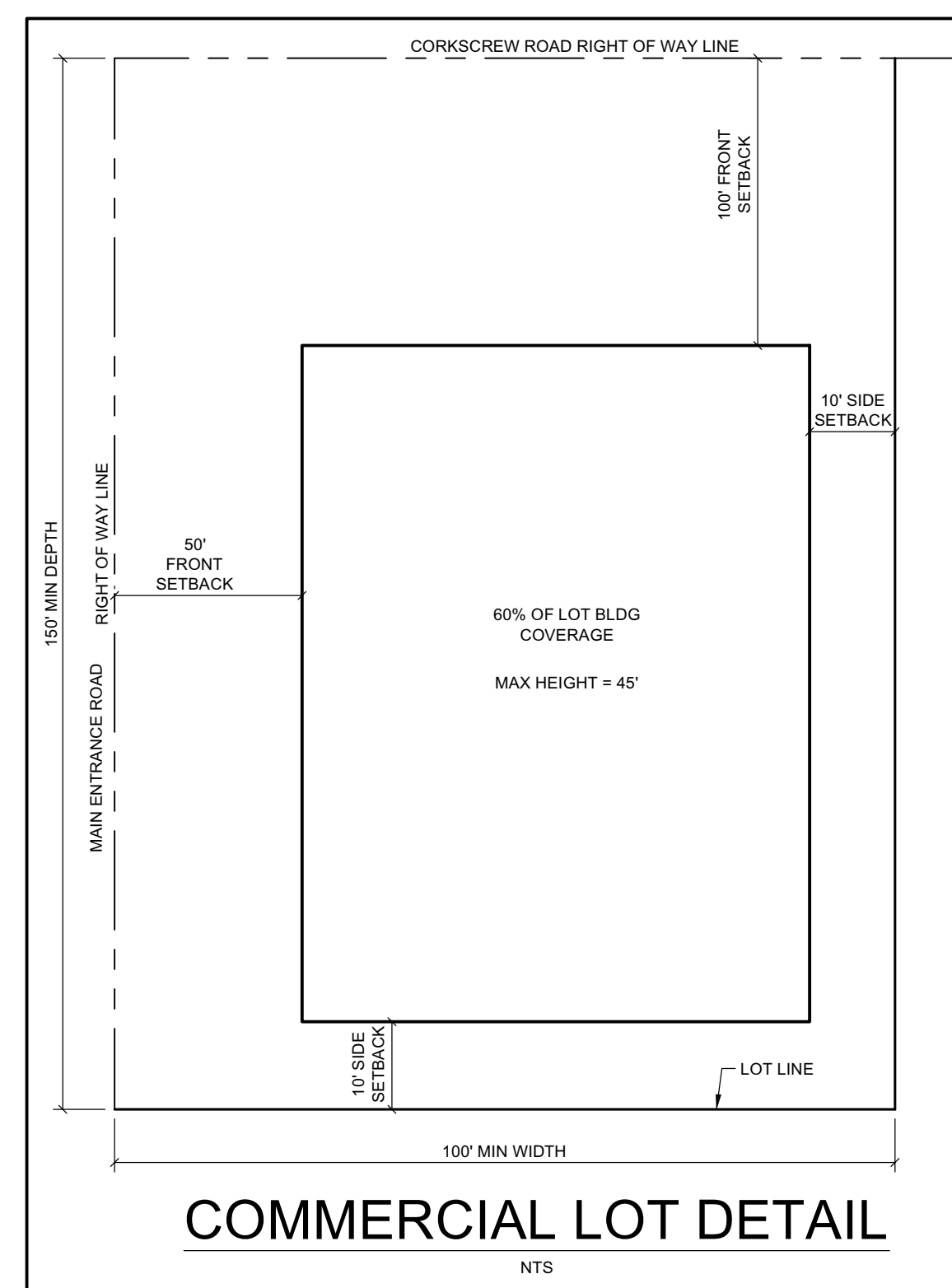
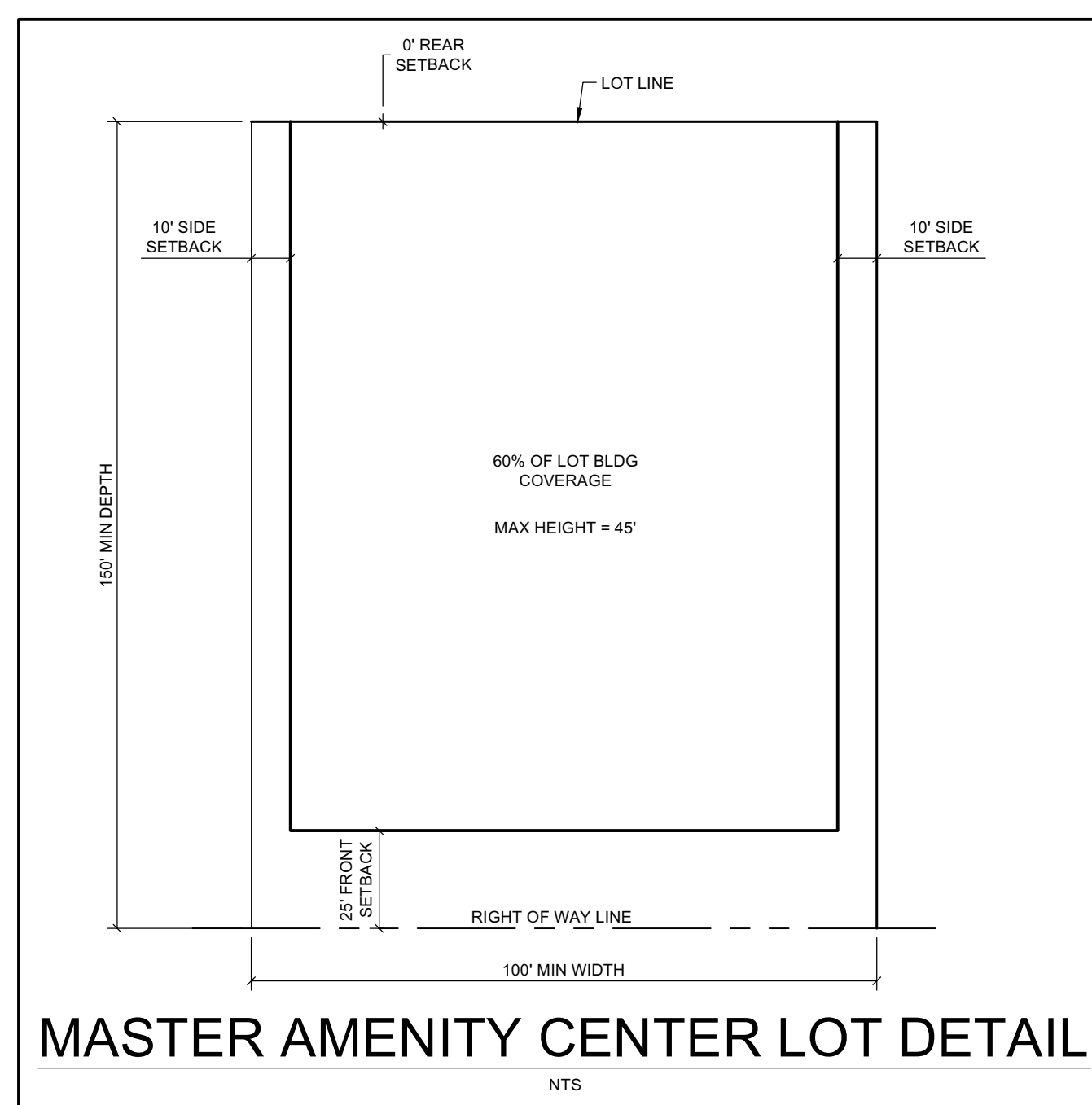
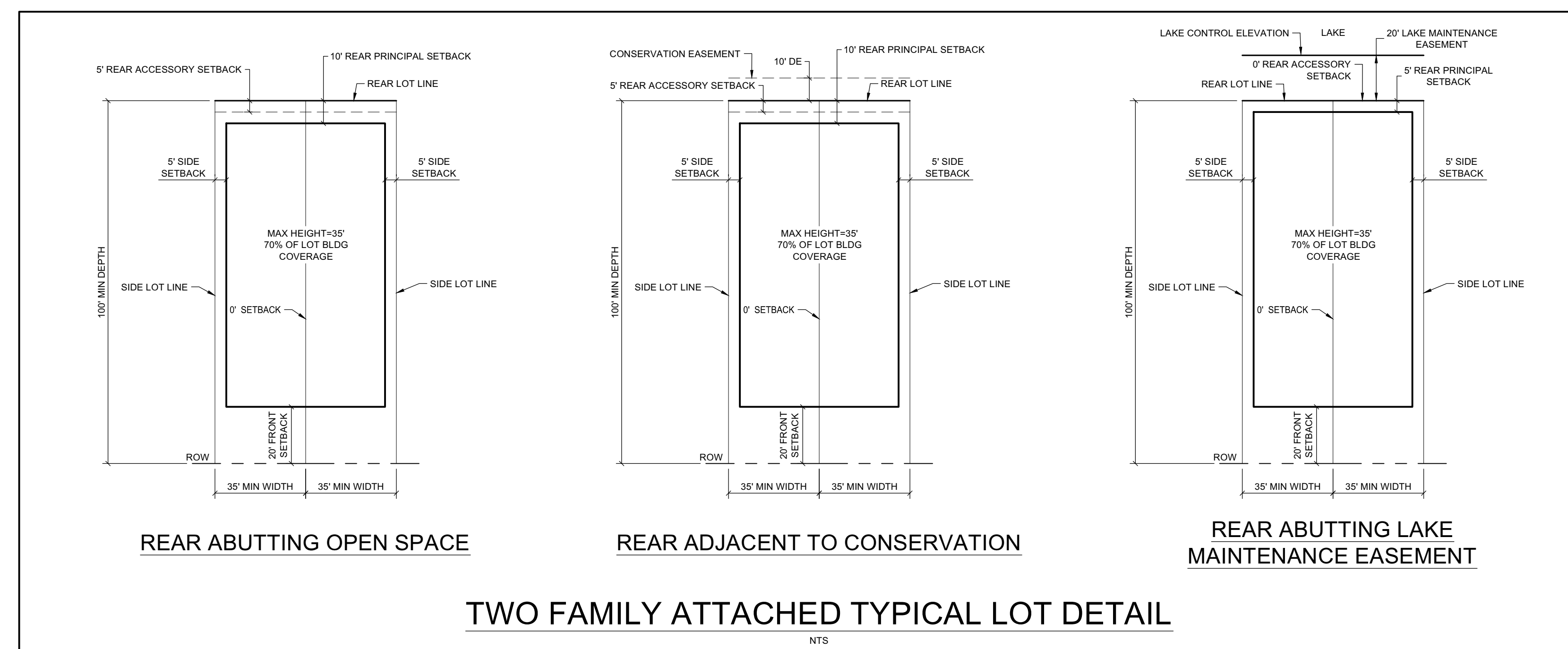
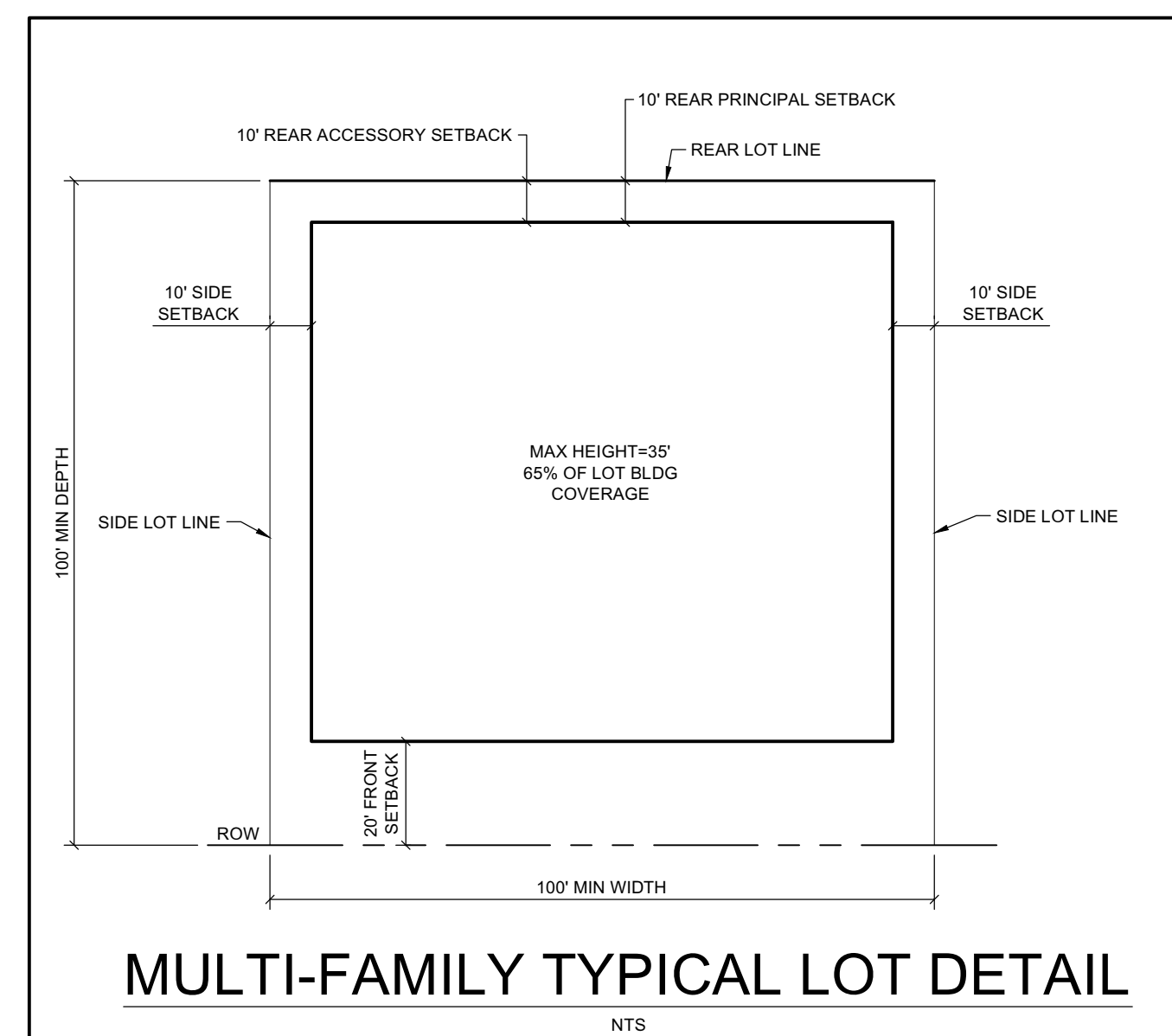
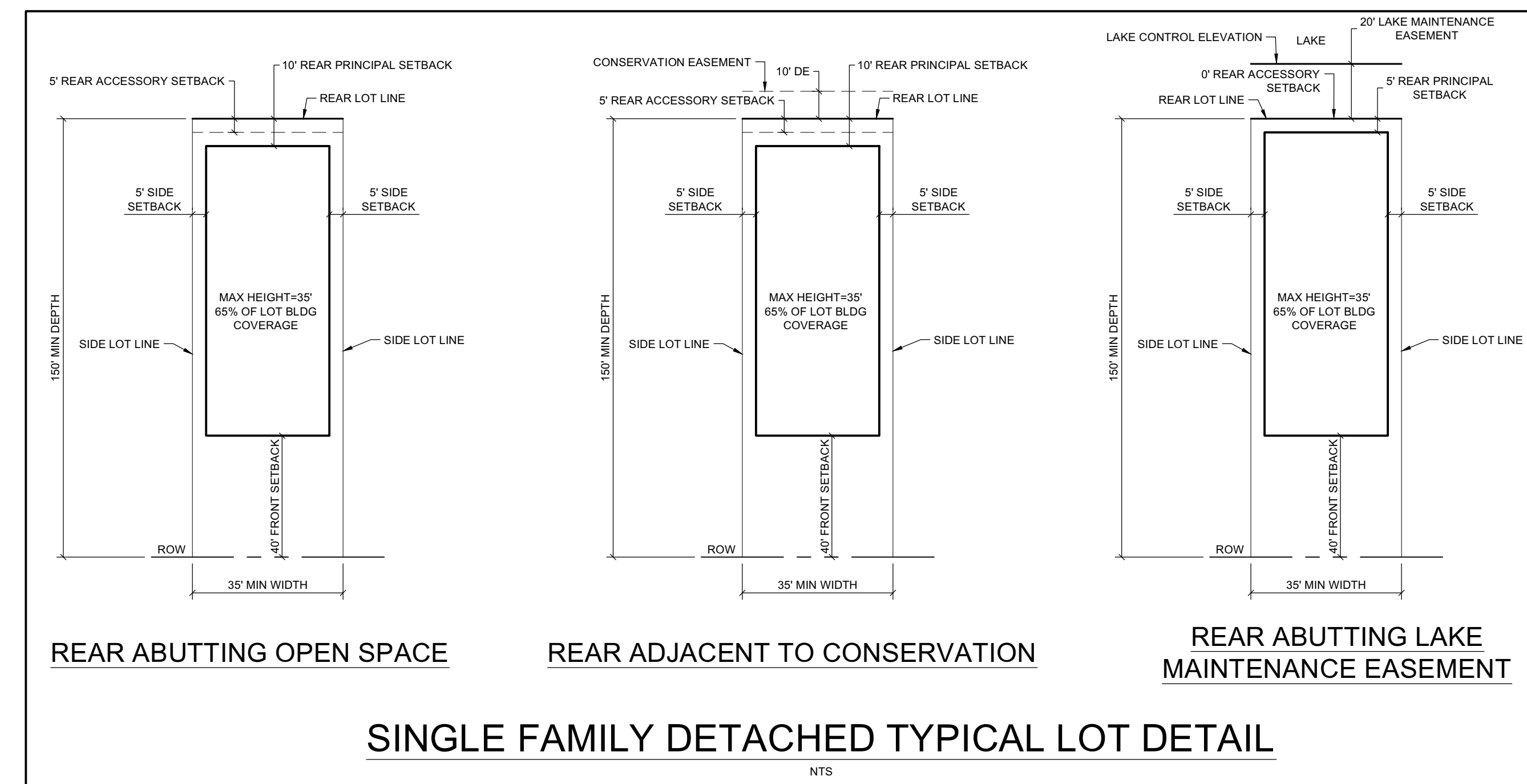
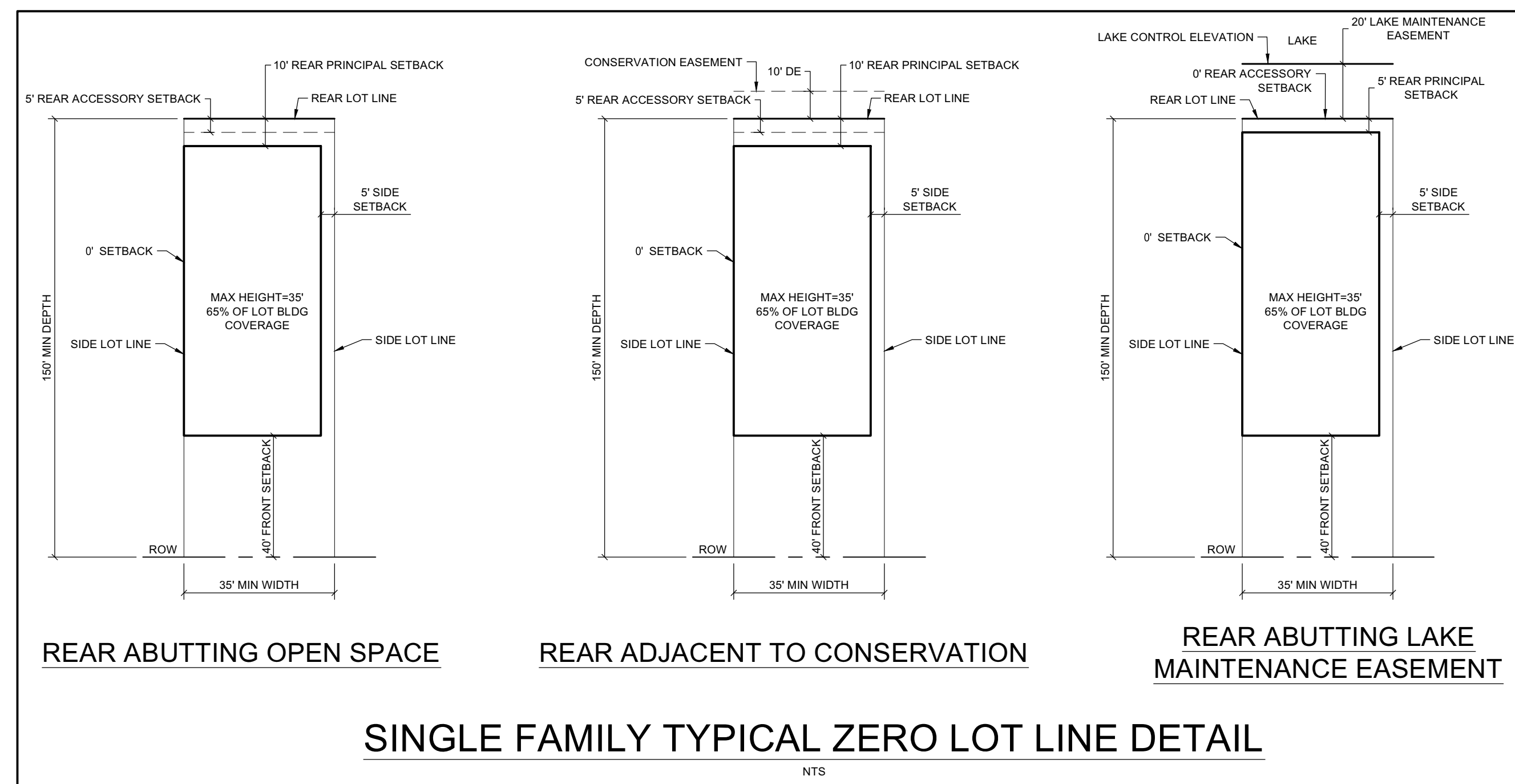
VERDANA VILLAGE

MASTER CONCEPT PLAN ASSUMING
CPA2019-00008 DENIAL

#	DATE	REVISIONS	1ST SUBMITTAL (07/2019)
1	06/19	REVISED PER COUNTY COMMENTS	
2	11/19	REVISED PER COUNTY COMMENTS	
3	02/20	REVISED PER COUNTY COMMENTS	
4	02/22	REVISED PER COUNTY COMMENTS	

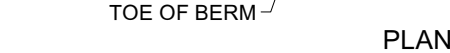
PROJECT #:	00450-05
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SHEET:	3
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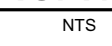
NOTE:
BERM HEIGHT AND SLOPE TO VARY
TO PROVIDE NATURAL APPEARANCE.



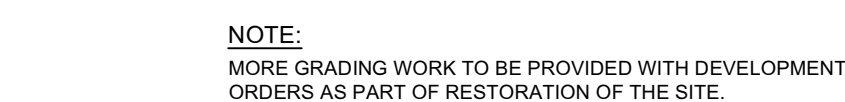
CORKSCREW ROAD BERM DETAIL



TYPICAL LAKE EXCAVATION DETAILS



LAKE 1, 2, 3 EXCAVATION DETAILS



EXISTING DITCH GRADING TYPICAL DETAIL

#	DATE	REVISIONS	1ST SUBMITTAL (07-2619)
1	08/19	REVISED PER COUNTY COMMENTS	
2	11/19	REVISED PER COUNTY COMMENTS	
3	02/20	REVISED PER COUNTY COMMENTS	
4	02/22	REVISED PER COUNTY COMMENTS	



 EXISTING INDIGENOUS UPLAND (37 AC)
 EXISTING INDIGENOUS WETLAND (91 AC)
 RESTORATION AREA (1,045 AC)
 OPEN SPACE (55 AC)
 LAKE (164 AC) INCLUDING 24 AC OF BUFFER LAKES SURROUNDING DEVELOPMENT PODS

REQUIRED: 2,138 AC X 65% = 1,390 AC

APPROXIMATELY SHOWN:	
LAKES	164 AC
EXISTING INDIGENOUS UPLAND	37 AC
EXISTING INDIGENOUS WETLAND	91 AC
RESTORATION AREA	1,050 AC
OPEN SPACE	55 AC
TOTAL	1,397 AC ±

REQUIRED: 2,138 AC X 56% = 1,197 AC

APPROXIMATELY SHOWN:	
EXISTING INDIGENOUS UPLAND	37 AC
EXISTING INDIGENOUS WETLAND	91 AC
RESTORATION AREA	1,050 AC
BUFFER LAKE	24 AC
TOTAL CONSERVATION AREA	1,202 AC ±

1. RESTORATION AREA DOES NOT INCLUDES 6.3 ACRE AUDUBON ACCENT EASEMENT. EASEMENT AREA WILL BECOME PRESERVE ONCE TERMINATED.
2. AT A MINIMUM 55% OF THE PLANNED DEVELOPMENT MUST BE PLACED INTO A CONSERVATION EASEMENT, IN ACCORDANCE WITH LEE PLAN POLICY 33.3.4(2)(d)
3. PROPOSED WATER BODIES, INCLUDING STORM WATER MANAGEMENT AREAS, MAY BE USED TO OFFSET A MAXIMUM OF 25% THE REQUIRED OPEN SPACE (1,390 AC x 25% = 348 AC).
4. BUFFER LAKES SURROUNDING DEVELOPMENT PODS ARE INCLUDED WITHIN THE CONSERVATION AREA ACRES, BUT NOT INDIGENOUS RESTORATION AREA ACRES.
5. A TOTAL OF 195 AC OF OPEN SPACE IN ADDITION TO THE CONSERVATION AREA IS PROVIDED. THE BUFFER LAKES ARE INCLUDED AS PART OF THE "TOTAL CONSERVATION AREA" CALCULATION, HOWEVER THE DEVELOPMENT LAKES ARE NOT (55 AC + 140 AC = 195 AC).
6. 65% OPEN SPACE REQUIREMENT ASSUMES APPROVAL OF CPA 2019-00008. IN THE EVENT OF CPA 2019-00008 DENIAL, 60% OPEN SPACE WILL BE REQUIRED (1,283 AC).
7. 65% CONSERVATION REQUIREMENT ASSUMES APPROVAL OF CPA 2019-00008. IN THE EVENT OF CPA 2019-00008 DENIAL, 55% CONSERVATION WILL BE REQUIRED (1,176 AC).

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4	02/22	REVISED PER COUNTY COMMENTS	

PROJECT #:	00450-05
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SHEET:	6
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VERDANA VILLAGE

OPEN SPACE CALCULATIONS

RESOLUTION NUMBER Z-20-006

RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS
OF LEE COUNTY, FLORIDA

WHEREAS, an application was filed by the property owners, TPL-LAND-SUB, LLC and on behalf of the property owners, V-LAND-SUB, LLC and PAN TERRA HOLDINGS, LTD, to rezone a 2,138.6± acre parcel from Mixed Use Planned Development (MPD), Residential Planned Development (RPD), and Agricultural (AG-2) to MPD, in reference to Verdana Village RPD; and

WHEREAS, a public hearing before the Lee County Zoning Hearing Examiner, Donna Marie Collins, was advertised and held on February 12, 2020. On February 12, 2020, the Hearing Examiner continued the hearing until February 13, 2020. On February 13, 2020, the public hearing was held. At the conclusion of the hearing, the Hearing Examiner left the record open and requested Staff and the applicant to submit written submissions to her office on or before February 28, 2020; and

WHEREAS, the Hearing Examiner gave full consideration to the evidence in the record for Case #DCI2019-00018 and recommended APPROVAL of the Request with conditions; and

WHEREAS, a second public hearing was advertised and held on May 6, 2020 before the Lee County Board of Commissioners; and,

WHEREAS, the Lee County Board of Commissioners gave full and complete consideration to the recommendations of the staff, the Hearing Examiner, the documents on record and the testimony of all interested persons.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS:

SECTION A. REQUEST

The applicant filed a request to rezone a 2,138.6± acre parcel from MPD, RPD, and AG-2 to MPD to allow a maximum of 2,400 residential dwelling units and 100,000 square feet commercial development, limited to Neighborhood Commercial uses.

The property is located in the Density Reduction/Groundwater Resource (DR/GR) and Wetlands Future Land Use Category and is legally described in attached Exhibit A. The request is APPROVED, SUBJECT TO the conditions and deviations specified in Sections B and C below.

SECTION B. CONDITIONS:

All references to uses are as defined or listed in the Lee County Land Development Code (LDC).

1. Development of this project must be consistent with the following:
 - a. The 6-page Master Concept Plan (MCP) entitled "Master Concept Plan," prepared by J.R. Evans Engineering, date stamped received February 25, 2020, and attached hereto as Exhibit C, except as modified by the conditions below. Development must comply with all requirements of the LDC at time of local development order approval, except as may be granted by deviation as part of this

planned development. If changes to the MCP are subsequently pursued, appropriate approvals will be necessary.

- b. Approved Development Parameters.
 - i. 2,400 dwelling units. The cumulative number of units may not exceed 1.15 times (115% of) the cumulative acreage of a development order phase plus previous phases.
 - ii. 100,000 square feet neighborhood commercial floor area limited to the commercial pod. Outdoor seating areas will be counted toward commercial floor area.
- c. The planned development will be completed in three development pods: an eastern residential pod, a western residential pod, and a commercial pod consistent with the MCP.
- d. The first development order creating residential lots in each development pod must include a minimum of:
 - i. 56% of conservation areas for the pod, but may identify future phases for residential development. The cumulative amount of conservation easement provided in each subsequent development order must equal a minimum of 56% of the phase acreage plus the acreage of previous phase(s).
 - ii. 65% open space for the pod, but may identify future phases for residential development. The cumulative amount of open space provided in each subsequent development order must equal a minimum of 65% of the phase acreage plus the acreage of previous phase(s).
- e. Development order applications that include dwelling units or residential amenities must include a cumulative land development summary table of approved and pending development orders including requested and approved:
 - i. Residential dwelling units and intensity of non-residential uses;
 - ii. Open space (in acres); and
 - iii. Conservation areas (in acres).
- f. Development order applications for the commercial pod must depict a minimum of 30% open space.

2. Schedule of Uses and Property Development Regulations

RESIDENTIAL TRACTS (R)
 Accessory Uses and Structures
 Administrative Offices
 Club, Private
 Community Gardens

Dwelling Units:

- Single-Family
- Two-Family Attached
- Townhouse
- Multiple Family
- Zero Lot Line

Entrance Gate and Gatehouse

Essential Services

Essential Services Facilities, Group I Excavation, Water Retention

Fences, Walls

Home Occupation

Models:

- Display Center
- Model Home
- Model Unit

Parking Lot:

- Accessory

Real Estate Sales Office

Recreational Facilities:

- Personal
- Private, On-site

Residential Accessory Uses

Signs

Temporary Uses

MASTER AMENITY CENTER TRACT (MAC) & COMMUNITY AMENITY CENTER TRACT (CAC)

Businesses within MAC and CAC Tracts are for the exclusive use of the residents and guests (not open to the general public)

- Accessory Uses and Structures

- Administrative Offices

- Club, Private

- Community Garden

- Consumption on Premises (in conjunction with Private Clubs)

- Convenience Food and Beverage Store, excluding fuel pumps

- Daycare, Child

- EMS, Fire or Sheriff's station (in compliance with wellfield protection regulations)

- Entrance Gate and Gatehouse

- Essential Services

- Essential Services Facilities, Group I

- Excavation, Water Retention

- Fences, Walls

- Food and Beverage Service, Limited

- Parking Lot: Accessory

- Personal Services: Groups I and II (limited to Health Clubs or Spas)

- Recreational Facilities:

- Private, On-site

- Private, Off-site

- Real Estate Sales Office

- Rental and Leasing Establishments, Group I

- Signs

Specialty Retail Shops, Groups I and II
Temporary Uses

NEIGHBORHOOD COMMERCIAL TRACT

Accessory Uses and Structures
Administrative Offices
Animal Clinic or Kennel (no outdoor runs)
Bait and Tackle Shop
Banks and Financial Institutions, Group I
Business Services, Group I
Cleaning and Maintenance Services
Clothing Stores, General
Consumption on Premises
Convenience Food and Beverage Store (no fuel pumps)
Daycare, Child and Adult
Drive-through facility for any permitted use
EMS, Fire or Sheriff's Station (in compliance with wellfield protection regulations)
Essential Services
Essential Services Facilities, Group I
Excavation, Water Retention
Fences, Walls
Food Stores, Group I
Gift and Souvenir Shop
Healthcare Facilities, Group III
Hobby, Toy and Game Shops
Household and Office Furnishings, Group I
Medical Office
Package Store
Parcel and Express Services
Parking Lot: Accessory
Personal Services, Groups I, II and III
Pet Services
Pet Shop
Pharmacy
Place of Worship
Real Estate Sales Office
Recreational Facilities, Commercial, Group IV, excluding Convention or Exhibit
Halls and Gun Ranges
Rental or Leasing Establishments, Groups I, II and III
Restaurant, Groups I, II and III
Schools, Commercial and Noncommercial
Signs
Specialty Retail Shops, all Groups
Studios
Temporary Uses
Variety Store

Property Development Regulations (in feet)

	Single Family	Zero Lot Line	Two-Family Attached	Townhouse	Multi-Family	Amenity Center	Commercial
Minimum Lot Width	35	35	35	22	100	100	100
Minimum Lot Depth	150	150	100	100	100	150	150
Minimum Lot Area	5,250	5,250	3,500	2,200	10,000	15,000	15,000
Maximum Building Height	35	35	35	35	45	45	45
Maximum Lot Coverage	65%	65%	70%	70%	65%	60%	60%
Corkscrew Road Setback	100						

Minimum Setbacks (Principal/Accessory) (in feet)

	Single Family	Zero Lot Line	Two-Family Attached	Town-house	Multi-Family	Amenity Center	Commercial
Public Street	N/A	N/A	N/A	N/A	N/A	N/A	50
Private Street*	40	40	20	20	20	25	25
Side Yard	5/5	5/5 & 0/0	5/5 & 0/0	5/5 & 0/0	10	10	10
Rear Yard	10/5	10/5	10/5	10/5	10	0	10
Rear Yard Abutting Lake Maintenance Easement	5/0	5/0	5/0	5/0	10	0	25

*~~40~~ 10 feet/5 feet for secondary street setbacks on corner lots

3. Development Permits

County development permits do not establish a right to obtain permits from state or federal agencies and does not establish liability on the part of the County if the developer: (a) does not obtain requisite approvals or fulfill obligations imposed by state or federal agencies or (b) undertakes actions resulting in violation of state or federal law.

4. Agricultural Uses

- a. Existing citrus grove and row crop agricultural uses must terminate within five years after the first development order approval. Cessation of irrigation and fertilizers must occur concurrent with the first development order approval creating residential lots.
- b. Cattle and grazing lease agricultural uses must terminate prior to issuance of a vegetation removal permit for areas specified in the permit application.

5. Transportation

- a. Zoning approval does not address mitigation of site-related impacts to vehicular or pedestrian facilities. Site-related impacts will be determined at the time of local development order.
- b. The development must mitigate project traffic impacts and pay a proportionate share of roadway improvements established by the Board based on the EEPKO Study and consistent with Lee County Administrative Code 13-16. Payment of the proportionate share obligation will be consistent with the terms of the Development Agreement referenced in Condition 20.
- c. Internal project roadways must meet LDC suburban roadway standards, except where modified by deviation and identified on the MCP.
- d. Turn lane deceleration length designs at project entrances will be determined at the time of local development order review.

6. Open Space and Conservation Easement

- a. A minimum of 65% of the entire project acreage must be devoted to open space and a minimum of 56% must be placed under conservation easement.
- b. Project acreage subject to conservation easements must have the easement recorded within five years of the issuance of the first development order approval creating residential lots and must include language:

Dedicating the easement to a maintenance entity that provides third party enforcement rights to Lee County or another public agency acceptable to Lee County.

7. Buffers and Landscaping

- a. Development Order landscape plans for residential pods must depict a 100-foot-wide buffer abutting Corkscrew Road that complies with the buffer plant restoration standards for at grade plantings consistent with Table 5: "Planting List for Upland Restoration from Agricultural Lands", of the Indigenous Preservation, Restoration, and Management Plan (IPRMP). (Exhibit D: IPRMP version stamped received October 15, 2019)

The landscape plan may depict a berm within the 100-foot-wide buffer in compliance with IPRMP Table 6 "Northern Perimeter Berm Plantings". Landscape plans must depict restoration plant materials necessary to meet project buffer requirements for the east, west, and south property lines, subject to Deviations 2, 3, 7, and 8.

- b. Development Order landscape plans must reflect 100% native vegetation for required landscaping within common elements. The planting requirements and native plant list must be incorporated into project covenants and deed restrictions.
- c. Development order landscape plans that include dry detention areas must depict dry detention planted with 4 inch to one-gallon container size native vegetation installed five-foot-on-center. For every 400 square feet of dry detention area planted, the general tree requirement may be reduced by one ten-foot tree. This condition does not apply to swales outside the Conservation Easement.
- d. The first development order for the commercial tract must include landscape plans depicting:
 - i. An enhanced Type-A buffer along the east, west, and south property lines five feet in width and planted with five trees per 100 linear feet and a single hedgerow. Shrubs must be specified at 36 inches in height and spaced four-foot-on-center; and
 - ii. An enhanced 100-foot-wide buffer along the commercial pod's north property line with plant species consistent with IPRMP Table 6. Tree species must be seven feet in height and installed between 15 and 20 feet on-center; shrub species must be 24 inches in height; and groundcover species must be 12 inches in height, spaced three feet on-center.

8. Corkscrew Road Berm

The berm along Corkscrew Road must be designed in substantial compliance with the MCP, the IPRMP, and the Hydrological Restoration Plan. (Hydrological Restoration Plan stamped "received" November 27, 2019; Exhibit E). The berm may not exceed 5'-6' in height as measured from Corkscrew Road.

9. Protected Species

- a. Development order plans that include surface water management lakes or conservation areas must depict the location and typical signs for prohibiting the feeding of alligators around the lake and preservation signs that state no dumping.
- b. Development order plans must include a Protected Species Management Plan depicting on-site wildlife corridor connections, wildlife fencing, and include a Human-Wildlife Coexistence Plan.
- c. Vegetation Removal permit applications must include a map depicting the work limit area and a species survey for the work limit area. The developer must submit a management plan for protected species within the work limit area identifying

protection measures, monitoring, and/or relocation consistent with State and Federal requirements.

- d. Development order plans for the commercial pod must demonstrate use of bear resistant dumpsters and below ground grease traps.

10. Indigenous Restoration and Preservation

Development order plans that include habitat restoration must substantially comply with the IPRMP. Sub-phases for restoration will be allowed within a development order phase. The developer may amend the IPRMP phasing at the time of development order application.

11. Lighting

Lighting plans must demonstrate no light spillage into the preserves and conservation easement areas.

12. Regional Benefit

- a. The project must be designed to accommodate 650 cubic feet per second (cfs) offsite flow rate through the proposed onsite flow way, for a 25 year, 3-day designed storm event consistent with Exhibit E: Hydrological Restoration Plan.
- b. Hydrological improvements must be constructed under Corkscrew Road interconnecting "The Place" to the proposed western flow way within Verdana Village with the first development order for the west development pod. Hydrological improvements must be constructed under Carter Road and include a 30 inch diameter pipe or equivalent (cfs) into the proposed eastern flow way within Verdana Village with the first development order for the east development pod. These improvements must accommodate known flows as identified in Exhibit E: Hydrological Restoration Plan.
- c. A plugged connecting pipe must be constructed to permit Lee County to introduce flows into Verdana Village from the northeast with the east development pod. Lee County will be responsible for necessary permitting and improvements to unplug the pipe to allow for pass through conveyance.
- d. The first development order application must include a drainage plan implementing the following aspects of the Hydrological Restoration Plan (Exhibit E):
 - i. Two 30-inch culverts and a discharge weir to convey easterly flow-way surface water from "The Place at Corkscrew" under Corkscrew Road; and
 - ii. Two culverts under Corkscrew Road east of the main project entry to allow off-site drainage conveyance.

13. Hydrological Restoration Plan

The first development order application must include supporting computer software files and input data for the surface water and groundwater flow models developed for the Hydrological Restoration Plan (ICPR4 or equivalent). Flow models must demonstrate:

- a. The project provides significant regional hydrological connections furthering Lee County's flood mitigation and flow way restoration efforts and provides enhanced on-site surface water storage and flood attenuation.
- b. No adverse impacts to adjacent properties and regional drainage. The analysis must be substantially consistent with the assumptions and commitments made in the Hydrological Restoration Plan and its supporting data, as updated at the time of development order to address:
 - i. An additional project outfall; or
 - ii. Modification to northern inflow from The Place in a location other than the one shown in the current model.

The first development order application must include engineer drawings that implement the Hydrological Restoration Plan consistent with flow models (ICPR4 or equivalent). The developer must backfill and restore manmade ditches as part of the hydrological restoration plans. The developer must phase backfill work with project development. Construction phasing of the Hydrological Restoration Plan must be coordinated with construction of the storm water management system.

14. Flow-Way Agreement

Prior to issuance of the first development order creating residential lots, a "Flow-Way Agreement" with the County must be approved by the Board of County Commissioners (Board) allowing the County to further improve historic flow patterns in the region. The developer must construct necessary infrastructure and improvements within the property, to accommodate conveyance of onsite surface water flow of 650 cfs through the property.

The Flow-Way Agreement must include easement rights, or recognize separately created easement rights, allowing the County to obtain permits and create surface water flow connections across the property boundaries. If the hydrological and environmental restoration is phased, the Flow-Way Agreement must include an exhibit demonstrating expected phasing and sub-phasing.

15. Surface & Ground Water Monitoring

The developer must revise the Enhanced Lake Management Plan (stamped received November 27, 2019, attached as Exhibit F), at the time of Development Order application to include monitoring components of surface and groundwater levels and quality as follows:

- a. The proposed groundwater (level and quality) monitoring program must establish baseline conditions and address monitoring during construction and operation of the storm water management facility.

- b. Quality of storm water entering and leaving the site must be monitored twice during the raining season and once during the dry season. Reporting must consist of an Electronic Data Deliverable (EDD) in a format approved by the Lee County Department of Natural Resources and submitted quarterly.
- c. The developer or successor must annually update the Water Quality Monitoring Program within the Enhanced Lake Management Plan (Exhibit F) to: 1) assess water quality data and trend analysis, 2) identify potential issues, and if necessary, 3) recommend corrective actions for changes to the monitoring plan.

The developer may amend water quality monitoring and reporting after written request, review, and approval by the Department of Natural Resources.

- d. Groundwater quality monitoring well(s) for the Surficial Aquifer System must be provided and located between and proximate to Lee County's nearest production well(s) identified in the Water Quality Monitoring Plan.

16. Wellfield Protection

- a. A portion of the property lies within Wellfield Protection Zones for the County public water supply. Development in those areas must comply with the Wellfield Protection Ordinance.
- b. The first development order application must include a list of Best Management Practices to address potential degradation of groundwater due to storage and use of regulated substances on-site during construction and operation of the development, if such substances will be stored or used on-site.
- c. The Declarations and Covenants must specify that only licensed professionals authorized by Lee County may perform activities such as the application of fertilizers, pesticides, insecticides, herbicides, nematicides or other chemicals on the property. This restriction also applies to the commercial parcel.
- d. Docks, boat ramps, and motorized boats are prohibited within on-site storm water management lakes.
- e. Residential and amenity center development areas within the 5-year travel zones of the Wellfield Protection Ordinance must provide a minimum of 1.5 inches of water quality treatment of which, a minimum of 0.5-inch must be completed by water quality dry pretreatment prior to discharging into the lakes.
- f. Commercial development within the 6-month, 1-year, 5-year, or 10-year travel zones of the Wellfield Protection Ordinance must provide a minimum of 1.5 inches of water quality treatment, of which, a minimum of 0.5 inches must be completed by water quality dry pretreatment. The commercial pod will be considered within the most restrictive wellfield protection zone as provided in the Wellfield Protection Ordinance.

17. Irrigation Wells

Single-Family Irrigation and Domestic Wells are prohibited. The County will not permit single-family use wells on the property for potable water on individual lots. Development order plans must demonstrate irrigation will be provided via a central irrigation system using onsite lakes and, as necessary, existing permitted wells (or replacement wells). The Property Owner Association documents, including Declarations and Covenants, must prohibit the installation of single-family use wells for potable or irrigation water. Landscape irrigation must comply with the Water Conservation Ordinance #17-04, as amended.

18. Public Water and Sewer

All development must connect to public water and sewer. The developer will ensure Lee County Utilities will be the source of potable water for the property.

19. Maintenance

The developer and/or the CDD must submit a biennial drainage report signed by a licensed Professional Engineer in the State of Florida certifying that the drainage capacities of the flow-ways or buffer lakes at the completion of the project are consistent with the original design. If the report finds that flow-ways or buffer lakes require maintenance, then the developer/CDD must submit a remedial plan for review and approval to address measures to conduct maintenance (i.e. re-grading the flow-ways or berms). Providing the County with a copy of the CDD Engineer's Report will satisfy this requirement with the additional requirements above.

20. Development Agreement

Prior to County approval of the first project development order, the developer must execute a Development Agreement addressing transportation mitigation consistent with Condition 5 and emergency medical services consistent with Condition 21. The Development Agreement must address, at a minimum Emergency Medical Service and transportation proportionate share of the improvements adopted by the Board as a result of the EEPKO Study.

21. Emergency Medical Services

When 25% of project residential lots have received a certificate of occupancy (CO), the Department of Community Development will issue a written notice to the developer. Upon receipt of the notice, the developer, at Lee County's option must take the following action within 30 days:

- a. Coordinate the transfer of a two-acre parcel of land fronting on Corkscrew Road for the development of an EMS or multi-use Public Safety facility, subject to Board of County Commissioners approval; or
- b. Provide a one-time donation of two hundred thousand dollars (\$200,000.00) toward capital improvements necessary to support service delivery in the area of the project.

This donation does not entitle the developer to fire or EMS impact fee credits.

SECTION C. DEVIATIONS:1. Buffering Adjacent Property.

Deviation (1) seeks relief from the LDC §10-416(d)(3) requirement to provide a 15-foot Type D buffer along the northern and western perimeter and a 30-foot native Type F buffer along the southern and eastern perimeter of the commercial pod, to allow a 5-foot Type A buffer along its east, west and south perimeter and no buffer along its north perimeter.

This deviation is APPROVED SUBJECT TO Condition 7.

2. Buffering Adjacent Property

Deviation (2) seeks relief from the LDC §10-416(d)(1) requirement to provide a landscape buffer adjacent to property boundaries where abutting a different use, to allow the proposed restoration areas to act as the buffer for the south, east and west boundaries.

This deviation is APPROVED SUBJECT TO Condition 7.

3. Buffer Plant Material Standards.

Deviation (3) seeks relief from the LDC §§ 10-420(c), (d), and (g), which requires trees to be a minimum of 10 feet in height with a 2-inch caliper and a 4-foot spread and shrubs to be a minimum of 24 inches in height at the time of planting, to allow trees ranging between 24 inches and 60 inches (Bare Root - 3gal) to be planted between 15 and 20 feet on center and 2-inch container ground cover at 5 feet to 8 feet on center for the south, east and west boundaries.

This deviation is APPROVED SUBJECT TO Condition 7.

4. Water Main Installation.

Deviation (4) seeks relief from the LDC §10-384(c)(1), which requires water mains for one- and two-story residential buildings be constructed in an external loop no greater than 1,500 feet, to allow 3,700 feet.

This deviation is APPROVED.

5. Driveway Connection Separation.

Deviation (5) seeks relief from the LDC §10-285, which requires an access separation of 660 feet along principal arterials in Future Non-Urban areas, to allow connection separation distances ranging between 60 and 656 feet as depicted on the MCP.

This deviation is APPROVED.

6. Street Design and Construction Standards.

Deviation (6) seeks relief from the LDC §10-296(e)(3), which requires non-urban local streets to have two 10-foot travel lanes with open drainage, to allow a modified suburban

local street with a minimum of two 10- to 11-foot travel lanes, no planting area, a five to six-foot sidewalk, and a varying curb and closed drainage.

This deviation is APPROVED.

7. Buffering Adjacent Property.

Deviation (7) seeks relief from the LDC §10-416(d)(1), which requires a landscape buffer adjacent to the property boundaries where abutting a different use, to allow the proposed restoration area to act as the buffer for the northern perimeter buffer adjacent to the residential and residential amenity portion of the development.

This deviation is APPROVED SUBJECT TO Condition 7.

8. Plant Material Standards.

Deviation (8) seeks relief from the LDC §§ 10-420(c), (d), and (g), which requires trees to be a minimum 10 feet in height with a two-inch caliper with a four-foot spread and shrubs to be a minimum of 24 inches in height at the time of planting, to allow trees ranging between two and five feet in height (1 gallon) to be planted at 15 to 20 feet on-center; shrubs ranging between two and five feet in height (1 gallon); and groundcover to be a minimum of 12 inches installed three feet on-center for the 100-foot Corkscrew Road Buffer adjacent to the residential and residential amenity portion of the development.

This deviation is APPROVED SUBJECT TO Condition 7.

9. Buffering Adjacent Property.

Deviation (9) seeks relief from the LDC §10-416(d)(1), which requires a landscape buffer adjacent to the property boundaries where abutting a different use, to allow the proposed restoration to act as the buffer for the northern perimeter buffer adjacent to the neighborhood commercial portion of the development.

This deviation is APPROVED SUBJECT TO Condition 7.

10. Plant Material Standards.

Deviation (10) seeks relief from the LDC §§ 10-420(c), (d), and (g), which requires trees to be a minimum of 10 feet in height with a 2-inch caliper with a 4-foot spread and shrubs to be a minimum of 24 inches in height at the time of planting, to allow trees to be planted at a minimum of 7 feet in height (7 gal) planted at 15 to 20 feet on center; shrubs to be a minimum of 2 feet in height; and 1 gallon container and ground cover to be a minimum of 12 inches installed at 3 feet on center for the 100-foot-wide Corkscrew Road Buffer adjacent to the neighborhood commercial portion of the development.

This deviation is APPROVED SUBJECT TO Condition 7.

SECTION D. EXHIBITS:

The following exhibits are attached to this resolution and incorporated by reference:

- Exhibit A: Legal description of the property
- Exhibit B: Zoning Map (with the subject parcel indicated)
- Exhibit C: The Master Concept Plan
- Exhibit D: Indigenous Preservation, Restoration, and Management Plan
- Exhibit E: Hydrological Restoration Plan
- Exhibit F: Enhanced Lake Management Plan

SECTION E. FINDINGS AND CONCLUSIONS:

Based upon its review, the Board of County Commissioners adopts the recommendation of the Hearing Examiner, including the following findings and conclusions:

1. The requested rezoning to Mixed Use Planned Development complies with the Lee Plan. See Lee Plan Vision Statement Paragraph 18 (Southeast Lee County), Lee Plan Goals 4, 5, 6, 11, 33, 39, 60, 61, 63, 77, 123, 124; Objectives 1.5, 2.1, 2.2, 4.1, 5.1, 6.1, 33.2, 33.3, 39.1, 123.2, 123.3, 123.4, 126.2; Policies 1.4.5, 1.5.1, 1.7.13, 2.1.2, 5.1.1, 5.1.7, 6.1.3, 33.3.4, 33.3.5, 135.1.9; Lee Plan Maps 1, 6, 7, 16 and 17; LDC §§ 34-411(a) and 34-612(2).
2. *As conditioned*, the Verdana Village Mixed Use Planned Development:
 - a. Meets the Land Development Code and other County regulations or qualifies for deviations. See LDC §§ 10-474, 14-201 *et seq.*, 34-145(d), 34-341, 34-378, 34-411, 34-413, 34-491, 34-932.
 - b. Is compatible with existing and planned uses in the DR/GR. See Lee Plan Policies 5.1.5, 6.1.4, 135.9.5, 135.9.6; LDC §§ 34-411(c) and (i).
 - c. Provides access sufficient to support the proposed development intensity. Expected impacts to transportation facilities will be addressed by the conditions of approval and County regulations. See Lee Plan Goal 39, Objectives 37.4, 39.1, Policies 6.1.2, 6.1.5, 33.3.4, 39.1.1, 39.2.1; LDC §§ 10-287, 34-411(d).
 - d. Will not adversely affect environmentally critical/sensitive areas and natural resources. See Lee Plan Goals 60, 61, 63, 77, 123, 124; Objectives 33.2, 33.3, 60.4, 61.2, 77.1, 77.3, 123.1, 123.3, 123.4, 123.8, 123.10, 123.11, 123.12, 126.2; Policies 33.2.1, 33.2.2, 33.2.3, 33.2.4, 33.2.7, 33.3.4, 33.3.5, 60.1.2, 60.4.1, 60.4.2, 60.4.3, 61.2.1, 61.2.4, 61.3.1, 61.3.3, 61.3.6, 61.3.8, 61.3.11, 61.4.2, 63.1.3, 77.3.1, 77.3.2, 77.3.4, 77.3.5, 123.1.5, 123.1.7, 123.2.4, 123.2.6, 123.2.8, 123.2.15,¹ 123.3.1, 123.3.3, 123.4.2, 123.4.3, 123.4.4, 123.8.1, 123.10.2, 123.10.3, 123.11.4, 123.12.2; 124.1.1, 125.1.2, 125.1.3, 126.1.1, 126.1.2, 126.1.4, Standard 4.1.4; and LDC §§ 10-474, 34-411(g) and (h), 34-1573.

¹ Listed in Lee Plan as 123.12.15

- e. Will be served by urban services adequate to serve the proposed land use. See Lee Plan Glossary, Lee Plan Maps 6, 7, Goal 11, Objectives 56.2, 65.2, and Policy 33.3.4; Standards 4.1.1 and 4.1.2; LDC §34-411(d).
- 3. The proposed mix of uses is appropriate at the proposed location. See Lee Plan Map 17; Goals 5, 6, 11, Objectives 11.1, 33.2, 33.3; Policies 1.4.5, 1.7.13, 5.1.2, 5.1.5, 5.1.7, 6.1.4, 33.3.2, 33.3.4, 33.3.5.
- 4. The recommended conditions and applicable regulations provide sufficient safeguards to protect the public interest. See Lee Plan Goals 5, 6, 33, 55, 56, 59, 60, 61, 63, 123, 125, 126, Policies: 5.1.5, 6.1.3, 6.1.6, 33.3.4, 60.4.1, 63.1.2, 63.1.3, 123.3.3, 124.1.2, 126.2.1 and 135.9.6; See *also* LDC §§ 34-377; 34-411.
- 5. The recommended conditions are reasonably related to the impacts expected from the proposed development. See Lee Plan Policies 5.1.5, 6.1.3, 123.12.2, 123.12.3; LDC §34-932.
- 6. As conditioned, the requested deviations:
 - a. Enhance the objectives of the planned development, and
 - b. Preserve and promote protection of public health, safety and welfare.

SECTION F. SCRIVENER'S ERRORS

The Board intends that this resolution can be renumbered or relettered and typographical errors that do not affect the intent and are consistent with the Board's action can be corrected with the authorization of the County Manager or his designee, without the need for a public hearing.

Commissioner Pendergrass made a motion to adopt the foregoing resolution, seconded by Commissioner Manning. The vote was as follows:

Adopted by unanimous consent.

John Manning	Aye
Cecil Pendergrass	Aye
Raymond Sandelli	Aye
Brian Hamman	Aye
Frank Mann	Aye

DULY PASSED AND ADOPTED this 6th day of May 2020.

ATTEST:
LINDA DOGGETT, CLERK

BY: *Theresa King*
Deputy Clerk

BOARD OF COUNTY COMMISSIONERS
OF LEE COUNTY, FLORIDA

BY: *Brian Hamman*
Brian Hamman, Chair



APPROVED AS TO FORM FOR THE
RELIANCE OF LEE COUNTY ONLY

Richard M. [Signature]
County Attorney's Office

RECEIVED
MINUTES OFFICE
TK
2020 MAY 13 AM 10:28

Barraco
and Associates, Inc.

www.barraco.net

Civil Engineers, Land Surveyors and Planners

DESCRIPTION

Parcel in
Sections 29, 30, 31 and 32,
Township 46 South, Range 27 East,
Lee County, Florida

A tract or parcel of land lying in Sections 29, 30, 31 and 32, Township 46 South, Range 27 East, Lee County, Florida, said tract or parcel of land being more particularly described as follows:

Beginning at the Northwest corner of said Section 29 run N89°20'15"E along the North line of the Northwest Quarter (NW 1/4) of said Section 29 for 2,636.22 feet to the North Quarter corner of said Section 29; thence run N89°19'58"E along the North line of the Northeast Quarter (NE 1/4) of said Section 29 for 2,306.22 feet to an intersection with the West line of the East 330 feet of said Section 29; thence run S01°05'41"E along said West line for 5,352.78 feet to an intersection with the North line of the Northeast Quarter (NE 1/4) of said Section 32; thence run N89°58'16"E along said North line for 330.06 feet to the Northeast corner of said Section 32; thence run S00°54'19"E along the East line of the Northeast Quarter (NE 1/4) of said Section 32 for 2,594.64 feet to the East Quarter corner of said Section 32; thence run S00°53'57"E along the East line of the Southeast Quarter (SE 1/4) of said Section 32 for 1,144.23 feet to an intersection with the North line of lands described in a deed recorded in Official Records Book 2032, at Page 1106, Lee County Records; thence run along the Northerly and Westerly line of said lands the following two (2) courses: S89°03'50"W parallel to the south line of said Fraction for 1,800.00 feet and S00°53'57"E parallel with the East line of said Fraction for 1,452.00 feet to an intersection with the South line of said Fraction; thence run S89°03'50"W along the South line of said Fraction for 848.66 feet to the South Quarter corner of said Section 32; thence run S89°10'20"W along the South line of the Southwest Quarter (SW 1/4) of said Section 32 for 2,651.10 feet to the Southeast corner of said Section 31; thence run S88°55'41"W along the South line of the Southeast Quarter of said Section 31 for 2,632.71 feet to the South Quarter corner of said Section 31; thence run N00°55'01"W along the West line of the East Half (E 1/2) of said Section 31 for 5,278.97 feet the North Quarter corner of said Section 31; thence run S89°15'54"W along the South line of the Southwest Quarter (SW 1/4) of said Section 30 for 2,639.48 feet to the Southwest corner of Section 30; thence run N00°46'19"W along the West line of said Fraction for 2,641.21 feet to the West Quarter corner of Section 30; thence run N00°46'49"W along the West line of the Northwest Quarter (NW 1/4) of Section 30 for 2,631.06 feet to an intersection with the South right of way line of Corkscrew Road (100' wide right of way); thence run along said South right of way line the following three (3) courses: N89°23'21"E for 2,632.12 feet; N89°32'32"E for 2,638.97 feet and N89°20'15"E for 0.32 feet to an intersection with the West line of the Northwest Quarter (NW 1/4) of said Section 29; thence run N00°55'29"W along said West line for 50.00 feet to the POINT OF BEGINNING.

Containing 2,138.26 acres, more or less.

Bearings hereinabove mentioned are State Plane for the Florida West Zone (1983/NSRS 2007) and are based on the North line of the Northwest Quarter (NW 1/4) of said Section 29 to bear N89°20'15"E.

Applicant's Legal Checked
by EM 7/30/18

Scott A. Wheeler 7/11/19
Scott A. Wheeler (For The Firm)
Professional Surveyor and Mapper
Florida Certificate No. 5949

RECEIVED
JUL 16 2019

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Post Office Drawer 2800 • Fort Myers, FL 33902
Phone (239) 461-3170 • Fax (239) 461-3169

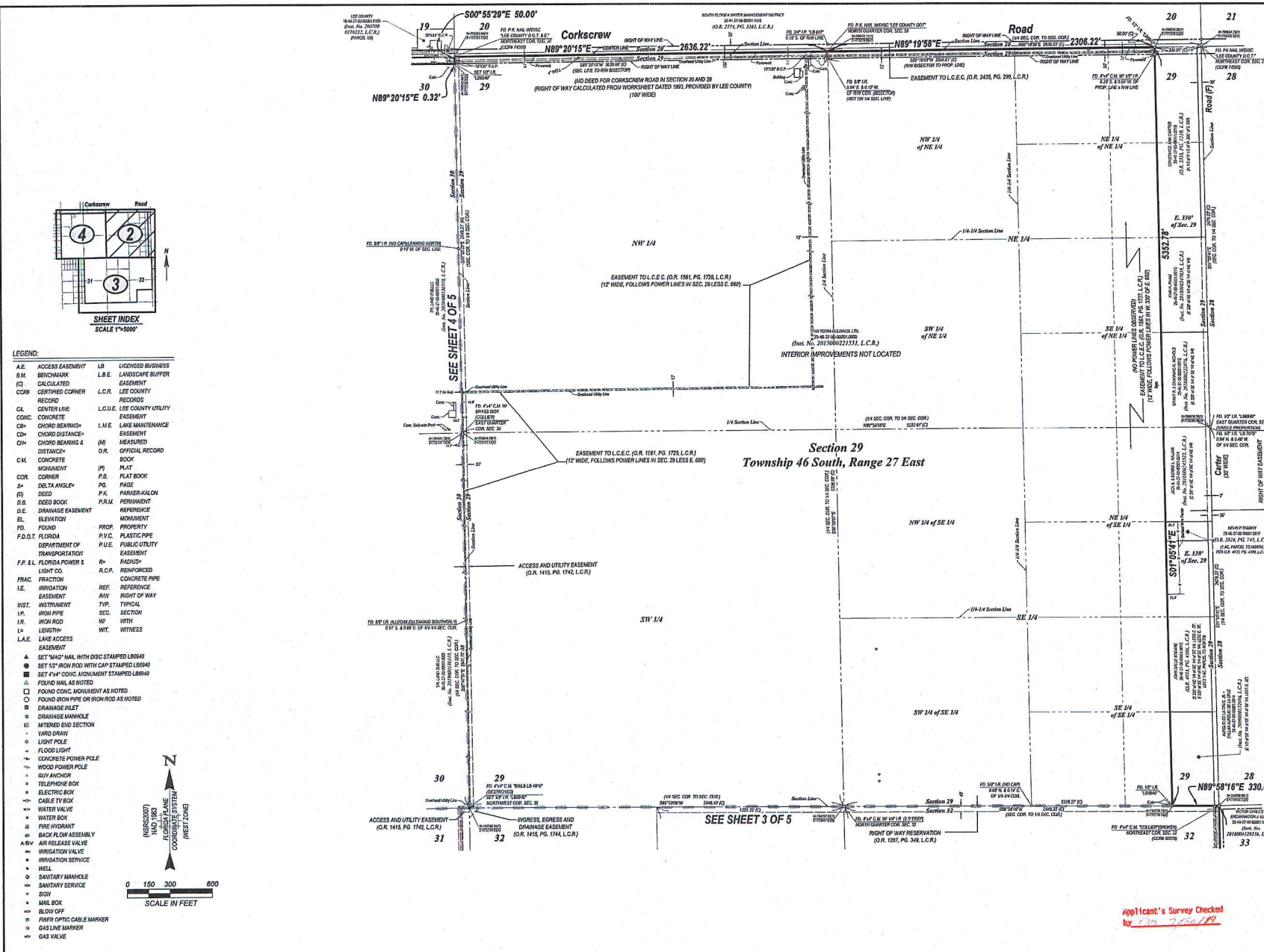
COMMUNITY DEVELOPMENT

EXHIBIT A

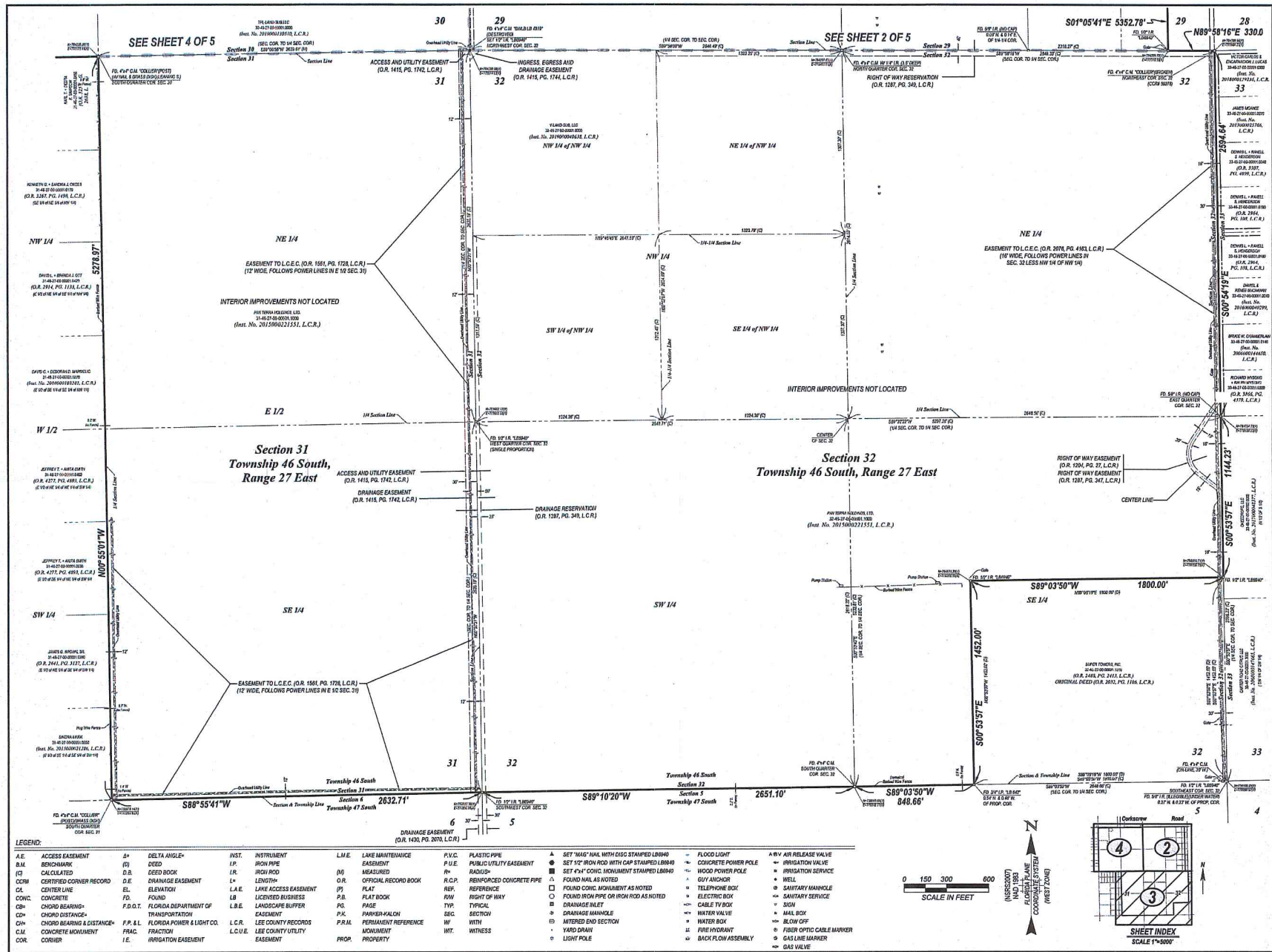
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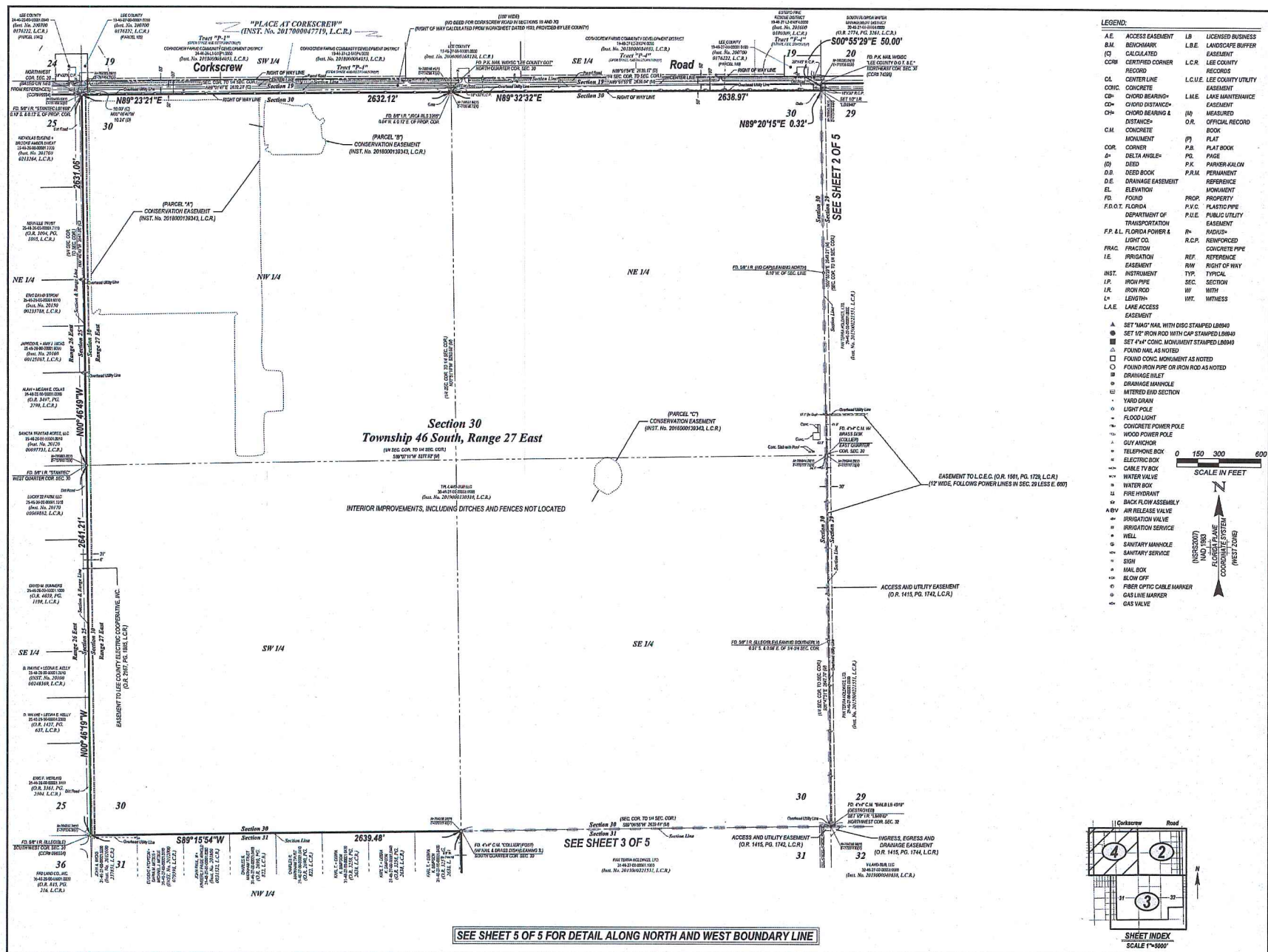
PROJECT / FILE NO.	SHEET NUMBER
23742 13-16-77	2 OF 2



Barraco and Associates, Inc. CIVIL ENGINEERING - LAND SURVEYING LAND PLANNING www.barraco.net 2271 McCREGOR BLVD., SUITE 100 FOOT OFTICE DRAFTER 2800 FORT MYERS, FLORIDA 33902-2800 PHONE (239) 461-3170 FAX (239) 461-3169 FLORIDA CERTIFICATES OF AUTHORIZATION ENGINEERING 7995 - SURVEYING LB-6940 PREPARED FOR TPL-LAND-SUB, LLC 4954 ROYAL GULF CIRCLE FORT MYERS, FL 33966 PHONE (239) 425-8662 FAX (239) 425-8665 www.Campmap.com PROJECT DESCRIPTION VERDANA VILLAGE <i>A Parcel of Land in Sections 29, 30, 31 & 32, Township 46 South, Range 27 East Lee County, Florida</i> PROJECT SURVEYOR  NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL, RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">FILE NAME</td> <td>23242503.DWG</td> </tr> <tr> <td>LAYOUT</td> <td>1</td> </tr> <tr> <td>LOCATION</td> <td>2339426000.SURVEYING</td> </tr> <tr> <td>PLOT DATE</td> <td>WED. 7-16-2011 11:30 AM</td> </tr> <tr> <td>PLOT BY</td> <td>PETER C. OLSEN</td> </tr> <tr> <td colspan="2" style="text-align: center;">DRAWING DATA</td> </tr> <tr> <td>SURVEY DATE</td> <td>12-04-2010</td> </tr> <tr> <td>DRAWN BY</td> <td>P. OLSEN</td> </tr> <tr> <td>CHECKED BY</td> <td>SAW</td> </tr> <tr> <td>SCALE</td> <td>1"=300'</td> </tr> <tr> <td>FIELD BOOK</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">PLAN REVISIONS</td> </tr> <tr> <td colspan="2" style="height: 100px;"> </td> </tr> <tr> <td colspan="2" style="text-align: center;">STRAP NUMBERS</td> </tr> <tr> <td colspan="2" style="height: 100px;"> </td> </tr> <tr> <td colspan="2" style="text-align: center;">BOUNDARY SURVEY</td> </tr> <tr> <td colspan="2" style="text-align: center; font-size: 1.5em; font-weight: bold; color: red;">RECEIVED</td> </tr> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">PROJECT / FILE NO.</td> <td style="width: 50%;">JULY 2011 PROJECT</td> </tr> <tr> <td>25346</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: right; font-size: 1.2em; font-weight: bold;">2 OF 5</td> </tr> </table> </table>		FILE NAME	23242503.DWG	LAYOUT	1	LOCATION	2339426000.SURVEYING	PLOT DATE	WED. 7-16-2011 11:30 AM	PLOT BY	PETER C. OLSEN	DRAWING DATA		SURVEY DATE	12-04-2010	DRAWN BY	P. OLSEN	CHECKED BY	SAW	SCALE	1"=300'	FIELD BOOK		PLAN REVISIONS				STRAP NUMBERS				BOUNDARY SURVEY		RECEIVED		PROJECT / FILE NO.	JULY 2011 PROJECT	25346		2 OF 5	
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PHONE (239) 481-3170
FAX (239) 481-3160
FLORIDA CERTIFICATE OF AUTHORIZATION
ENGINEERING 7965 - SURVEYING LB-6940
PREPARED FOR
TPL-LAND-SUB, LLC
4954 ROYAL GULF CIRCLE
FORT MYERS, FL 33905
PHONE (239) 425-6065
FAX (239) 425-6065
www.camprom.com
PROJECT DESCRIPTION
VERDANA VILLAGE
A Parcel of Land in
Sections 29, 30, 31 & 32,
Township 46 South,
Range 27 East
Lee County, Florida
PROJECT SURVEYOR
PETER OLSEN
NOT VALID WITHOUT THE SIGNATURE
AND THE ORIGINAL RANDED SEAL OF A
FLORIDA LICENSED SURVEYOR AND AN INSTRUMENT
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PLOT BY: PETER OLSEN
DRAWING DATA
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DRAWN BY: P. OLSEN
CHECKED BY: SAV
SCALE: 1"=500'
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PLAN REVISIONS
STRAP NUMBERS
applicant's Survey Checked
by [Signature]
BOUNDARY SURVEY
PROJECT/FILE NO. 22348 SHEET NUMBER 3 OF 5
28-46-27-00000-00000
DCI2019-00018



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Band Associates, Inc.
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LAND PLANNING
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2271 MIDGROCER BLVD., SUITE 100
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PHONE (239) 491-3170
FAX (239) 491-3160
FLORIDA CERTIFICATES OF AUTHORIZATION
ENGINEERING 7995 - SURVEYING LB-6949

TPL-LAND-SUB, LLC

4954 ROYAL GULF CIRCLE
FORT MYERS, FL 33909
PHONE (239) 425-8982
FAX (239) 425-8981
www.Campmap.com

PROJECT DESCRIPTION

VERDANA VILLAGE
A Parcel of Land in
Sections 29, 30, 31 & 32,
Township 46 South,
Range 27 East
Lee County, Florida

PROJECT SURVEYOR



NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

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PLOT BY: PETER OLSEN
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SURVEY DATE: 12-04-2018
DRAWN BY: P. OLSEN
CHECKED BY: SAV
SCALE: 1"=200'
FIELD BOOK: 34075-10-14-16-17-2

PLAN REVISIONS

NO.	DATE	DESCRIPTION
1	12-04-2018	INITIAL DRAFT
2	07-10-2019	FINAL

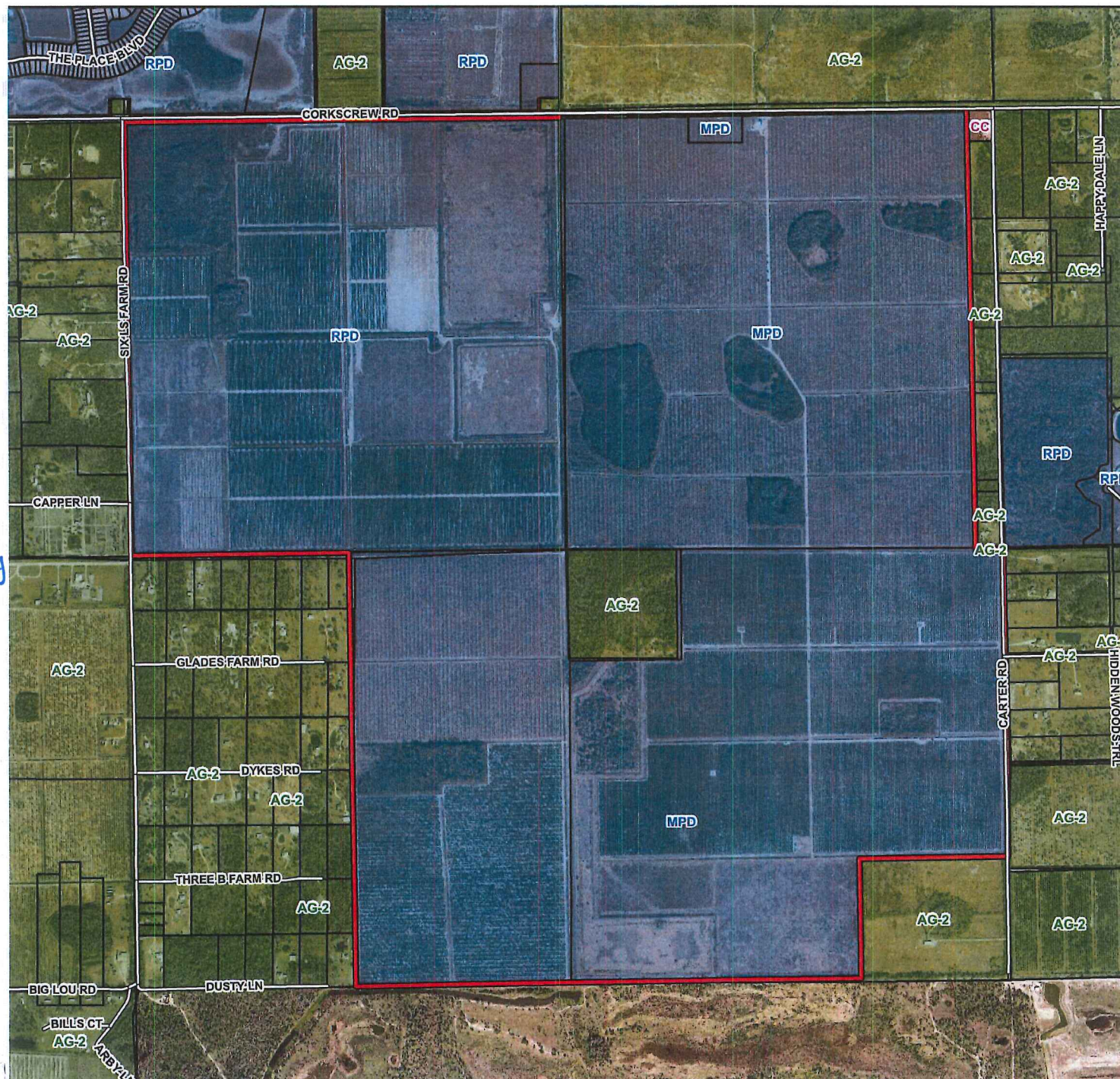
STRAP NUMBERS

applicant's Survey Checked by: *Peter Olsen*

BOUNDARY PROVED
JUL 15 2019

PROJECT / FILE NO. 23349
SHEET NUMBER 4 OF 5

DCI2019-00018



DCI2019-00018 Zoning

Legend

 Subject Parcel



0 1,000
Feet

LEE COUNTY
HEARING EXAMINER

2020 FEB 25 PM 1:26

MASTER CONCEPT PLAN FOR VERDANA VILLAGE MIXED USE PLANNED DEVELOPMENT

LOCATED IN LEE COUNTY, FLORIDA
PART OF SECTION 29, 30, 31 & 32, TOWNSHIP 46 SOUTH, RANGE 27 EAST

DEVELOPED BY

PROPERTY OWNER

TPL - LAND - SUB, LLC
4954 ROYAL GULF CIRCLE
FORT MYERS, FL 33966
(239) 425-8662

DEVELOPED BY

CAM VILLAGE DEVELOPMENT, LLC
4954 ROYAL GULF CIRCLE
FORT MYERS, FLORIDA 33966
PHONE: (239) 425-8662

PROPERTY INFORMATION

SITE ADDRESS

19500 CORKSCREW ROAD
ESTERO, FL 33928

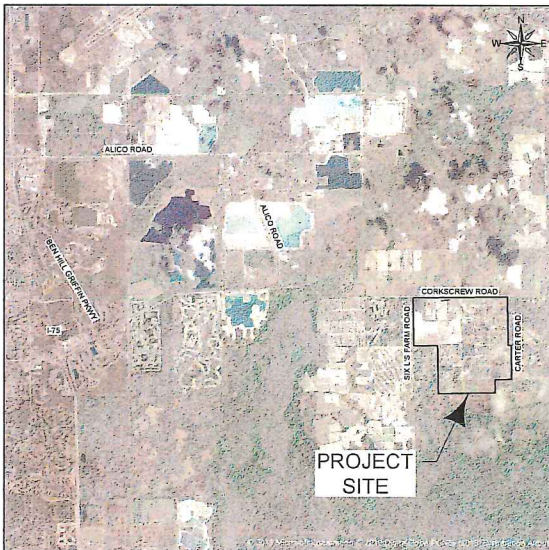
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FLOOD ZONE

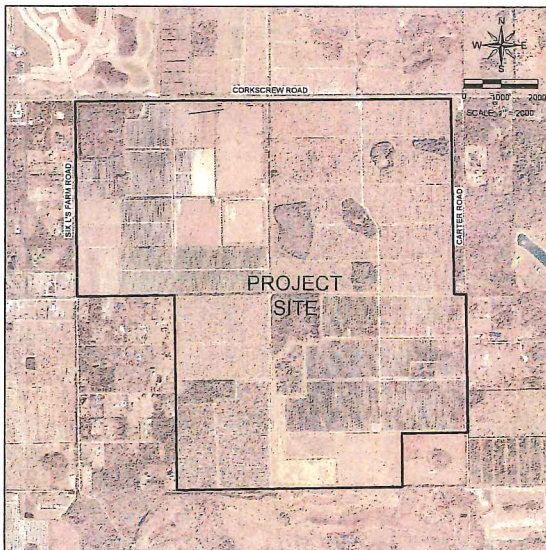
ACCORDING TO THE FLOOD INSURANCE RATE MAP
NO. 12071C0825F (PANEL NOT PRINTED), EFFECTIVE
DATE: AUGUST 28, 2006, THE PROPERTY IS LOCATED
IN "NO SPECIAL FLOOD HAZARD AREA".

ZONING



VICINITY MAP

N.T.S.



LOCATION MAP

SCALE: 1" = 2000'

INDEX OF SHEETS

1. COVER SHEET
2. MASTER CONCEPT PLAN ASSUMING CPA2019-00008 APPROVAL
3. MASTER CONCEPT PLAN ASSUMING CPA2019-00008 DENIAL
4. PROPERTY DETAILS & DEVELOPMENT REGULATIONS
5. TYPICAL CROSS SECTIONS
6. OPEN SPACE CALCULATIONS

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ENGINEERING

VERDANA VILLAGE

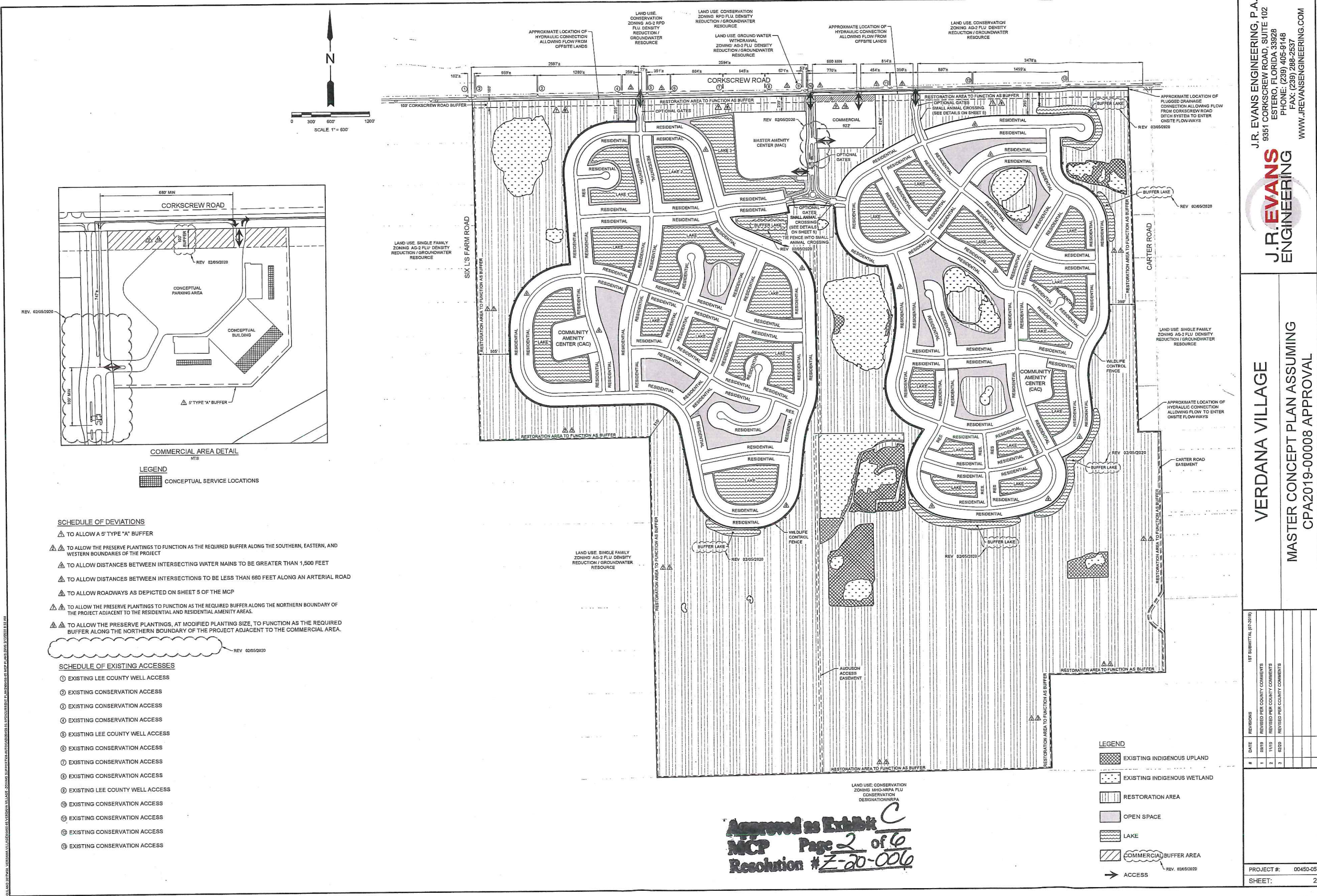
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#	DATE	REVISIONS	1ST SUBMITTAL (07/2019)
1	09/19	REVISED PER COUNTY COMMENTS	
2	11/19	REVISED PER COUNTY COMMENTS	
3	02/20	REVISED PER COUNTY COMMENTS	

PROJECT #: 00450-05
SHEET: 1

Approved as Exhibit ^C
MCP Page 1 of 6
Resolution # Z-20-006

DCI 2019-00018



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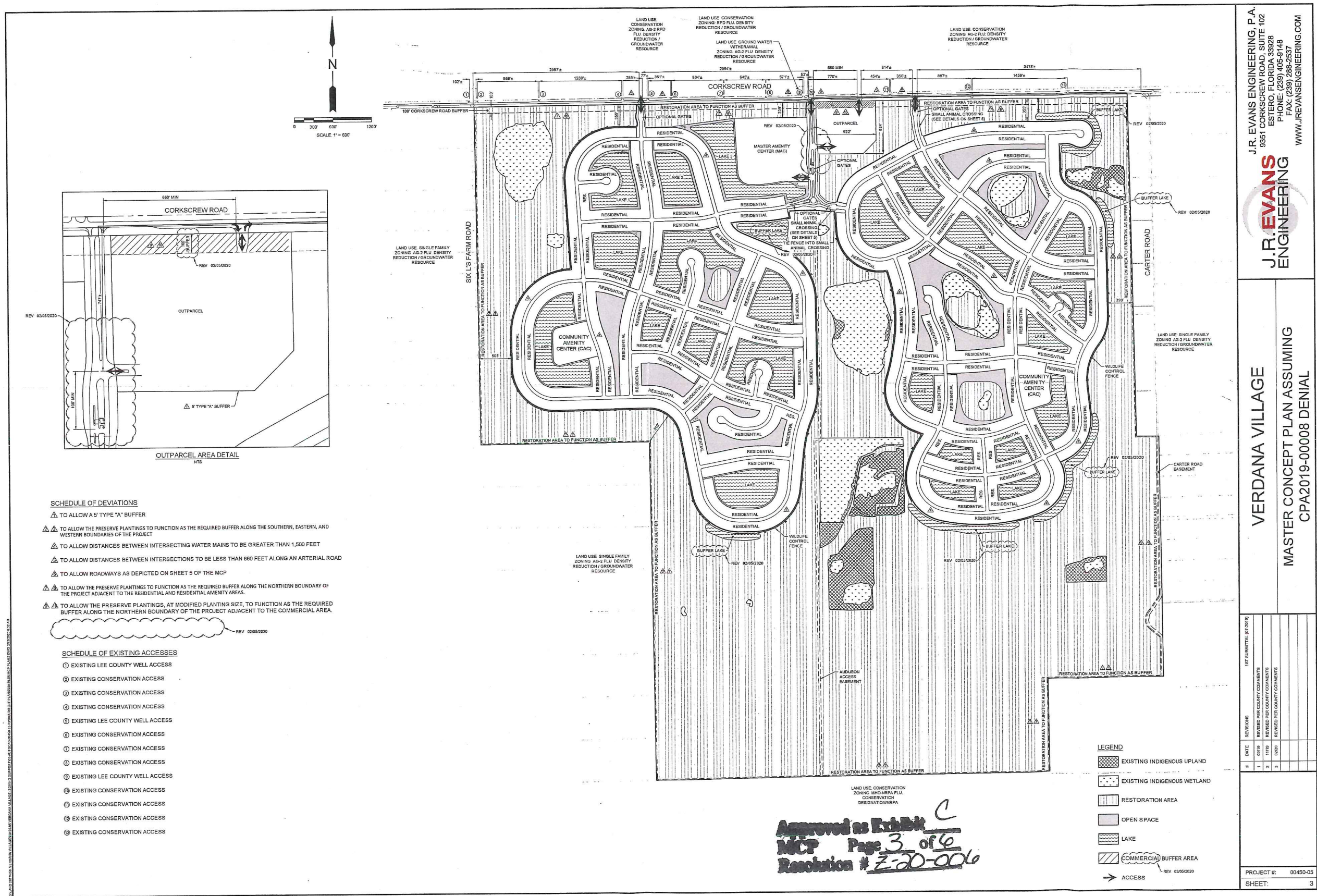
VERDANA VILLAGE

MASTER CONCEPT PLAN ASSUMING
CPA2019-00008 APPROVAL

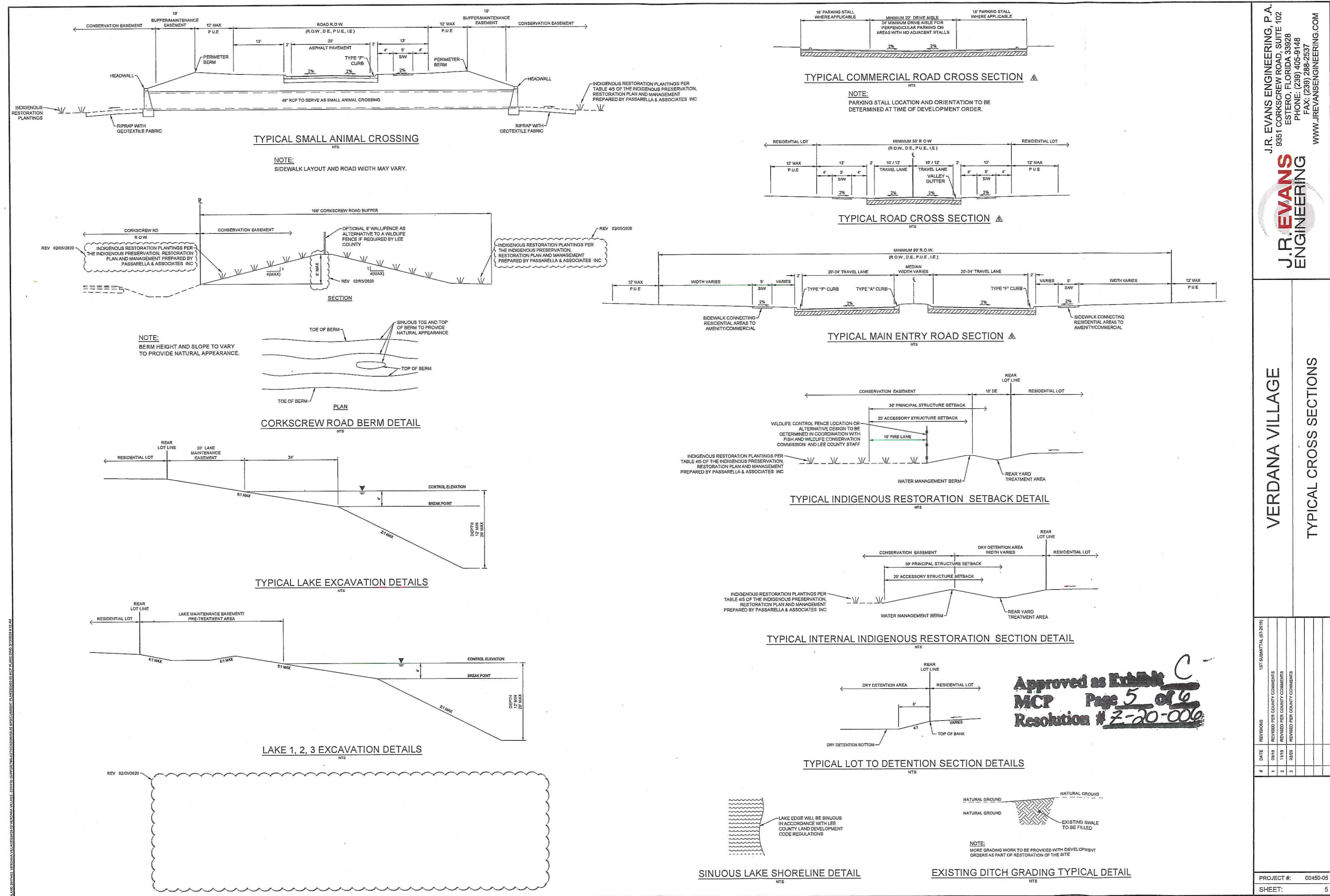
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11/19	REVISED PER COUNTY COMMENTS		
02/20	REVISED PER COUNTY COMMENTS		

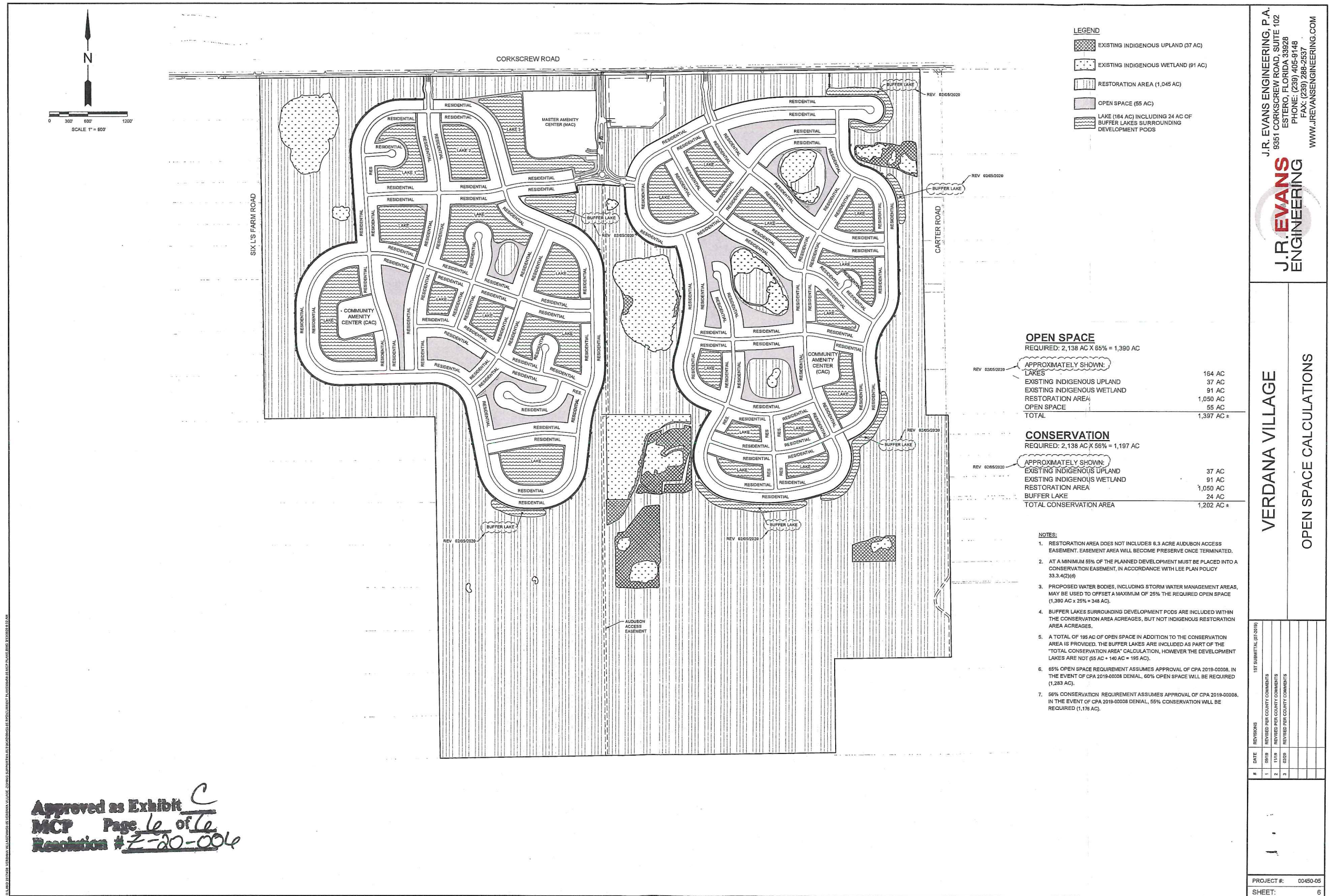
PROJECT #: 00450-05
SHEET: 2

DCI 2019-00018



DCI 2019-00018





**VERDANA VILLAGE
INDIGENOUS PRESERVATION, RESTORATION, AND
MANAGEMENT PLAN**

Revised October 2019

Prepared For:

TPL-Land-Sub, LLC
4954 Royal Gulf Circle
Fort Myers, Florida 33966
(239) 425-8662

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Prepared By:

Passarella & Associates, Inc.
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OC12019-00018

Project No. 19CCL3043

EXHIBIT D

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1.0 INTRODUCTION

The following outlines the Lee County Indigenous Preservation, Restoration, and Management Plan for Verdana Village (Project). The Project site totals 2,138± acres and is located in Sections 29, 30, 31, and 32; Township 46 South; Range 27 East; Lee County. According to Lee County's open space requirements outlined in Policy 33.3.4 of The Lee Plan, the minimum open space requirement for the Project is 60 percent of the site, or approximately 1,283 acres; however, the Project is proposing 65 percent open space contingent on approval of CPA2019-00008. In addition, a minimum of 55 percent of the total project area, or 1,176± acres, must be provided as indigenous vegetation and placed under conservation easement. The Project proposes to establish on-site conservation areas totaling approximately 1,202± acres. The proposed conservation areas will contain the following elements:

- Preservation and enhancement of 128± acres of indigenous wetlands and uplands (existing forested and herbaceous habitats with less than 75 percent exotics);
- Restoration of 64± acres of indigenous wetlands and uplands through the removal of exotic vegetation (existing forested and herbaceous habitats with greater than 75 percent exotics) and supplemental planting;
- Restoration of 986± acres of indigenous wetlands and uplands from agricultural lands (i.e., citrus groves and row crops); and
- Creation of 24± acres of lake buffer adjacent to the development pods that will remain as part of the conservation area.

Based on the acreages provided above, the proposed conservation area will contain 1,178± acres of indigenous vegetation. The total conservation area (1,202± acres), which includes the buffer lakes, will be placed under conservation easement to Lee County and the South Florida Water Management District (SFWMD). The created buffer lakes will be included in the conservation easement area but are not used to meet the 55 percent required for indigenous vegetation preservation and restoration.

The preservation and enhancement of existing indigenous vegetation and the large-scale restoration of agricultural lands to indigenous habitats will serve to provide significant regional flow-ways and wildlife corridors within the Project site. The proposed flow-ways and wildlife corridors will provide connection from Corkscrew Regional Mitigation Bank and The Place conservation lands to the north with Panther Island Mitigation Bank and Audubon's Corkscrew Swamp Sanctuary lands to the south. The proposed flow-ways will also serve to re-establish the north to south flow of water through the Project site that existed historically.

2.0 EXISTING INDIGENOUS VEGETATION HABITATS

Pursuant to Land Development Code (LDC) Section 10-1, indigenous native vegetation means those plant species that are characteristic of the major plant communities of the County. Native habitats where invasive exotic vegetation has exceeded 75 percent coverage are not considered to be indigenous vegetation.

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The Project site includes 128± acres (combined pre-development wetland and upland acres) of existing indigenous native vegetation. The indigenous areas occur on-site as scattered pockets of primarily remnant wetland and upland forested habitats with less than 75 percent coverage by exotics. These indigenous areas are surrounded by agricultural lands and associated drainage system components. The existing indigenous wetland and upland vegetation communities are identified in Appendix A.

The indigenous wetland habitats total 91± acres and consist mostly of remnant cypress, hydric pine, cypress/pine/cabbage palm, and mixed wetland hardwood habitats. Freshwater marsh habitats occur to a lesser extent. The indigenous uplands total 37± acres and consist mostly of pine flatwoods habitat around the remnant cypress areas on-site. Listed below are the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (Florida Department of Transportation 1999) descriptions of the indigenous wetland and upland habitats proposed for preservation and enhancement. An aerial with FLUCFCS is attached as Appendix B.

2.1 Indigenous Wetland Habitats

Willow, Disturbed (FLUCFCS Code 6189 E2)

The canopy of this habitat type includes Carolina willow (*Salix caroliniana*) and Brazilian pepper (*Schinus terebinthifolius*) along the edges. The sub-canopy is dominated by Carolina willow. The ground cover includes fireflag (*Thalia geniculata*), swamp fern (*Telmatoblechnum serrulatum*), pickerelweed (*Pontederia cordata*), and bull-tongue arrowhead (*Sagittaria lancifolia* subsp. *lancifolia*).

Cypress, Disturbed (0-24% Exotics) (FLUCFCS Code 6219 E1)

The canopy of this wetland habitat contains bald cypress (*Taxodium distichum*) and cabbage palm (*Sabal palmetto*). The sub-canopy consists of Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), cabbage palm, and wax myrtle (*Morella cerifera*). The ground cover includes caesarweed (*Urena lobata*), pennywort (*Hydrocotyle umbellata*), and swamp fern.

Cypress, Disturbed (25-49% Exotics) (FLUCFCS Code 6219 E2)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6219 E1, but contains 25 to 49 percent Brazilian pepper and/or melaleuca in the canopy and sub-canopy.

Cypress, Disturbed (50-75% Exotics) (FLUCFCS Code 6219 E3)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6219 E2, but contains 50 to 75 percent Brazilian pepper and/or melaleuca in the canopy and sub-canopy.

Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics) (FLUCFCS Code 6249 E1)

The canopy of this wetland habitat consists of slash pine (*Pinus elliottii*), bald cypress, laurel oak (*Quercus laurifolia*), and scattered cabbage palm. The sub-canopy consists of bald cypress, cabbage palm, and Brazilian pepper. The ground cover includes gulfdune

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paspalum (*Paspalum monostachyum*), slash pine, cabbage palm, bog buttons (*Lachnocaulon* sp.), and yellow-eyed grass (*Xyris* sp.).

Cypress/Pine/Cabbage Palm, Disturbed (25-49% Exotics) (FLUCFCS Code 6249 E2)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6249 E1 with 25 to 49 percent Brazilian pepper in the sub-canopy.

Cypress/Pine/Cabbage Palm, Disturbed (50-75% Exotics) (FLUCFCS Code 6249 E3)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6249 E2 with 50 to 75 percent Brazilian pepper in the sub-canopy.

Pine, Hydric, Disturbed (0-24% Exotics) (FLUCFCS Code 6259 E1)

The canopy of this habitat type is composed of slash pine and widely scattered bald cypress. The sub-canopy includes slash pine, Brazilian pepper, and scattered saw palmetto (*Serenoa repens*). The ground cover includes yellow-eyed grass, rosy camphorweed (*Pluchea baccharis*), bog buttons, little blue maidencane (*Amphicarpum muhlenbergianum*), gulfdune paspalum, roadgrass (*Eleocharis baldwinii*), and low panicum (*Dichanthelium* sp.).

Mixed Wetland Forest, Disturbed (0-24% Exotics) (FLUCFCS Code 6309 E2)

The canopy of this habitat type includes slash pine, bald cypress, eucalyptus (*Eucalyptus* sp.), widely scattered horse-tail casuarina (*Casuarina equisetifolia*), cocoplum (*Chrysobalanus icaco*), myrsine (*Myrsine cubana*), and scattered laurel oak (*Quercus laurifolia*), strawberry guava (*Psidium cattleianum*), cabbage palm, and live oak (*Quercus virginiana*). The sub-canopy includes slash pine, bald cypress, laurel oak, Brazilian pepper, and pitanga (*Eugenia uniflora*). The ground cover consists of swamp fern, pitanga, roadgrass, and bog buttons.

Freshwater Marsh, Disturbed (0-24% Exotics) (FLUCFCS Code 6419 E1)

The canopy and sub-canopy of this wetland habitat is typically open, with scattered Carolina willow and melaleuca. The ground cover includes fireflag, pickerelweed (*Pontederia cordata*), torpedograss (*Panicum repens*), cattail (*Typha* sp.), and arrowhead (*Sagittaria* sp.).

Freshwater Marsh, Disturbed (25-49% Exotics) (FLUCFCS Code 6419 E2)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6419 E1 with 25 to 49 percent coverage by melaleuca in the canopy and sub-canopy, and torpedograss and cattail in the ground cover.

2.2 Indigenous Upland Habitats

Pine Flatwoods, Disturbed (25-49% Exotics) (FLUCFCS Code 4119 E2)

The canopy of this upland habitat contains slash pine, laurel oak, earleaf acacia (*Acacia auriculiformis*), cabbage palm, ficus (*Ficus* sp.), and melaleuca. The sub-canopy contains Brazilian pepper, wax myrtle, earleaf acacia, and slash pine. The ground cover includes muscadine grapevine (*Vitis rotundifolia*), laurel oak, cabbage palm, Virginia creeper

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(*Parthenocissus quinquefolia*), earleaf greenbrier (*Smilax auriculata*), saw palmetto (*Serenoa repens*), caesarweed, and cocoplum.

Pine Flatwoods, Disturbed (50-75% Exotics) (FLUCFCS Code 4119 E3)

The vegetation composition of this upland community is similar to FLUCFCS Code 4119 E2, but contains 50 to 75 percent melaleuca, earleaf acacia, and/or Brazilian pepper in the canopy and sub-canopy.

Pine, Disturbed (0-24% Exotics) (FLUCFCS Code 4159 E1)

The canopy of this habitat type includes slash pine, widely scattered cabbage palm, and eucalyptus. The sub-canopy contains cabbage palm, saw palmetto, Brazilian pepper, and slash pine. The ground cover includes golden aster (*Pityopsis graminifolia*), natal grass (*Melinis repens*), bahiagrass (*Paspalum notatum*), flat-topped goldenrod (*Euthamia caroliniana*), dog fennel (*Eupatorium capillifolium*), blackroot (*Pterocaulon pycnostachyum*), chocolateweed (*Melochia spicata*), and broomsedge (*Andropogon virginicus*).

Pine, Disturbed (50-75% Exotics) (FLUCFCS Code 4159 E3)

The vegetation composition of this habitat type is similar to FLUCFCS Code 4159 E1, except with 50 to 75 percent cover of Brazilian pepper in the sub-canopy.

Tropical Hardwoods (FLUCFCS Code 426)

The canopy of this forest type is dominated by eucalyptus. The sub-canopy consists of scattered slash pine and cabbage palm. The ground cover is dog fennel, caesarweed, Virginia creeper, balsam apple (*Momordica charantia*), marsh brittle grass (*Setaria parviflora*), pennywort, zarzabacoa comun (*Desmodium incanum*), sensitive fern (*Mimosa pudica*), pinewoods fingergrass (*Eustachys petraea*), bushy bluestem (*Andropogon glomeratus*), bahiagrass, and beggar ticks (*Bidens alba*).

Hardwood/Conifer Mixed, Disturbed (25-49% Exotics) (FLUCFCS Code 4349 E2)

The canopy and sub-canopy of this upland area contain slash pine, laurel oak, and live oak. The ground cover includes scattered saw palmetto, broomsedge, bahiagrass, dog fennel, and caesarweed.

Cypress/Pine/Cabbage Palm, Disturbed and Drained (50-75% Exotics) (FLUCFCS Code 6245 E3)

The canopy of this habitat consists of slash pine, bald cypress, laurel oak, and scattered cabbage palm. The sub-canopy consists of bald cypress, cabbage palm, Brazilian pepper, and pond apple (*Annona glabra*). The ground cover consists primarily of swamp fern.

3.0 EXISTING NON-INDIGENOUS VEGETATION

Approximately 2,010 acres (94 percent) of the Project site consist of vegetation communities that do not meet the LDC's definition of indigenous vegetation. The non-indigenous areas are predominantly row crop and citrus grove with associated ditching and drainage systems, and

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agricultural operations areas. Existing non-indigenous wetlands on the site total 53± acres and consist of melaleuca areas, disturbed lands and remnant cypress areas, and wetland habitats with greater than 75 percent coverage by exotics, primarily Brazilian pepper. Non-indigenous uplands on the Project site total 1,856± acres and consist primarily of row crop and citrus grove along with their associated agricultural operation areas. Non-indigenous areas also include 101± acres of agricultural ditching and man-made surface waters (water detention and conveyance). The non-indigenous wetland and upland vegetation communities and surface waters are identified in Appendix A. Listed below are the FLUCFCS descriptions of the non-indigenous areas on the Project site.

3.1 Non-Indigenous Wetland Habitats

Melaleuca, Hydric (FLUCFCS Code 4241)

The canopy of this wetland area is dominated by melaleuca with scattered slash pine. The sub-canopy contains melaleuca with scattered Brazilian pepper. The ground cover contains swamp fern, sensitive fern, caesarweed, and muscadine grapevine.

Willow, Disturbed (FLUCFCS Code 6189 E4)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6189 E2, but contains 76 to 100 percent Brazilian pepper in the sub-canopy.

Cypress, Disturbed (76-100% Exotics) (FLUCFCS Code 6219 E4)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6219 E3, but contains 76 to 100 percent Brazilian pepper and/or melaleuca in the canopy and sub-canopy.

Cypress/Pine/Cabbage Palm, Disturbed (76-100% Exotics) (FLUCFCS Code 6249 E4)

The vegetation composition of this wetland community is similar to FLUCFCS Code 6249 E3, with 76 to 100 percent Brazilian pepper in the sub-canopy.

Disturbed Land, Hydric (FLUCFCS Code 7401)

These disturbed areas are periodically flooded due to farming and drainage operations on the property and are classified as "other surface waters." The ground cover includes Mexican primrose-willow (*Ludwigia octovalvis*), caesarweed, willow, sawgrass, cattail, mangrove flatsedge (*Cyperus ligularis*), cogongrass (*Imperata cylindrica*), water lettuce (*Pistia stratiotes*), and para grass (*Urochloa mutica*), Southern beaksedge (*Rhynchospora microcarpa*), yellow-eyed grass, torpedograss, smutgrass (*Sporobolus indicus*), marsh bristle grass, marsh pennywort, rosy camphorweed, dayflower (*Commelina diffusa*), and buttonweed (*Diodia virginiana*).

3.2 Non-Indigenous Upland Habitats

Agricultural Support Operations (FLUCFCS Code 205)

This upland area is cleared of vegetation and is used as a staging and preparation area for the surrounding agriculture operations.

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Row Crops (FLUCFCS Code 214)

This land use type consists of active row crop operations. The various crops consist of tomatoes, peppers, chili peppers, and tomatillos.

Citrus Grove (FLUCFCS Code 221)

The canopy contains citrus trees. The sub-canopy is open. The ground cover is dominated by bahiagrass with crowfoot grass (*Dactyloctenium aegyptium*), natalgrass (*Rhynchelytrum repens*), and Southern sandspur (*Cenchrus echinatus*).

Fallow Crop Land (FLUCFCS Code 261)

This land use type consists of harvestable crop land that is currently no longer in use. The canopy is open while the sub-canopy consists of widely scattered Carolina willow. The ground cover includes torpedograss, turkey tangle frog-fruit (*Phyla nodiflora*), ragweed (*Ambrosia artemisiifolia*), dayflower, broomsedge, tropical flatsedge (*Cyperus surinamensis*), and buttonweed.

Pine Flatwoods, Disturbed (76-100% Exotics) (FLUCFCS Code 4119 E4)

The vegetation composition of this upland community is similar to FLUCFCS Code 4119 E3, but contains 76 to 100 percent melaleuca, earleaf acacia, and/or Brazilian pepper in the canopy and sub-canopy.

Melaleuca (FLUCFCS Code 424)

The canopy and sub-canopy of this upland area are dominated by melaleuca. The ground cover contains smutgrass, rusty flatsedge (*Cyperus odoratus*), and caesarweed.

Disturbed Land (FLUCFCS Code 740)

The canopy and sub-canopy of this upland area are open. The ground cover includes smutgrass and Peruvian primrose-willow (*Ludwigia peruviana*).

Berm (FLUCFCS Code 747)

The canopy of this upland area is open. The sub-canopy consists of Brazilian pepper, slash pine, and earleaf acacia. The ground cover contains caesarweed, Brazilian pepper, Virginia creeper, saw palmetto, crowfoot grass, beggar ticks, Southern sandspur, ragweed, panicum (*Panicum* sp.), and smutgrass.

Road (FLUCFCS Code 814)

This upland land use consists of unimproved roads associated with the existing citrus grove.

3.3 Non-Indigenous Surface WatersDitch (FLUCFCS Code 514)

Ditches that support the agricultural operations have a ground cover that includes cattail, Mexican primrose-willow, marsh pennywort (*Hydrocotyle vulgaris*), Asiatic pennywort (*Centella asiatica*), dayflower, torpedograss, and West Indian marsh grass.

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Disturbed Land, Other Surface Waters (FLUCFCS Code 7401)

The vegetation of this area is similar to FLUCFCS Code 7401 described above, except with scattered melaleuca in the canopy and scattered Carolina willow in the sub-canopy.

4.0 INDIGENOUS VEGETATION PRESERVATION AND ENHANCEMENT

A total of 128± acres (91± acres of wetlands and 37± acres of uplands) with less than 75 percent existing exotic vegetation will be preserved and enhanced by the hand-removal/treatment of exotic and nuisance vegetation. The locations of the indigenous preservation areas are shown on Appendix C.

4.1 Methods to Remove and Control Exotic and Nuisance Plants

Exotics to be eradicated include, but are not limited to, the 21 species of prohibited invasive exotic species listed in Section 10-420(h) of the LDC (Table 1).

Table 1. Prohibited Invasive Exotics

Common Name	Scientific Name
Air potato	<i>Dioscorea alata</i>
Australian pines	All <i>Casuarina</i> species
Bishopwood	<i>Bischofia javanica</i>
Brazilian pepper	<i>Schinus terebinthifolius</i>
Carrotwood	<i>Cupaniopsis anacardioides</i>
Chinese tallow	<i>Sapium sebiferum</i>
Cork tree	<i>Thespesia populnea</i>
Cuban laurel fig	<i>Ficus microcarpa</i>
Downy rose-myrtle	<i>Rhodomyrtus tomentosus</i>
Earleaf acacia	<i>Acacia auriculiformis</i>
Japanese climbing fern	<i>Lygodium japonicum</i>
Java plum	<i>Syzygium cumini</i>
Melaleuca	<i>Melaleuca quinquenervia</i>
Murray red gum	<i>Eucalyptus camaldulensis</i>
Old World climbing fern	<i>Lygodium microphyllum</i>
Rose apple	<i>Syzygium jambos</i>
Rosewood	<i>Dalbergia sissoo</i>
Tropical soda apple	<i>Solanum viarum</i>

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Table 1. (Continued)

Common Name	Scientific Name
Wedelia	<i>Wedelia trilobata</i>
Weeping fig	<i>Ficus benjamina</i>
Woman's tongue	<i>Albizia lebbek</i>

Exotic and nuisance vegetation removal will be conducted primarily by hand methods. Hand treatment will be either felling of exotic trees, hand-removal, and herbicide treatment of the stumps; or by hand pulling and removal. The treatment of exotic and nuisance vegetation will include one or more of the following methods: (1) cut exotics within 12 inches of ground elevation, hand-remove cut vegetation, and treat remaining stump with approved herbicide; (2) foliar application of approved herbicide or hand pulling of exotic seedlings; and (3) foliar application of approved herbicide to nuisance grasses.

4.2 Debris Removal

Exotic vegetative debris that is cut will be removed from the indigenous preserve areas. Exotic debris may be stacked in the adjacent agricultural lands and burned. The preserve areas will be inspected annually for trash/garbage. Any trash/garbage located within the preserve areas will be removed and disposed of by hand.

4.3 Method and Frequency of Pruning and Trimming

Exotic removal within the existing indigenous habitats is scheduled to begin after development order approval. After the completion of the initial exotic removal, semi-annual inspections of the preserves will occur for the first two years. During these inspections, the conservation areas will be traversed by a qualified ecologist. Locations of nuisance and/or exotic species will be identified for immediate treatment with an appropriate herbicide. Any additional potential problems will also be noted and corrective actions taken. Once exotic/nuisance species levels have been reduced to acceptable limits, inspections of the conservation areas will be conducted a minimum of once every two years.

Maintenance will be conducted in perpetuity to ensure that the conservation areas are free of exotic vegetation, including the prohibited invasive exotic species listed in Section 10-420(h) of the LDC (Table 1).

5.0 INDIGENOUS VEGETATION RESTORATION

Restoration and re-establishment of indigenous vegetation communities will be conducted in areas with greater than 75 percent coverage by exotic vegetation and in the existing agricultural lands (i.e., citrus grove and row crops) within the conservation areas. Restoration activities will include 64± acres of exotic removal and supplemental plantings in existing forested and herbaceous

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habitats with greater than 75 percent exotics and 986± acres of wetland and upland restoration from existing agricultural lands. The locations of the various types of restoration areas are shown on Appendix C.

5.1 Removal of Exotics and Supplemental Plantings

Approximately 64 acres (53± acres of wetlands and 11± acres of uplands) with greater than 75 percent exotics will be enhanced by the removal of exotic species and supplemental plantings of native vegetation. Mechanical equipment may be utilized to assist in the removal of exotic species in these areas. Cut vegetative debris will be removed from these areas in order to allow for successful supplemental plantings. All efforts will be made to preserve native trees when conducting the exotic removal with mechanized equipment. To minimize adverse impacts to the ground surface, machinery that exerts a relatively low impact on the ground surface (i.e., tracked skid steer, feller-buncher) will be utilized within the mechanical removal areas.

Following the removal of exotics, supplemental wetland plantings will be installed in the 53± acres of wetland habitats. Wetland plantings will be selected based on the type of native vegetation that occurs in the adjacent or nearby wetland habitats. Tree and ground cover species will be planted according to the specifications in Table 2. A minimum of three tree species and five ground cover species will be planted. The species selected for planting will depend on market availability at the time the plantings are to occur.

Table 2. Supplemental Wetland Plantings¹

Common Name	Scientific Name	Minimum Height	Container Size	Planting Instruction (On Center)
Trees (minimum three species)				
Bald cypress	<i>Taxodium distichum</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Dahoon holly	<i>Ilex cassine</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Laurel oak	<i>Quercus laurifolia</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Pond apple	<i>Annona glabra</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Pop ash	<i>Fraxinus caroliniana</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Red maple	<i>Acer rubrum</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Slash pine	<i>Pinus elliottii</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Ground Cover (minimum five species)				
Alligator flag	<i>Thalia geniculata</i>	12 in.	2 in.	5 to 8 ft.
Arrowhead	<i>Sagittaria lancifolia</i>	12 in.	2 in.	5 to 8 ft.
Blue flag iris	<i>Iris virginica</i>	12 in.	2 in.	5 to 8 ft.
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>	12 in.	2 in.	5 to 8 ft.
Cordgrass	<i>Spartina bakeri</i>	12 in.	2 in.	5 to 8 ft.
Dense-flower knotweed	<i>Polygonum glabrum</i>	12 in.	2 in.	5 to 8 ft.
Golden canna	<i>Canna flaccida</i>	12 in.	2 in.	5 to 8 ft.
Gulfdune paspalum	<i>Paspalum monostachyum</i>	12 in.	2 in.	5 to 8 ft.

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Table 2. (Continued)

Common Name	Scientific Name	Minimum Height	Container Size	Planting Instruction (On Center)
Ground Cover (Continued)				
Maidencane	<i>Panicum hemitomon</i>	12 in.	2 in.	5 to 8 ft.
Muhly grass	<i>Muhlenbergia capillaris</i>	12 in.	2 in.	5 to 8 ft.
Pickrelweed	<i>Pontederia cordata</i>	12 in.	2 in.	5 to 8 ft.
Sawgrass	<i>Cladium jamaicense</i>	12 in.	2 in.	5 to 8 ft.
Soft-stem bulrush	<i>Scirpus validus</i>	12 in.	2 in.	5 to 8 ft.
Spikerush	<i>Eleocharis interstincta</i>	12 in.	2 in.	5 to 8 ft.
Swamp lily	<i>Crinum americanum</i>	12 in.	2 in.	5 to 8 ft.
Wiregrass	<i>Aristida stricta</i>	12 in.	2 in.	5 to 8 ft.

¹ Additional tree and ground cover species may be included in the planting table prior to Development Order approval.

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Following the removal of exotic vegetation, supplemental upland plantings will be installed in 11± acres of upland habitats. Upland plantings will be selected to replace the type of native vegetation that occurs in the adjacent or nearby upland habitats. Tree plantings will include primarily slash pine, although other tree species listed in Table 3 may be utilized. Upland tree and ground cover plantings will be installed according to the specifications listed in Table 3. A minimum of three tree species and five ground cover species will be planted. The species selected for planting will depend on market availability at the time the plantings are to occur.

Table 3. Supplemental Upland Plantings¹

Common Name	Scientific Name	Minimum Height	Minimum Container Size	Planting Instruction (On Center)
Trees (minimum three species)				
Cabbage palm	<i>Sabal palmetto</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Cypress	<i>Taxodium distichum</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Dahoon holly	<i>Ilex cassine</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Laurel oak	<i>Quercus laurifolia</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Live oak	<i>Quercus virginiana</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Red maple	<i>Acer rubrum</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Slash pine	<i>Pinus elliottii</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Ground Cover (minimum five species)				
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>	12 in.	2 in.	5 to 8 ft.
Broomgrass	<i>Andropogon virginicus</i>	12 in.	2 in.	5 to 8 ft.
Cordgrass	<i>Spartina bakeri</i>	12 in.	2 in.	5 to 8 ft.
Fakahatchee grass	<i>Tripsacum dactyloides</i>	12 in.	2 in.	5 to 8 ft.
Gulfdune paspalum	<i>Paspalum monostachyum</i>	12 in.	2 in.	5 to 8 ft.
Muhly grass	<i>Muhlenbergia capillaris</i>	12 in.	2 in.	5 to 8 ft.

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Table 3. (Continued)

Common Name	Scientific Name	Minimum Height	Minimum Container Size	Planting Instruction (On Center)
Ground Cover (Continued)				
Purple lovegrass	<i>Eragrostis spectabilis</i>	12 in.	2 in.	5 to 8 ft.
Saw palmetto	<i>Serenoa repens</i>	12 in.	1 gal.	30 to 50 ft.
Wiregrass	<i>Aristida stricta</i>	12 in.	2 in.	5 to 8 ft.

¹Additional tree and ground cover species may be included in the planting table prior to Development Order approval.

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5.2 Wetland and Upland Restoration from Agricultural Lands

Approximately 986 acres of existing agricultural lands, including ditches, water detention areas, and berms will be restored to native wetland and upland habitats. The final acreages associated with the upland and wetland restoration from agricultural lands will be determined at the time of development order. Wetland and upland restoration activities will include removal of existing row crops and citrus trees, backfilling of agricultural ditches and detention systems, regrading to contours necessary for restoration to historic habitat communities, replanting of vegetation to achieve target habitat types, and ongoing maintenance and management.

5.2.1 Wetland Grading and Planting

Stormwater from development areas of the Project will be treated for water quality in stormwater lakes within the surface water management system for each development area. Following water quality treatment, stormwater will be discharged from treatment lakes into the restoration area at various locations. Indigenous wetland restoration for agricultural lands, or "flow-ways," will be established to accommodate the flow of water from the north to the south through the site, similar to what existed historically. The location of the flow-ways is depicted on Exhibit C. The westernmost flow-way has been designed to accommodate a future connection to the existing wetland flow-way within The Place at Corkscrew residential development located on the north side of Corkscrew Road. The easternmost flow-way has been designed to provide connection to drainage features along Carter Road, immediately east of the Project site, to help alleviate flooding along the roadway corridor. The restored flow-ways will converge in the south-central portion of the site and eventually outfall to Panther Island Mitigation Bank at a fixed location along the southern property boundary.

The flow-ways will consist primarily of freshwater marsh habitat with hydric pine forest plant communities in the higher elevations. The freshwater marsh areas will contain intermittent pockets of open water. The open water areas may be more prevalent during and after large storm events, particularly in the southern portion of the site where the elevation is lowest. The side slopes of the flow-ways will be

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8:1 or less and will be vegetated with appropriate marsh and hydric pine vegetation. Water elevations within the flow-ways will be stepped down from north to south to mimic historic patterns and to allow hydration of the indigenous replanting areas. The control elevations and fixed weir locations for each restoration basin are provided on Exhibit C. A detail of the weir structure is provided in Appendix D.

Cross-sections showing how the proposed wetland flow-ways are anticipated to function are provided in Appendix D. The cross-sections illustrate how water will move from north to south through the property via separate basins controlled by physical structures (i.e., weirs). Each weir will be set at a specific elevation to control water levels in each flow-way basin. This design allows for the cascading of water from north to south while maintaining water elevations supportive of the proposed hydric pine and freshwater marsh vegetation communities.

Following the removal of the row crops and citrus trees, drainage ditches and other components of the agricultural operations such as detention areas will be backfilled using material from the existing berms and disturbed areas. Proposed wetland flow-way areas will be graded and planted with wetland plantings. The wetland flow-way restoration areas are divided into three planting zones. The approximate location of the flow-way planting zones is depicted on the typical cross-sections provided in Appendix D. Slash pine trees and ground cover plantings will be installed on the higher slope of the restored flow-ways in Zone 1 where the target habitat is hydric pine. Zone 2 plantings will be installed on the mid to lower elevations where the target habitat is freshwater marsh. Zone 3 plantings will be installed in the lowest portions of the graded area which will consist of freshwater marsh with intermittent pockets of open water.

A minimum of two ground cover species will be planted in each planting zone. Specifications for plantings including species, size, and density (on-center spacing) are provided in Table 4. The species selected for planting will depend on market availability at the time the plantings are to occur.

Table 4. Planting List for Wetland Restoration from Agricultural Lands¹

Common Name	Scientific Name	Minimum Height	Container Size	Planting Instruction (On Center)
Trees²				
Bald cypress	<i>Taxodium distichum</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Pop ash	<i>Fraxinus caroliniana</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Pond apple	<i>Annona glabra</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.
Slash pine	<i>Pinus elliottii</i>	2 to 5 ft.	BR to 3 gal.	30 to 50 ft.

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Table 4. (Continued)

Common Name	Scientific Name	Minimum Height	Container Size	Planting Instruction (On Center)
Ground Cover Plantings (minimum two species per zone)				
Zone 1				
Blue flag iris	<i>Iris virginica</i>	12 in.	2 in.	3 to 5 ft.
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>	12 in.	2 in.	3 to 5 ft.
Bushy bluestem	<i>Andropogon glomeratus</i>	12 in.	2 in.	5 to 8 ft.
Cordgrass	<i>Spartina bakeri</i>	12 in.	2 in.	5 to 8 ft.
Gulfdune paspalum	<i>Paspalum monostachyum</i>	12 in.	2 in.	5 to 8 ft.
Maidencane	<i>Panicum hemitomon</i>	12 in.	2 in.	3 to 5 ft.
Muhly grass	<i>Muhlenbergia capillaris</i>	12 in.	2 in.	5 to 8 ft.
Redroot	<i>Ceanothus americanus</i>	12 in.	2 in.	5 to 8 ft.
Sawgrass	<i>Cladium jamaicense</i>	12 in.	2 in.	3 to 5 ft.
Yellow canna	<i>Phyllanthus fluitans</i>	12 in.	2 in.	5 to 8 ft.
Zone 2				
Alligator flag	<i>Thalia geniculata</i>	12 in.	2 in.	3 to 5 ft.
Arrowhead	<i>Sagittaria lancifolia</i>	12 in.	2 in.	3 to 5 ft.
Golden canna	<i>Canna flaccida</i>	12 in.	2 in.	3 to 5 ft.
Maidencane	<i>Panicum hemitomon</i>	12 in.	2 in.	3 to 5 ft.
Pickereelweed	<i>Pontederia cordata</i>	12 in.	2 in.	3 to 5 ft.
Sawgrass	<i>Cladium jamaicense</i>	12 in.	2 in.	3 to 5 ft.
Soft-stem bulrush	<i>Scirpus validus</i>	12 in.	2 in.	3 to 5 ft.
Spikerush	<i>Eleocharis interstincta</i>	12 in.	2 in.	3 to 5 ft.
Zone 3				
Alligator flag	<i>Thalia geniculata</i>	12 in.	2 in.	3 to 5 ft.
Arrowhead	<i>Sagittaria lancifolia</i>	12 in.	2 in.	3 to 5 ft.
Golden canna	<i>Canna flaccida</i>	12 in.	2 in.	3 to 5 ft.
Pickereelweed	<i>Pontederia cordata</i>	12 in.	2 in.	3 to 5 ft.
Soft-stem bulrush	<i>Scirpus validus</i>	12 in.	2 in.	3 to 5 ft.
Spatterdock	<i>Nuphar luteum</i>	24 in.	1 gal.	15 ft.
Spikerush	<i>Eleocharis interstincta</i>	12 in.	2 in.	3 to 5 ft.
Water lily	<i>Nymphaea odorata</i>	24 in.	1 gal.	15 ft.

¹Additional tree and ground cover species may be included in the planting table prior to Development Order approval.

²Wetland tree plantings will be clustered along the edge of the flow-way restoration area as to not preclude open foraging habitat for listed wading bird species.

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5.2.2 Upland Grading and Planting

The locations of the upland restoration areas are shown on Appendix C. Upland restoration will consist of the removal of row crops, citrus trees, and berms, and the backfilling of ditches and detention areas. Re-grading will occur to provide appropriate ground elevations for targeted upland plant communities. Depending on the topography and natural hydrologic regime, portions of the upland restoration areas may contain wetland vegetation. As such, trees species that are more tolerant of periodic inundation may be utilized in lower portions of the upland restoration area, particularly in the southern portion of the site. A list of trees that may be utilized in these areas is included in Table 5.

Following final grading, tree species and ground cover from Table 5 will be installed. The cross-sections included in Appendix D show the location of the upland restoration planting areas. The species selected for planting will depend on the market availability at the time plantings are to occur. Trees may be planted in clusters to provide distinct areas that can be defended from prescribed fire by the installation of disked fire breaks around the perimeter of the clusters. The locations of the tree clusters will be identified based on an analysis of historic aerials and proposed site topography. Trees will be planted in accordance with the specifications listed in Table 5. The goal is to create clusters of primarily open canopy, native forest areas with adequate sunlight for an abundance of ground cover species. Clusters of trees may be pine, hardwoods, or a mix of pine and hardwoods. A variety of tree sizes may be utilized to create a more heterogeneous plant community.

In areas where tree plantings are not clustered, widely scattered trees will be planted randomly in the upland restoration areas. The widely scattered trees will consist primarily slash pine plantings.

Native ground cover plantings will be installed in the upland restoration areas and will include a minimum of four of the species listed in Table 5. No one species will constitute more than 50 percent of the total ground cover plantings. Direct seeding to establish upland ground cover may be used in conjunction with ground cover plantings within the upland restoration areas. The seed source will be obtained from and applied by a professional experienced with direct seeding as a method of upland restoration. The seed source will be harvested from a local area and will include a mixture of regionally appropriate native graminoid species. The seed source mixture will include a variety of species to optimize ground cover diversity to the maximum extent possible.

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Table 5. Planting List for Upland Restoration from Agricultural Lands¹

Common Name	Scientific Name	Minimum Height	Container Size	Planting Instruction (On Center)
Trees				
Bald cypress ²	<i>Taxodium distichum</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Cabbage palm	<i>Sabal palmetto</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Dahoon holly	<i>Ilex cassine</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Laurel oak	<i>Quercus laurifolia</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Live oak	<i>Quercus virginiana</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Red maple ²	<i>Acer rubrum</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Swamp bay ²	<i>Persea palustris</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Slash pine	<i>Pinus elliotii</i>	2 to 5 ft.	BR to 3 gal.	15 to 20 ft.
Ground Cover (minimum four species)				
Broomsedge	<i>Andropogon virginicus</i>	12 in.	2 in.	5 to 8 ft.
Cordgrass	<i>Spartina bakeri</i>	12 in.	2 in.	5 to 8 ft.
Fakahatchee grass	<i>Tripsacum dactyloides</i>	12 in.	2 in.	5 to 8 ft.
Gulfdune paspalum	<i>Paspalum monostachyum</i>	12 in.	2 in.	5 to 8 ft.
Muhlygrass	<i>Muhlenbergia capillaris</i>	12 in.	2 in.	5 to 8 ft.
Purple lovegrass	<i>Eragrostis spectabilis</i>	12 in.	2 in.	5 to 8 ft.
Saw palmetto	<i>Serenoa repens</i>	12 in.	1 gal.	30 to 50 ft.
Wiregrass	<i>Aristida stricta</i>	12 in.	2 in.	5 to 8 ft.
Muhlygrass	<i>Muhlenbergia capillaris</i>	12 in.	2 in.	5 to 8 ft.

¹Additional tree and ground cover species may be included in the planting table prior to Development Order approval.

²To be utilized in lower portions of the upland restoration areas.
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5.2.3 Northern Perimeter Berm Plantings

In addition to meeting the minimum planting requirements outlined in Table 5, additional native tree and shrub plantings may be installed along the northern perimeter berm within the upland restoration from agricultural land area south of Corkscrew Road. The location of the northern perimeter berm will be identified at the time of development order application. The additional tree and shrub species proposed along the northern perimeter berm are included in Table 6.

Ground cover planting will include a minimum of three of the five species listed in Table 6. Ground cover plantings may be clustered so there may be small patches where only trees exist. After ground cover plantings have been installed, a layer of pine straw bedding will be utilized on the southern perimeter berm and mounding areas to prevent erosion along the side slopes.

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Table 6. Northern Perimeter Berm Plantings

Common Name	Scientific Name	Minimum Height	Minimum Container Size	Planting Instruction (On Center)
Ground Cover (minimum three species)				
Cordgrass	<i>Spartina bakeri</i>	12 in.	4 in.	3 ft.
Fakahatchee grass	<i>Tripsacum dactyloides</i>	12 in.	4 in.	3 ft.
Muhlygrass	<i>Muhlenbergia capillaris</i>	12 in.	4 in.	3 ft.
Purple lovegrass	<i>Eragrostis spectabilis</i>	12 in.	4 in.	3 ft.
Sawgrass	<i>Cladium jamaicensis</i>	12 in.	4 in.	3 ft.
Trees/Shrubs¹				
American elm	<i>Ulmus americana</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Green/silver buttonwood	<i>Conocarpus erectus</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Jamaican caper	<i>Quadralla jamaicensis</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Loblolly bay	<i>Gordonia lasianthus</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Pigeon plum	<i>Coccoloba diversifolia</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Pitch apple	<i>Clusia rosea</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Red bay	<i>Persea borbonia</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Simpson's stopper	<i>Myrcianthes fragrans</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Southern magnolia	<i>Magnolia grandiflora</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Sugarberry	<i>Celtis laevigata</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Sweet gum	<i>Liquidambar styraciflua</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Thatch palm	<i>Thrinax radiata</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Walter's viburnum	<i>Viburnum obovatum</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
West Indian mahogany	<i>Swietenia mahagoni</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Wild coffee	<i>Psychotria nervosa</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Black olive	<i>Bucida buceras</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Eagleston holly	<i>Ilex x attenuata</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Orange geiger	<i>Cordia sebestena</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Paurotis palm	<i>Acoelorrhaphe wrightii</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Seagrape	<i>Coccoloba uvifera</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Sycamore	<i>Platanus occidentalis</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Wax myrtle	<i>Morella cerifera</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Wild lime	<i>Zanthoxylum fagara</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Yaupon holly	<i>Ilex vomitoria</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Cocoplum	<i>Chrysobalanus icaco</i>	2 to 5 ft.	1 gal.	15 to 20 ft.
Carolina willow	<i>Salix caroliniana</i>	2 to 5 ft.	1 gal.	15 to 20 ft.

¹Trees and shrubs may be clustered or evenly spaced.

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6.0 RESTORATION ACTIVITY SCHEDULE

Site development and restoration will occur in two phases. A restoration phase map corresponding to each development phase is provided as Appendix E. The Phase 1 restoration area includes a minimum of 55 percent of the Phase 1 development and restoration acreages combined. The restoration phasing will be sub-phased to coincide with the phasing of development determined at the time of development order. Restoration activities in each phase will be completed within ten years or sooner from the date of issuance of the first development order for that phase.

7.0 SUCCESS CRITERIA

7.1 Indigenous Wetland and Upland Preservation and Enhancement

The following are the success criteria for the indigenous preserve areas:

- 1) Initial eradication of exotic and nuisance vegetation will be completed; and
- 2) The preserve areas will be maintained free from exotic vegetation. Exotic vegetation species include, but are not limited to, the 21 species of prohibited invasive exotic species listed in Section 10-420(h) of the LDC (Table 1).

7.2 Indigenous Wetland and Upland Restoration

The following are the success criteria for the indigenous wetland and upland restoration areas:

- 1) Initial eradication of exotic and nuisance vegetation will be completed;
- 2) Supplemental plantings will be completed in the indigenous restoration areas;
- 3) A minimum 80 percent survival of tree and ground cover plantings after five years; and
- 4) The preserve areas will be maintained free from exotic vegetation. Exotic vegetation species include, but are not limited to, the 21 species of prohibited invasive exotic species listed in Section 10-420(h) of the LDC (Table 1).

7.3 Wetland and Upland Restoration from Agricultural Lands

The following are the success criteria for the wetland and upland restoration from agricultural lands:

- 1) Initial eradication of exotic and nuisance vegetation will be completed;



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- 2) Removal of row crops, citrus trees, berms and spoil areas, backfilling of ditches and borrow areas, and re-grading of wetland and upland restoration areas will be completed;
- 3) Plantings within wetland and upland restoration areas will be completed;
- 4) A minimum of 80 percent survival of tree and ground cover species after five years;
- 5) The goal will be an average of approximately 100 trees per acre in the upland restoration areas. There may be areas of clustered trees which amount to greater than 100 trees per acre and areas of herbaceous prairie with less than 100 trees per acre; and
- 6) The preserve areas will be maintained free from exotic vegetation. Exotic vegetation species include, but are not limited to, the 21 species of prohibited invasive exotic species listed in Section 10-420(h) of the LDC (Table 1).

8.0 MAINTENANCE

After the completion of the initial exotic removal, semi-annual inspections of the conservation areas will occur for the first two years. During these inspections, the conservation areas will be traversed by a qualified ecologist. Locations of nuisance and/or exotic species will be identified for immediate treatment with an appropriate herbicide. Any additional potential problems will also be noted, and corrective actions taken. Once exotic/nuisance species levels have been reduced to acceptable limits, inspections of the conservation areas will be conducted annually.

Maintenance will be conducted in perpetuity to ensure that the conservation areas are free of exotic vegetation, including the prohibited invasive exotic species listed in Section 10-420(h) of the LDC (Table 1).

8.1 Prescribed Fire

Prescribed burning will be used as a management tool in the conservation areas to maintain the native vegetation communities. Prescribed burns help maintain vegetative communities in their natural state, reduce fuel loads and the danger of wildfire, aid with the eradication and control of exotic and nuisance vegetation species, and improve wildlife habitat. The objectives of prescribed burning maintenance events will be to aid in the control of exotic vegetation and woody shrubs (i.e., wax myrtle and saltbush), and to stimulate the growth and diversity of herbaceous vegetation.

The burning frequency for the conservation areas will be two to four years, which is consistent with the natural fire regime for mesic flatwoods, wet flatwoods, and wet prairies described by Florida Natural Areas Inventory (FNAI) in the *Guide to the Natural Communities of Florida* (FNAI 2010). The edges of the Project's freshwater marshes will

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be burned when the fire moves through the adjacent pine and prairie habitats. The fire will be allowed to extinguish naturally within the wetter marsh habitats.

Prescribed burning is typically conducted during the winter or early spring when temperatures are reduced and wind direction is more constant. The initial burn is anticipated to occur during the late winter. Winter burns are preferred to reduce high fuel loads. Growing season burns also may be conducted as conditions allow. Changes in annual weather cycles determine when burn permits will be available and burns may be conducted only on the day(s) of Florida Forest Service permission.

Fire breaks will be installed in strategic locations in order to safely ignite and control prescribed fires. Fire breaks will be co-located with maintenance trails, access roads, easements, fence lines, property boundaries, and natural habitat boundaries. A 12-foot wide fire break will be established directly adjacent to and inside (i.e., the restoration side) of the 6-foot tall wildlife control fence or other structural wildlife deterrent. Fires will be excluded from the planted tree clusters until such time that the plantings are mature enough to survive fires. Fires will be allowed to extinguish naturally within the wetter preserve areas, such as the marsh habitats.

Controlled burns will be conducted only when authorized with a permit by the Florida Forest Service. In addition, notice will be given to the Estero Fire District. Coordination with the Audubon Society and the South Florida Water Management District will occur before burning. Burning will not be conducted if smoke is anticipated to encroach upon Corkscrew Road or adjacent residential areas.

9.0 MONITORING REPORTS

Monitoring will be conducted annually for the conservation areas. Annual reports documenting the achievement of the success criteria outlined in Section 7.0 will be submitted to Lee County's Division of Environmental Sciences (DES). Annual monitoring reports will be provided for a period of five years after the Certificate of Compliance has been issued by Development Services or until the 80 percent survivability is reached. Monitoring will typically be conducted during the height of the growing season (August to October) with annual reports submitted by January 15.

Annual monitoring reports will be provided for each conservation area phase as described above. The monitoring reports will include documented exotic and nuisance species, mortality of vegetation, estimated causes of mortality, growth of the vegetation, wildlife observed and other factors that demonstrate the functional health of the conservation areas, and photographs. A brief description of anticipated maintenance work to be conducted over the next year will also be included. Periodic inspections will be conducted by DES staff to ensure the accuracy of the monitoring reports.

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10.0 LONG-TERM MANAGEMENT AND MONITORING

The conservation areas will be placed in a conservation easement granted to Lee County and the SFWMD. The conservation easement will contain a minimum of 55 percent of the total planned development acreage per Lee Plan Policy 33.3.4(2)(c). The conservation easement will prevent the encroachment of future development as well as activities that are incompatible with the goal of sustaining the preserved and restored conservation areas in good ecological health. These areas will be physically managed in accordance with the approved long-term management plan prepared by the Project ecologist and implemented by a Community Development District (CDD) or Homeowners' Association (HOA) with the assistance of an appropriately skilled environmental professional.

Responsibility for management of the conservation areas will shift to the CDD or HOA following the completion of enhancement and restoration activities on-site. Prior to completion of the five-year annual monitoring program, a long-term management and monitoring plan will be drafted for DES review and approval. The plan will then be implemented after completion of the five-year annual monitoring program and achievement of success criteria has been verified by DES. Long-term management activities within the conservation areas will include periodic surveys of vegetation and wildlife, control of exotic and nuisance plant species, regulating water levels, maintenance of the water control structures and access, and prescribed fires.

Long-term monitoring reports will be provided to DES bi-annually (every other year). The long-term monitoring reports will provide ecological data such as water levels, vegetative cover, degree and location of exotic vegetation cover, and wildlife utilization. This information will guide the active management of the site.

11.0 PRESERVE SIGNAGE AND COMMUNITY EDUCATION PLAN

Signs identifying the preserve as a "nature preserve area" will be installed along the boundary of the conservation areas. The signage will include language stating, "No dumping allowed." The signs will be spaced a maximum of 200 feet apart. The signs will be no closer than ten feet from residential property lines and be limited to a maximum height of four feet and a maximum size of two square feet. A typical preserve sign is attached as Appendix D.

The community will be advised of the benefits of the conservation areas to the surrounding landscape and their residential community.

Community informational and educational brochures, such as those describing the benefits of preserve areas, may be created and provided as needed to keep residents in compliance with conservation easements, wildlife regulations, etc. Continued education will ensure that the community is well-informed regarding the preserves and wildlife coexistence.

Please refer to the Protected Species Management and Human-Wildlife Coexistence Plan for details on wildlife crossings, fencing, and measures to be implemented to help prevent human-wildlife conflicts.



12.0 REFERENCES

- Florida Department of Transportation. 1999. Florida Land Use, Cover and Forms Classification System. Procedure No. 550-010-001-a. Third Edition.
- Florida Natural Areas Inventory. 2010. Guide to the Natural Communities of Florida: 2010 Edition. Florida Natural Areas Inventory, Tallahassee, Florida.

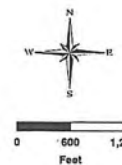
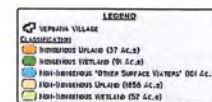
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APPENDIX A
INDIGENOUS VEGETATION MAP

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NOTES:
PROPERTY PER BARRAGO AND ASSOCIATES, INC.
DRAWING NO. 23742SD.DWG DATE JUNE 3, 2019
FLUCFCS LINES ESTIMATED FROM 1"-200' AERIAL
PHOTOGRAPHS AND LOCATIONS APPROXIMATED.
FLUCFCS PER FLORIDA LAND USE, COVER AND
FORMS CLASSIFICATION SYSTEM (FLUCFCS)
(FDOT 1999).

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& ASSOCIATES**

VERDANA VILLAGE
INDIGENOUS VEGETATION MAP

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MADET No.	APPENDIX A

APPENDIX B

AERIAL WITH FLUCFCS AND WETLANDS MAP

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LEGEND:

- SPFWD WETLANDS (043.76 Ac.)
- SPFWD "OTHER SURFACE WATERS" (001.27 Ac.)
- SURVEYED WETLAND LINE

FLUCFCS CODES	DESCRIPTIONS	ACREAGE	% OF TOTAL
205	AGRICULTURAL SUPPORT OPERATIONS	5.55 Ac.	0.2%
214	ROW CROPS	418.44 Ac.	18.9%
221	CITRUS GROVE	1181.47 Ac.	54.3%
261	FALLOW CROP LAND	98.31 Ac.	4.5%
4110 E2	PINE FLATWOODS, DISTURBED (25-49% EXOTICS)	14.54 Ac.	0.7%
4110 E3	PINE FLATWOODS, DISTURBED (50-75% EXOTICS)	2.50 Ac.	0.1%
4110 E4	PINE FLATWOODS, DISTURBED (76-100% EXOTICS)	11.15 Ac.	0.5%
4130 E1	PINE, DISTURBED (0-24% EXOTICS)	10.81 Ac.	0.5%
4130 E3	PINE, DISTURBED (50-75% EXOTICS)	0.84 Ac.	0.0%
424	MELALEUCA	0.89 Ac.	0.0%
4241	MELALEUCA, HYDRIC	4.58 Ac.	0.2%
426	TROPICAL HARDWOODS	0.64 Ac.	0.0%
4340 E2	HARDWOOD/CONIFER MIXED, DISTURBED (25-49% EXOTICS)	4.43 Ac.	0.2%
514	DITCH	78.75 Ac.	3.7%
6100 E2	YELLOW, DISTURBED (25-49% EXOTICS)	0.80 Ac.	0.0%
6100 E4	YELLOW, DISTURBED (76-100% EXOTICS)	27.39 Ac.	1.3%
6210 E1	CYPRESS, DISTURBED (0-24% EXOTICS)	8.47 Ac.	0.4%
6210 E2	CYPRESS, DISTURBED (25-49% EXOTICS)	47.70 Ac.	2.2%
6210 E3	CYPRESS, DISTURBED (50-75% EXOTICS)	0.48 Ac.	0.0%
6210 E4	CYPRESS, DISTURBED (76-100% EXOTICS)	12.42 Ac.	0.6%
6245 E3	CYPRESS/PINE, DISTURBED AND DRAINED (50-75% EXOTICS)	3.44 Ac.	0.2%
6249 E1	CYPRESS/PINE/CABBAGE PALM, DISTURBED (0-24% EXOTICS)	4.43 Ac.	0.2%
6249 E2	CYPRESS/PINE/CABBAGE PALM, DISTURBED (25-49% EXOTICS)	8.58 Ac.	0.4%
6249 E3	CYPRESS/PINE/CABBAGE PALM, DISTURBED (50-75% EXOTICS)	8.08 Ac.	0.4%
6249 E4	CYPRESS/PINE/CABBAGE PALM, DISTURBED (76-100% EXOTICS)	2.89 Ac.	0.1%
6259 E1	PINE, HYDRIC, DISTURBED (0-24% EXOTICS)	3.44 Ac.	0.2%
6300 E2	MIXED WETLAND FOREST, DISTURBED (25-49% EXOTICS)	8.42 Ac.	0.4%
6410 E1	FRESHWATER MARSH, DISTURBED (0-24% EXOTICS)	1.84 Ac.	0.1%
6410 E2	FRESHWATER MARSH, DISTURBED (25-49% EXOTICS)	1.79 Ac.	0.1%
740	DISTURBED LAND	33.10 Ac.	1.6%
7401*	DISTURBED LAND, OTHER SURFACE WATERS	22.52 Ac.	1.1%
7401	DISTURBED LAND, HYDRIC	8.23 Ac.	0.4%
747	BORA	60.58 Ac.	3.0%
814	ROAD	4.57 Ac.	0.2%
TOTAL		2136.26 Ac.	100.0%

NOTES:

AERIAL PHOTOGRAPHS PROVIDED BY THE LEE COUNTY PROPERTY APPRAISER'S OFFICE WITH FLIGHT DATES OF JANUARY - FEBRUARY 2019.

FLUCFCS LINES ESTIMATED FROM 1"=200' AERIAL PHOTOGRAPHS AND LOCATIONS APPROXIMATED.

FLUCFCS PER FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM (FLUCFCS) (FDOT 1999).

PROPERTY PER BARRACO AND ASSOCIATES, INC. DRAWING No. 23142500.DWG DATE JUNE 3, 2019.

CAMA9 SURVEYED WETLANDS LINES PER BARRACO AND ASSOCIATES, INC. DRAWING No. 23742500.DWG DATED JUNE 9, 2019.

CAMA9 WETLAND LINES HAVE NOT BEEN REVIEWED BY ANY REGULATORY AGENCY AND ARE SUBJECT TO CHANGE.

PEPPERLAND RANCH SURVEYED WETLAND LINES PER BANKS ENGINEERING DRAWING No. 802-WET-FLAG-LOC-2-13-15.DWG DATED FEBRUARY 18, 2016.

PEPPERLAND RANCH UPLAND/WETLAND LIMITS WERE FIELD REVIEWED AND APPROVED BY SPFWD STAFF ON JULY 27, 2016.

VERDANA SURVEYED WETLAND LINES PER DELISI FITZGERALD, INC. DRAWING No. CORKSCREW GROVES.DWG DATED JANUARY 7, 2016.

VERDANA SURVEYED WETLAND LINES WERE APPROVED BY THE SPFWD ON MAY 18, 2016.

OCT 15 2019

2019-00018

REVISIONS	DATE	DRAWN BY	DATE	13620 Metropolis Avenue Suite 200 Ft. Myers, FL 33912 Phone (239) 274-0067 Fax (239) 274-0069		VERDANA VILLAGE AERIAL WITH FLUCFCS AND WETLANDS MAP	19CCL3043
		D.B.	7/2/19				SHEET No.
		S.J.	7/2/19				APPENDIX B
		SURVEYED BY	DATE				
		S.J.	7/2/19				

APPENDIX C

**LEE COUNTY INDIGENOUS VEGETATION PRESERVATION,
RESTORATION, AND MANAGEMENT PLAN**

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- LEGEND:**
-  INDIGENOUS WETLAND PRESERVE AND ENHANCEMENT (91.27 Ac.±)
 -  INDIGENOUS UPLAND PRESERVE AND ENHANCEMENT (37.45 Ac.±)
 -  INDIGENOUS WETLAND RESTORATION (32.48 Ac.±)
 -  INDIGENOUS UPLAND RESTORATION (10.41 Ac.±)
 -  INDIGENOUS WETLAND RESTORATION FROM AGRICULTURAL LANDS (642.12 Ac.±) *
 -  INDIGENOUS UPLAND RESTORATION FROM AGRICULTURAL LANDS (344.20 Ac.±) *
 -  BUFFER LAKES WITHIN CONSERVATION AREAS (23.57 Ac.±)
 -  SURVEYED WETLAND LINE
 -  FIXED WEIR LOCATION
- 24.5'** CONTROL ELEVATION (TYP.)

NOTES:

PROPERTY BOUNDARY AND SITE PLAN PER J.R.
EVANS, INC. DRAWING No. VERDANA VILLAGE BASE
2019-08-29 2013.DWG DATED AUGUST 29, 2019.

CAMLO SURVEYED WETLANDS LINES PER BARRACO
AND ASSOCIATES, INC. DRAWING No. 23742500.DWG
DATED JUNE 5, 2019.

CANAL WETLAND LINES HAVE NOT BEEN REVIEWED

CANAL WETLAND LINES HAVE NOT BEEN REVIEWED
BY ANY REGULATORY AGENCY AND ARE SUBJECT
TO CHANGE

PEPPERLAND RANCH SURVEYED WETLAND LINES PER
BANKS ENGINEERING DRAWING No. 8112-WET-FLAG-
LOC-2-13-16.DWG DATED FEBRUARY 18, 2016.

PEPPERLAND RANCH UPLAND/WETLAND LIMITS WERE
FIELD REVIEWED AND APPROVED BY SPWMD STAFF
ON JULY 27, 2016.

VERDANA SURVEYED WETLAND LINES PER DELISI
FITZGERALD, INC. DRAWING No. CORKSCREW
GROVES.DWG DATED JANUARY 7, 2016.

VERDANA SURVEYED WETLAND LINES WERE APPROVED BY THE SFWMD ON MAY 18, 2016.

GRADING CONTOURS AND LEVEL AT EXCAVATION ARE
SUBJECT TO CHANGE PENDING APPROVAL OF CPA201
00000.

* THE FINAL ACREAGES ASSOCIATED WITH THE UPLAND AND WETLAND RESTORATION FROM AGRICULTURAL LANDS WILL BE DETERMINED AT THE TIME OF DEVELOPMENT ORDER.

DCI 2019-00018

COMMUNITY DEVELOPMENT

Revised
OCT 15 2019

REVISIONS	DATE	DRAWN BY	DATE
New site plan	8/22/19	D.B.	7/2/19
		DESIGNED BY	DATE
New site plan	8/29/19	S.J.	7/2/19
		REVIEWED BY	DATE
		S.J.	7/2/19

13620 Metropolis Avenue
Suite 200
Ft. Myers, FL 33912
Phone (239) 274-0067
Fax (239) 274-0069



VERDANA VILLAGE
LEE COUNTY INDIGENOUS VEGETATION
PRESERVATION, RESTORATION, AND MANAGEMENT PLAN

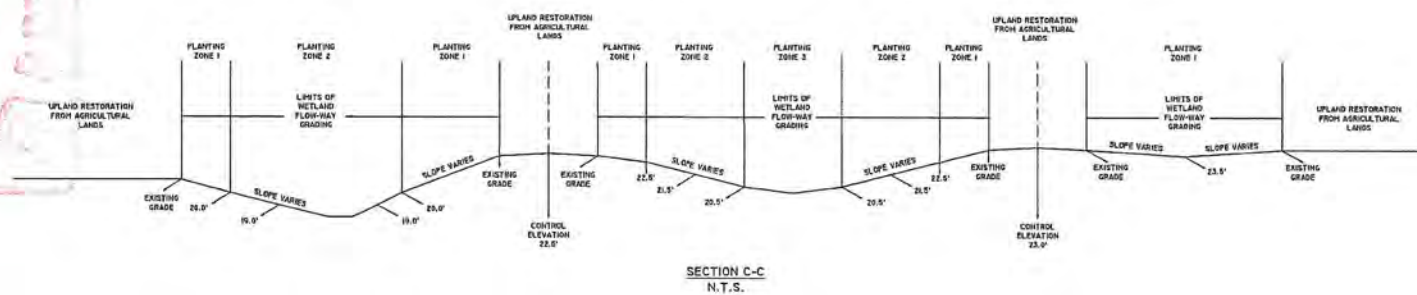
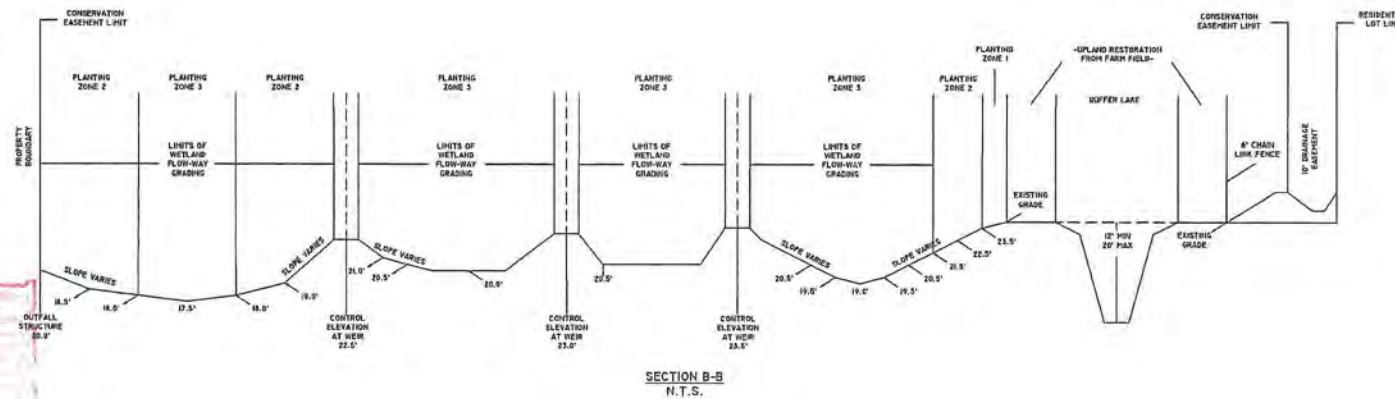
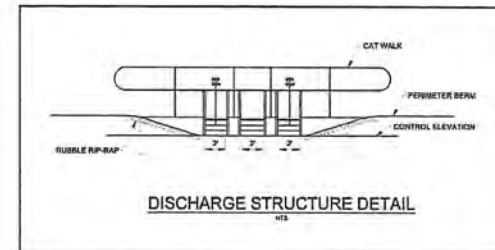
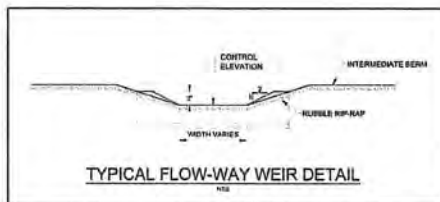
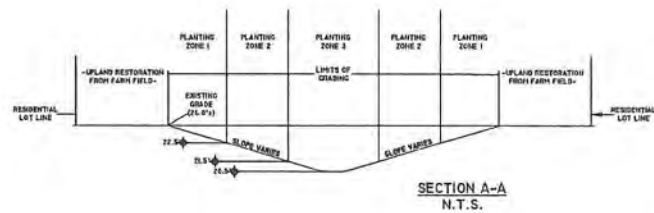
DRAWING No.	19CCL3043
SHEET No.	APPENDIX C

APPENDIX D
TYPICAL SECTIONS

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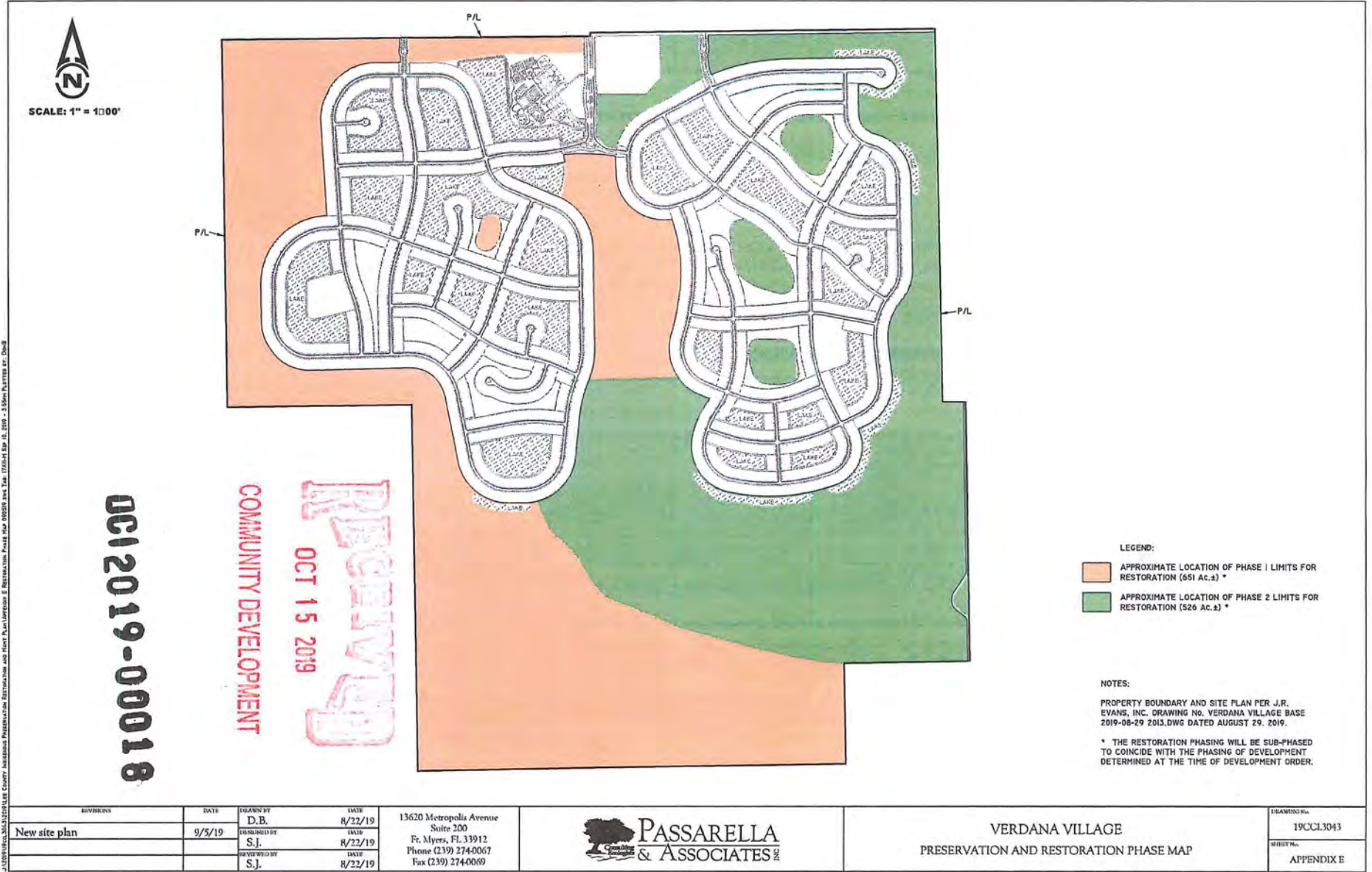
REVISIONS	DATE	DESIGNED BY	CHECKED BY	DATE	13620 Metropolis Avenue Suite 200 Fr. Myers, FL 33912 Phone (239) 274-0067 Fax (239) 274-0069	 PASSARELLA & ASSOCIATES	VERDNA VILLAGE TYPICAL SECTIONS	DRAWING NO.
New details	9/3/19	R.P.	S.J.	8/22/19				19CCL3043
		S.J.	S.J.	8/22/19				SHEET 25a
		S.J.	S.J.	8/22/19				APPENDIX D

APPENDIX E
RESTORATION PHASE MAP

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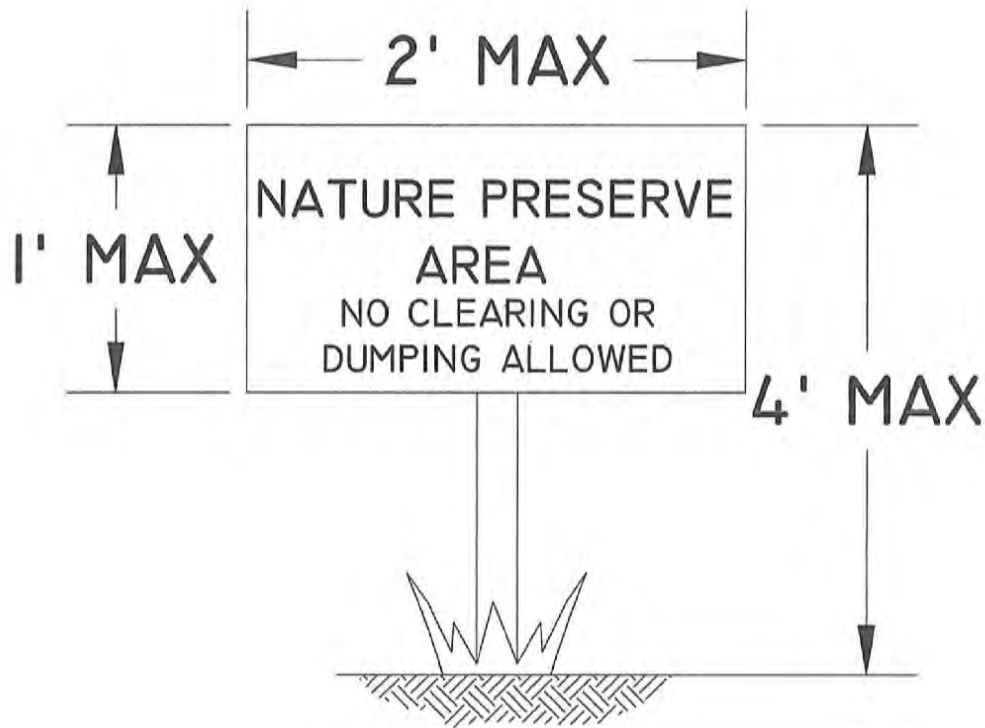
DCI2019-00018



APPENDIX F
TYPICAL PRESERVE SIGNAGE

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**TYPICAL
PRESERVE SIGNAGE**
N.T.S.

RECEIVED
OCT 15 2019

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OC12019-00018

APPENDIX F. TYPICAL PRESERVE SIGNAGE
VERDANA VILLAGE

DRAWN BY	DATE
D.B.	6/27/19
REVIEWED BY	DATE
S.J.	6/27/19
REVISED	DATE



**PASSARELLA
& ASSOCIATES INC.**

Submitted via CD on 11-27-19 / DCI2019-00018

Verdana Village MPD

DCI2019-00018

Hydrological Restoration Plan



Prepared for:

CAM Village Development, LLC
4954 Royal Gulf Circle
Fort Myers, FL 33966

Prepared By:

J.R. Evans Engineering, P.A.
9351 Corkscrew Road, Ste. 102
Estero, FL 33928

November 2019

Submitted via CD on 11-27-19 / DCI2019-00018

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APPENDIX C - Existing Conditions ICPR4 1D Input Reports

APPENDIX D - Existing Conditions ICPR4 1D Output Reports

APPENDIX E – Offsite Inflows per Preliminary Results of Lee County Flood Mitigation Study

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APPENDIX F - Proposed Conditions ICPR4 1D Nodal Diagram

APPENDIX G - Proposed Conditions ICPR4 1D Input Reports

APPENDIX H - Proposed Conditions ICPR4 1D Output Reports

APPENDIX I - Proposed Conditions ICPR4 2D Nodal Diagram

APPENDIX J - Proposed Conditions ICPR4 2D Input Reports

APPENDIX K - Proposed Conditions ICPR4 2D Output Reports

APPENDIX L - Exhibit of Hydraulic Connections and Outfall Control Structure

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Verdana Village Hydrological Restoration Plan

Project Narrative and Analysis Description

1. Property Location and Description

Verdana Village is a proposed 2,138-acre property located along Corkscrew Road approximately 3 miles east of the intersection of Corkscrew Road, and Alico Road, in Lee County, Florida. At build out, the project will consist of residential homes, amenity centers, a commercial area, and supporting infrastructure. The subject parcels are composed primarily of existing agricultural lands. Approximately 1,067 acres will be restored to a natural upland/wetland preserve. The property is bordered on the north by Corkscrew Road, on the east and west by agriculturally zoned property and local roadways, and to the south by conservation lands, known as the Panther Island Mitigation Bank (PIMB). As a requirement of the project's MPD zoning application (DCI2019-00018) and to provide consistency with Lee Plan Policies, the project must be designed to provide a plan that includes basins to reconnect historic hydraulic flow-ways. Per the Lee Plan, the project must demonstrate that potential impacts on surface and groundwater resources have been analyzed utilizing an integrated surface and groundwater model with site-specific data.

The proposed project also involves a Comprehensive Plan Amendment (CPA2019-00008) to incorporate a commercial use within the project and additional density based upon additional regional benefits provided by the project's improvements. These additional regional-scale benefits include hydraulic connections at the northwest corner, near the middle of the project's north property line, and a third hydraulic connection to the eastern side of the project. The improvements also involve upgrading the internal flow-way basin weirs within the project to accommodate the potential for a significant amount of off-site inflow from the three (3) hydraulic connections. These improvements will also provide additional flood storage to accommodate two (2) sequential 100-year, 3-day storms with a 15 day lag between the beginning of each storm. This event was chosen as the design criteria to emulate and provide storage for events similar to INVEST 92L and the closely following Hurricane Irma seen in late 2017. Additionally, the project will be designed to pass through flows anticipated within the preliminary results of a Lee County flood mitigation study, which total 650 cfs. A copy of the preliminary results can be seen within Appendix E of this report.

This detailed analysis for the proposed flow-way system considers the approval of the pending CPA2019-00008 and incorporates these hydraulic connections, which is further discussed in the following sections of this report. Should CPA2019-00008 not be approved, it should be noted that the hydraulic connections will not be provided as part of the project, and as such, a revised analysis would need to be completed. It should be noted that based on discussions with the Owner and Lee County Staff, it is understood that there will be some level of operability necessary over time for the system, and modifications can be completed as deemed necessary by Lee County. In order to evaluate the proposed hydrologic and hydraulic conditions of the flow-way restoration areas and the proposed design for those areas, the following model scenario analyses were conducted:

➤ Existing Conditions Hydrologic/Hydraulic 1D Model:

The purpose of this model is to determine the magnitude of surface water flow discharging off the agricultural properties to the current outfall locations (based on limited available data of the existing conditions, permits, etc.). The existing model is

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executed utilizing the Interconnected Channel and Pond Routing (version 4.05.02), (ICPR4) (1D) software and simulates the following design storms:

- 25-Year, 3-Day
- 100 Year, 3 -Day
- Sequential Two (2) 100-Year, 3-Day Events with 15-day interval between start of each storm

➤ **Proposed Conditions Hydrologic/Hydraulic 1D Model- Design Storms with and without Offsite Flows:**

The purpose of this model is to determine the magnitude of surface water storage capacity and flow discharging from the project's proposed flow-way system to the specified outfall towards the south and Panther Island Mitigation Lands. The design storms are executed in three (3) sets, one incorporating smaller estimated flows that may exist today, another including flows anticipated within preliminary results of a Lee County flood mitigation study, and the other not incorporating off-site flows. This version of the Proposed Conditions model is executed utilizing the ICPR4 (1D) software and simulates the following design storms:

- 25-Year, 3-Day
- 100 Year, 3 -Day
- Sequential Two (2) 100-Year, 3-Day Events with 15-day interval between start of each storm

It should be noted that, per discussion with the Lee County Department of Natural Resources, the scenario including preliminary flows from the Lee County flood mitigation study will only be included during the 25-year, 3-day storm scenario.

➤ **Proposed Conditions Hydrologic/Hydraulic 2D Integrated Surface Water and Groundwater Model – Extreme Dry Season (2009):**

The purpose of this model is to simulate a continuous scenario of an extreme dry season with the proposed flow-way system interacting with the groundwater table and irrigation demands (within the project boundary only). The results of this analysis provide the relationship between the proposed flow-way surface water storage and the groundwater influences/uses during an extreme dry season.

➤ **Proposed Conditions Hydrologic/Hydraulic 2D Integrated Surface Water and Groundwater Model – Typical Wet Season (2013):**

The purpose of this model is to simulate a continuous scenario of a typical wet season with the proposed flow-way system interacting with the groundwater table and irrigation demands (within the project boundary only). The results of this analysis provide the relationship between the proposed flow-way surface water storage and the groundwater influences/uses during a typical wet season.

The following sections of this report provide details of each of the analyses and a summary of the results.

2. **Description of Model Software and Hydraulic/Hydrologic Parameters (All Model Scenarios)**

The software utilized to create the hydrologic and hydraulic models is Interconnected Channel and Pond Routing (version 4.03.02), known as ICPR4. ICPR4 is a fully integrated 1D/2D surface

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and groundwater model platform. ICPR is a widely used and accepted modeling platform throughout Florida for simulating hydrologic and hydraulic analyses and similar studies. The ICPR4 platform is also integrated with GIS (Graphical Information System) data so that the model is properly geo-referenced and can be easily updated with new data as it becomes available. The ICPR4 is not limited with the number of model elements and is therefore well suited to utilize for a detailed model of the existing and proposed infrastructure system within the Verdana Village project boundaries.

2.1. Topographic Data/Terrain Data

The first parameter to review is the topographic data available and used for the modeling study. For the Existing Conditions model, the latest LiDAR data for Lee, Collier and Hendry Counties was obtained from the South Florida Water Management District (SFWMD) database. The new data was incorporated into the ICPR4 model using a 1 foot x 1 foot cell size for topographic sampling. The elevations range from 27 FT NAVD in the northeastern portion of study area to 22 FT NAVD at the southwest side of the model study area. Map 2-1 depicts a graphical view of the digital elevation model (DEM) generated from the LiDAR data. The resolution for the DEM to support the Existing Conditions ICPR4 model is detailed enough to provide 0.5 ft contours meeting acceptable accuracy thresholds.

For the Proposed Conditions models, the proposed grading for the flow-way basins were utilized along with the preliminary grading for the development pods, including the internal lake excavation areas and detention areas within the development pods. The grading plan for the flow-way basins is depicted within Appendix A "Excavation and Grading Plan" of this report.

2.2. Land Use/Land Cover Data

At the present, Verdana Village Existing Conditions drainage basin is comprised of mostly agricultural fields and facilities. The property does contain isolated forested wetland and indigenous areas which were included with the land use calculations and determination of curve numbers (CNs). Overall, the total Existing Conditions basin contains homogeneous land use/land cover.

For the Proposed Conditions ICPR models, the land use/land cover data file was defined by the proposed land use based upon the Master Concept Plan for the Verdana Village MDP. The land use/land cover categories include: Residential, Commercial, Right-of-Way, Wetlands, Lake, and Uplands.

2.3. Soil Data

In addition to the Land Use/Land Cover, the most recent available soil data was obtained for the study area. The soil data source is the National Resources and Conservation Services (NRCS), dated August 2019. The soil data was processed as needed to be properly incorporated into the Existing Conditions and Proposed Conditions ICPR model and result in a better evaluation of run-off characteristics for basin areas. This information shows that the predominant soils in the area are Immokalee Sand, Valkaria Fine Sand, Oldsmar Sand, each of which falls into the A/D or B/D hydrologic soil group classification.

The 2D Continuous Simulation model scenarios used soil parameters averaged between the three most predominant soils, Immokalee Sand, Valkaria Fine Sand and Oldsmar Sand.

2.4. Runoff Curve Number

Another parameter specific to the basins is the run-off curve number, known as the CN. The curve number method is a simple, widely used and efficient method for determining the approximate amount of runoff from a rainfall event in a particular area. Determination of

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the CN depends on the watershed's soil and land cover conditions, which the model represents as hydrologic soil group, cover type, treatment, and hydrologic condition.

For the Verdana Village Existing/Proposed Conditions ICPR4 1D model, all the different combinations of land use/land cover and soil types were tabulated with a CN assigned to each combination. As the sub-basins were processed in ICPR4, the program uses the CN table and calculates a composite CN specific to each sub-basin depending on the specific land cover and soil types contained in the basin area. Therefore, the determination of the runoff CN value is more detailed with less assumptions or generalizations. The following Table 2-1 and Table 2-2 provide the defined CN for each of the land cover/soil types contained within the Existing and Proposed Conditions ICPR4 ID models.

For the Verdana Village Proposed Conditions ICPR4 2D integrated model, the rainfall excess method is the Green-Ampt method, which uses the average soil parameters (saturated conductivity, density, bubbling pressure, etc.) and the Land Cover/Land Use defined within each basin. Therefore, a direct CN is not produced for the development pod or flow-way basins in the 2D integrated model.

Table 2-1: CN Table for Existing Conditions ICPR4 ID

CN Table for Existing Conditions ICPR4		
Land Cover Zone	Soil Zone	Curve Number
Grass	A/D	80
Grass	B/D	80
Grass	D	80
Woods (Good)	A/D	77
Woods (Good)	B/D	77
Woods (Good)	D	77
Woods (Fair)	A/D	83
Woods (Fair)	B/D	83
Woods (Fair)	D	83
Ditch	A/D	98
Ditch	B/D	98
Ditch	D	98
Wetlands	A/D	98
Wetlands	B/D	98
Wetlands	D	98
Row Crops	A/D	91
Row Crops	B/D	91
Row Crops	D	91

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Table 2-2: CN Table for Proposed Conditions ICPR4 1D

CN Table for Proposed Conditions ICPR4 1D		
Land Cover Zone	Soil Zone	Curve Number
Uplands	A/D	83
Uplands	B/D	83
Uplands	D	83
Water	A/D	100
Water	B/D	100
Water	D	100
Proposed Wetlands	A/D	98
Proposed Wetlands	B/D	98
Proposed Wetlands	D	98
Wetlands	A/D	98
Wetlands	B/D	98
Wetlands	D	98

2.5. Time of Concentration (Tc)

Another parameter to review for the study area is the Time of Concentration, Tc. Time of concentration (Tc) is the time required for runoff to travel from the hydraulically most distant point in the watershed to the outlet. Time of concentration will vary depending upon slope and character of the watershed and the flow path.

For the Existing Conditions model, an average Tc of 15 minutes was utilized since the sub-basins are comprised of agriculture fields with numerous ditches and swales. The travel time for a point of runoff to one of the ditches or swales is minimal due to the channelized nature of the conveyance.

Within the Proposed Conditions models, for the development area sub-basins, the Tc defined based upon the sub-basin characteristics. For the proposed flow-way system sub-basins, a unique time of concentration was calculated for each of those sub-basins. Time of concentration was calculated as the duration required for the most hydraulically isolated runoff within each sub-basin to reach the outfall location for that basin. Three components of time of concentration were estimated and summed to form the time of concentrations; the duration of sheet flow, shallow concentrated flow and channel flow. Equations from the Technical Report 55 (TR-55) were utilized to calculate the three components of time of concentration.

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A maximum length of 300 feet of sheet flow was assumed for each applicable sub-basin, per the TR-55 and the time of sheet flow was calculated using the following equation from the TR-55:

$$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}} \quad [\text{eq. 3-3}]$$

where:

- T_t = travel time (hr),
- n = Manning's roughness coefficient (table 3-1)
- L = flow length (ft)
- P_2 = 2-year, 24-hour rainfall (in)
- s = slope of hydraulic grade line
(land slope, ft/ft)

Source: NRCS TR-55: CHAPTER 3 Time of Concentration and Travel Time

Shallow concentrated flow travel lengths were based on the projected distance to the sub-basin outfall location, starting from the point at which runoff transitioned from sheet flow to shallow concentrated flow. Specific travel lengths of shallow concentrated flow were calculated for each of the applicable sub-basins. The following equation and figure from the TR-55 was utilized to calculate the shallow concentrated flow travel time:

$$T_t = \frac{L}{3600V} \quad [\text{eq. 3-1}]$$

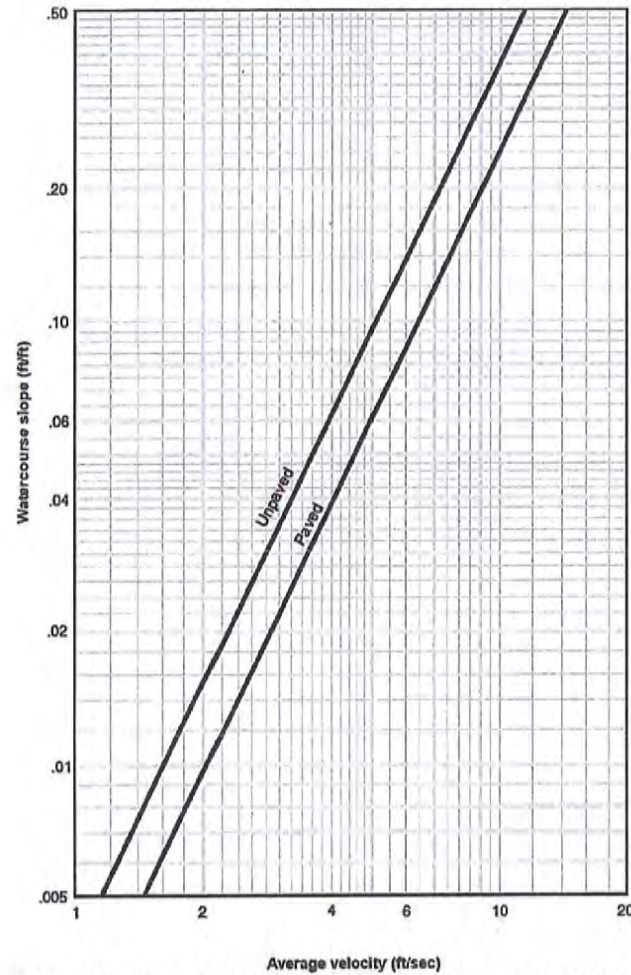
where:

- T_t = travel time (hr)
- L = flow length (ft)
- V = average velocity (ft/s)
- 3600 = conversion factor from seconds to hours.

Source: NRCS TR-55: CHAPTER 3 Time of Concentration and Travel Time

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Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow



Source: NRCS TR-55: CHAPTER 3 Time of Concentration and Travel Time

Any channelized flow for a sub-basin was assumed to begin at the point at which surface flow may enter a channel prior to reaching the outfall location for the sub-basin. The following equations from the TR-55 were utilized to calculate the channel flow travel time:

$$T_t = \frac{L}{3600V} \quad [\text{eq. 3-1}]$$

where:

T_t = travel time (hr)

L = flow length (ft)

V = average velocity (ft/s)

3600 = conversion factor from seconds to hours.

Source: NRCS TR-55: CHAPTER 3 Time of Concentration and Travel Time

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$$V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n} \quad [\text{eq. 3-4}]$$

where:

V = average velocity (ft/s)
r = hydraulic radius (ft) and is equal to a/p_w
a = cross sectional flow area (ft²)
p_w = wetted perimeter (ft)
s = slope of the hydraulic grade line (channel slope, ft/ft)
n = Manning's roughness coefficient for open channel flow.

Source: NRCS TR-55: CHAPTER 3 Time of Concentration and Travel Time

2.6. Rainfall Data and Design Storms

Precipitation depths for the 25- and 100-year design storm events were obtained specifically for the subject watershed area using the South Florida Water Management District's (SFWMD) Applicant's Handbook and applicable Isohyet Curves. The rainfall distribution applied to the entire model domain was as defined in the SFWMD Applicants Handbook. The design storm rainfall amounts are depicted in the following Table 2-3.

Table 2-3: Rainfall Data per Design Storm

Design Storm Interval	Rainfall Depth (inches)
25-Year, 3-Day	10.0
100-Year, 3 Day	12.3

For the Proposed Conditions continuous model (1D and 2D) scenarios, daily NEXRAD rainfall data was obtained from SFWMD for the year 2009 for the extreme dry season and for the year January 2013 to December 2013 for the typical wet season. In addition, Daily reference ET (RET) data was obtained from SFWMD from the years 2009 and 2013 and processed for utilization within the 2D model.

3. Verdana Village: Existing Conditions Analysis

As previously mentioned, the specific property is comprised of existing agricultural farmlands. The farms include numerous agricultural fields with dividing berms and irrigation ditches. There are berms along all the property's perimeters with a system of parallel ditches along the perimeter. The gradient of the property's surface generally runs northeast to southwest with a five (5) foot difference in average surface elevations.

It should be noted that the existing conditions analysis for the project is based on limited data provided by the developer, field reconnaissance and available permitting files at the time of this analysis. It should be understood that reported conditions are only estimates based on this limited data and based on the models as described within and/or included with this report.

Utilizing 2007 Florida Department of Emergency Management (FDEM) LiDAR (NAVD 88), field survey data, current 2019 aerial photography, limited on-site observations, and SFWMD permit

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files, the existing property was delineated into apparent sub-basins. The contour interval used of the 2007 LIDAR data for the delineation is at a 0.5-foot interval. A total of 64 sub-basins were generated as a result of the delineation.

Once the sub-basins were defined, the hydrologic characteristics of each basin were defined and quantified, including the land use/land cover, hydrologic soil type, curve number (CN), Manning's roughness factor, time of concentration, and surface storage capacity. Once all of the parameters were estimated, the rainfall-runoff model for each sub-basin was created using the Interconnected Pond Routing (ICPR4) software.

3.1. ICPR4 Modeling

The Interconnected Pond Routing Model (ICPR4) software was utilized to perform the hydrologic analysis of Verdana Village Existing Conditions drainage basin. The modeled rainfall intervals include the 25-year, 3-day; 100-year, 3-day; and sequential 100-year, 3-day events with a 15-day lag time between the start of each event. Each of the sixty-four (64) sub-basins were modeled as a separate node, and were characterized by their determined properties: area, composite curve number, and time of concentration. Analyzing the topographic data, it was determined that the sub-basins had areas of runoff storage, due to the existing berms and agricultural ditches. The AutoCAD Civil 3D software was utilized to calculate the volume of storage at specific elevations. The stage-storage volumes were input into the basin characteristics for the sub-basins. Figure 3-1 provides a graphic of the digital elevation model (DEM) utilized for the Existing Conditions analysis.

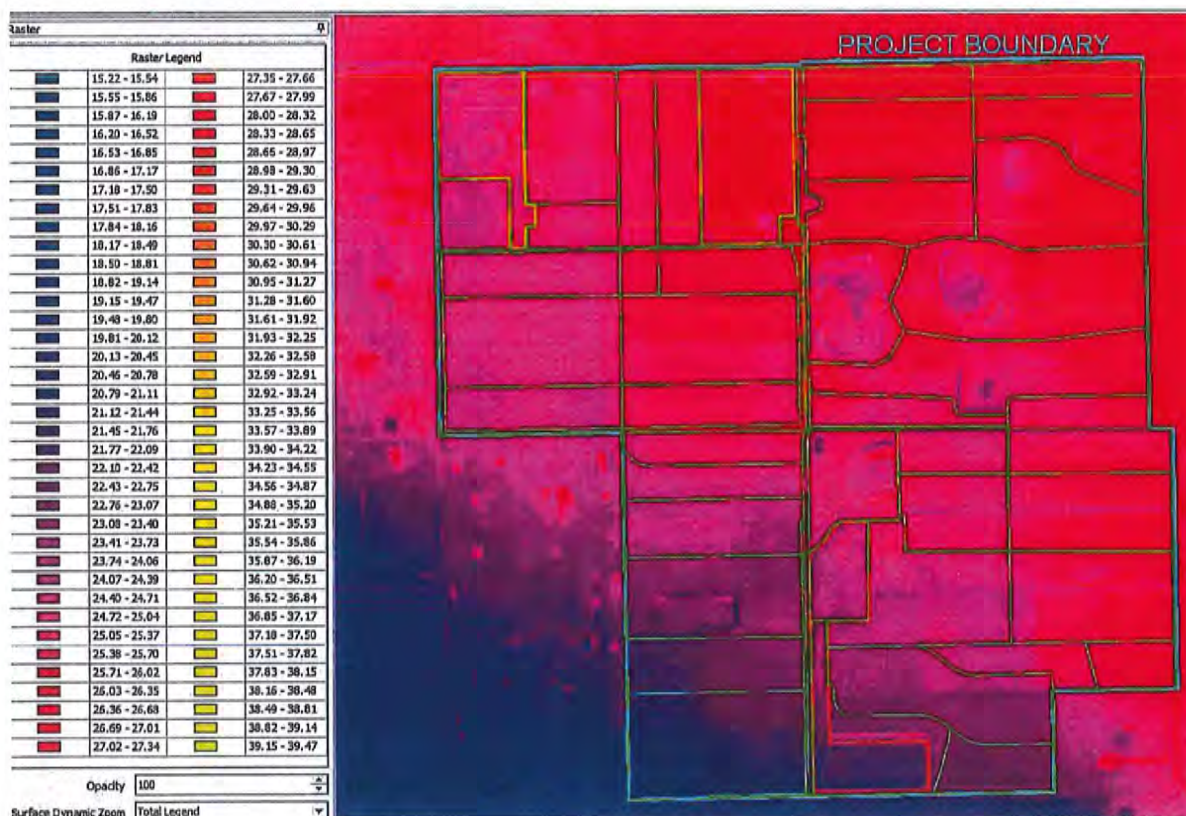


Figure 3-1: DEM for Existing Conditions ICPR 4 1D, NAVD 88

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To further analyze the hydrologic conditions of the existing conditions sub-basins, routing was incorporated into the ICPR4 model. The previous SFWMD permit files for the existing agriculture farms were reviewed and used to establish the hydraulic network between the sub-basins. Field reconnaissance was also conducted to verify portions of the hydraulic network. Figure 3-2 and Figure 3-3 provide depictions of the ICPR4 1D network (North and south portions of the overall property).

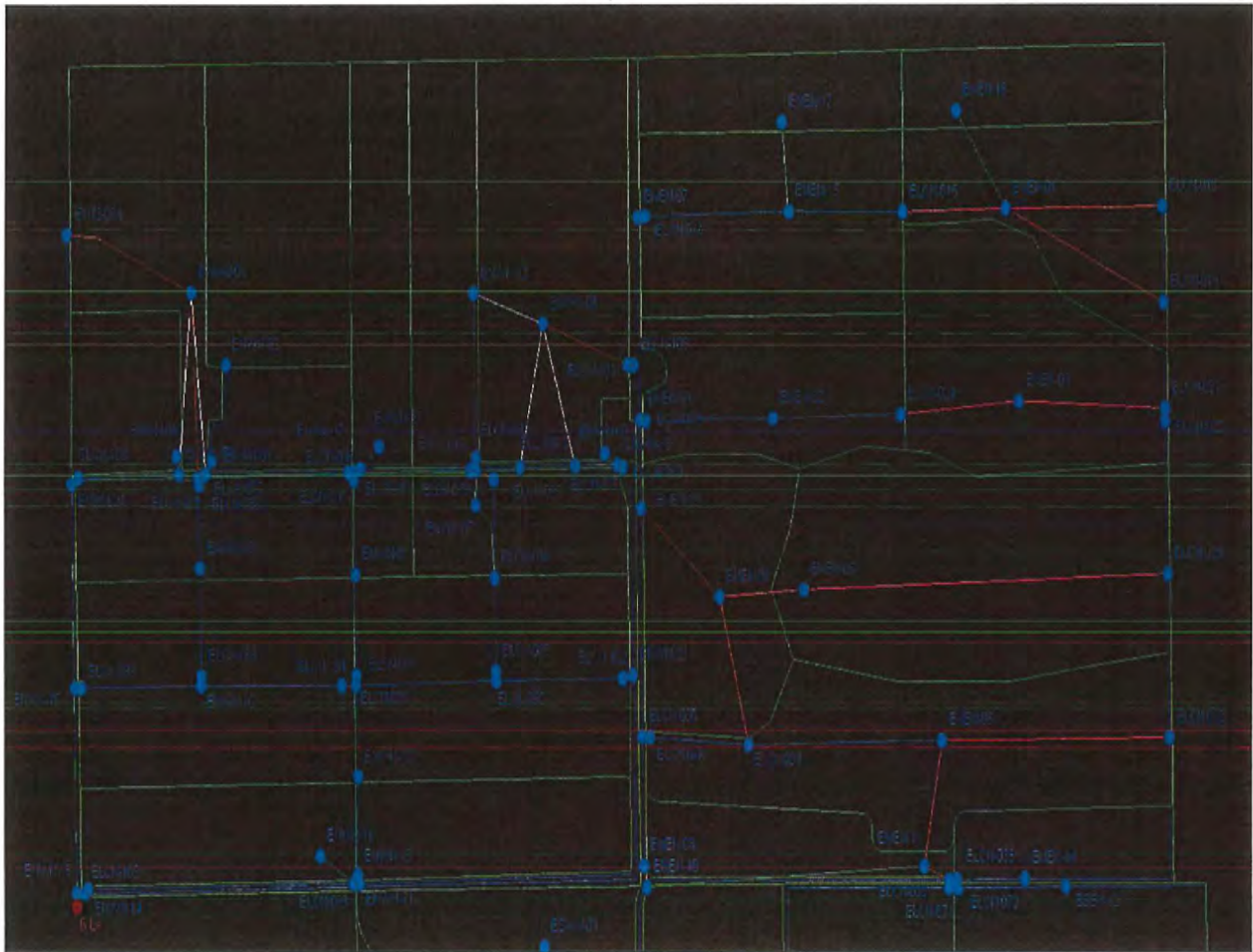


Figure 3-2: ICPR4 1D Network for Existing Conditions, North

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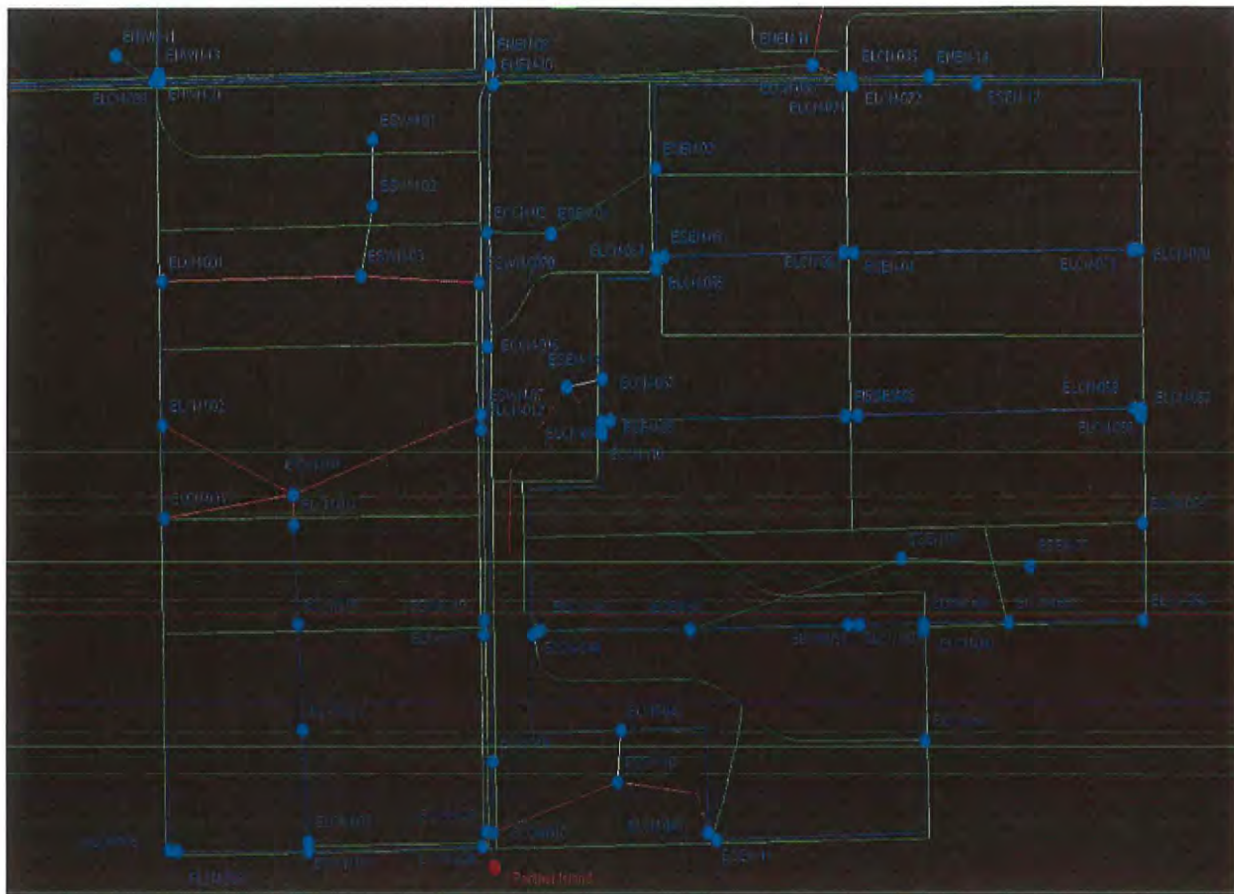


Figure 3-3: ICPR4 1D Network for Existing Conditions, South

3.2. Outfall Tailwater Conditions

The Existing Conditions model includes two (2) off-site discharge locations. One is located at the southern boundary at the midpoint of the property, representing a direct canal connection from the farm areas to the Panther Island Mitigation Bank (PIMB) lands. The second outfall is located along Six L's Road, along the western property line.

The boundary nodes for each outfall were set as Time/Stage nodes. The boundary node for the outfall to Six L's roadway was set based on limited existing topographic data for the roadway and swale system. The time/stage relationship for boundary node for the outfall to the PIMB lands to the south of the property was established based upon available monitoring well data for wells located within the PIMB lands. The time/stage relationship for the PIMB outfall remains consistent in the Proposed Conditions model.

3.3. ICPR 1D Modeling Results

Based on the modeling for the existing conditions sub-basins of the Verdana Village property, the potential peak discharge rate reaching the Panther Island Mitigation Bank

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during the design storm (25-year, 3-day) was determined to be 154 CFS. The maximum discharge within the proposed conditions design is limited to this amount, and the focus was shifted to metering the water release to downstream lands, providing more consistent water levels year-round, rather than the more sudden changes in stage.

Per the model, during the 100-year, 3-day event, a peak rate of 171 CFS potentially discharges to Panther Island Mitigation Bank. Provided below is Table 3-1 outlining the discharge results per design storm and per outfall for the Existing Conditions Model.

Table 3-1: Existing Conditions Model Discharge Results

Design Storm Interval	Six L's Outfall Peak Discharge (cfs)	PIMB Outfall Peak Discharge (cfs)
25-Year, 3-Day	30	154
100-Year, 3-Day	32	171
100-Year, 3 Day, Sequential	32	171

The actual peak discharge from the existing property may vary substantially from the modeled conditions, due to the limited nature of available data for analysis. In addition, the capacity of the downstream conveyance system must be a considered factor when evaluating and estimating the existing flows leaving the property.

Therefore, the approach to analyzing the proposed conditions for the projects flow-way areas has been established with the intent to provide a range of possible scenarios for flow conditions within and off the project site. The proposed scenarios will include options for controlling flows via control structure operability, so that there is the availability to operate the system to provide for flow regulation, as well as to retain water on site, providing downstream flood protection and longer hydroperiods both within the Project boundary and properties located downstream. The model nodal diagram, input and output reports for the Existing Conditions Model are included as Appendix B, C, and D of this report.

4. Historic Verdana Village Flow-way Conditions Analyses

At the request of the Lee County Department of Natural Resources (DNR), a historic analysis was done to estimate the amount of flow that historically made its way through to the subject property boundary. Per Lee County DNR request, the study was to be based upon 1944 aerial photography, and the 25-year 3-day storm event was chosen for the analysis.

4.1. Historic Model Approach and Input

The first step taken for the analysis was to obtain the 1944 aerials for the analysis area. These aerials were aligned and scaled using AutoCAD and served as the basis for estimating flow pathways and watershed boundaries. The conglomerate aerial was then analyzed, and sub-basin boundaries were determined. Generally, sub-basin boundaries were chosen based upon lighter (higher ground) areas depicted within the aerials, with State Road 82 acting as the most upstream boundary of the specific watershed or overall basin. This task resulted in a total of two primary basins, and a total of eleven sub-basins. Following this delineation, other hydrologic/hydraulic parameters were determined and entered into the ICPR 4 model. A figure depicting the basin delineation can be seen below in Figure 4-1.

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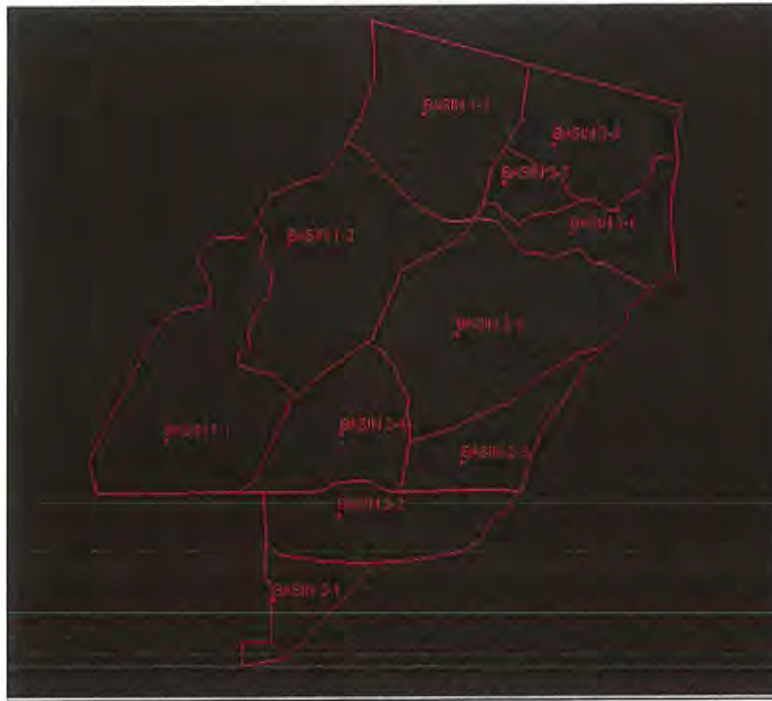


Figure 4-1: Historic Model Basin Delineation 1

4.2. Topographic Data/Terrain Data

Following the task of basin delineation, elevation data was obtained. Unfortunately, topographic data was not available from the 1940s, so the 1958 USGS Topographic Maps were utilized as a starting point for elevation data. These maps were digitized, and the respective topographic data was entered the surface model created to estimate storage capacity within the individual sub-basins, which was utilized in the ICPR4 analysis. In order to supplement the limited and undetailed 1958 USGS topographic maps, lands within the study area that have not been altered since the historic conditions were identified. Within these areas, 2007 FDEM LiDAR data was obtained and placed into the surface model, and a combined surface was generated incorporating both topographic data sources. A figure showing the created Digital Elevation Model (DEM) can be seen in Figure 4-2 below, with brown areas representing higher ground and green areas representing lower ground.

4.3. Land Cover/Land Use Data

During the study period, the subject area was comprised almost entirely of natural areas. Given the lack of records regarding specific wetland and upland types, the land uses were generalized as upland and wetland areas. Generally, lighter areas near the basin boundaries were determined to be uplands, and darker areas were determined to be wetlands. The respective areas were assigned, and a map layer was generated.

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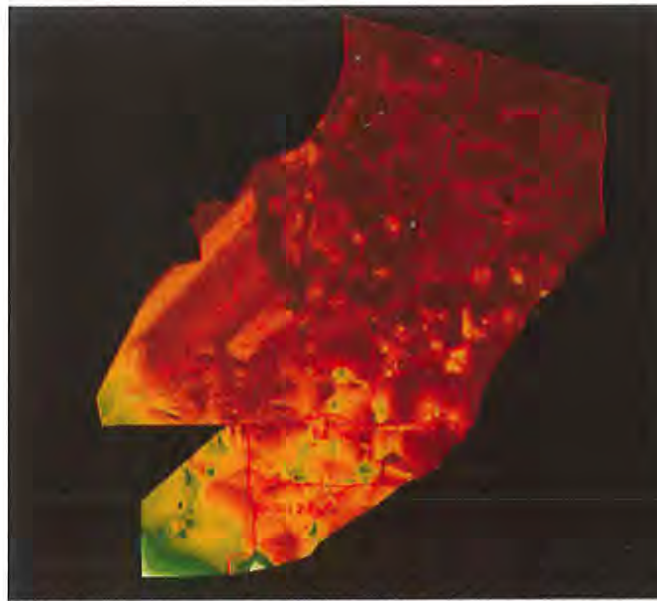


Figure 4-2: Historic Model Digital Elevation Model (DEM)

4.4. Soil Data

In addition to the Land Use/Land Cover, the most recent available soil data was obtained for the study area. The soil data source is the National Resources and Conservation Services (NRCS), dated August 2019. The soil data was processed as needed to be properly incorporated into the Historic Conditions ICPR4 1D model and result in a better evaluation of run-off characteristics for the sub-basin areas.

4.5. Runoff Curve Number

Another parameter specific to the basins is the run-off curve number, known as the CN. The curve number method is a simple, widely used and efficient method for determining the approximate amount of runoff from a rainfall event in a particular area. Determination of the CN depends on the watershed's soil and land cover conditions, which the model represents as hydrologic soil group, cover type, treatment, and hydrologic condition. For the Historic Flows Analysis ICPR4 1D model, all the different combinations of land use/land cover and soil types were tabulated with a CN assigned to each combination. As the sub-basins were processed in ICPR4, the program uses the CN table and calculates a composite CN specific to each sub-basin depending on the specific land cover and soil types contained in the basin area. Therefore, the determination of the runoff CN value is more detailed with less assumptions or generalizing.

4.6. Historic Flows Analysis ICPR4 Results and Discussion

The intent of the historic model was to evaluate the amount of flow that the subject site may have encountered in 1944, before the introduction of agricultural development within the area. The model resulted in a total flow of 1,800 cfs coming to the northern and eastern perimeters of the Verdana Village property during the 25-year, 3-day design storm. Consistent with the Lee County DNR discussion, these flows were split and input into the

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proposed development ICPR4 model and the location of the three (3) proposed hydraulic connection points.

The model was executed with these flows and it was determined that the impacts to the development were too great, and that accommodation of these level of flows was unfeasible due to internal flow-way basins water levels rising higher than surrounding area topography would allow. Following the presentation of these results to Lee County DNR, it was determined that the off-site inflows would be adjusted to be consistent with the values presented within the preliminary Lee County Flood Mitigation Study. Information regarding these flows and the ultimate design model scenario is located within Section 5 of this report.

5. Proposed Verdana Village Flow-way Conditions Analyses

The proposed flow-way restoration plan depicts two (2) distinct flow-way areas. One is located along the western side of the property, and the other is located along the eastern side of the property. Within the middle of the Verdana Village property, there is another flow-way system delineated which will converge with the western and eastern flow-way systems at the southern portion of the property. These flow-ways are designed and graded to provide areas of water storage and surface water flow to the south, where flows will converge upon a singular discharge point on the southern boundary of the project, where controlled discharge will enter the Panther Island Mitigation Bank lands. In addition to providing conveyance, the flow-way areas include individual basins designed to restore and/or maintain the hydroperiod for wetlands within these detention basins. As surface water stages increase in the individual flow-way detention basins, an intermediate weir will be overtopped on the downstream end, allowing conveyance and hydration of the next downstream flow-way basin. To further hydrate the flow-way areas, the proposed development basins will discharge properly treated surface water runoff via control structures to the flow-way basins.

The initial step in the analysis involved defining sub-basins within the flow-way areas based on the varying wet season water table elevations (control elevations) throughout the project site. Each sub-basin represents individual water storage and ponding areas with a control elevation determined through collected well data and wetland markers within the numerous existing wetlands. For the western flow-way, the sub-basins are defined as W1 through W5, for the east flow-way, the basins are defined as E1 through E6, and for the middle flow-way, the basins are defined as M1 through M3. The most southern flow-way basin is defined as S1.

Once the flow-way sub-basins were delineated, the hydrologic characteristics of each basin was defined and quantified, including the land use/land cover, soil type, manning's roughness factor, and surface storage capacity. For this modeling effort, both the 1D and 2D model scenarios were executed for the Proposed Conditions. For the 2D Integrated model, the additional groundwater elements and parameters are described below.

In order to be consistent with the Lee Plan Policy and demonstrate that the impacts to the County's natural and water resources have been adequately evaluated, the 2D model was established to consider both the surface water components and the groundwater components.

The 2D groundwater parameters obtained/defined for this study include the following:

- Soil Properties and Coefficients:
 - Fillable Porosity below Ground
 - Average Conductivity

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- Average Permeability
- Kv Saturated
- MC Residual
- MC Initial
- MC Field
- Mc Wilting
- Pore Size Index
- Bubble Pressure
- WT Initial
- Leakance (per day)
- Wet Season Groundwater Table (Gathered 2016 Data from On-site Wells)
- Dry Season Groundwater Table (Gathered 2016 Data from On-site Wells)
- Crop Coefficients and Anticipated Irrigation Rates per Land Use
- Surficial Aquifer Confining Layer Depth
- Recharge Well Values

Once these inputs were defined, they were entered in the ICPR4 software to determine the behavior of the project under the different scenarios.

5.1. Proposed Conditions ICPR4 1D Modeling

The ICPR4 software was utilized to perform the 1D hydrologic and hydraulic analysis of the Verdana Village Proposed Flow-way Conditions basins. The modeled rainfall intervals include the 25-year, 3-day; 100-year, 3-day; and sequential 100-year, 3-day events (with a 15-day lag time between the start of each event). A one (1) year-long simulations was also modeled based on recorded data (NEXRAD) available through the SFWMD, consisting of daily rainfall and values. The one year-long simulation modeled was the year 2013, which is representative of a typical wet year. Each of the flow-way sub-basins were modeled as a separate node and were characterized by their determined properties/parameters: area, roughness coefficients, and surface storage.

In order to determine the stage/storage relationship in each flow-way sub-basin, the environmental professional involved with the project was consulted to ensure that the storage elevation of the flow-way basins began at a water elevation consistent with the wet season water elevation of the adjacent wetlands and natural areas. Links between the sub-basins were established as weirs (constructed of concrete or similar material) or piped connections based upon the proposed development plan. Inflows and outflows were characterized via structures in the model. The proposed development includes a piped connection from The Place, a hydraulic connection to the east side of Carter Road, an anticipated future connection at the northeastern corner of the project to accept flows from Corkscrew Road, and the project outfall, located south of the project. In order to provide some flexibility with managing flows, the discharge structure is proposed to be operable to help balance flows, timing, and storage provided by Verdana Village. Map 5-1 includes a

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graphic of the defined digital elevation model (DEM) for the proposed flow-way system within the project. Figure 5-2 and Figure 5-3 provide a graphic depicting the ICPR4 1D network for the Proposed Conditions (north and south portions of the property).

The model analysis also considered the discharges from the on-site development basins at their respective outfall locations into the flow-way basins. These discharges are regulated and modeled as control structures, with weirs set at the control elevation for the respective development basin. The discharge rates utilized within the development basins are based upon the allowable flow within the Imperial River Basin, which is 25 CSM, or 0.04 cfs/acre.

One (1) outfall weir is proposed at the downstream boundary condition within the model. The outfall control structure is proposed near the center of the south project boundary, within sub-basin S1.

The model nodal diagram, input and output reports for the Proposed Conditions 1D Model are included as Appendix E, F, and G of this report.

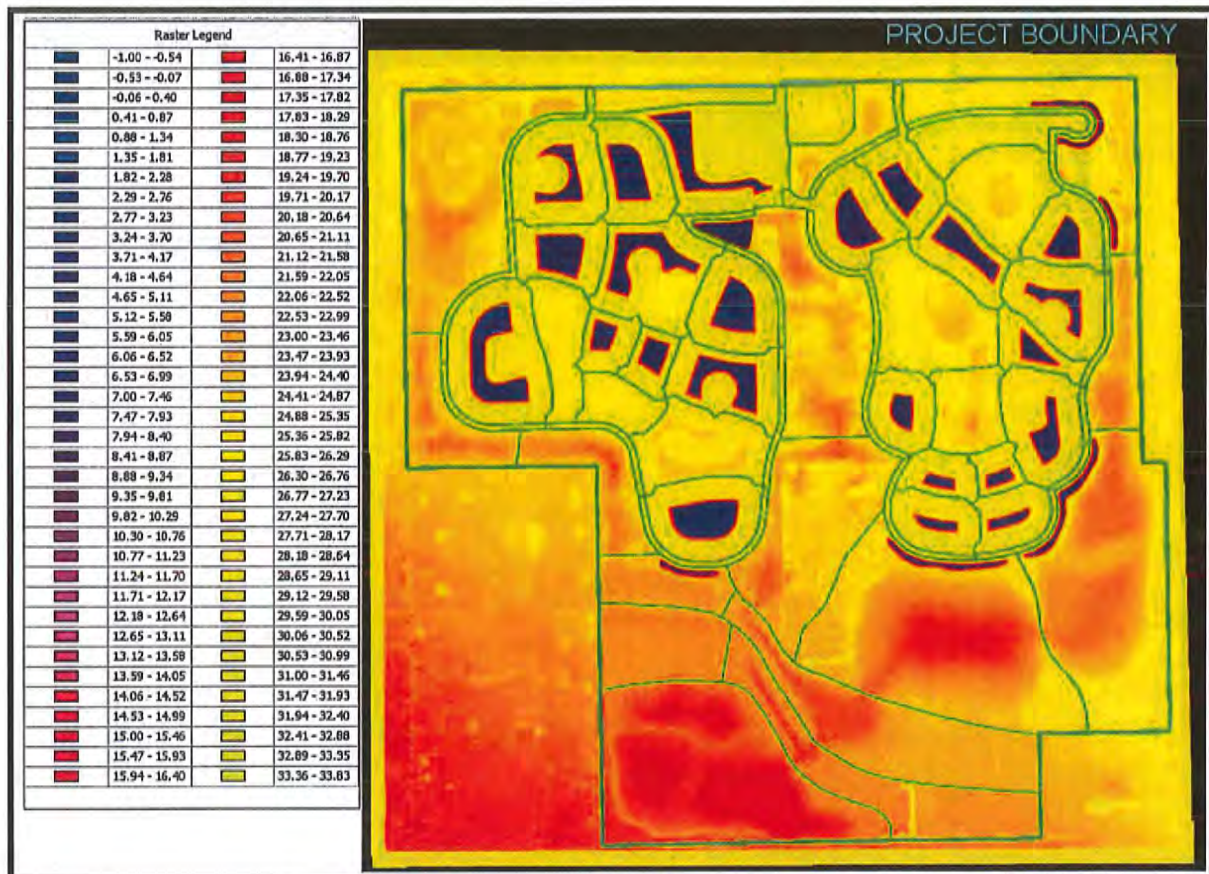


Figure 5-1: DEM for Proposed Flow-way Conditions, NAVD 8

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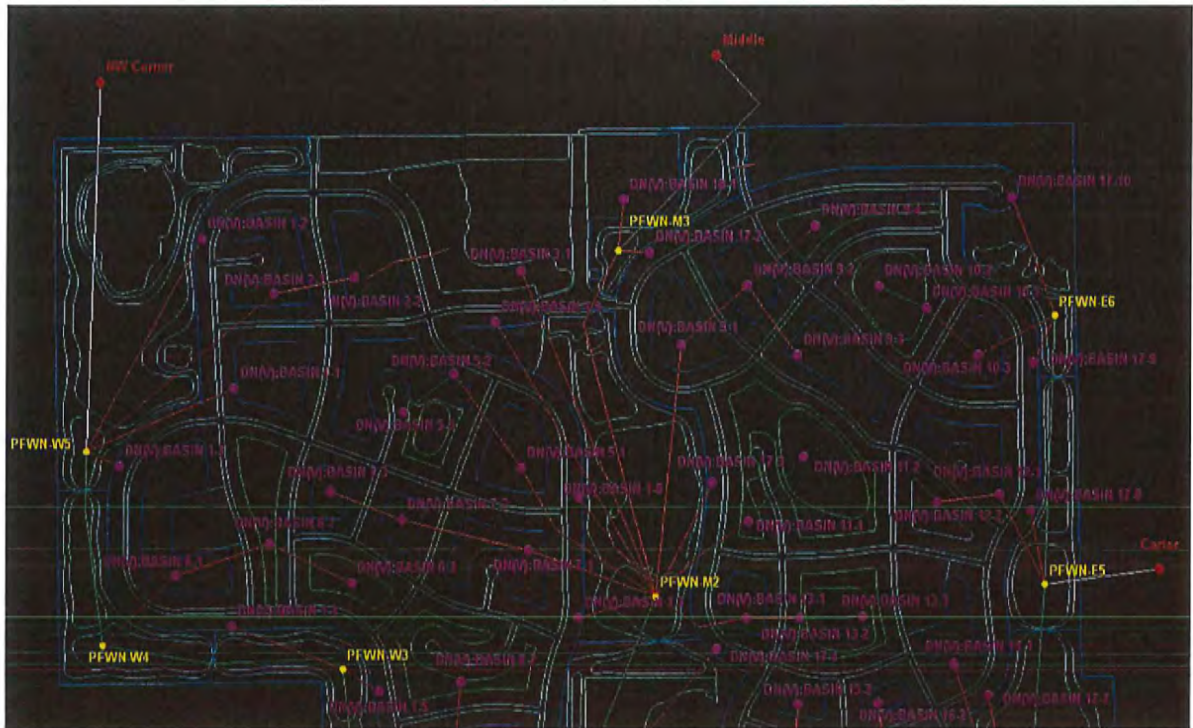


Figure 5-2: ICPR4 1D Network for Proposed Conditions, North

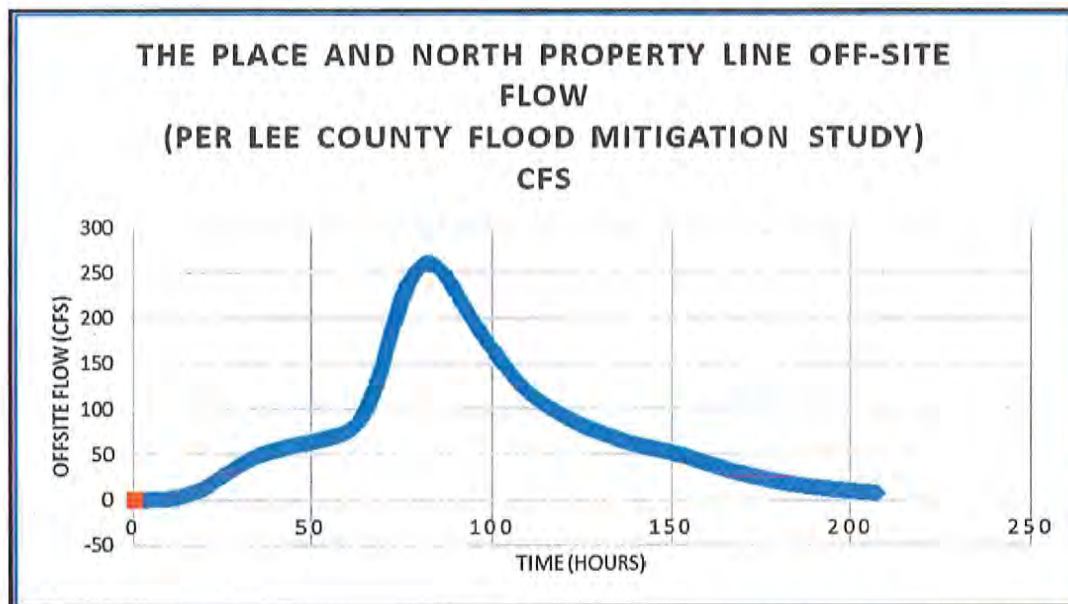


Figure 5-3: ICPR4 1D Network for Proposed Conditions, South

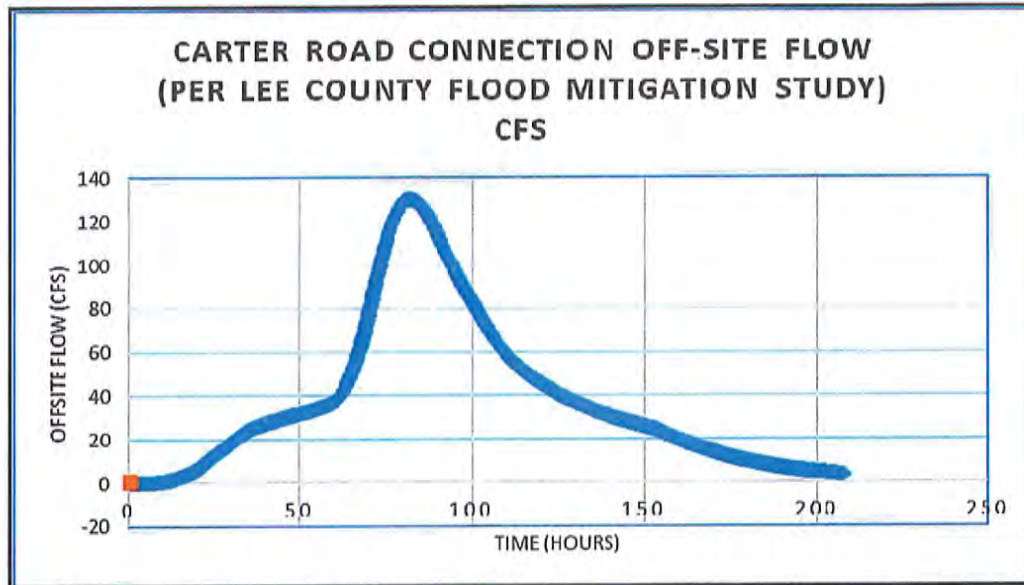
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5.2. Potential Off-Site Inflows

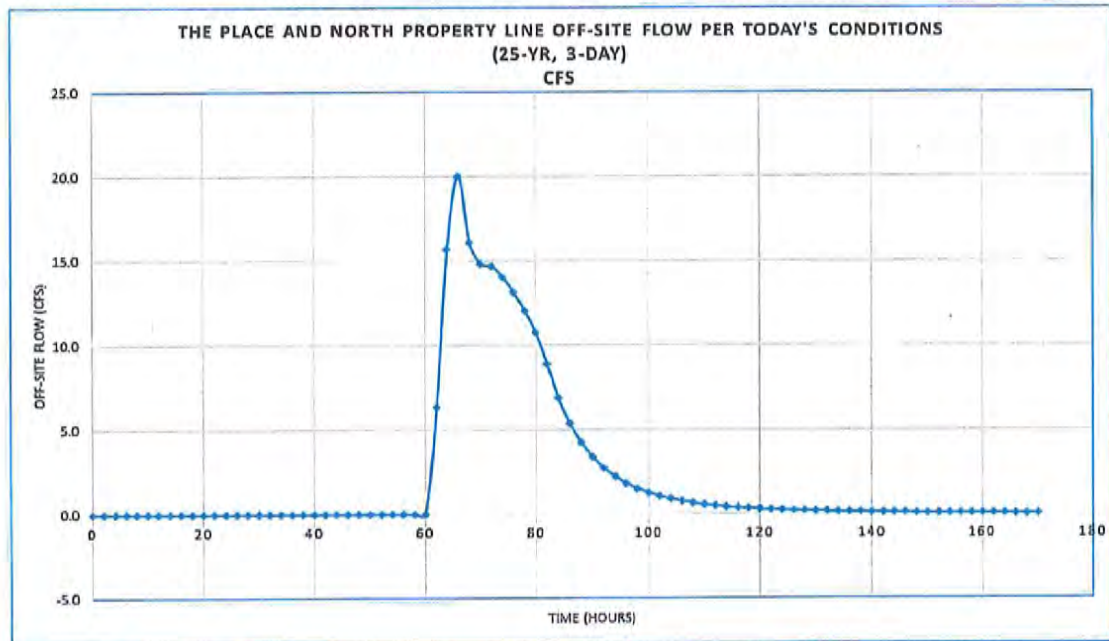
As previously mentioned, the Proposed Conditions analysis includes the incorporation of the flow-way system receiving off-site flows from lands located to the north of Corkscrew Road and east of Carter Road. As of the date of publication of this report, detailed specifications for how flow will enter the Verdana Village will enter the site are unknown, however, the Development and associated models will be completed to accommodate a total inflow of 650 cfs, consistent with future flows anticipated within preliminary results from a Lee County flood mitigation study. Based on the preliminary results of the Lee County flood mitigation study, 260 cfs will be directed to the west connection, 260 cfs will be directed at a location of the northern/central property line and 130 cfs will be directed from location along the east property line at Carter Road. To establish a reasonable flow hydrograph for the future offsite inflows, the hydrograph produced by historic analysis ICPR4 model at the respective inflow locations was converted to a unit hydrograph, and then multiplied by the respective future offsite flow amounts anticipated per the preliminary Lee County flood mitigation study. An exhibit depicting these future off-site inflow locations and amounts is provided in Appendix L of this report. Provided below are the respective future off-site flow hydrographs for each of the hydraulic connection locations.



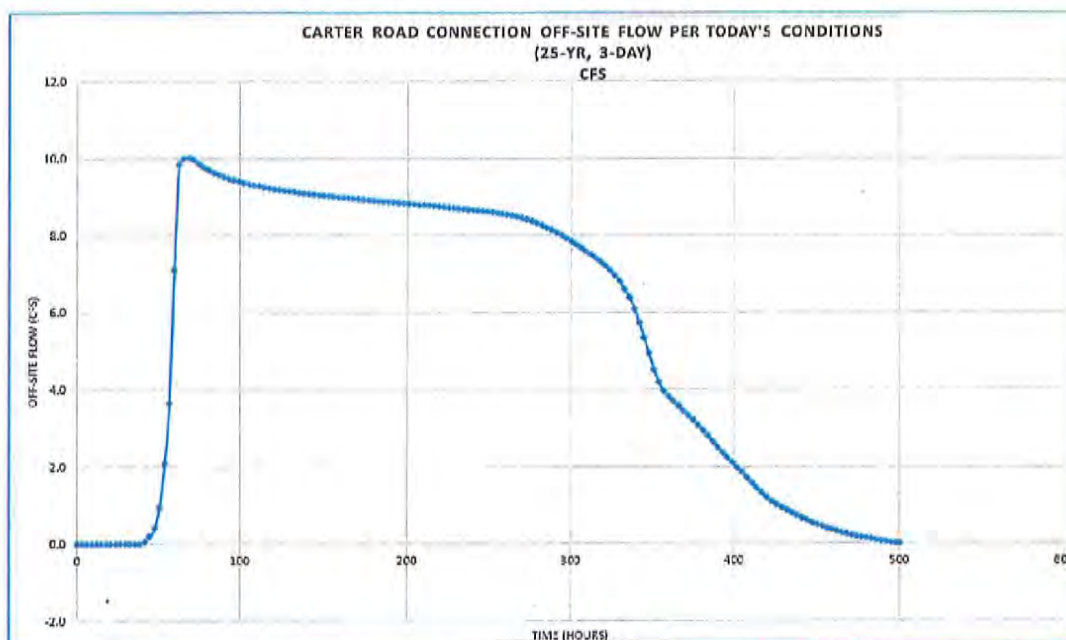
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Another scenario was modeled with flow entry points consistent with anticipated hydraulic connection points, but instead using flows more consistent with what may be available under today's (2019) conditions. It should be noted that these flows are only estimates and act as a "placeholder" in an effort to provide insight on stages under today's conditions. It is anticipated that these flows will ultimately increase to be consistent within the preliminary results of the Lee County flood mitigation study. Provided below are the flow hydrographs for the off-site flow connections with existing/today's anticipated conditions.



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5.3. Proposed Conditions ICPR4 1D Modeling Results

Proposed Conditions 1D Scenario 1: Design Storms with Current Anticipated Offsite Inflow

Scenario 1 includes discharge from all sources, including the hydraulic connection at the northwestern corner of the project, flows from the middle of the project's northern property line, and flows from east of Carter Road. The scenario considers the one (1) of the outfall weirs within the outfall control structure completely open.

- Total anticipated inflow: 50 cfs (Per today's-2019 conditions)
- 25-Year, 3-Day Discharge Results:
 - Outfall Weir (Outfall Weir 1): 134.92 cfs
- 100-Year, 3- Day Discharge Results:
 - Outfall Weir (Outfall Weir 1): 155.03 cfs
- Sequential 100-Year, 3- Day Discharge Results:
 - Outfall Weir (Outfall Weir 1): 162.8 cfs

Proposed Conditions 1D Scenario 2: Design Storms Ultimate Offsite Inflow

Scenario 1 includes discharge from all sources, including the hydraulic connection at the northwestern corner of the project, flows from the middle of the project's northern property line, and flows from east of Carter Road. The scenario considers all the outfall weirs within the outfall control structure completely open.

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- Total anticipated inflow: 650 cfs (Per preliminary results from Lee County flood mitigation study)
- 25-Year, 3-Day Discharge Results:
 - Outfall Weir (Outfall Weir 1): 536.82 cfs

Provided below in Figure 5-4 is a graph of the flow versus time for Existing Conditions Scenario 1 and Proposed Conditions Scenarios 1, 3, and 4 during the 25-year, 3-day design storm event.

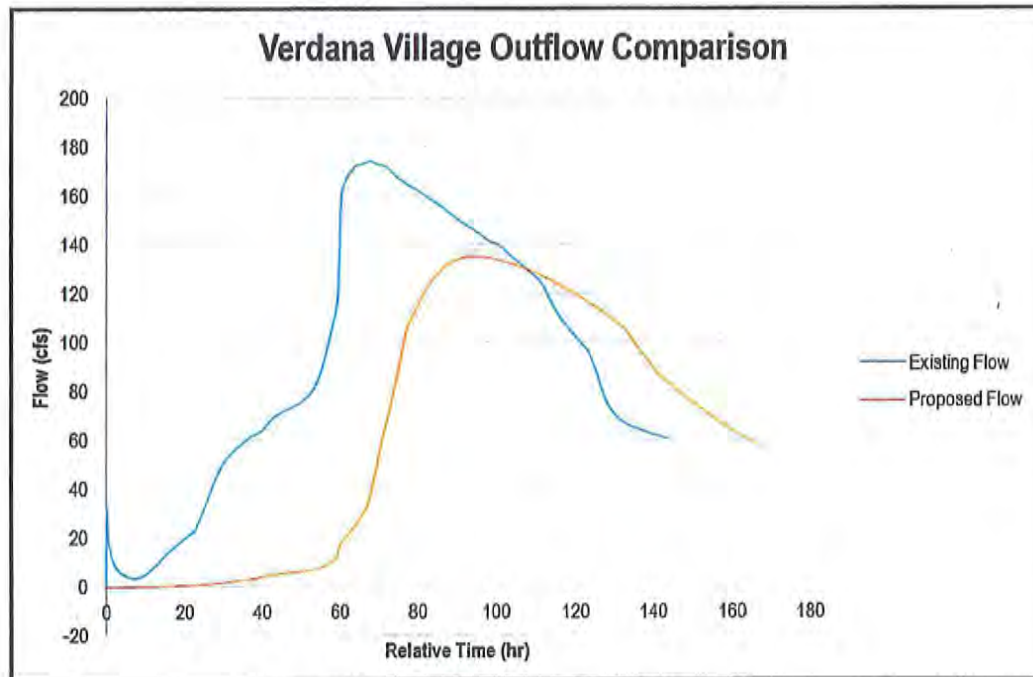


Figure 5-4: 25-year, 3-day Flow Results
ICPR4 1D Models -No Offsite flows

5.4. Proposed Conditions ICPR4 2D Modeling

The ICPR4 software was utilized to perform the 2D integrated hydrologic and hydraulic analysis of the Vermana Village Proposed Flow-way basins. Two year-long simulations were modeled based on recorded data (NEXRAD) available through the SFWMD, consisting of daily rainfall and reference evapotranspiration values. The two year-long simulations modeled were 2009 and 2013, the first representing a drought condition, and the latter a typical/more than typical wet year. Each of the flow-way sub-basins were modeled as a separate node, and were characterized by their determined properties: area, roughness coefficients, surface storage and the underlying soil properties.

The ICPR4 integrated 2D surface and groundwater model was built using map layers and several digital elevation models (DEMs). The map layers consist of polygons with assigned properties to which the program references for a variety of parameters, discussed further in the following paragraphs. A DEM of the proposed flow-way surface was created in AutoCAD Civil 3D, along with a proposed surface of the development, particularly the development lakes. A DEM of the typical wet season groundwater table, as well as a typical dry season

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groundwater table, were created and utilized in the model simulations discussed in the previous section.

Each DEM for the ground surfaces and groundwater surfaces, were converted into an overland flow region (OFR) or a groundwater region (GWR) within the ICPR4 program. Intersecting OFRs and GWRs form a digital mesh connected to one another, allowing for the program to calculate the interaction of above ground water flows with the below ground water surface. The magnitude of interaction between the two layers is dictated by the properties within each cell of the interlocking mesh network. The parameters include innate soil properties, such as porosity and conductivity, the soil conditions during each time-step of the simulation, such as moisture and saturation, the land cover, evapotranspiration rates during each time-step, and hydraulic gradients of the surface and groundwater table. The map layers, polygons applied over the project area, define the land cover, soil type, roughness zone, irrigation demand, and even rainfall amounts, and are used by the program to determine these properties in each individual cell of the OFRs and GWRs.

The use of a 2D surface water-groundwater model makes it possible to analyze the impact that irrigation and recharge wells will have on the groundwater table throughout the project area, without neglecting potential recharge from surface water.

Dry season irrigation rates were applied to the residential tracts, right-of-way tracts and commercial/amenity tracts on a daily basis. The monthly dry season irrigation demand and the 1-in-10 Annual Drought irrigation demand, provided by Progressive Water Resources, Inc. in Appendix B of the "Characterization of Ground and Surface Water Resources" report, were used to prorate the total annual irrigation volume to a daily irrigation rate, with daily rates varying between months.

Crop coefficient tables were used to define the irrigation and evapotranspiration parameters per land use/land cover. The land cover map layer is associated with each crop coefficient zone. The crop coefficient table for each land use/land cover has time dependent variables that allows the model to simulate the change in evapotranspiration rates and the varying irrigation rates throughout the year. The reference evapotranspiration values from the processed NEXRAD data modifies the crop coefficients, adjusting the rate of evapotranspiration daily, based on the historic data for each simulation year.

The residential and commercial land cover zones were divided into three separate zones each, for the sole purpose of allocating the irrigation demands between the three lakes used for irrigation withdrawals. Proposed irrigation pumps will draw water from the development's water management lakes, Lake 3 (Basin 3-1), Lake 7 (Basin 6-1) and Lake 19 (Basin 14-1). Lake 3 was assigned as the irrigation source for the land cover zone "Residential", "Commercial" and "ROW". Lake 7 was assigned as the irrigation source for land cover zones "Residential 2" and "Commercial 2". Lake 19 supplied the irrigation demand for "Residential 3" and "Commercial 3".

There are three recharge wells included in the ICPR4 2D integrated model to supplement the irrigation withdrawals from each of the three irrigation lakes. The recharge wells supplement the irrigation demand by pumping water from the surficial aquifer into the irrigation lakes. Three recharge wells were incorporated in the model to simulate the groundwater drawdown from the proposed wells. The recharge wells function in the ICPR4 model as an irrigation source rather than a direct pipe connection from the groundwater wells to irrigation lakes. To specify a recharge rate to each of the three irrigation lakes, each irrigation lake was assigned a crop coefficient zone with an irrigation demand equal to the anticipated 1-in-10 drought year prorated recharge rate. The selected source for the irrigation demand was assigned to the recharge wells, simulating withdrawal of groundwater and discharge into each of the three irrigation lakes.

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The model analysis also considered the discharges from the on-site development basins at their respective outfall locations into the flow-way basins. These discharges are regulated and modeled as control structures, with weirs set at the control elevation for the respective development basin. The discharge rates utilized within the development basins are based upon the allowable flow within the Imperial River Basin, which is 25 CSM, or 0.04 cfs/acre.

One (1) outfall weir is proposed at the downstream boundary condition within the model. The outfall control structure is proposed near the center of the south project boundary, within sub-basin S1.

The model nodal diagram, input and output reports for the Proposed Conditions Model are included as Appendix I, J, and K of this report.

Figure 5-5 and Figure 5-6 provide a graphic depicting the ICPR4 2D network for the Proposed Conditions (north and south portions of the property)

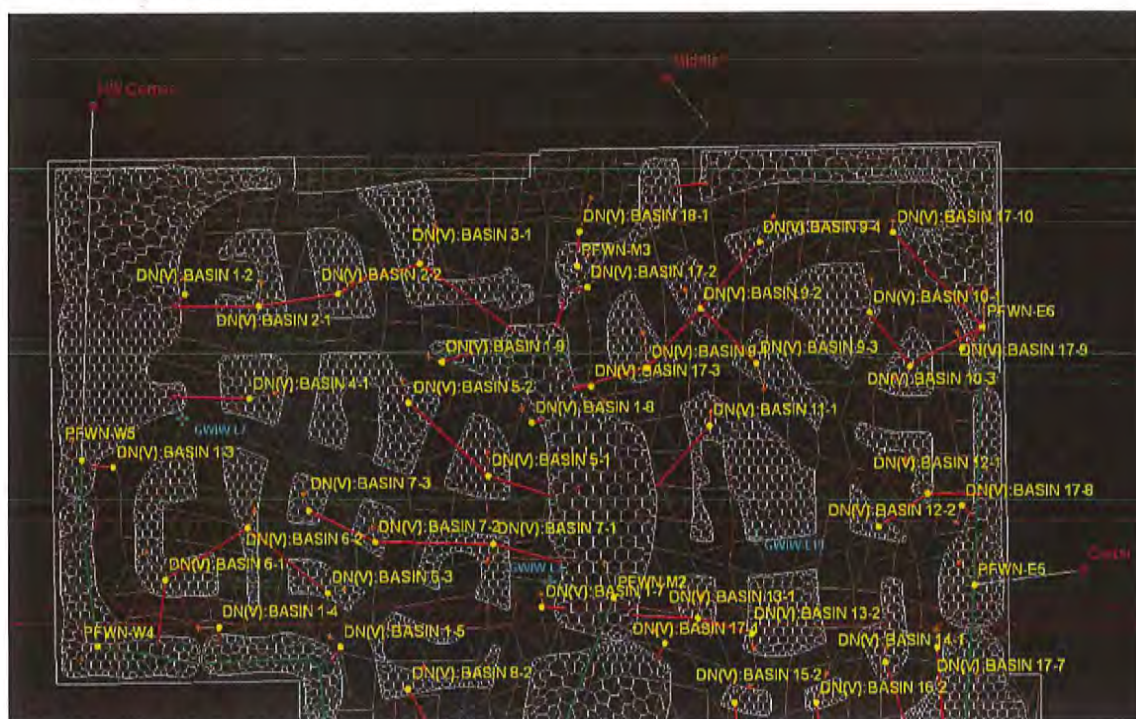


Figure 5-5: ICPR4 2D Network for Proposed Conditions, North

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Figure 5-6: ICRP4 2D Network for Proposed Conditions, South

5.5. ICRP4 2D Modeling Results

The intent of the model for the proposed conditions was to evaluate the hydraulic stages within the flow-way restoration areas based on varying scenarios and determine the potential additional capacity for flow within the project, while not adversely impacting natural resources within the project area and surrounding lands. Based upon all the factors and current analyses, outlined below are the potential hydrologic scenarios and results concerning the Verdiana Village Flow-way Restoration system.

Proposed Conditions 2D Scenario 1: Extreme Dry Season (2009) with Offsite Inflow

- Scenario 1 includes discharge from all sources, including the hydraulic connection at the northeastern corner of the project, flows from east of Carter Road, and flows from The Place. This scenario will leave the ultimate outfall structure completely open to obtain a baseline from which the other scenarios will be compared. This scenario simulates a continuous year incorporating recorded NEXRAD rainfall data for the year 2009 for the project site and incorporating irrigation withdrawals and recharge as proposed with this project.

To demonstrate the results of the ICRP4 2D Dry Season Model simulation, several graphs were prepared to illustrate the time/stage relationship of the groundwater profile within the flow-way basins. The flow-way profiles depict the ground elevation along the flow-way profile and the groundwater surface elevation at specific times during the continuous scenario. Figure 4-7 provides a graphic of the 2D Model surface with the three (3) flow-way profile alignments depicted. These "snapshot" times occur at January 1st, May 15th, September 15th, and December 31st during the year. Figure 4-7a provides an aerial location map of the existing monitoring wells located within the Verdiana Village property. The data from these wells were used to

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compare the 2D model results and recorded information. Also prepared are the time/stage relationship graphs for the surface water stages within the flow-way basins (Figure 5-8) and a selection of the development pod basins (Figure 5-9). The selected development pod basins include the three (3) basins containing the direct irrigation withdrawals and the four (4) basins containing the existing wetlands. On the graphs of the flow-way profiles and corresponding groundwater levels, the location of existing adjacent on-site wells is noted along the profile. In addition, a graph of the recent data for the existing well is provided for comparison purposes.



Figure 5-7: ICPR4 2D Flow-way Profile Alignments

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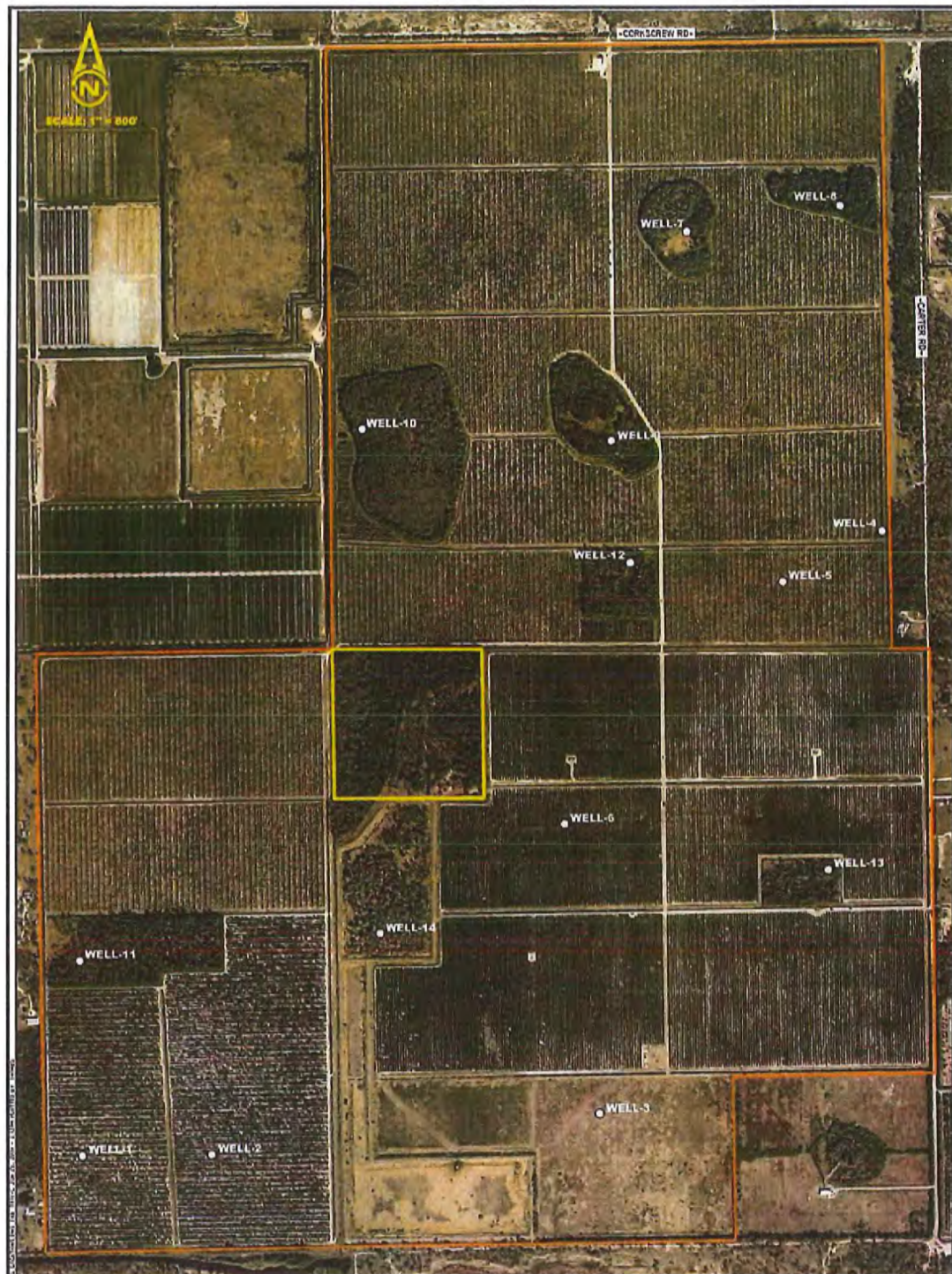


Figure 5-7a: Existing Monitoring Well Locations

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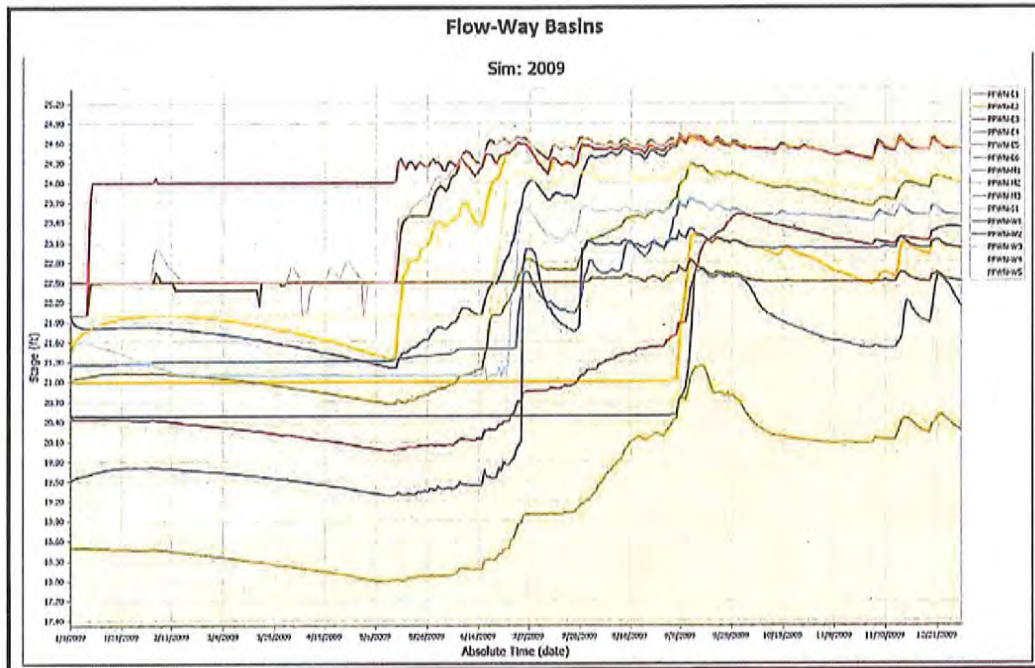


Figure 5-8: ICPR4 2D Dry Season Flow-way Surface Water Time-Stage

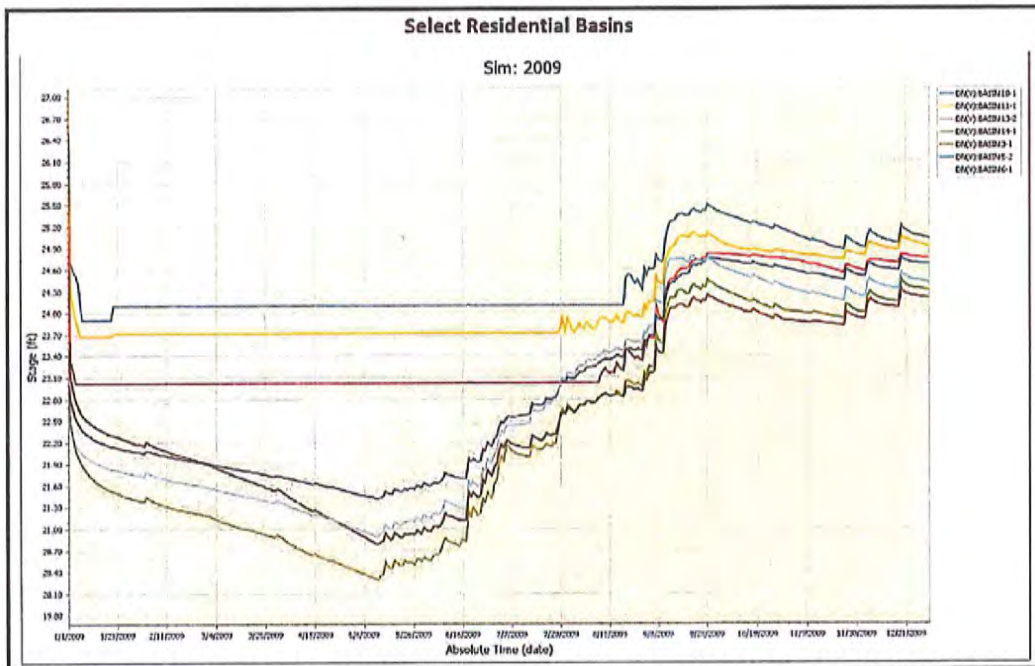


Figure 5-9: ICPR4 2D Dry Season Development Pods Surface Water Time-Stage

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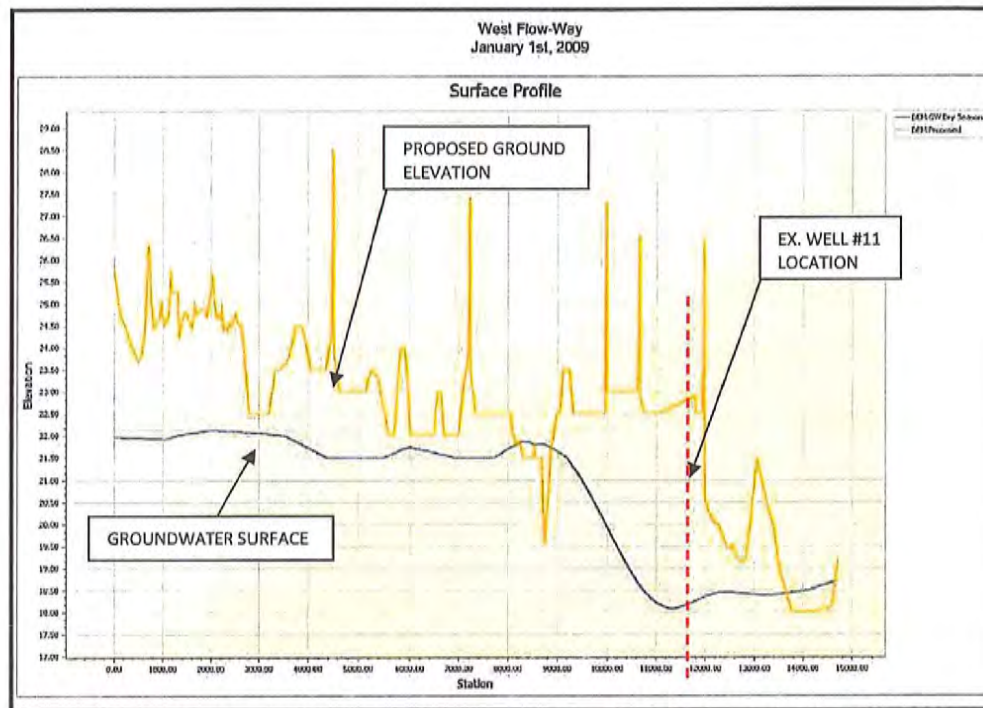


Figure 5-10 a. ICPR4 2D Dry Season West Flow-way Profile Groundwater Time-Stage 01/01/2009

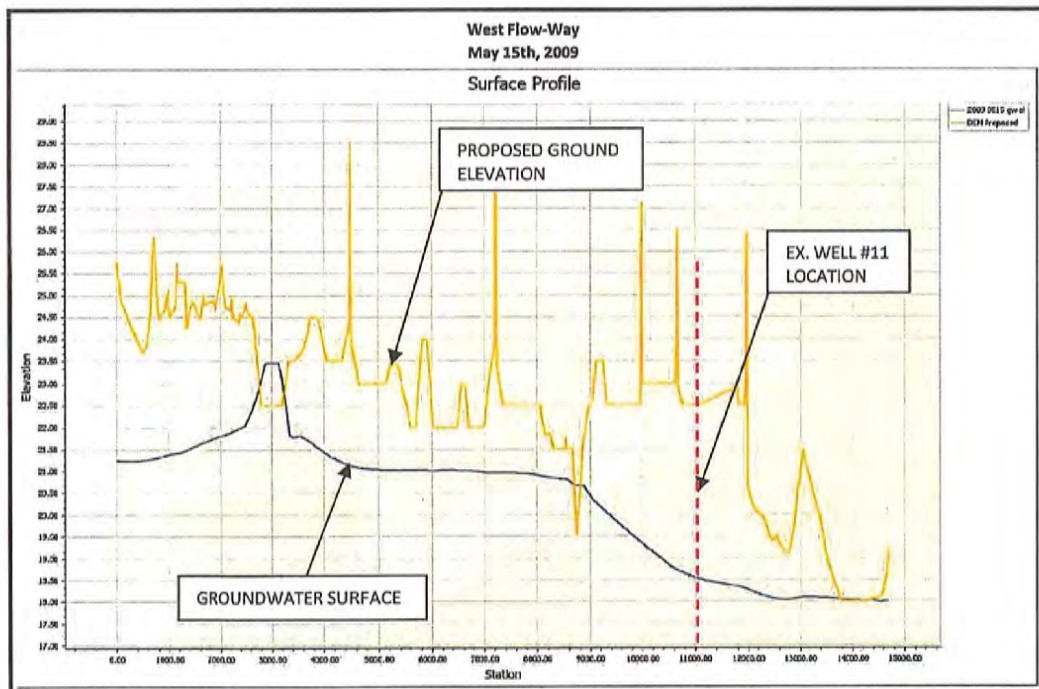


Figure 5-10 b. ICPR4 2D Dry Season West Flow-way Profile Groundwater Time-Stage 05/15/2009

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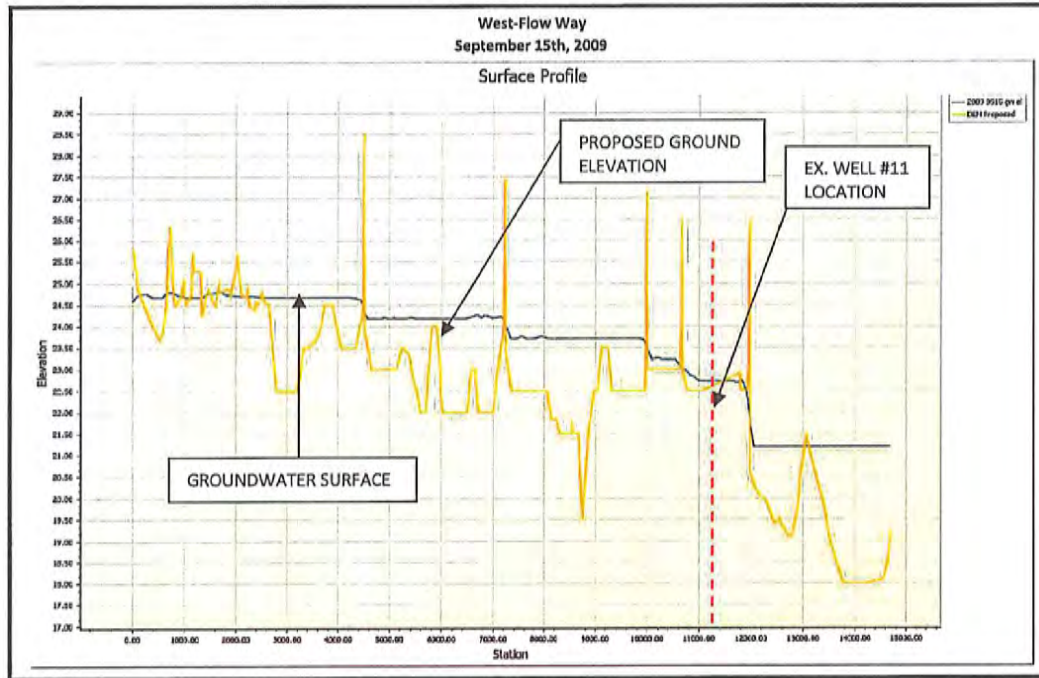


Figure 5-10 c. ICPR4 2D Dry Season West Flow-way Profile Groundwater Time-Stage 09/15/2009

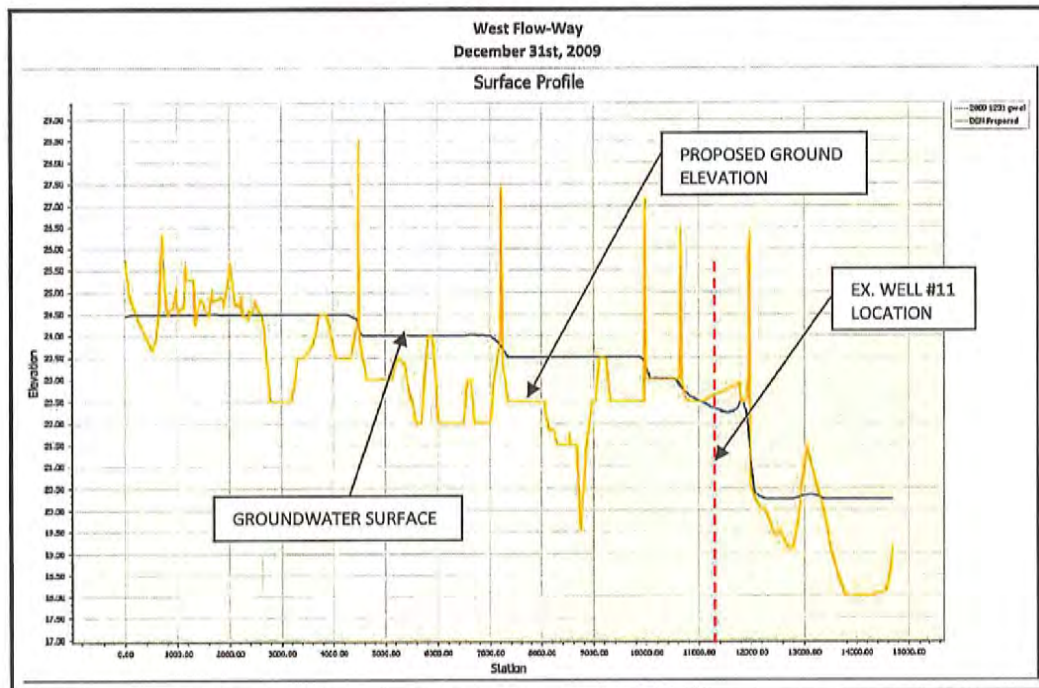


Figure 5-10 d. ICPR4 2D Dry Season West Flow-way Profile Groundwater Time-Stage 12/31/2009

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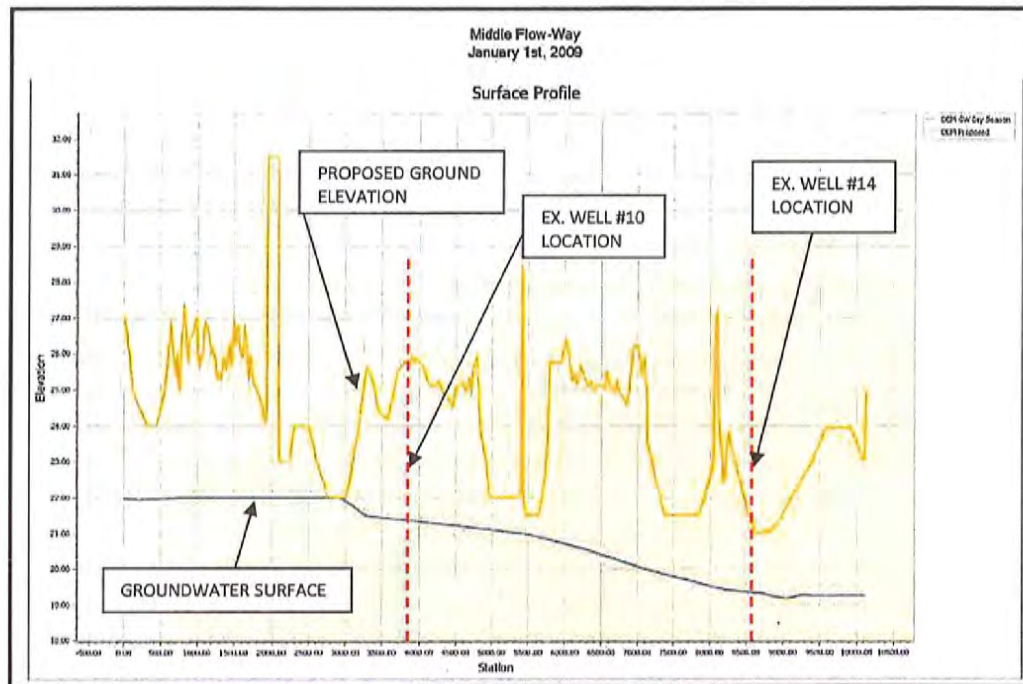


Figure 5-11 a.: ICPR4 2D Dry Season Middle Flow-way Profile Groundwater Time-Stage 01/01/2009

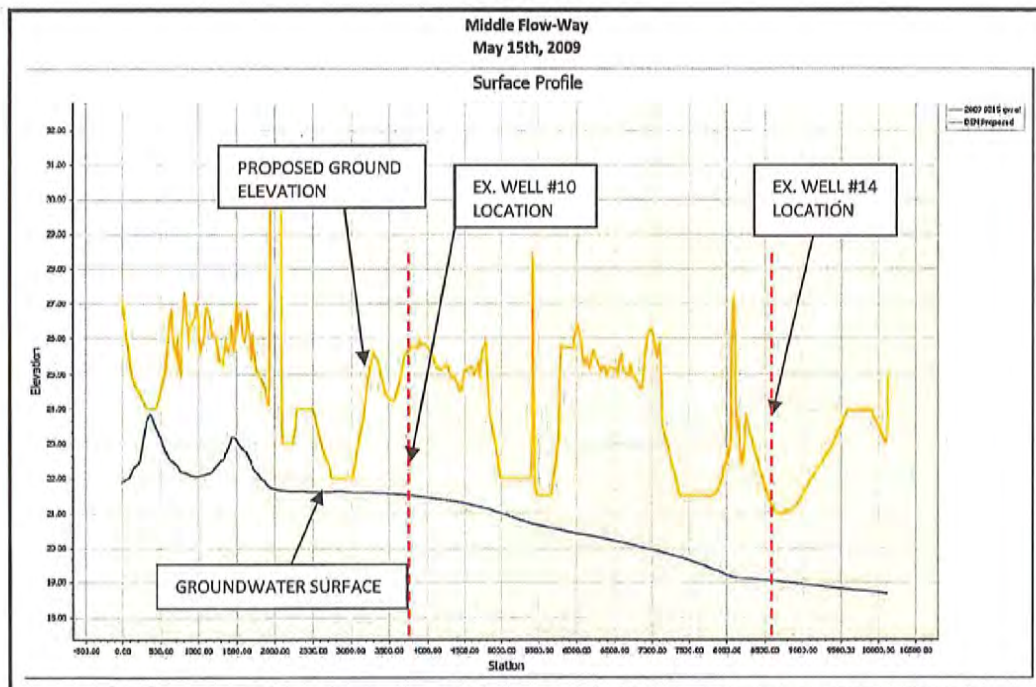


Figure 5-11 b.: ICPR4 2D Dry Season Middle Flow-way Profile Groundwater Time-Stage May 15th, 2009

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05/15/2009

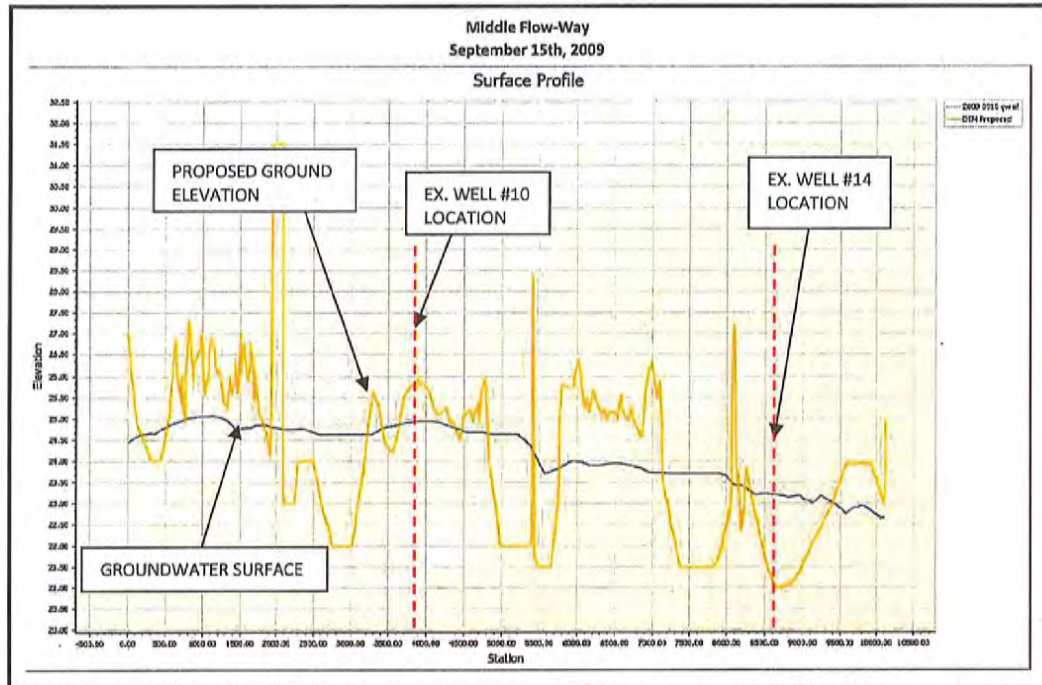


Figure 5-11-c.: ICPR4 2D Dry Season Middle Flow-way Profile Groundwater Time-Stage 09/15/2009

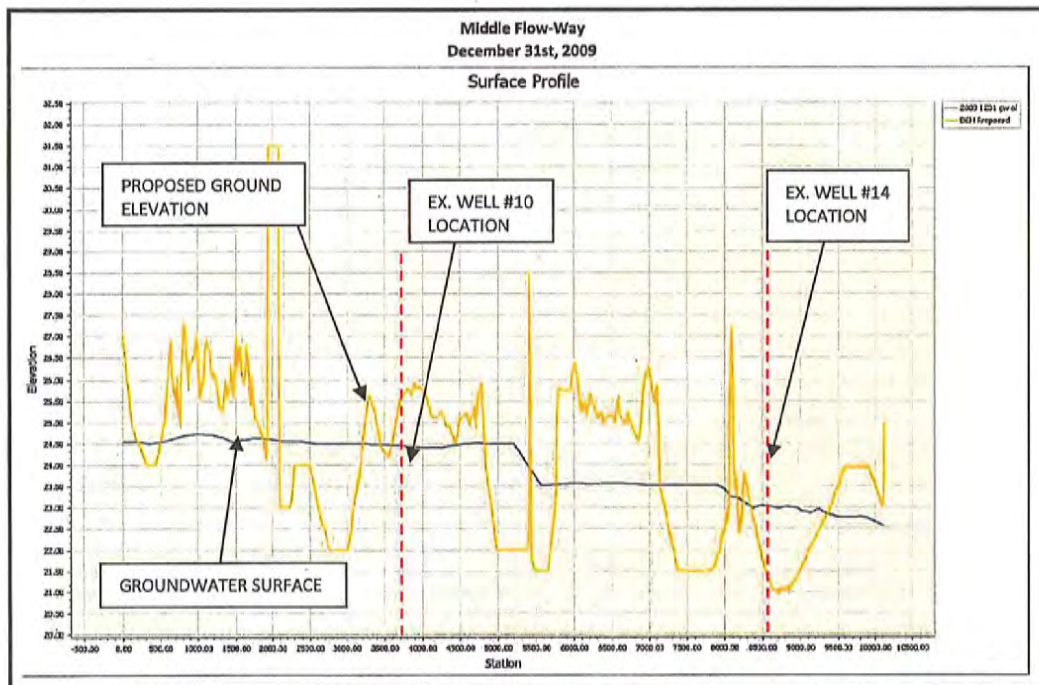


Figure 5-11d.: ICPR4 2D Dry Season Middle Flow-way Profile Groundwater Time-Stage 12/31/2009

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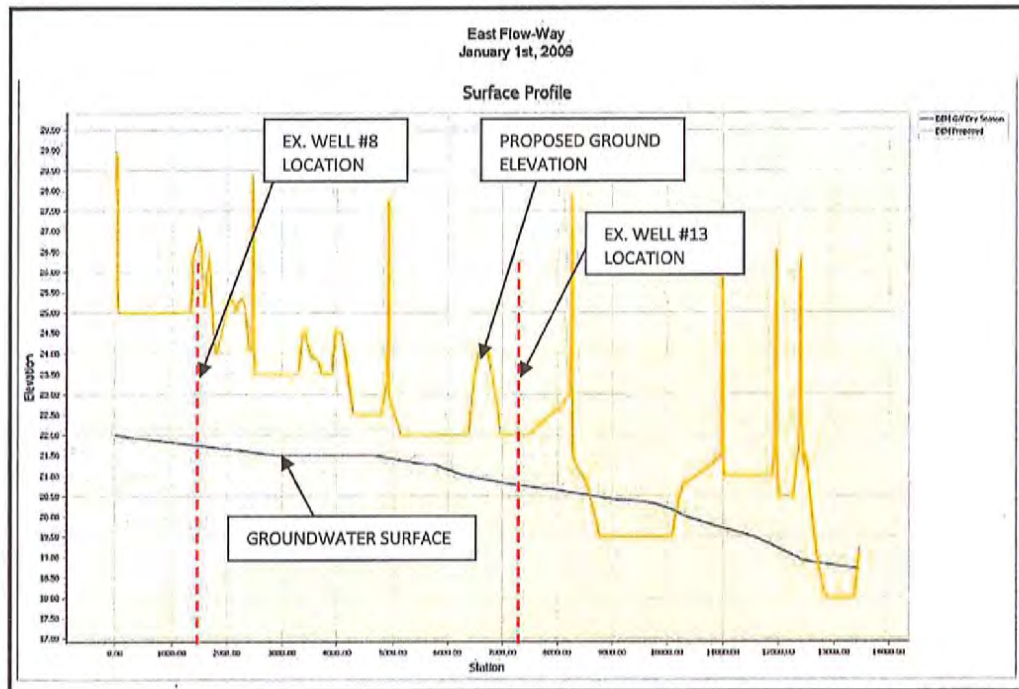


Figure 5-12 a.: ICPR4 2D Dry Season East Flow-way Profile Groundwater Time-Stage 01/01/2009

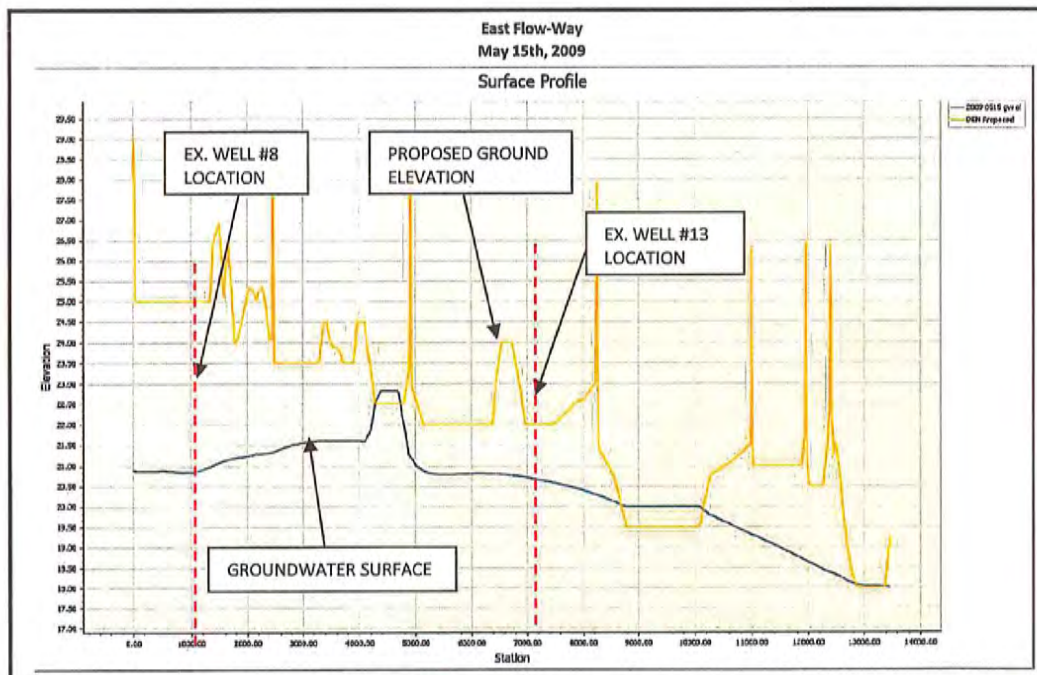


Figure 5-12 b.: ICPR4 2D Dry Season East Flow-way Profile Groundwater Time-Stage 05/15/2009

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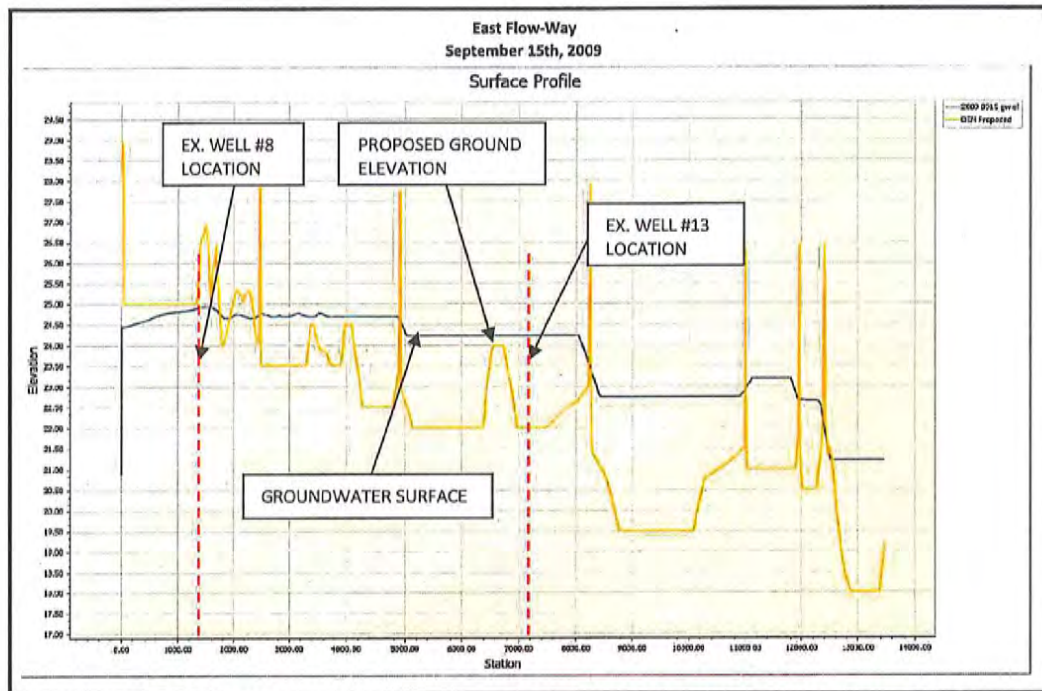


Figure 5-12 c.: ICPR4 2D Dry Season East Flow-way Profile Groundwater Time-Stage 09/15/2009

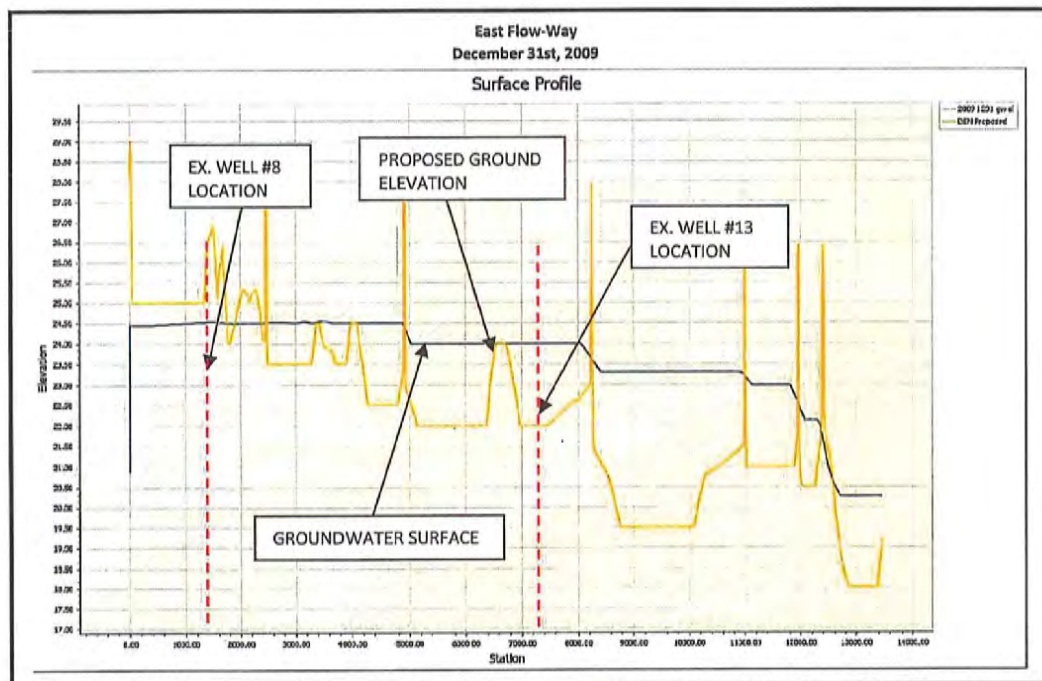


Figure 5-12 d.: ICPR4 2D Dry Season East Flow-way Profile Groundwater Time-Stage 12/31/2009

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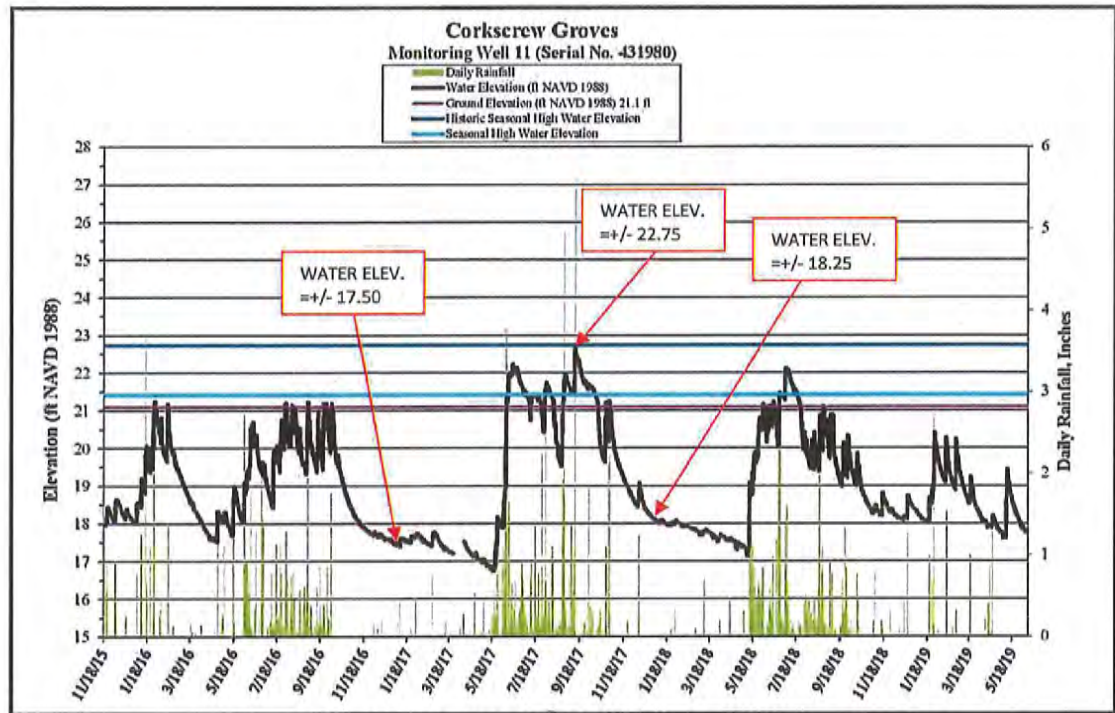


Figure 5-13a: Existing Monitoring Well Data- Well 11

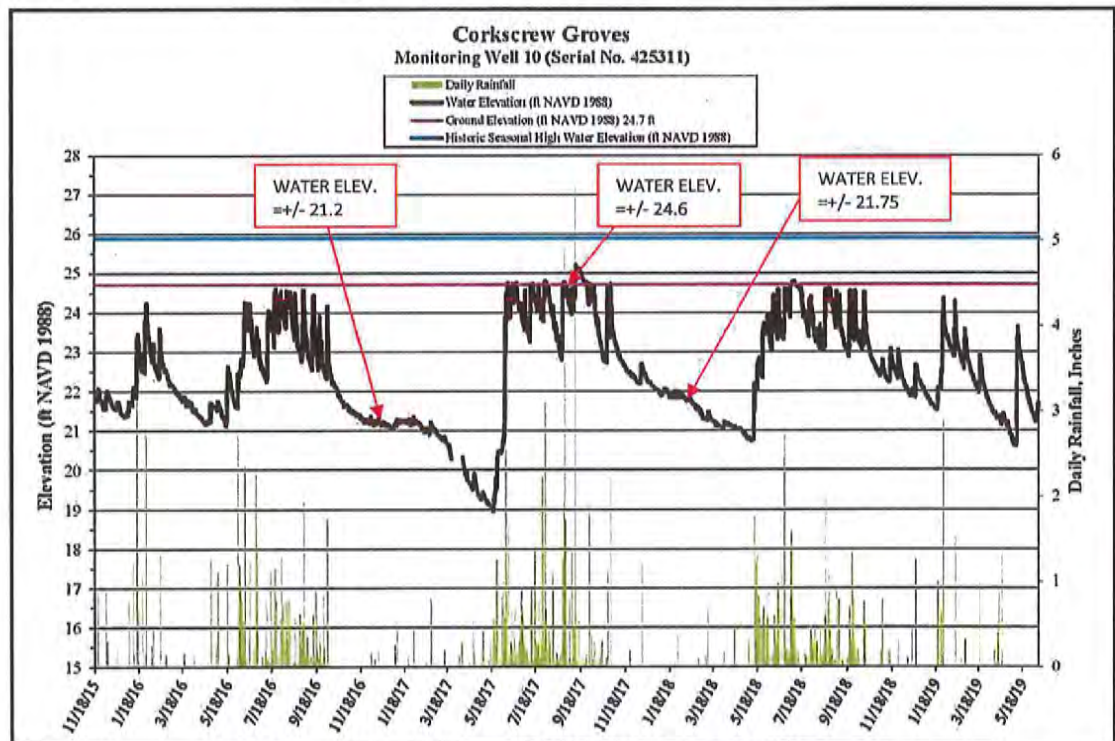


Figure 5-13b: Existing Monitoring Well Data- Well 10

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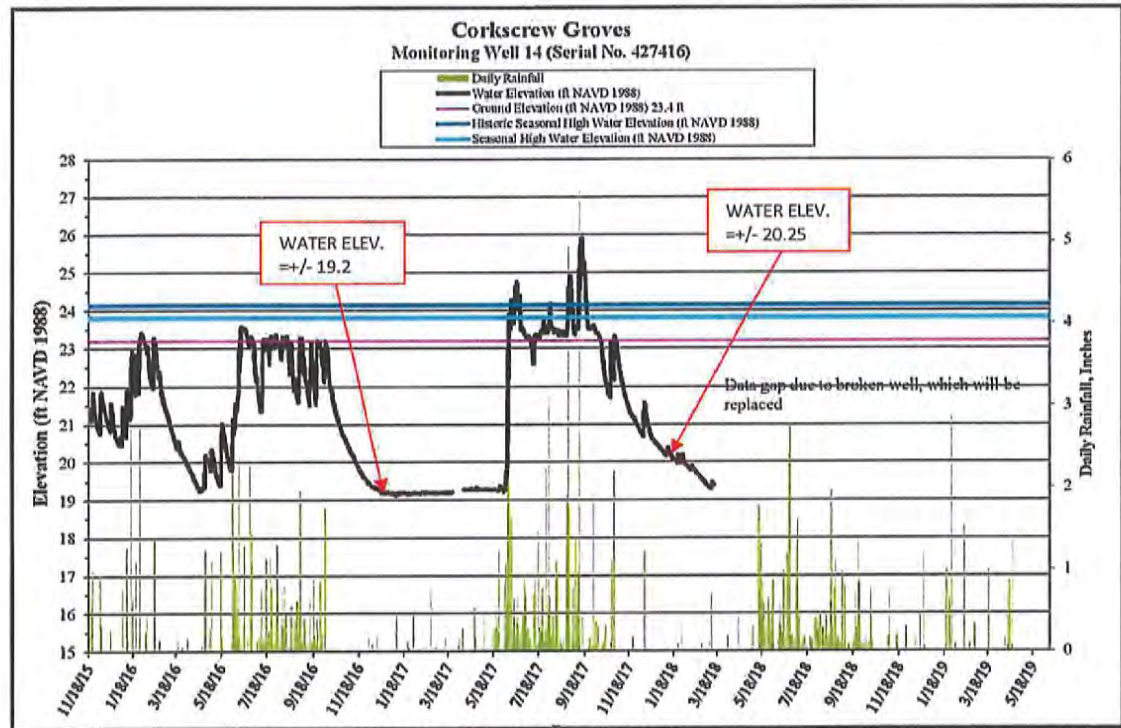


Figure 5-13c: Existing Monitoring Well Data- Well 14

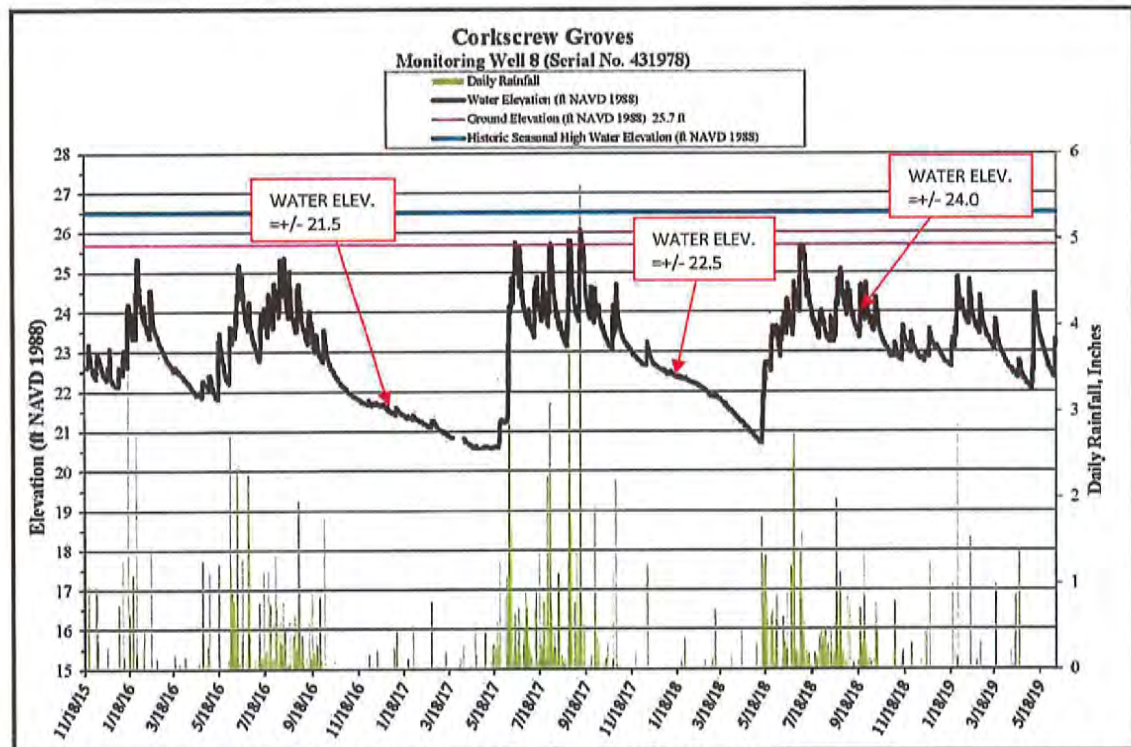


Figure 5-13d: Existing Monitoring Well Data- Well 8

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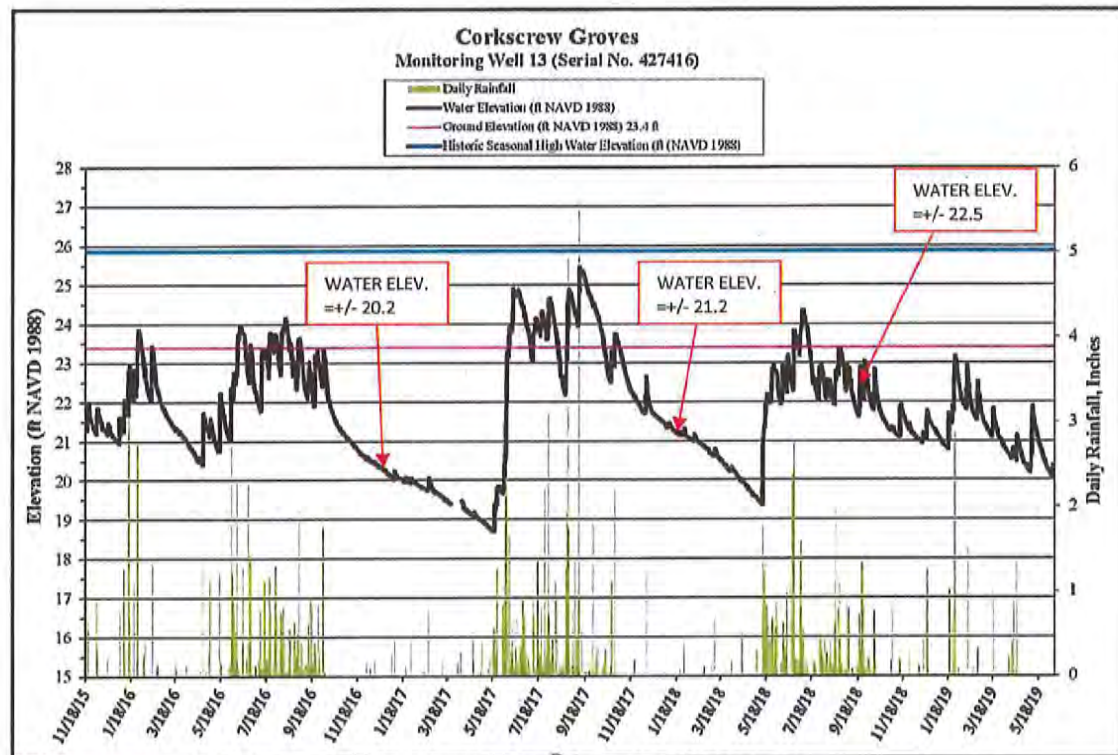


Figure 5-13e: Existing Monitoring Well Data- Well 13

Based on review of the 2009 Dry Season results from the ICPR4 2D integrated model, it is evident that the groundwater levels will remain elevated for a longer period during the continuous simulation. This is specifically evident for each flow-way profile in comparing the groundwater levels from the 09/15/2009 date to the 12/31/2009 date. This is also evident when reviewing the time-stage graph for surface water levels within the flow-way basins. At the end of the 2009 simulation, the surface water levels are higher than the initial surface water stages within the beginning of the simulation. In comparing the recent monitoring well data for specific wells located within or adjacent to wetlands near the proposed flow-way areas, the majority of the groundwater elevations are depicted to be higher than the lowest of the well data and the longer period of higher groundwater levels is evident. This will promote a longer hydroperiod for the adjacent wetlands, which is a significant benefit for the area.

Proposed Conditions 2D Scenario 2: Typical Wet Season (2013) with Offsite Inflow

- Scenario 2 includes discharge from all sources, including the hydraulic connection at the northeastern corner of the project, flows from east of Carter Road, and flows from The Place. This scenario will leave the ultimate outfall structure completely open to obtain a baseline from which the other scenarios will be compared. This scenario simulates a continuous year incorporated recorded NEXRAD rainfall data for the year 2013 for the project site and incorporating irrigation withdrawals and recharge as proposed with this project.

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To demonstrate the results of the ICRP4 2D Typical Wet Season Model simulation, several graphs were prepared to illustrate the time/stage relationship of the groundwater profile within the flow-way basins. The flow-way profiles depict the ground elevation along the flow-way profile and the groundwater surface elevation at specific times during the continuous scenario. These "snapshot" times occur at January 1st, May 15th, September 15th, and December 31st during the year. Also prepared are the time/stage relationship graphs for the surface water stages within the flow-way basins and a selection of the development pod basins. The selected development pod basins include the three (3) basins containing the direct irrigation withdrawals and the four (4) basins containing the existing wetlands. On the graphs of the flow-way profiles and corresponding groundwater levels, the location of existing on-site wells is noted along the profile. In addition, a graph of the recent data for the existing well is provided for comparison purposes.

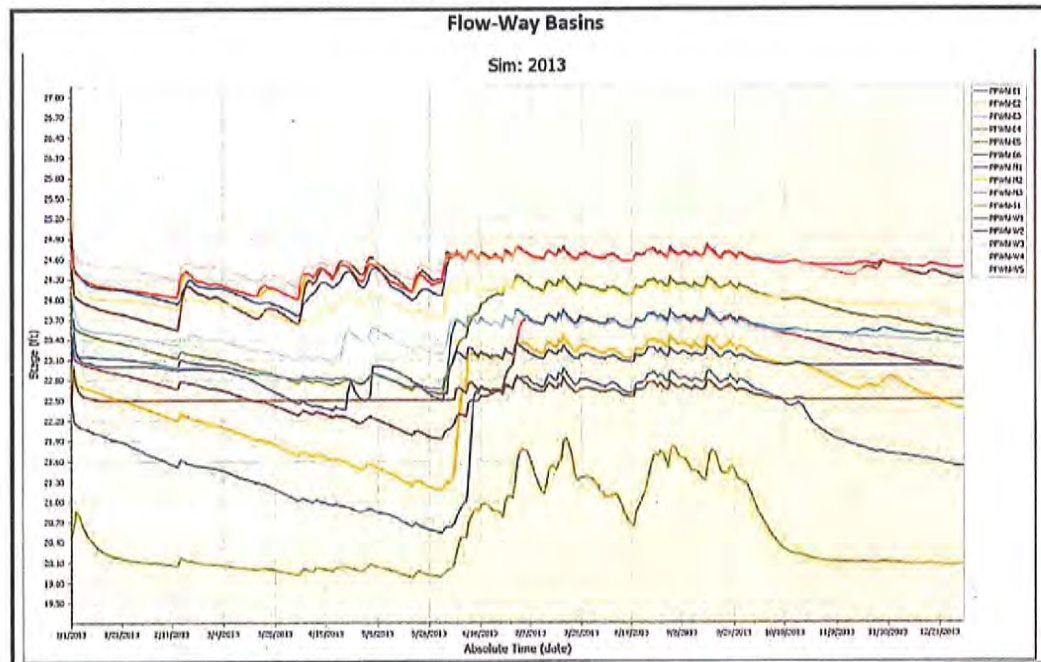


Figure 5-14: ICRP4 2D Wet Season Flow-way Surface Water Time-Stage

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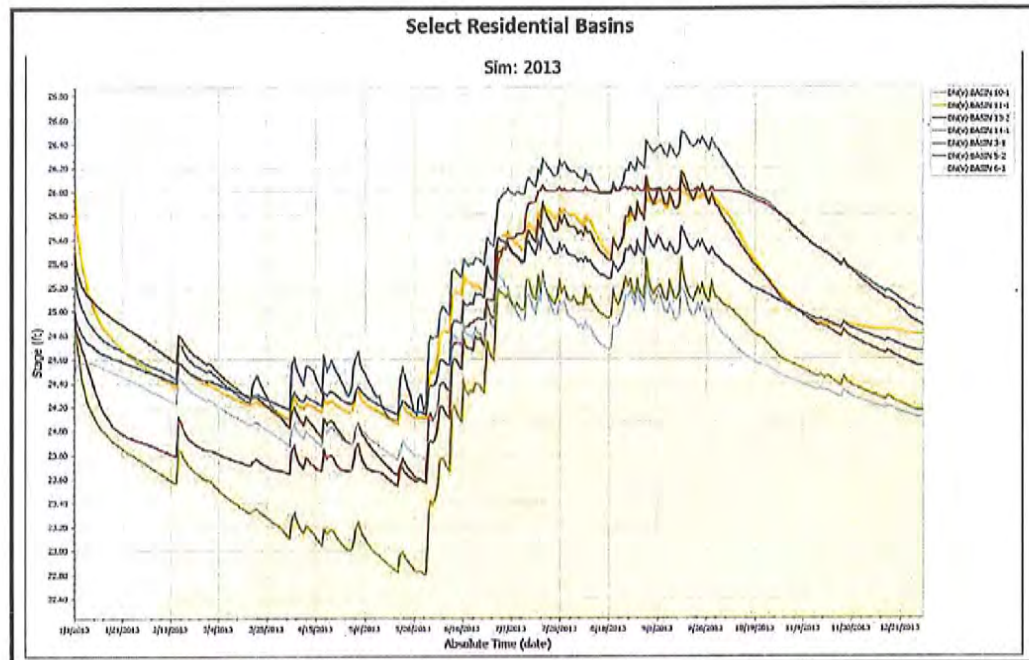


Figure 5-15: ICPR4 2D Wet Season Development Pods Surface Water Time-Stage

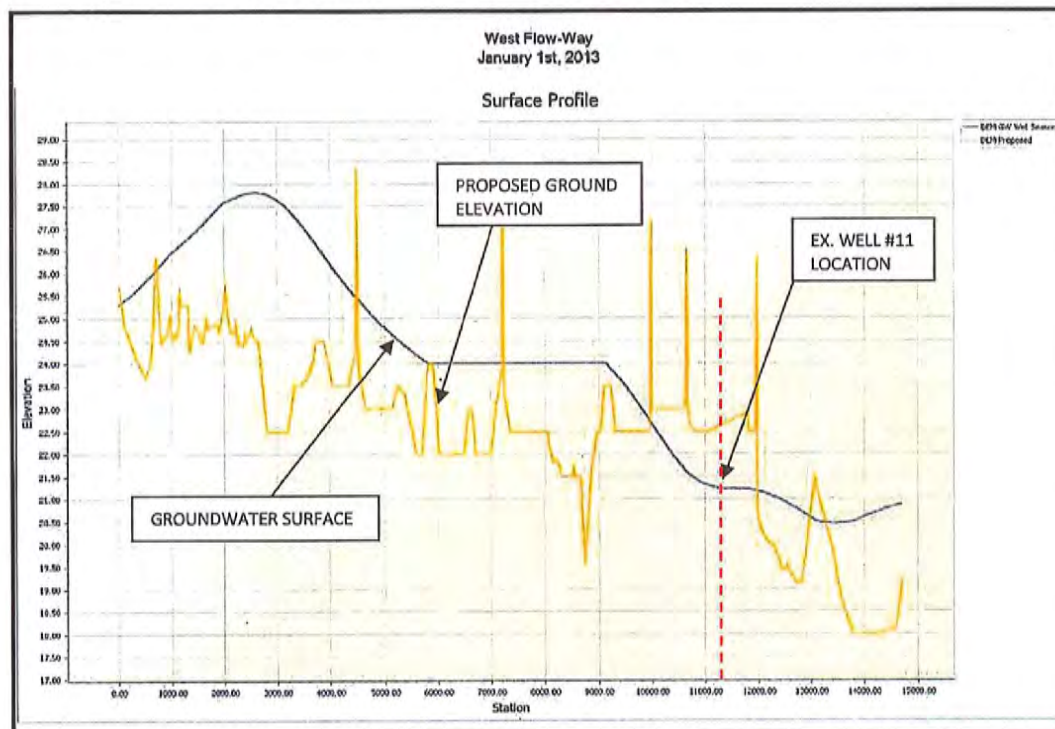


Figure 5-16 a.: ICPR4 2D Wet Season West Flow-way Profile Groundwater Time-Stage 01/01/2013

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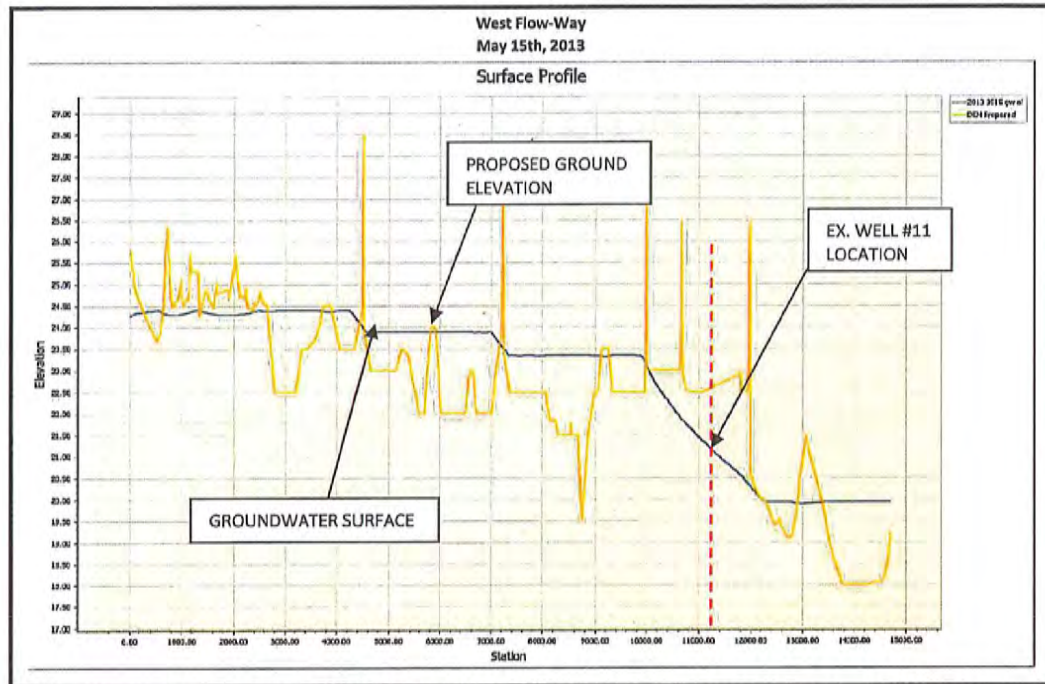


Figure 5-16 b.: ICPR4 2D Wet Season West Flow-way Profile Groundwater Time-Stage 05/15/2013

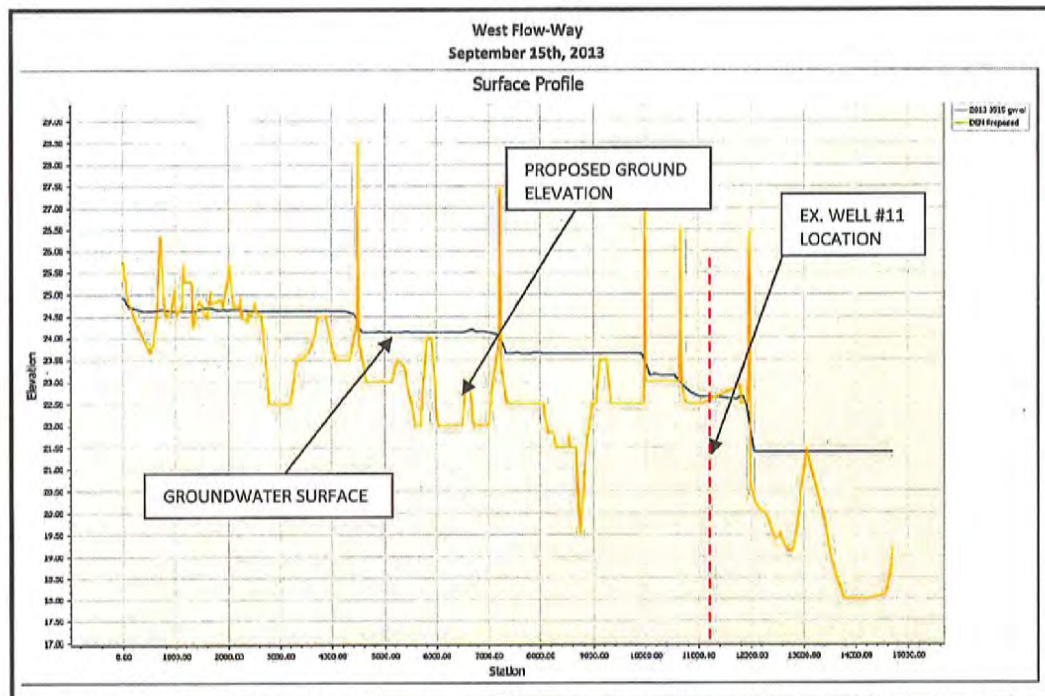


Figure 5-16 c.: ICPR4 2D Wet Season West Flow-way Profile Groundwater Time-Stage 09/15/2013

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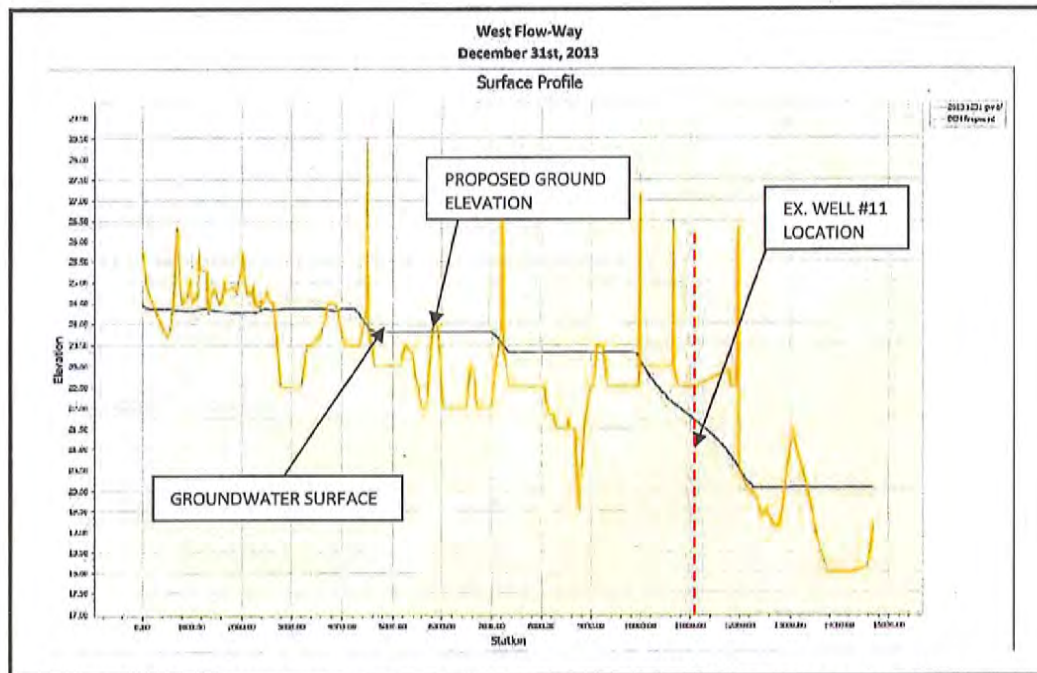


Figure 5-16 d.: ICPR4 2D Wet Season West Flow-way Profile Groundwater Time-Stage 12/31/2013

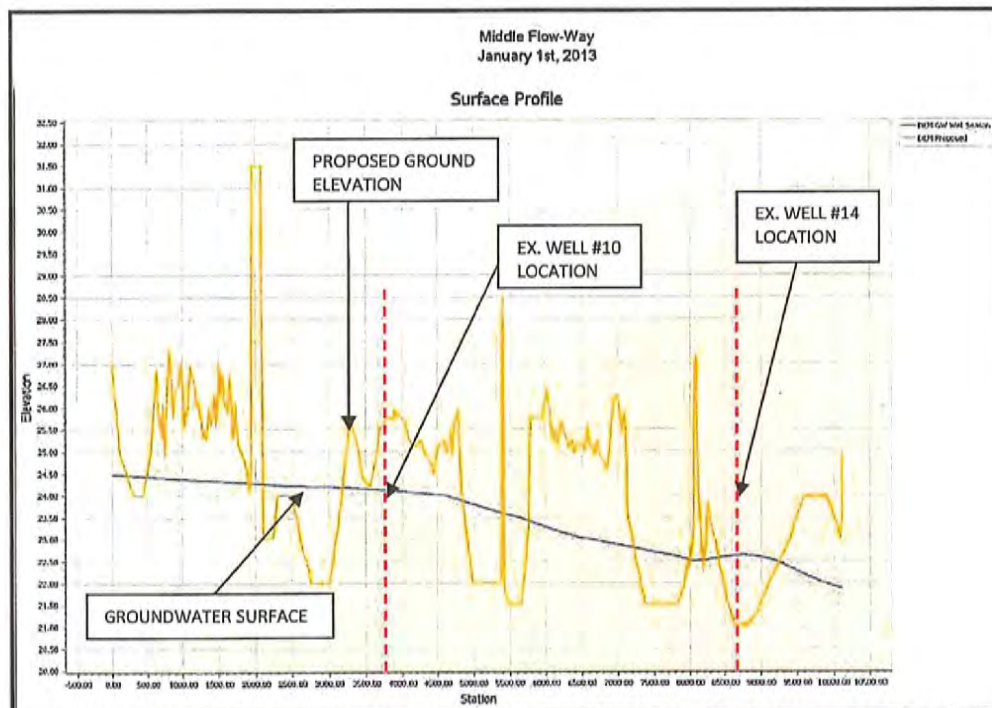


Figure 5-17a: ICPR4 2D Wet Season Middle Flow-way Profile Groundwater Time-Stage 01/01/2013

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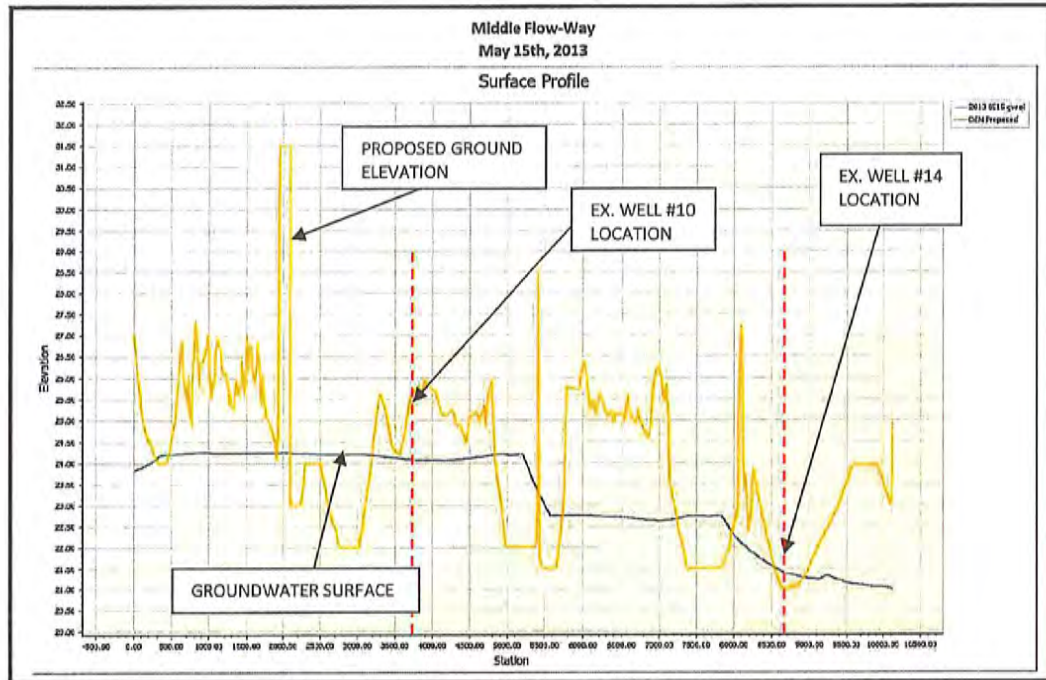


Figure 5-17b: ICPR4 2D Wet Season Middle Flow-way Profile Groundwater Time-Stage 05/15/2013

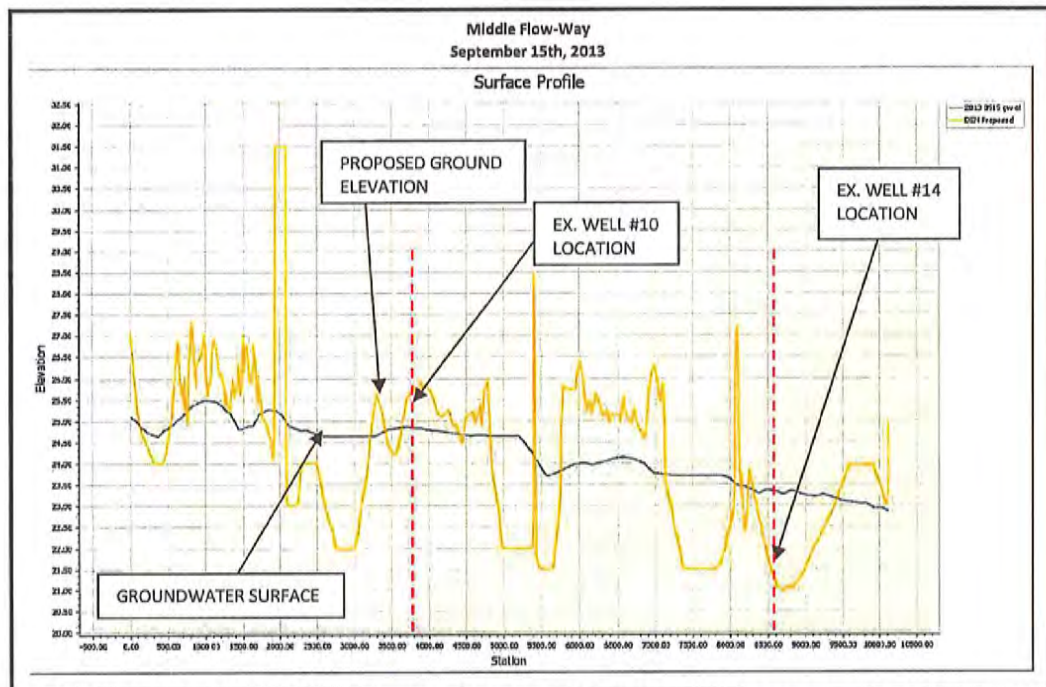


Figure 5-17c: ICPR4 2D Wet Season Middle Flow-way Profile Groundwater Time-Stage 09/15/2013

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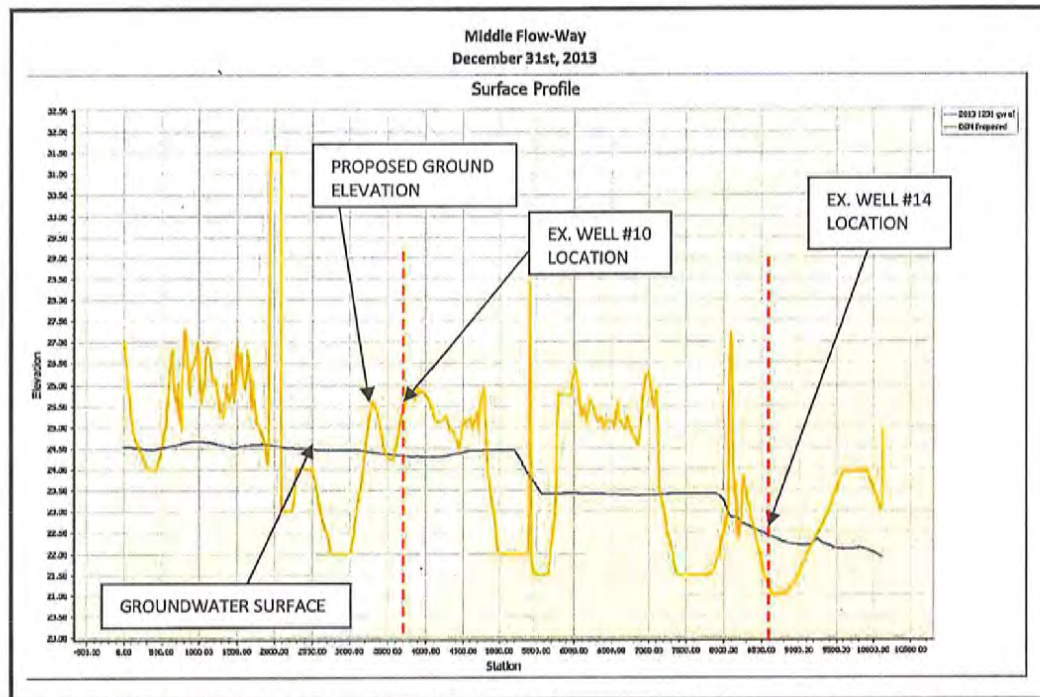


Figure 5-17d: ICPR4 2D Wet Season Middle Flow-way Profile Groundwater Time-Stage 12/31/2013

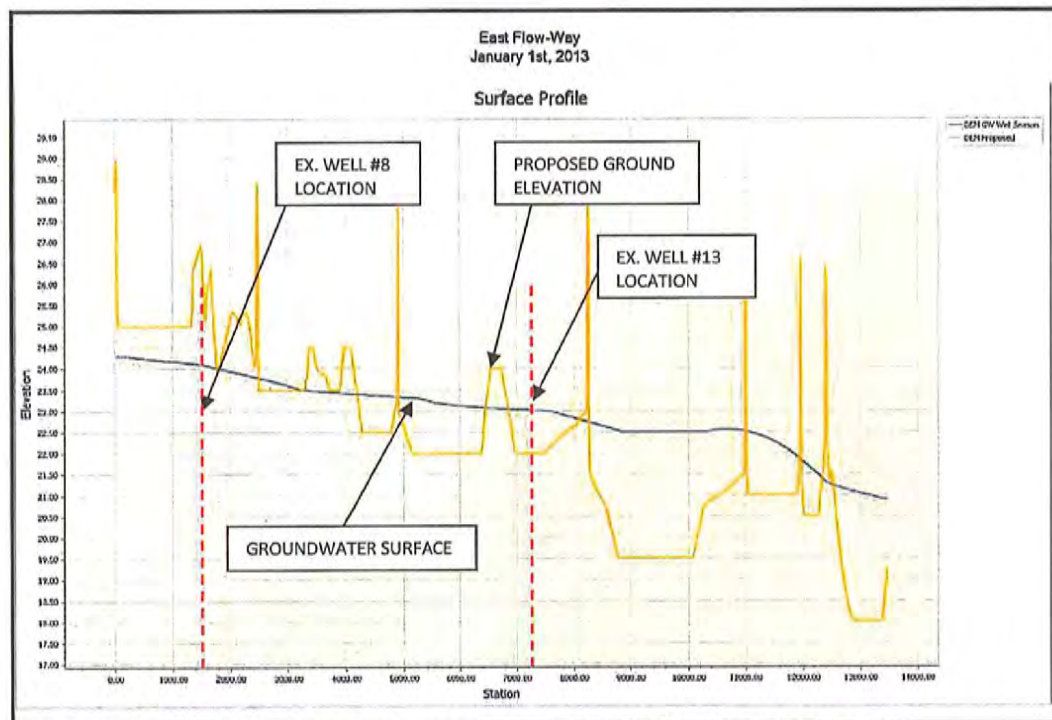


Figure 5-18a: ICPR4 2D Wet Season East Flow-way Profile Groundwater Time-Stage 01/01/2013

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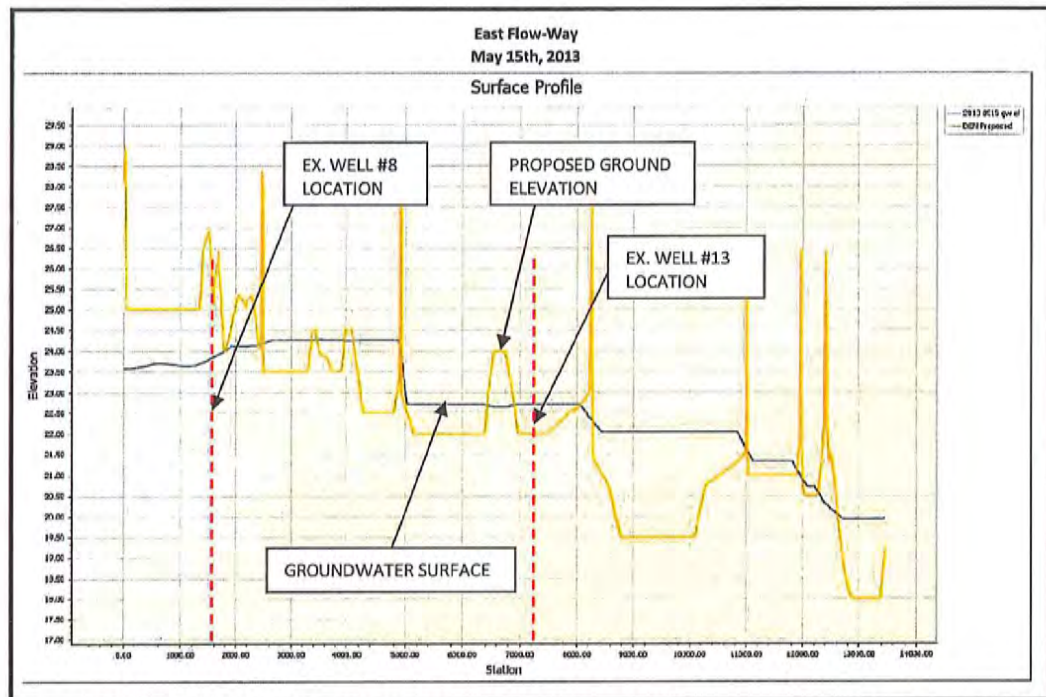


Figure 5-18b: ICPR4 2D Wet Season East Flow-way Profile Groundwater Time-Stage 05/15/2013

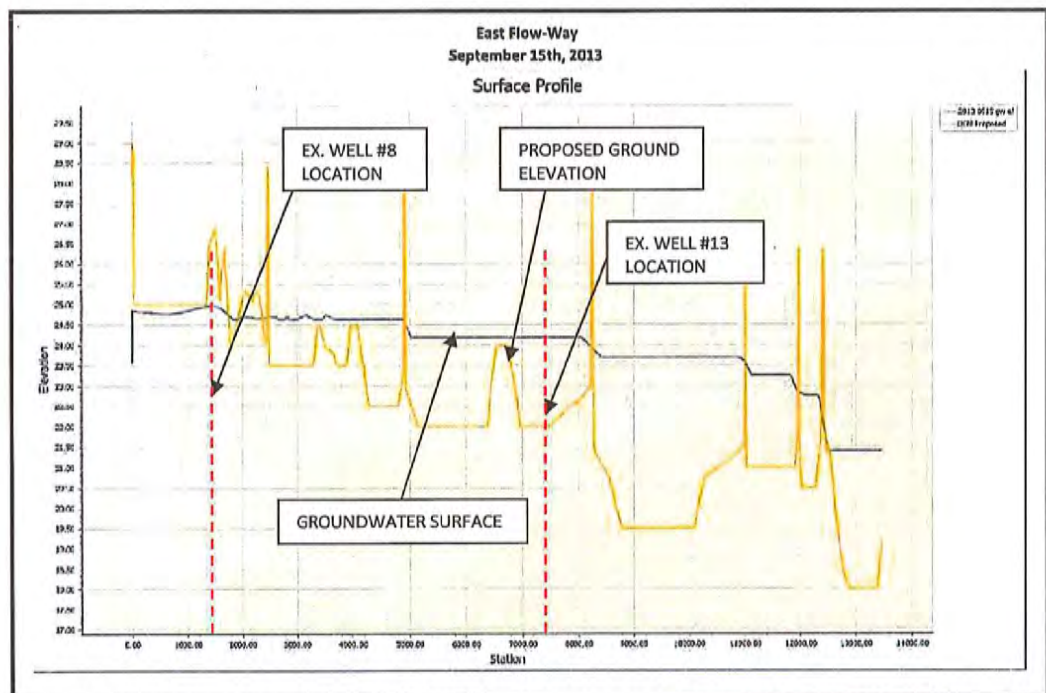


Figure 5-18c: ICPR4 2D Wet Season East Flow-way Profile Groundwater Time-Stage 09/15/2013

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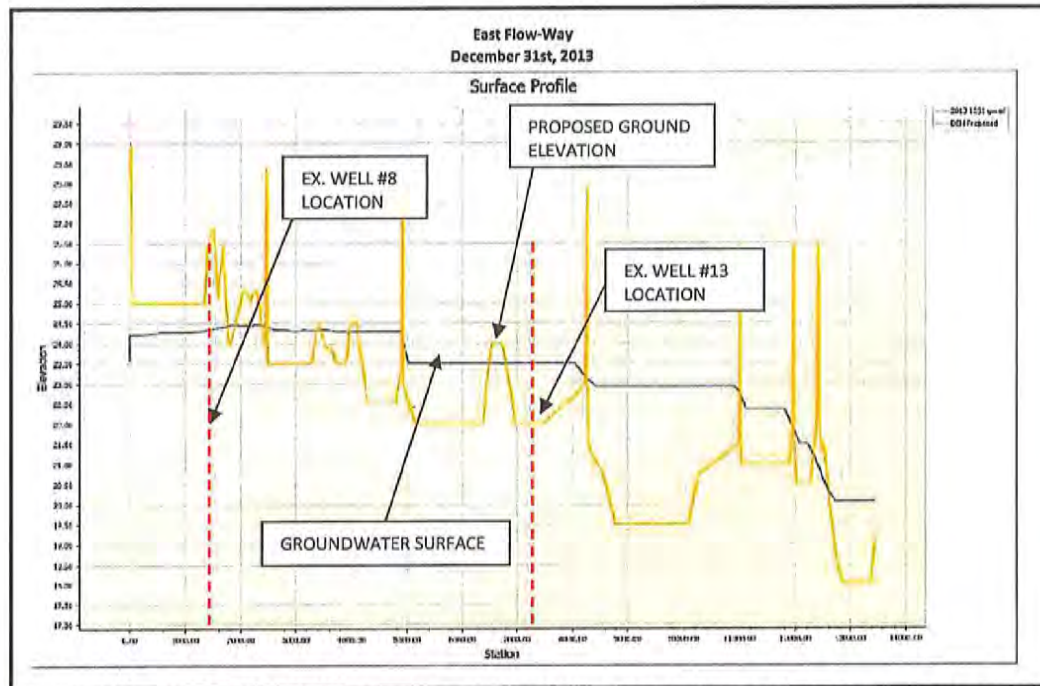


Figure 5-18d: ICPR4 2D Wet Season East Flow-way Profile Groundwater Time-Stage
12/31/2013

Based on review of the 2013 Wet Season results from the ICPR4 2D integrated model, it is evident that the groundwater levels will remain elevated for a longer period during the continuous simulation. This is specifically evident for each flow-way profile in comparing the groundwater levels from the 09/15/2013 date to the 12/31/2013 date. In comparing the recent monitoring well data for specific wells located within or adjacent to wetlands near the proposed flow-way areas, the majority of the groundwater elevations are depicted to be higher than the lowest of the well data and the longer period of higher groundwater levels is evident. In some cases, the peak groundwater surface shown for the 09/15/2013 time period is at or very close to the estimated "historic" seasonal high-water elevations for the corresponding wetland. This is evident for monitoring well #11 located in an existing wetland within the southwestern portion of the west flow-way. The historic seasonal high-water elevation is estimated at 22.75 FT-NAVD and the ICPR4 2D model indicates that on 9/15/2013, the groundwater level within the west flow-way at this location is 22.75 FT-NAVD. This will promote a longer hydroperiod for the adjacent wetlands, which is a significant benefit for the area.

6. Water Budget Narrative

The following water budget narrative is provided to more comprehensively describe historic, existing, and proposed conditions as it relates to the introduction and removal of stormwater from the Verdiana Village project. Prior to development, the subject property and surrounding areas were predominately characterized as native pine flatwoods, dominated by Slash Pine with an understory of mostly Saw Palmetto and mixed grasses. The site was generally flat with poorly drained sandy soils, with low water storage capabilities. The property was interspersed with isolated wetlands and a large, heavily vegetated, historic flow-way transecting the property that conveyed surface water flows from northeast to southwest. The historic flow-way was in turn intersected by a smaller and less-defined north-south flow-way. Collectively these predevelopment flow-ways formed a "flow-way system" that historically drained lands located

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north and east of the Verdana Village project, whose flows also helped to sustain onsite wetlands.

A 1996 United States Geological Survey (USGS) report (Water Supply Paper 2430) entitled "Evapotranspiration from Areas of Native Vegetation in West-Central Florida" estimated ET rates of approximately 38.2 inches per year for Cypress Swamps and 41.7 inches per year for Pine Flatwoods. Historic rainfall is assumed to be similar to recent statistical records which indicate an average of approximately 56 inches of rainfall per year. USGS also estimates the recharge rate to the underlying Water Table Aquifer to be between 0 to 10 inches per year. Therefore, in years where above-average rainfall was experienced and exceeded ET, the conveyance of surface water flows offsite would have occurred more often. Recharge to the Water Table Aquifer would have also potentially increased during periods with higher rainfall due to the higher water levels onsite. Runoff from the site would have been relatively low and is estimated at approximately 14 to 16 inches per year ($\text{Rainfall} - \text{ET} = \text{Runoff}$).

Citrus farming operations began on the property in the early 1960's and surface water drainage (stormwater) was routed south, along the western boundary of Section 32 and into the northern section of what is now referred to as the Panther Island Mitigation Bank. The site was modified and parallel citrus tree beds and furrows along with a network of drainage ditches were constructed. "Rim-ditching" occurred around the onsite wetlands to assist in stormwater conveyance and maximization of agricultural footprint. This elaborate network of ditches onsite was constructed because of the citrus trees' extreme vulnerability to excess water and elevated water tables. The historic flow-way system was eliminated, with the exception of a small portion that remained within a 40-acre out-parcel (now incorporated into the project). The water table was carefully controlled and maintained below the citrus tree root zones. Consequently, the grove was designed to drain and quickly remove stormwater, which also affected the vitality of the onsite wetlands by reducing water levels and hydroperiods. Recharge rates to the Water Table Aquifer would have been reduced accordingly.

Irrigation was necessary to overcome the higher ET rates for citrus which based on SFWMD's Blaney-Criddle calculator is approximately 50 inches per year. Rainfall is anticipated to be roughly the same as predevelopment conditions and groundwater was used to make up for the increase in ET. The average irrigation for the citrus crop is approximately 25.5 inches per year, with a majority of the groundwater used occurring during the dry season and early fall. Crop protection would have been used during colder months. Given the extensive drainage alterations made to the farm, it is possible that some portion of irrigation supplies would have drained off as seepage through the extensive ditching onsite.

Row crops were also cultivated on the western section of the property and were also irrigated from the Water Table Aquifer. However, the drainage systems were less intensive and composed of an orthogonal series of ditches. Based on Blaney-Criddle calculations, the ET rate for the row crops is approximately 20 inches per year. The lower ET value is due to the crop only being grown seasonally. Runoff values are anticipated to be similar to citrus.

The proposed residential development will result in a majority of the property being restored into a natural condition. ET and runoff rates for the restoration and preserve areas are anticipated to be close, if not equivalent to, predevelopment conditions. Stormwater within the development will be routed to engineered lakes and following the proper treatment, will enter the onsite flow-way system. The existing berms surrounding the onsite wetlands will be

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removed, allowing hydraulic connection to the newly constructed flow-ways. This will help to lengthen hydroperiods, and provide water levels more consistent with what these areas saw prior to agricultural development. The proposed flow-way design allows for appropriate water levels to be maintained by installing a number of weirs placed at the downstream end of each individual basin, allowing the water levels within these basins to be maintained, while accommodating the varying control elevations across the site. ET values for the landscaped area can approach 59 inches per year, further signifying the importance of the proposed reduction in irrigated area. ET for the lakes could approach 60 inches per year, but when adequate supplies are available, captured stormwater will be used for irrigation, further offsetting groundwater withdrawals from the Water Table Aquifer. Stormwater retained in the lakes will also facilitate higher recharge rates. As provided in the narrative above, the proposed development results in an increase in both water storage and recharge as compared to the existing agricultural operations. The project also results in a significant decrease in irrigation quantities. As provided in the narrative above, the Verdana Village planned development provides a more natural and balanced hydrologic condition and preserves, restores, and enhances the water resources in the DR/G

7. Summary

Based upon the described hydrologic and hydraulic analyses for both the existing conditions of the Verdana Village property and the proposed flow-way restoration areas, there is opportunity for the project to provide a hydrologic benefit to the region by providing significant capacity of water flow from lands located to the north, from the east and through the project site. The provided analyses have approximated a level of benefit based on the potential scenarios as described, taking into account the avoidance of adverse impacts upstream or downstream. Provide below is Table 6-1 is a Surface Water Management Summary of the resulting water surface elevations within the flow-way basins per modeled design storm scenario. Based upon the water surface stage results, it is evident that the proposed flow-way restoration areas provide a significant amount of surface water storage capacity. The difference in water surface stages between the 100-year, 3-day event and the sequential 100-year, 3-day events is minimal with the greatest difference occurring in the southern flow-way basin, S1. The modeling further demonstrates that the proposed system is capable of receiving anticipated future off-site flows from the north and east per the preliminary results from the Lee County Flood Mitigation Study, which furthers the goal of restoring the historic flow patterns within the area.

In addition to providing a significant amount of surface water storage, the 2D integrated model analysis indicates that the groundwater levels in both the dry and wet season will experience longer time period of elevated (higher) water levels. This is a critical aspect of the project as it demonstrates the enhancement of the hydroperiods of the wetlands within the property that have been adversely impacted by the agricultural uses.

The final control systems on the southern project boundary, is recommended to be operable control systems utilizing flash boards or similar operable mechanisms to allow for ability to modify the flows based on experienced conditions over time, and to accommodate future potential scenarios. The proposed operating schedule for the flow-way system control structures has been based upon the practical range of flow values and as downstream conveyance conditions are improved, the operation of the control weirs may be adjusted to allow more flow through the system. Staff gauges shall be installed on the outfall weir structures for the purpose of monitoring water elevations.

Submitted via CD on 11-27-19 / DCI2019-00018

**Table 6-1: ICPR4 ID Model
Flow-way Basins Surface Water Management Summary**

VERDANA VILLAGE FLOW-WAY SURFACE WATER MANAGEMENT SUMMARY								
		NO OFFSITE FLOW			INCLUDES TODAY'S OFFSITE FLOW			INCLUDES PRELIMINARY FLOOD MITIGATION STUDY FLOWS
FLOW- WAY BASIN	CONTROL ELEVATION	25-YR 3-DAY PEAK STAGE	100-YR 3-DAY PEAK STAGE	SEQUENTIAL 100-YR 3-DAY PEAK STAGE	25-YR 3-DAY PEAK STAGE	100-YR 3-DAY PEAK STAGE	SEQUENTIAL 100-YR 3-DAY PEAK STAGE	25-YR 3-DAY PEAK STAGE
E1	22.50	23.69	23.91	24.03	23.72	24.02	24.21	24.74
E2	23.00	24.12	24.28	24.30	24.16	24.32	24.35	25.26
E3	23.50	24.48	24.65	24.68	24.51	24.68	24.73	25.5
E4	24.00	24.89	25.05	25.07	24.98	25.13	25.17	26.12
E5	24.50	25.00	25.12	25.14	25.19	25.27	25.30	26.73
E6	25.00	25.35	25.46	25.47	25.38	25.49	25.50	26.8
M1	23.50	24.48	24.63	24.65	24.56	24.70	24.72	25.67
M2	24.50	25.09	25.18	25.20	25.18	25.27	25.28	26.25
M3	24.50	25.10	25.19	25.21	25.22	25.30	25.31	26.88
S1	20.00	23.28	23.79	23.93	23.45	23.91	24.11	24.28
W1	22.50	23.57	23.89	24.02	23.63	24.01	24.20	24.74
W2	23.00	24.10	24.27	24.29	24.14	24.31	24.34	25.25
W3	23.50	24.21	24.37	24.39	24.26	24.42	24.45	25.55
W4	24.00	24.58	24.67	24.68	24.65	24.73	24.73	25.96
W5	24.50	24.96	25.03	25.03	25.06	25.13	25.13	26.44
NOTE: ALL STAGES ARE IN FT-NAVD								

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Appendix A

Excavation and Grading Plan



- NOTES:
- PROPERTY BOUNDARY AND SITE PLAN PER J.R. EVANS, INC. DRAWING NO. VERONDA VILLAGE BASE 2019-05-29 2013 DWG DATED AUGUST 29, 2019.
- CAN40 SURVEYED WETLANDS LINES PER BARRACO AND ASSOCIATES, INC. DRAWING NO. 237A-25200 DATED JUNE 3, 2019.
- CAN50 WETLAND LINES HAVE NOT BEEN REVIEWED BY REGULATORY AGENCY AND ARE SUBJECT TO CHANGE.
- PEPPERLAND RANCH SURVEYED WETLAND LINES PER BANKS ENGINEERING DRAWING NO. BIE-WET-FLAG-02-15-16.DWG DATED FEBRUARY 18, 2016.
- PEPPERLAND RANCH UPLAND/WETLAND LIMITS WERE REVIEWED AND APPROVED BY SFWMD STAFF ON JULY 27, 2016.
- VERONDA SURVEYED WETLAND LINES PER DELISH FITZGERALD, INC. DRAWING NO. CORKSCREW GROVES.DWG DATED JANUARY 7, 2016.
- VERONDA SURVEYED WETLAND LINES WERE APPROVED BY THE SFWMD ON MAY 18, 2016.
- GRADING CONDITIONS AND LEVEL AT EXCAVATION ARE SUBJECT TO CHANGE PENDING APPROVAL OF CFA2019-00008.
- * THE FINAL ACRES ASSOCIATED WITH THE UPLAND AND WETLAND RESTORATION FOR AGRICULTURAL LANDS WILL BE DETERMINED AT THE TIME OF DEVELOPMENT ORDER.

REVISIONS	DATE	DRAWN BY	DATE
New site plan	8/22/19	D.B.	7/2/19
New site plan	8/29/19	DESIGNED BY S.J.	DATE 7/2/19
		REVIEWED BY S.J.	DATE 7/2/19

PASSARELLA
& ASSOCIATES

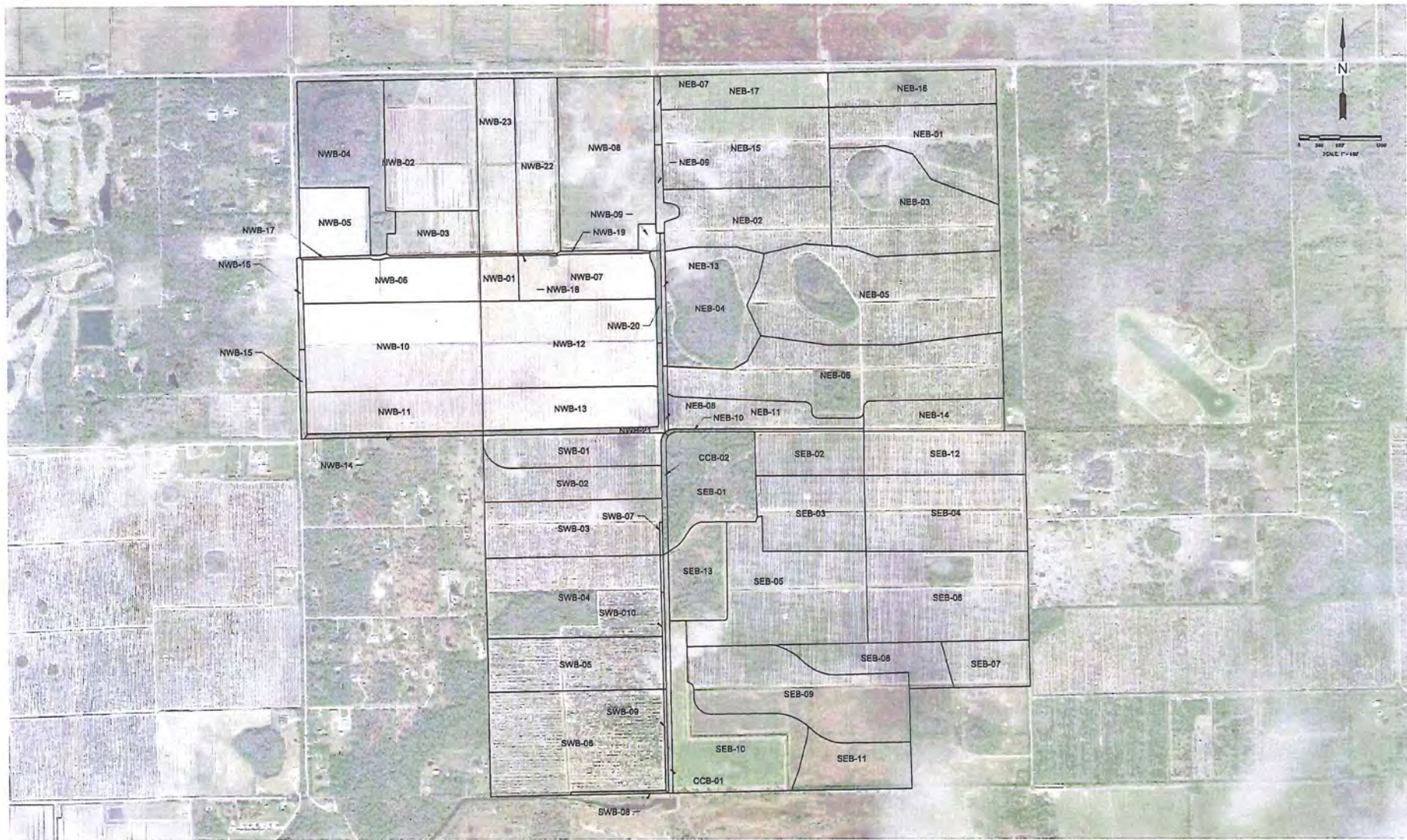
DRAWING No.	19CCL3043
SHEET No.	APPENDIX C

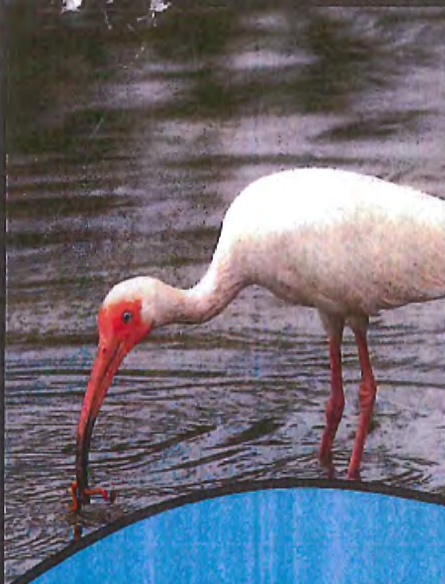
Submitted via CD on 11-27-19 / DC/2019-00018

Appendix B

Existing Conditions 1D ICPR4 Nodal Diagram

Submitted via ePlan on 11/27/19 12:03:04 PM





**Enhanced Lake Management Plan
Verdana Village
Lee County, Florida**



Prepared By:
Progressive Water Resources, LLC

November 2019



Verdana Village – Enhanced Lake Management Plan

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APPENDICES

Appendix A	Example of Deep Lake Aeration Device	Attached
Appendix B	Lee County Fertilizer Ordinance No. 08-08	Attached
Appendix C	Lee County Wellfield Protection Ordinance No. 07-35	Attached

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Introduction

The Verdana Village is distinct from other residential developments in Lee County's Density Reduction/Groundwater Resource (DR/GR) area in that it is composed of two adjacent and previously approved residential developments that are now being combined into the single, integrated project, as shown in **Figure 1**. The aggregation of the two proposed developments offers a unique opportunity to further enhance the water resource benefits beyond what was proposed in the earlier approvals. Therefore, the Verdana Village Enhanced Lake Management Plan (ELMP) not only provides for a substantial net benefit to the water resources within the DR/GR, but also affords increased protection to Lee County's Corkscrew Wellfield.

The Verdana Village property encompasses approximately 2,138.26 acres. The project site has had a long farming history with sections of the property used for cultivation of citrus and row crops for decades. In accordance with Lee County's Comprehensive Plan (The Lee Plan), proposed developments within the DR/GR must demonstrate the protection, preservation and enhancement of groundwater resources and environmental (wetland) systems. The Verdana Village project not only maintains the water resource protection benefits of each of the prior development plans (Verdana and Pepperland Ranch), but also extends those approved resource protections to a higher level, resulting in the following Water Resource Benefits:

Water Resource Benefits

- The total lawn and landscape irrigated areas within the proposed Verdana Village development represents a decrease from the sum of irrigated areas for the two previously approved development plans.
- The South Florida Water Management District's (SFWMD) irrigation allocation model for the Verdana Village lawn and landscape area indicates a decrease in quantities when compared to the sum of irrigated quantities for the two previously approved development plans. The Verdana Village also proposes to decrease the maximum or peak month (i.e. dry season) quantity.
- Verdana Village will utilize both groundwater and captured stormwater for irrigation, whereby groundwater quantities are used to supplement surface water irrigation supplies within the project's stormwater management system lakes. Irrigation quantities will then be withdrawn from the lakes to irrigate lawn and landscaped areas. The conjunctive use of both ground and surface water supplies are anticipated to conserve additional groundwater from the Water Table Aquifer when adequate surface water supplies are available, thereby furthering the project's resource benefits within the DR/GR.
- Along with a decrease in irrigated area, the smaller footprint of the Verdana Village project will result in a reduction in lawn care and maintenance activities for the turf and landscaped areas.
- The project includes a master-controlled irrigation system that regulates the initiation and

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overall duration of irrigation events in order to increase irrigation water use efficiency and enhance water conservation (i.e. no individual homeowner will have access to irrigation timers). Evapotranspiration sensors are also proposed for each irrigation pump station and future plans may include an integrated communication system between the controller clocks and the irrigation pump station(s).

- Improved surface water quality is anticipated through the creation of numerous interconnected stormwater management system lakes which outfall into a uniquely designed flow-way system. The flow-way system is composed of a series of shallow depressional sub-basins which stair-step stormwater down the property's southerly gradient. The flow-way system will increase stormwater residence time and promote increased recharge to the Water Table Aquifer. In addition, the series of shallow depressional sub-basins will provide enhanced floodwater storage, allowing the project to help alleviate historic stormwater flooding concerns on Carter Road to the east and Six L's Farm Road to the west.
- Only professional landscape businesses registered with Lee County will be allowed to perform their services at Verdana Village. Proof of completion of a Lee County-approved Best Management Practices (BMP) training program will be required.
- To further protect the water resources, the Verdana Village project includes both groundwater and surface water quality monitoring to verify the effectiveness of BMPs and safeguard Lee County's potable supply wells.

Collectively, these Water Resource Benefits represent a new standard of water resource and environmental protection and, in many cases, exceed the future land use requirements contemplated by Lee County's Comprehensive Plan. For ease of use and understanding, the contents of the Verdana Village ELMP contains Sections that address key water resource protection elements, with each of the main ELMP Sections in turn having Subsections that provide specificity regarding the management actions necessary to safeguard the water resources. Where applicable, BMPs are provided to highlight specific water resource protection measures.

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Section 1. Historic Surface Water Hydrology

To better understand the proposed water resource management actions contained within this ELMP, it is important to provide a basic context of the historic, pre-development surface water flows on the property. The project site gradually slopes to the south, with the highest land surface elevations of approximately 27 feet NAVD located on the northern sections of the property, immediately south of Corkscrew Road. The lowest land surface elevations are located in the south-central portion of the property at approximately 19 feet NAVD.

Prior to agricultural development, the project site was characterized as open rangeland and pine flatwoods interspersed with wet prairies, marshes and cypress forest. Historic aerial photography indicates a series of shallow depressions forming wetland slough systems, or flow-ways, that transected the property and conveyed surface water downslope towards a large wetland system now referred to as the "Corkscrew Swamp Sanctuary" and the Flint Pen Strand, both of which are part of the Corkscrew Regional Ecosystem Watershed (CREW).

With the advent of agricultural development, the natural flow-ways were backfilled, ditched and drained, resulting in surface water flows being redirected to two (2) main outlets: 1) on the west side of the project area along Six L's Farm Road, and 2) on the south-central portion of the property into what is now the Panther Island Mitigation Bank.

The Verdana Village project aims to generally recreate the historic flow-way system by accepting off-site stormwater flows from the north, originating from The Place residential development, and from the project's eastern boundary along Carter Road. The flow-way system will also accept stormwater flows from the project's internal stormwater management system and is proposed to eliminate the existing stormwater outlet along Six L's Farm Road. The proposed hydrologic connections to the north and east fully integrate the project into the surrounding land uses, with the outfall into the Panther Island Mitigation Bank remaining as the project's single stormwater discharge point.

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Section 2. Water Resources Best Management Practices

As the Verdana Village project evolves from predominately a "construction phase" to "partial construction" and ultimately to a "post-construction" residential phase, the BMPs must also evolve to maintain water resource protection. Construction of the proposed development may take up to 10 years, depending on market conditions. However, after initiation of construction, the vast majority of major earthwork is anticipated to be completed by the end of the 5th year.

A. Construction Phase BMPs

During construction of the proposed development, the greatest potential for impacts is associated with increased turbidity and/or potential spills of fuels/oils (hydrocarbons), otherwise known as Volatile Organic Compounds (VOCs) used to power earthmoving equipment, etc. Specific BMPs associated with the construction phase are provided below. The Developer will be responsible for maintaining compliance with all ELMP BMP requirements until such time that control of the development is transitioned to the Homeowner's Association (HOA) and/or Community Development District (CDD).

1. The site's general contractor shall be responsible for assuring that each contractor or subcontractor evaluates the work area before construction is initiated to determine if site conditions may pose particular problems for the safe and secure handling of any regulated substances.
2. If any regulated substances are stored on the construction site during the construction process, they shall be stored in a location and manner which will minimize any possible risk of release to the environment. There will be no intention to use, handle, produce or store regulated substances in violation of the Lee County Land Development Code Section 14-477, Stormwater Pollution Prevention Plan (SWP3) criteria.
3. Each contractor/subcontractor shall familiarize themselves with the manufacturer's safety data sheet supplied with each material containing a regulated substance and shall be familiar with procedures required to contain and clean up any releases of a regulated substance. Any tools or equipment necessary to accomplish the same shall be available in case of an accidental release.
4. In the event of a spill of a regulated substance, the contractor/subcontractor will immediately notify the Developer, who will in turn notify the Lee County Division of Natural Resources Director at (239) 533-8109 and the Florida Department of Environmental Protection (FDEP) South District Office at (239) 344-5600. Additional measures, such as those described in this ELMP's Section 4 (Part A), may also apply.
5. Upon completion of construction, all unused quantities of regulated substances and their containment systems shall be completely removed from the construction site.
6. Proper turbidity abatement measures, as required by the SFWMD, the Florida Stormwater Sedimentation Control Inspector's Manual standards, and the FDEP National Pollutant Discharge Elimination System (NPDES) permit criteria, will be maintained while construction is ongoing or until adequate vegetation or other stabilization measures have been established.

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B. Post-Construction Phase BMPs

After the Lee County Certificate of Compliance or the SFWMD stormwater management system certification is completed for a particular phase of the development, the primary focus of the ELMP will be maintaining the stormwater management system lakes since all internal runoff will be routed to these features for treatment. It is also anticipated that the Developer will establish and create an HOA and/or a CDD that will be responsible for the operation and maintenance of all aspects of the stormwater management system including the lakes, associated stormwater conveyance and control components, and the flow-way system in perpetuity. At a minimum, the operation and maintenance of the stormwater management and flow-way systems will require compliance with the terms and conditions contained within this ELMP. Additional details on BMPs, including monitoring of groundwater and surface water, are provided in Section 3 below.

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Section 3. Lake Maintenance

A. General Provisions

Proper lake maintenance is an integral aspect of this ELMP since internal stormwater runoff is directed to these features for treatment and attenuation. As an added protection to underlying groundwater resources, the excavation of the lakes will not penetrate any continuous impervious layer of clay or rock. In addition, the groundwater withdrawn from the proposed (new) onsite wells will be used to replenish a subset of stormwater lakes as needed for use in the master irrigation system.

As shown on **Figure 2**, surface water irrigation pumps will “repump” groundwater supplies and retained stormwater (surface water) for the irrigation of the residential development. The recycling of surface water quantities is expected to further improve water quality on the property and maintain high water quality in the lakes. The stormwater lakes must be maintained in perpetuity and the following management actions are proposed. Specific post-construction BMPs are also provided.

B. Deep Lake Management

The Verdana Village stormwater management lakes are proposed to be deeper than 12 feet in depth. In accordance with Lee County Land Development Code Section 10-329(d) (3), these lakes are therefore designated as “deep lakes” and are subject to specific criteria. Based on Lee County Code, the proposed deep lakes will satisfy the following criteria:

1. The stormwater management deep lakes will not exceed a maximum water depth of 20 feet and will not penetrate any continuous impervious layer of clay or rock.
2. A destratification (i.e. aeration) system will be installed in any lake that exceeds a 12-foot water depth. Documentation that the proposed destratification system is adequately sized and designed for each lake deeper than 12 feet will be submitted to Lee County for approval. An example of a deep lake aeration device is provided as **Appendix A**.
3. Native shade trees meeting the specifications of Lee County Land Development Code Section 10-420 will be planted around each deep lake perimeter at approximately one tree per 100 feet of lake shoreline measured at the detention lake’s water level control elevation. Trees and other plants may be grouped or clustered together around the lake perimeter.
4. The deep lake management techniques, including operation of the destratification system, will be maintained for the life of the stormwater management system and will be recorded in the development’s covenants, in accordance with the County Attorney's Office.
5. A post-construction bathymetric survey verifying each deep lake’s finished water depth, sealed by a professional surveyor and mapper, will be submitted to Lee County for approval.

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C. Nuisance and Exotic Vegetation Control

The HOA and/or CDD will be responsible for the removal (in perpetuity) of all nuisance and exotic vegetation from the stormwater management system as defined by the Lee County Land Development Code.

1. Lakes must be inspected annually and any prohibited vegetation must be removed by the use of hand-clearing or appropriate chemical treatment. Only aquatic-approved compounds may be utilized in the stormwater management system lakes.
2. Herbicides and/or algaecides may only be applied by a licensed professional applicator who meets the requirements of Lee County, and in accordance with manufacturer specifications. All applicable local, state and/or federal guidelines and requirements will also be followed.

D. Littoral Vegetation Preservation

Littoral zone vegetation is required to be installed by the Developer and maintained by the HOA and/or CDD (in perpetuity). Littoral zones provide habitats for wading birds, fish and aquatic invertebrates and also help to stabilize shorelines and reduce lake bank erosion.

1. Littoral plants that die will be replaced in accordance with Lee County Land Development Code requirements. The presence of littoral plants throughout the lakes is desirable and may also help to improve the water quality within the lakes.
2. The spread of littoral plants will be encouraged throughout the designated littoral areas.
3. Mechanical trimming or the use of land-based herbicides on desirable littoral plants is prohibited. Any trimming or removal of vegetation required to promote the survival and viability of littoral vegetation will be performed by hand or by approved aquatic herbicides and methods.

E. Fertilizer Application

Strict adherence will be maintained with Lee County's Fertilizer Ordinance. Individual lot owners are prohibited from applying fertilizer to their lots. Any person(s) applying fertilizers must have received a limited certification in compliance with Florida Statute 482.1562 prior to application of any and all fertilizers. Additionally, fertilizer content and application rate must be in compliance with Lee County's Fertilizer Ordinance. The Lee County Fertilizer Ordinance No. 08-08 is provided as **Appendix B**.

1. All professional landscape businesses must register with Lee County prior to performing landscape fertilization services within unincorporated Lee County.
2. At least one (1) employee of a firm employed to perform landscape fertilization services must be a Certified Professional Landscaper.

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3. Proof of completion of a Lee County-approved BMP training program must be provided to the Division of Lee County Natural Resources.
4. At least one (1) BMP-trained employee must be onsite while fertilizers are applied. A registration decal provided by the division must be displayed on all company vehicles.

F. Erosion Protection and Lake Bank Maintenance

Lake banks are susceptible to erosion due to overland flow of stormwater runoff, wave action, and the natural seasonal fluctuation of water levels. Accordingly, lake banks within the project are designed to minimize this potential for erosion.

1. Lake banks will be inspected annually to identify areas of erosion. Once identified, the erosion will be repaired and the source of erosion shall be eliminated, if possible.
2. Where excessive erosion occurs, repair of the lake banks and/or enhancement of stabilization measures may be necessary.
3. No motorized boats will be allowed within any of the onsite stormwater management lakes.

G. Lake Education Program

A narrative explaining the benefits of littoral vegetation, lake maintenance and surface and groundwater quality will be made available to residents.

1. Lake experts will be encouraged to attend the HOA and/or CDD meetings annually to discuss the lake system operation and maintenance requirements.
2. Homeowners will be informed that they are prohibited from removing or trimming littoral vegetation.
3. Additionally, the homeowners will be made aware of the extreme importance regarding any introduction of hazardous materials or substances into the lakes.

H. Pesticide, Herbicide or Fungicide Applications

All applications of pesticides, herbicides, algaecides and/or fungicides shall be applied by a licensed professional applicator, meet the requirements of Lee County, be applied in accordance with the manufacturer's specifications, and shall meet all applicable local, state and/or federal guidelines and requirements. Only approved aquatic herbicides may be used to treat the stormwater management system.

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1. Homeowners shall be prohibited from applying pesticides, herbicides and/or fungicides to their lots. These activities will only be performed by certified contractors approved by the HOA and/or CDD.
2. The use of any chemical product in a manner that will allow airborne or waterborne entry of such products into the stormwater management system is prohibited. This requirement shall not apply to the use of chemical agents by certified lake management specialists for the control of algae and nuisance vegetation within the stormwater management system lakes. However, application of such agents shall be in compliance with the requirements of Lee County, applied in accordance with the manufacturer's specifications, and meet all applicable local, state and/or federal guidelines and requirements.
3. Pesticides, fungicides and herbicides will be used only in response to a specific problem and in the manner and amount recommended by the manufacturer. Broad application of pesticides, fungicides and herbicides as a preventative measure is prohibited.

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Section 4. Corkscrew Wellfield Protection

A. Corkscrew Wellfield Protection

A vast majority of the Verdana Village development is located outside and downgradient of the Lee County Wellfield Protection Zones, as shown in Figure 3, with only the northwestern-most stormwater management lakes partially intersecting the five- and ten-year travel time zones. The long travel time is due to the southerly groundwater and surface water gradients and the fact that the nearest Lee County potable well site is located over 900 feet from the nearest stormwater management lake.

However, to safeguard the County's nearest public supply wells, this ELMP includes detailed water quality monitoring of two (2) dedicated Water Table Aquifer (i.e. upper Tamiami Formation) monitor wells as well as one (1) of nearest stormwater management system lakes. In addition, surface water quality monitoring is also proposed for stormwater inflows coming onto the Verdana Village project from the north and east, and at the final outfall near Panther Island, as shown in Figure 3. The level of water quality assurance offered by this ELMP, coupled with Lee County's five- to ten-year prediction of groundwater travel times, offers abundant assurance that, in the unlikely event that degradation of water quality or contamination occurs, ample time exists to initiate remedial measures and safeguard Lee County's wellfield.

If an unforeseen spill, accidental release of chemicals or increased concentration of contaminants is detected, remedial measures will be immediately put into place. Such measures could include some or all of the following actions: 1) the implementation of increased water quality testing; 2) measures to replenish the lake with groundwater for dilution and, if necessary, withdraw the water from the lake for treatment; 3) the installation of additional monitoring wells between the nearest stormwater management system lakes and Lee County's public supply wells; and 4) if deemed necessary, the construction and operation of groundwater intercept or recovery wells. These remedial actions would be triggered by detection of high concentrations above the Maximum Contaminant Levels (MCLs) for the compounds. A copy of the Lee County Wellfield Protection Ordinance No. 07-35 is included in Appendix C.

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Section 5. Surface Water Quality Monitoring Program

A. General Data Quality Objectives

All surface water quality samples will be collected in accordance with Chapter 62-160, Florida Administrative Code (F.A.C.), and the FDEP's Standard Operating Procedures (SOPs) DEP-SOP-001/01 FQ 1000 Field Quality Control Requirements and FDEP-SOP-001/01 FS 2100 Surface Water Sampling. A summary of the proposed surface water sampling schedule is provided in the attached Table 1.

B. Surface Water Monitoring Goals

The purpose of the surface water monitoring program is to assure that surface water coming onto, originating within, and leaving the project meet all applicable requirements of the SFWMD Environmental Resource Permit (ERP) program authorized pursuant to Part IV of Chapter 373, F.S. and all applicable requirements of Chapter 62-302, F.A.C., Surface Water Quality Standards. Additionally, water quality monitoring of the designated stormwater management lake will verify the efficiency of the ELMP management actions and assure the lakes' health for the residents' enjoyment. Please note that if there is no flow observed at any of the three (3) designated flow-way system monitoring points at the time of sample collection, the "no flow" condition will be noted and no surface water sample will be taken. Additional surface water quality parameters may be required if the FDEP determines that the sub-watershed or FDEP Water Body Identification (WBID) No. 3258C becomes impaired.

C. Surface Water Quality Monitoring

Immediately after the operational completion of the proposed stormwater management system shown in **Figure 3**, the closest lake to Lee County's public supply well will be sampled quarterly (March, June, September and December). Surface water quality grab samples will be collected per FDEP protocol and analyzed by a NELAC/TNI-certified laboratory. After completion of the flow-way system, quarterly surface water quality sampling at the northern, eastern and southerly property boundaries will also commence. The surface water quality parameters to be tested are listed below and summarized in the attached **Table 2**. In addition, the attached **Table 2** also includes the laboratory's Accuracy, Precision and minimum Method Detection Limit (MDL). Please note that the Practical Quantitation Limit (PQL) for each parameter varies between laboratories, however the PQL typically equates to four times the MDL.

- **Field Parameters – Depth of Water, Dissolved Oxygen, pH, Temperature and Specific Conductivity**
- **Lab Parameters – Total Nitrogen, Nitrate and Nitrite, Ammonium, Ammonia, Total Kjeldahl Nitrogen, Total Phosphorus, Chlorophyll-a, and Ortho-phosphate.**

Quarterly surface water quality monitoring shall be continued for a minimum of five (5) years after operational completion of the stormwater management system. After five (5) consecutive years of testing, a request for discontinuation or reduction in the monitoring requirements will be proposed to the Lee County Natural Resources Department if it can be demonstrated that the surface water quality is being maintained within applicable State standards.

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Section 6. Groundwater Quality Monitoring Program

A. General Data Quality Objectives

All groundwater quality samples will be collected in accordance with Chapter 62-160, F.A.C. and the FDEP-SOP-001/01 FQ 1000 Field Quality Control Requirements and FDEP-SOP-001/01 FS 2200 Groundwater Sampling. A summary of the proposed groundwater sampling schedule is provided in the attached **Table 1**.

B. Groundwater Monitoring Goals

The purpose of the groundwater monitoring program is to assure that the County's public supply wellfield is protected. In addition to the surface water monitoring of the stormwater management system, the groundwater monitoring affords a comprehensive means to safeguard drinking water supplies and the overall water resources of the DR/GR.

C. Groundwater Quality Monitoring

Coincident with the operational completion of the proposed stormwater management system, two (2) Water Table Aquifer monitoring wells will be constructed between the northern corners of the development and the nearest public supply wells (Site No. 39S and 38S), as shown in **Figure 3**. The proposed monitoring wells will be constructed such that the sampling interval (i.e. open hole section) are similar to Lee County's surficial aquifer public supply wells (Site No. 39S and 38S). The groundwater quality parameters to be tested are listed below and summarized in the attached **Table 3**. Sampling of the proposed groundwater monitoring well will occur simultaneously with the quarterly surface water quality sampling. In addition, the attached **Table 3** also includes the laboratory's Accuracy, Precision and minimum MDL. Please note that the PQL for each parameter varies between laboratories, however the PQL is typically four times the MDL.

- **Field Parameters – Water Table Aquifer Elevation, pH, Temperature and Specific Conductivity**
- **Lab Parameters – Chloride, Endothall, Glyphosate and Diquat**

Semi-annual groundwater quality monitoring shall be continued for a minimum of five (5) years after operational completion of the stormwater management system. After five (5) years of testing, a request for discontinuation or reduction in the monitoring requirements will be proposed to the Lee County Natural Resources Department if it can be demonstrated that groundwater quality is being maintained within applicable State standards.

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Section 7. Water Quality Data Reporting and Analysis

Surface and groundwater quality data will be submitted to the Lee County Natural Resources Department staff in an approved electronic format within 30 days of receiving results from the contract laboratory if an issue has been detected. Otherwise, data will be submitted annually. The submittal will include all field notes, field and laboratory water quality data results and all previously collected (i.e. period of record) water quality data. The submittals will also include a brief narrative on the most recent sample collection, sample chain of custody, descriptions of any re-testing of erroneous values, and any water quality exceedances.

By **March 1 of each year**, a Water Quality Summary Report for the preceding calendar year shall be supplied to Lee County Natural Resources staff which summarizes the surface and groundwater testing results for the development. The results will include a summary table that lists all the field and laboratory parameters for the monitoring locations. Laboratory parameter concentrations that fall below the PQL for that parameter will be reported with no value; however, a value qualifier of "I" (i.e. between the MDL and PQL) or "U" (below the MDL) will be included in the summary table.

All water quality data for the analytes listed in the attached **Tables 2 and 3** that are detected in concentrations above the laboratory PQL will be reviewed, graphed and statistically analyzed for trends and exceedances above two (2) standard deviations of the mean of all values. Any reported concentrations above the MCL will be clearly identified, as well as remedial actions which were used to timely reduce that particular analyte's concentration.

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Section 8. Remedial Actions

In the unforeseen event that any significant surface and/or groundwater impacts are identified as a result of a hydrocarbon spill or pesticide/herbicide application at the subject property, the Developer or designee of the HOA and/or CDD will notify the Director of the Lee County Natural Resources Division within no more than 12 hours (or next business day). If a spill or release "presents an immediate threat to human health and/or the environment" then the FDEP Office of Emergency Response (OER) will be contacted within 24 hours. Guidance outlining the definition of a release as well as reporting procedures is presented in the OER webpage located at:

http://www.dep.state.fl.us/per/reportable_incident.htm.

The Developer or their successor(s) will coordinate contamination assessment and remediation efforts with Lee County and will comply with applicable local, state and federal permitting requirements. The initial phase of the remediation plan will consider the actions outlined in Section 4 and may consist of additional temporary monitoring wells installed for the short-term temporal monitoring of potential subsurface impacts and to evaluate the horizontal and the vertical distribution of the impacted area. Based on the findings of the initial phase, if necessary, a more comprehensive assessment may be required.

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Section 9. In Conclusion

The information and technical requirements in this ELMP are provided to the Developer or designee of the HOA and/or CDD to assist with understanding the importance of a well-maintained and fully-functioning stormwater management system. The stormwater management system lakes within the development are not only required by state law but can also be a source of beauty and enjoyment for the residents while maintaining the value and integrity of the water resources. The Verdana Village flow-way system is an integral hydrologic feature that enhances the project site and promotes increased recharge to the shallow Water Table Aquifer. These features and the management actions required herein demonstrate an exceptional level of protection, preservation and enhancement of groundwater and surface water resources in the DR/GR.

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Table 1
Quarterly Water Quality Sampling Schedule

Date	Sample Type	Sample Location
January-31	N/A	N/A
February-28	N/A	N/A
March-31	Surface Water	4 locations
	Groundwater	Water Table Aquifer Monitor Well
April-30	N/A	N/A
May-31	N/A	N/A
June-30	Surface Water	4 Locations
July-31	N/A	N/A
August-31	N/A	N/A
September-30	Surface Water	4 locations
	Ground Water	Water Table Aquifer Monitoring Well
October-31	N/A	N/A
November-30	N/A	N/A
December-31	Surface Water	4 Locations

*See Figure 3 for groundwater and surface water quality sampling locations

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Table 2
Surface Water Quality Analytes

Field Parameters					
Parameter	Units	Precision (%RPD)	Accuracy (%Recovery)	MDL	Sampling Frequency
Depth of Water	Feet	0.01	NA	NA	Quarterly
Dissolved Oxygen	mg/L	FT 1000-1	FT 1000-1	NA	Quarterly
pH	SU	FT 1000-1	FT 1000-1	NA	Quarterly
Temperature	Deg C	FT 1000-1	FT 1000-1	NA	Quarterly
Specific Conductivity	µS/cm	FT 1000-1	FT 1000-1	NA	Quarterly
Laboratory Parameters (Nutrients)					
Total Nitrogen	mg/L	CALC	CALC	CALC	Quarterly
Nitrite + Nitrate	mg/L	5	90-110	0.004	Quarterly
Ammonium	mg/L	CALC	CALC	CALC	Quarterly
Ammonia	mg/L	17	90-110	0.008	Quarterly
Total Kjeldahl Nitrogen	mg/L	11	90-110	0.05	Quarterly
Total Phosphorus	mg/L	10	90-110	0.008	Quarterly
Chlorophyll-a	mg/L	20	93-108	0.25	Quarterly
Ortho-phosphate	mg/L	10	88-118	0.002	Quarterly

Table 3
Groundwater Quality Analytes

Field Parameters					
Parameter	Units	Precision (%RPD)	Accuracy (%Recovery)	MDL	Sampling Frequency
Temperature	Dec C	FT 1000-1	FT 1000-1	0.1	Semi-annually
Specific Conductance	µmhos/cm	FT 1000-1	FT 1000-1	1	Semi-annually
pH	SU	FT 1000-1	FT 1000-1	0.01	Semi-annually
Water Table Aquifer Elevation	ft NGVD	NA	NA	0.01	Semi-annually
Laboratory Parameters (Nutrients)					
Chloride	mg/L	0-20	90-110	1	Semi-annually
Endothall	µg/L	0-20	90-110	9	Semi-annually
Glyphosphate	µg/L	0-20	90-110	6	Semi-annually
Diquat	µg/L	0-20	90-110	0.4	Semi-annually

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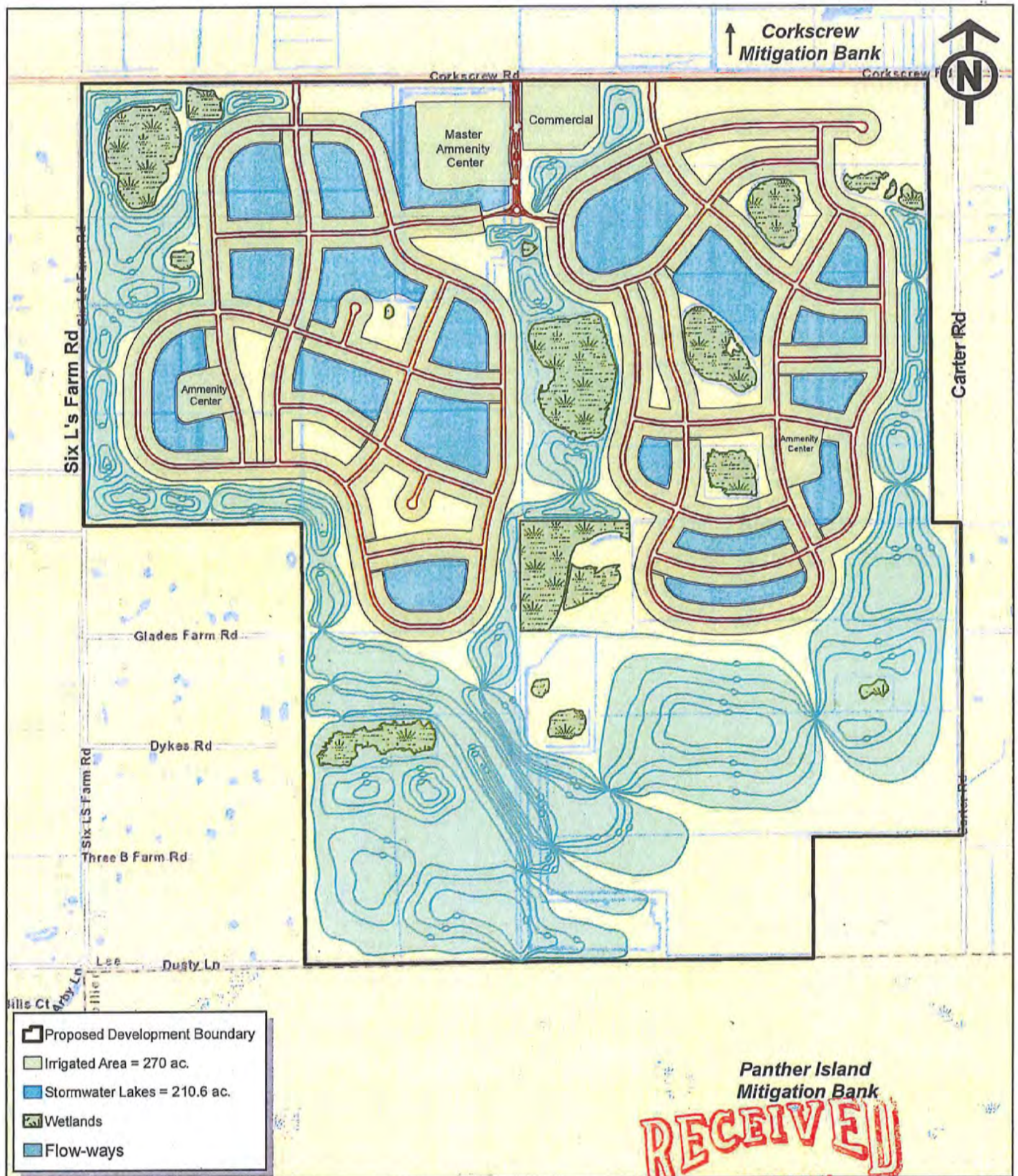
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Notes:

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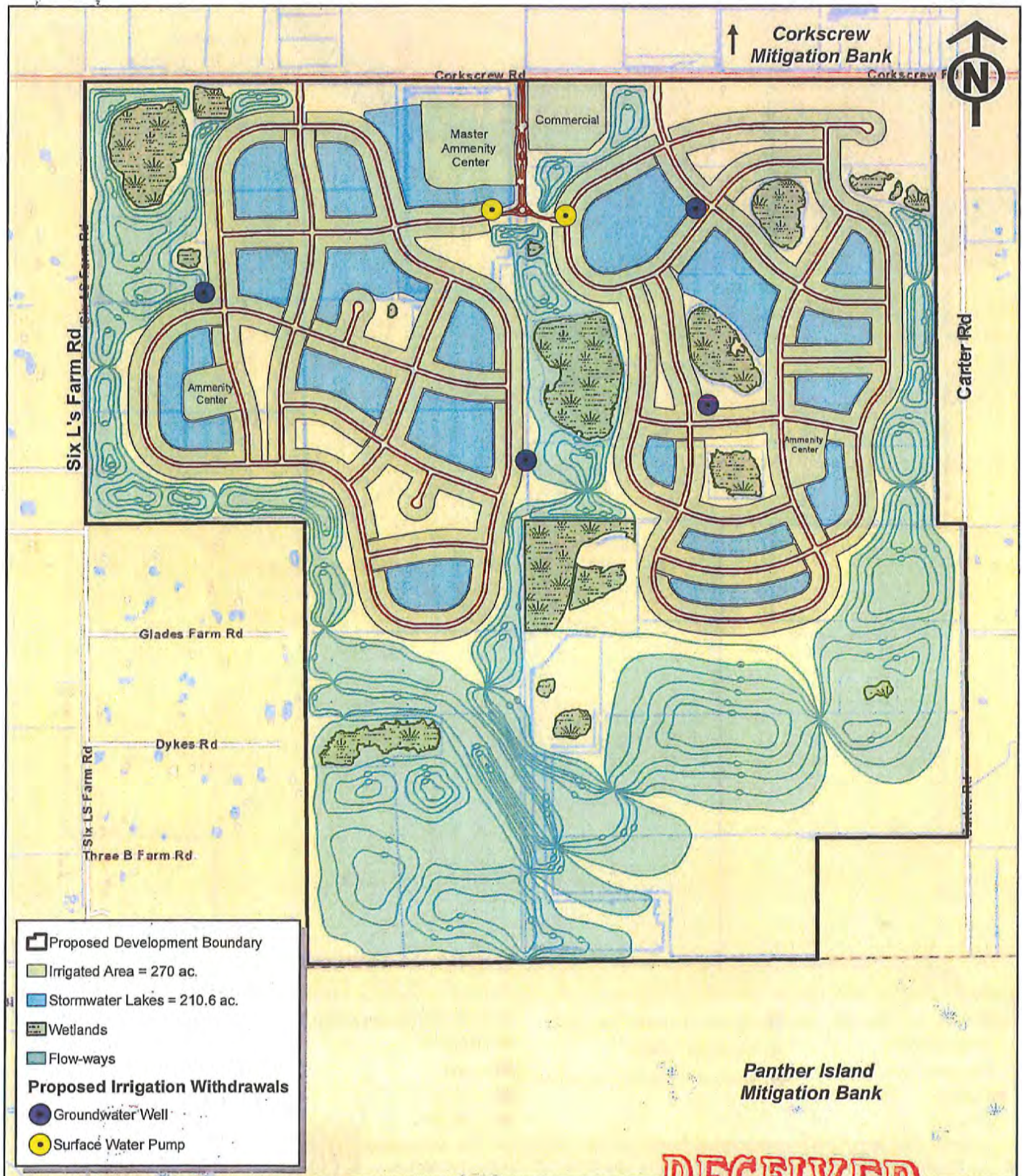


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 Panther Island Mitigation Bank

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Figure 1
 Proposed Residential Development
 Verdana Village
 Lee County, Florida

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 Integrated Water Resource Consultants
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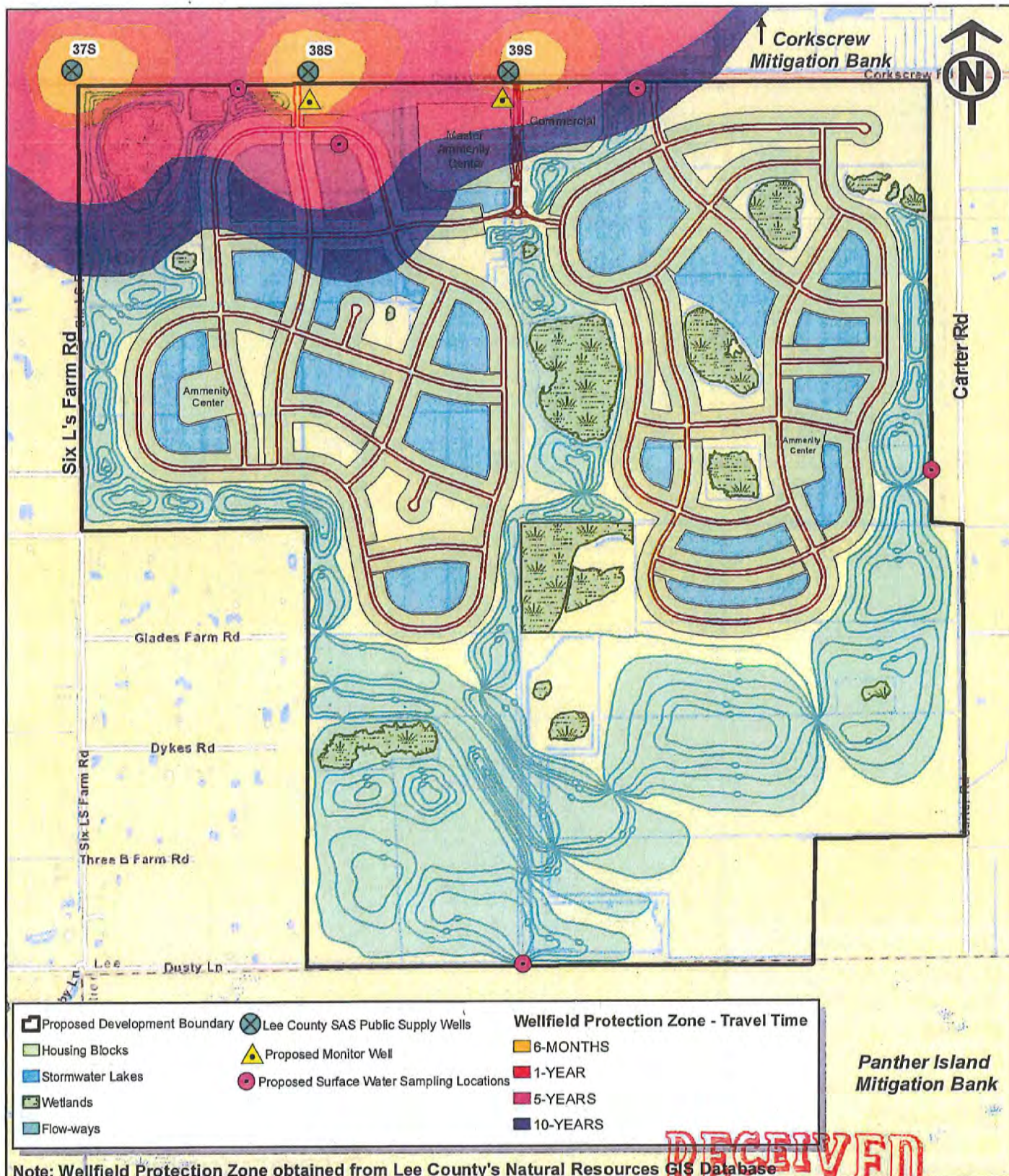
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Figure 2
 Proposed Irrigation Withdrawals
 Lee County, Florida

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APPENDIX A

Example of Deep Lake Aeration Device

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Vertex Water Features Pond and Lake Aeration

BOTTOM AERATION

With
Vertex
MicronBubble™
Technology



AIR3 XL2

Cabinet shown is representative, actual system may be different.

AIR3 XL2™

The Vertex Air3 XL2™ pond aerator is a super-efficient, affordable and safe system. In a typical pond, an Air3 XL2™ can aerate approximately 3-4 acres depending on shape, slope, oxygen demand and other factors. A 1/2hp (0.37kW) Brookwood™ SafeStart™ compressor, housed in our rustproof aluminum outdoor cabinet, feeds three bottom mounted CoActive AirStations™ utilizing Vertex's MicronBubble™ technology. The rising force of millions of bubbles circulates the entire water column, entraining bottom water up to the surface allowing vital oxygen to be absorbed and poisonous gasses expelled. With no electricity in the water, Vertex's aeration systems are safe for any type of water recreation.

Our systems have a full 3-year Vertex warranty, excluding wearable parts (air filters and compressor maintenance kits) plus a Limited Lifetime warranty against rust and corrosion on the cabinet, 5-year warranty on the AirStations™ and a 15-year warranty on BottomLine™ supply tubing.



FEATURES

AIRSTATIONXL2™

- ♦ Total pumping capacity of up to 11,400 GPM
- ♦ Six 9" flexible membrane discs with MicronBubble™ technology
- ♦ Shallow water Airstation optional for depths lower than 8'
- ♦ Self-cleaning, low maintenance
- ♦ Powder-coated stainless steel self-sinking base unit designed to prevent sinking into soft bottom sediments
- ♦ 5-year "No Questions" warranty

BROOKWOOD™ COMPRESSOR

- ♦ 3-year Vertex warranty, excluding wearable parts (air filters and compressor maintenance kits)
- ♦ Vertex SafeStart™ Technology
- ♦ UL, 115v or 230v, 35 Max PSI
- ♦ Thermal overload protection
- ♦ 1/2hp (0.37kW): low electrical costs
- ♦ 2-3 year extended duty cycle between scheduled maintenance

QUIETAIR™ CABINET

- ♦ Class "A" GFCI protection on all 115v circuits
- ♦ Powder coated aluminum for a durable attractive finish
- ♦ High capacity 290 CFM fan
- ♦ Easy access design with cam lock
- ♦ Easy plug-in connection to waterside electrical service
- ♦ Disconnect switch
- ♦ Heavy duty, light weight mounting pad included
- ♦ Sound dampening kit optional
- ♦ Limited lifetime warranty against rust

BOTTOMLINE™ TUBING

- ♦ Over-sized I.D. for high flow
- ♦ Self-weighted for easy installation
- ♦ Available in 100' and 500' increments
- ♦ 15-year Vertex warranty

BENEFITS TO THE LAKE

- ♦ High pumping rate easily penetrates stratification layers
- ♦ Circulates entire water column
- ♦ Increases oxygen levels throughout water column
- ♦ Promotes beneficial bacteria growth
- ♦ Prevents low oxygen fish kills
- ♦ Reduces nutrient levels and associated algae growth
- ♦ Oxidizes/reduces bottom muck
- ♦ Expands oxygenated habitat for improved fisheries
- ♦ Reduces aquatic midge and mosquito insect hatches
- ♦ Eliminates foul odors from undesirable dissolved gases
- ♦ Safe entry – no electricity in the water
- ♦ Extremely energy efficient

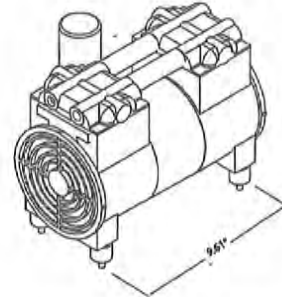
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SPECIFICATIONS: AIR3XL2™ LAKE AERATION SYSTEM

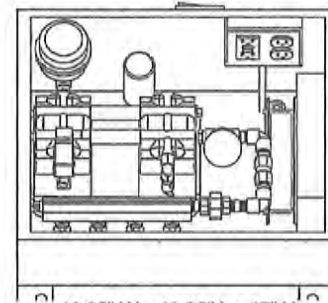
BROOKWOOD™ COMPRESSOR

1/2hp (0.37kW), 115v or 230v, Single Phase piston type compressor. Built for continuous 24/7 operation and equipped with Vertex SafeStart™ technology allowing auto restart under maximum rated pressure without motor damage. Super-duty Brookwood™ compressors incorporate upgraded rotors, stators, valve plates, bearings and capacitors and are thermally protected, oil-free, and require no lubrication; just periodic cleaning of included washable air filter. Extended duty cycle is approximately 2 to 3 years for compressor maintenance, about 2 to 3 times the duty cycle of ordinary piston and rotary vane compressors. All Brookwood™ SafeStart™ compressors carry a 3-year Vertex warranty, excluding wearable parts (air filters and compressor maintenance kits).



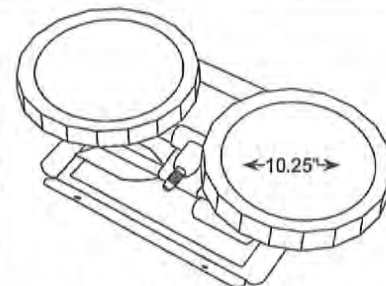
QUIETAIR™ CABINET

Enclosure comes equipped with cam lock for security, fully gasketed and constructed of aluminum with gray electrostatically-bonded powder coating to provide Limited Lifetime warranty against cabinet rust and corrosion. Enclosure furnished with stamped ventilation grills to insure forced air circulation and an integral cooling fan with thermal protection, producing 290 CFM to guard against excessive compressor operating temperatures. Cabinet provided with HDPE mounting pad. Enclosure comes with class A GFCI protection on both the compressor and fan circuits. Quick disconnect switch included. Side mounted muffler box and additional insulation optional for quieter operation.



AIRSTATION XL2™ ASSEMBLY

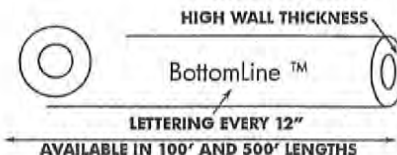
Diffuser station consists of two self-cleaning, 9" diameter, flexible membrane diffusers of EPDM compound with 100% rebound memory, each producing millions of fine 500 to 3000 micron bubbles – the majority 500 to 1000 microns. Each diffuser station base unit is made of powder-coated stainless steel and designed to prevent settling into soft bottom sediments. AIRSTATION™ is designed with adjustable diffuser riser to accommodate any site requirements. AirStations are independently tested and verified to provide stated pumping rates. 5-year warranty.



14.375" W x 18.625" L x 8.375" H

BOTTOMLINE™ SUPPLY TUBING

Self-weighted, direct burial submersible tubing for connection from compressor to diffuser stations. Tubing is flexible PVC composite construction for use with standard PVC solvent weld cement and insert fittings. Tubing has 0.58" I.D. and high wall thickness for long term durability and protection against punctures. Remains flexible in cold temperatures.



Vertex Water Features
Pond and Lake Aeration

(844) 432-4303 • info@vertexwaterfeatures.com
www.vertexwaterfeatures.com

Install all electrical equipment in accordance with Article 682 of the National Electrical Code and all local codes. Vertex Water Features reserves the right to improve and change our designs and/or specifications of our aerators without notice or obligation. 2019
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APPENDIX B

Lee County Fertilizer Ordinance No. 08-08

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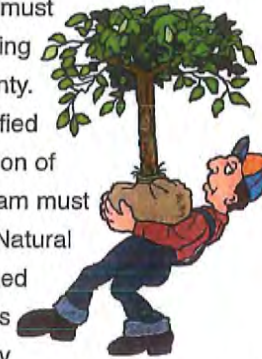
LEE COUNTY FERTILIZER ORDINANCE (08-08)

APPLICATION: This ordinance applies to anyone performing lawn care and maintenance on turf and/or landscape plants within unincorporated Lee County as a "professional landscape business" or an "institutional landscaper". This ordinance does not apply to individual homeowners who perform their own landscape maintenance.

EFFECTIVE DATE: This ordinance goes in to effect on May 13, 2009.

REGISTRATION:

- All professional landscape businesses must register with Lee County prior to performing landscaping within unincorporated Lee County. At least one (1) employee must be a Certified Professional Landscaper. Proof of completion of a Lee County approved BMP training program must be provided to the Division of Lee County Natural Resources. At least one (1) BMP trained employee must be on site while fertilizers are applied. A registration decal provided by the division must be displayed on all company vehicles. NOTE: An example of a professional landscape business is any company you hire to perform landscaping at your home.
- All institutional landscapers must follow the same registration guidelines as professional landscape businesses with the exception of displaying a registration decal on company vehicles. NOTE: An example of an institutional landscaper is the in-house landscape maintenance staff at Shadow Wood.



TRAINING & CERTIFICATION:

- Florida Green BMP training & certification can be completed through the Lee County Extension Service. This must be done prior to registration.
- Non-professional landscapers are not required to complete the Florida Green BMP training & certification, but are strongly encouraged to participate in the University of Florida (UFAS) Florida Yards & Neighborhoods Outreach & Public Education Program. This applies to individual owners of single-family residential units who perform lawn care and maintenance on turf and/or landscape plants.

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TIMING OF FERTILIZER APPLICATION: Fertilizers containing Nitrogen (N) and/or Phosphorus (P) may not be applied on turf and/or landscape plants from June 1 through September 30.

FERTILIZER CONTENT/APPLICATION RATE:

- Phosphorus (P) in any fertilizer may not exceed a rate of 0.25 lb. per 1,000 sq. ft. per application.
- Phosphorus (P) in any fertilizer may not exceed a rate of 0.50 lbs. per 1,000 sq. ft. per year.
- All fertilizers applied must contain at least 50% slow release nitrogen (N).
- Nitrogen (N) in any fertilizer may not exceed a rate of 4 lbs. per 1,000 sq. ft. per year.

IMPERVIOUS SURFACES: No fertilizers should be deposited, intentionally or accidentally, on an impervious surface such as a driveway, sidewalk or street.

BUFFER ZONES: No fertilizers shall be applied on turf and/or landscape plants within ten (10) feet of a water body, seawall or wetland. (See Florida DEP chapter 62-340)

MODE OF FERTILIZER APPLICATION: When using a rotary spreader, use of a deflector shield is required to deflect fertilizers away from water bodies, seawalls and wetlands.

LOW MAINTENANCE ZONES (NO MOW): A voluntary six (6) foot low maintenance zone is strongly recommended from any water body, seawall or wetland.

GRASS CLIPPINGS/VEGETATIVE MATERIAL: No grass clippings or vegetative materials shall be deposited into storm drains, ditches, water bodies, roadways or other impervious surfaces.

EXEMPTIONS (ordinance does not apply to):

- New landscaping in place for less than sixty (60) days.
- Vegetable gardens as long as they are not within fifteen (15) feet of a water body, seawall or wetland.
- Yard waste, compost or mulches applied to improve the soil.
- Reclaimed water used for irrigation which usually contains high amounts of nitrogen and phosphorus.
- Farm operations.
- Pastures used for grazing livestock.
- Golf courses.
- Specialized turf areas (parks, cemeteries, athletic fields, golf practice areas).

ENFORCEMENT & PENALTIES:

- This ordinance shall be enforced by designated Lee County officials and/or inspectors.
- First violation...\$100.00
- Second violation...\$250.00
- Third and subsequent violations...\$500.00



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APPENDIX C

Lee County Wellfield Protection Ordinance No. 07-35

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ORDINANCE NO. 07-35

AN ORDINANCE AMENDING LEE COUNTY LAND DEVELOPMENT CODE, CHAPTER 14, ARTICLE III, REGARDING WELLFIELD PROTECTION; PROVIDING FOR STATUTORY AUTHORITY AND SCOPE OF ARTICLE (§14-201); PURPOSE AND INTENT OF ARTICLE (§14-202); AMENDING DEFINITIONS OF "AQUIFER", "DIVISION", "GROUNDWATER", "MONITOR WELL", "PROTECTION ZONE MAPS", "PUBLIC POTABLE WATER SUPPLY WELLFIELD", "TOXIC SUBSTANCES", "WELL"; REPEALING DEFINITION OF "EXTRACTION PROCEDURE TOXIC MATERIAL"; CREATING DEFINITION FOR "F.A.C.", "POLLUTANT", "PROPOSED PUBLIC WATER SUPPLY WELL", "SANITARY HAZARD" (§14-203); AMENDING CONFLICTING PROVISIONS (§14-205); EFFECTIVE DATE OF ARTICLE AND RETROACTIVE APPLICATION TO EXISTING ACTIVITIES (§14-206); REPEALING THE SUNSET PROVISION (§14-207); AMENDING APPLICABILITY OF ARTICLE (§14-208); EXEMPTIONS FROM ARTICLE (§14-209); VESTED RIGHTS (§14-210); PROTECTION ZONE MAPS (§14-212); REGULATED HAZARDOUS OR TOXIC SUBSTANCE AND SANITARY HAZARDS (§14-213); PROHIBITED AND REGULATED ACTIVITIES WITHIN PROTECTION ZONES (§14-214); ABANDONED WELLS (§14-215); CRITERIA FOR ESTABLISHING PROTECTION ZONES (§14-216); ADOPTING PROVISIONS RELATED TO AQUIFER STORAGE AND RECOVERY WELLS (§14-219); AMENDING AUTHORITY AND DUTIES OF NATURAL RESOURCES DIVISION (§14-241); CLOSURE PERMIT (§14-245); BOND (§14-246); RECONSTRUCTION OF DAMAGED FACILITIES (§14-249); EXCEPTIONS TO PERMIT REQUIREMENTS (§14-250); INSPECTIONS AND ENFORCEMENT GENERALLY (§14-252); RESPONSIBILITY FOR CLEANUP OF REGULATED SUBSTANCES AND LIABILITY FOR DAMAGES (§14-253); FEES (§14-256); ESTABLISHING APPENDIX N CONSISTING OF THE WELLFIELD PROTECTION ZONE MAPS; PROVIDING FOR CONFLICTS, SEVERABILITY, CODIFICATION, SCRIVENER'S ERRORS AND AN EFFECTIVE DATE.

WHEREAS, Florida Statutes Section 125.01(1)(h) authorizes counties to establish, coordinate, and enforce zoning regulations necessary for the protection of the public; and

WHEREAS, the Board of County Commissioners adopted the Lee County Land Development Code, which contains regulations applicable to the development of land in Lee County; and

WHEREAS, Florida Statutes, Chapters 376 and 403, Part VI, require the County to establish rules and procedures for the protection of public drinking water supplies from contamination by all manner of pollutants; and

WHEREAS, Florida Statutes §163.3202(2)(c) requires local land development codes to provide specific regulations implementing Comprehensive Plan provisions to provide for the protection of potable water wellfields; and

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WHEREAS, Goal 24 of the Lee County Comprehensive Land Use Plan (Lee Plan) mandates that the County maintain clear, concise, and enforceable development regulations that fully address on-site and off-site development impacts, yet function in a streamlined manner; and

WHEREAS, the Board of County Commissioners of Lee County, Florida, adopted the Lee County Wellfield Protection provisions in order to protect existing public potable water supply wells from the potentially irreversible and adverse effects of bacterial and chemical contamination from abandoned wells and sanitary hazards; and to control the storage, handling and use of hazardous or toxic substances within certain distances from wellfields; and

WHEREAS, Goal 63 of the Lee Plan requires the County to protect the groundwater supply from activities that have the potential to degrade or deplete the supply; and

WHEREAS, Lee Plan Policies 14.5.3, 24.1.9, 52.1.1 and 110.6.2 require County staff and private citizen committees to review existing development regulations to determine whether the regulations can be further fine tuned and streamlined in order to meet the goals, objectives and policies of the Lee Plan; and

WHEREAS, the Land Development Code Advisory Committee was created by the Board of County Commissioners to explore amendments to the Land Development Code; and

WHEREAS, the Land Development Code Advisory Committee has reviewed the proposed amendments to the Code and recommended their adoption; and

WHEREAS, the Executive Regulatory Oversight Committee reviewed the proposed amendments to the Code and recommended their adoption; and

WHEREAS, the Local Planning Agency reviewed the proposed amendments on September 24, 2007, and found them consistent with the Lee Plan, as indicated.

NOW, THEREFORE, be it ordained by the Board of County Commissioners of Lee County, Florida, that:

**SECTION ONE: AMENDMENT TO LEE COUNTY LAND DEVELOPMENT CODE
CHAPTER 14**

Lee County Land Development Code Chapter 14, Article III is hereby amended as follows with deleted text identified by strike through and added text identified by underlining.

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Chapter 14

ENVIRONMENT AND NATURAL RESOURCES

ARTICLE III. WELLFIELD PROTECTION

DIVISION 1. GENERALLY

Sec. 14-201. Statutory authority; scope of article.

(a) Pursuant to the authority granted by F.S. ch. 125 and F.S. § 163.3202(2)(c), the standards, rules and regulations set forth in this article have been promulgated and approved by the Board of County Commissioners and apply to all abandoned wells and to certain public utility potable water supply wellfields in ~~the unincorporated area of the county~~ unincorporated Lee County.

(b) The regulations set forth in this article apply to all areas surrounding a wellfield and designated as wellfield protection zones on the adopted protection zone map.

Sec. 14-202. Purpose and Intent of article.

(a) In order to properly protect certain existing potable water supply wellfields in ~~the within unincorporated area of the county~~ Lee County, the Board of County Commissioners declares that the storage, handling, use or production of hazardous substances ~~or toxic substances or sanitary hazards~~ and the location of abandoned wells in close proximity to public utility potable water supply wells is potentially harmful to the drinking water of the county, and that abandoned wells and certain land uses and activities involving hazardous substances, ~~or toxic substances or sanitary hazards~~ are hereby prohibited or regulated within certain defined protection zones around public utility potable water supply wellfields in ~~the unincorporated area of the county~~.

(b) The intent of this article is further to safeguard the public health, safety and welfare of the residents of the county by providing criteria for the regulation of activities which that may allow the entrance of brackish water into identified protection zones surrounding existing wellfields, and prohibiting or regulating hazardous substances, ~~or toxic substances or sanitary hazards~~ within identified protection zones surrounding such wellfields, thereby protecting existing public potable water supply wells from contamination. ~~The provisions of this article apply only to the unincorporated areas of the county.~~

(c) This article is intended to supplement the rules and regulations promulgated by the State and Federal government concerning groundwater supplies, wellheads, public drinking water, potable water, monitoring, sanitary hazards and similar public water supply provisions. These regulations include, but are not limited to: Florida Administrative Code Chapters 5E-2, 5E-9, 40E-3, 62-521, 62-522, 62-550, 62-555, 62-610, 62-730, 62-731 and 62-761; Code of Federal Regulations Title 40, Chapter I, Subchapter D - Part 122, Subchapter I - Part 261, and Subchapter J - Part 302; and Florida Statutes Chapter 376.

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(d) The purpose of this article is to provide protection to potable water wellfields that are permitted to pump a minimum of 1,000,000 gallons of water per day.

Sec. 14-203. Definitions.

The following words, terms and phrases, when used in this article, have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Aquifer means an underground water-bearing a geologic formation, sufficiently group of formations, or a part of a formation, containing sufficient saturated permeable material to yield useful quantities of ground water to wells, and springs, or surface water (see rule 17-21.020(12) Rule 40E-3.201(3), and the Lee County Well Code 62-520.200(2), Florida Administrative Code F.A.C.).

Division means the division of natural resources management of the county Lee County Natural Resources Division (NRD), and any succeeding agency entity authorized to perform similar functions or duties.

EP (extraction procedure) toxic material means a substance determined to be toxic as defined under the EPA Resource Conservation and Recovery Act criteria (40 CFR 261.24):

F.A.C. means the Florida Administrative Code.

Groundwater means the water below that occurs below the land surface in a zone wherein all of the interstices are filled with water (see 17-28.120(33), Florida Administrative Code); where the pore spaces in the subsurface formations are fully saturated and under atmospheric or greater pressure.

Monitor well (also known as an observation well) means a well used primarily to monitor hydrologic parameters such as water levels or water quality (see F.A.C. rule 40E-3.021(19), Florida Administrative Code).

Pollutant means the presence in the outdoor atmosphere or waters of the state of any substances, contaminants, noise, or man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of air or water in quantities or levels that are or may be potentially harmful or injurious to animal or plant life, human health or welfare, or property, including outdoor recreation. (See Rule 62-520.200 (13), F.A.C.)

Proposed public water supply well means a well not yet constructed but either identified in a water use permit application submitted to the South Florida Water Management District (SFWMD) or identified in an existing water use permit granted by the SFWMD.

Protection zone maps means maps showing the location on the ground of the outer limits of protection zones for present public utility potable water supply wells and wellfields

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which ~~that~~ are permitted to pump a minimum of 1,000,000 gallons of water per day or more. The Florida Cities Waterway Estates Wellfield are not being included within the protections established by this article or depicted on the protection zone maps.

Public potable water supply wellfield with the exception of the Florida Cities Waterway Estates Wellfield, means a tract of land containing a well (or group of wells) for which that is the subject of a consumptive use permit has been issued by the South Florida Water Management District; which are is in use and ~~are~~ providing water for public consumption; and, which are is the subject of an agreement between the county and the public utility operating the well (or group of wells) whereby the utility contributes its pro rata share of the administration and enforcement costs of this article. For brevity, the term "wellfield" refers to a public potable water supply wellfield.

Sanitary hazard means a physical condition that involves or affects any part of a drinking water system or the raw water source, and that creates an imminent or potentially serious risk to the health of any person who consumes water from that system. (See F.A.C. Rule 62-550.200(75)).

Toxic substances or material means a hazardous wastes as defined in chapter 17-730 62-730.020, Florida Administrative Code 40 CFR 261.3; hazardous substances as defined in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, PL 96-510, 94 Stat. 2767 40 CFR 302; a pollutant as defined in F.S. ch. §376.031(16); a substance which ~~that~~ is or is suspected to be carcinogenic, mutagenic, teratogenic or toxic to human beings, or to be acutely toxic as defined in rule 17-3.021(1); Florida Administrative Code F.A.C. Rule 62-302.200(1); or a substance which ~~that~~ poses a serious danger to the public health, safety or welfare (see rule 17-7510(35), Florida Administrative Code).

Well means any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed when the intended use of ~~such the~~ excavation is to conduct groundwater from a source bed to the surface, by pumping or natural flow, when groundwater from ~~such the~~ excavation is used or ~~to be used~~ intended for use in a public utility potable water supply wellfield system (see F.A.C. Rule 17-7510(35) 62-550.200(104), Florida Administrative Code).

The balance of the definitions remain unchanged.

Sec. 14-205. Conflicting provisions.

Whenever the requirements or provisions of this article are in conflict with or less restrictive than the requirements or provisions of any other lawfully adopted ordinance or statute, the more restrictive requirements apply.

Sec. 14-206. Effective date of article; retroactive application to existing activities.

The requirements and provisions of this article will apply ~~immediately upon the effective date of this article~~ to all existing activities regulated under this article in the within

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unincorporated area of the county Lee County and relate back to September 1, 1989. Existing activities include all activities that were ~~issued a~~ approved by the County under a valid building permit or occupational license or for which a completed building permit or occupational license application was filed and accepted by the appropriate department or jurisdiction on or after September 1, 1989.

Sec. 14-207. ~~Sunset provision.~~Reserved.

(a) ~~The Board of County Commissioners has adopted this article for the purpose of providing interim protection to existing potable water wellfields which are permitted to pump 1,000,000 gallons of water or more per day. The county is a member of the Lee County Regional Water Supply Authority. The authority has been established as an independent special district in part to ensure the protection of the public potable water supply. Potable water wellfields make up a portion of the available public potable water supply. In adopting this article, the board has taken the first step in the establishment of the authority and in providing an overall program for the protection of the public water supply. This article is conceived as a part of that program.~~

(b) ~~In order to ensure that the wellfield protection efforts of the county are incorporated into any overall program to protect the public potable water supply. This article will remain in full force and effect until the board adopts an ordinance repealing these provisions either expressly or by implication.~~

Sec. 14-208. Applicability of article.

(a) This article only applies to a particular land use or activity, whether that land use or activity is classified as a residential or commercial use, when:

- (1) The aggregate sum of all quantities of any one regulated substance on a given parcel or in a certain building exceeds 110 gallons if the substance is a liquid, or 1,110 pounds if the substance is a solid; or
- (2) No single substance exceeds the limits referenced in subsection (a)(1) of this section but the aggregate sum of all regulated substances present on a given parcel or in a given building exceeds 110 gallons if the substances are liquids, or 1,110 pounds if the substances are solids.

(b) Where regulated substances are dissolved in or mixed with nonregulated substances, only the actual quantity of the regulated substance present will be used to determine compliance. Where a regulated substance is a liquid, the total volume of the regulated substance present in a solution or mixture of the substance with other substances will be determined by volume percent composition of the regulated substances.

(c) This article applies to all storage facilities for petroleum products which are not regulated by F.S. §376.317 or F.A.C. chapters ~~47-61~~ 62-761 and 62-762, Florida Administrative Code.



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- (d) This article applies to sanitary hazards.

Sec. 14-209. Exemptions from article.

(a) *General exemption.* Certain existing or proposed public and quasipublic land uses and activities may be declared exempt from the provisions of this article by the Board of County Commissioners. This exemption will be granted only upon a finding made by the board in a public meeting that the existing or proposed land use or activity serves an overriding public need which overrides the intent and purpose of this article and that it would be economically impractical or scientifically impossible for the land use or activity to comply with the requirements of this article or be relocated to an area outside of the protection zones established by this article. ~~When declaring such an exemption, the Board of County Commissioners will limit the exemption to the extent necessary to enable the existing or proposed public or quasipublic land use or activity in question to be conducted within a protection zone while still serving the intent and purpose of this article to the extent which is economically practical and scientifically possible.~~ The As a basis for granting the exemption, the board may attach any impose conditions to the grant of any exemption that it deems appropriate on the proposed land use or activity that are designed to ensure compliance with the provisions of this article to the greatest extent possible.

(b) *Special exemptions.* The following activities or uses are exempt from the provisions of sections 14-214(a)(2), 14-214(b)(2), 14-214(c)(2) and 14-214(d)(2):

- (1) *Application of pesticides.* The application of those regulated substances used as pesticides, herbicides, fungicides and rodenticides in recreation, agriculture, pest control and aquatic weed control activities ~~will be~~ is exempt from the provisions of this article provided that:
 - a. Application of the substance ~~must be~~ is in strict conformity with the use requirement ~~as~~ set forth in the EPA registry for that substance and as indicated on the containers in which the substances are sold;
 - b. The application ~~must be~~ is in strict conformity with the requirements ~~as~~ set forth in F.S. chs 482 and 487, and F.A.C. chapters 5E-2 and 5E-9, Florida Administrative Code;
 - c. The application of ~~any of the~~ pesticides, herbicides, fungicides and rodenticides ~~will be~~ is flagged in the records of the certified operator supervising the use. The certified operator must provide specific notification ~~in writing~~ written notice to the applicators under his supervision indicating that they are working at a site located in protection zone 1, 2, 3, or 4, for which and particular care is required. Records ~~will~~ must be kept of the date and amount of those regulated substances applied at each location, ~~and the~~ These records ~~will~~ must be available for inspection at reasonable times by the division; and

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- d. All nonresidential applicators of pesticides, herbicides, fungicides and rodenticides who apply those applying regulated substances must obtain an a single operating permit covering all application operations under one permit for using those regulated materials and comply with all the requirements as set forth in the regulations promulgated pursuant to this article.
- (2) *Continuous transit.* The transportation of any regulated substance ~~will be is~~ exempt from the provisions of this article provided that:
- The transporting motor vehicle is in continuous transit as defined in section 14-203; or
 - The transport of such regulated substances through existing permanent pipelines within zones 1, 2 and 3 is in accordance with the applicable regulations ~~applicable to protection zone 1, 2, and 3~~ requirements within those respective zones. In protection zone 4 such transport activity is exempt provided that the currently authorized the permitted uses and activities are not changed and provided that the leak detection and monitoring procedures as approved by the division are employed.
- (3) through (6). *No change.*
- (7) *Construction activities.* ~~Constructing, repairing or maintaining any~~ The construction, repair or maintenance of a facility or improvement on lands within any protection zone and earth mining within any protection zone ~~will be is~~ exempt from the provisions of this article provided that all contractors, subcontractors, laborers, material men and their employees using, handling, storing or producing regulated substances within any protection zone use the applicable best management practices provided set forth in section 14-217. No operating permit is required.
- (c) *Administrative exemption.* Any person affected by this article may petition the division for an administrative exemption from the prohibitions and monitoring requirements ~~of this article, provided that the person demonstrates by a preponderance of~~ The petition must set forth competent, substantial evidence that indicating: (1) special or unusual circumstances exist that support a waiver of the prohibition or monitoring requirements; and, (2) and adequate the technology exists that will be employed to isolate the facility or activity from the potable water supply in the event of a spill. In granting an The grant of an administrative exemption, the division may attach any appropriate include conditions and safeguards which are the division deems necessary to protect the wellfield.

Sec. 14-210. Vested rights.

- (a) Notwithstanding any provision of this article to the contrary, any proposed or existing land use or activity which has that obtained county approval prior to September

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1, 1989, ~~will be allowed to~~ may develop consistent with the development approval only ~~after provided an operating permit for the land use or activity has obtained an operating permit is issued and remains viable.~~ For purposes of applying this section, only the following approvals will be considered:

- (1) A final development order;
- (2) A certificate of occupancy;
- (3) A general excavation permit;
- (4) A building permit; or
- (5) A certificate of completion.

The judicially recognized standards of equitable estoppel will be applied to determine if a development ~~should~~ will be allowed to develop consistent with prior development approval.

(b) Mining operations ~~which have that~~ received development approvals prior to the effective date of this article September 1, 1989 will be permitted to continue with the previously approved phased activities so long as the activities are consistent with the prior approvals granted prior to September 1, 1989, the approval remains viable, and no excavation occurs within 500 feet of a wellhead. Development approvals for mining include ~~having obtained zoning approval either as an IPD or as a special exception to in the AG-2 zoning district, in addition to any other approvals listed in subsection~~ section 14-211(a) of this section.

(c) ~~To the extent that an approved development can obtain any o~~Operating permits ~~consistent with this article without conflicting with the for~~ specific uses or development based upon design and construction specifications approved prior to the effective date of this article September 1, 1989, full compliance with the operating permit requirements will be required must be consistent with the provisions of this article.

Sec. 14-212. Protection zone maps.

(a) *Adoption.* The protection zone maps, contained in appendix N, have been developed by the county and are hereby adopted by reference and made a part of this article. The official protection zone maps ~~will be placed are~~ on file at the division office. Reproductions of the maps ~~will be made are~~ available for sale a fee at the division offices, the office of land information services or other appropriate county agency. The protection zone maps are based on groundwater modeling performed by Water Resource Solutions Inc. and presented in a report titled "Lee County Utilities Supporting Documentation for the Wellfield Protection Ordinance Updated" dated March 2005 and revised April 2007.

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(b) *Interpretation of zone designation.* To determine the location of properties and buildings within the a particular protection zones delineated on the protection zone maps, the following rules will apply:

- (1) Properties located wholly within one protection zone, as depicted reflected on the applicable protection zone maps, are ~~be~~ governed by the restrictions applicable to that zone.
- (2) Properties having parts lying within more than one zone, as reflected depicted on the applicable protection zone maps, are governed by the restrictions applicable to the protection zone in which ~~each~~ that part of the property is located.
- (3) Where a travel time contour which that delineates the boundary between two protection zones passes through a building, the entire building is ~~considered~~ deemed to be in the more restrictive zone.
- (4) Where ~~the~~ a building or portion thereof is overlapped by protection zones of different wells or wellfields, the most restrictive regulations apply.
- (5) Where a property or portion thereof is overlapped by protection zones of different wells or wellfields, the most restrictive of the regulations ~~will prevail over the overlapped area~~ apply.
- (6) Where the protection zone boundary intersects an open waterbody, the boundary will be extended to include the entire limits of that waterbody.

(c) *Annual Periodic review.* The protection zone maps will be reviewed ~~at least annually~~ by the division at least every three to five years unless changes within a protection zone warrant earlier review of the zone maps. ~~Any~~ Amendments, additions or deletions to the maps must will be approved by the Board of County Commissioners as amendments to this article. Copies of the maps will be made available to the ~~appropriate divisions of the county and to the county health department, the Southwest Florida Regional Planning Council, the South Florida Water Management District and any other agency requesting the maps.~~ public and reviewing entities upon request. The basis for amending the maps may include but is not limited to the following:

- (1) Changes in the technical knowledge concerning the aquifers of the county.
- (2) Changes in the pumping rate of wellfields.
- (3) Wellfield reconfiguration.
- (4) ~~The~~ addition of new wells to a wellfield.
- (5) Approval by the Board of County Commissioners of additional wellfields.

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Sec. 14-213. Regulated hazardous or toxic substances and sanitary hazards.

Regulated substances include, but are not limited to, those deleterious substances and contaminants ~~which~~ that have one or more of the following characteristics:

- (1) Substances, including degradation and interaction products, which because of quality, concentration or physical or chemical characteristics (including ignitability, corrosivity, reactivity and toxicity), infectious characteristics, radioactivity, mutagenicity, carcinogenicity, teratogenicity, bioaccumulative effect, persistence (nondegradability) in nature, or any other characteristic relevant to a particular material, that may cause significant harm to human health or the environment, including surface water and groundwater, plants or animals;
- (2) ~~Those substances set forth in the following lists, as amended from time to time: Lists of Hazardous Waste (identified as hazardous under 40 CFR part 261, subpart D); 40 CFR 261, Appendix VIII—Hazardous Constituents; and EPA Designation Reportable Quantities and Notification Requirements for Hazardous Substances Under CERCLA (and 40 CFR 302);~~
- (3) ~~Exhibit any of the characteristics of ignitability, corrosivity, reactivity or toxicity as identified in 40 CFR 261.20–261.24;~~
- (4) Are priority toxic pollutants listed in 40 CFR 422.24 129 by the EPA;
- (5) Contain a degradation product which is toxic, including petroleum-based products;
- (6) Are restricted-use pesticides, as that term is used in F.S. ch. 487, and ~~which are listed in F.A.C. chapters 5E-2 and 5E-9, Florida Administrative Code;~~
- (7) Contain brackish or saline water ~~which~~ that contains total dissolved solids in excess of 1,000 parts per million and chlorides in excess of 500 parts per million; or
- (8) Are raw or partially treated sewage; or
- (9) Sanitary hazards.

Sec. 14-214. Prohibited and regulated activities within protection zones.

- (a) *Protection zone 1.*
 - (1) *Prohibitions.* Except as provided in section 14-209, the following land uses or activities are prohibited in protection zone 1:

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- a. The use, handling, production or storage of regulated substances associated with land uses or activities regulated by this article in quantities greater than those set forth in section 14-208(a).
- b. Wastewater effluent disposal, except for public access reuse of reclaimed water and land application under the conditions set forth and as defined in F.A.C. chapter 17-610 62-610, part III, Florida Administrative Code. Where public access reuse is permitted the chloride content must be no greater than 500 milligrams per liter.
- c. Liquid waste disposal.
- d. Solid waste disposal.
- e. Earth mining within a 500-foot radius of an existing wellhead.

(2) *Regulations.*

- a. ~~Except as provided in section 14-209, all persons who engage in land uses or activities regulated under this article who store, handle, use or produce any of the regulated substances (excluding partially treated sewage from residential septic tank systems) within protection zone 1, in quantities greater than those set forth in section 14-208(a), will cease to do so within 90 days of the effective date of this article pursuant to the prohibitions set forth in this article, unless such persons obtain an operating permit authorizing the continuation of such land use or activity within the 90-day deadline. A closure permit (see section 14-245) will otherwise be obtained from the division and a timetable for discontinuance and closure must be submitted to the wellfield protection officer in accordance with the requirements of this article.~~

Except as provided in section 14-209, land uses or activities involving the storage, handling, use or production of regulated substances in quantities greater than those set forth in section 14-208 are prohibited within protection zone 1 unless an operating permit for the prohibited activity, issued on or before September 1, 1989, remains viable.

- b. The owners of any sanitary sewer, force main, gravity sewer or lateral must notify the division of any break in the sewer lines within 24 hours of ~~discovering such a break~~ discovery. The purpose of this requirement is to allow the division to monitor repairs to the line and any necessary cleanup activities.
- c. Any ~~s~~Stormwater or surface water discharges within this protection zone will must conform to existing South Florida Water Management



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District and state department of environmental protection rules, ~~as they may be amended or replaced.~~

(b) *Protection zone 2.*

(1) *Prohibitions.* Except as provided in section 14-209, the following land uses or activities are prohibited in protection zone 2:

- a. The use, handling, production or storage of regulated substances associated with activities regulated by this article in quantities greater than those set forth in section 14-208(a).
- b. Wastewater effluent disposal, except ~~that~~ public access reuse of reclaimed water and land application under the conditions set forth and as defined in F.A.C. chapter 17-640 62-610, part III, Florida Administrative Code, ~~will~~ may be permitted. Where public access reuse is permitted the chloride content will may be no greater than 500 milligrams per liter.
- c. Liquid waste disposal.
- d. Solid waste disposal.
- e. Earth mining within a 500-foot radius of an existing wellhead.

(2) *Regulations.* ~~Except as provided in section 14-209, all persons who engage in land uses or activities regulated under this article who store, handle, use or produce any of the regulated substances (excluding partially treated sewage from residential septic tank systems), or who own or undertake any of the activities regulated under this article will cease to do so within 90 days of the effective date of this article pursuant to the prohibitions set forth in this article, unless such persons obtain an operating permit authorizing the continuation of such land use or activity within the 90-day deadline. A closure permit will otherwise be obtained from the division and a timetable for discontinuance and closure must be submitted to the wellfield protection officer in accordance with section 14-245.~~

- a. Except as provided in section 14-209, land uses or activities involving the storage, handling, use or production of regulated substances in quantities greater than those set forth in section 14-208 are prohibited within protection zone 2 unless an operating permit for the prohibited activity, issued on or before September 1, 1989, remains viable or, an administrative exemption is granted under section 14-208 to allow issuance of an operating permit under section 14-244.

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- b. ~~Any s~~ Stormwater or surface water discharge within this protection zone will must conform to existing South Florida Water Management District and state department of environmental protection rules, ~~as they may be amended or replaced.~~
 - (c) *Protection zone 3.*
 - (1) *Prohibitions.* Except as provided in this article, the following land uses or activities are prohibited in protection zone 3:
 - a. The use, handling, production or storage of regulated substances associated with activities regulated by this article in quantities greater than those set forth in section 14-208(a).
 - b. Wastewater effluent disposal, except that public access reuse of reclaimed water and land application under the conditions set forth in ~~F.A.C. chapter 47-610~~ 62-610, part III, ~~Florida Administrative Code~~ will may be permitted. Where public access reuse is permitted the chloride content must be no greater than 500 milligrams per liter.
 - c. Liquid waste disposal.
 - d. Solid waste disposal.
 - (2) *Regulations.*
 - a. Except as provided in section 14-209, ~~all persons in protection zone 3 who store, handle, use or produce any land uses or activities involving the storage, handling, use or production of regulated substances on the effective date of this article, or any new land use or activity established thereafter, may continue to do so in accordance with the provisions and exemptions set forth in this article upon obtaining an~~ occurring within protection zone 3 must be conducted in accordance with a valid operating permit issued pursuant to section 14-244.
 - b. ~~Within 90 days of the effective date of this article, all land uses or activities regulated by this article and located within protection zone 3 will make application for an operating permit from the division in compliance with the provisions of this article. Activities requesting an administrative exemption (see section 14-209(c)) or a closure permit (see section 14-245) will have a period of 120 days from the effective date of this article to make application. If after 180 days all the requirements necessary for the issuance of an operating permit have not been completed and the applicant has made a diligent effort to do so, an operating permit may be issued contingent on compliance by~~



~~a date certain.~~ All operating permits must be renewed annually and will be subject to the conditions set forth in section 14-244.

- c. ~~Any s~~Stormwater or surface water discharged within this protection zone will must conform to existing South Florida Water Management District and state department of environmental protection rules, ~~as they may be amended or replaced.~~

(d) *Protection zone 4.*

- (1) *Prohibitions.* Except as provided in section 14-209, ~~any all activity regulated by this article which stores, handles, uses or produces any involving the storage, use, handling or production of a regulated substance in quantities greater than those set forth in section 14-208(a), which does not obtain a valid operating permit as set forth in section 14-244, is prohibited in protection zone 4, unless a valid operating permit is obtained in accordance with section 14-244.~~

(2) *Regulations.*

- a. Except as provided in section 14-209, any land uses or activity activities involving the storage, handling, production or use of regulated substances in protection zone 4, ~~in existence on the effective date of this article, or any new land use or activity established thereafter, must obtain an~~ be conducted in accordance with a valid operating permit issued pursuant to section 14-244.
- b. ~~Within 90 days of the effective date of this article, all persons who engage in land uses or activities regulated by this article within protection zone 4 who store, handle, use or produce any regulated substances will obtain an operating permit from the division and will comply with the provisions of this article and the regulations promulgated pursuant to this article. All operating permits must be renewed annually.~~
- c. ~~Any s~~Stormwater or surface water discharged within this protection zone will must conform to existing South Florida Water Management District and state department of environmental protection rules, ~~as they may be amended or replaced.~~

- (e) *Sanitary Hazard Zone.* Sanitary hazards are prohibited within a 100 foot radius around an existing or proposed public water supply well.

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Sec. 14-215. Abandoned wells.

(a) ~~The division will initiate a program that will result in the plugging of any wells that have been abandoned and that lie within the ten-year travel time of any well or wellfield protection zone as well as the Mid-Hawthorne Aquifer System. The program will include:~~

- ~~(1) An inventory, to be conducted by the division, of all known abandoned or out-of-use wells lying within the ten-year travel time of any well or wellfield regulated by this article in the unincorporated area of the county:~~
- ~~(2) A procedure for notifying by registered mail the owners of properties within whose boundaries such abandoned wells are located. The property owners will be notified within 30 days of the discovery of such wells. The letter of notification will include but not be limited to the following:~~
 - ~~a. Notice that an abandoned well exists on his property and that the county plans to properly plug the well.~~
 - ~~b. Approximate dates during which the county will plug the well and that county staff will require access to the property.~~

(b) Abandoned wells on any property lying within the ten-year travel time zone of any well regulated by this article will be physically plugged in accordance with the provisions of Lee County Ordinance No. 87-7 of the county, as amended, renumbered or replaced 06-09, section 9.3.4.

Sec. 14-216. Criteria for establishing protection zones.

- (a) *No change.*
- (b) The protection zones indicated on the protections zone maps are the planar geometric union of the largest of the travel time protection zones determined as follows:
 - (1) through (4) *No change.*
 - (5) Lower Hawthorne (Floridan) aquifer system. Lower Hawthorne ten-year: The land situated between existing or proposed water supply wells and the ten-year travel time contour.

(c) The aquifers referenced in this article are identical to those listed in the report titled "Final Report, Wellfield Protection Modeling, Lee County, Florida," Camp, Dresser and McKee, Inc., November 1987. "Lee County Utilities Supporting Documentation for the Wellfield Protection Ordinance Update" Water Resource Solutions, March 2005 and updated April 2007.

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Sec. 14-219. Aquifer storage and recovery wells.

The installation of a water supply well is prohibited within 500 feet of an existing or permitted aquifer storage and recovery well, unless confinement exists between the production zone of the water well and the storage/production zone of the aquifer storage and recovery well.

DIVISION 2. ADMINISTRATION AND ENFORCEMENT

Sec. 14-241. Authority and duties of ~~division of natural resources management~~ Natural Resources Division.

(a) ~~The division of natural resources management~~ Natural Resources Division will administer and enforce the provisions of this article.

(b) The division will perform the following duties:

(1) The division director will recommend revisions and amendments to this article as necessary.

(2) The division will make continuing studies and periodic reports and recommendations for the improvement of wellfield protection controls throughout the ~~unincorporated area of the county~~, and work in cooperation with federal, state and local agencies and groups interested in the ~~field of~~ wellfield protection.

(3) through (7) *No change.*

Sec. 14-245. Closure permit.

(a) *Required Information.* Closure permit applications must provide the following information:

(1) A schedule of events to complete the closure of land use or activity that does or did store, handle, use or produce regulated substances. ~~As a~~ At minimum, the application ~~will~~ must address the following:

a. through c. *No change.*

(2) and (3) *No change.*

(b) through (d) *No change.*

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Sec. 14-246. Bond.

(a) ~~Upon adoption of an appropriate county administrative code, no permit required under this article will be issued unless there is filed at the time of application, except in the case of an application by a political subdivision or agency of the state, a cash bond, rate bond or letters of credit with a corporate~~ As a condition of permit issuance, the division may require a surety, in the form of a performance bond, letter of credit or escrow agreement, in an amount required by that code deemed appropriate by risk management or the division to ensure that:

- (1) The permittee will operate its activities or closure of such activities, as applicable, in accordance with the conditions and requirements of this article and permits issued under this article.
- (2) The permittee will reimburse the county for any and all expenses and costs which the county incurs as a result of the permittee failing to comply with the conditions and requirements of this article.

(b) ~~Before a bond or letter of credit is accepted by the division as being in compliance with this section, the~~ A bond or letter of credit must be reviewed and approved by the county attorney's office and then be filed with the clerk of the Board of County Commissioners prior to issuance of the permit.

(c) The bond or letter of credit required by this section must be kept in full force and effect for the term of the permit ~~and for plus~~ one year after voluntary cessation of activities permitted under this article or expiration or revocation of the permit. Failure to keep a bond or letter of credit in full force and effect as required in this section is grounds for revocation of the underlying permit or exemption and may result in a fine against the property or violator.

Sec. 14-249. Reconstruction of damaged facilities.

(a) ~~Reconstruction of any portion of a structure or building in which there is any accommodating a land use or activity subject to the provisions of this article and which is damaged by fire, vandalism, flood, explosion, collapse, wind, war or other catastrophe must be in strict conformity compliance with this article. This requirement will be imposed whether the damage was caused by fire, vandalism, flood, explosion, hurricane, wind, war or other catastrophe.~~

(b) Within 90 days of the receipt of written notice from the division, all existing land uses or activities regulated by this article ~~which that~~ use, handle, store or produce regulated substances will must file an application for an operating permit. ~~Any such If the land use or activity which fails to apply for an operating permit within the 90 day time frame, then an application will file for a closure permit or exemption must be filed within 120 days of the receipt of written notice from the division. The permit application must be prepared and signed by a professional engineer registered in the state or professional geologist~~

licensed in the state. Within 30 days of receipt of the notice from the division, the owner or operator ~~will~~ must file with the division proof of retention of the engineer or geologist. If application is made for an operating permit, ~~such the~~ permit will be issued ~~of or~~ denied within 60 days ~~of the filing of the completed~~ after a complete application is filed. If the application for an operating permit is denied, then the activity must cease within 12 months of the denial and an application for a closure permit ~~will~~ must be filed with the division within 120 days of the denial of the operating permit.

Sec. 14-250. Exceptions to permit requirements.

(a) *Eligibility.* Activities with adequate technology to isolate the land use or activity from the potable water supply and protect the wellfield may apply for a special exception from the operating or closure permitting requirements of this article.

(b) *Procedure for granting exception.*

(1) *Application generally.*

- a. A special exception application claiming special or unusual circumstances and adequate protection technology may be filed with the division. It ~~will~~ must be signed by the applicant and a professional engineer registered in the state or a professional geologist licensed in the state.
- b. ~~Such application will~~ Applications must contain a concise statement by the applicant detailing the circumstances which the applicant feels would entitle him to a special exception.
- c. ~~A The application must be accompanied by the appropriate fee as determined by the applicable administrative code must be filed with the application to defray the costs of processing such application.~~

(2) *Contents of application.* The application for a special exception must contain but ~~is not be~~ limited to the following elements:

- a. ~~The application must include a~~ A description of the situation at the site requiring isolation from the wellfield, including:
 1. A list of the regulated substances in use at the site.
 2. A clearly legible site plan of the facility, including drawn at an appropriate scale and detailing all storage, piping dispensing, shipping, etc., facilities; travel time contours as identified on the protection zone maps; and, the limits of sanitary hazard zones.

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3. A description of the operations at the facility ~~which would involve~~ involving regulated substances ~~which that~~ must be isolated from the wellfields.
 4. The location of all operations involving regulated substances.
 5. A sampling and analysis of the groundwater on the site of the activity seeking a special exception, to determine if any regulated substances are already present ~~which that~~ constitute a threat to the water supply.
 6. An analysis of the affected well showing whether or not ~~such the~~ well is already contaminated by any regulated substances and the extent of such contamination.
 7. A hydrogeologist's assessment of the site, ~~which must addressing, as a~~ at minimum, soil characteristics and groundwater level, groundwater directional flow and quality.
- b. The application must include a technical proposal to achieve the required isolation, including:
1. The components to be used and their individual functions.
 2. The system tying the components together.
 3. A discussion and documentation, such as published technical articles, substantiating the performance and reliability of the components individually and the system as a whole. If the system has not been field-tested, a discussion and laboratory test documentation to substantiate the proposal performance and reliability of the system must be included.
 4. Details of the specific plans to install the system at the site.
- c. If the proposed system does not have a proven history of successful in-field operation, it may still be proposed using proven components. A test plan for the system as installed ~~shall~~ must be provided to ~~provide document~~ that the proposed system works in the field.
- d. The application must include a technical proposal for backup detection of regulated substances that may elude the isolation system and escape to outside a perimeter ~~to be established by division. Such~~ The proposal will must include emergency measures to be initiated in case of escape of regulated substances.

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- e. Site-specific, system performance criteria must be proposed to ascertain the success of the system. ~~Such~~ This criteria ~~will includes,~~ but ~~are-is~~ not limited to:
 - 1. Performance.
 - 2. Reliability.
 - 3. Level of maintenance.
 - 4. Level of sensitivity to regulated substances.
 - 5. Effect of rain, flood, power failure or other natural disaster.
 - f. The applicant must provide information on the on-site availability of substance removal technologies sufficient to remediate ~~any~~ the introduction of regulated substances into the water table at the site. Where the water is removed from on-site wells during the remedial process, a plan ~~will~~ must be proposed for the disposal of ~~such~~ the water.
 - g. A closure plan must be provided if the system does not prove successful in the testing required in this subsection.
 - h. The application ~~will~~ must include any other reasonable information deemed necessary by division due to site-specific circumstances.
- (3) *Review of application.* Within 30 working days ~~of~~ after receipt of an application for special exception, the division will ~~inform~~ notify the applicant whether ~~such~~ the application contains sufficient information ~~for a proper~~ upon which to base a determination ~~to be made~~. If the application is ~~found to be~~ insufficient ~~not sufficient~~, then the division will provide ~~to the applicant a~~ written sufficiency statement, ~~by certified mail or hand delivery, requesting the additional information required~~ the division deems necessary for review. The applicant will ~~inform the division within~~ have ten working days ~~of~~ from the date of the written sufficiency statement ~~of his intent to either furnish~~ notify the division when the information requested will be submitted or have request that review proceed on the application ~~processed~~ as it stands.
- (c) *Conditions.*
- (1) Any special exception granted by the division ~~will be~~ is subject to the applicable conditions of this article and any other reasonable and necessary special conditions imposed by the division.

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- (2) ~~The division will issue A~~an operating permit will be issued by the division with the applicable subject to the standard conditions of this article and any other reasonable and necessary special conditions imposed by the division. ~~Such s~~Special exceptions will be ~~are~~ subject to revocation or revision by the division for violation of any condition of the special exception. Prior to revocation, the division will provide by first issuing a written notice of intent to revoke or revise, sent by via certified mail, return receipt requested, or hand delivery. Upon revocation or revision, the activity will immediately be subject to the code enforcement proceedings provisions of this article.
- (3) Special exceptions for within protection zones 1 and 2 ~~are~~ may be granted for existing activities only. No new activity will be permitted into protection zones 1 and 2 after September 1, 1989, if the new activity is regulated by this article.

Sec. 14-252. Inspections; enforcement generally.

- (a) *Inspections.*
- (1) The county wellfield protection officer and his designated inspectors are hereby authorized and empowered to make inspections at reasonable hours of all land uses or activities regulated by this article including nonresidential buildings, structures and lands within protection zones in the county, in order to determine if regulations relating to wellfield protection and other applicable county regulations are being followed.
- (2) As a condition of every operating permit shall be or special exception, the property owner grants permission for inspection of the premises by an authorized county wellfield protection officer or inspector.
- (3) Inspections may be made without notice, ~~and r~~Refusal to allow such an inspection ~~will be is~~ sufficient grounds for revocation of the operating permit or special exception issued by the division.
- (4) ~~If The refusal of a person who has common authority over a building, structure or land does not to permit an inspection, such failure of such person to permit an inspection will be~~ will be deemed sufficient grounds and probable cause for a court of competent jurisdiction to issue an administrative warrant for the purpose of inspecting, surveying or examining the premises.
- (5) If a building, structure or land appears to be vacant or abandoned, and the property owner cannot be readily contacted in order to obtain consent for an inspection, the wellfield protection officer or inspector may enter into or upon any open or unsecured portion of the premises in order to conduct an inspection thereof.

- (6) The wellfield protection officer or inspector will be provided with official identification and will exhibit ~~such~~this identification when making any inspection.
- (7) It will be the duty of all law enforcement officers to assist in making inspections when such assistance is requested by the wellfield protection officer or inspector.
- (b) *Remedies.* Whenever the wellfield protection officer or an inspector determines that there is a violation of this article, the officer or inspector will may elect to follow the procedures established by the county for bringing a case before the Lee County code enforcement board or any alternative code enforcement body adopted by the county hearing examiner or County Court. The County may also pursue any legal means available to obtain compliance including, or will seek injunctive relief as provided in section 14-254. A notice to cease a land use or activity, or a permit or an exemption issued under this article, will not relieve the owner or operator of the obligation to comply with any other applicable federal, state, regional or local codes, regulations, rules, ordinances or requirements. ~~nor will~~ Further, the notice, permit or exemption will not relieve any the owner or operator of any liability for violation of such the codes, regulations, rules, ordinances or requirements.

Sec. 14-253. Responsibility for cleanup of regulated substances; liability for damages.

Any person subject to this article ~~will be~~is liable for any damage caused by a regulated substance present on or emanating from the person's property, for all costs of removal or remedial action incurred by the county, and damages for injury to, destruction of or loss of natural resources, including the reasonable costs of assessing such injury, destruction or loss resulting from the release or threatened release of a regulated substance. ~~Such~~ Removal or remedial action by the county may include, but is not limited to, the prevention of further contamination of groundwater, monitoring, and containment and cleanup or disposal of regulated substances resulting from the spilling, leaking, pumping, poring, emitting or dumping of any regulated substance or material which that creates an emergency hazardous situation or is expected to create an emergency hazardous situation.

Sec. 14-256. Fees.

(a) *Permit fees.* Prior to the issuance, renewal, modification or transfer of a permit or an exemption the applicant must pay a fee as set forth in the applicable county administrative code. ~~Such~~ The fee will be used to defray the cost of monitoring the compliance with this article.

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- (b) *Administrative fees; service charge.*
- (1) The cost of administering and enforcing this article will be borne by the public utilities owning the public potable water wellfields protected by the provisions of this article. Each utility will be assessed its pro rata share of the cost of administering and enforcing this article.
- (2) The county may create municipal service benefit units, as necessary, whereby the county may impose a service charge payable to the county as a pro rata share of the costs of administering and enforcing this article.
- (3) The service charge payment to the county for wellfield environmental protection services may be based upon a stated dollar amount per a set amount of gallons per day of the permitted maximum daily withdrawal rate capacity of the utility evidenced by permits as issued by the South Florida Water Management District or any other method deemed equitable by the county.
- (4) The service charge payable pursuant to this section must be deposited in a county fund and will be used exclusively by the county and its ~~division of water resources~~ Natural Resources Division to pay for the costs of the wellfield protection services directed by this article, and no part of ~~such these~~ funds will may be used for any purpose other than the administering and enforcing of this article.

SECTION TWO: CREATION OF APPENDIX N

The Lee County Land Development Code is hereby amended to add Appendix N, to be called "Wellfield Protection Zones". The appendix will consist of the map attached as Exhibit A to this ordinance.

SECTION THREE: CONFLICTS OF LAW

Whenever the requirements or provisions of this Ordinance are in conflict with or less restrictive than the requirements or provisions of any other lawfully adopted ordinance or statute, the most restrictive requirements will apply.

SECTION FOUR: SEVERABILITY

It is the Board of County Commissioner's intent that if any section, subsection, clause or provision of this ordinance is deemed invalid or unconstitutional by a court of competent jurisdiction, such portion will become a separate provision and will not affect the remaining provisions of this ordinance. The Board of County Commissioners further declares its intent that this ordinance would have been adopted if such unconstitutional provision was not included.

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SECTION FIVE: CODIFICATION AND SCRIVENER'S ERRORS

The Board of County Commissioners intend that this ordinance will be made part of the Lee County Code; and that sections of this ordinance can be renumbered or relettered and that the word "ordinance" can be changed to "section", "article" or some other appropriate word or phrase to accomplish codification, and regardless of whether this ordinance is ever codified, the ordinance can be renumbered or relettered and typographical errors that do not affect the intent can be corrected with the authorization of the County Administrator, County Manager or his designee, without the need for a public hearing.

SECTION SIX: EFFECTIVE DATE

The amendments set forth in this ordinance will take effect upon filing of the ordinance with the Office of the Secretary of the Florida Department of State. However, the requirements and provisions of this ordinance relate back to September 1, 1989 in accordance with LDC Section 14-206 as stated above.

All uses and activities within the Wellfield Protection Zones, as established under this ordinance, must be brought into compliance with the amended provisions no later than December 31, 2008.

Commissioner Mann made a motion to adopt the foregoing ordinance, seconded by Commissioner Hall. The vote was as follows:

Robert P. Janes	Aye
Brian Bigelow	Nay
Ray Judah	Nay
Tammara Hall	Aye
Frank Mann	Aye

DULY PASSED AND ADOPTED THIS 4th day of December, 2007.

ATTEST:
CHARLIE GREEN, CLERK

By: Marcia Wilson
Deputy Clerk

BOARD OF COUNTY COMMISSIONERS
OF LEE COUNTY, FLORIDA

By: Ray Judah
Ray Judah, Chair

APPROVED AS TO FORM:

By: Dawn E. Perry-Lehnert
Dawn E. Perry-Lehnert
Office of County Attorney



Attachment:
Exhibit 1 - Appendix N

S:\LUI\ORDINANCE\Adopted\LDC Stand Alone amendments\07-35 Wellfield Protection Ordinance.wpd DPL

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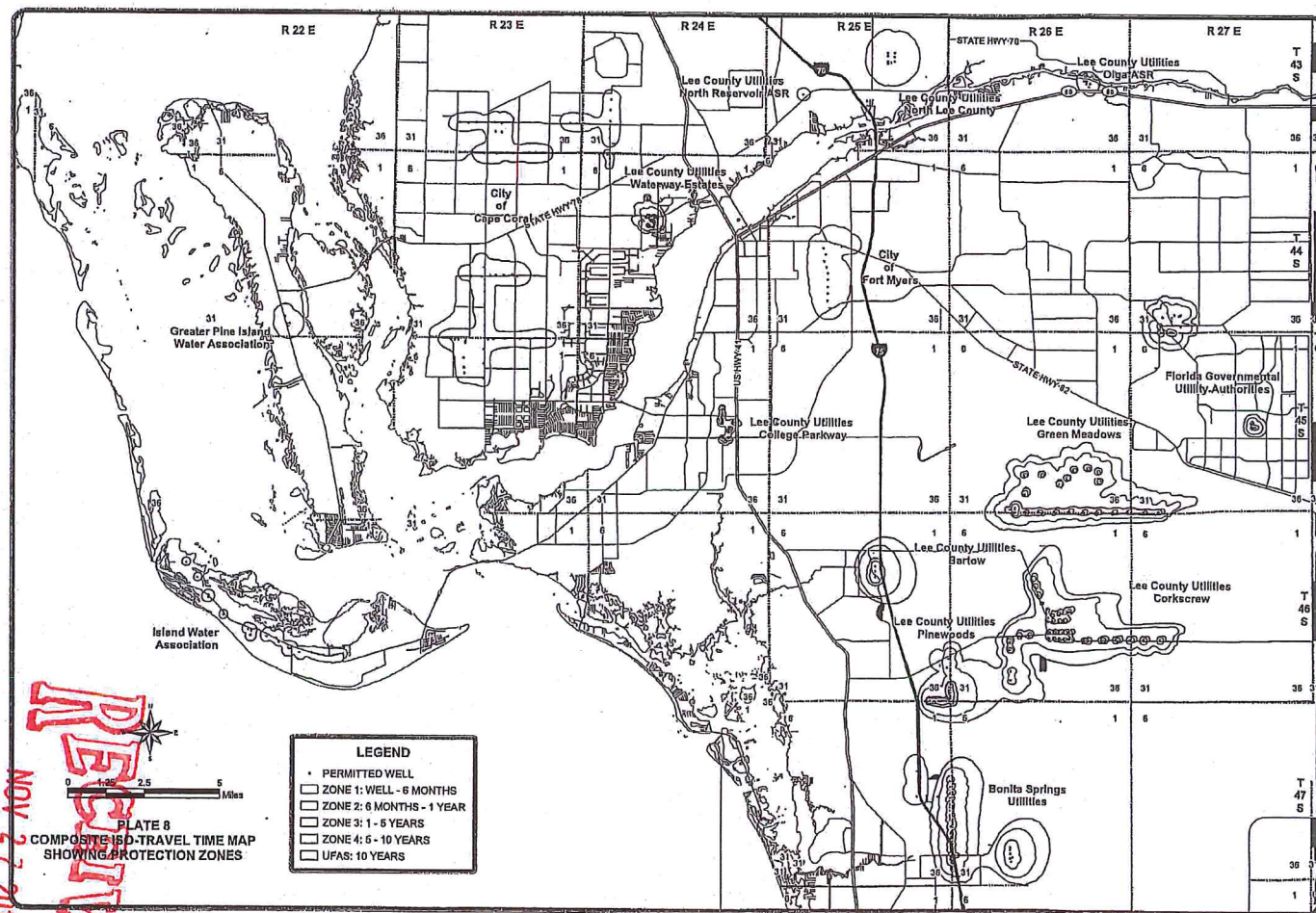


EXHIBIT A

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FLORIDA DEPARTMENT of STATE

CHARLIE CRIST
Governor

STATE LIBRARY AND ARCHIVES OF FLORIDA

KURT S. BROWNING
Secretary of State

December 11, 2007

Honorable Charlie Green
Clerk of Court
Lee County
Post Office Box 2469
Fort Myers, Florida 33902-2469

Attention: Lisa L. Pierce, Deputy Clerk

Dear Mr. Green:

Pursuant to the provisions of Section 125.66, Florida Statutes, this will acknowledge receipt of your letter dated December 7, 2007 and certified copies of Lee County Ordinance Nos. 07-31 through 07-35, which were filed in this office on December 11, 2007.

Sincerely,

Liz Cloud

Liz Cloud
Program Administrator

LC/jru

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DIRECTOR'S OFFICE

R.A. Gray Building • 500 South Bronough Street • Tallahassee, Florida 32399-0050
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**MEMORANDUM
FROM THE
OFFICE OF COUNTY ATTORNEY**

VIA EMAIL ONLY

DATE: June 8, 2020

To: Eileen Gabrick
Minutes Office Manager

FROM: *Michael D. Jacob*
Michael D. Jacob
Deputy County Attorney

**RE: Zoning Resolution Z-20-006, Adopted May 6, 2020
Scrivener's Error**

Lee County Zoning Resolution Z-20-006, adopting the Verdana Village RPD, contains a scrivener's error on page 5. The error consists of the following:

Minimum Setbacks (Principal/Accessory) (in feet) table
*~~140~~-10 feet/5 feet for secondary street setbacks on corner lots

Consequently, we respectfully request that you replace page 5 in Zoning Resolution Z-20-006 with the attached page so that it correctly reflects the text adopted by the County.

Should you have any questions concerning the above, please do not hesitate to contact me.

MDJ:tlb
Attachments

cc via email only: Audra Ennis, Zoning Manager, DCD
Jamie Baker, Administrative Specialist