PRELIMINARY POND SITING REPORT FOR ERIE ROAD
(4-LANE EAST-WEST BUILD-OUT)
FEBRUARY 28, 2017

FOR

MANATEE COUNTY PUBLIC WORKS

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John K. Pari, PE No. 56368 Date:

PRELIMINARY POND SITING REPORT FOR ERIE ROAD (4-LANE EAST-WEST BUILD-OUT) FEBRUARY 28, 2017

Introduction:

Manatee County is proposing to widen Erie Road from 2-Lanes to 4-Lanes from 300’ west of 91st Ave East to U.S. 301, a distance measuring 16,000± LF. To mitigate the proposed increases in runoff to the receiving water body, the County will evaluate several pond locations along the project corridor. Linear dry ponds will be constructed upstream of wet ponds creating a water quality treatment train required by SWFWMD. The intent of this report is to define not only the wet pond location but size, cost of land acquisition, and environmental impacts.

Existing Conditions:

Manatee County is currently re-designing Erie Road, a 2-lane rural collector roadway, from 91st Ave East to U.S. 301. Functional improvements include the addition of left/right turn bays where needed, 4-6’ wide bike lanes on either side of roadway, a 6’ wide concreate sidewalk on the south side of roadway, and curb and gutter. A 10’ wide paved recreational trail is planned on the north side of roadway. The existing right of way width is 50’±. The existing right of way would be widened to 65’ to accommodate the above described improvements. An additional 10’ wide utility easement is proposed adjacent to taking to accommodate a future 24” FM, and proposed 16” RCW.

Future Conditions:

Future build-out includes constructing a 4-lane section with a 15.5 foot wide grass median w/ Type F curb, 6’ wide concrete sidewalk on the south side and a 6-10’ wide recreational trail on the north side. To accommodate said build-out improvements, the 65’ wide R/W (proposed under the functional improvement project) would be widened to 100’ to 105’. This additional 35’ to 40’ wide taking would effect 56 parcels. An additional 20’ wide utility easement is proposed adjacent to taking to accommodate a future 24” FM, a proposed 16” RCW and 24” WM.

Pond Siting Selection Criteria:

Pond siting evaluation criteria includes right of way costs, land use costs, wetland impacts, contamination and hazardous materials, well field impacts, favorable soil types, suitable topography, and available discharge points from ponds.

PRELIMINARY POND SITING REPORT FOR ERIE ROAD (4-LANE EAST-WEST BUILD-OUT) FEBRUARY 28, 2017

POND SITE ONE:

Pond site 1 is located just east of the FDOT Transportation Facility, PID # 467201009 owned by Manatee County. The drainage basin begins at U.S. 301 and extends 4,300 LF to the west. Based on a future right of way width = 100' - 105', the drainage area = 10.0 Acres. Basin topography along the existing roadway varies from elevation 43.0 near U.S. 301 to 36.4 to the west. Attenuated runoff can be discharged into an existing channel along the westerly property line of said County owned property. An existing 38"x60" RCP culvert that crosses Erie Road will convey runoff from the south side of Erie Road to the north and discharge to Wade Canal / Buffalo Creek. This site is located in Section 30, Township 33S, Range 19E and zoned agricultural. See Exhibits A1, B1 and C1.

Wetlands are located along the southwesterly property line and classified as Forested mixed (code 6300) and emergent aquatic vegetation (code 6440). Additional wetlands classified as Forested mixed are located along the northerly property line. Pond site one would be located a minimum of 30' from wetland limit. See Exhibit D1.

100 year floodplain varies from 35.23 near the westerly basin limit to 38.2 to the east. Existing site topography for the wet pond varies from elevation 34.0 to 35.0. The proposed wet pond top of bank would be set at 35.0± to minimize floodplain impacts. The interconnected dry pond site topography is 35.0± that can be used as dry pond bottom elevation. The existing roadway is not located within the 100 year floodplain. However, proposed widening from 2 to 4 lanes will impact existing floodplain from the westerly basin limit (Elev. = 35.23), to 100' east. In addition, the existing floodplain will be impacted from 120th Avenue east (Elev. = 37.47) to 121st Avenue East (Elev. = 38.2), a distance of 860 LF. See Exhibit E1.

Soils within the pond site are predominantly EauGallie fine sand. The remaining drainage basin consists of Orlando fine sand and Floridana - Immokalee - Okeelanta association. See Exhibit F1

There is an existing 24" water main on the north side of Erie Road from 118th Avenue East to 121st Ave East. An existing 12" water main is located on north side of Erie Road from 121st Ave East to U.S. 301.

No underground storage tanks within the basin area.

No historical resources within the basin area per the Historical Register of Manatee County, FL.

No wells are within the basin area per Manatee County GIS.

PRELIMINARY POND SITING REPORT FOR ERIE ROAD (4-LANE EAST-WEST BUILD-OUT) FEBRUARY 28, 2017

Water quality calculations are based on SWFWMD'S on-line treatment system shall treat the first one-inch of rainfall; or as an option for projects of < 100 Ac, the first ½ inch of runoff.

10.0 Ac (Project Area) x 0.5"/12 = 0.417 AF; Use 6" head, Dry Pond Size = 0.417 AF / 0.5 Ft = 0.83 Ac. Use 1.0 to account for maintenance road.

The existing grade at dry pond site = 35.0; Assume dry pond bottom elevation = 35.0.

To determine the proposed elevation at the low point in the future 4-lane section, 0.50' of treatment depth is added to the pond bottom elevation = 35.0 + 0.3' fluctuation in dry pond + 0.2' head loss through conveyance pipe from roadway to bubbler box in dry pond, the minimum roadway gutter elevation at low point = 36.0±. Since the existing grade is 36.0±, no ordinary borrow would be required. The need for underdrain may be required since bottom of base course is < 1.0' above SHWL, assuming the SHWL is 1.0' below existing grade.

Water Attenuation calculations are based on the County's requirement to reduce existing peak flow rates up to 50%, since we are within Wade Canal, a watershed that is flood prone.

Existing Q Calculations are as follows:

Weighted C = (2.5 Ac x 0.95) + (7.5 Ac x 0.30)/10.0 Ac. = 0.46

Tc = 40 Min. based on average Velocity = 2.0 ft. /sec through 4,300 LF of roadside swale.

Intensity = 5 in/hr. per 50 Year Storm.

$\mathbf{Q}_{\mathbf{exist}}$ = 0.46 x 10 Ac. x 5 in/hr. = 23 cfs.

With 25% reduction, allowable peak flow at discharge point = 17.0 cfs.

Proposed Q Calculations are as follows:

Weighted C = (8.2 Ac x 0.95) + (1.8 Ac x 0.30)/10.0 Ac. = 0.83

Tc = 25 Min. based on average Velocity = 2.5 ft. /sec through 4,300 LF of pipe.

Intensity = 6.3 in/hr. per 50 Year Storm.

$\mathbf{Q}_{\mathbf{prop}}$ = 0.83 x 10 Ac. x 6.3 in/hr. = 52.3 cfs.

Using TR-55, Figure 6-1 (Refer to attached exhibit), calculate ratio of Peak Outflow / Peak inflow

q_o/q_i = 17 cfs/ 52.3 cfs = 0.32; Use 0.30; Yields a Storage Volume / Runoff Volume ratio = 0.38.

Runoff Volume Vr = 10 Ac x 0.83 x 9"/12 = 6.23 AF.

Storage Volume = 0.38 x 6.23 AF = 2.37 AF.

Therefore, assuming SHWL is 2’ below existing wet pond grade (T.O.B. EL=35.0±) and 1’ of freeboard, the estimated wet pond size = 2.37 Ac + 0.33 Ac (for maintenance berm) = 2.70 Ac wet pond.

No Property Acquisition is anticipated.

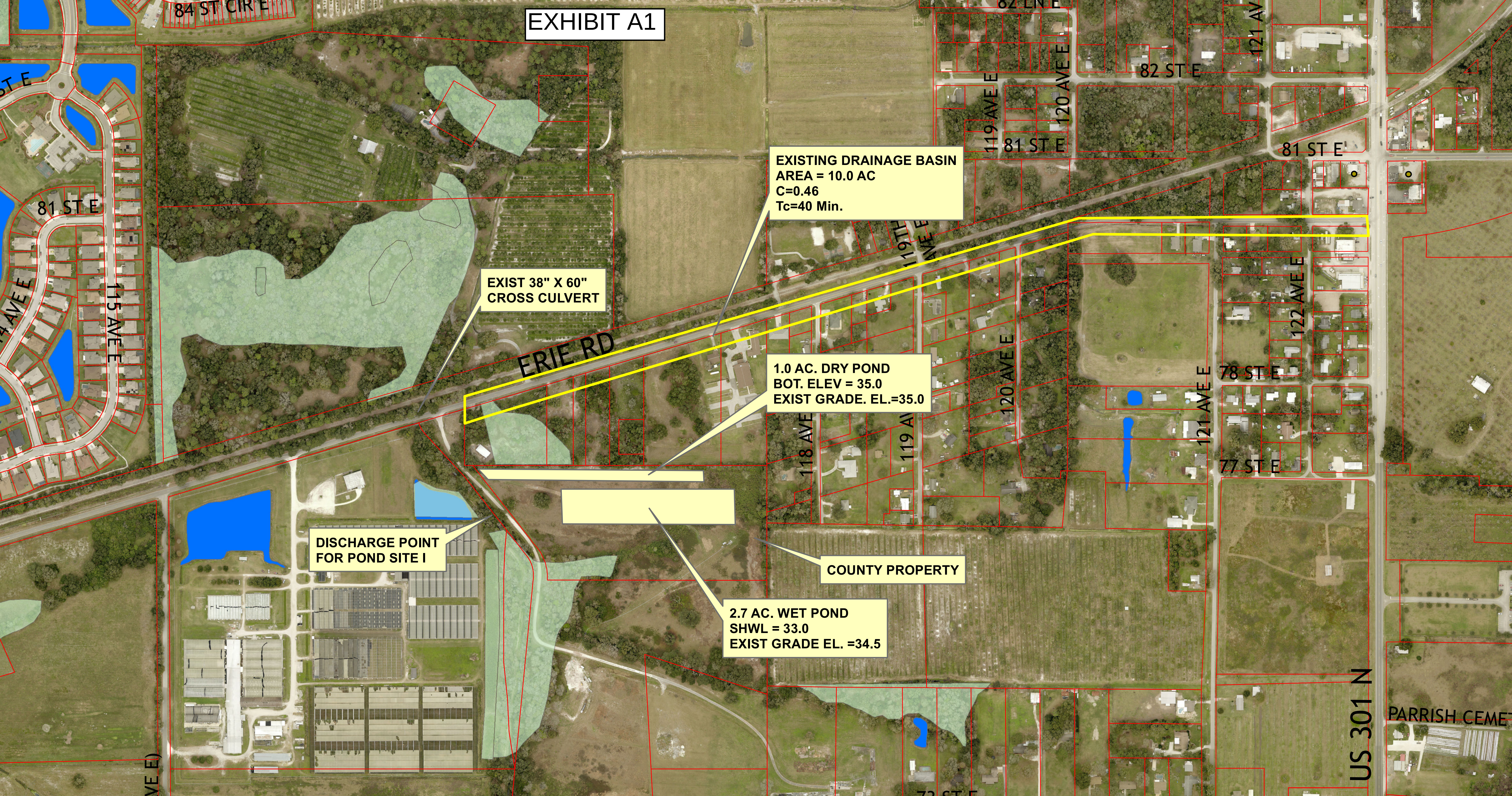


EXHIBIT A1
EXISTING DRAINAGE BASIN
AREA = 10.0 AC
C=0.46
Tc=40 Min.
EXIST 38" X 60"
CROSS CULVERT
ERIE RD
1.0 AC. DRY POND
BOT. ELEV = 35.0
EXIST GRADE. EL.=35.0
DISCHARGE POINT
FOR POND SITE I
COUNTY PROPERTY
2.7 AC. WET POND
SHWL = 33.0
EXIST GRADE EL. =34.5
82 ST E
81 ST E
81 ST E
81 ST E
119 AVE E
120 AVE E
115 AVE E
78 ST E
77 ST E
120 AVE E
121 AVE E
122 AVE E
118 AVE
US 301 N
PARRISH CEMET


EXHIBIT B1
EXISTING WETLANDS
DISCHARGE POINT FOR POND SITE I
POND SITE I
COUNTY PROPERTY
EXISTING WETLANDS
82ND ST E
81ST ST E
81ST ST E
SR 62
ERIE RD
121ST AVE E
118TH AVE E
120TH AVE E
122ND AVE E
78TH ST E
77TH ST E
121ST AVE E
73RD ST E
73RD ST E
US 301 N

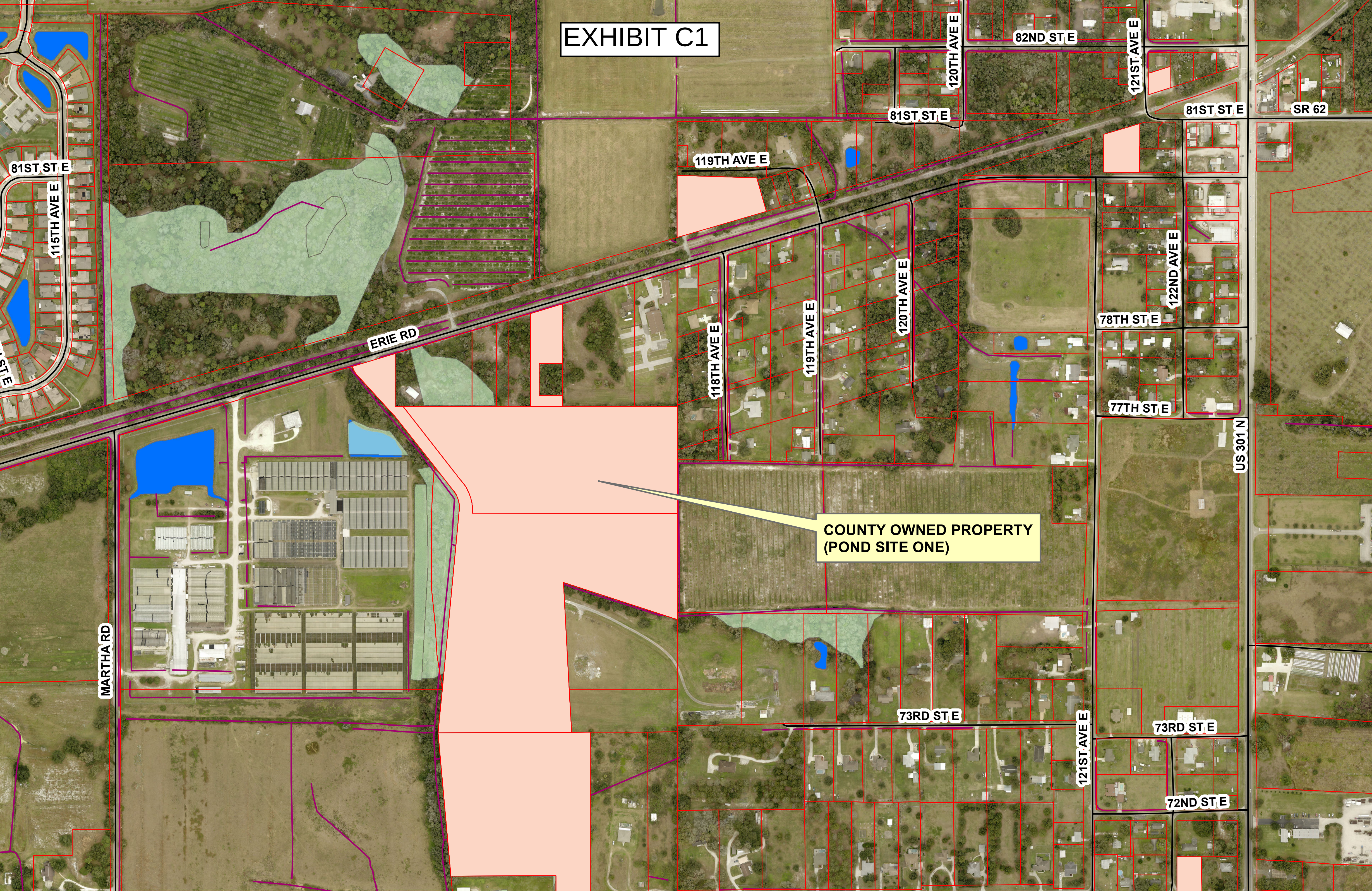


EXHIBIT C1
82ND ST E
120TH AVE E
121ST AVE E
81ST ST E
SR 62
81ST ST E
119TH AVE E
81ST ST E
115TH AVE E
ERIE RD
118TH AVE E
119TH AVE E
120TH AVE E
122ND AVE E
78TH ST E
77TH ST E
US 301 N
COUNTY OWNED PROPERTY
(POND SITE ONE)
MARTHA RD
73RD ST E
121ST AVE E
73RD ST E
72ND ST E

EXHIBIT D1
EXISTING WETLANDS
DISCHARGE POINT FOR POND SITE I
POND SITE I
COUNTY PROPERTY
EXISTING WETLANDS
RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS 1100
WETLAND FORESTED MIXED 6300
TREE CROPS 2200
FRESHWATER MARSHES 6410
HARDWOOD CONIFER MIXED 4340
EMERGENT AQUATIC VEGETATION 6440
TRANSPORTATION 8100
RESERVOIRS 5300
INDUSTRIAL 1500
CROPLAND AND PASTURELAND 2100
INSTITUTIONAL 1700
OPEN LAND 1900
RESIDENTIAL MED DENSITY 2->5 DWELLING UNIT 1200
COMMERCIAL AND SERVICES 1400
RECREATIONAL 1800
82ND ST E
81ST ST E
77TH ST E
78TH ST E
73RD ST E
114TH AVE E
115TH AVE E
118TH AVE E
119TH AVE E
120TH AVE E
121ST AVE E
122ND AVE E
ERIE RD
SR 62
US 301 N
MARTHA RD

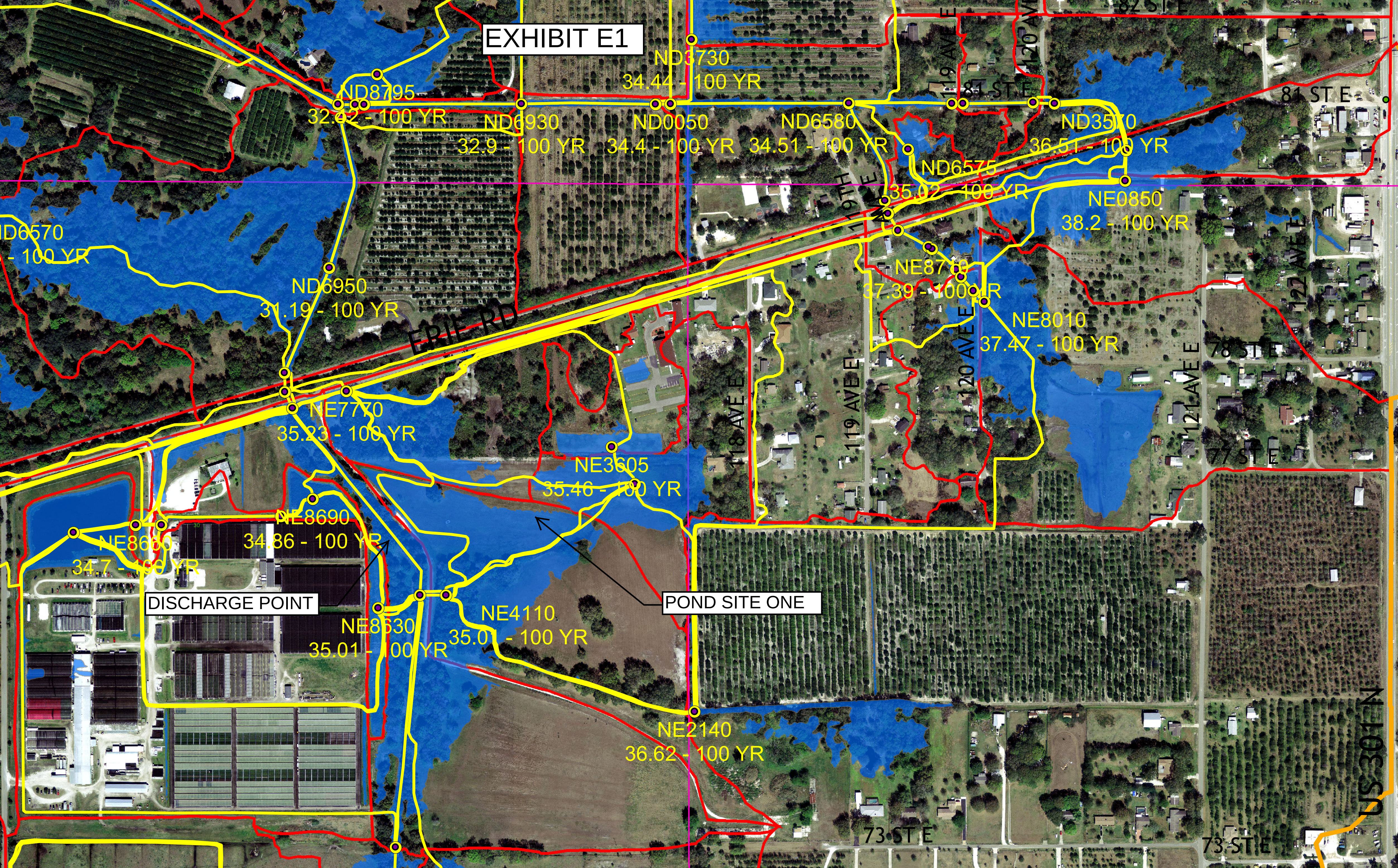
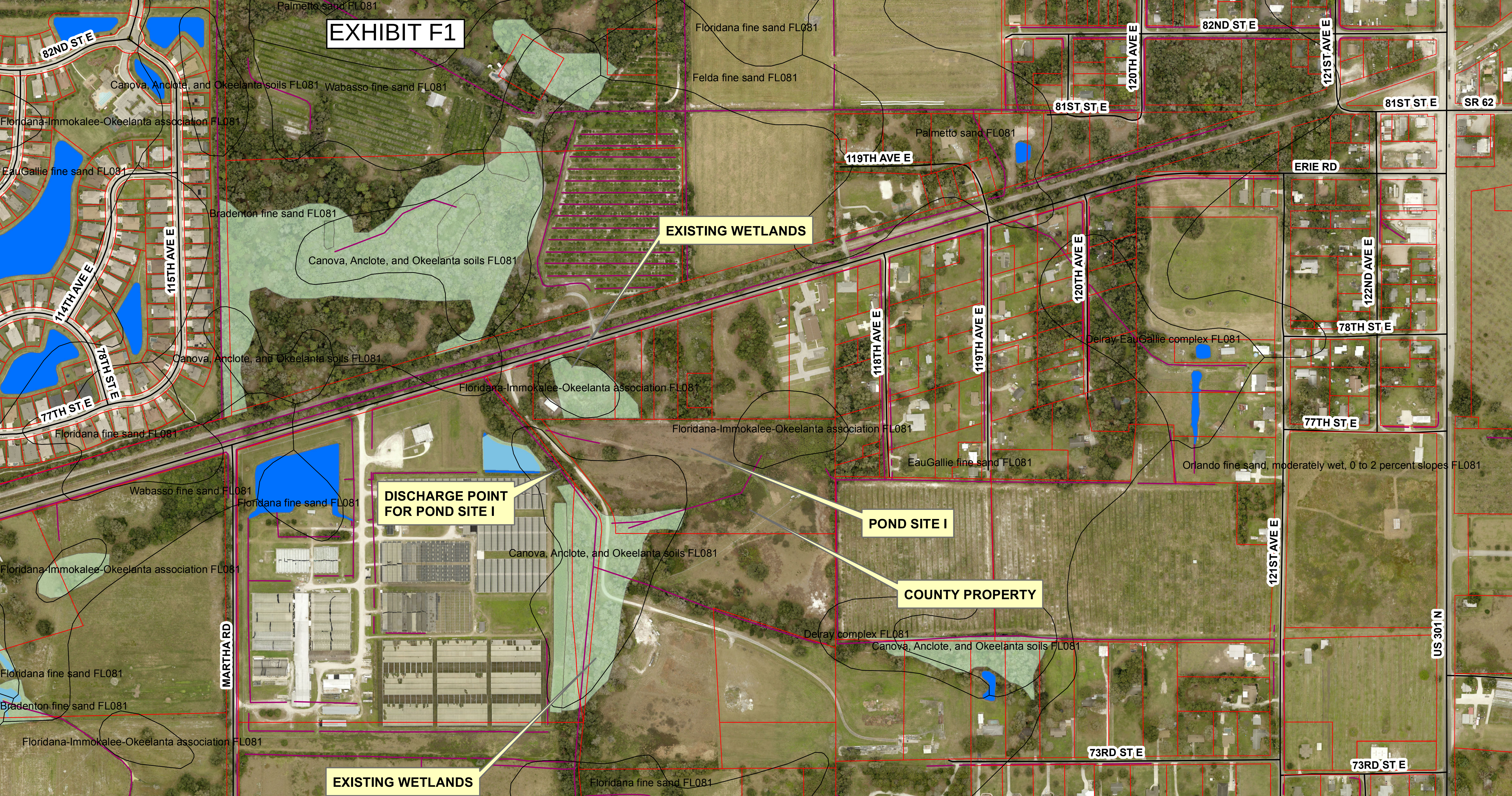


EXHIBIT E1
ND3730
34.44 - 100 YR
ND8795
ND6930
32.9 - 100 YR
ND0050
34.4 - 100 YR
ND6580
34.51 - 100 YR
ND3570
ND6575
NE0850
38.2 - 100 YR
81 ST E
ND6950
31.19 - 100 YR
ERIE RD
NE8010
37.47 - 100 YR
78 ST E
77 ST E
NE7770
35.23 - 100 YR
NE3605
118 AVE E
119 AVE E
120 AVE E
121 AVE E
NE8690
34.86 - 100 YR
DISCHARGE POINT
POND SITE ONE
NE4110
NE2140
36.62 - 100 YR
73 ST E
US 301 N

EXHIBIT F1


EXISTING WETLANDS
DISCHARGE POINT FOR POND SITE I
POND SITE I
COUNTY PROPERTY
EXISTING WETLANDS
82ND ST E
81ST ST E
SR 62
119TH AVE E
ERIE RD
120TH AVE E
121ST AVE E
122ND AVE E
118TH AVE E
119TH AVE E
78TH ST E
77TH ST E
73RD ST E
US 301 N
MARTHA RD
115TH AVE E
114TH AVE E
78TH ST E
77TH ST E
Palmetto sand FL081
Floridana fine sand FL081
Felda fine sand FL081
Canova, Anclote, and Okeelanta soils FL081
Wabasso fine sand FL081
Floridana-Immokalee-Okeelanta association FL081
EauGallie fine sand FL081
Bradenton fine sand FL081
Delray-EauGallie complex FL081
Orlando fine sand, moderately wet, 0 to 2 percent slopes FL081
Delray complex FL081

Input requirements and procedures

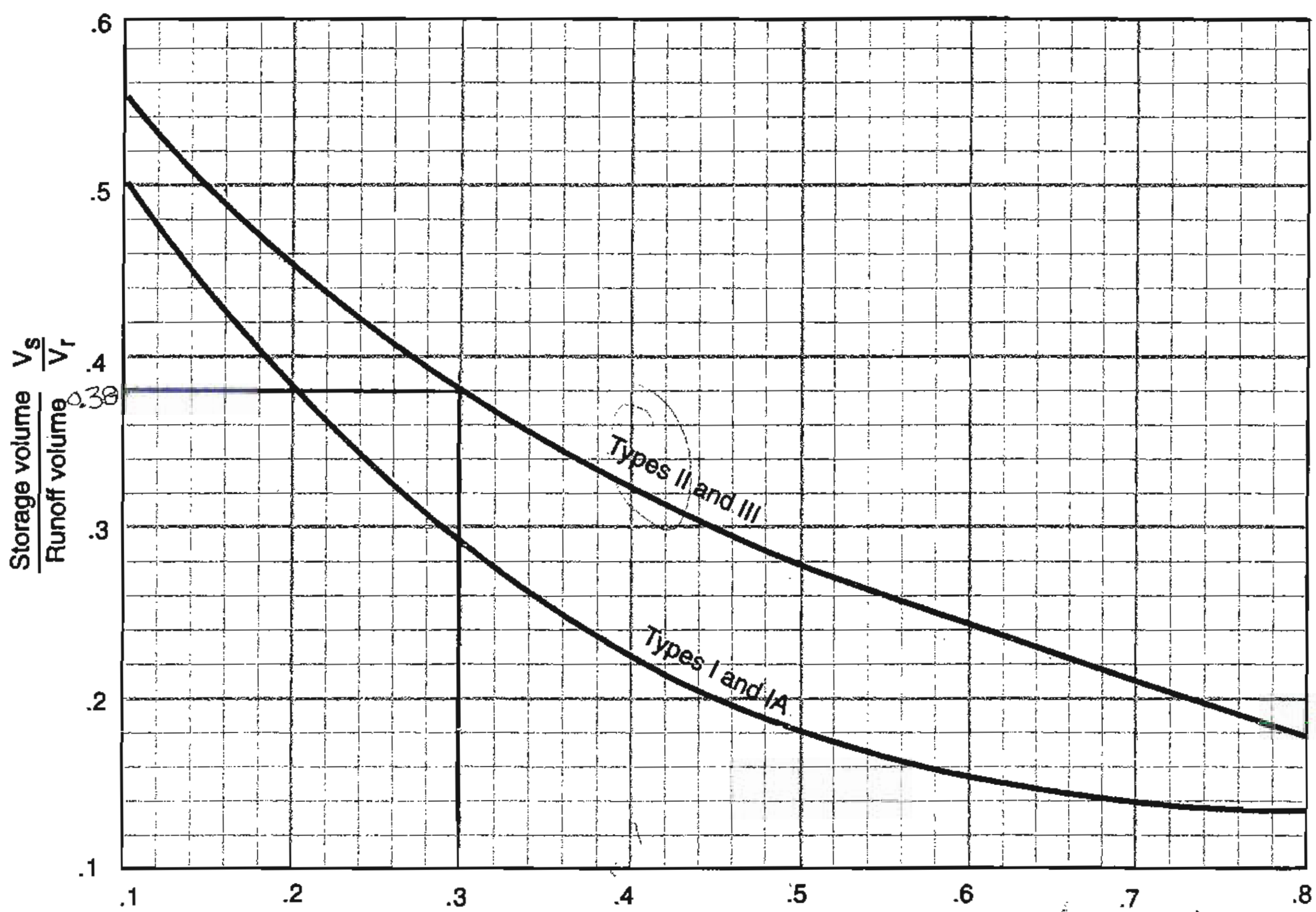
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



0.32 = 17/52 cfs   Peak outflow discharge / Peak inflow discharge $\left(\frac{q_o}{q_i}\right)$ ← ALLOWABLE (EXISTING)   25% REDUCTION

← PROP. Q

POND #1

V_r = RAINFALL(IN) × Cw × A

POND SITE TWO:

Pond site 2 is located 645 LF west of 113th Avenue East, PID # 467520003, and owned by Green Bull, LLC. The drainage basin begins 200 LF east of the FDOT Transportation Facility and extends 5,085 LF to the west near 108th Avenue East. Based on a future right of way width = 100' - 105', the drainage area = 11.7 Acres. Basin topography along the existing roadway varies from elevation 36.4 to the east to 33.0 at the existing 29" x 45" cross culvert (to the west). Attenuated runoff can be discharged into an existing channel along the easterly property line of said Green Bull, LLC. Said existing 29"x 45" RCP culvert that crosses Erie Road will convey runoff from the south side of Erie Road to the north and discharge to Wade Canal / Buffalo Creek. This site is located in Section 30, Township 33S, Range 19E and zoned agricultural. See Exhibits A2 and B2.

Wetlands are located on the westerly property line and classified as Upland Coniferous Forest (code 4100) and Freshwater Marshes (code 6410). Pond site two would be located a minimum of 30' from wetland limit. See Exhibit C2.

100 year floodplain varies from 33.07 at the westerly basin limit to 35.23 to the east. Existing site topography for the wet pond varies from elevation 31.0 to 32.0. The proposed wet pond top of bank would be set at 32.0± to minimize floodplain impacts. The interconnected dry pond site topography varies from elevation 30.0 to 32.0, the lower limit used as the pond bottom elevation. The existing roadway is not located within the 100 year floodplain. However, proposed widening from 2 to 4 lanes will impact existing floodplain from the westerly basin limit (Elev. =33.07) to the easterly basin limit (Elev. =35.23). See Exhibit D2.

Soils within pond site is predominantly EauGallie fine sand. The remaining drainage basin consists of Wabasso and Bradenton and fine sands. See Exhibit E2.

There is an existing 16" force main on the north side of Erie Road from 113th Avenue East to approximately 540 LF east of 108th Avenue East, the westerly basin limit.

Underground storage tank one (1) located 500' east of Martha Road.

No historical resources within the basin area per the Historical Register of Manatee County, FL.

No wells are within the basin area per Manatee County GIS.

Water quality calculations are based on SWFWMD'S on-line treatment system shall treat the first one-inch of rainfall; or as an option for projects of < 100 Ac, the first ½ inch of runoff.

11.7 Ac (Project Area) x 0.5"/12 = 0.49 AF; Use 6" head, Dry Pond Size = 0.49 AF / 0.5 Ft = 0.98 Ac. Use 1.1 to account for maintenance road.

The existing grade at dry pond site = 30.0; Assume dry pond bottom elevation = 30.0.

To determine the proposed elevation at the low point in the future 4-lane section, 0.50' of treatment depth is added to pond bottom elevation = 30.0 + 2.3' fluctuation in dry and wet ponds + 0.2' head loss through conveyance pipe from roadway to bubbler box in dry pond, the minimum roadway gutter elevation at low point = 33.0±. Since the existing grade is 33.0, no ordinary borrow would be required. The need for underdrain may be required since bottom of base course is < 1.0' above SHWL, assuming the SHWL is 1.0' below existing grade.

Water Attenuation calculations are based on the County's requirement to reduce existing peak flow rates up to 50%, since we are within Wade Canal, a watershed that is flood prone.

Existing Q Calculations are as follows:

Weighted C = (2.6 Ac x 0.95) + (9.1 Ac x 0.30)/11.7 Ac. = 0.44

Tc = 44 Min. based on average Velocity = 2.0 ft. /sec through 5,085 LF of roadside swale.

Intensity = 4.8 in/hr. per 50 Year Storm.

$\mathbf{Q_{exist}}$ = 0.44 x 11.7 Ac. x 4.8 in/hr. = 24.7 cfs.

With 25% reduction, allowable peak flow at discharge point = 18.5 cfs.

Proposed Q Calculations are as follows:

Weighted C = (9.8 Ac x 0.95) + (1.9 Ac x 0.30)/11.7 Ac. = 0.84

Tc = 29 Min. based on average Velocity = 2.8 ft. /sec through 5,085 LF of pipe.

Intensity = 5.9 in/hr. per 50 Year Storm.

$\mathbf{Q_{prop}}$ = 0.84 x 11.7 Ac. x 5.9 in/hr. = 58.0 cfs.

Using TR-55, Figure 6-1 (Refer to attached exhibit), calculate ratio of Peak Outflow / Peak inflow

q_o/q_i = 18.5 cfs/ 58.0 cfs = 0.32; Use 0.30; Yields a Storage Volume / Runoff Volume ratio = 0.38.

Runoff Volume Vr = 11.7 Ac x 0.84 x 9"/12 = 7.37 AF.

Storage Volume = 0.38 x 7.37 AF = 2.80 AF.

Therefore, assuming SHWL is 2’ below existing wet pond grade (T.O.B. EL=32.0±) with 1’ of freeboard, the estimated wet pond size = 2.8 Ac + 0.20 Ac (for maintenance berm) = 3.0 Ac wet pond.

Property Acquisition is anticipated. Parcel PID # 467520003 is a 10.01 acre site owned by Green Bull, LLC. The appraised value is $297,712.

EXHIBIT A2
108 AVE CIR E
79 ST E
79 ST E
110 AVE E
110 AVE E
111 TER E
77 ST E
77 ST E
78 LN E
78 ST E
113 AVE E
EXIST 29" X 45"
CROSS CULVERT
EXIST. DRAINAGE BASIN
AREA = 11.7 AC.
C = 0.44
Tc = 44 Min.
DISCHARGE POINT
FOR POND SITE 2
ERIE RD
1.1 AC. DRY POND
BOT. ELEV = 30.0
EXIST GRADE. EL.=30.0
3.0 AC. WET POND
SHWL = 30.0
EXIST GRADE EL. =32.0
108 AVE E
MARTHA RD (115 AVE E)

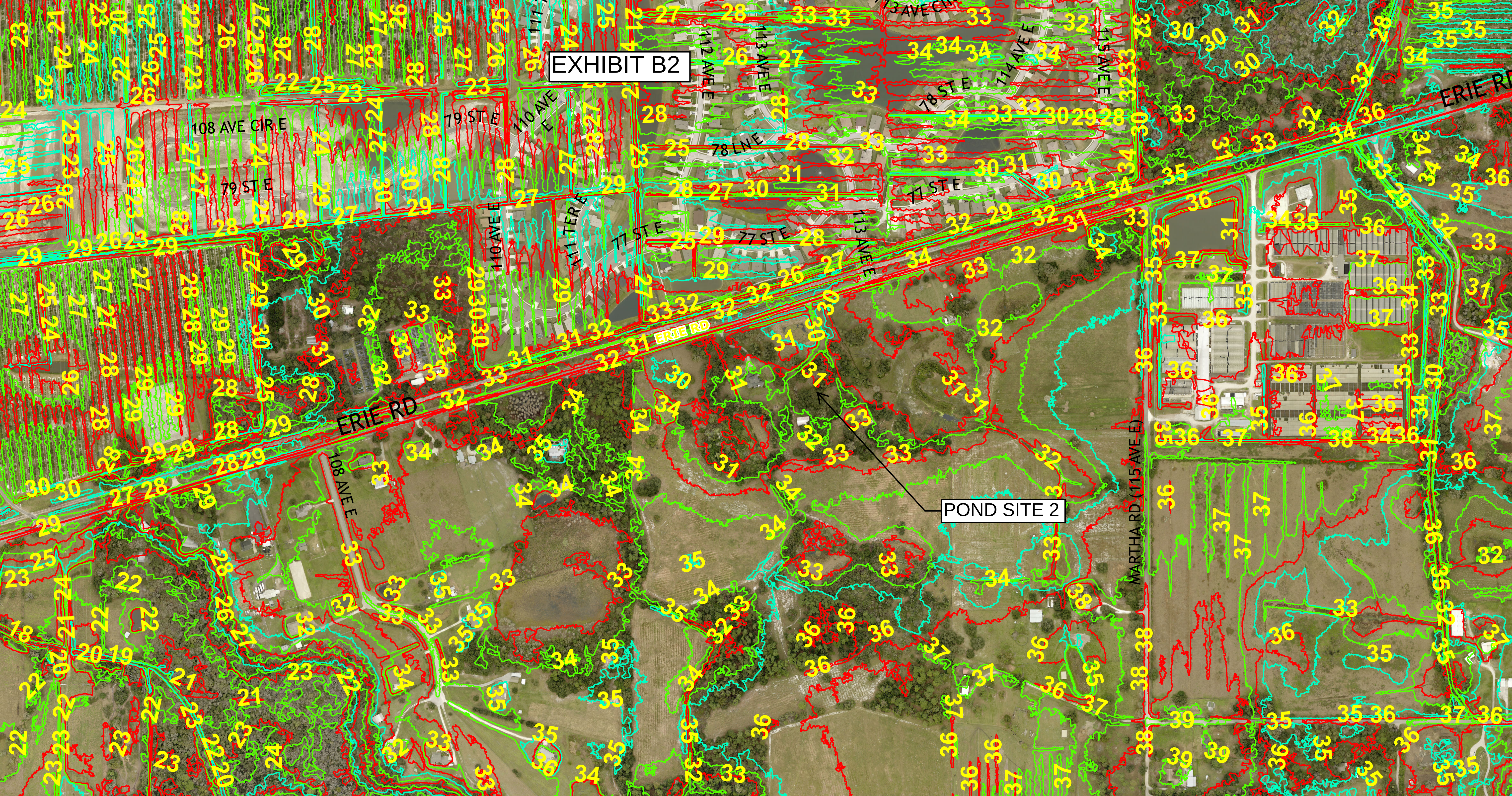


EXHIBIT B2
POND SITE 2
ERIE RD
108 AVE CIR E
79 ST E
110 AVE E
111 TERE
77 ST E
78 LN E
112 AVE E
113 AVE E
114 AVE E
115 AVE E
78 ST E
77 ST E
108 AVE E
MARTHA RD (115 AVE E)

EXHIBIT C2
FRESHWATER MARSHES 6410
108 AVE CIR E
79 ST E
110 AVE E
TREE CROPS 2200
79 ST E
110 AVE E
111 TER E
77 ST E
77 ST E
78 LN E
78 ST E
114 AVE E
113 AVE E
EXIST 29" X 45" CROSS CULVERT
FRESHWATER MARSHES 6410
WETLAND FORESTED MIXED 6300
RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS 1100
HARDWOOD CONIFER MIXED 4340
EMERGENT AQUATIC VEGETATION 6440
RESERVOIRS 5300
WETLAND FORESTED MIXED 6300
UPLAND CONIFEROUS FOREST 4100
TRANSPORTATION 8100
FRESHWATER MARSHES 6410
INDUSTRIAL 1500
RESERVOIRS 5300
RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS 1100
DISCHARGE POINT FOR POND SITE 2
FRESHWATER MARSHES 6410
FRESHWATER MARSHES 6410
FRESHWATER MARSHES 6410
EMERGENT AQUATIC VEGETATION 6440
WETLAND FORESTED MIXED 6300
ERIE RD
1.0 AC. DRY POND
BOT. ELEV = 30.0
EXIST GRADE. EL.=30.0
FRESHWATER MARSHES 6410
108 AVE E
UPLAND CONIFEROUS FOREST 4100
FRESHWATER MARSHES 6410
3.0 AC. WET POND
SHWL = 30.0
EXIST GRADE EL. =32.0
RESERVOIRS 5300
RESERVOIRS 5300
CROPLAND AND PASTURELAND 2100
ROW CROPS 2140
MARTHA RD (115 AVE E)
FRESHWATER MARSHES 6410
WET PRAIRIES 6430
RESERVOIRS 5300
STREAM AND LAKE SWAMPS (BOTTOMLAND) 6150
WET PRAIRIES 6430
STREAM AND LAKE SWAMPS (BOTTOMLAND) 6150
FRESHWATER MARSHES 6410
STREAM AND LAKE SWAMPS (BOTTOMLAND) 6150
PINE FLATWOODS 4110
EMERGENT AQUATIC VEGETATION 6440
WET PRAIRIES 6430
CROPLAND AND PASTURELAND 2100
RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS 1100

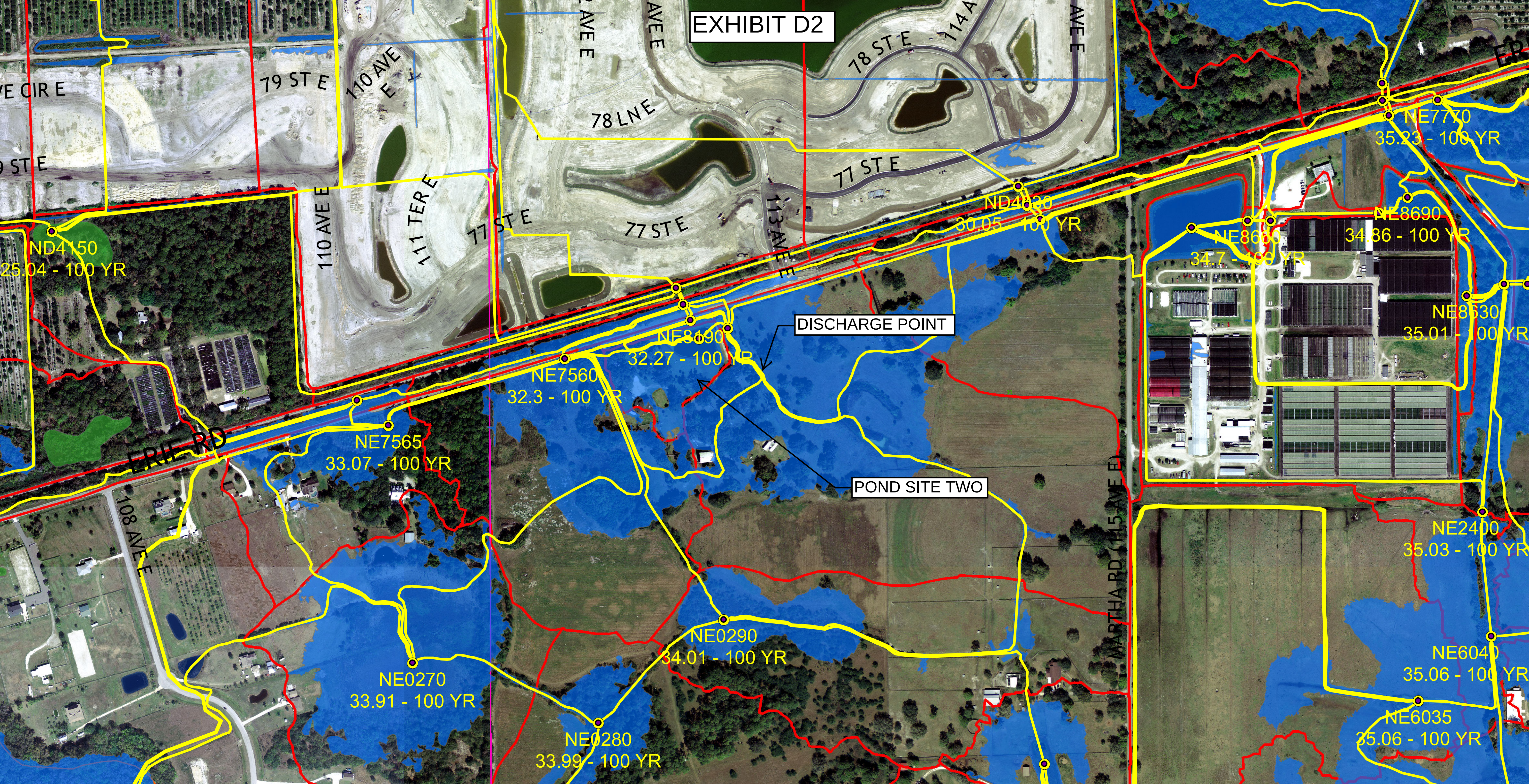


EXHIBIT D2
DISCHARGE POINT
POND SITE TWO
ERIE RD
108 AVE E
MARTHA RD (115 AVE E)
79 ST E
110 AVE E
111 TER E
110 AVE E
77 ST E
78 LN E
78 ST E
77 ST E
113 AVE E
ND4150
25.04 - 100 YR
NE7565
33.07 - 100 YR
NE7560
32.3 - 100 YR
NE8190
32.27 - 100 YR
30.05 - 100 YR
NE7770
35.23 - 100 YR
NE8690
34.86 - 100 YR
34.7 - 100 YR
NE8630
35.01 - 100 YR
NE2400
35.03 - 100 YR
NE6040
35.06 - 100 YR
NE6035
35.06 - 100 YR
NE0290
34.01 - 100 YR
NE0270
33.91 - 100 YR
NE0280
33.99 - 100 YR


EXHIBIT E2
EXIST 29" X 45"
CROSS CULVERT
DISCHARGE POINT
FOR POND SITE 2
1.0 AC. DRY POND
BOT. ELEV = 30.0
EXIST GRADE. EL.=30.0
3.0 AC. WET POND
SHWL = 30.0
EXIST GRADE EL. =32.0
ERIE RD
MARTHA RD (115 AVE E)
108 AVE CIR E
79 ST E
110 AVE E
111 TER E
77 ST E
78 LN E
78 ST E
113 AVE E
108 AVE E
Felda fine sand FL081
Floridana-Immokalee-Okeelanta association FL081
Canova, Anclote, and Okeelanta soils FL081
Palmetto sand FL081
Bradenton fine sand FL081
EauGallie fine sand FL081
Floridana fine sand FL081
Wabasso fine sand FL081
Delray complex FL081
Chobee loamy fine sand FL081

Input requirements and procedures

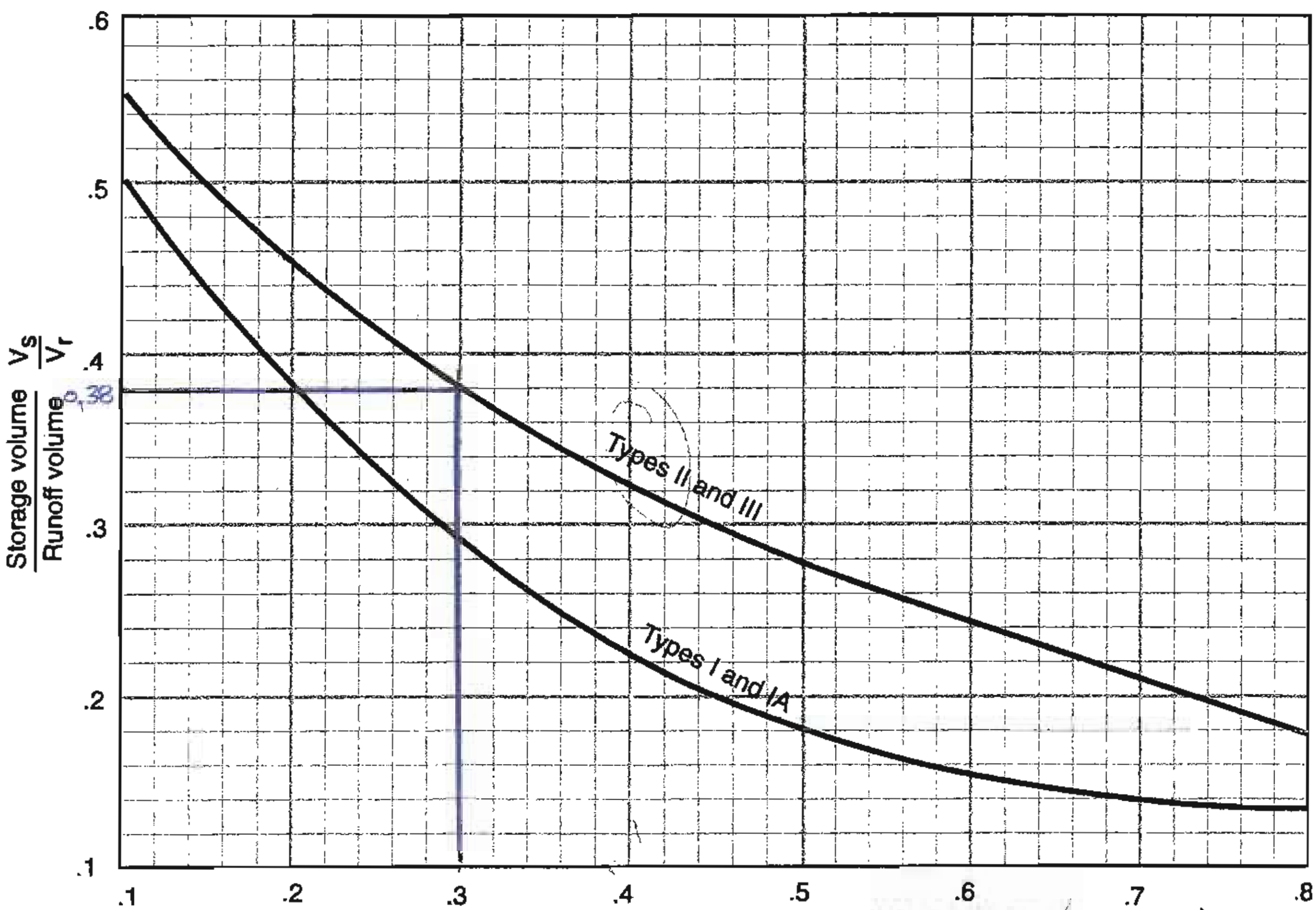
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



$0.32 = \frac{18.5}{58 \text{ cfs}}$ ALLOWABLE (EXISTING)

PROP. Q

POND # 2

V_R = RAINFALL (IN) x Cw x A

POND SITE THREE:

Pond site 3 is located opposite Sawgrass Road, PID # 726400109 owned by Harrison Ranch, LLC. The drainage basin begins near 91st Avenue East and extends 6,850 LF to the east. Based on a future right of way width = 100' - 105', the basin area = 15.7 Acres. Basin topography along the existing roadway varies from 35.0 to the east to 29.0 to the west. Attenuated runoff can be discharged into an existing channel along the westerly property line of said Harrison Ranch, LLC. An existing 9' x 13' box culvert that crosses Erie Road will convey runoff from the south side of Erie Road to the north and discharge to Wade Canal / Buffalo Creek. This site is located in Section 36, Township 33S, Range 18E and zoned agricultural. See Exhibits A3 and B3.

Wetlands are located on the easterly property line and classified as Wet Prairies (code 6430). Pond site three would be located a minimum of 30' from wetland limit. See Exhibit C3.

100 year floodplain varies from elevation 25.69 near Harrison Ranch Blvd to 26.67 east of Sawgrass Road. Existing site topography for the wet pond varies from elevation 22.0 to 24.0. The proposed wet pond top of bank would be set at 23.0± to minimize floodplain impacts. The interconnected dry pond site topography varies from 23.0 to 27.0, an elevation of 25.0 used as the pond bottom. The existing roadway is not located within the 100 year floodplain. However, proposed widening from 2 to 4 lanes will impact existing floodplain from Harrison Ranch Blvd to 300' west of Sawgrass Road, a distance of 3,000 LF. See Exhibit D3.

Soils within the pond site is predominantly Chobee loamy fine sand. The remaining drainage basin consists of Wabasso, Bradenton and EauGallie fine sands and Delray Complex. See Exhibit E3.

There is an existing 16" force main on the north side of Erie Road from 108th Avenue East to the westerly basin limit.

No underground storage tanks within the basin area.

No historical resources within the basin area per the Historical Register of Manatee County, FL.

No wells are within the basin area per Manatee County GIS.

Water quality calculations are based on SWFWMD'S on-line treatment system shall treat the first one-inch of rainfall; or as an option for projects of < 100 Ac, the first ½ inch of runoff.

15.7 Ac (Project Area) x 0.5"/12 = 0.65 AF; Use 6" head, Dry Pond Size = 0.65 AF / 0.5 Ft = 1.30 Ac. Use 1.4 to account for maintenance road.

PRELIMINARY POND SITING REPORT FOR ERIE ROAD (4-LANE EAST-WEST BUILD-OUT) FEBRUARY 28, 2017

The existing grade at dry pond site varies from 23.0 to 27.0; Assume dry pond bottom elevation = 25.0.

To determine the proposed elevation at the low point in the future 4-lane section, 0.50' of treatment depth is added to pond bottom elevation = 25.0 + 0.3' fluctuation in dry pond + 0.2' head loss through conveyance pipe from roadway to bubbler box in dry pond, the minimum roadway gutter elevation at low point = 26.0±. Since the existing grade is 29.0, the proposed roadway gutter elevation could be set to 29.0. No ordinary borrow would be required. The need for underdrain may be required since bottom of base course is < 1.0' above SHWL, assuming the SHWL is 1.0' below existing grade.

Water Attenuation calculations are based on the County's requirement to reduce existing peak flow rates up to 50%, since we are within Wade Canal, a watershed that is flood prone.

Existing Q Calculations are as follows:

Weighted C = (3.45 Ac x 0.95) + (12.25 Ac x 0.30)/15.7 Ac. = 0.44

Tc = 37 Min. based on average Velocity = 1.8 ft. /sec through 4,000 LF of roadside swale.

Intensity = 5.3 in/hr. per 50 Year Storm.

$\mathbf{Q}_{\mathbf{exist}}$ = 0.44 x 15.7 Ac. x 5.3 in/hr. = 36.6 cfs.

With 25% reduction, allowable peak flow at discharge point = 27.5 cfs.

Proposed Q Calculations are as follows:

Weighted C = (9.8 Ac x 0.95) + (1.9 Ac x 0.30)/11.7 Ac. = 0.84

Tc = 27 Min. based on average Velocity = 2.5 ft. /sec through 4,000 LF of pipe.

Intensity = 6.1 in/hr. per 50 Year Storm.

$\mathbf{Q}_{\mathbf{prop}}$ = 0.84 x 15.7 Ac. x 6.1 in/hr. = 80.4 cfs.

Using TR-55, Figure 6-1 (Refer to attached exhibit), calculate ratio of Peak Outflow / Peak inflow

q_o/q_i = 27.5 cfs/ 80.4 cfs = 0.34; Use 0.30; Yields a Storage Volume / Runoff Volume ratio = 0.38.

Runoff Volume Vr = 15.7 Ac x 0.84 x 9"/12 = 9.89 AF.

Storage Volume = 0.38 x 9.89 AF = 3.76 AF.

Therefore, assuming SHWL is 2' below wet pond grade (T.O.B. EL=23.0±), the estimated wet pond size = 3.76 Ac + 0.24 Ac (for maintenance berm) = 4.0 Ac wet pond.

PRELIMINARY POND SITING REPORT FOR ERIE ROAD
(4-LANE EAST-WEST BUILD-OUT)
FEBRUARY 28, 2017

Property Acquisition is anticipated. Parcel PID # 726400109 is a 21.2 acre site owned by Harrison Ranch, LLC. The appraised value is $339,552.

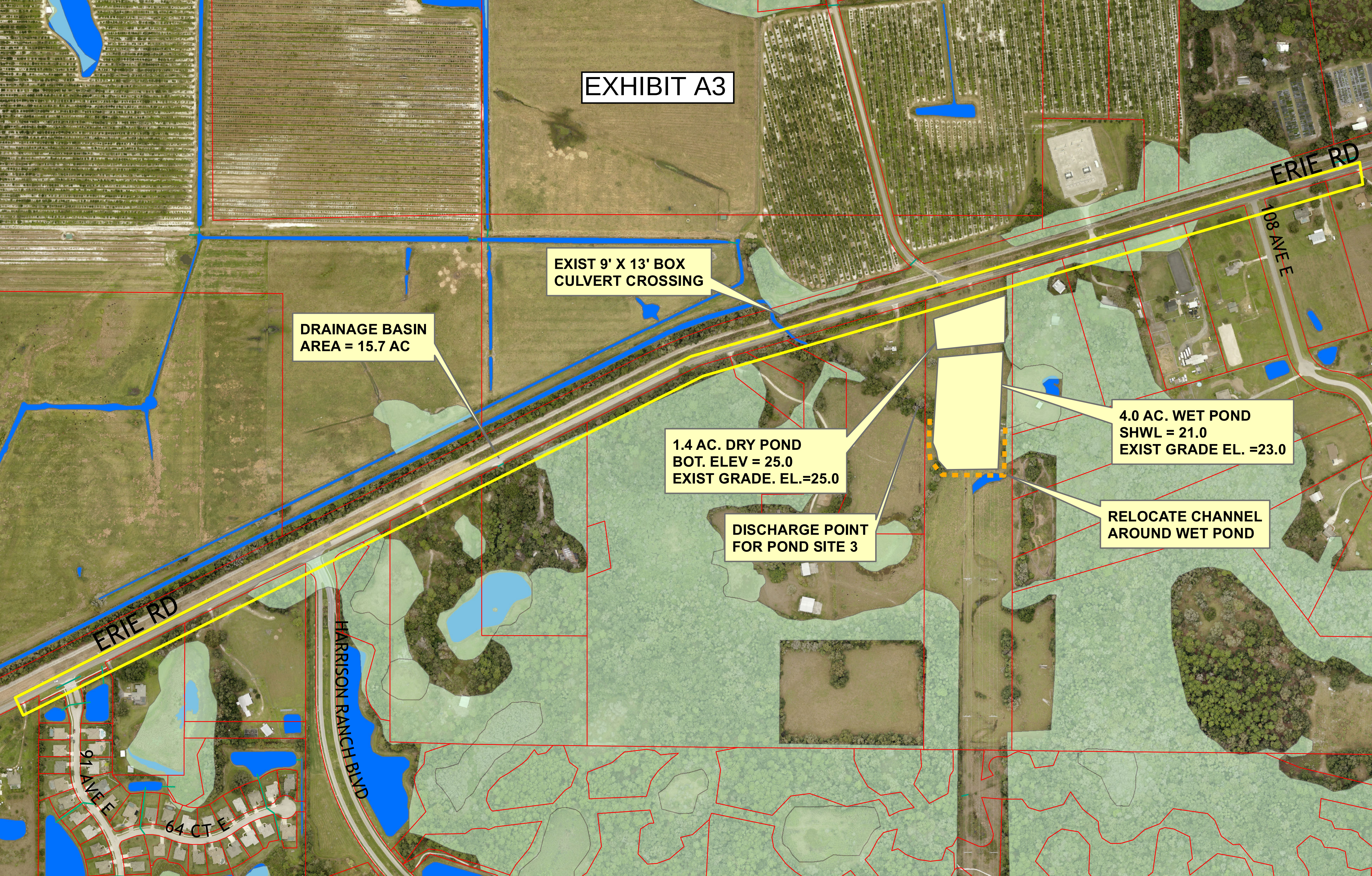


EXHIBIT A3
ERIE RD
108 AVE E
EXIST 9' X 13' BOX
CULVERT CROSSING
DRAINAGE BASIN
AREA = 15.7 AC
4.0 AC. WET POND
SHWL = 21.0
EXIST GRADE EL. =23.0
1.4 AC. DRY POND
BOT. ELEV = 25.0
EXIST GRADE. EL.=25.0
DISCHARGE POINT
FOR POND SITE 3
RELOCATE CHANNEL
AROUND WET POND
ERIE RD
HARRISON RANCH BLVD
91 AVE E
64 CT E


EXHIBIT B3
EXISTING CULVERT
POND SITE
ERIE RD
ERIE RD
108 AVE E
HARRISON RANCH BLVD

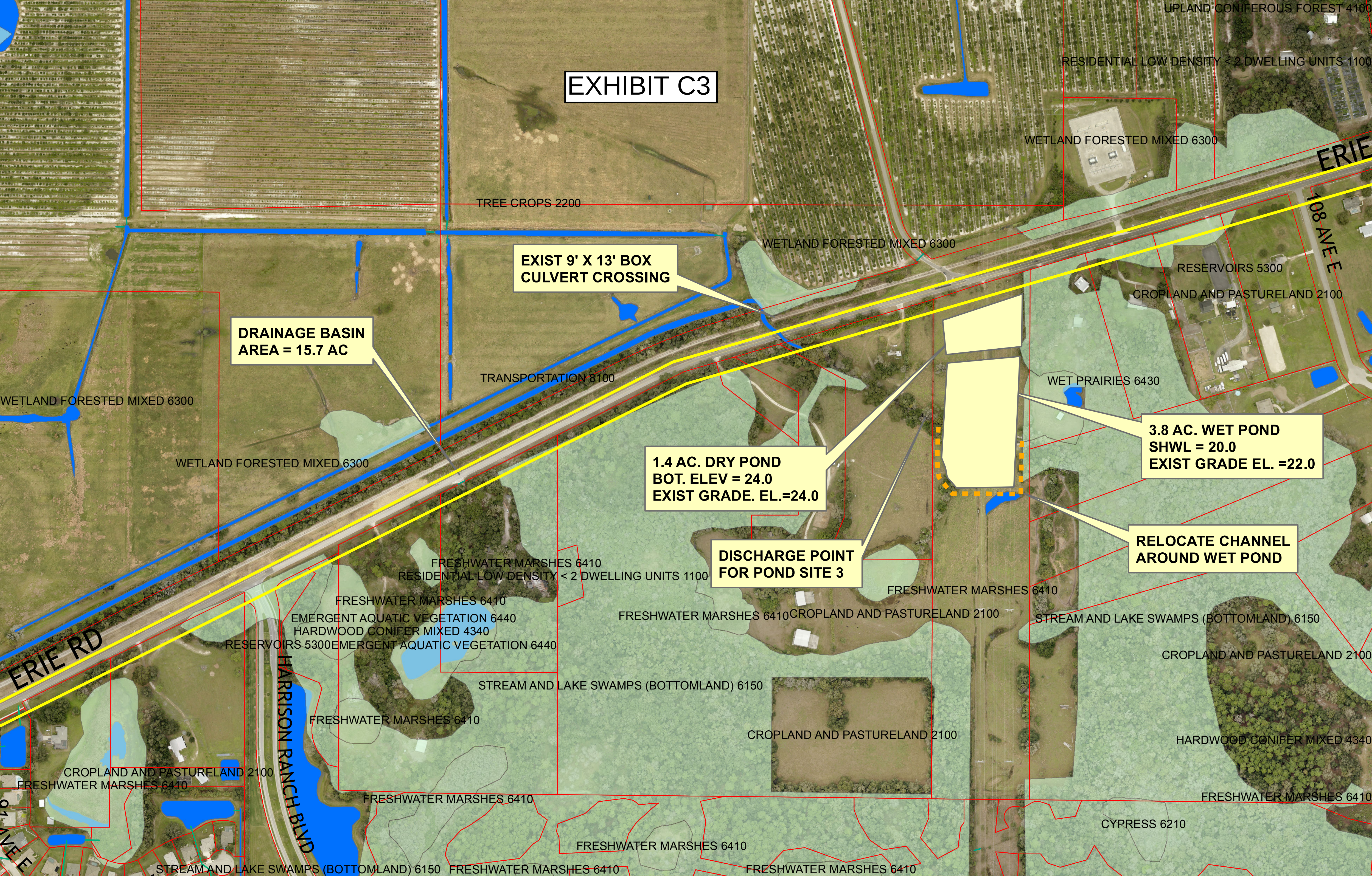


EXHIBIT C3
UPLAND CONIFEROUS FOREST 4100
RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS 1100
WETLAND FORESTED MIXED 6300
ERIE
108 AVE E
TREE CROPS 2200
WETLAND FORESTED MIXED 6300
RESERVOIRS 5300
CROPLAND AND PASTURELAND 2100
EXIST 9' X 13' BOX
CULVERT CROSSING
DRAINAGE BASIN
AREA = 15.7 AC
TRANSPORTATION 8100
WET PRAIRIES 6430
WETLAND FORESTED MIXED 6300
3.8 AC. WET POND
SHWL = 20.0
EXIST GRADE EL. =22.0
WETLAND FORESTED MIXED 6300
1.4 AC. DRY POND
BOT. ELEV = 24.0
EXIST GRADE. EL.=24.0
RELOCATE CHANNEL
AROUND WET POND
DISCHARGE POINT
FOR POND SITE 3
FRESHWATER MARSHES 6410
RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS 1100
FRESHWATER MARSHES 6410
FRESHWATER MARSHES 6410
EMERGENT AQUATIC VEGETATION 6440
FRESHWATER MARSHES 6410
CROPLAND AND PASTURELAND 2100
STREAM AND LAKE SWAMPS (BOTTOMLAND) 6150
HARDWOOD CONIFER MIXED 4340
ERIE RD
RESERVOIRS 5300
EMERGENT AQUATIC VEGETATION 6440
CROPLAND AND PASTURELAND 2100
STREAM AND LAKE SWAMPS (BOTTOMLAND) 6150
HARRISON RANCH BLVD
FRESHWATER MARSHES 6410
CROPLAND AND PASTURELAND 2100
HARDWOOD CONIFER MIXED 4340
CROPLAND AND PASTURELAND 2100
FRESHWATER MARSHES 6410
FRESHWATER MARSHES 6410
FRESHWATER MARSHES 6410
CYPRESS 6210
FRESHWATER MARSHES 6410
STREAM AND LAKE SWAMPS (BOTTOMLAND) 6150
FRESHWATER MARSHES 6410
FRESHWATER MARSHES 6410

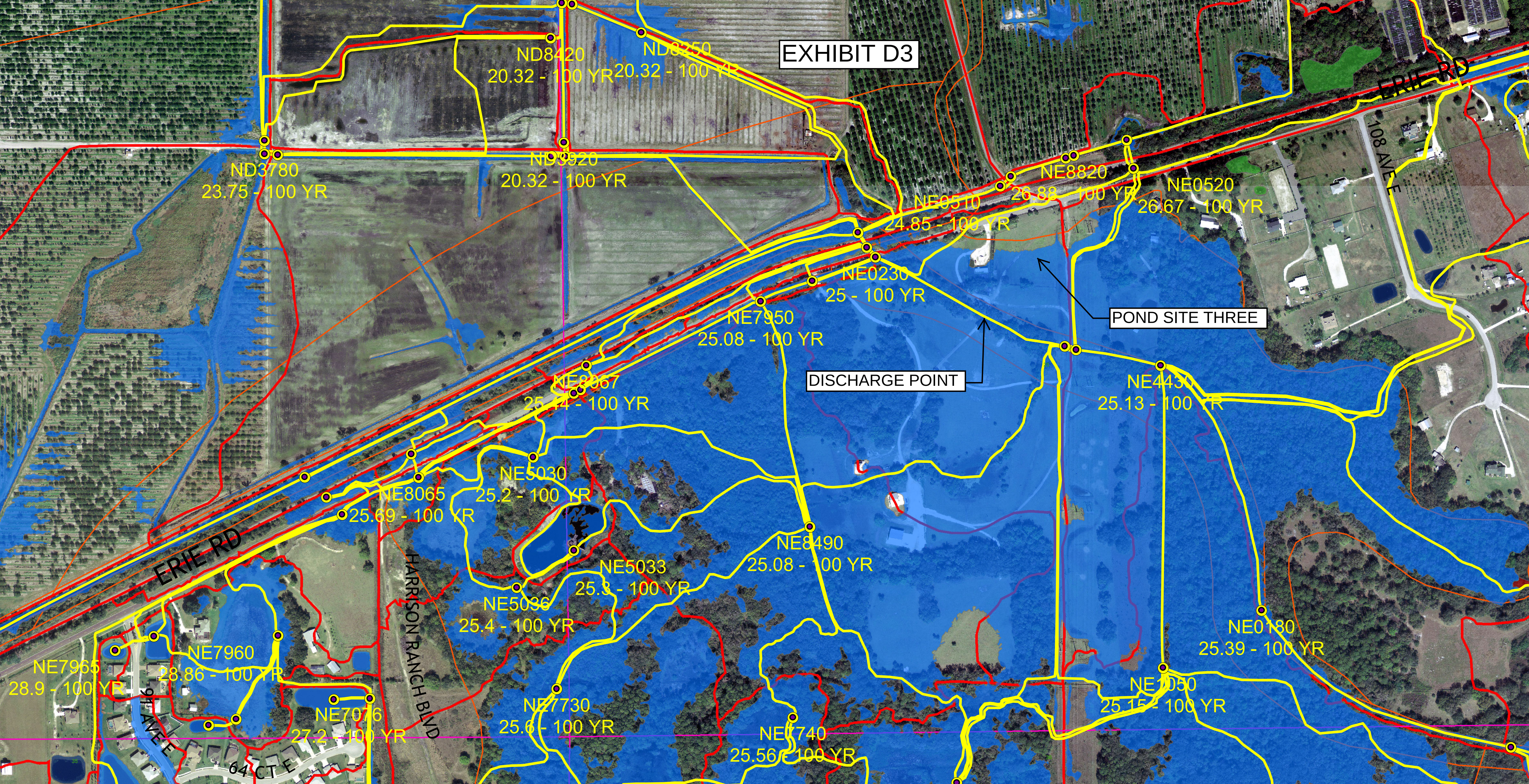


EXHIBIT D3
ND8420
20.32 - 100 YR
ND8250
20.32 - 100 YR
ND3780
23.75 - 100 YR
ND3920
20.32 - 100 YR
ERIE RD
108 AVE E
NE0510
24.85 - 100 YR
NE8820
26.88 - 100 YR
NE0520
26.67 - 100 YR
NE0230
25 - 100 YR
POND SITE THREE
NE7950
25.08 - 100 YR
DISCHARGE POINT
NE8067
25.44 - 100 YR
NE4430
25.13 - 100 YR
NE5030
25.2 - 100 YR
NE8065
25.69 - 100 YR
ERIE RD
HARRISON RANCH BLVD
NE8490
25.08 - 100 YR
NE5033
25.3 - 100 YR
NE5036
25.4 - 100 YR
NE0180
25.39 - 100 YR
NE7965
28.9 - 100 YR
NE7960
28.86 - 100 YR
NE7076
27.2 - 100 YR
NE7730
25.6 - 100 YR
NE7740
25.56 - 100 YR
NE1050
25.15 - 100 YR
64 CT E

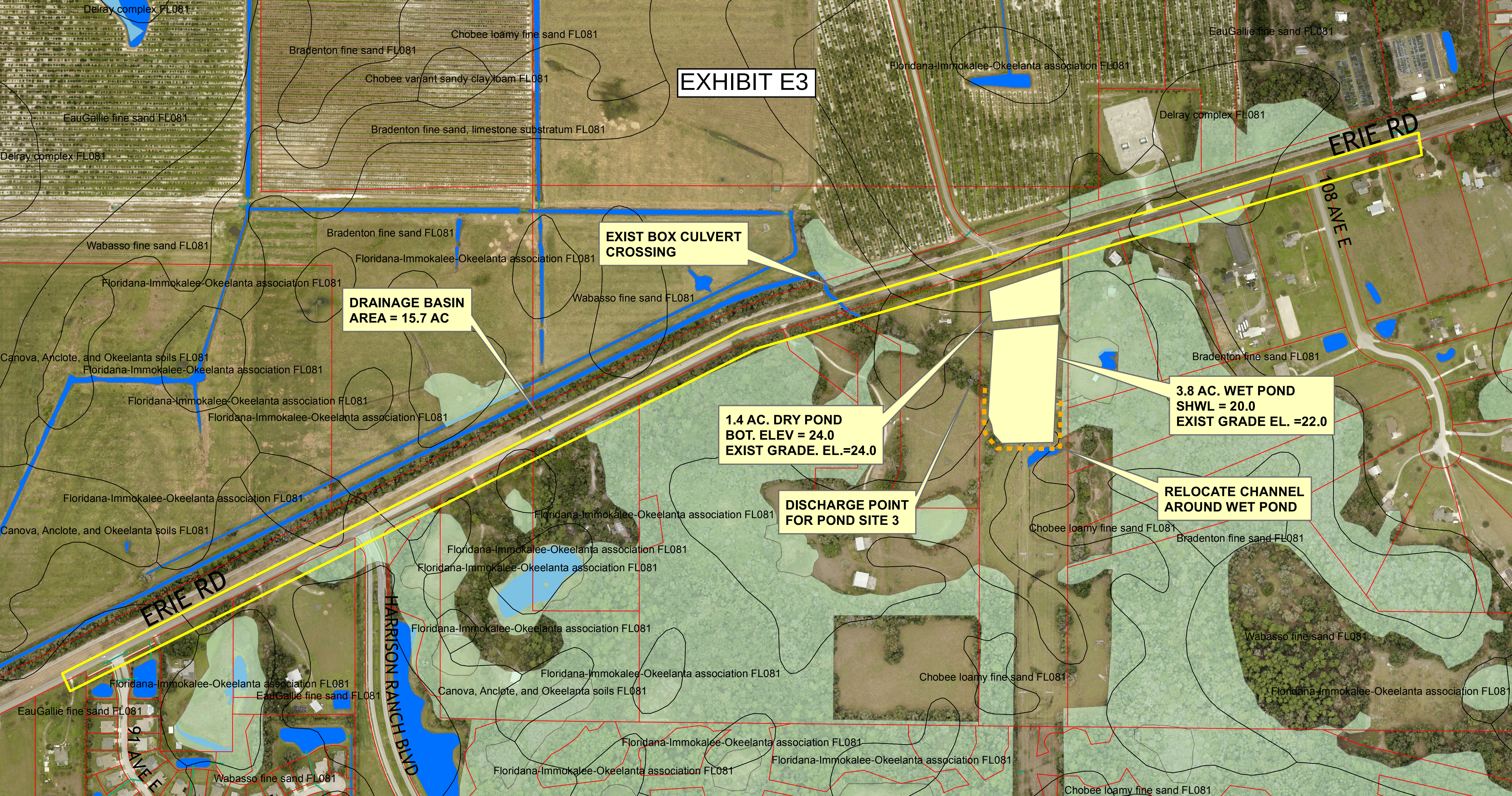


EXHIBIT E3
ERIE RD
ERIE RD
108 AVE E
HARRISON RANCH BLVD
91 AVE E
EXIST BOX CULVERT CROSSING
DRAINAGE BASIN AREA = 15.7 AC
1.4 AC. DRY POND
BOT. ELEV = 24.0
EXIST GRADE. EL.=24.0
3.8 AC. WET POND
SHWL = 20.0
EXIST GRADE EL. =22.0
DISCHARGE POINT FOR POND SITE 3
RELOCATE CHANNEL AROUND WET POND
Delray complex FL081
Chobee loamy fine sand FL081
Bradenton fine sand FL081
Chobee variant sandy clay loam FL081
EauGallie fine sand FL081
Bradenton fine sand, limestone substratum FL081
Floridana-Immokalee-Okeelanta association FL081
Wabasso fine sand FL081
Canova, Anclote, and Okeelanta soils FL081

Input requirements and procedures

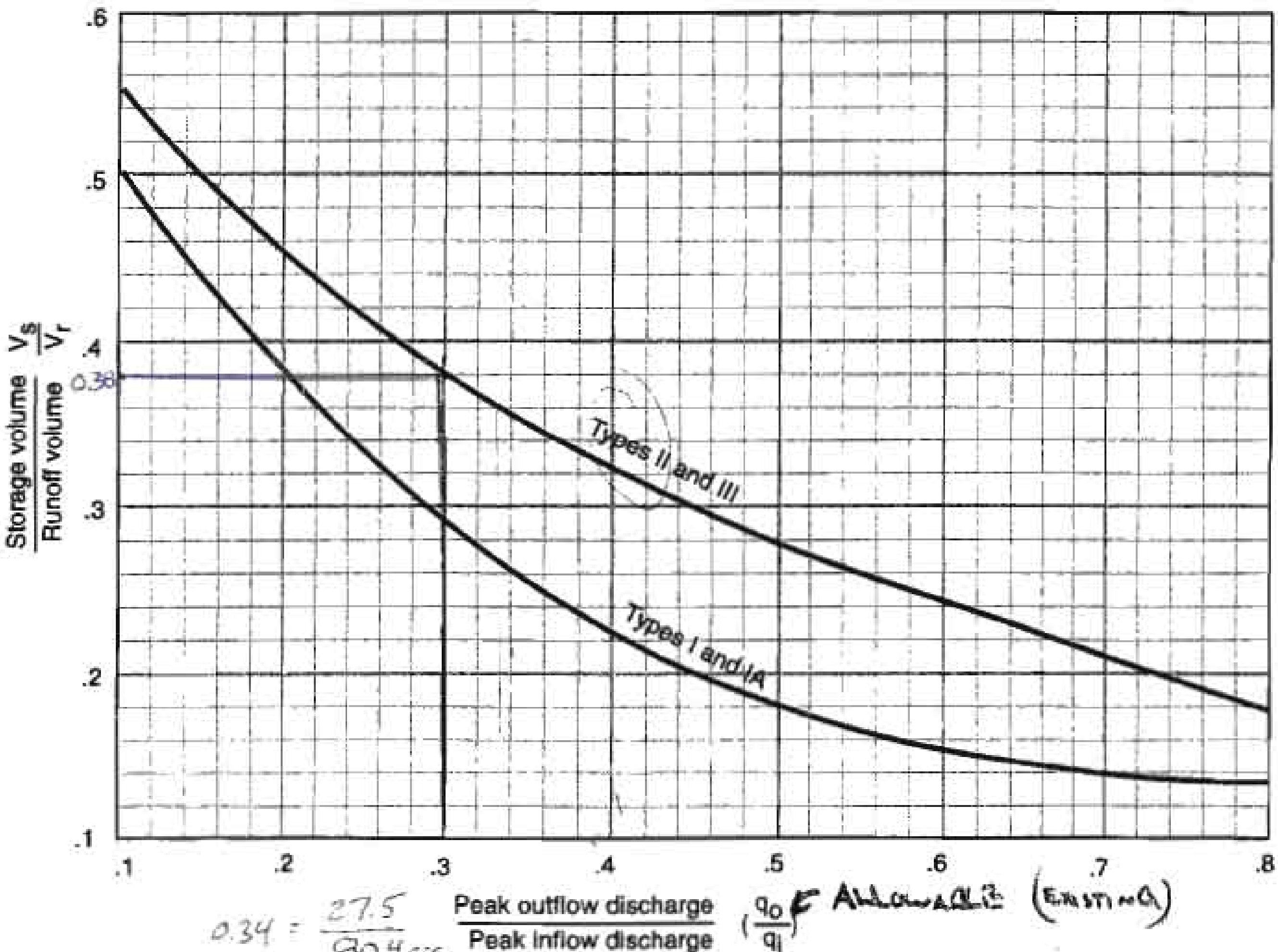
Use figure 6-1 estimate storage volume (V_s) required or peak outflow discharge (q_o). The most frequent application is to estimate V_s, for which the required inputs are runoff volume (V_r), q_o, and peak inflow discharge (q_i). To estimate q_o, the required inputs are V_r, V_s, and q_i.

Estimating V_s

Use worksheet 6a to estimate V_s, storage volume required, by the following procedure.

1. Determine q_o. Many factors may dictate the selection of peak outflow discharge. The most common is to limit downstream discharges to a desired level, such as predevelopment discharge. Another factor may be that the outflow device has already been selected.
2. Estimate q_i by procedures in chapters 4 or 5. Do not use peak discharges developed by other procedure. When using the Tabular Hydrograph method to estimate q_i for a subarea, only use peak discharge associated with $T_t = 0$.

Figure 6-1 Approximate detention basin routing for rainfall types I, IA, II, and III



$0.34 = \frac{27.5}{80.4 \text{ cfs}}$

ALLOWABLE (EXISTING)

PROP. Q

POND #3

V_r = Rainfall (in) x Cw x A