

**Wetland Rapid Assessment Procedure
and
Floristic Quality Index Assessment
D'Olive Creek Watershed**



December 2015

Prepared for

Mobile Bay National Estuary Program

By

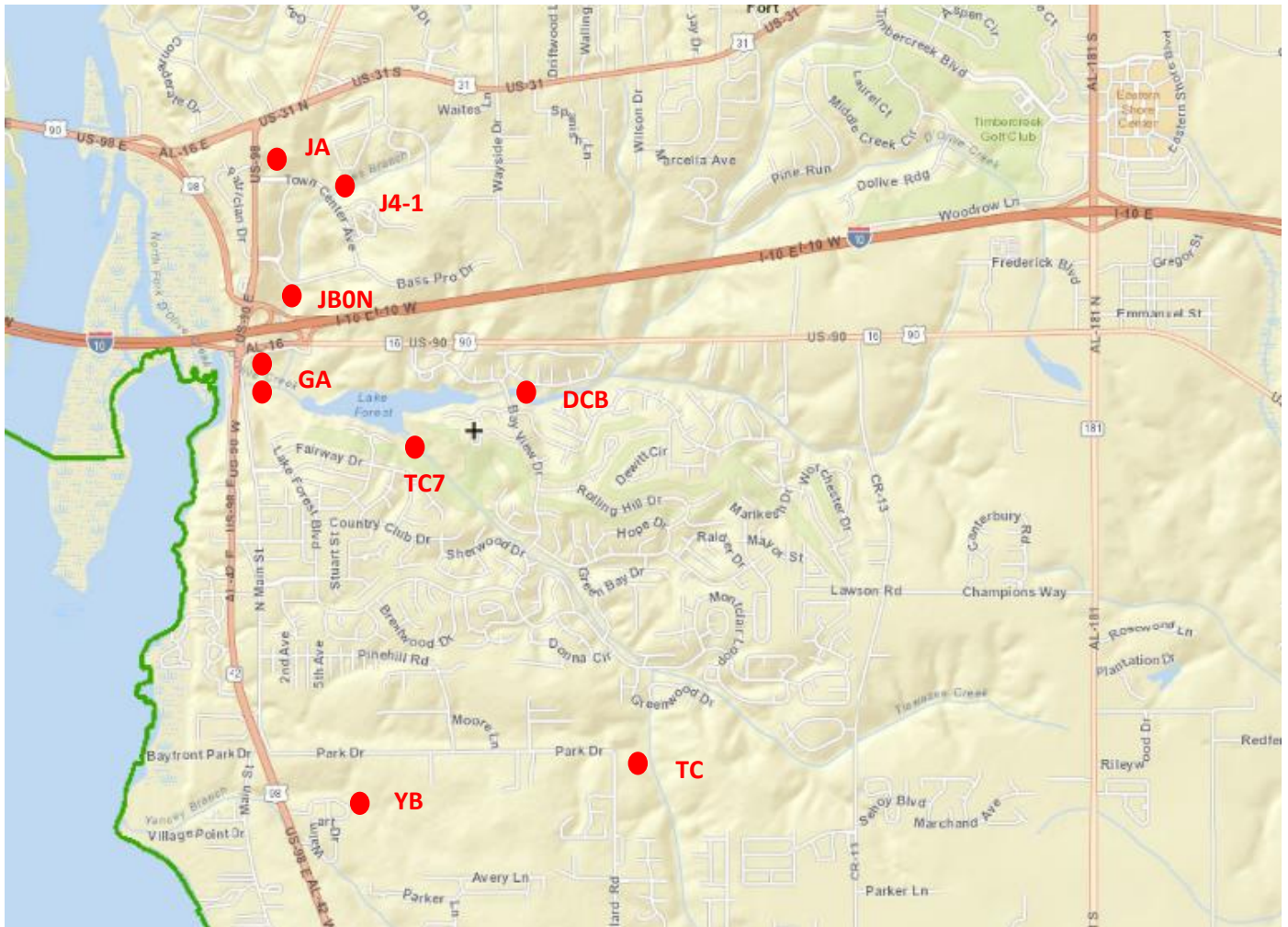


Wetland Rapid Assessment Procedure and Floristic Quality Index Assessment D'Olive Creek Watershed

Introduction

The Mobile Bay National Estuary Program (MBNEP) has contracted with Wetland Resources Environmental Consulting to conduct functional assessment of wetlands using Wetland Rapid Assessment Procedure (WRAP) and floristic assessments within those same wetlands using a Floristic Quality Index (FQI).

Assessments have been conducted within seven areas pre-selected by MBNEP Science Advisory Committee, with input from the city of Daphne and Wetland Resources, that occur in the D'Olive Creek watershed. One high-quality reference site along the North Fork of Yancey Branch was also included. Assessment areas are 50 meters in length along selected stream corridor segments and extend laterally to the approximate wetland/upland boundary where feasible. Assessments were conducted during November and early December 2015.



Wetland Rapid Assessment Procedure

WRAP is a functional assessment procedure developed by the South Florida Water Management District for use in south Florida, but this procedure is used extensively in south Alabama by the U.S. Army Corps of Engineers and the Alabama Dept. of Environmental Management for wetland regulatory purposes, and by environmental consultants and scientists who work within the wetland regulatory realm. (Technical Publication REG-001, Wetland Rapid Assessment Procedure (WRAP); by Raymond E. Miller Jr. and Boyd E. Gunsalus; September 1997; last updated August 1999.) WRAP includes six variables that are assessed and scored independently of each other in order to come up with an overall score. A variable score of 3 is considered the best a system can function and a 0 is for a system that is severely impacted and is exhibiting negligible attributes. An evaluator has the option of scoring each variable in half (0.5) increments. The overall score is expressed as a percentage, ranging from 0% - 100%. Within the Mobile District wetland regulatory realm, WRAP scores of 0-50% are considered low quality wetlands; 51-75% are medium quality; and greater than 75% are high quality. WRAP variables include the following:

- Wildlife Utilization
- Wetland Overstory/Shrub Canopy
- Wetland Vegetative Groundcover
- Adjacent Upland Support/Wetland Buffer
- Field Indicators of Wetland Hydrology
- Water Quality Input and Treatment Systems

Floristic Quality Index

The Southeast Wetlands Workgroup (SEWWG) consists of participants representing state and federal personnel and scientists from Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. This membership focuses on both users and developers of wetland monitoring and assessment tools (<https://sewwg.rti.org/Default.aspx>). The SEWWG website includes the following background information concerning FQI and Coefficients of Conservatism:

This workgroup is funded by an EPA Region 4 Wetland Program Development Grant issued to the North Carolina Department of Environment and Natural Resources. One of the objectives on this grant is to gather expert botanists from across the Southeast Region for the purposes of developing a database of wetland plant quality ratings, called Coefficients of Conservatism. Coefficient of Conservatism values (C values) are used in the calculation of Floristic Quality Index as indicators of habitat quality. Average C value of a study site is also a useful indicator.

This rating system was originated by Gerould Wilhelm in the 1970s in response to NEPA regulations as a way of measuring the degree to which impact to an area is irreversible or irretrievable. Guidance for the application of this rating system was published in 1997 by Taft et al., and it is becoming widely adopted across the country as a means of facilitating site quality assessments. These Coefficients vary from 0-10, and indicate the degree to which a species is found growing in unique environmental conditions. Plants are given a low rating if they are able to tolerate a very wide range of conditions and are found in a variety of habitats/locations. A high rating is given to species which have very specific requirements and cannot exist outside of those conditions. Non-native species are generally given a rating of zero.

A Floristic Quality Index Calculator tool is also found at this website and was used determine FQI for each of the eight plots included in this assessment. Once plant species found in each assessment area have been entered into the calculator, a table with the following information is generated:

Metric	Explanation
Total number of species with assigned C-values (N)	The total number of species with a C-value assigned to that species. Note: Upland species and 1% of wetland species were not assigned C-values.
Mean Coefficient of Conservatism (C)	The mean C-value for all species. (Calculation includes only species with assigned C-values).
Mean C (native species only)	The mean C-value for native species. (Calculation includes only species with assigned C-values).
Floristic Quality Index (FQI) (all species)	Sum of C-values of all species divided by the square root of N. (Calculation includes only species with assigned C-values).
Adjusted FQI (native species only)	Sum of C-values of native species divided by the square root of the number of native species. (Calculation includes only species with assigned C-values).
Total Number of Species	The total number of species (includes species with and without assigned C-values).
Total Number of Native Species	The total number of native species (includes species with and without assigned C-values).
Percent Tolerant Species	Percentage of species with C-value ≤ 3 . (Calculation includes only species with assigned C-values).
Percent Intolerant Species	Percentage of species with C-value ≥ 7 . (Calculation includes only species with assigned C-values).
Percent Wetness	Percent of species classified as obligate (OBL), facultative wet (FACW), or facultative (FAC). (Calculation includes only species with assigned C-values). Classification of wetland status based on the 2013 Wetland Plant List .

Note: Species not found in the database are not included in the calculations. Plants that could not be identified to species due to lack of reproductive material are also not included.

The calculator tool also generates a plant list that includes C value, duration (i.e., perennial), growth habitat (i.e., tree), native status, and indicator status (i.e., FACW).

Assessment Methods

Prior to site visits, a review was made of recent aerial photography, USGS topographic mapping, and USDA-NRCS soil mapping for each assessment area.

Then, a site visit was made to each assessment area. A plot center point was established and marked with three blue survey flags. A measuring tape was used to establish the upstream and downstream limits (25 meters in each direction), which were also marked with a single blue survey flag. The lateral limits, in most cases, were the upland/wetland boundaries.

A list of plant species occurring within each assessment area was compiled. Any species not recognized was collected and later identified to species where possible. Some plants (mostly sedges and other graminoids) did not have reproductive material present and could not be identified. These species were not included in the plant list.

WRAP variables were assigned scores based on on-site observations and aerial photography.

WRAP assessment forms have been completed and the FQI has been calculated for each area.

The table below provides a summary of assessment plot locations and scores:

Assessment Plot	Location (Center Point)	WRAP Score	FQI
YB – Yancey Branch reference site	30.6271 / -87.9028	86.81	32.17
GA – Gator Alley (assessed separately north and south of the creek, then the data was combined)	N-30.6529 / -87.9110 S-30.6523 / -87.9110	47.64	33.14
TC – Tiawasee Creek	30.6303 / -87.8839	74.72	29.34
TC7 – Tiawasee Creek at Lake Forest	30.6492 / -87.9005	52.50	23.04
DCB – D’Olive Creek at Lake Forest	30.6524 / -87.8925	46.53	18.90
JB0N – Joe’s Branch at I-10 interchange	30.6576 / -87.9085	56.60	31.96
J4-1 – Joe’s Branch east of Town Center Ave.	30.6638 / -87.9034	77.50	30.92
JA – UT to Joe’s Branch north of Town Center Ave.	30.6655 / -87.9091	44.44	12.61

WRAP Forms and FQI Data

The following pages contain WRAP forms, plant lists, and FQI tables for each assessment plot.

YB – Yancey Branch reference site.

☐ PROPOSED
☒ EXISTING CONDITIONS

WETLAND RAPID ASSESSMENT PROCEDURE

COUNTY: Baldwin PROJECT: MENEP D'Olive Creek DATE: 11/19/2015 REVIEWER: Gena Todla FLUCCS CODE:
 APP. #: YB WETLAND TYPE: ☒ FORESTED ☐ Non-Forested

LAND USE CATEGORY	WETLAND AREA	SECONDARY IMPACTS	MELALEUCA INVASION >50%
Natural	50 M ACRES	<input type="checkbox"/> NO <input type="checkbox"/> YES % = <u> </u>	<input type="checkbox"/> NO <input type="checkbox"/> YES
	ACRES OF IMPACT	ACRES	

WILD LIFE UTILIZATION

2.5

WETLAND CANOPY

2.5

WETLAND GROUND COVER

2.5

HABITAT SUPPORT / BUFFER

2.3

BUFFER TYPE	SCORE	% AREA	SUB TOTAL
N,S,E-natural	2.5	80	2
W-commercial	1.5	20	0.3
			0
			0
			0

FIELD HYDROLOGY

3

WATER QUALITY INPUT & TREATMENT

2.825

LAND USE CATEGORY

LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL
Single-family Residential	1.5	10	0.15
Natural Area	3	90	2.7
			0
			0
			0
LU TOTAL			2.85

PRETREATMENT CATEGORY

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Veg Buffer/Dry Det	1	10	0.1
Natural Area	3	90	2.7
			0
			0
			0
PT TOTAL			2.8

WRAP SCORE

86.81%

WILDLIFE UTILIZATION

(Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) Wildlife habitat is generally good. Upland areas that offer food and cover surround the wetlands, but are limited in size. There is minimal human disturbance. It is expected that large mammals, such as deer and bobcat, as well as a variety of reptiles and amphibians would utilize this area. It is also good habitat for songbirds.

WETLAND CANOPY

(Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy is diverse and composed of appropriate native species. Few snags are present. There are signs of natural recruitment.

WETLAND GROUND COVER

(Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of appropriate herbaceous and woody species. The only invasive exotics noted were several coral ardisia (*Ardisia crenata*) seedlings, which were removed, two small Chinese privet shrubs (*Ligustrum sinense*) that appeared to be browsed by deer, and one gripeweed plant (*Phyllanthus urinaria*).

HABITAT SUPPORT/BUFFER

(This is based upon habitats OUTSIDE the perimeter of the polygon.) Surrounding the assessment area to the north, south, and east is natural forest. However, the surrounding area is not optimal habitat due to past land management practices and fire suppression. To the west is a narrower strip of natural habitat, then commercial development. Wildlife corridors are present, but limited, and the overall size of the available habitat is relatively small and surrounded by development.

FIELD HYDROLOGY

(Site specific based on conditions inside and outside the polygon.) Hydrology of these wetlands appears to be intact and with a natural hydroperiod.

WQ INPUT & TREATMENT

(This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes from adjacent forested uplands to the northeast and southwest in the form of runoff and rainfall. There is also groundwater discharge from upland areas. Runoff from upstream residential development presumably is directed into detention ponds before discharging into natural areas.

Site: YB

Yancey Branch reference site.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Acer rubrum</i>	3	Perennial	Tree	Native	FAC
<i>Arnoglossum ovatum</i>	9	Perennial	Forb/herb	Native	FACW
<i>Centella erecta</i>	4	Perennial	Forb/herb	Native	FACW
<i>Clethra alnifolia</i>	6	Perennial	Shrub	Native	FACW
<i>Cyrilla racemiflora</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Decumaria barbara</i>	6	Perennial	Vine	Native	FACW
<i>Ilex coriacea</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Ilex glabra</i>	5	Perennial	Shrub	Native	FACW
<i>Ilex vomitoria</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Illicium floridanum</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Itea virginica</i>	7	Perennial	Shrub	Native	FACW
<i>Leucothoe axillaris</i>	7	Perennial	Shrub	Native	FACW
<i>Ligustrum sinense</i>	0	Perennial	Tree, Shrub	Introduced	FAC
<i>Liriodendron tulipifera</i>		Perennial	Tree	Native	FACU
<i>Magnolia virginiana</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Morella caroliniensis</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Morella inodora</i>	8	Perennial	Tree, Shrub	Native	OBL
<i>Nyssa biflora</i>	7	Perennial	Tree	Native	OBL
<i>Orontium aquaticum</i>	7	Perennial	Forb/herb	Native	OBL
<i>Osmanthus americanus</i>	7	Perennial	Tree, Shrub	Native	FAC
<i>Osmunda cinnamomea</i>	7	Perennial	Forb/herb	Native	FACW
<i>Osmunda regalis</i>	7	Perennial	Forb/herb	Native	OBL
<i>Persea palustris</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Phyllanthus urinaria</i>	0	Annual	Forb/herb	Introduced	FAC
<i>Pinus elliotii</i>	5	Perennial	Tree	Native	FACW
<i>Quercus nigra</i>	3	Perennial	Tree	Native	FAC
<i>Rhododendron viscosum</i>	7	Perennial	Shrub	Native	OBL
<i>Smilax laurifolia</i>	5	Perennial	Shrub, Vine	Native	FACW
<i>Toxicodendron radicans</i>	3	Perennial	Shrub, Forb/herb, Subshrub, Vine	Native	FAC
<i>Toxicodendron vernix</i>	7	Perennial	Tree, Shrub	Native	OBL
<i>Viola primulifolia</i>				Not Available	
<i>Woodwardia areolata</i>	6	Perennial	Forb/herb	Native	OBL
<i>Woodwardia virginica</i>	7	Perennial	Forb/herb	Native	OBL

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	32
Mean Coefficient of Conservatism (C)	5.69
Mean C (native species only)	6.07
Floristic Quality Index (FQI) (all species)	32.17
Adjusted FQI (native species only)	33.23
Total Number of Species	34
Total Number of Native Species	32
Percent Tolerant Species	15.62
Percent Intolerant Species	50
Percent Wetness	96.97

GA – Gator Alley just upstream of the Main St. D'Olive Creek channel, north and south of the creek.

☐ PROPOSED
☒ EXISTING CONDITIONS

WETLAND RAPID ASSESSMENT PROCEDURE

COUNTY: Baldwin PROJECT: DATE REVIEWER: FLUCCS CODE
 APP. #: GA MBEP D'Olive Creek 11/16/2015 Gena Todla WETLAND TYPE: ☒ FORESTED ☐ Non-Forestad

LAND USE CATEGORY	WETLAND AREA	SECONDARY IMPACTS	MELALEUCA INVASION >50%
Natural	50 M ACRES	<input type="checkbox"/> NO <input type="checkbox"/> YES %	<input type="checkbox"/> NO <input type="checkbox"/> YES
	ACRES OF IMPACT	ACRES	

WILD LIFE UTILIZATION

1.5

WETLAND CANOPY

2

WETLAND GROUND COVER

2

HABITAT SUPPORT / BUFFER

0.075

WRAP SCORE

47.64%

BUFFER TYPE	SCORE	% AREA	SUB TOTAL
N & S	0	90	0
W-D'Olive Creek corridor	1	5	0.05
E-Lake Forest/Dam	0.5	5	0.025
			0
			0

FIELD HYDROLOGY

2

WATER QUALITY INPUT & TREATMENT

1

LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL
Single-fam Res/Golf Crs	1.5	60	0.9
Commercial/Hwy.	1	40	0.4
			0
			0
			0
LU TOTAL			1.3

PRETREATMENT CATEGORY

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Wet Detention (lake)	1	60	0.6
Underground Detention	0	30	0
Vegetated Buffer	1	10	0.1
			0
			0
PT TOTAL			0.7

WILDLIFE UTILIZATION

(Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) Wildlife habitat is degraded, limited in size, essentially isolated and surrounded by development. Adequate upland food and cover are lacking. There are frequent human disturbances associated with Main St. traffic, pedestrians along the trail, commercial development to the north, and the sewage treatment plant to the south. These wetlands do offer limited habitat for birds, small mammals, reptiles, amphibians. It should also be noted that the rusty gravedigger crayfish is known to occur here.

WETLAND CANOPY

(Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy is composed of a diversity of mostly appropriate species. Chinese tallow tree (*Triadica sebifera*) is present. Greater than 25% of the shrub canopy is composed of Chinese privet (*Ligustrum sinense*). Few snags are present. There are few signs of natural recruitment.

WETLAND GROUND COVER

(Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of appropriate herbaceous and woody species; however, several invasive exotics, including a few coral ardisia (*Ardisia crenata*), Japanese climbing fern (*Lygodium japonicum*), one occurrence of air potato (*Dioscorea bulbifera*), and scattered downy maiden fern (*Thelypteris dentata*) are also present.

HABITAT SUPPORT/BUFFER

(This is based upon habitats OUTSIDE the perimeter of the polygon.) This wetland system is completely surrounded by development with essentially no suitable upland buffer. The lake is to the east and D'Olive Creek continues under Main St. and Hwy. 98 bridges to the west.

FIELD HYDROLOGY

(Site specific based on conditions inside and outside the polygon.) The hydrology is adequate to maintain a wetland system, but it has been altered by upstream impoundment (the lake), sediment input from upstream, and surrounding development. Runoff from adjacent and upstream development has also altered the natural hydrology of the creek and these adjacent wetlands.

WQ INPUT & TREATMENT

(This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes primarily from overflow from Lake Forest, discharge from underground detention ponds associated with the hotels to the north (no pretreatment), and from a narrow vegetated buffer on the south side.

Site: GA

Gator Alley, just upstream of the Main Street bridge over D'Olive Creek.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Alnus serrulata</i>	5	Perennial	Tree, Shrub	Native	FACW
<i>Berchemia scandens</i>	6	Perennial	Vine	Native	FAC
<i>Centella erecta</i>	4	Perennial	Forb/herb	Native	FACW
<i>Cephalanthus occidentalis</i>	5	Perennial	Tree, Shrub	Native	OBL
<i>Chasmanthium laxum</i>	5	Perennial	Graminoid	Native	FACW
<i>Cinnamomum camphora</i>	0	Perennial	Tree	Introduced	UPL
<i>Colocasia esculenta</i>	0	Perennial	Forb/herb	Introduced	FACW
<i>Commelina virginica</i>	5	Perennial	Forb/herb	Native	FACW
<i>Crimum americanum</i>	7	Perennial	Forb/herb	Native	OBL
<i>Cynilla racemiflora</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Dichanthelium scabriusculum</i>	4	Perennial	Graminoid	Native	OBL
<i>Diospyros virginiana</i>	4	Perennial	Tree	Native	FAC
<i>Elymus virginicus</i>	5	Perennial	Graminoid	Native	FAC
<i>Ilex vomitoria</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Itea virginica</i>	7	Perennial	Shrub	Native	FACW
<i>Juncus effusus</i>	3	Perennial	Graminoid	Native	OBL
<i>Juniperus virginiana</i>		Perennial	Tree	Native	FACU
<i>Leucothoe axillaris</i>	7	Perennial	Shrub	Native	FACW
<i>Ligustrum sinense</i>	0	Perennial	Tree, Shrub	Introduced	FAC
<i>Liquidambar styraciflua</i>	3	Perennial	Tree	Native	FAC
<i>Lonicera japonica</i>	0	Perennial	Vine	Introduced	FAC
<i>Lygodium japonicum</i>	0	Perennial	Vine, Forb/herb	Introduced	FAC
<i>Lyonia lucida</i>	7	Perennial	Shrub	Native	FACW
<i>Magnolia virginiana</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Mikania scandens</i>	4	Perennial	Vine, Forb/herb	Native	FACW
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Nyssa biflora</i>	7	Perennial	Tree	Native	OBL
<i>Onoclea sensibilis</i>	5	Perennial	Forb/herb	Native	FACW
<i>Orontium aquaticum</i>	7	Perennial	Forb/herb	Native	OBL
<i>Osmunda regalis</i>	7	Perennial	Forb/herb	Native	OBL
<i>Peltandra sagittifolia</i>	8	Perennial	Forb/herb	Native	OBL
<i>Peltandra virginica</i>	7	Perennial	Forb/herb	Native	OBL
<i>Persea palustris</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Pinus elliottii</i>	5	Perennial	Tree	Native	FACW
<i>Quercus nigra</i>	3	Perennial	Tree	Native	FAC
<i>Rhododendron viscosum</i>	7	Perennial	Shrub	Native	OBL
<i>Rubus argutus</i>	2	Perennial	Subshrub	Native	FAC
<i>Sabal palmetto</i>	7	Perennial	Tree	Native	FAC
<i>Sagittaria latifolia</i>	5	Perennial	Forb/herb	Native	OBL
<i>Salix nigra</i>	3	Perennial	Tree	Native	OBL
<i>Sambucus nigra</i>	3	Perennial	Tree, Shrub	Native/Introduced	FACW

<i>Saururus cernuus</i>	6	Perennial	Forb/herb	Native	OBL
<i>Smilax laurifolia</i>	5	Perennial	Shrub, Vine	Native	FACW
<i>Stachys floridana</i>	2	Perennial	Forb/herb	Native	FAC
<i>Symphytotrichum lateriflorum</i>	5	Perennial	Forb/herb	Native	FAC
<i>Taxodium ascendens</i>	8	Perennial	Tree	Native	OBL
<i>Thelypteris dentata</i>	0	Perennial	Forb/herb	Native	FACW
<i>Thelypteris kunthii</i>	4	Perennial	Forb/herb	Native	FACW
<i>Triadenum walteri</i>	7	Perennial	Forb/herb	Native	OBL
<i>Triadica sebifera</i>	0	Perennial	Tree	Introduced	FAC
<i>Viburnum nudum</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Vitis rotundifolia</i>	4	Perennial	Vine	Native	FAC
<i>Woodwardia areolata</i>	6	Perennial	Forb/herb	Native	OBL

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	52
Mean Coefficient of Conservatism (C)	4.60
Mean C (native species only)	5.20
Floristic Quality Index (FQI) (all species)	33.14
Adjusted FQI (native species only)	35.24
Total Number of Species	53
Total Number of Native Species	47
Percent Tolerant Species	26.92
Percent Intolerant Species	28.85
Percent Wetness	96.23

Site: TC

Tiawasee Creek East of Pollard Rd. and Park Ave.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Acer rubrum</i>	3	Perennial	Tree	Native	FAC
<i>Alnus serrulata</i>	5	Perennial	Tree, Shrub	Native	FACW
<i>Bidens mitis</i>	6	Annual	Forb/herb	Native	OBL
<i>Campsis radicans</i>	2	Perennial	Vine	Native	FAC
<i>Chasmanthium laxum</i>	5	Perennial	Graminoid	Native	FACW
<i>Cinnamomum camphora</i>	0	Perennial	Tree	Introduced	UPL
<i>Cyrilla racemiflora</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Decumaria barbara</i>	6	Perennial	Vine	Native	FACW
<i>Hamamelis virginiana</i>		Perennial	Tree, Shrub	Native	FACU
<i>Ilex coriacea</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Ilex vomitoria</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Illicium floridanum</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Itea virginica</i>	7	Perennial	Shrub	Native	FACW
<i>Juniperus virginiana</i>		Perennial	Tree	Native	FACU
<i>Leucothoe axillaris</i>	7	Perennial	Shrub	Native	FACW
<i>Ligustrum sinense</i>	0	Perennial	Tree, Shrub	Introduced	FAC
<i>Liquidambar styraciflua</i>	3	Perennial	Tree	Native	FAC
<i>Liriodendron tulipifera</i>		Perennial	Tree	Native	FACU
<i>Lonicera japonica</i>	0	Perennial	Vine	Introduced	FAC
<i>Lygodium japonicum</i>	0	Perennial	Vine, Forb/herb	Introduced	FAC
<i>Magnolia virginiana</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Mitchella repens</i>		Perennial	Subshrub, Forb/herb	Native	FACU
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Nyssa biflora</i>	7	Perennial	Tree	Native	OBL
<i>Orontium aquaticum</i>	7	Perennial	Forb/herb	Native	OBL
<i>Osmunda regalis</i>	7	Perennial	Forb/herb	Native	OBL
<i>Parthenocissus quinquefolia</i>		Perennial	Vine	Native	FACU
<i>Persea palustris</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Pinus elliotii</i>	5	Perennial	Tree	Native	FACW
<i>Quercus nigra</i>	3	Perennial	Tree	Native	FAC
<i>Rhododendron viscosum</i>	7	Perennial	Shrub	Native	OBL
<i>Rubus argutus</i>	2	Perennial	Subshrub	Native	FAC
<i>Rubus trivialis</i>		Perennial	Subshrub, Vine	Native	FACU
<i>Saururus cernuus</i>	6	Perennial	Forb/herb	Native	OBL
<i>Smilax laurifolia</i>	5	Perennial	Shrub, Vine	Native	FACW
<i>Toxicodendron radicans</i>	3	Perennial	Shrub, Forb/herb, Subshrub, Vine	Native	FAC
<i>Triadenum walteri</i>	7	Perennial	Forb/herb	Native	OBL
<i>Triadica sebifera</i>	0	Perennial	Tree	Introduced	FAC
<i>Viburnum nudum</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Viola primulifolia</i>				Not Available	
<i>Woodwardia areolata</i>	6	Perennial	Forb/herb	Native	OBL

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	34
Mean Coefficient of Conservatism (C)	4.65
Mean C (native species only)	5.45
Floristic Quality Index (FQI) (all species)	27.10
Adjusted FQI (native species only)	29.34
Total Number of Species	41
Total Number of Native Species	36
Percent Tolerant Species	32.35
Percent Intolerant Species	32.35
Percent Wetness	82.5

TC7 – Tiawasee Creek wetlands just upstream of the Lake Forest impoundment.

☐ PROPOSED
☒ EXISTING CONDITIONS

WETLAND RAPID ASSESSMENT PROCEDURE

COUNTY: Baldwin
 APP. #: TC7

PROJECT: MBNEP D'Olive Creek
 DATE: 12/1/2015
 REVIEWER: Gena Todla

FLUCCS CODE:
 WETLAND TYPE: ☒ FORESTED ☐ Non-Forestad

LAND USE CATEGORY	WETLAND AREA	SECONDARY IMPACTS	MELALEUCA INVASION >50%
Natural	50 M ACRES	<input type="checkbox"/> NO <input type="checkbox"/> YES %	<input type="checkbox"/> NO <input type="checkbox"/> YES
	ACRES OF IMPACT	ACRES	

WILD LIFE UTILIZATION 1
 WETLAND CANOPY 1.5
 WETLAND GROUND COVER 1.5
 HABITAT SUPPORT / BUFFER 1.5

WRAP SCORE

52.50%

BUFFER TYPE	SCORE	% AREA	SUB TOTAL
S-natural, golf course	1.5	60	0.9
N-natural, residential	1.5	40	0.6
			0
			0
			0

FIELD HYDROLOGY 2
 WATER QUALITY INPUT & TREATMENT 1.95

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Veg Buffer/Dry Det	1	60	0.6
Natural Area	3	40	1.2
			0
			0
			0

LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL
Single-fam Res/Golf Crs	1.5	60	0.9
Natural Area	3	40	1.2
			0
			0
			0
LU TOTAL			2.1

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Veg Buffer/Dry Det	1	60	0.6
Natural Area	3	40	1.2
			0
			0
			0
PT TOTAL			1.8

WILDLIFE UTILIZATION
 (Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) Wildlife habitat is degraded, limited in size, and fragmented, and surrounded by development. Adequate upland food and cover are lacking. There are frequent human disturbances associated with the adjacent golf course and residential development.

WETLAND CANOPY
 (Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy is lacking diversity and maturity. Several species that should be present are not there. Chinese tallow tree (*Triadica sebifera*) and Chinese privet (*Ligustrum sinense*) are prevalent. Few snags are present. There are few signs of natural recruitment.

WETLAND GROUND COVER
 (Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of appropriate herbaceous and woody species; however, there is also a high percentage of invasive exotics, including alligatorweed (*Alternanthera philoxeroides*), a few coral ardisia (*Ardisia crenata*), Japanese climbing fern (*Lygodium japonicum*), and torpedo grass (*Panicum repens*).

HABITAT SUPPORT/BUFFER
 (This is based upon habitats OUTSIDE the perimeter of the polygon.) Surrounding the assessment area to the north, south, and east is a narrow strip of forested uplands, then a golf course and/or single-family residential development. The lake is to the west. Wildlife corridors are present, but limited and surrounded by development.

FIELD HYDROLOGY
 (Site specific based on conditions inside and outside the polygon.) The hydrology is adequate to maintain a wetland system, but it has been altered by downstream impoundment (the lake) and sediment input from upstream. Runoff from adjacent and upstream development has also altered the natural hydrology of the creek and these adjacent wetlands.

WQ INPUT & TREATMENT
 (This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes from adjacent and upstream forested uplands in the form of runoff and rainfall. There is also groundwater discharge from upland areas. Runoff from upstream and adjacent residential development and the golf course flows through vegetated areas before entering natural areas.

Site: TC7

Tiawasee Creek wetlands just upstream of the Lake Forest impoundment.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Acer rubrum</i>	3	Perennial	Tree	Native	FAC
<i>Alnus serrulata</i>	5	Perennial	Tree, Shrub	Native	FACW
<i>Alternanthera philoxeroides</i>	0	Perennial	Forb/herb	Introduced	OBL
<i>Ampelopsis arborea</i>	4	Perennial	Vine, Shrub	Native	FAC
<i>Berchemia scandens</i>	6	Perennial	Vine	Native	FAC
<i>Bidens laevis</i>	6	Annual, Perennial	Forb/herb	Native	OBL
<i>Bignonia capreolata</i>	4	Perennial	Vine	Native	FAC
<i>Campsis radicans</i>	2	Perennial	Vine	Native	FAC
<i>Chasmanthium laxum</i>	5	Perennial	Graminoid	Native	FACW
<i>Cinnamomum camphora</i>	0	Perennial	Tree	Introduced	UPL
<i>Cynilla racemiflora</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Erianthus giganteus</i>	4	Perennial	Graminoid	Native	FACW
<i>Hypericum crux-andreae</i>	6	Perennial	Subshrub, Shrub	Native	FACW
<i>Ilex vomitoria</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Itea virginica</i>	7	Perennial	Shrub	Native	FACW
<i>Juncus effusus</i>	3	Perennial	Graminoid	Native	OBL
<i>Juniperus virginiana</i>		Perennial	Tree	Native	FACU
<i>Ligustrum sinense</i>	0	Perennial	Tree, Shrub	Introduced	FAC
<i>Liriodendron tulipifera</i>		Perennial	Tree	Native	FACU
<i>Lonicera japonica</i>	0	Perennial	Vine	Introduced	FAC
<i>Lycopus rubellus</i>	6	Perennial	Forb/herb	Native	OBL
<i>Lygodium japonicum</i>	0	Perennial	Vine, Forb/herb	Introduced	FAC
<i>Mikania scandens</i>	4	Perennial	Vine, Forb/herb	Native	FACW
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Osmunda regalis</i>	7	Perennial	Forb/herb	Native	OBL
<i>Panicum repens</i>	0	Perennial	Graminoid	Introduced	FACW
<i>Quercus nigra</i>	3	Perennial	Tree	Native	FAC
<i>Rhynchospora capitellata</i>	6	Perennial	Graminoid	Native	OBL
<i>Rhynchospora corniculata</i>	5	Perennial	Graminoid	Native	OBL
<i>Rubus argutus</i>	2	Perennial	Subshrub	Native	FAC
<i>Salix nigra</i>	3	Perennial	Tree	Native	OBL
<i>Sambucus nigra</i>	3	Perennial	Tree, Shrub	Native/Introduced	FACW
<i>Saururus cernuus</i>	6	Perennial	Forb/herb	Native	OBL
<i>Scirpus cyperinus</i>	3	Perennial	Graminoid	Native	OBL
<i>Smilax bona-nox</i>	4	Perennial	Shrub, Vine	Native	FAC
<i>Smilax laurifolia</i>	5	Perennial	Shrub, Vine	Native	FACW
<i>Symphytotrichum lateriflorum</i>	5	Perennial	Forb/herb	Native	FAC
<i>Triadica sebifera</i>	0	Perennial	Tree	Introduced	FAC
<i>Viola primulifolia</i>				Not Available	
<i>Vitis rotundifolia</i>	4	Perennial	Vine	Native	FAC
<i>Woodwardia areolata</i>	6	Perennial	Forb/herb	Native	OBL

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	38
Mean Coefficient of Conservatism (C)	3.74
Mean C (native species only)	4.58
Floristic Quality Index (FQI) (all species)	23.04
Adjusted FQI (native species only)	25.50
Total Number of Species	41
Total Number of Native Species	34
Percent Tolerant Species	39.47
Percent Intolerant Species	5.26
Percent Wetness	92.5

DCB – D'Olive Creek wetlands just upstream of the Lake Forest impoundment.

☐ PROPOSED
☒ EXISTING CONDITIONS

WETLAND RAPID ASSESSMENT PROCEDURE

COUNTY: Baldwin PROJECT: DATE REVIEWER: FLUCCS CODE
 APP. #: DCB MENEP D'Olive Creek 11/24/2015 Gena Todla WETLAND TYPE: ☒ FORESTED ☐ Non-Forestad

LAND USE CATEGORY	WETLAND AREA	SECONDARY IMPACTS	MELALEUCA INVASION >50%
Natural	50 M ACRES	<input type="checkbox"/> NO <input type="checkbox"/> YES %	<input type="checkbox"/> NO <input type="checkbox"/> YES
	ACRES OF IMPACT	ACRES	

WILD LIFE UTILIZATION

1

WETLAND CANOPY

1.5

WETLAND GROUND COVER

1.5

HABITAT SUPPORT / BUFFER

1.125

BUFFER TYPE	SCORE	% AREA	SUB TOTAL
N-residential	0.5	25	0.125
S-natural	2	25	0.5
E-natural	2	25	0.5
W-residential/road	0	25	0
			0

FIELD HYDROLOGY

2

WATER QUALITY INPUT & TREATMENT

1.25

LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL
Single-family residential	1.5	80	1.2
Natural area	3	10	0.3
			0
			0
			0
LU TOTAL			1.5

PRETREATMENT CATEGORY

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Vegetated Buffer	1	100	1
			0
			0
			0
			0
PT TOTAL			1

WRAP SCORE

46.53%

WILDLIFE UTILIZATION

(Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) The limited habitat present is degraded by sedimentation and invasion by exotic plant species. The wetlands are adjacent to residential property and a high-volume road, so any wildlife present is subject to frequent human disturbance. Adjacent upland food sources are limited.

WETLAND CANOPY

(Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy lacks diversity and includes a high percentage of Chinese tallow tree (*Triadica sebifera*). Few snags are present. There are minimal signs of natural recruitment.

WETLAND GROUND COVER

(Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of herbaceous species; however, a high percentage is invasive exotic species, including Japanese climbing fern (*Lygodium japonicum*), Iris spp., Peruvian primrose-willow (*Ludwigia peruviana*), parrot feather (*Myriophyllum aquaticum*), and cogongrass (*Imperata cylindrica*).

HABITAT SUPPORT/BUFFER

(This is based upon habitats OUTSIDE the perimeter of the polygon.) To the immediate north are residential yards; to the south is the creek, then a forested area, and beyond that are residential areas; to the east is a forested corridor along the creek; and to the west is a residential lawn, then a heavily-traveled road, and then the lake. The natural areas to the south and east are degraded to some degree and are not very wide.

FIELD HYDROLOGY

(Site specific based on conditions inside and outside the polygon.) The hydrology is adequate to maintain a wetland system, except in areas where sediment has accumulated to unnaturally high elevations, but it has been altered by downstream impoundment (the lake) and sediment input from upstream. Runoff from adjacent and upstream development has also altered the natural hydrology of the creek and these adjacent wetlands. A levee has formed along the creekbanks, which disconnects the wetlands from the creek except in high water flow events.

WQ INPUT & TREATMENT

(This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes from adjacent uplands to the north and east in the form of runoff and rainfall, and from creek overflow events during high rainfall occurrences. D'Olive Creek receives runoff from residential and commercial development, roadways, and natural forested areas.

Site: DCB

D'Olive Creek wetlands just upstream of the Lake Forest impoundment.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Acer rubrum</i>	3	Perennial	Tree	Native	FAC
<i>Bignonia capreolata</i>	4	Perennial	Vine	Native	FAC
<i>Boehmeria cylindrica</i>	4	Perennial	Forb/herb	Native	FACW
<i>Cephalanthus occidentalis</i>	5	Perennial	Tree, Shrub	Native	OBL
<i>Cyrilla racemiflora</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Dichanthelium scabriusculum</i>	4	Perennial	Graminoid	Native	OBL
<i>Erianthus giganteus</i>	4	Perennial	Graminoid	Native	FACW
<i>Galium hispidulum</i>		Perennial	Forb/herb	Native	
<i>Ilex vomitoria</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Itea virginica</i>	7	Perennial	Shrub	Native	FACW
<i>Juncus effusus</i>	3	Perennial	Graminoid	Native	OBL
<i>Ligustrum sinense</i>	0	Perennial	Tree, Shrub	Introduced	FAC
<i>Liriodendron tulipifera</i>		Perennial	Tree	Native	FACU
<i>Ludwigia octovalvis</i>	2	Perennial	Subshrub, Forb/herb	Native	OBL
<i>Ludwigia peruviana</i>	0	Perennial	Subshrub, Shrub, Forb/herb	Introduced	OBL
<i>Lygodium japonicum</i>	0	Perennial	Vine, Forb/herb	Introduced	FAC
<i>Mikania scandens</i>	4	Perennial	Vine, Forb/herb	Native	FACW
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Myriophyllum aquaticum</i>	0	Perennial	Forb/herb	Introduced	OBL
<i>Orontium aquaticum</i>	7	Perennial	Forb/herb	Native	OBL
<i>Osmunda regalis</i>	7	Perennial	Forb/herb	Native	OBL
<i>Polygonum punctatum</i>	4	Annual, Perennial	Forb/herb	Native	
<i>Quercus nigra</i>	3	Perennial	Tree	Native	FAC
<i>Rhynchospora corniculata</i>	5	Perennial	Graminoid	Native	OBL
<i>Rubus trivialis</i>		Perennial	Subshrub, Vine	Native	FACU
<i>Saururus cernuus</i>	6	Perennial	Forb/herb	Native	OBL
<i>Scirpus cyperinus</i>	3	Perennial	Graminoid	Native	OBL
<i>Scoparia dulcis</i>	3	Annual, Perennial	Forb/herb, Subshrub	Native	FAC
<i>Smilax laurifolia</i>	5	Perennial	Shrub, Vine	Native	FACW
<i>Stachys floridana</i>	2	Perennial	Forb/herb	Native	FAC
<i>Triadica sebifera</i>	0	Perennial	Tree	Introduced	FAC

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	28
Mean Coefficient of Conservatism (C)	3.57
Mean C (native species only)	4.35
Floristic Quality Index (FQI) (all species)	18.90
Adjusted FQI (native species only)	20.85
Total Number of Species	31
Total Number of Native Species	26
Percent Tolerant Species	42.86
Percent Intolerant Species	10.71
Percent Wetness	93.10

☐ PROPOSED
☒ EXISTING CONDITIONS

WETLAND RAPID ASSESSMENT PROCEDURE

COUNTY: Baldwin PROJECT DATE REVIEWER FLUCCS CODE
 APP. #: JBON MBNEP D'Olive Creek 12/7/2015 Gena Todla WETLAND TYPE: ☒ FORESTED ☐ Non-Forested

LAND USE CATEGORY	WETLAND AREA	SECONDARY IMPACTS	MELALEUCA INVASION >50%
Natural	50 M ACRES	<input type="checkbox"/> NO <input type="checkbox"/> YES %	<input type="checkbox"/> NO <input type="checkbox"/> YES
	ACRES OF IMPACT	ACRES	

WILD LIFE UTILIZATION

1

WETLAND CANOPY

2

WETLAND GROUND COVER

2.5

HABITAT SUPPORT / BUFFER

0.6

BUFFER TYPE	SCORE	% AREA	SUB TOTAL
E&W-Defention Ponds	0.5	60	0.3
Joe's Br. creek corridor	2	15	0.3
S-Interstate exchange	0	25	0
			0
			0

FIELD HYDROLOGY

2

WATER QUALITY INPUT & TREATMENT

2.0875

LAND USE CATEGORY

LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL
Mod Intensive Commercial	1.5	60	0.9
High Volume Hwy	1	25	0.25
Natural	2.5	15	0.375
			0
			0
LU TOTAL			1.525

PRETREATMENT CATEGORY

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Wet Detention	2.5	30	0.75
Vegetated Buffers	1	10	0.1
Natural	3	60	1.8
			0
			0
PT TOTAL			2.65

WRAP SCORE

56.60%

WILDLIFE UTILIZATION

(Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) Wildlife habitat is degraded, limited in size, essentially isolated and surrounded by development. Adequate upland food and cover are lacking. There are frequent human disturbances associated with traffic on surrounding roads, including an I-10 off ramp. These wetlands do offer limited habitat for birds, small mammals, reptiles, amphibians. A corridor is present upstream, but at its upper end (Hwy. 31) is surrounded by dense development.

WETLAND CANOPY

(Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy is composed of mostly appropriate species. Chinese tallow tree (*Triadica sebifera*) and Chinese privet (*Ligustrum sinense*) are present, but comprise less than 25% of the canopy. Few snags are present. There are few signs of natural recruitment.

WETLAND GROUND COVER

(Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of appropriate herbaceous and woody species; however, several invasive exotics, including a few coral ardisia (*Ardisia crenata*), Japanese climbing fern (*Lygodium japonicum*), scattered downy maiden fern (*Thelypteris dentata*), and a few Oriental false hawksbeard (*Youngia japonica*) are also present.

HABITAT SUPPORT/BUFFER

(This is based upon habitats OUTSIDE the perimeter of the polygon.) To the east and west are stormwater detention ponds with no surrounding natural habitat. To the south is a narrow strip of forested uplands and then interstate exchange. To the north is an elevated bridge and then the upstream segment of the Joe's Branch stream and wetland corridor that extends north to Hwy. 31. This corridor is surrounded by cleared land and commercial development.

FIELD HYDROLOGY

(Site specific based on conditions inside and outside the polygon.) The hydrology is adequate to maintain a wetland system, but it has been altered by surrounding development. Runoff from adjacent and upstream development has also altered the natural hydrology of the creek and these adjacent wetlands.

WQ INPUT & TREATMENT

(This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes from upstream forested wetlands, surrounding cleared land, and discharge from the adjacent detention ponds.

Site: JB0N
 Joe's Branch just north of I-10
 Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
Acer rubrum	3	Perennial	Tree	Native	FAC
Alnus serrulata	5	Perennial	Tree, Shrub	Native	FACW
Arnoglossum ovatum	9	Perennial	Forb/herb	Native	FACW
Bidens laevis	6	Annual, Perennial	Forb/herb	Native	OBL
Bignonia capreolata	4	Perennial	Vine	Native	FAC
Campsis radicans	2	Perennial	Vine	Native	FAC
Chasmanthium laxum	5	Perennial	Graminoid	Native	FACW
Cinnamomum camphora	0	Perennial	Tree	Introduced	UPL
Cyrilla racemiflora	6	Perennial	Tree, Shrub	Native	FACW
Dichanthelium scabriusculum	4	Perennial	Graminoid	Native	OBL
Gelsemium sempervirens	4	Perennial	Vine, Shrub	Native	FAC
Ilex coriacea	7	Perennial	Tree, Shrub	Native	FACW
Ilex opaca	5	Perennial	Tree, Shrub	Native	FAC
Itea virginica	7	Perennial	Shrub	Native	FACW
Juncus effusus	3	Perennial	Graminoid	Native	OBL
Ligustrum sinense	0	Perennial	Tree, Shrub	Introduced	FAC
Liriodendron tulipifera		Perennial	Tree	Native	FACU
Lonicera japonica	0	Perennial	Vine	Introduced	FAC
Lygodium japonicum	0	Perennial	Vine, Forb/herb	Introduced	FAC
Magnolia grandiflora	4	Perennial	Tree	Native	FAC
Magnolia virginiana	6	Perennial	Tree, Shrub	Native	FACW
Mikania scandens	4	Perennial	Vine, Forb/herb	Native	FACW
Mitchella repens		Perennial	Subshrub, Forb/herb	Native	FACU
Morella carolinensis	7	Perennial	Tree, Shrub	Native	FACW
Morella cerifera	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
Nyssa biflora	7	Perennial	Tree	Native	OBL
Orontium aquaticum	7	Perennial	Forb/herb	Native	OBL
Osmunda cinnamomea	7	Perennial	Forb/herb	Native	FACW
Osmunda regalis	7	Perennial	Forb/herb	Native	OBL
Panicum gymnocarpon	5	Perennial	Graminoid	Native	OBL
Persea palustris	7	Perennial	Tree, Shrub	Native	FACW
Pinus taeda	2	Perennial	Tree	Native	FAC
Pluchea odorata	5	Annual, Perennial	Subshrub, Forb/herb	Native	FACW
Potamogeton pectinatus	6	Perennial	Forb/herb	Native	OBL
Quercus nigra	3	Perennial	Tree	Native	FAC
Rhynchospora fascicularis	6	Perennial	Graminoid	Native	FACW
Rhynchospora odorata	8	Perennial	Graminoid	Native	OBL
Rubus argutus	2	Perennial	Subshrub	Native	FAC
Sagittaria latifolia	5	Perennial	Forb/herb	Native	OBL
Saururus cernuus	6	Perennial	Forb/herb	Native	OBL
Smilax bona-nox	4	Perennial	Shrub, Vine	Native	FAC
Smilax laurifolia	5	Perennial	Shrub, Vine	Native	FACW
Symphyotrichum lateriflorum	5	Perennial	Forb/herb	Native	FAC
Thelypteris dentata	0	Perennial	Forb/herb	Native	FACW
Thelypteris kunthii	4	Perennial	Forb/herb	Native	FACW
Thelypteris palustris	7	Perennial	Forb/herb	Native	OBL
Toxicodendron radicans	3	Perennial	Shrub, Forb/herb, Subshrub, Vine	Native	FAC
Toxicodendron vernix	7	Perennial	Tree, Shrub	Native	OBL
Triadica sebifera	0	Perennial	Tree	Introduced	FAC
Viburnum nudum	7	Perennial	Tree, Shrub	Native	FACW
Viola primulifolia				Not Available	
Woodwardia areolata	6	Perennial	Forb/herb	Native	OBL
Youngia japonica	0	Annual	Forb/herb	Introduced	FACU

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	50
Mean Coefficient of Conservatism (C)	4.52
Mean C (native species only)	5.14
Floristic Quality Index (FQI) (all species)	31.96
Adjusted FQI (native species only)	34.07
Total Number of Species	53
Total Number of Native Species	47
Percent Tolerant Species	28
Percent Intolerant Species	26
Percent Wetness	92.31

J4-1 – Joe's Branch east of Town Center Avenue.

☐ PROPOSED
☒ EXISTING CONDITIONS

WETLAND RAPID ASSESSMENT PROCEDURE

COUNTY: **Baldwin** PROJECT: **MBNEP D'Olive Creek** DATE: **12/7/2015** REVIEWER: **Genia Todla** FLUCCS CODE:
APP. #: **J4-1** WETLAND TYPE: ☒ FORESTED ☐ Non-Forested

LAND USE CATEGORY	WETLAND AREA	SECONDARY IMPACTS	MELALEUCA INVASION >50%
Natural	50M ACRES	<input type="checkbox"/> NO <input type="checkbox"/> YES % =	<input type="checkbox"/> NO <input type="checkbox"/> YES
	ACRES OF IMPACT	ACRES	

WILD LIFE UTILIZATION

2

WETLAND CANOPY

2

WETLAND GROUND COVER

2.5

HABITAT SUPPORT / BUFFER

2.15

BUFFER TYPE	SCORE	% AREA	SUB TOTAL
N&E-Natural	2.5	80	2
S-Detention Pond	1	15	0.15
West-Road	0	5	0
			0
			0

FIELD HYDROLOGY

2.5

WATER QUALITY INPUT & TREATMENT

2.8

LAND USE CATEGORY

LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL
N&E-Natural	3	80	2.4
S-Low Int Commercial	1	15	0.15
W-High Vol Highway	1	5	0.05
			0
			0
LU TOTAL			2.6

PRETREATMENT CATEGORY

PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL
Natural	3	100	3
			0
			0
			0
			0
PT TOTAL			3

WRAP SCORE

77.50%

WILDLIFE UTILIZATION

(Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) Wildlife habitat is limited in size, but generally good. Limited upland and wetland habitat is present to the north and east. There is some amount of human disturbances associated with traffic to the west. These wetlands offer limited habitat for birds, small mammals, reptiles, amphibians.

WETLAND CANOPY

(Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy is composed primarily of appropriate native species. Chinese tallow tree (*Triadica sebifera*), Japanese privet (*Ligustrum japonicum*), and Chinese privet (*L. sinense*) are minor components. Few snags are present. There is some evidence of natural recruitment.

WETLAND GROUND COVER

(Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of appropriate herbaceous and woody species. Invasive exotic species, including downy maiden fern (*Thelypteris dentata*) and coral ardisia (*Ardisia crenata*), are very minor components.

HABITAT SUPPORT/BUFFER

(This is based upon habitats OUTSIDE the perimeter of the polygon.) To the north and east is natural forested uplands and wetlands that are limited in size and with limited connection to wildlife corridors. To the south is detention pond. To the west is a road.

FIELD HYDROLOGY

(Site specific based on conditions inside and outside the polygon.) The hydrology is adequate to maintain a wetland system, but it has been altered by surrounding development. Runoff from adjacent and upstream development has also altered the natural hydrology of the stream and these adjacent wetlands.

WQ INPUT & TREATMENT

(This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes from adjacent forested uplands and other primarily natural, undeveloped areas.

Site: J4-1

Joe's Branch east of Town Center Avenue.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Acer rubrum</i>	3	Perennial	Tree	Native	FAC
<i>Arnoglossum ovatum</i>	9	Perennial	Forb/herb	Native	FACW
<i>Arundinaria gigantea</i>	5	Perennial	Subshrub, Shrub, Graminoid	Native	FACW
<i>Bignonia capreolata</i>	4	Perennial	Vine	Native	FAC
<i>Chionanthus virginicus</i>	7	Perennial	Tree, Shrub	Native	FACU
<i>Cinnamomum camphora</i>	0	Perennial	Tree	Introduced	UPL
<i>Conoclinium coelestinum</i>	4	Perennial	Forb/herb	Native	FAC
<i>Cyrilla racemiflora</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Decumaria barbara</i>	6	Perennial	Vine	Native	FACW
<i>Dichanthelium scabriusculum</i>	4	Perennial	Graminoid	Native	OBL
<i>Eupatorium fistulosum</i>	6	Perennial	Forb/herb	Native	FACW
<i>Ilex coriacea</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Ilex opaca</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Ilex vomitoria</i>	5	Perennial	Tree, Shrub	Native	FAC
<i>Itea virginica</i>	7	Perennial	Shrub	Native	FACW
<i>Juncus effusus</i>	3	Perennial	Graminoid	Native	OBL
<i>Juniperus virginiana</i>		Perennial	Tree	Native	FACU
<i>Ligustrum sinense</i>	0	Perennial	Tree, Shrub	Introduced	FAC
<i>Liquidambar styraciflua</i>	3	Perennial	Tree	Native	FAC
<i>Liriodendron tulipifera</i>		Perennial	Tree	Native	FACU
<i>Magnolia virginiana</i>	6	Perennial	Tree, Shrub	Native	FACW
<i>Mikania scandens</i>	4	Perennial	Vine, Forb/herb	Native	FACW
<i>Mitchella repens</i>		Perennial	Subshrub, Forb/herb	Native	FACU
<i>Morella carolinensis</i>	7	Perennial	Tree, Shrub	Native	FACW
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Nyssa biflora</i>	7	Perennial	Tree	Native	OBL
<i>Osmunda cinnamomea</i>	7	Perennial	Forb/herb	Native	FACW
<i>Osmunda regalis</i>	7	Perennial	Forb/herb	Native	OBL
<i>Pinus taeda</i>	2	Perennial	Tree	Native	FAC
<i>Quercus nigra</i>	3	Perennial	Tree	Native	FAC
<i>Rhynchospora glomerata</i>	5	Perennial	Graminoid	Native	OBL
<i>Rubus argutus</i>	2	Perennial	Subshrub	Native	FAC
<i>Sagittaria latifolia</i>	5	Perennial	Forb/herb	Native	OBL
<i>Saururus cernuus</i>	6	Perennial	Forb/herb	Native	OBL
<i>Smilax laurifolia</i>	5	Perennial	Shrub, Vine	Native	FACW
<i>Solidago fistulosa</i>	6	Perennial	Forb/herb	Native	FAC
<i>Symphotrichum lateriflorum</i>	5	Perennial	Forb/herb	Native	FAC
<i>Taxodium distichum</i>	6	Perennial	Tree	Native	OBL
<i>Thelypteris dentata</i>	0	Perennial	Forb/herb	Native	FACW
<i>Triadica sebifera</i>	0	Perennial	Tree	Introduced	FAC
<i>Vaccinium elliotii</i>	7	Perennial	Shrub	Native	FACW

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	41
Mean Coefficient of Conservatism (C)	4.83
Mean C (native species only)	5.21
Floristic Quality Index (FQI) (all species)	30.92
Adjusted FQI (native species only)	32.12
Total Number of Species	45
Total Number of Native Species	42
Percent Tolerant Species	24.39
Percent Intolerant Species	26.83
Percent Wetness	88.64

JA – Unnamed tributary to Joe's Branch north of Town Center Avenue.

WETLAND RAPID ASSESSMENT PROCEDURE																																																															
<input type="checkbox"/> PROPOSED <input checked="" type="checkbox"/> EXISTING CONDITIONS																																																															
COUNTY:	Baldwin	PROJECT	DATE	REVIEWER	FLUCCS CODE																																																										
APP. #:	JA	MBNEP D'Olive Creek	12/7/2015	Gena Todla	WETLAND TYPE:	<input checked="" type="checkbox"/> FORESTED	<input type="checkbox"/> Non-Forestad																																																								
LAND USE CATEGORY		WETLAND AREA		SECONDARY IMPACTS		MELALEUCA INVASION >50%																																																									
Natural		50 M ACRES		<input type="checkbox"/> NO <input type="checkbox"/> YES		<input type="checkbox"/> NO <input type="checkbox"/> YES																																																									
		ACRES OF IMPACT		ACRES																																																											
WILD LIFE UTILIZATION				1		<div style="font-size: 24px; font-weight: bold; margin-bottom: 10px;">WRAP SCORE</div> <div style="font-size: 36px; font-weight: bold;">44.44%</div>																																																									
WETLAND CANOPY				0																																																											
WETLAND GROUND COVER				1.5																																																											
HABITAT SUPPORT / BUFFER				1.75																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>BUFFER TYPE</th> <th>SCORE</th> <th>% AREA</th> <th>SUB TOTAL</th> </tr> </thead> <tbody> <tr> <td>N-Natural</td> <td>2.5</td> <td>50</td> <td>1.25</td> </tr> <tr> <td>S-Road/Commercial</td> <td>1</td> <td>50</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> </tbody> </table>				BUFFER TYPE	SCORE	% AREA	SUB TOTAL	N-Natural	2.5	50	1.25	S-Road/Commercial	1	50	0.5				0				0				0	2																																			
BUFFER TYPE	SCORE	% AREA	SUB TOTAL																																																												
N-Natural	2.5	50	1.25																																																												
S-Road/Commercial	1	50	0.5																																																												
			0																																																												
			0																																																												
			0																																																												
FIELD HYDROLOGY				2																																																											
WATER QUALITY INPUT & TREATMENT				1.75																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>LAND USE CATEGORY</th> <th>SCORE</th> <th>% AREA</th> <th>SUB TOTAL</th> </tr> </thead> <tbody> <tr> <td>N-Natural</td> <td>3</td> <td>50</td> <td>1.5</td> </tr> <tr> <td>S-Road/Commercial</td> <td>1</td> <td>50</td> <td>0.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">LU TOTAL</td> <td>2</td> </tr> </tbody> </table>				LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL	N-Natural	3	50	1.5	S-Road/Commercial	1	50	0.5				0				0				0	LU TOTAL			2	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>PRETREATMENT CATEGORY</th> <th>SCORE</th> <th>% AREA</th> <th>SUB TOTAL</th> </tr> </thead> <tbody> <tr> <td>Natural</td> <td>3</td> <td>50</td> <td>1.5</td> </tr> <tr> <td>No Treatment</td> <td>0</td> <td>50</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">PT TOTAL</td> <td>1.5</td> </tr> </tbody> </table>				PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL	Natural	3	50	1.5	No Treatment	0	50	0				0				0				0	PT TOTAL			1.5
LAND USE CATEGORY	SCORE	% AREA	SUB TOTAL																																																												
N-Natural	3	50	1.5																																																												
S-Road/Commercial	1	50	0.5																																																												
			0																																																												
			0																																																												
			0																																																												
LU TOTAL			2																																																												
PRETREATMENT CATEGORY	SCORE	% AREA	SUB TOTAL																																																												
Natural	3	50	1.5																																																												
No Treatment	0	50	0																																																												
			0																																																												
			0																																																												
			0																																																												
PT TOTAL			1.5																																																												
WILDLIFE UTILIZATION (Wildlife utilization should be in consideration of the suite of species that would inhabit and are endemic to the mature target wetland system and not just any wildlife.) Wildlife habitat is degraded and limited in size. Limited upland and wetland habitat is present to the north, northeast, and east. There is some amount of human disturbances associated with traffic on surrounding roads and commercial development. These wetlands do offer very limited habitat for birds, small mammals, reptiles, amphibians.																																																															
WETLAND CANOPY (Canopy is defined as woody vegetation with greater than 4 inch dbh.) The canopy that should be present has been removed at some time in the past and is completely lacking.																																																															
WETLAND GROUND COVER (Groundcover should be in consideration of endemic species of target wetland community.) Groundcover includes a diversity of appropriate, mostly common, herbaceous and woody species; however, several invasive exotics, including downy malden fern (<i>Thelypteris dentata</i>), torpedo grass (<i>Panicum repens</i>), and Vasey grass (<i>Paspalum urvillei</i>), are also present. Common cat-tail (<i>Typha latifolia</i>) is also present.																																																															
HABITAT SUPPORT/BUFFER (This is based upon habitats OUTSIDE the perimeter of the polygon.) To the north is natural forested uplands that are limited in size and with limited connection to wildlife corridors. To the south is a narrow (~70 ft.) of dense, young loblolly pine (<i>Pinus taeda</i>), then Town Center Avenue. To the south of the road is commercial development with no connection to wildlife corridors.																																																															
FIELD HYDROLOGY (Site specific based on conditions inside and outside the polygon.) The hydrology is adequate to maintain a wetland system, but it has been altered by surrounding development. Runoff from adjacent and upstream development has also altered the natural hydrology of the stream and these adjacent wetlands.																																																															
WQ INPUT & TREATMENT (This is based upon habitats OUTSIDE the perimeter of the polygon.) Water that enters the wetlands comes from adjacent forested uplands and runoff from the commercial development to the north.																																																															

Site: JA

Unnamed tributary to Joe's Branch north of Town Center Avenue.

Region: Coastal Plain

USDA Scientific Name	C Value	Duration	Growth Habitat	Native Status	Indicator Status
<i>Arnoglossum ovatum</i>	9	Perennial	Forb/herb	Native	FACW
<i>Baccharis halimifolia</i>	3	Perennial	Tree, Shrub	Native	FAC
<i>Bacopa monnieri</i>	3	Perennial	Forb/herb	Native	OBL
<i>Bidens alba</i>		Annual, Perennial	Forb/herb	Native	
<i>Conoclinium coelestinum</i>	4	Perennial	Forb/herb	Native	FAC
<i>Eupatorium capillifolium</i>		Perennial	Forb/herb	Native	FACU
<i>Eupatorium perfoliatum</i>	4	Perennial	Forb/herb	Native	FACW
<i>Galium asprellum</i>		Perennial	Forb/herb	Native	OBL
<i>Juncus effusus</i>	3	Perennial	Graminoid	Native	OBL
<i>Liquidambar styraciflua</i>	3	Perennial	Tree	Native	FAC
<i>Ludwigia octovalvis</i>	2	Perennial	Subshrub, Forb/herb	Native	OBL
<i>Mikania scandens</i>	4	Perennial	Vine, Forb/herb	Native	FACW
<i>Morella cerifera</i>	4	Perennial	Tree, Subshrub, Shrub	Native	FAC
<i>Panicum repens</i>	0	Perennial	Graminoid	Introduced	FACW
<i>Paspalum urvillei</i>	0	Perennial	Graminoid	Introduced	FAC
<i>Platanus occidentalis</i>	5	Perennial	Tree	Native	FACW
<i>Sagittaria latifolia</i>	5	Perennial	Forb/herb	Native	OBL
<i>Salix nigra</i>	3	Perennial	Tree	Native	OBL
<i>Thelypteris dentata</i>	0	Perennial	Forb/herb	Native	FACW
<i>Triadica sebifera</i>	0	Perennial	Tree	Introduced	FAC

Metric Name	Calculated Value
Total Number of Species with Assigned C-values (N)	17
Mean Coefficient of Conservatism (C)	3.06
Mean C (native species only)	3.71
Floristic Quality Index (FQI) (all species)	12.61
Adjusted FQI (native species only)	13.90
Total Number of Species	20
Total Number of Native Species	17
Percent Tolerant Species	58.82
Percent Intolerant Species	5.88
Percent Wetness	94.74