LEGISLATIVE ID #120212

FORM #: 62-305.900
RULE #: 62-305.300(1)
FORM TITLE: TMDL WATER QUALITY GRANT APPLICATION

TMDL WATER QUALITY RESTORATION GRANT PROPOSAL APPLICATION

PROJECT NAME:
Depot Park Stormwater Pond Monitoring

PROJECT FUNDING:	**TMDL Grant**	**$374,538**	**50%**
	Matching Funds	**$374,538**	**50%**
	Monitoring Project Total:	**$749,076**	**100%**
	Other Funding Sources	**$15,373,352.60**	
	Total Project Costs:	**$16,122,428.60**	

LEAD ORGANIZATION: City of Gainesville
End of Fiscal Year: September 30
FEID Number: 59-6000325

CONTACT PERSON: RAHIM HARJI, P.E. CFM
ADDRESS:405 NW 39TH AVENUE, GAINESVILLE FL, 32609
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COOPERATING ORGANIZATIONS AND CONTACT PERSON (THOSE PROVIDING FUNDING OR IN-KIND SERVICES):
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (STATE REVOLVING FUND PROGRAM AND LEGISLATIVE APPROPRIATION GRANT) CONTACT: MR. TOMMY WILLIAMS
SJRWMD (COST SHARE GRANTS) CONTACT MS. MADELINE NORTHCUTT
EPA (SPECIAL PROJECTS APPROPRIATION GRANT) CONTACT: MR. BRENDEN HELD

PROJECT ABSTRACT:

The City of Gainesville is in the process of constructing Phase II of a regional stormwater treatment facility and park on a 35 acre designated brownfield site known as Depot Park in downtown Gainesville (see Appendix 4 for Location Map). Phase I of the project was constructed in 2006 and included a portion of the regional stormwater. The work on Phase II of the project proposes extensive contamination remediation activities, as well as construction of a stormwater treatment facility and numerous park amenities.

As part of the City's effort to provide enhanced stormwater treatment facilities on the site, a stormwater park with multiple wet-detention ponds, a pumping station, pretreatment baffle boxes, two sediment forebays, an aeration system and a wetland marsh area are proposed to reduce pollution flowing into Sweetwater Branch (see Appendix 5 for an Overall Plan). The Sweetwater branch discharges directly to the Alachua Sink which is impaired for nutrients and has a direct connection to the Floridan Aquifer. The Alachua sink is located within the Orange Creek Basin for which a BMAP has been adopted (see Appendix 6 for the location of the project in the watershed).

The Depot Park stormwater facilities will treat stormwater from approximately 134 acres from downtown Gainesville. As a BMP, the treatment train is expected to reduce the amount of urban pollutants to Alachua Sink on annual average basis to Sweetwater Branch by 85 percent for TSS, 75 percent for lead and zinc, and 65 percent for phosphorus, and 50 percent for nitrogen. TSS in runoff is estimated to be reduced by 63,800 lbs/yr. Trash will be trapped and removed before the stormwater flows into Sweetwater Branch. The TMDL Water Quality Grant Restoration Program was established by the Florida Legislature to provide cost share assistance to local governments for stormwater retrofit projects that reduce stormwater pollutant loadings discharged to impaired waters.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

The project is located in downtown Gainesville, Florida on the southeast corner of Depot Avenue and Main Street. The latitude and longitude of the site is 29° 38' 37" latitude and 82° 19' 24".

Water Body Name: Alachua Sink
Hydrologic Unit Code(HUC): 3080102
Project Latitude:29° 38' 37"
Project Longitude:82° 19' 24"

Land Uses within the Watershed (acres and percentages of total):

Land Use	Acres	%
Industrial	8	6
Open Space/Parks	35	26
High Intensity Commercial	91	68
Land Use Totals (Acreage and %)	134	100

TMDL STATUS OF WATER BODY AND PROJECT:

Name of Impaired Water: Alachua Sink
Status of Impaired Water: TMDL Adopted
Status of BMAP: Adopted

POLLUTION REDUCTION STRATEGY:

The Depot Park project will implement a treatment train approach to pollutant removal (see Appendix 7 for the Depot Park treatment train). Inflow to the park will first be treated using a baffle box at each of the two major inflow points. The wet detention ponds will be lined to prevent potentially contaminated groundwater from entering ponds. In order to increase pollutant reduction and reduce long term maintenance costs, the ponds will be constructed with sediment forebays at the two major inflow points. The two wet detention ponds will be connected via a constructed wetland marsh. To enhance flow through, the marsh pump will be installed in the downstream pond and will pump back into the upstream pond, creating circulation through the marsh. In addition, aerators will be installed in the ponds and pond water will be used for onsite irrigation.

The Depot Park Project was listed as a priority in the Orange Creek Basin Surface Water Improvements and Management (SWIM) Plan and the Orange Creek BMAP.

PROJECT OBJECTIVE(S):

The overall project objective is to mitigate environmental impacts to soil and groundwater and provide stormwater treatment to the 134 acre downtown service area. The objective of the monitoring component of the project is to monitor the effectiveness of the Phase I and Phase II ponds in achieving the pollutant reduction goals that these basins are permitted for. Both ponds are anticipated to reduce the nitrogen by 50%, phosphorus by 65%, total suspended solids by 85% and the biological oxygen demand by 80%. These reduction targets are based on various published sources however the City would like to measure the actual effectiveness of these ponds once Phase II has been built. In addition to measuring the actual effectiveness of these ponds, the data obtained from this monitoring project will provide useful

data on estimating the pollutant reduction abilities of a wet pond in a highly urban area (see **Appendix 9- Depot Drainage Area** for aerial of contributing drainage area). All components of this project have been funded (land acquisition, design and construction) except the monitoring component of the project. Construction of Phase II is on schedule to commence in October 2012 and is anticipated to take no more than 12 months. The installation of the monitoring equipment can begin in August 2012 and monitoring is expected to continue until December 2014. The City will continue to monitor the basin after December 2014 using its own resources.

PROJECT DESCRIPTION (PLEASE LIST ALL TASKS AND DELIVERABLES):
NOTE: Typical tasks will include: Land acquisition, design, permitting, bidding, BMP construction, BMP monitoring, grant administration, quarterly progress reports, draft final report, final report.

TASK 1: LAND ACQUISITION

SCHEDULE: AQUIRED 2003

TASK 2: DESIGN

DELIVERABLES:FINAL CONSTRUCTION DRAWING AND SPECIFICATIONS
SCHEDULE:JULY 30, 2012

TASK 3:PERMITTING

DELIVERABLES: ERP AND ACOE PERMITS
SCHEDULE: OBTAINED 2005

TASK 4:BIDDING

DELIVERABLES: SECURE CONTRACTOR
SCHEDULE: AUGUST 2012

TASK 5: BMP CONSTRUCTION

DELIVERABLES: SUBSTANTIAL COMPLETION
SCHEDULE: OCTOBER 2013

TASK 6: BMP MONITORING
STORMWATER EVENT SAMPLING (PERFORMED PRIMARILY BY THE CITY OF GAINESVILLE OR A CONSULTANT TO THE CITY OF GAINESVILLE)

THE CITY, WILL IDENTIFY QUALIFYING EVENTS AND PERFORM EVENT BASED SAMPLING FOR UP TO 12 EVENTS PER A PROPOSED QAPP IN ACCORDANCE WITH SAMPLING METHODS AND REQUIREMENTS OF THE FDEP LISTED IN APPENDIX 2.

DELIVERABLES: MONITORING REPORT
SCHEDULE: DECEMBER 2014

ESTIMATED POLLUTANT LOAD REDUCTION:
See Appendix 8 for permitted pollutant removal

MODEL USED: Allowable models include Spreadsheet Tool for Estimating Pollutant Load (STEPL, 2007), Nonpoint Source Loading Management Model (NPSLMM, 2008) and Watershed Management Model (WMM, 2006). The STEPL model is available for download at http://it.tetratech-ffx.com/stepl/ while the other models are on the TMDL Grant web site.
EMCS USED IN MODEL: Please use the Event Mean Concentrations (EMCs) listed in Attachment 1 in the model to estimate pre- and post-project pollutant loads and load reductions.

PROJECT MILESTONES:

Task	Activity	Start	Complete
1	Land Acquisition	1999	2003
2	Design and Permitting	2003	7/30/2012
3	Bidding	7/31/2012	8/30/2012
4	BMP Construction	10/1/2012	10/1/2013
5	BMP Effectiveness Monitoring	8/1/2013	12/1/2014
6	Public Education	3/1/2013	ongoing
7	Draft and Final Reports:	10/1/2014	12/1/2014

PROJECT BUDGET:

	Monitoring Project*		Depot Park Project Phases I & II Other Funding (not match)
Project Funding Activity	**Grant Amount**	**Matching Contribution & Source****	
Land Acquisition			$2,156,130.60
Design and Permitting**		$374,538 City Stormwater Management Utility**	
Bidding			
BMP Construction			$13,217,222
BMP Effectiveness Monitoring	$374,538		
Public Education			
Draft and Final Reports:			
Totals:	$374,538	$374,538	$15,373,352.60
Total Project Cost:		**$749,076**	**$16,122,428.60**
Percentage Match:		50%	

This grant application is a request for $374,538 in TMDL funds for Depot Park Stormwater Pond Monitoring. The TMDL grant will be matched with $374,538 Phase II Design expenditures that were incurred during FY2012 and paid for by the City Stormwater Management Utility.

****DEDICATED STORMWATER FUNDING INFORMATION:**

Match Source Name	Description	ERU/Fee
City Stormwater Management Utility	A stormwater utility fee that all properties within City pay with exemptions for properties that qualify for 100% credit or discharge outside City limits.	$8.15/ERU

OTHER FUNDING (Not Match):

Agency	Activity	Amount
City of Gainesville	Land Acquisition Construction	$2,156,130.60 $6,299,922.00
St. Johns River Water Management District Grants	Construction-Phase I	$1,065,500
FDEP-State Revolving Loan	Construction-Phases I and II	$4,312,000
FDEP-Legislative Appropriation	Design, Construction-Phase II	$1,100,000
HUD-EDI Special Project Grant	Construction-Facilities Improvements & Upgrades-Phase II	$148,800
EPA-Special Appropriations Grant (application submitted and award is anticipated in Summer 2012)	Construction – Phase II	$291,000
	Total:	$15,373,352.60

REFERENCES CITED:

ORANGE CREEK BASIN WORKING GROUP. MAY 8, 2008. 2007 ORANGE CREEK BASIN MANAGEMENT ACTION PLAN. PREPARED FOR NEWNANS LAKE, ORANGE LAKE, LAKE WAUBERG, HOGTOWN CREEK, SWEETWATER BRANCH, TUMBLIN CREEK, AND ALACHUA SINK

NOTE: PLEASE SUBMIT ALL APPENDICES IN A SEPARATE WORD DOCUMENT. THIS MAY INCLUDE MAPS, FIGURES OR ANY OTHER INFORMATION YOU WOULD LIKE TO INCLUDE WITH YOUR APPLICATION

ATTACHMENT 1 - EMC VALUES FOR MODELING POLLUTANT LOADS

LAND USE CATEGORY	TYPICAL RUNOFF CONCENTRATION (mg/l)						
	TOTAL N	TOTAL P	BOD	TSS	COPPER	LEAD	ZINC
Low-Density Residential[1]	1.61	0.191	4.7	23.0	0.008[4]	0.002[4]	0.031[4]
Single-Family	2.07	0.327	7.9	37.5	0.016	0.004	0.062
Multi-Family	2.32	0.520	11.3	77.8	0.009	0.006	0.086
Low-Intensity Commercial	1.18	0.179	7.7	57.5	0.018	0.005	0.094
High-Intensity Commercial	2.40	0.345	11.3	69.7	0.015	--	0.160
Light Industrial	1.20	0.260	7.6	60.0	0.003	0.002	0.057
Highway	1.64	0.220	5.2	37.3	0.032	0.011	0.126
Agricultural							
Pasture	3.47	0.616	5.1	94.3	--	--	--
Citrus	2.24	0.183	2.55	15.5	0.003	0.001	0.012
Row Crops	2.65	0.593	--	19.8	0.022	0.004	0.030
General Agriculture[2]	2.79	0.431	3.8	43.2	0.013	0.003	0.021
Undeveloped / Rangeland / Forest	1.15	0.055	1.4	8.4	--	--	--
Mining / Extractive	1.18	0.15	7.6[3]	60.0[3]	0.003[3]	0.002[3]	0.057[3]

1. Average of single-family and undeveloped loading rates
2. Mean of pasture, citrus, and row crop land uses
3. Runoff concentrations assumed equal to industrial values for these parameters
4. Value assumed to be equal to 50% of single-family concentration

APPENDIX 2. MONITORING TO DETERMINE TREATMENT EFFECTIVENESS

If this project is approved for funding, the applicant will be required to monitor the effectiveness of the stormwater BMP. BMP effectiveness data is required to demonstrate the environmental benefits of a project. The general monitoring requirements are set forth below. Please note that the final scope of work in the contract may include more specifics on particular monitoring requirements.

Within six months before the completion of the project, the applicant will submit a detailed monitoring plan to the department for review and comment. The monitoring plan will specify the sampling locations, sampling instruments, and parameters to be sampled. The monitoring will include sampling of from seven to ten (10) storm events as described below. If possible, monitored events will be discrete rainfall events generally consisting of greater than 0.20 inches and less than 1.5 inches or rain. However, we want to monitor the real world to determine true efficiency. Therefore, remember this is a GENERAL guideline with respect to the storm event. Actual rainfall may vary depending on the type of BMP, the contributing drainage area, the amount of impervious area, and the time of concentration.

Monitoring will be conducted at two locations: inflows and outflows.

Monitoring will include the following parameters:

- Daily rainfall (to nearest 0.01 inch) measured at the sampling location with verification from the local weather station. Rainfall data should be provided for at least the week proceeding monitoring and day(s) of monitoring.

- Flow using approved flow activated flow meters

    - Parameters as specified below

Parameter	Detection Limit	Method
Total Cadmium	1 ug/l	Composite*
Total Chromium	5 ug/l	Composite*
Total Copper	5 ug/l	Composite*
Total Zinc	10 ug/l	Composite*
NO2+NO3	0.1 mg/l	Composite*
TKN	0.3 mg/l	Composite*
Total Ammonia	0.05 mg/l	Composite*
Or Total N		Composite*
Total Phosphorus	0.05 mg/l	Composite*
Ortho Phosphate	0.05 mg/l	Composite*
TSS	1 mg/l	Composite*
Oil/Grease	1 mg/l	Composite*
Fecal coliform	N/A	Grab** if possible

*Flow weighted composite samples will be taken over the storm hydrograph. Typically, the samples will be composited over the inflow hydrograph at the inflow and for up to a 36 hour period at outflow station, depending upon the time of concentration and flow into and out of the BMP. Each composite will include at least six evenly distributed sub-samples.

**Grab samples to be collected within the drainage area time of concentration at influent and effluent stations described above.

The applicant should estimate the pollutant removal efficiency of the stormwater BMP by calculating the percent reduction in the event mean concentration (EMC) for the period of record [1-(Average Inflow EMC/Average Outflow EMC)]. For BMPs with multiple inflow (and/or outflow) points, the pollutant contributions for each inflow should be flow weighted. See the National Stormwater Best Management Practice database at http://www.bmpdatabase.org/ and Development of Performance Measures, Determining Urban Stormwater Best Management Practice Removal Efficiencies, 1999 by URS Greiner Woodward Clyde, ASCE and EPA at http://www.bmpdatabase.org/task3_1.pdf

From ASCE Data base

3.1 Efficiency Ratio

Definition

The efficiency ratio is defined in terms of the average event mean concentration (EMC) of pollutants over some time period:

$$ER = 1 - \frac{\text{Average outlet EMC}}{\text{Average inlet EMC}} = \frac{\text{average inlet EMC} - \text{average outlet EMC}}{\text{average inlet EMC}}$$

EMCs can be either collected as flow weighted composite samples in the field or calculated from discrete measurements. The EMC for an individual event or set of field measurements, where discrete samples have been collected, is defined as:

$$EMC = \sum ViCi / \sum Vi$$

where,

V: volume of flow during period i
C: average concentration associated with period i
n: total number of measurements taken during event

The arithmetic average EMC is defined as,

$$averageEMC = \sum EMCj / m$$

where,

m: number of events measured

In addition, the log mean EMC can be calculated using the logarithmic transformation of each EMC. This transformation allows for normalization of the data for statistical purposes.

Mean of the Log EMCs = $\sum Log(EMCj) / m$

Estimates of the arithmetic summary statistics of the population (mean, median, standard deviation, and coefficient of variation) should be based on their theoretical relationships (Appendix A) with the mean and standard deviation of the transformed data. Computing the mean and standard deviation of log transforms of the sample EMC data and then converting them to an arithmetic estimate often obtains a better estimate of the mean of the population due to the more typical distributional characteristics of water quality data. This value will not match that produced by the simple arithmetic
average of the data. Both provide an estimate of the population mean, but the approach utilizing the log-transformed data tends to provide a better estimator, as it has been shown in various investigations that pollutant, contaminant and constituent concentration levels have a log-normal distribution (NURP, 1983). As the sample size increases, the two values converge.

Assumptions
This method

- Weights EMCs from all storms equally regardless of relative magnitude of storm. For example a high concentration/high volume event has equal weight in the average EMC as a low concentration/low volume event. The logarithmic approach tends to minimize the difference between the EMC and mass balance calculations.
- Is most useful when loads are directly proportional to storm volume. For work conducted on nonpoint pollution (i.e., inflows), the EMC has been shown to not vary significantly with storm volume. This lends credence to using the average EMC value for the inflow but does not provide sufficient evidence that outflows are well represented by average EMC. Accuracy of this method will vary based on the BMP type.
- Minimizes the impacts of smaller/cleaner storm events on actual performance calculations. For example, in a storm by storm efficiency approach, a low removal value for such an event is weighted equally to a larger value.
- Allows for the use of data where portions of the inflow or outflow data are missing, based on the assumption that the inclusion of the missing data points would not significantly impact the calculated average EMC.

Comments
This method

- Is taken directly from nonpoint pollution studies and does a good job characterizing inflows to BMPs but fails to take into account some of the complexities of BMP design. For example, some BMPs may not have outflow EMCs that are normally distributed (e.g., a media filter that treats to a relatively constant level that is independent on inflow concentrations).
- Assumes that if all storms at the site had been monitored, the average inlet and outlet EMCs would be similar to those that were monitored.

ATTACHMENT 3 - GRANT APPLICATION INSTRUCTIONS

The DEP Bureau of Watershed Restoration administers state funds allocated to the TMDL program for the reduction of urban nonpoint source pollutant loadings to impaired waters. These grant funds are used to implement projects (Best Management Practices or BMPs) to reduce urban stormwater pollutant loadings from existing drainage systems without treatment and from lands developed before the implementation of the state's stormwater treatment rules. Nonpoint source pollution is the biggest cause of water pollution in Florida today, and reducing stormwater pollutant loadings is critical to meeting Total Maximum Daily Loads (TMDLs) established for impaired waters.

1. Project Name: Provide the name of the project. For example, Lake Greenwood Urban Wetland Stormwater Retrofit

2. Project Funding: Provide the total project costs, the matching funds, and the amount of TMDL grant funding requested. Provide the % for matching funds and TMDL grant funds.

3. Lead Organization: This is the entity that is applying for the grant funds and with which DEP will enter into a contract for the project. Also, provide the date on which the Lead Organization's Fiscal Year ends (i.e., December 31, September 30, June 30) and the Lead Organization's Federal Employment Identification Number (FEID)

4. Contact Person: Provide the name and contact information for the person from the Lead Organization that will serve as the project/contract manager.

5. Cooperating Organizations: Provide the name and contact person for any entities that are providing matching funds or in-kind services on the project.

6. Project Abstract: Provide an abstract of the project that includes the name of the water body to which the stormwater BMP discharges, the status of the impaired water body (i.e., BMAP adopted, TMDL adopted, verified list), the number of acres in the drainage area to be treated, the BMPs to be implemented, and the anticipated load reductions.

7. Project Location and Watershed Characteristics: Provide the requested information for the drainage area that will contribute stormwater to the retrofit project.

8. TMDL Status of Water Body: Provide the requested information. Status of impaired water body means one of the following, as applicable: TMDL Adopted, on Adopted Verified List of Impaired Waters, on Planning List of Impaired Waters, on 1999 Consent Decree list. Status of Basin Management Action Plan (BMAP) means one of the following, as applicable: BMAP Adopted, BMAP in development, no BMAP

9. Pollution Reduction Strategy: Summarize the actions, both structural and nonstructural, that will be undertaken as part of the project to reduce stormwater pollutant loadings to impaired waters. Please state if the project is specifically listed in a

Surface Water Improvement and Management (SWIM Plan), National Estuary Program Comprehensive Conservation and Management Plan (CCMP), BMAP, or other watershed or stormwater master plan.

10. Project Objectives: Provide the objectives of the project. For example, the objective of this project is to reduce stormwater pollutant loads to Dirty Lake, an impaired water body with an adopted TMDL, and to educate the public about effective stormwater treatment.

11. Project Description: Provide a brief, but complete, description of each task to be undertaken as part of the project. For each task, include the specific deliverables that will result from the task, and the start date and end date for the task. Some tasks may actually occur before the grant application is submitted such as land acquisition, project design, permitting, etc.

12. Estimated Pollutant Load Reduction: Using the models listed and the Event Mean Concentrations listed in Attachment 1, provide stormwater pollutant load estimates for the existing condition, the condition after the BMP is installed, and the resulting load reductions.

13. Project Milestones: List your tasks from Number 11 and their start and end dates.

14. Project Budget by Category: Provide your budget, for both grant funds and matching funds, by the categories listed. You may add additional categories, as needed.

15. Dedicated Stormwater Funding Information: If matching funds are being provided by a dedicated stormwater funding source, such as a stormwater utility fee, MSBU, MSTU, or infrastructure sales tax, please provide the requested information.

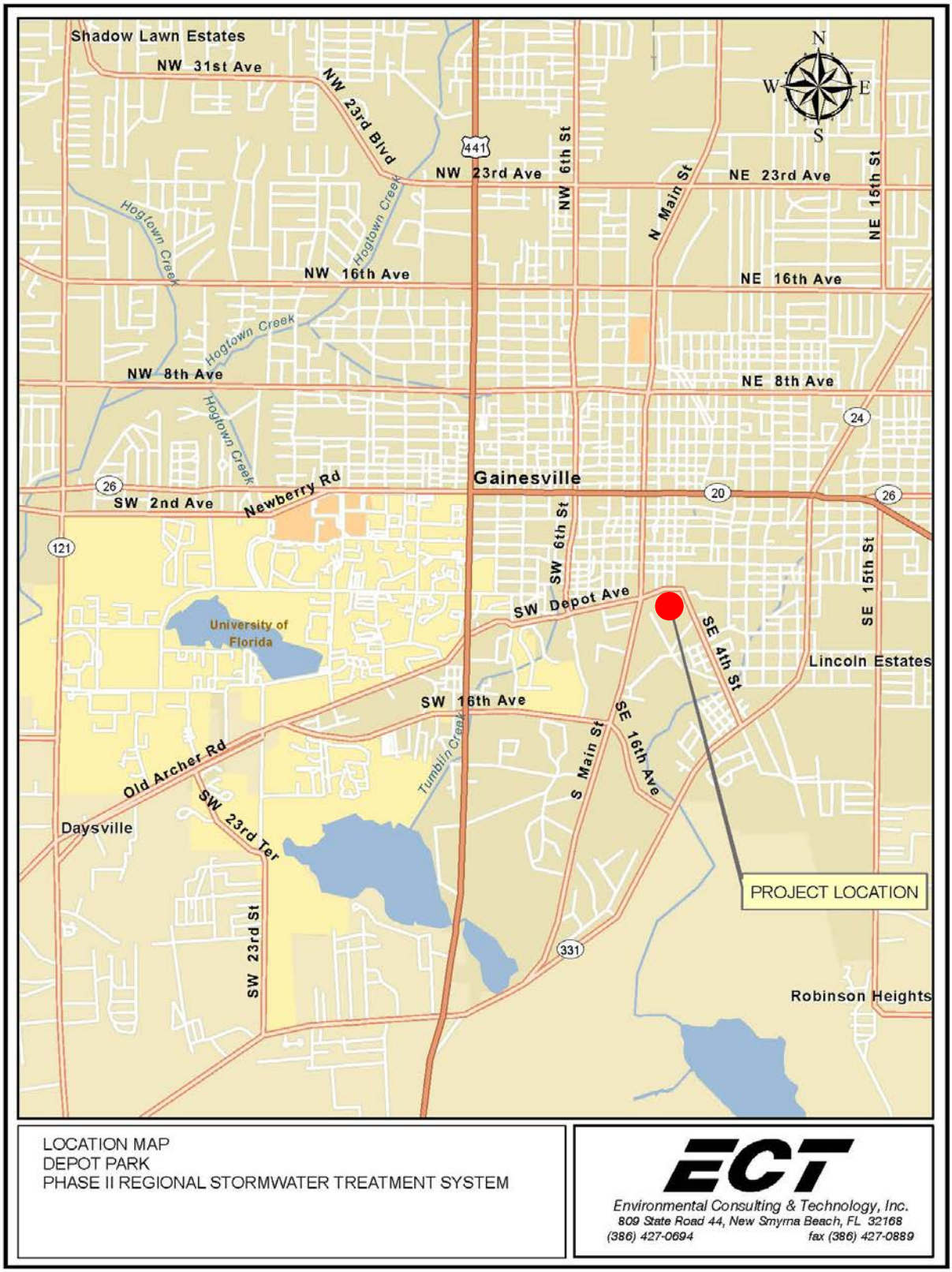
16. Budget by Task: Provide your budget, for both grant funds and matching funds, by task. Tasks should correspond to those listed in Items 11 and 13.

17. Other Funding: List other funding sources that do not serve as matching funds.

18. References Cited: Please list any references cited in your project description

Appendix 4 – Project Location Map
Appendix 5 – Depot Park Site Plan
Appendix 6 – Depot Park Watershed Location
Appendix 7 – Depot Park Treatment Train
Appendix 8 – Permitted Pollutant Removal
Appendix 9 - Depot Drainage Area

Appendix 4



LOCATION MAP
DEPOT PARK
PHASE II REGIONAL STORMWATER TREATMENT SYSTEM

ECT
Environmental Consulting & Technology, Inc.
809 State Road 44, New Smyrna Beach, FL 32168
(386) 427-0694 fax (386) 427-0889

1"=100' @ 24"X36"

0 50 100

DEPOT AVENUE

SOUTH MAIN STREET - STATE HIGHWAY 329

SE 4TH STREET

SE 3RD. STREET

(E)DEPOT BUILDING

(P)12' ACCESS DRIVE

(E)48" RCP

(P)PUMP STATION
SEE SHEETS P1-P7

(E)54" RCP

(E)SECOND GENERATION
BAFFLE BOX

(E)DRAINAGE PIPE
FROM S MAIN ST

(P)60" RCP INFLOW PIPE

(P)DRAINAGE PIPE.
SEE SHEET C5

(P)CONCRETE SIDEWALK

(E)54" RCP

(P)12'X20 SUNTREE
SECOND GENERATION
BAFFLE BOX

(P)RETAINING WALL
SEE STRUCTURAL DWGS.

(P)FOREBAY WALL
SEE STRUCTURAL DWGS.

(P)60" PIPE PENETRATION

(P)54" PIPE PENETRATION

(P)FOUNTAIN

(P)PHASE II
REGIONAL STORMWATER
TREATMENT POND

(P)FOREBAY WALL
SEE STRUCTURAL DWGS.

LIMITS OF CONSTRUCTION

(P)POROUS ASPHALT TRAIL

(P)IRRIGATION PUMP
SEE SHEET C10

(P)RECIRCULATION PUMP
FROM PHASE I POND TO
PHASE II POND FOUNTAIN

(P) AERATION SYSTEM
COMPRESSOR CABINET

(P)WETLAND HYDRATION
PIPING (SEE SHEET C6)

(P) AERATION
SYSTEM (TYP)

(E) ASPHALT TRAIL

(E)WETLAND

Phase II Pond - To be Constructed

(P)PHASE II POND CONTROL
STRUCTURE (SEE SHEET C12)

(P) HDPE LINED BRAIDED STREAM
SEE SHEET C6

(P)RIP RAP

(E) PHASE I REGIONAL
STORMWATER
TREATMENT POND

(E)WETLAND

(P)WETLAND CREATION
SEE SHEET C8

(P)CONNECTION TO (E)PHASE I POND

(P)CONNECTION TO (E)ASPHALT TRAIL

(E)5000 SF ISOLATED WETLAND TO BE
REMOVED DURING ARSENIC REMEDIATION.
SHOWN HERE FOR PERMITTING
PURPOSES ONLY.

(E) RTS POND

Phase I Pond - Constructed

(E)PHASE I
POND OVERFLOW

SE 10TH AVE

S.E. 10TH AVENUE

S.E. 10TH STREET

S.E. 10TH PLACE

SE 10TH AVENUE

ABANDONED SEWER

VETLAND 7
5,460 sq. Ft.
0.13 acres

FORESTED WETLAND CREATION

MARSH WETLAND CREATION

WETLAND PRESERVATION &
ENHANCEMENT

UPLAND CREATION

NO.	REVISION	APPROVED	DATE

DSG. CRF
DWN. AJC
CHK. SGD
APPV. CRF

ECT
Environmental Consulting & Technology, Inc.
3701 NW 98TH STREET GAINESVILLE, FL. 32606
(352)332-0444 fax (352)332-6722

DEPOT PARK PHASE II REGIONAL STORMWATER TREATMENT SYSTEM

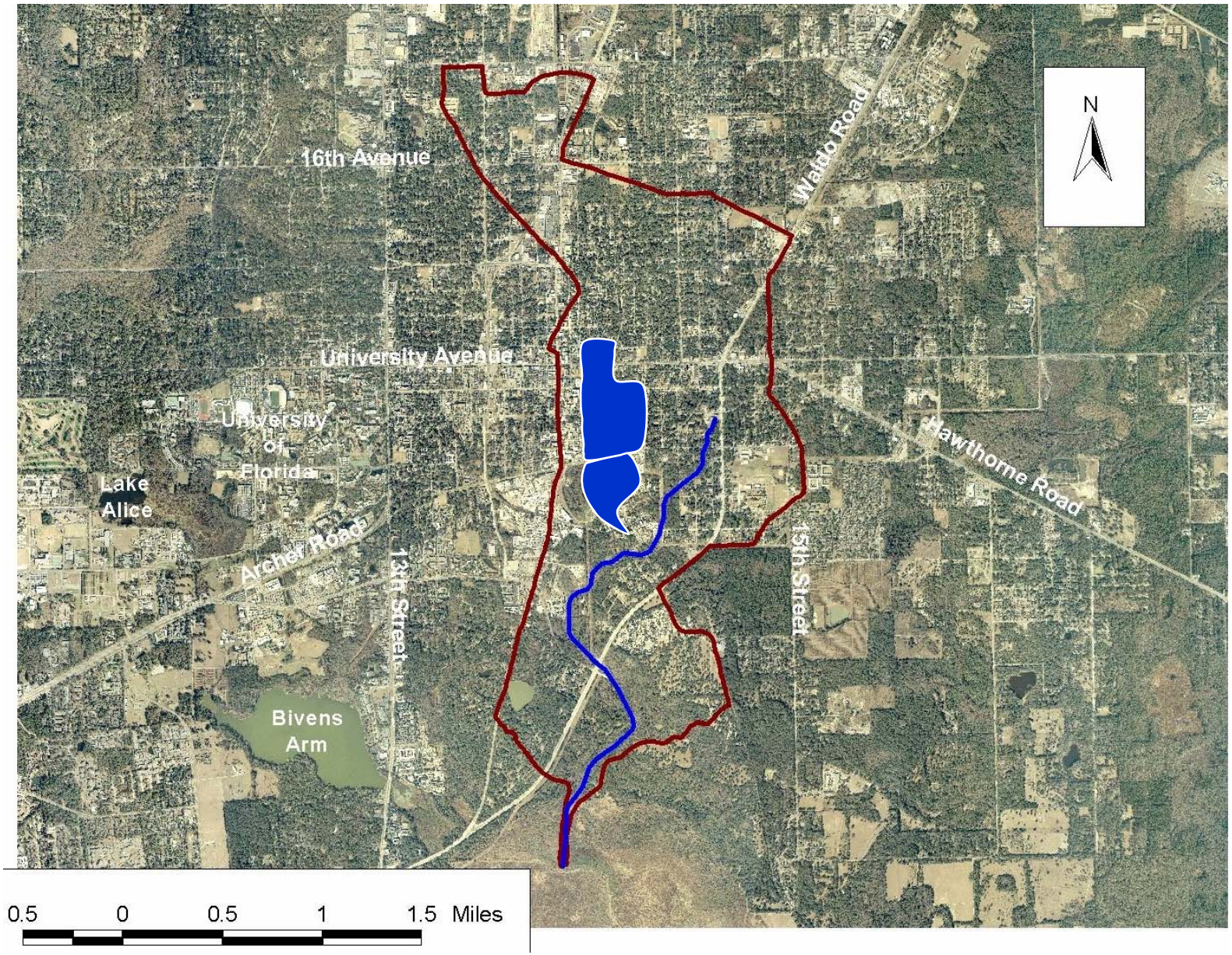
OVERALL PLAN

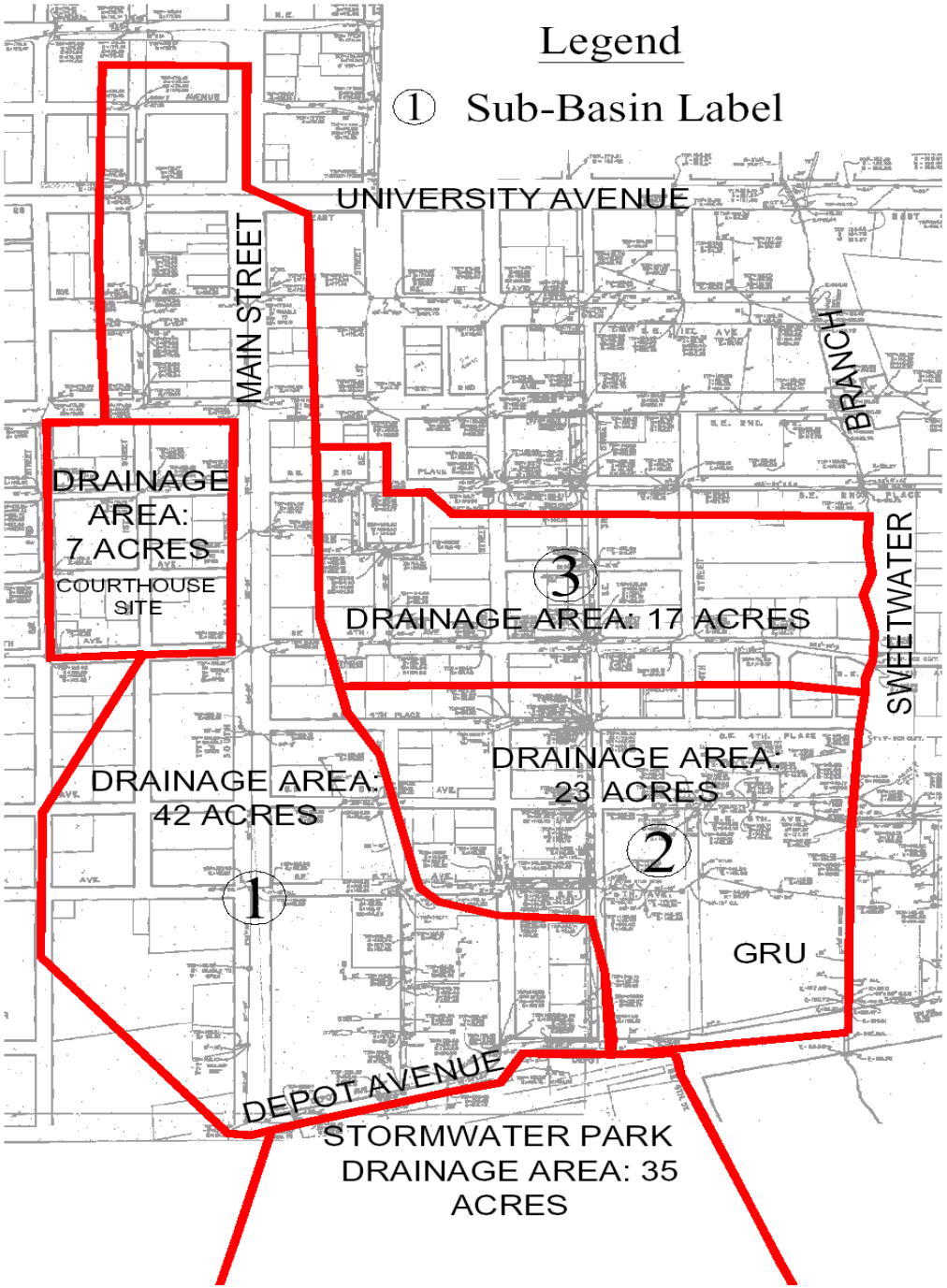
Chris Fagerstrom, P.E. No. 63045

NOT FOR CONSTRUCTION

SCALE: 1"=100@24"x36"
PROJECT: 11-0120
JANUARY 2012
C4

Sweetwater Branch Drainage Basin





Drainage Map

Basin #1 42ac

Basin #2 23ac

Basin #3 17ac

Courthouse 7ac

Bus Depot 10ac

Park Site 35ac

Treatment

134 acres of downtown

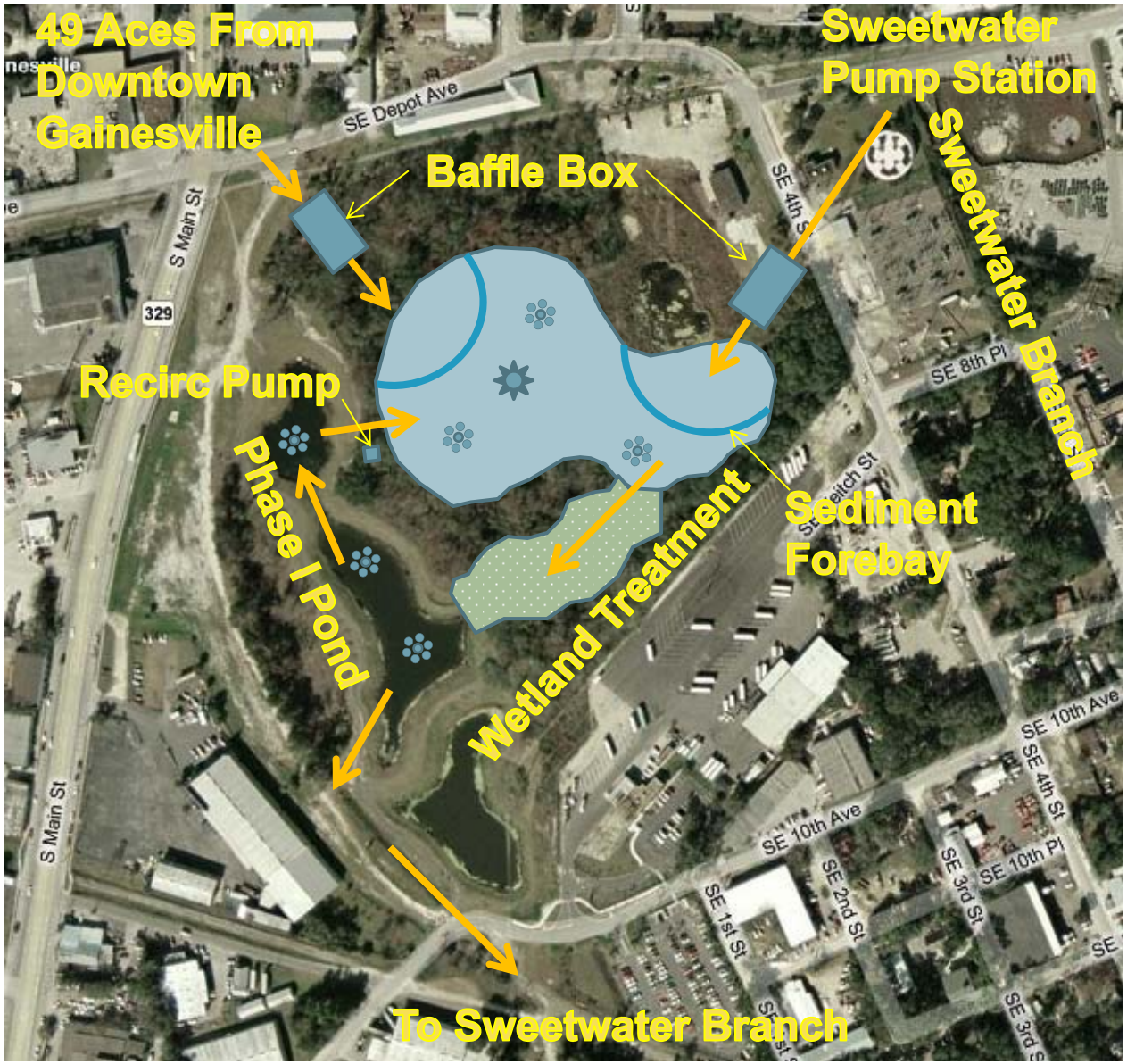
9% of Sweetwater Branch watershed

Park Concept

Cade Museum

Park concept (cont.)

Treatment Train Schematic



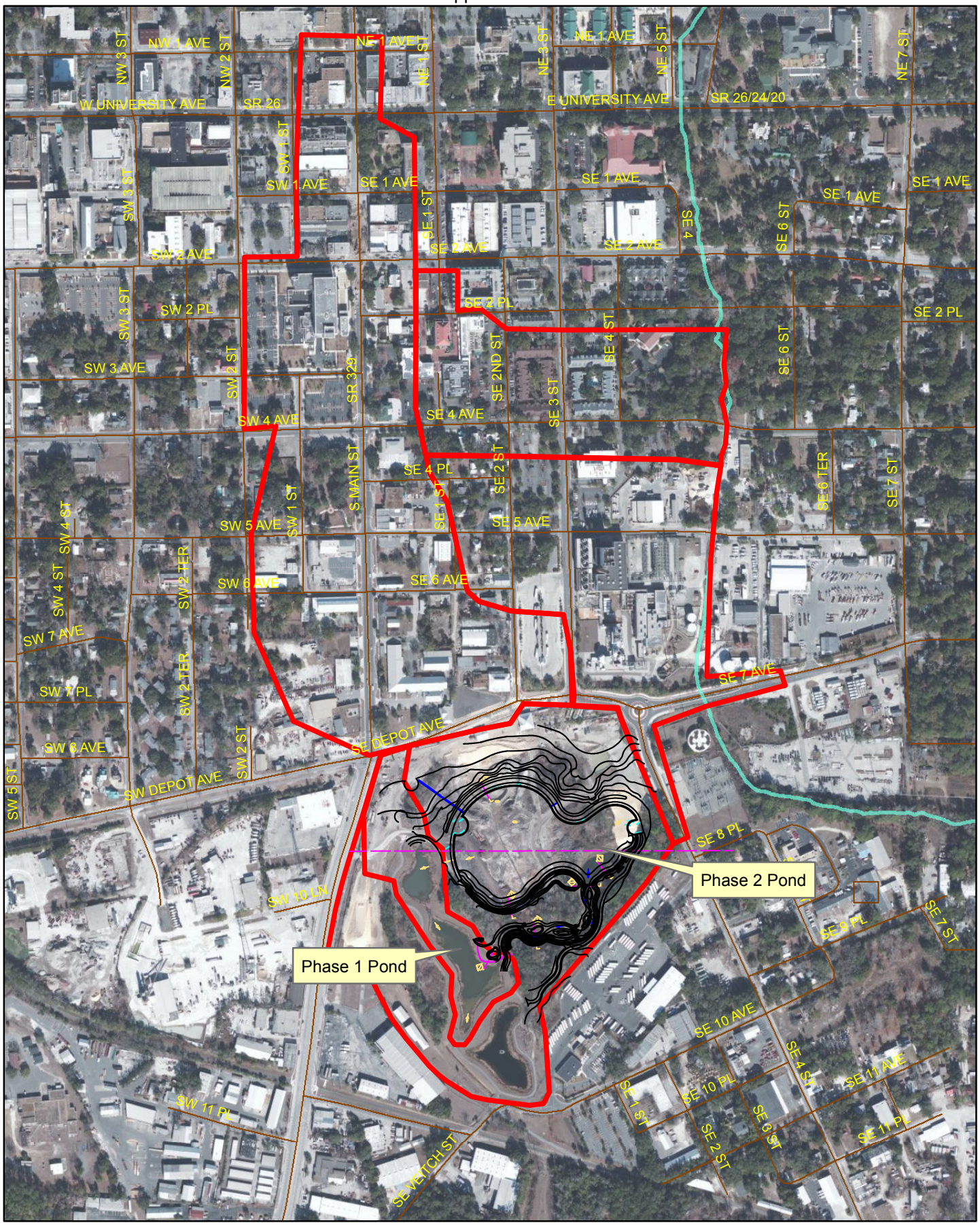
Stormwater Pollutant Loads for Depot Park Phase II

1	2	3	4	5	6	7	8	9	10
Constituent	Mean Runoff Concentration (mg/l)	Annual Runoff (liters/year)	Pollutant Load (kg/year)	Removal by BMP (%)	% Treated (%)	Lbs Removed lbs./yr.	Banked Credits lbs./yr.	Utilized Credits lbs/yr.	Remaining Credits lbs/yr.
Nitrogen	2.4	488,778,049	1,173.07	50	100	1,293.09	1,293.09	0.00	1,293.09
Phosphorus	0.345	488,778,049	168.63	65	100	241.65	241.65	0.00	241.65
SS	69.7	488,778,049	34,067.83	85	100	63,840.70	63,840.70	0.00	63,840.70
BOD	11.3	488,778,049	5,523.19	80	100	9,741.24	9,741.24	0.00	9,741.24
Zn	0.16	488,778,049	78.20	80	100	137.93	137.93	0.00	137.93
Lead	0.005	488,778,049	2.44	55	100	2.96	2.96	0.00	2.96

Column Notes:

1. Selection of constituents based on representative pollutants typical monitored in Stormwater.
2. Loading Rates were taken from Harper "Stormwater Loading Rate Parameters for Central and South Florida, Revised October 1994 for Medium Intensity Commercial."
3. Annual runoff is calcualted for the Drainage area using 117.7 acres, Runoff coefficient of .8 and annual rainfall of 50.5 inches.
4. Pollutant load is calculated for the entire DA in kg/year.
5. Removal rates taken from various published sources.
6. Represents the percentage of the actual watershed that can be treated effectively.
7. Represents actual pounds of pollutants removed by the Wet Detention System.
8. Represents the banked pollutatnt credits.
9. Represents Utilized Credits- See list of City approved projects below.
10. Represents the remaining credits with the Utilized Pollutants accounted.

Appendix 9



1 inch = 506 feet

0 155 310 620 930 1,240 Feet

Drainage Area

N