

APPLICATION

1719

Fee Receipt

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
P. O. Box 1429
Palatka, FL 32178-1429

Date: Apr. 10, 2000
By: Lisette M Bonilla

RECEIPT #: 8330
RECEIVED FROM: Edgewood Oaks, Inc.
THE SUM OF: \$350.00
FOR: Application Fee

FEE DETAIL INFORMATION

F/A Receipt O-020055-1 \$350.00

Grady Nations

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT		<i>(8330)</i>
P.O. Box 1429 Palatka, Florida 32178-1429		<i>OR-020055-1</i>
		DATE <i>4-10-2000</i>
RECEIVED FROM	<i>Edgewood Oaks, Inc</i>	
THE SUM OF	<i>Lost Lake Pines Subdivision</i>	DOLLARS \$ <i>350.-</i>
FOR	<i>42-069-64873-1</i>	
AMOUNT OF ACCOUNT	\$ _____	<i>CK # 1128</i>
AMOUNT PAID	\$ _____	<i>Thank You!</i>
BALANCE DUE	\$ _____	
<input type="checkbox"/> CASH	<input checked="" type="checkbox"/> CHECK	<input type="checkbox"/> M.O. <input type="checkbox"/> CREDIT CARD
		BY <i>Lisette Bonilla</i>

Permit Data Services Assignment Sheet

02-May-00

Application Number: 42-069-64873-1

Project Name: Lost Lake Pines Subdivision

Date Received: 4/10/2000

Comments:

Application Complete: Yes

If Application is incomplete please check appropriate Box!

Authorization from Owner for Applicant:

Signatures:

Signature by Agent:

Copies of Application:

Location Map:

Fee:

Comments:

RUTH GRADY	ENGINEER	ORL
VICTORIA NATIONS	ENVIRONMENTAL SPECIALIST	ORL

Data Capture Person: Lisette Bonilla

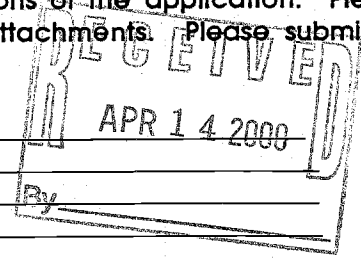
Date Routed: _____

*material previously
distributed... kindly
add to file*

SECTION C
ENVIRONMENTAL RESOURCE PERMIT NOTICE OF RECEIPT OF APPLICATION

This information is required in addition to that required in other sections of the application. Please submit five copies of this notice of receipt of application and all attachments. Please submit all information on 8 1/2" x 11" paper.

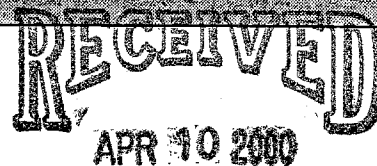
Project Name: Lost Lake Pines Subdivision County: Lake
Owner: Herb Smith Construction Co. Inc.
Applicant: Herb Smith
Applicant's Address: P.O. Box 120989
Clermont, FL 34712



1. Indicate the project boundaries on a USGS quadrangle map reduced or enlarged as necessary to legibly show the entire project. If not apparent from the quad map, attach a location map showing a north arrow and a graphic scale; Section(s), Township(s), and Range(s); and sufficient detail to allow a person unfamiliar with the site to find it.
2. Provide the names of all wetlands, or other surface waters that would be dredged, filled, impounded, diverted, drained, or would receive discharge (either directly or indirectly), or would otherwise be impacted by the proposed activity, and specify if they are in an Outstanding Florida Water or Aquatic Preserve:
There are no wetlands on site
3. Attach a depiction (plan and section views), which clearly shows the works or other facilities proposed to be constructed. Use a scale sufficient to show the location and type of works. Use multiple sheets, if necessary.
4. Briefly describe the proposed project (such as "construct a deck with boatshelter", "replace two existing culverts", "construct surface water management system to serve 150 acre residential development"):
Construct surface water management system to serve 40 Lot
subdivision
5. Specify the acreage of wetlands or other surface waters, if any, that are proposed to be disturbed, filled, excavated, or otherwise impacted by the proposed activity:
There are no wetlands on site
6. Provide a brief statement describing any proposed mitigation for impacts to wetlands and other surface waters (attach additional sheets if necessary):
na

FOR AGENCY USE ONLY

Application Name: _____
Application Number: 42-069-64873-1
Office where the application can be inspected: ORLANDO
Date to be posted: 4-17-2000
Date to be removed: 5-1-2000

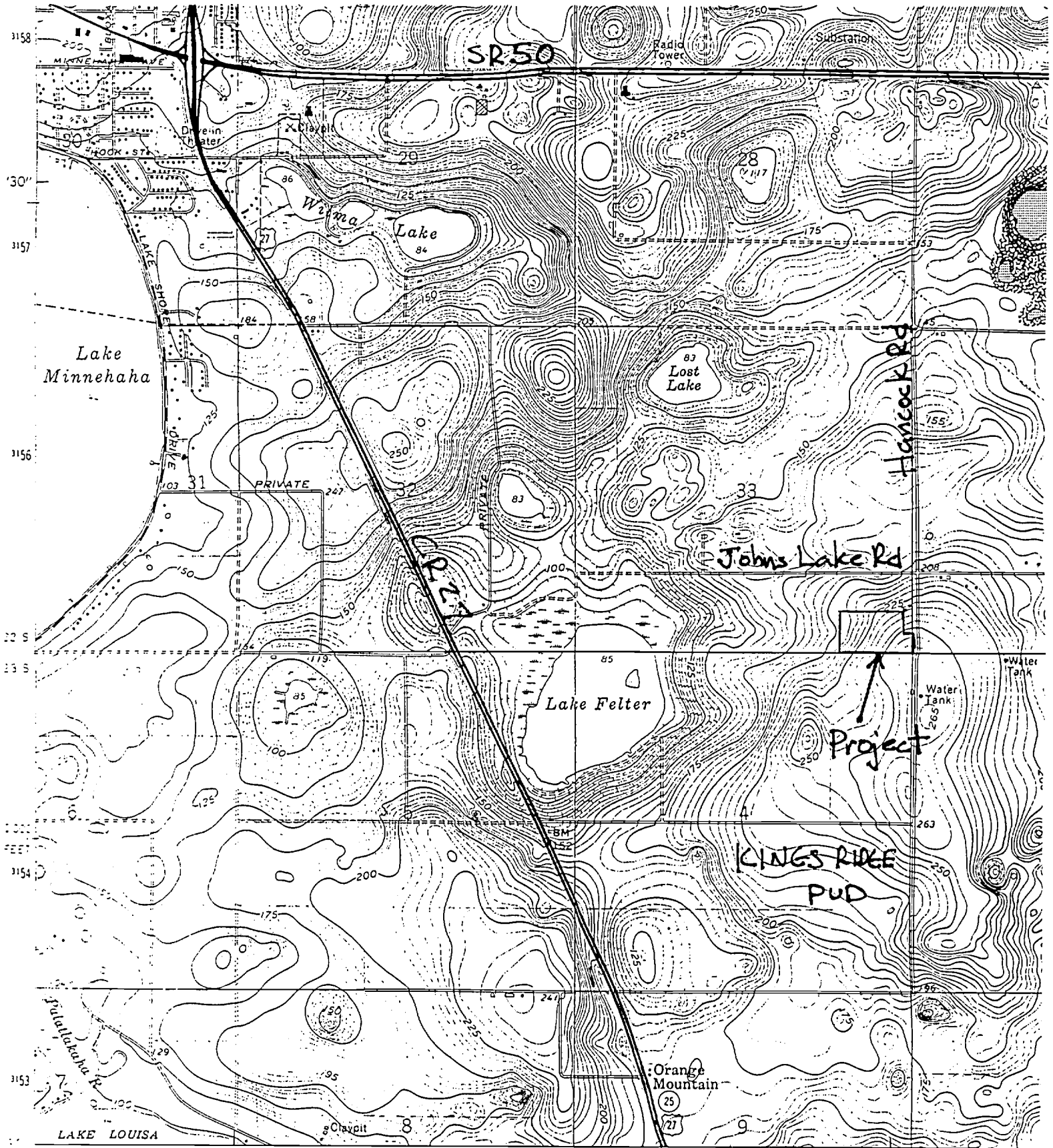


PDS
ORLANDO
SJR-WMD

Lost Lake Pines Subdivision

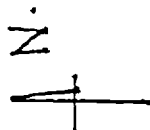
Site Location Map Scale 1"=2000'

USGS Quad Clermont East



Site Depiction Plan

Scale 1" = 100'



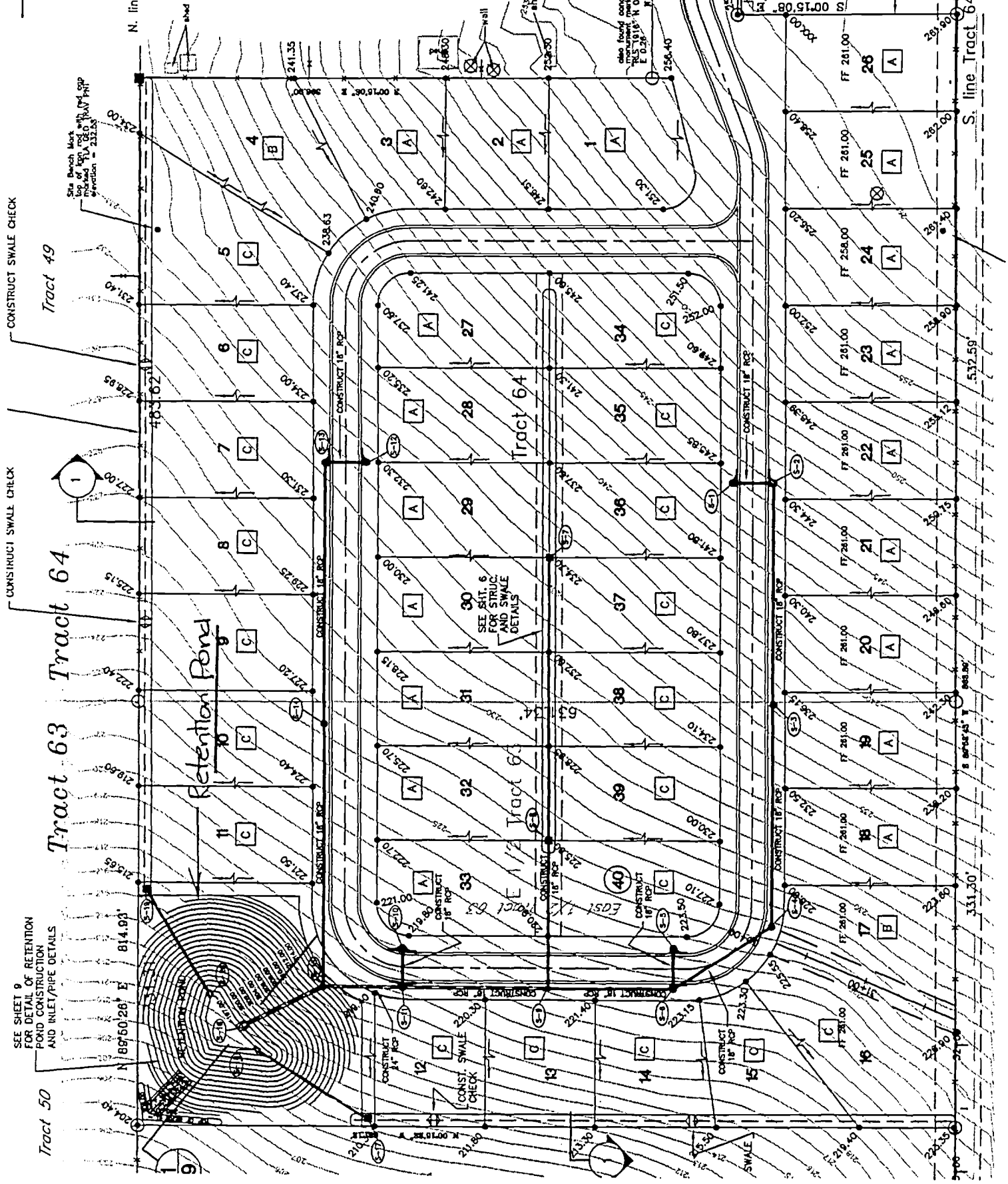
Hancock Rd.

F. line Tract 64

N. line Tract 64

Road

S. line Tract 64



CONSTRUCT SWALE CHECK

Tract 49

CONSTRUCT SWALE CHECK

Tract 63 Tract 64

Retention Pond

Tract 64

SEE SHEET 9 FOR DETAIL OF RETENTION POND CONSTRUCTION AND INLET/PIPE DETAILS

Tract 50

CONSTRUCT 18" RCP

CONSTRUCT 18" RCP

CONSTRUCT 18" RCP

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FOR AGENCY USE ONLY

ACOE Application # _____ SJR Application # 48-019-64873-1
 Date Application Received _____ Date Application Received 4-10-2000
 Proposed Project Lat. _____ Fee Received \$ 350.-
 Proposed Project Long. _____ Fee Receipt # 0-020055-1 / 8330
 Date Received _____ Project Use Codes _____
 Assigned Reviewers GRAS Reviewer# 's _____
NATIONS

SECTION A

Are any of the activities described in this application proposed to occur in, on, or over wetlands or other surface waters?
 _____ yes _____ no

A. Type of Environmental Resource Permit Requested (check at least one)

- _____ Noticed General - include information requested in Section B.
- _____ Standard General (Single Family Dwelling) - include information requested in Sections C and D.
- _____ Standard General (all other projects) - include information requested in Sections C and E
- _____ Individual (Single Family Dwelling) - include information requested in Sections C and D.
- _____ Individual (all other projects) - include information requested in Sections C and E.
- _____ Conceptual - include information requested in Sections C and E.
- _____ Mitigation Bank Permit (construction) - include information requested in Sections C and F.
 (If the proposed mitigation bank involves the construction of a surface water management system requiring another permit defined above, check the appropriate box and submit the information requested by the applicable section.)
- _____ Mitigation Bank (conceptual) - include information requested in Sections C and F.
- Standard General Stormwater - include information requested in Sections C and H
- _____ Individual Stormwater - include information requested in Sections C and H

B. Type of activity for which you are applying (check at least one)

- Construction and operation of a new system including dredging or filling in, on or over wetlands and other surface waters.
- _____ Alteration and operation of an existing system which was not previously permitted by a WMD or DEP.
- _____ Modification of a system previously permitted by a WMD or DEP. Provide previous permit numbers:

 _____ Alteration and operation of a system _____ Extension of permit duration
 _____ Abandonment of a system _____ Construction and operation of additional phases of a system
 _____ Removal of a system

C. Are you requesting authorization to use State Owned Submerged Lands? _____ yes no
 (If yes, include the information requested in Section G.)

D. For activities in, on or over wetlands or other surface waters, check type of federal dredge and fill permit requested:
 _____ Individual _____ Programmatic General
 _____ General _____ Nationwide

E. Are you claiming to qualify for an exemption? _____ yes _____ no
 If yes provide rule number if known _____

RECEIVED
 APR 10 2000

PDS
 ORLANDO
 SJR WMD

OWNER(S) OF LAND	ENTITY TO RECEIVE PERMIT (IF OTHER THAN OWNER)
NAME Herb Smith Construction Co. Inc.	NAME na
ADDRESS P.O. Box 120989	ADDRESS na
CITY, STATE, ZIP Clermont, FL 34712	CITY, STATE, ZIP na
COMPANY AND TITLE Herb Smith Construction Co. Inc.	COMPANY AND TITLE na
TELEPHONE (352) 394-6639 FAX (352) 394-6639	TELEPHONE () FAX ()
AGENT AUTHORIZED TO SECURE PERMIT (IF AN AGENT IS USED)	CONSULTANT (IF DIFFERENT FROM AGENT)
NAME na	NAME Arthur C. Nix, P.E.
COMPANY AND TITLE na	COMPANY AND TITLE Montverde Engineering Inc./President
ADDRESS na	ADDRESS P.O. Box 560116
CITY, STATE, ZIP na	CITY, STATE, ZIP Montverde, FL 34756
TELEPHONE () FAX ()	TELEPHONE (407) 469-4829 FAX (407) 469-2129
<p>Name of project, including phase if applicable <u>Lost Lake Pines Subdivision</u></p> <p>Is this application for part of a multi-phase project? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no</p> <p>Total applicant-owned area contiguous to the project <u>0.0</u> ac</p> <p>Total project area for which a permit is sought <u>12.73</u> ac</p> <p>Impervious area for which a permit is sought <u>4.32</u> ac</p> <p>What is the total area (metric equivalent for federally funded projects) of work in, on, or over wetlands or other surface waters? <u>na</u> acres <u>na</u> square feet <u>na</u> hectares <u>na</u> square meters</p> <p>If a docking facility, the number of proposed new slips _____.</p> <p>Project location (use additional sheets, if needed)</p> <p>County(ies) <u>Lake</u></p> <p>Section(s) <u>24</u> Township(s) <u>23</u> Range(s) <u>25</u></p> <p>Section(s) _____ Township(s) _____ Range(s) _____</p> <p>Land Grant name, if applicable _____</p> <p>Tax Parcel Identification Number <u>24-23-25-080006400000</u></p> <p>Street address, road, or other location <u>Hancock Road</u></p> <p>City, Zip Code if applicable <u>Clermont 34712</u></p>	

Describe, in general terms, the proposed project, system or activity.

Construction of a 40 lot single family residential subdivision

If there have been any pre-application meetings, including at the project site, with regulatory staff, please list the date(s), location(s), and names of key staff and project representatives.

Please identify by number any MSSW/Wetland Resource/ERP/ACOE permits pending, issued or denied for projects at the location and any related enforcement actions.

Agency	Date	No. \ Type of Application	Action Taken (Pending/Issued/Denied)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Note: The following information is required for projects proposed to occur in, on or over wetlands or other surface waters that need a federal dredge and fill permit and/or authorization to use state owned submerged lands. Please provide the names, addresses and zip codes of property owners whose property directly adjoins the project (excluding applicant). Please attach a plan view showing the owner's names and adjoining property lines. Attach additional sheets if necessary.

- | | |
|----------------------------|----------------------------|
| 1. _____

_____ | 2. _____

_____ |
| 3. _____

_____ | 4. _____

_____ |

By signing and submitting this application form, I am applying, or I am applying on behalf of the applicant, for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application, and represent that such information is true complete and accurate. I understand this is an application and not a permit, and work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto, does not relieve me of any obligation for obtaining any other required federal, state, water management district or local permit prior to commencement of construction. I agree, or I agree on behalf of my corporation, to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a responsible operation entity. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S., and 18 U.S.C. Section 1001.

Herb Smith/Herb Smith Construction Co. Inc.

Typed/Printed Name of Applicant (If no Agent is used) or Agent (If one is so authorized below)

Herb Smith

Signature of Applicant/Agent

Date

President

(Corporate Title if applicable)

AN AGENT MAY SIGN ABOVE ONLY IF THE APPLICANT COMPLETES THE FOLLOWING:

I hereby designate and authorize the agent listed above to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I designate and authorize the above-listed agent to bind me, or my corporation, to perform any requirement which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S., and 18 U.S.C. Section 1001.

na

Typed/Printed Name of Applicant

Signature of Applicant

Date

(Corporate Title if applicable)

Please note: The applicant's original signature (not a copy) is required above.

PERSON AUTHORIZING ACCESS TO THE PROPERTY MUST COMPLETE THE FOLLOWING:

I either own the property described in this application or I have legal authority to allow access to the property, and I consent, after receiving prior notification, to any site visit on the property by agents or personnel from the Department of Environmental Protection, the Water Management District and the U.S. Army Corps of Engineers necessary for the review and inspection of the proposed project specified in this application. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review and inspection. Further, I agree to provide entry to the project site for such agents or personnel to monitor permitted work if a permit is granted.

Herb Smith

Herb Smith

Typed/Printed Name

Signature

Date

President-Herb Smith Construction Co. Inc.

(Corporate Title if applicable)

Letter of Transmittal

Montverde Engineering Inc.
P.O. Box 560116
Montverde, FL 34756-0116
(407) 469-4829

To: SJRWMD
618 E. South Street
Orlando, FL 32801

April 7, 2000

PROJECT: Lost Lake Pines Subdivision

WE ARE SENDING YOU THE FOLLOWING ITEMS:

- XX Drawings
- XX Calculations
- XX Other

Item Number	Copies	Description
1.	5	Construction Plans
2.	5	Application
3.	5	Notice of Application
4.	5	Proof of Ownership
5.	5	Aerials
6.	5	Stormwater Calculations
7.	1	Application Fee (\$350)

Remarks:

These are transmitted for: **For Approval**

Transmitted by : Arthur C. Nix, P.E.

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APR 10 2000
42-069-64873-1
PDS
ORLANDO
SJR WMD

EDGEWOOD OAKS, INC. 11-94
PH. 352-394-6639
P.O. BOX 120989
CLERMONT, FL 34712-0989

0-080055-1 (8330) 1128

63-8445/2631

Date 3-24-2000

Pay to the
Order of

St. Johns River Water Management District
Three Fund, #101 + no/100 \$ 350.00

Dollars Security Features
Check on back



LEESBURG, FLORIDA 34748

For Lost Lake Pines Subdivision

Neil Smith

⑆001128⑆ ⑆263184459⑆1600000254179⑆

⑆MAR10⑆

MP

LAKE COUNTY PROPERTY RECORD CARD

ALTERNATE KEY: 1064503

Run: 8/11/99 10:57AM Page: 1

HERB SMITH CONSTRUCTION CO INC

PARCEL 24-23-25-080006400000 NBHD 2803
 ALT KEY 1064503 MILL GRP 0003 PC 00
 LOC NOTES

16706 TEQUESTA TRL
 CLERMONT FL 34711

LEGAL DESCRIPTION

POSTAL COLONY, 33-22-26 TRACT 64--LESS N 396 FT OF E 179 FT & LESS S 169.76 FT OF E 130 FT & LESS E 18 FT--
 ORB 1662 PG 2243

LAND DATA

LINE	USE	FRONT	DEPTH	NOTES	#	UNIT	TYPE	RATE	DEPTH	LOC	SHP	PHYS	CLASS	VAL	JUST	VAL
1	0000	0	0		7.03	AC		7000.00	1.00	2.00	1.00	1.00		0		98420
TOTAL													0		98420	

SALES HISTORY

O.R. BOOK	O.R. PAGE	SALE DATE	INSTRUMENT	TRAN CODE	QUAL UNQUAL	VAC IMPR	SALE PRICE	APPR VALUE	CHG DATE
1662	2243	11/19/1998	WD WARRANTY	D0	Q QUALIFIED	V	119,900	10,897	12/28/1998
1188	1748	9/01/1992	WD WARRANTY	D0	U UNQUALIFIED	V	0	0	/ /
1068	1047	7/01/1990	WD WARRANTY	D0	Q QUALIFIED	V	58,000	0	/ /
0852	1422	9/01/1985	WD WARRANTY	D0	Q QUALIFIED	V	10,000	0	/ /
653	1689	1/01/1978	MI MISC DEED	0	Q QUALIFIED	V	27,100	0	/ /

EXEMPTIONS

CD	VALUE	YEAR	RENEW	PCT	AMT	APP
----	-------	------	-------	-----	-----	-----

TOTAL VALUES

BLD-RCN-VAL	BLD-DEP-VAL	MIS-DEP-VAL	EQUIPMENT-VAL	LAND-VAL	MARKET ADJ
0	0	0	0	98420	0
TOTAL-J-VAL	TOT-EXPT-VAL	TAXABLE VAL	PREV-TX-VAL	PREV-JUST	NEW-CON-VAL
98420	0	98420	1547	10897	0

48-019-64873-1
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 PDS
 ORLANDO
 SJR WMD

Modica & Associates, Inc.
Environmental Planning, Design & Permitting

November 17, 1999

Arthur Nix
Monteverde Engineering, Inc.
P.O. Box 560116
Monteverde, FL 34756

**Re: Lost Lake Pines Project Site
Preliminary Environmental Assessment**

Dear Mr. Nix:

Modica and Associates, Inc. completed a preliminary environmental assessment of the Lost Lake Pines project site on November 16, 1999 to document the vegetation and land-use cover, wildlife inhabiting the site, general site conditions, and extent of any on-site wetlands. The site is approximately 12.27 acres and is located in Lake County (Section 33 of Township 22 South, Range 26 East). The site borders Hancock Road to the east. The following paragraphs describe the observations made during the assessment, as well as the methodologies used to evaluate the site.

The Lost Lake Pines project site was evaluated using a series of belt transects and pedestrian surveys to document the vegetative communities and wildlife utilization. Approximately 100% of the site was surveyed for plant species composition by ground truthing. Tools made available during the assessment include, but were not limited to soils maps, aerial photographs, and binoculars. The Lost Lake Pines project site is comprised of two different types of plant communities including slash pine plantation and abandoned citrus grove.

VEGETATIVE COMMUNITIES

The eastern half of the site is classified as **Coniferous Plantation (441)** per the Florida Land Use, Cover and Forms Classification System, Level III (FLUCFCS). This area is planted with slash pines (*Pinus elliotii*). Additional

Associates:

Jim Modica, B.S., President
John Miklos, B.S., Project Manager
Rodney Hudson, B.S., Project Manager
Joe Galletti, B.S., Project Manager
Peter Johnson, B.S., Limnologist
Dean Parsons, PhD., Field Biologist
Walter Taylor, PhD., Field Biologist
Jim McCann, B.S., Horticulturalist
Laura Lee Judy, Office Manger

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ORLANDO
SR-EMD



310 Almond St.
Clermont, FL 34711
Telephone (352) 394-2000
Fax (352) 394-1159

species comprising this community include black cherry (*Prunus serotina*), sabal palm (*Sabal palmetto*), lantana (*Lantana camara*), prickly pear cactus (*Optunia stricta*), bahia grass (*Paspalum notatum*), Mexican clover (*Richardia brasiliensis*), ceasarweed (*Urena lobata*), broomsedge (*Andropogon glomeratus*), natal grass (*Rhynchelytrum repens*), and dog fennel (*Eupatorium capillifolium*). This area is shown on the enclosed FLUCFCS map.

The western half of the site is classified as **Fallow Crop Land (261)** per the Florida Land Use, Cover and Forms Classification System, Level III (FLUCFCS). The dominant vegetation is natal grass. Additional species include black cherry, citrus trees, laurel oak (*Quercus laurifolia*), salt bush (*Baccharis halimifolia*), lantana, prickly pear cactus, and sabal palm (*Sabal Palmetto*). This area is shown on the enclosed FLUCFCS map.

WILDLIFE

The Lost Lake Pines project site was also evaluated to determine if any wildlife species currently utilizing the property are "listed" as Endangered, Threatened, or Species of Special Concern by the Florida Fish and Wildlife Conservation Commission (FFWCC) or the United States Fish and Wildlife Service (USFWS). Several wildlife species were observed on the project site at the time of the evaluation. The following is a list of those species present during the evaluation including, any direct observations made and evidence of any particular species found (i.e. tracks, burrows, etc...).

BIRDS

Mourning Dove (*Zenaida macroura*)
Northern Mockingbird (*Mimus polyglottos*)
Red Shouldered Hawk (*Buteo lineatus*)
Black Vulture (*Coragyps atratus*)

REPTILES AND AMPHIBIANS

gopher tortoise (*Gopherus polyphemus*)
black racer (*Coluber constrictor*)

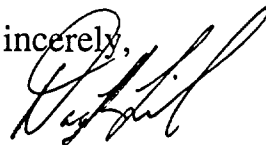
MAMMALS

eastern harvest mouse (*Reithrodontomys humilus*)
eastern cottontail (*Sylvilagus floridanus*)
raccoon (*Procyon lotor*)

The wildlife survey covered approximately 100% of the uplands. Per the results of the survey, the gopher tortoise was the only wildlife species listed as Endangered, Threatened, or Species of Special Concern listed in the Florida Fish and Wildlife Conservation Commission's (FFWCC) Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida, currently utilizing the site. The Florida Fish and Wildlife Conservation Commission has deemed the gopher tortoise a species of special concern. Twenty-five (25) viable tortoise burrows were found during the survey. Based on twenty-five (25) burrows it is estimated that approximately 16 tortoises are expected to be residing on the subject site. This number is based on the Auffenburg-Franz method of determining gopher tortoise population, which assumes approximately 61.4% of viable burrows are occupied. The Florida Fish and Wildlife Conservation Commission provides four options for developers to deal with gopher tortoises: avoidance, preservation of habitat, contribution to a wildlife trust fund (i.e. contribution of money for purchase of land that is part of a gopher tortoise mitigation bank) and relocation. Additionally, no listed plants were observed on the subject site.

Please contact our office at (352) 394-2000 if you have any questions or comments regarding the information provided above, or if any further work is required. Thank you.

Sincerely,

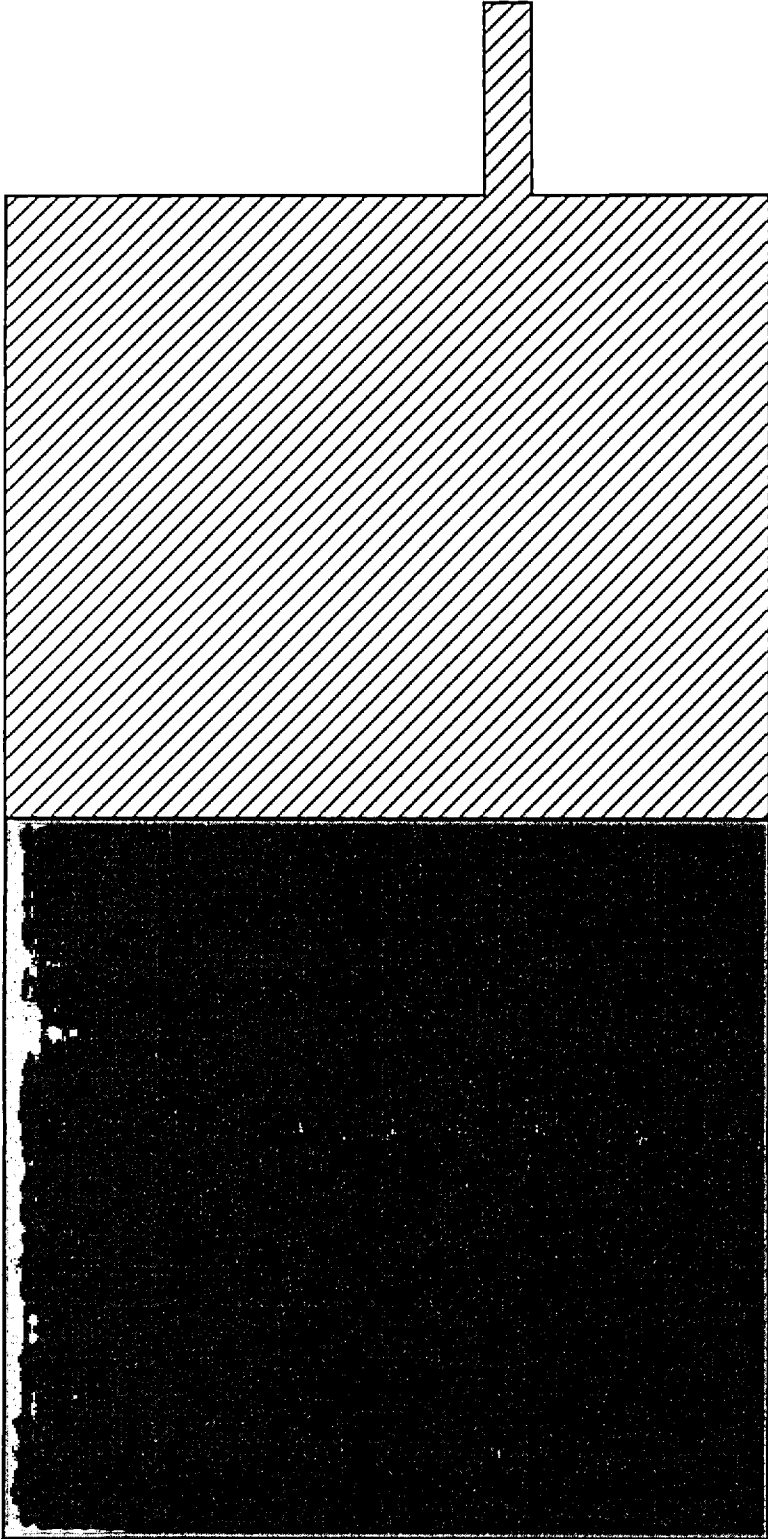


Doug R. Lieb
Environmental Scientist



James V. Modica
President

Attachment



North

Legend

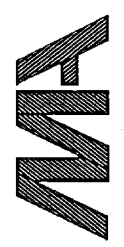
 Coniferous Plantation (441)

 Fallow Crop Land (261)

Date: 11/17/99
 Drawn By: D.R. Lieb
 Scale: N.T.S.

**FLUCFCS Map for the Lost
 Lake Pines Project Site**

Modica and Associates, Inc.
 310 Almond St.
 Clermont, FL 34711
 (352) 394-2000



Storm Water Calculations - Lost Pines Subdivision

Project Location: In the unincorporated limits of Lake County.

Legal Description: See project plans for legal description.

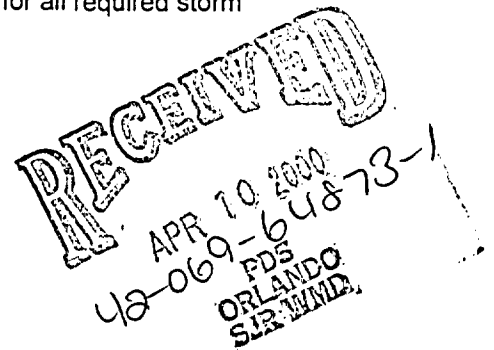
Project Description: Project consists of a 40 lot subdivision

Wetlands Statement: There are no wetlands on site.

Stormwater Calculations Description:

The project discharges in the pre and post development conditions to a closed basin. The calculations were divided then into two types, storm rate of discharge and storm volume calculations. For the storm volume the post less the pre discharge volume must be contained on site for a 25 year 96 hour storm. For this purpose the pre and post development drainage basins are the same with no changes (15.48 acres) since both the pre and post development conditions will discharge ultimately to the same closed basin. However the rate of discharge calculations where the post development rate of discharge should not exceed the pre development rate of discharge used a different pre development area. In order to more closely model what is actually discharging at the proposed pond the pre development area was reduced to that area discharging to the post development pond (7.49 acres). This is a more conservative approach that ensures that downstream properties are not adversely affected by the development. A spreader swale is used from the pond to also ensure than discharge velocities are kept below erosion levels.

Calculations Results: The required treatment volume is stored and treated and the post development discharges are less than the pre development discharges for all required storm events.



4/5/00

Storm Water Calculations for Lost Lake Pines

Basin 100- Conventional Open Pond

Onsite Drainage Area = onda onda := 12.73 acres
Offsite Drainage Area = offda offda := 2.75 acres (along ROW of Bloxam Ave)
Impervious Area On Site = onim onim := 4.28 acres
Impervious Area Off Site = ofim ofim := 0.04 acres

Impervious Area Breakdown

Roadway&Drives = 1.36 acres
Homes = 40x2800 sf per each = 2.57 acres
Sidewalks = 0.35 acres

Total Area = 4.28 ac

Total Drainage Area = A A := onda + offda A = 15.48 acres
Total Impervious Area = IA IA := onim + ofim IA = 4.32 acres
% Impervious= 1%

$$1\% := \frac{IA}{A} \cdot 100 \qquad 1\% = 27.9$$

Description of Soils: See soils report.

On Line retention method will be used.

Calculate required storage Volume

$$TV_1 := A \cdot \frac{.5}{12} \cdot 43560 \cdot 2.0 \qquad TV_1 = 56192 \text{ cubic feet-(1 inch times total area)}$$

$$TV_2 := \left(IA \cdot \frac{1.25}{12} \cdot 43560 + A \cdot \frac{.5}{12} \cdot 43560 \right) \qquad TV_2 = 47698 \text{ cubic feet}$$

TV := TV₁

Treatment volume No. 1 controls therefore must storm 56192 cubic feet.

Storage Provided by Retention Pond

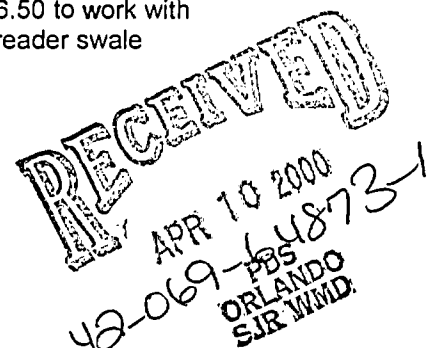
Stage	Area- sf	Volume (cf)
197.00	740	0
207.00	13163	69515

$$\text{Stage } tv := 197 + (208 - 197) \cdot \frac{(56192 - 0)}{(69515 - 0)}$$

Stage tv = 205.89 Place weir elevation at 206.50 to work with spreader swale

Volume provided = 66,039 cubic feet or 1.52 ac-ft
Stage at Treatment Volume - 205.89
Structure Discharges at 206.50

Thus Provided Volume > Required Treatment Volume



Storm Water Calculations for Lost Lake Pines

Basin Storm Routing

Calculate weighted "C" pre-development using C for pervious of 57 and C for impervious area of 98. Post development C=39 for well developed grass. The area is planted in rows of pine trees so a "C" value of "57" for tree farm with very poor grass coverage was selected.

$$CN_{post} := \frac{IA \cdot 98 + 39 \cdot (A - IA)}{A} \quad CN_{post} = 55.47$$

$$CN_{pre} := \frac{0.04 \cdot 98 + 57 \cdot (A - 0.03)}{A} \quad CN_{pre} = 57.14$$

Storm Routings

Adicpr was used to route storms. See the results of the routings below.

<u>Storm</u>	<u>Discharge (cfs)</u>	
	<u>Pre-Development</u>	<u>Post-Development</u>
Mean Annual	7.15	0.00
10 Year 24 Hour	9.75	1.76
25 Year 24 Hour	17.28	15.25

Since the project discharges to a closed basin (East Lake) the post-pre discharge volume must be retained for the 25 year 96 hour storm (I=11.50"). From the hydrograph results

$$Vol_{25pre} := 5.46 \text{ inches} \quad Vol_{25post} := 5.71 \text{ inches}$$

$$Vol_{25} := \frac{(5.71 - 5.46)}{12} \cdot A \quad Vol_{25} = 0.322 \text{ ac-ft} \quad Vol_{required} := Vol_{25} \cdot 43560$$

$$Vol_{required} = 14048 \text{ cubic feet}$$

Therefore volume provided is 66,039 cubic feet at the discharge stage of 206.50. This exceeds the required volume of 14,048 cubic feet.

Recovery Calculations

See soils report for boring information.

Treatment Volume of 56,192 cf must be recovered in less than 72 hours. As "PONDS Ver. 2.26" was used to test the dry retention pond recovery. A horizontal permeability rate of 15 ft/day amount) was used as recommended by Geotechnical Engineer. This value already includes the factor of safety.

See attached results from Ponds 2.26 by Dr. Devo Seereeram, P.E.

Treatment Volume recovery time = 12.5 hours (0.522 days)

Storm Water Calculations for Lost Lake Pines

Soils Map

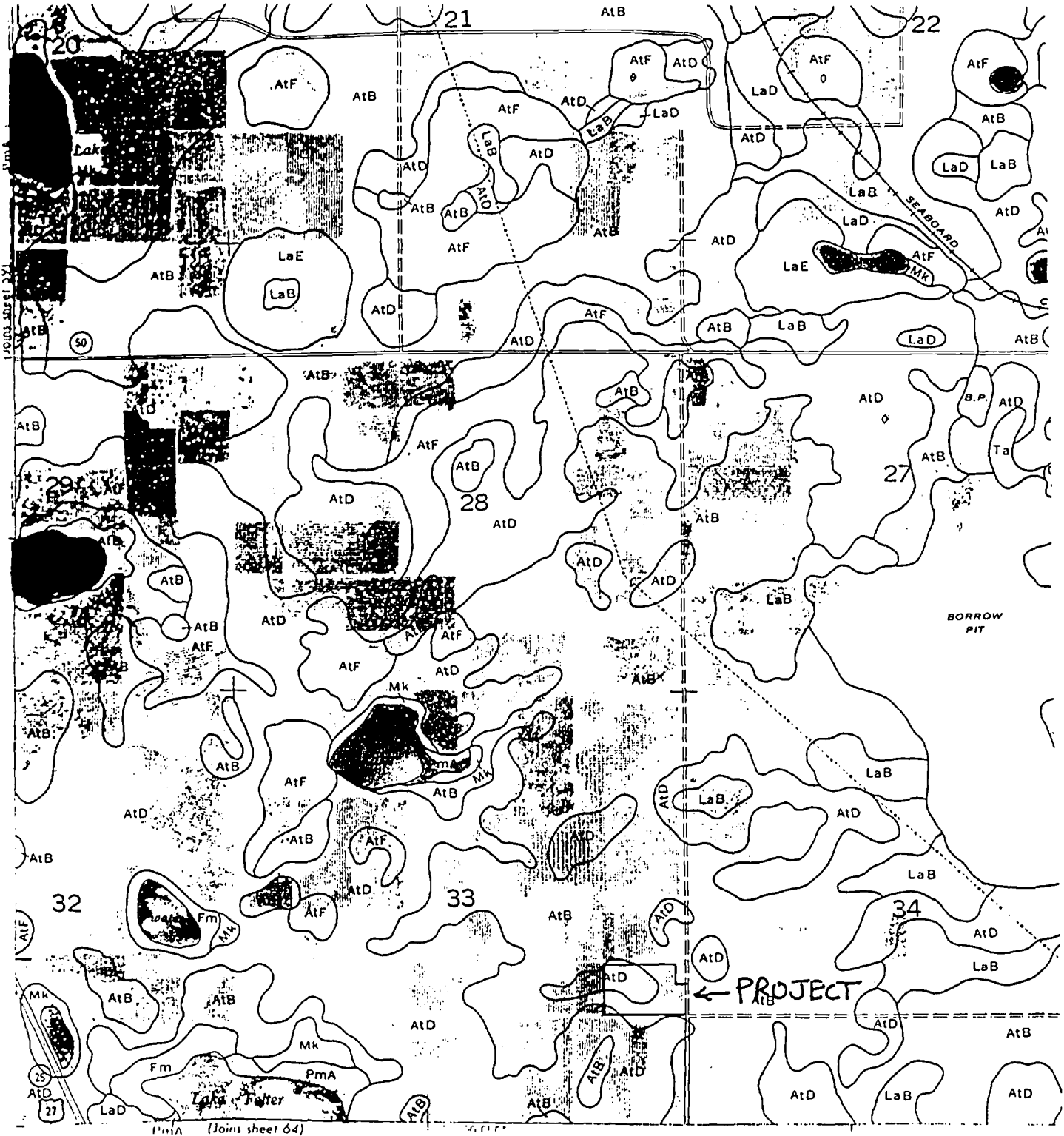


Table 2-2c.—Runoff curve numbers for other agricultural lands¹

Cover description		Curve numbers for hydrologic soil group—			
		A	B	C	D
Cover type	Hydrologic condition				
Pasture, grassland, or range—continuous forage for grazing. ²	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. ³	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30	48	65	73
Woods—grass combination (orchard or tree farm). ⁵ <i>Pre Development Condition</i> →	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. ⁶	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

¹Average runoff condition, and $I_a = 0.2S$.

²*Poor*: <50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed.

Good: >75% ground cover and lightly or only occasionally grazed.

³*Poor*: <50% ground cover.

Fair: 50 to 75% ground cover.

Good: >75% ground cover.

⁴Actual curve number is less than 30; use $CN = 30$ for runoff computations.

⁵ CN 's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN 's for woods and pasture.

⁶*Poor*: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

Fair: Woods are grazed but not burned, and some forest litter covers the soil.

Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Written By Devo Seereeram, Ph.D., P.E.
And Robert D. Casper

Licensed Solely For Use By:
Montverde Engineering, Inc.

Retention Pond Recovery Analysis

I. Job Information

Job Name: 9919 Lost Lake Pines Recovery Treatment Volume
Engineer: Arthur C. Nix, P.E.
Date: 3/14/00

II. Input Data

Equivalent Pond Length, [L] (ft):	127.00
Equivalent Pond Width, [W] (ft):	79.00
Pond Bottom Elevation, [PB] (ft above datum):	197.00
Porosity Of Material Within Pond, [p] (%):	100.00
Base Of Aquifer Elevation, [B] (ft above datum):	182.00
Water Table Elevation, [WT] (ft above datum):	182.50
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day)	15.00
Fillable Porosity of Aquifer, [n] (%):	25.00
Vertical Unsaturated Infiltration, [Iv] (ft/day):	10.00
Runoff Volume, [V] (cubic feet)	56192.00
Percent Recovery Of Runoff Volume, [PV] (%)	100.00

III. Results

UNSATURATED FLOW

Recovery Time From Unsaturated Flow, [T1] (days):	0.3625
Recovered Volume From Unsaturated Flow, [V1] (ft ³):	36369.63

SATURATED FLOW

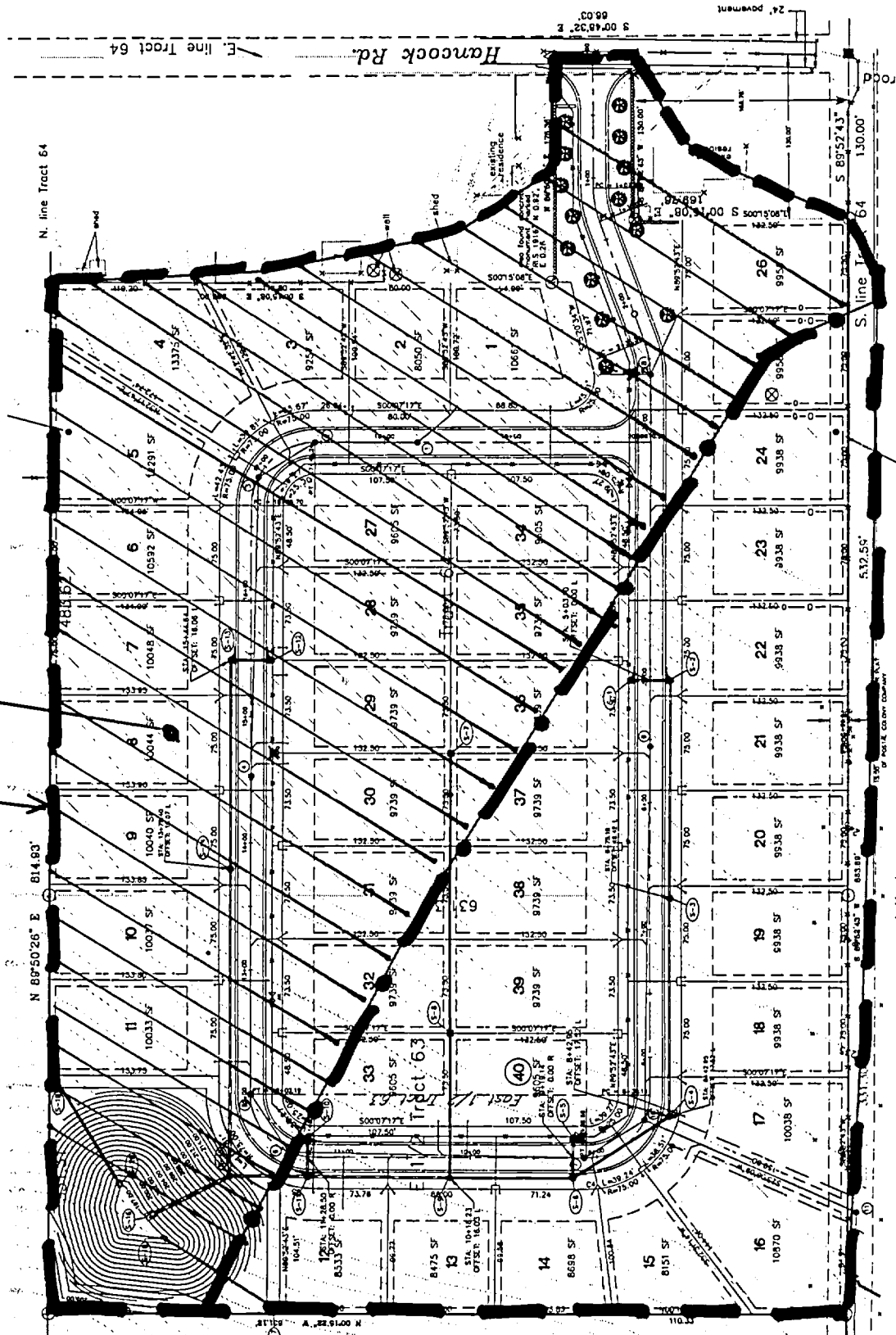
Recovery Time From Saturated Flow, [T2] (days):	0.1595
Recovered Volume From Saturated Flow, [V2] (ft ³):	19822.38
Maximum Radius Of Influence, [R] (ft):	23.69
Maximum Driving Head, [Hmax] (ft):	16.476
Minimum Driving Head, [Hmin] (ft):	14.500

TOTAL

Total Recovery Time, [T] (days):	0.5220
Total Recovered Volume, [V] (ft ³):	56192.00

Post-Development Area = 15.48 Acres

Pre-Development Area = 7.49 Acres



LOST PINES SUBDIVISION
 3/8/2000

Hydrograph Data

BASIN NAME	1	2	3	4	5
NODE NAME	1	2	3	4	5
UNIT HYDROGRAPH	UH484	UH484	UH484	UH484	UH484
PEAKING FACTOR	484.	484.	484.	484.	484.
RAINFALL FILE	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
RAIN AMOUNT (in)	11.50	11.50	8.50	8.50	6.50
STORM DURATION (hrs)	96.00	96.00	24.00	24.00	24.00
AREA (ac)	15.48	15.48	7.49	15.48	7.49
CURVE NUMBER	57.14	55.47	57.14	55.47	57.14
DCIA (%)	.00	.00	.00	.00	.00
TC (mins)	25.00	15.00	25.00	15.00	25.00
LAG TIME (hrs)	.00	.00	.00	.00	.00
BASIN STATUS	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
1	20.99	48.05	5.71	25 YEAR 96 HOUR STORM PRE DEV.
2	20.69	48.00	5.46	25 YEAR 96 HOUR STORM POST DEV.
3	17.28	12.17	3.37	25 YEAR 24 HOUR STORM PRE DEV.
4	40.04	12.07	3.18	25 YEAR 24 HOUR STORM POST DEV.
5	9.75	12.17	2.00	10 YEAR 24 HOUR STORM PRE DEV.

BASIN NAME	6	7	8
NODE NAME	6	7	8
UNIT HYDROGRAPH	UH484	UH484	UH484
PEAKING FACTOR	484.	484.	484.
RAINFALL FILE	FLMOD	FLMOD	FLMOD
RAIN AMOUNT (in)	6.50	4.20	4.20
STORM DURATION (hrs)	24.00	24.00	24.00
AREA (ac)	15.48	7.49	15.48
CURVE NUMBER	55.47	55.47	57.14
DCIA (%)	.00	.00	.00
TC (mins)	15.00	25.00	15.00
LAG TIME (hrs)	.00	.00	.00
BASIN STATUS	ONSITE	ONSITE	ONSITE

BASIN	QMX (cfs)	TMX (hrs)	VOL (in)	NOTES
6	22.21	12.07	1.85	10 YEAR 24 HOUR STORM POST DEV.
7	2.36	12.28	.63	MEAN ANNUAL PRE DEVELOPMENT
8	7.15	12.10	.71	MEAN ANNUAL POST DEVELOPMENT

Montverde Engineering
P.O. Box 560116
Montverde, FL 34756

Storm Water Calculations
for Lost Lake Pines

Date: 4/4/00
Project: 9919

Storm Water Calculations for Lost Lake Pines

AdiCpr routing Results

For a summary of these results see the calculations on the third sheet

LOST PINES SUBDIVISION
 3/8/2000

*AdiCpr Results - Routing
 25 Year 24 Hour Post Dev.*

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	<-- MINIMUMS -->		<-- MAXIMUMS -->	
		VALUE	TIME (hr)	VALUE	TIME (hr)
4	STAGE (ft):	197.00	9.50	207.06	12.50
	VOLUME (af):	.00	9.50	1.61	12.50
	RUNOFF (cfs):	.00	9.50	36.24	12.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	12.25	15.25	12.50
100	STAGE (ft):	205.00	.00	206.00	24.00
	VOLUME (af):	.00	12.25	2.55	24.00
	RUNOFF (cfs):	.00	24.00	.00	24.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	12.25	15.25	12.50
	OUTFLOW (cfs):	.00	24.00	.00	24.00

15.25
 → MAX
 DISCHARGE

LOST PINES SUBDIVISION
 3/8/2000

10 Year 24 Hour Post Dev.

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	<-- MINIMUMS -->		<-- MAXIMUMS -->	
		VALUE	TIME (hr)	VALUE	TIME (hr)
6	STAGE (ft):	197.00	10.75	206.65	15.00
	VOLUME (af):	.00	10.75	1.54	15.00
	RUNOFF (cfs):	.00	10.75	19.41	12.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	14.50	1.76	15.00
100	STAGE (ft):	205.00	.00	206.00	24.00
	VOLUME (af):	.00	14.50	.84	24.00
	RUNOFF (cfs):	.00	24.00	.00	24.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	14.50	1.76	15.00
	OUTFLOW (cfs):	.00	24.00	.00	24.00

→ MAX DISCHARGE

10 Year Stage = 206.65

LOST PINES SUBDIVISION
 3/8/2000

Mean Annual Post Dev.

NODAL MIN/MAX/TIME CONDITIONS REPORT

NODE ID	PARAMETER	<-- MINIMUMS -->		<-- MAXIMUMS -->	
		VALUE	TIME (hr)	VALUE	TIME (hr)
8	STAGE (ft):	197.00	11.50	202.70	24.00
	VOLUME (af):	.00	11.50	.91	24.00
	RUNOFF (cfs):	.00	11.50	5.90	12.25
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	24.00	.00	24.00
100	STAGE (ft):	205.00	.00	206.00	24.00
	VOLUME (af):	.00	24.00	.00	24.00
	RUNOFF (cfs):	.00	24.00	.00	24.00
	OFFSITE (cfs):	.00	24.00	.00	24.00
	OTHER (cfs):	.00	24.00	.00	24.00
	OUTFLOW (cfs):	.00	24.00	.00	24.00

.00
 No
 Discharge

LOST PINES SUBDIVISION
3/8/2000

AdiCpr Setup

CONTROL PARAMETERS

=====

START TIME: .00
END TIME: 24.00

TO TIME (hours)	SIMULATION INC (secs)	PRINT INC (mins)
----- 100.00	----- 150.00	----- 15.00

RUNOFF HYDROGRAPH FILE: DEFAULT
OFFSITE HYDROGRAPH FILE: DEFAULT
BOUNDARY DATABASE FILE: NONE

NOTE:

Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)
Copyright 1989, Streamline Technologies, Inc.

LOST PINES SUBDIVISION
3/8/2000

Retention Pond

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
4 POND	AREA	197.000	.000	.000	.000	197.000 208.000	.017 .302
100	TIME	205.000	.000	.000	.000	205.000 206.000	.000 24.000

LOST PINES SUBDIVISION
3/8/2000

Weir to Spreader Swale

>>REACH NAME : 1000
FROM NODE : 4
TO NODE : 100
REACH TYPE : TRAPEZOIDAL WEIR/GATE/ORIFICE, MAVIS EQ.
FLOW DIRECTION : POSITIVE AND NEGATIVE FLOWS ALLOWED
CREST EL. (ft): 206.500 BTM. WIDTH (ft): 10.000 LEFT SS (h/v): 4.000
RGHT SS (h/v): 4.000 OPENING (ft): 999.000 WEIR COEF.: 3.000
GATE COEF.: .600 NUMBER OF ELEM.: 1.000
NOTE: OVERFLOW WEIR TO SPREADER SWALE

Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)
Copyright 1989, Streamline Technologies, Inc.

LOST PINES SUBDIVISION
3/8/2000

REACH SUMMARY
=====

INDEX	RCHNAME	FRMNODE	TONODE	REACH TYPE
1	1000	4	100	TRAPEZOIDAL WEIR/GATE/ORIFICE, MAVIS EQ.

Montverde Engineering Inc.
P.O. Box 560116
Montverde, FL 34756
(407) 469-4829

Project: Lost Pines Subdivision
Date: 03/08/2000
Calc. By: A. Nix
File:time

Time of Concentration Calculations- Pre-Development Basin

Sheet Flow

1. Surface Description: Unpaved

2. Manning's roughness coeff. $n := 0.24$

3. Flow length, L (total $L \leq 300$ ft) $L := 300$

4. Two-yr 24 hour rainfall P $P := 4.5$

5. Land Slope ft/ft, s $s := 0.043$

6. Time of Concentration $TC1 := \frac{0.007 \cdot (n \cdot L)^{0.8}}{P^{0.5} \cdot s^{0.4}}$ $TC1 = 0.36$ hours

Shallow Concentrated Flow

7. Surfaced Description (paved or unpaved) : Unpaved

8. Flow Length, L2 $L2 := 748$

9. Watercourse Slope, s2 0.059

10. Average Velocity, V ft/sec $V := 3.8$

11. Time of Concentration $TC2 := \frac{L2}{3600 \cdot V}$ $TC2 = 0.05$ hours

Channel Flow-None

12. Cross Sectional Flow Area, A $A := 0$

13. Wetted Perimeter, PW $PW := 17.46$

14. Hydraulic Radius, $r = A/PW$ $r := \frac{A}{PW}$

15. Channel Slope, s $s := 0.04$ average

16. Mannings n $n := 0.15$

17. Velocity $V2 := \frac{1.49 \cdot r^{\frac{2}{3}} \cdot s^{0.5}}{n}$ $V2 = 0$

18. Flow Length, L3 $L3 := 0$

19. Travel Time $TC3 := \frac{L3}{3600 \cdot V2}$ $TC3 = 0$ hours

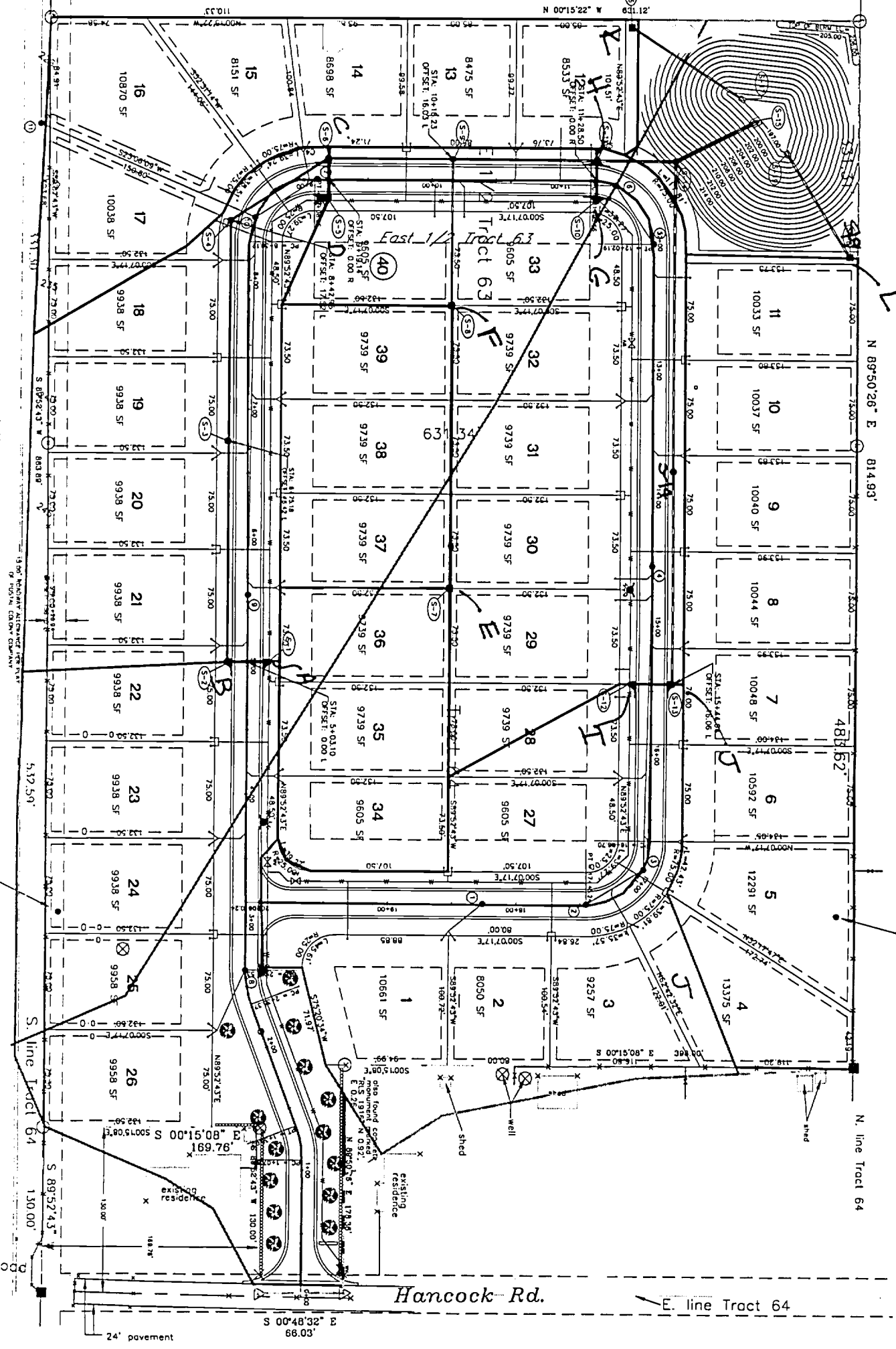
Total Time of Concentration = $TC := TC1 + TC2 + TC3$
 $TC = 0.41$ hours

Storm Water Calculations for Lost Lake Pines

Hydraulic Calculations

The following calculations determine the Hydraulic Grade Line for the storm system based on a 10 year storm duration. The terminating pond condition was the 10 year storm stage as determined by Adicpr.

Revised 3/14/00



Hancock Rd.

E. line Tract 64

S 00°48'32" E
66.03'

24' pavement

N 89°50'26" E
814.93'

N line Tract 64

S line Tract 64

532.50'

S 89°52'43" E
150.00'

S 89°52'43" E
883.80'

S 89°52'43" E
1003.80'

S 89°52'43" E
1103.33'

481.62'

814.93'

1103.33'

150.00'

150.00'

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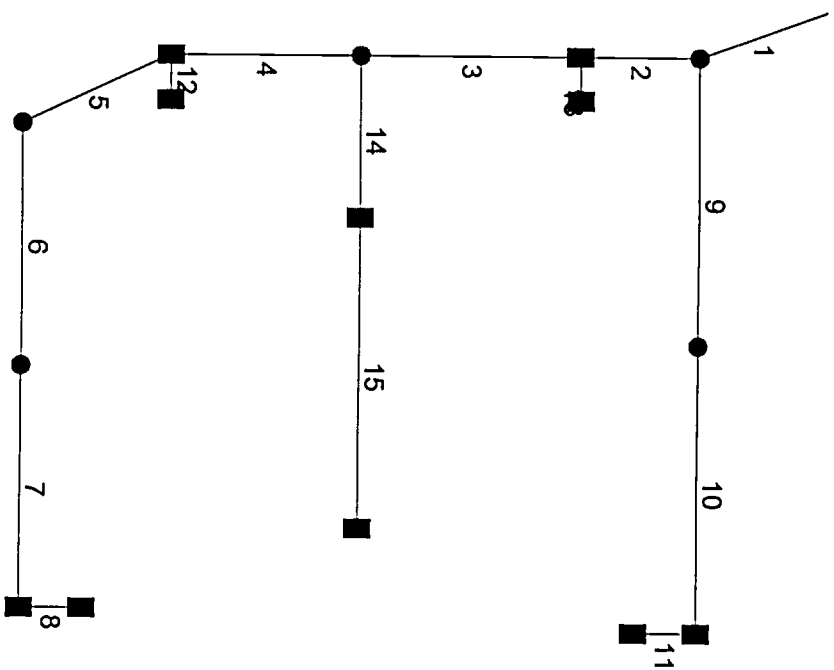
Montverde Engineering Inc.
P.O. Box 560116
Montverde, FL 34756

Area and Storm
Runoff Calculations for
Lost Pines Subdivision

Project: 9919
Date: March 14, 2000

<u>Inlet</u>	<u>Area</u>	<u>Impervious</u>	<u>Pervious</u>	<u>C Calc</u>	<u>Area</u>
S-1	0.32	0.13	0.19	0.44	A
S-2	1.77	0.52	1.25	0.36	B
S-3	0				
S-4	0				
S-5	1.26	0.43	0.83	0.39	C
S-6	0.26	0.17	0.09	0.63	D
S-7	0.67	0.2	0.47	0.36	E
S-8	0.67	0.2	0.47	0.36	F
S-9	0	0	0		
S-10	1.76	0.57	1.19	0.38	G
S-11	0.21	0.09	0.12	0.46	H
S-12	0.59	0.32	0.27	0.55	I
S-13	1.21	0.39	0.82	0.38	J
S-14	0				
S-15	0				
S-17	1.42	0.41	1.01	0.35	K
S-19	1.9	0.55	1.35	0.35	L
	12.04				
C Pervious	0.13				
C Impervious	0.9				

Hydraflow Plan View



Project file: Lost Lake Pines.stm

IDF file: 10 YEAR.IDF

No. Lines: 15

03-14-2000

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.	
1	MES	23.93	24 c	73.0	197.00	206.30	12.740	206.65	208.04	0.90	End	
2	S-11	18.70	24 c	61.0	210.80	212.25	2.377	211.85	214.05	0.92	1	
3	S-9	13.61	24 c	112.0	212.25	213.80	1.384	214.97	215.25	0.49	2	
4	S-6	11.75	24 c	97.0	213.80	216.56	2.845	215.73	217.77	0.81	3	
5	S-4	6.50	18 c	90.0	216.56	220.30	4.156	218.58	221.27	0.38	4	
6	S-3	6.75	18 c	172.0	220.32	229.45	5.308	221.65	230.44	0.07	5	
7	S-2	7.03	18 c	172.0	229.46	238.59	5.308	230.51	239.60	0.72	6	
8	S-1	1.28	18 c	32.0	238.50	238.80	0.938	240.32*	240.32*	0.01	7	
9	S-14	5.67	18 c	204.0	210.80	222.20	5.588	211.30	223.11	0.06	1	
10	S-13	5.88	18 c	204.0	222.20	225.80	1.765	223.17	226.73	0.62	9	
11	S-12	2.45	18 c	32.0	225.80	226.12	1.000	227.34	227.35	0.04	10	
12	S-5	1.49	18 c	32.0	216.56	216.88	1.000	218.58*	218.59*	0.01	4	
13	S-10	5.04	18 c	31.0	212.25	212.56	1.000	214.97*	215.04*	0.13	2	
14	S-8	3.50	15 c	115.0	213.80	222.00	7.130	215.73	222.75	0.16	3	
15	S-7	1.82	15 c	220.0	222.00	230.90	4.045	222.91	231.44	0.20	14	
Project File: Lost Lake Pines.stm		I-D-F File: 10 YEAR.IDF			Total No. Lines: 15			Run Date: 03-14-2000				
NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.												

Hydraflow Storm Sewer Tabulation

Station	Len	Drng Area		Rknoff coeff	Area x C		Tc		Rain (l)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID				
		Incr	Total		Incr	Total	Inlet	Syst					Rain	Total	Flow	Full	Vel	Size	Slope	Up		Dn	Up	Dn	Up
Line	To Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)				
1	End	73.0	0.00	8.72	0.00	0.00	3.47	0.0	12.8	6.9	23.93	80.73	7.94	24	12.74	206.30	197.00	208.04	206.65	199.00	214.80	MES			
2	1	61.0	0.21	6.92	0.46	0.10	2.68	5.0	12.5	7.0	18.70	34.87	8.71	24	2.38	212.25	210.80	214.05	211.85	214.80	218.26	S-11			
3	2	112.0	0.00	4.95	0.00	0.00	1.92	0.0	11.9	7.1	13.61	26.61	4.97	24	1.38	213.80	212.25	215.25	214.97	218.26	219.80	S-9			
4	3	97.0	1.26	3.61	0.39	0.49	1.43	5.0	7.6	8.2	11.75	38.15	4.83	24	2.85	216.56	213.80	217.77	215.73	219.80	222.56	S-6			
5	4	90.0	0.00	2.09	0.00	0.00	0.78	0.0	7.1	8.4	6.50	21.41	4.52	18	4.16	220.30	216.56	221.27	218.58	222.56	226.32	S-4			
6	5	172.0	0.00	2.09	0.00	0.00	0.78	0.0	6.1	8.7	6.75	24.19	4.76	18	5.31	229.45	220.32	230.44	221.65	226.32	235.46	S-3			
7	6	172.0	1.77	2.09	0.36	0.64	0.78	5.0	5.2	9.0	7.03	24.19	5.43	18	5.31	238.59	229.46	239.60	230.51	235.46	245.14	S-2			
8	7	32.0	0.32	0.32	0.44	0.14	0.14	5.0	5.0	9.1	1.28	10.17	0.73	18	0.94	238.80	238.50	240.32	240.32	245.14	245.14	S-1			
9	1	204.0	0.00	1.80	0.00	0.00	0.78	0.0	11.3	7.2	5.67	24.82	8.09	18	5.59	222.20	210.80	223.11	211.30	214.80	227.26	S-14			
10	9	204.0	1.21	1.80	0.38	0.46	0.78	5.0	10.2	7.5	5.88	13.95	5.00	18	1.76	225.80	222.20	226.73	223.17	227.26	232.34	S-13			
11	10	32.0	0.59	0.59	0.55	0.32	0.32	10.0	10.0	7.5	2.45	10.50	1.48	18	1.00	226.12	225.80	227.35	227.34	232.34	232.34	S-12			
12	4	32.0	0.26	0.26	0.63	0.16	0.16	5.0	5.0	9.1	1.49	10.50	0.84	18	1.00	216.88	216.56	218.59	218.58	222.56	222.56	S-5			
13	2	31.0	1.76	1.76	0.38	0.67	0.67	10.0	10.0	7.5	5.04	10.50	2.85	18	1.00	212.56	212.25	215.04	214.97	218.26	218.26	S-10			
14	3	115.0	0.67	1.34	0.36	0.24	0.48	10.0	11.2	7.2	3.50	17.24	3.70	15	7.13	222.00	213.80	222.75	215.73	219.80	227.00	S-8			
15	14	220.0	0.67	0.67	0.36	0.24	0.24	10.0	10.0	7.5	1.82	12.99	2.74	15	4.05	230.90	222.00	231.44	222.91	227.00	235.90	S-7			
Project File: Lost Lake Pines.stm															I-D-F File: 10 YEAR.IDF					Total number of lines: 15				Run Date: 03-14-2000	

NOTES: Intensity = 62.16 / (Tc + 11.00) ^ 0.69; Return period = 10 Yrs.; Initial tailwater elevation = 206.65 (ft)

Hydratflow Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream										Len (ft)	Upstream										Check		JL coeff (K)	Minor loss (ft)
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Invert elev (ft)	HGL elev (ft)		Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Energy loss (ft)						
1	24	23.93	197.00	206.65	2.00	3.14	7.62	0.90	207.55	1.120	73.0	206.30	208.04	1.74**	2.90	8.26	1.06	209.10	1.023	1.072	N/A	0.85	0.90				
2	24	18.70	210.80	211.85	1.05*	1.68	11.14	1.93	213.78	2.291	61.0	212.25	214.05	1.80	2.98	6.27	0.61	214.66	0.601	1.446	0.882	1.50	0.92				
3	24	13.61	212.25	214.97	2.00	3.14	4.33	0.29	215.26	0.362	112	213.80	215.25	1.45	2.43	5.60	0.49	215.73	0.476	0.419	0.470	1.00	0.49				
4	24	11.75	213.80	215.73	1.93	3.11	3.78	0.22	215.96	0.237	97.0	216.56	217.77	1.21**	2.00	5.89	0.54	218.31	0.577	0.407	N/A	1.50	0.81				
5	18	6.50	216.56	218.58	1.50	1.77	3.68	0.21	218.79	0.384	90.0	220.30	221.27	0.97**	1.21	5.36	0.45	221.72	0.673	0.529	N/A	0.85	0.38				
6	18	6.75	220.32	221.65	1.33	1.66	4.07	0.26	221.91	0.368	172	229.45	230.44	0.99**	1.24	5.45	0.46	230.90	0.688	0.528	N/A	0.15	0.07				
7	18	7.03	229.46	230.51	1.05	1.32	5.31	0.44	230.95	0.637	172	238.59	239.60	1.01**	1.27	5.54	0.48	240.08	0.705	0.671	N/A	1.50	0.72				
8	18	1.28	238.50	240.32	1.50	1.77	0.73	0.01	240.33	0.015	32.0	238.80	240.32	1.50	1.77	0.73	0.01	240.33	0.015	0.015	0.005	1.00	0.01				
9	18	5.67	210.80	211.30	0.50*	0.51	11.12	1.92	213.22	5.237	204	222.20	223.11	0.91**	1.12	5.06	0.40	223.51	0.627	2.932	N/A	0.15	0.06				
10	18	5.88	222.20	223.17	0.97	1.21	4.87	0.37	223.54	0.558	204	225.80	226.73	0.93**	1.14	5.14	0.41	227.14	0.638	0.598	N/A	1.50	0.62				
11	18	2.45	225.80	227.34	1.50	1.77	1.38	0.03	227.37	0.054	32.0	226.12	227.35	1.23	1.55	1.58	0.04	227.39	0.054	0.054	0.017	1.00	0.04				
12	18	1.49	216.56	218.58	1.50	1.77	0.84	0.01	218.59	0.020	32.0	216.88	218.59	1.50	1.77	0.84	0.01	218.60	0.020	0.020	0.006	1.00	0.01				
13	18	5.04	212.25	214.97	1.50	1.77	2.85	0.13	215.10	0.231	31.0	212.56	215.04	1.50	1.77	2.85	0.13	215.17	0.230	0.230	0.071	1.00	0.13				
14	15	3.50	213.80	215.73	1.25	1.23	2.85	0.13	215.86	0.293	115	222.00	222.75	0.75**	0.77	4.56	0.32	223.07	0.654	0.474	N/A	0.50	0.16				
15	15	1.82	222.00	222.91	0.91	0.96	1.90	0.06	222.97	0.102	220	230.90	231.44	0.54**	0.51	3.58	0.20	231.64	0.530	0.316	N/A	1.00	0.20				

Project File: Lost Lake Pines.stm
 I-D-F File: 10 YEAR.IDF
 Total number of lines: 15
 Run Date: 03-14-2000

NOTES: Initial tailwater elevation = 206.65 (ft), * Normal depth assumed, ** Critical depth assumed.

Montverde Engineering
P.O. Box 560116
Montverde, FL 34756

Storm Water Calculations
for Lost Lake Pines

Date: 4/4/00
Project: 9919

Storm Water Calculations for Lost Lake Pines

Geotechnical Report

Reviewers Note: The Ground Elevation noted in the report is not 112+ but 212+.



Andreyev Engineering, Inc.

CLERMONT OFFICE
1170 W. Minneola Avenue
Clermont, Florida 34711
352-241-0508
Fax: 352-241-0977
Email: AEICLERMNT@AOL.COM

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

December 10, 1999
CPGT-99-122

TO: Montverde Engineering, Inc.
17550 C.R. 455
P.O. Box 560116
Montverde, FL 34756
Attn: Mr. Arthur Nix, P.E.

SUBJECT: Geotechnical Investigation of Retention Area,
Proposed Lost Lake Subdivision, Clermont, Florida

Dear Mr. Nix:

Andreyev Engineering, Inc. has completed an investigation of the soil and groundwater conditions in the area of a proposed dry retention area associated with the above referenced site. The following are the results of our investigation, including soil stratigraphy, permeability testing, estimation of seasonal high groundwater table, and recommendations for infiltration and recovery analyses of the retention area and design of a proposed retaining wall.

Investigation and Results

The soil conditions below the proposed retention area were investigated by means of drilling two (2) auger borings, one (1) in the center of the retention area to a depth of 30 feet and one (1) at the location of a proposed retaining wall to a depth of 15 feet. The approximate locations of the borings are presented on the location plan on the attached **Figure 1**.

Soil samples were collected at each change in strata and were classified in our laboratory by a geotechnical engineer using the Unified Soil Classification system. The results of the borings are presented in the form of soil profiles on **Figure 1**.

A field permeability test was conducted at the location of AB-1 to measure the horizontal hydraulic conductivity of the effective aquifer below the proposed retention area. Based on the test result the horizontal hydraulic conductivity of the tested aquifer was measured to be 31 ft/day in the depth interval of 9 to 15 feet below existing ground surface.

Evaluation and Recommendations

Retention Area

Based on the results of this investigation it is our opinion that the site soil and groundwater conditions are suitable for use of a dry retention area as part of the stormwater management system. The subsurface conditions in the proposed retention area consists of very well drained, high permeability sands having a deep encountered and seasonal high groundwater table.

Infiltration and recovery analyses must be performed for the subject pond as required by the St. John's River Water Management District and City of Clermont. For this purpose, we recommend utilizing the shallow aquifer soil and groundwater parameters presented below when conducting the infiltration and recovery analyses.

- Ground Elevation at Boring Location (ft-NGVD) +112.0
- Depth to Confining Layer (ft) 30.0
- Depth to Seasonal High Groundwater Table (ft) 29.5
- Horizontal Saturated Hydraulic Conductivity (ft/day) 15
- Vertical Unsaturated Hydraulic Conductivity(ft/day) 10
- Soil Storage Coefficient 0.25

Factors of safety have been assigned to the horizontal and vertical coefficients of hydraulic conductivity recommended above.

Retaining Wall

For purposes of estimating lateral earth pressures against the proposed retaining wall we recommend a Rankine passive earth pressure coefficient of 3.0 and an active earth pressure coefficient of 0.33. The soil to wall friction coefficient for the soils encountered on-site is approximately 0.38. These earth pressure coefficients are recommended assuming fill will be compacted against the wall and they are not free to move or yield. One method of calculating the estimated lateral earth pressure is to assume an equivalent pressure distribution with a soil unit weight (compacted structural sand fill) of 120 pcf above the watertable and 65 pcf for sands below the water table. The equivalent pressure is calculated by multiplying the earth pressure coefficient by the vertical effective soil pressure (unit weight multiplied by depth). This earth pressure criterion does not include a factor of safety or effects of surcharge loadings at the surface.

Closure

We appreciate the opportunity to provide our services on this project and we trust that the information presented is sufficient for your needs. If you have any questions concerning the contents of this report, please contact the undersigned.

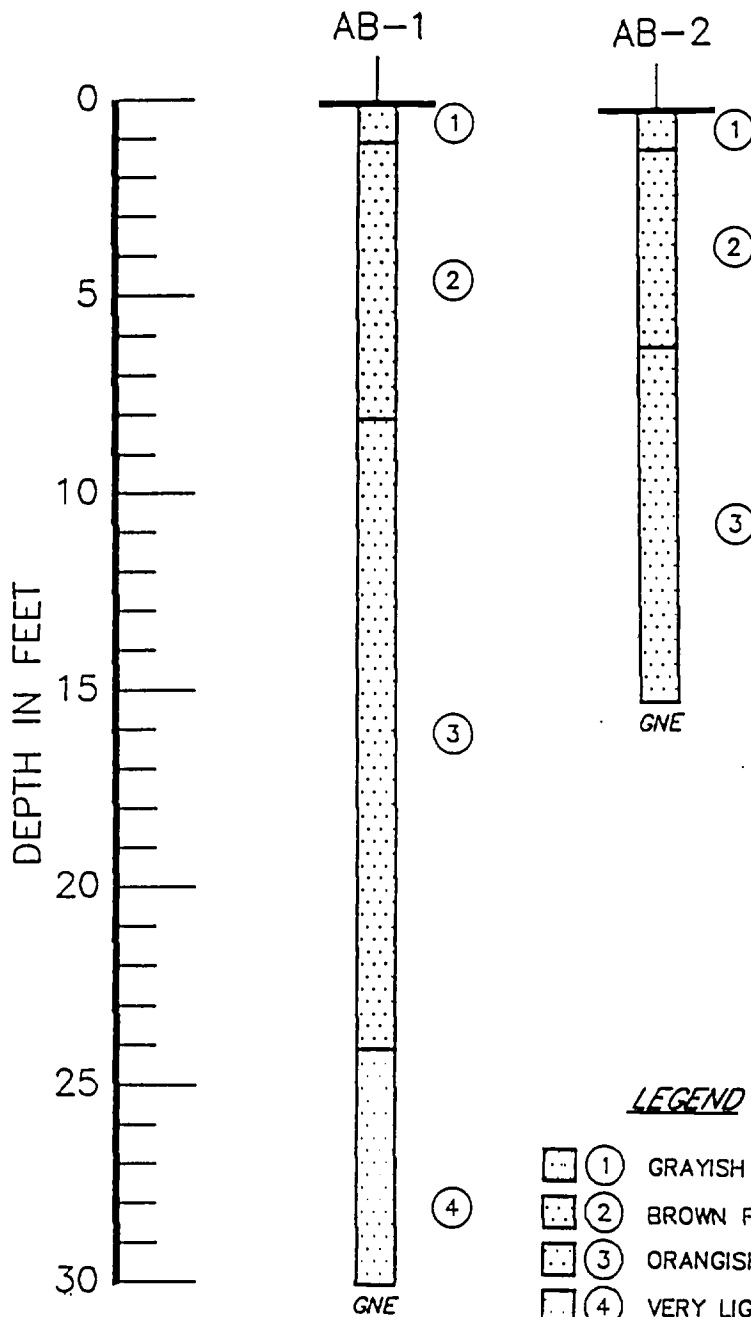
Sincerely,

ANDREYEV ENGINEERING, INC.



J. Scott Cavin, P.E.
Vice President
Fl. Registration No. 48125

FIGURES




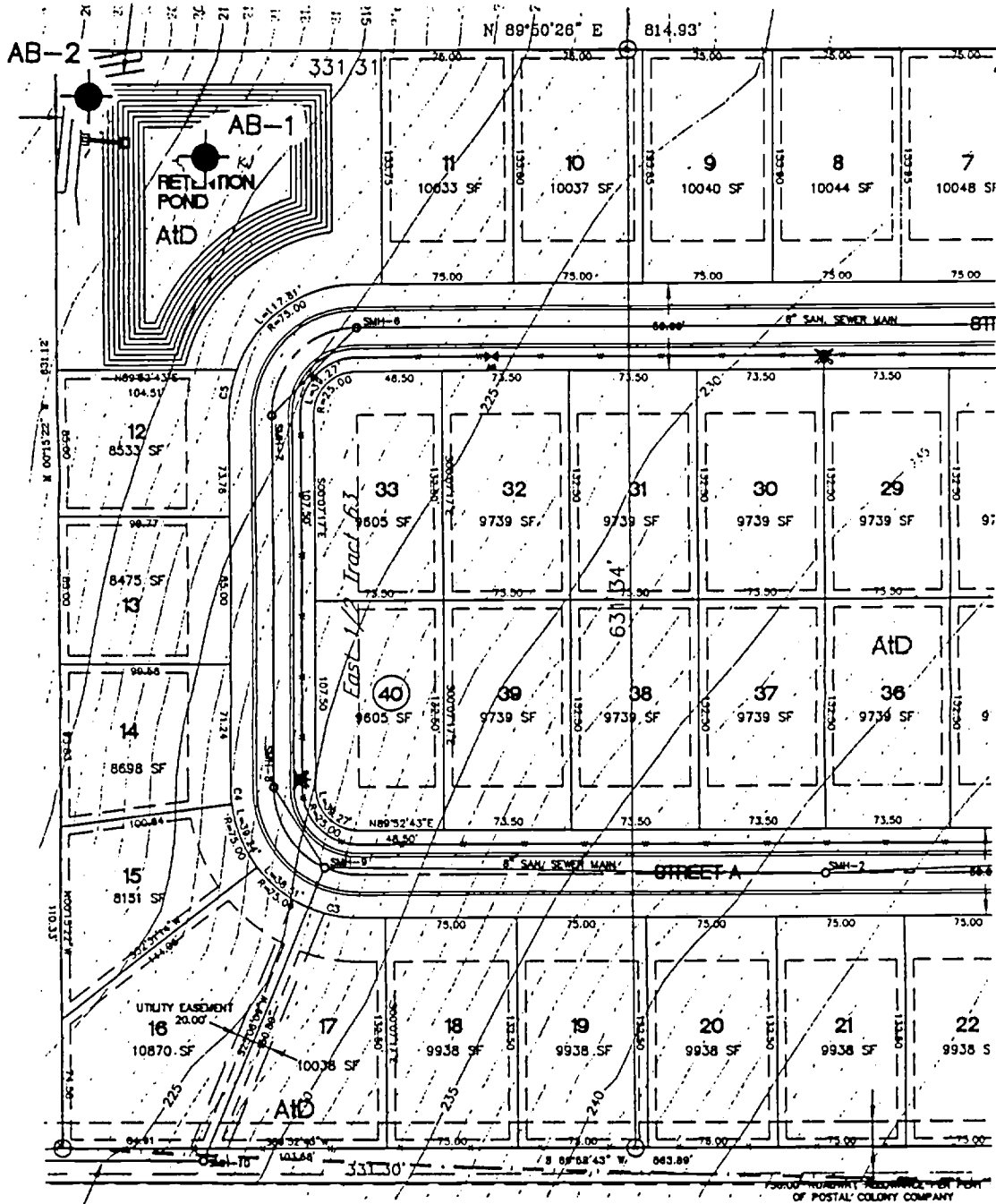
LEGEND

- ① GRAYISH BROWN FINE SAND (SP)
- ② BROWN FINE SAND (SP)
- ③ ORANGISH BROWN FINE SAND (SP)
- ④ VERY LIGHT BROWN FINE SAND (SP)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

GNE GROUNDWATER TABLE NOT ENCOUNTERED

 Andreyev Engineering, Inc.	Geotechnical Investigation LOST LAKE PINES SUBDIVISION LAKE COUNTY, FLORIDA	
	SOIL PROFILES FIGURE 2	
SCALE: 1" = 5'	DATE: 12/08/99 PN: CPGT-99-122	ENGINEER: SC DRAWN BY: JE



LEGEND

BORING LOCATION



**Andreyev
Engineering,
Inc.**

Geotechnical Investigation
LOST LAKE PINES
SUBDIVISION
LAKE COUNTY, FLORIDA

SCALE: 1" = 100'
DATE: 12/08/99 ENGINEER: SC
PN: CPGT-99-122 DRAWN BY: JE

LOCATION PLAN
FIGURE 1

STORMWATER GIS
PROCESSING SHEET



Application# 64873-1

Section(s) 24 Quad shows S-33

Township(s) 23 T-22

Range(s) 25 R-26

Quad Name Clermont East

Date Received 4-00 / Historical

Date Mapped 9-18-02

Acceptable Yes No

Mapper Initials sq