Preliminary Subsurface Soil Exploration
Proposed Stormwater Ponds
State Road 426/County Road 419
Project Development & Environment
(PD&E) Study
From Pine Avenue to Lockwood Boulevard
Oviedo, Seminole County, Florida

Ardaman & Associates, Inc.

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Geotechnical, Environmental and
Materials Consultants

March 10, 2004
DRAFT File No. 02-6521

DRMP, Inc
1505 East Colonial Drive
Orlando, Florida 32803

Attention: Mr. Ralph Bove

Subject: Preliminary Subsurface Soil Exploration
Proposed Stormwater Ponds
State Road 426/County Road 419
Project Development & Environment
(PD&E) Study
From Pine Avenue to Lockwood Boulevard
Oviedo, Seminole County, Florida

Gentlemen:

As requested, we have performed a preliminary subsurface soil exploration for the proposed stormwater ponds to be constructed as part of the State Road 426/County Road 419 improvement project. The purposes of performing the exploration were to determine the general subsurface stratigraphy at the stormwater pond locations and to provide a preliminary estimate of the normal seasonal high groundwater level at the boring locations. This report documents our findings and presents the results of our exploration.

This report has been prepared in accordance with generally accepted soil engineering practices for specific application to the subject project indicated in this report. No other warranty expressed or implied is made. The soils information submitted herein is based on the data obtained from the soil borings presented on Figures 3 through 5. This report does not reflect any variations which may occur adjacent to or between the borings. The nature and extent of the variations adjacent to or between the borings may not become evident until during construction.

It is a pleasure assisting you with this project. If you have any questions, or when we may be of further assistance to you, please do not hesitate to contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.

William L. Fox, P.E.
Project Engineer
Florida Registration No. 55385

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WLF/CHC/bb/ksb

02-6521 psse psw wlf.wpd (2002 Geo.)

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1.0 INTRODUCTION

1.1 Site Location

The sites of the proposed stormwater ponds are located at selected locations along the existing alignment of State Road 426/County Road 419 between Pine Avenue to the west and Lockwood Boulevard to the east. The proposed pond locations, as provided by DRMP, are located outside of the existing right-of-way of the project corridor within Sections 9, 10, 11, 13 and 14 of Township 21 South, Range 31 East. The approximate pond locations are shown superimposed on a reproduction of the Oviedo, Florida, USGS quadrangle map presented as Figure 1.

1.2 Project Considerations

It is our understanding that the proposed stormwater ponds under consideration for this report are to be located at selected locations outside the existing right-of-way of the State Road 426/County Road 419 alignment. Potential pond sites, which have been designated as Ponds A1 through F3, are located as follows:

Pond Designation	Approximate Stations	Approximate Offset (feet)	Remarks
Pond A1	8+00 to 10+00	250 Right	Heavily Wooded
Pond A2	22+00 to 23+50	100 Left	Heavily Wooded
Pond A3	15+00 to 16+50	1,100 Right	Heavily Wooded
Pond B1	39+00 to 41+00	1,400 Right	South of Clark Street
Pond B2	31+00 to 33+00	100 Right	Single Family Residence *Not Accessible
Pond B3	28+00 to 30+00	100 Right	Single Family Residence *Not Accessible
Pond C1	53+00 to 56+00	250 Left	Sod King Property
Pond C2	52+00 to 54+00	100 Right	Sheriff Community Center
Pond D1	56+00 to 60+00	100 Right	Heavily Wooded
Pond D2	62+00 to 67+00	200 Right	Heavily Wooded
Pond D3A	58+00 to 60+00	100 Left	Existing Dry Pond
Pond D3B	57+00 to 59+00	600 Left	Grassed Lot

Pond Designation	Approximate Stations	Approximate Offset (feet)	Remarks
Pond E1	97+50 to 98+50	100 Right	Heavily Wooded
Pond E2	103+00 to 105+00	100 Right	Heavily Wooded
Pond F1	113+00 to 115+00	100 Right	Heavily Wooded
Pond F2	116+00 to 118+00	250 Right	Heavily Wooded *Not Accessible
Pond F3	N/A	N/A	North Side of Evans Street
Note: Stationing and offset are referenced to the project baseline of State Road 426/County Road 419 depicted on the aerial photographs prepared by DRMP dated September, 2002.			

1.3 Purpose and Scope of Project

The purposes of performing the exploration relative to the proposed ponds were to determine the general subsurface stratigraphy within the stormwater pond areas and to provide a preliminary estimate of the typical seasonal high water table at the boring locations. Our scope of services included:

1. Conducting auger borings at selected locations within the proposed pond areas and measuring encountered groundwater levels.

2. Observing recovered soil samples in our laboratory and performing tests on selected samples to aid in classification.

3. Analyzing and interpreting the field and laboratory data.

1.4 Review of Available Data

1.4.1 Soil Survey Map

Based on review of the 1990 Soil Survey for Seminole County, Florida, as prepared by the U.S. Department of Agriculture Soil Conservation Service, the proposed pond locations are mapped within various soil types. A brief description of these soil types and their characteristics are presented in Table 1. The proposed project alignment and approximate pond locations are shown superimposed on a reproduction of the Soil Survey map presented as Figure 2.

1.4.2 USGS Quadrangle Map

Based on our review of the Oviedo, Florida, USGS quadrangle map, the prevailing ground surface elevations along the project corridor vary between approximate Elevations +50 and +60 feet based on the 1929 National Geodetic Vertical Datum (NGVD).

1.4.3 Potentiometric Map

Based on review of the "Potentiometric Surface of the Upper Floridan Aquifer in the St. Johns River Water Management District and Vicinity, Florida" (dated September, 2002) published by the United States Geological Survey, the potentiometric elevation of the upper Floridian Aquifer in the vicinity of the proposed pond sites is approximately +30 feet NGVD. Therefore, this potentiometric surface is generally below the existing ground surface elevation, as determined by a review of the USGS quadrangle map.

2.0 FIELD EXPLORATION PROGRAM

2.1 Auger Borings

The field exploration relative to the proposed ponds consisted of performing auger borings to depths of 7 to 15 feet below the existing ground surface at select locations within each of the proposed pond areas. The borings were drilled using a truck-mounted, 4-inch diameter, continuous flight auger or a hand-held, 3-inch diameter bucket auger. A summary of this field procedure is included in Appendix I. Soil samples recovered during performance of the borings were visually classified in the field and representative portions of the samples were transported to our laboratory in sealed sample jars.

2.2 Boring Locations

The locations of the borings were determined in the field by visual observations and estimating distances from existing site features. The approximate station and offset of each boring, as referenced to the project baseline of State Road 426/County Road 419 depicted on the aerial photographs prepared by DRMP dated September, 2002, is presented above the soil boring profile on Figures 3 through 5. These locations should be considered accurate only to the degree implied by the method of measurement used.

We note that borings were not performed within ponds B2 and B3 as these proposed pond areas are currently developed. Likewise, borings could not be performed within Pond F2 due to inaccessibility.

2.3 Groundwater Measurements

Where encountered, the groundwater level was measured in the boreholes on the date drilled after stabilization of the downhole water level, and approximately 1 to 2 days following the completion of drilling. The measured groundwater levels are shown adjacent to the soil boring profiles on Figures 3 through 5.

Groundwater was not encountered within the vertical extent of several of the borings on the dates indicated. However, this does not necessarily imply that groundwater would not be encountered at these locations at some other time. Fluctuations in groundwater level should be anticipated throughout the year primarily due to seasonal variation in rainfall and other factors that may vary from the time the borings were conducted.

3.0 LABORATORY TESTING PROGRAM

3.1 Visual Examination and Classification Testing

Representative soil samples obtained during our field sampling operation were packaged and transferred to our laboratory for further visual examination and classification to obtain more accurate descriptions of the existing soil strata. The soil samples were visually classified in general accordance with the American Association of State Highway and Transportation Officials (AASHTO) Soil Classification System.

In addition, natural moisture content, organic content, sieve analysis and Atterberg limits tests were conducted on representative soil samples to aid in classification. The resulting soil descriptions and the results of our tests are summarized on the Soil Survey sheet presented as Figure 6 and in Table 2.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 General Soil Stratigraphy

The results of the field exploration and laboratory testing programs are presented on the Auger Boring Profiles sheets (Figures 3 through 5) and are summarized on the Soil Survey sheet (Figure 6). The stratification of the soil boring profiles represents our interpretation of the field boring logs and the results of the laboratory examination of the recovered samples. The stratification lines represent the approximate boundary between soil types. The actual transitions may be more gradual than implied.

The results of our borings indicate the following general soil types:

Strata No.	Description	Classification	
		AASHTO	Index 505
1	Light brown to dark brown, gray to dark gray, grayish brown to dark grayish brown and reddish brown fine sand to fine sand with silt	A-3	S
2	Dark brown to dark reddish brown and orangish brown fine sand with silt to silty fine sand	A-3, A-2-4	S
3	Brown to grayish brown and bluish gray fine sand with clay to clayey fine sand	A-2-4	S
4	Bluish gray clay	A-6	P

Strata No.	Description	Classification	
		AASHTO	Index 505
5	Bluish gray clay	A-7-5	H
6	Dark brown to black sandy organic muck (O.C. 8-24%)	A-8	M

The soils encountered in the borings consist of fine sands containing varying amounts of silt and/or clay (AASHTO Classification A-3, A-2-4, A-6, and A-7-6). Soil Strata 1, 2 and 3 (AASHTO A-3 and A-2-4) are considered select materials based on FDOT criteria (Index 505). Soil Strata 4 (AASHTO A-6) and 5 (AASHTO A-7-5) are considered non-select materials as these strata are considered plastic and high-plastic soils, respectively, based on FDOT criteria (Index 505). The results of organic content and moisture content tests performed on Stratum 6 soils were 8 to 24 percent and 25 to 92 percent, respectively. Based on the results of the tests and our experience with similar materials, we recommend that the Stratum 6 soils be considered muck (AASHTO A-8). We note that the muck depths and thicknesses may be greater at unexplored.

Of particular note, buried trash was encountered at the location of Boring AB-2 performed at Pond F3 between depths of 5½ to 12 feet. The depths and thicknesses of the trash may be greater at unexplored locations.

The A-3 soils of Strata 1 and 2 are generally considered to be relatively permeable. The A-2-4 soils of Strata 2 and 3 and the A-6 and A-7-5 soils of Strata 4 and 5 are likely less permeable than the A-3 soils due to their high fines content. These soils should therefore be considered to be aquitards when analyzing pond drawdown by exfiltration. The permeability of the Stratum 6 soils will be variable, but is generally considered to be low. Permeability testing will need to be performed to determine actual permeability rates for design purposes.

4.2 Normal Seasonal High Groundwater Level

The normal seasonal high groundwater level each year is the level in the August-September period at the end of the rainy season during a year of normal (average) rainfall. The water table levels associated with a flood would be much higher than the seasonal high water table elevations. The normal high water levels would more approximate the seasonal high water table elevations.

The seasonal high water table is affected by a number of factors. The drainage characteristic of the soils, the land surface elevation, relief points such as lakes, rivers, swamp areas, etc., and distance to relief points are some of the more important factors influencing the seasonal high water table elevation.

Based on our interpretation of the site conditions using the boring log data, we have preliminarily estimated the normal seasonal high groundwater level at the boring locations assuming that site drainage existing at the time of our borings is maintained. Our estimates are presented adjacent to the auger boring profiles on Figures 3 through 5. If site drainage conditions are altered from those existing at the time of our borings, our estimates may not be valid. Our preliminary estimates should be further evaluated once survey information and plans become available.

TABLE 1

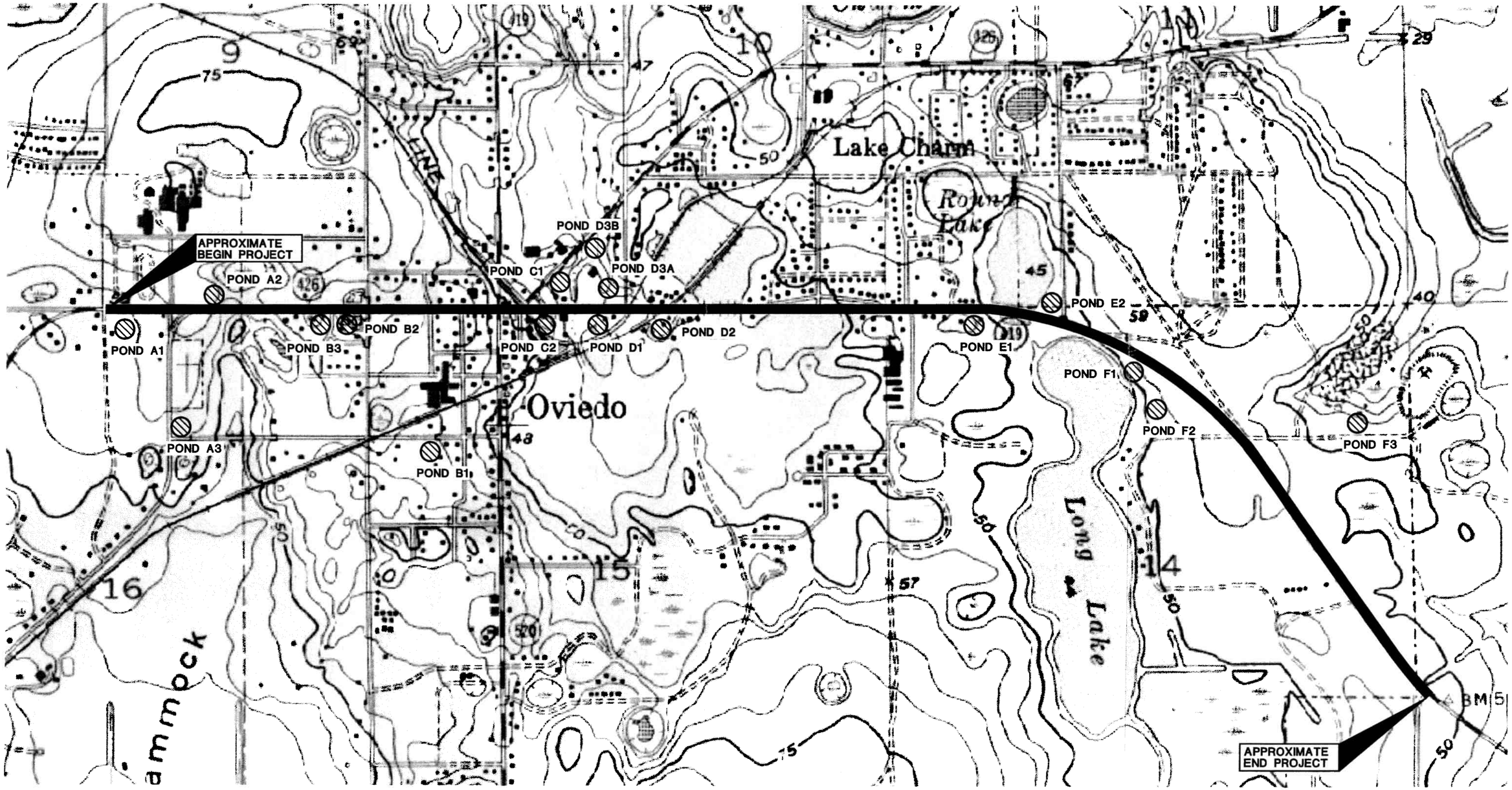
Review of Soil Survey of Seminole County
State Road 426/County Road 419
From Pine Avenue to Lockwood Boulevard
Oviedo, Seminole County, Florida

Pond	Soil Type	Description
D2	3 - Arents, 0 to 5 percent slopes	Consists of different kinds of soils excavated from several areas. This fill material is the result of earthwork operations and is used to fill such areas as sloughs, marshes, shallow depressions, swamps, and other low-lying areas.
A2, A3, B2, B3	6 - Astatula - Apopka fine sands, 0 to 5% slopes	Nearly level to gently sloping. Surface layer of gray to grayish-brown fine sand 3 to 4 inches thick. A subsurface layer of pale brown to very pale brown fine sand to about 64 inches. Underlying material to about 80 inches consists of very pale brown fine sand and a yellowish brown sandy clay loam.
D1, D3A	10 - Basinger, Samsula, and Hontoon soils, depressional	Nearly level, very poorly drained organic laden soils found in swamps and depressions. These soils consist primarily of organic material (i.e., muck and peat) in varying stages of decay.
E1, E2, F1, F2, F3	20 - Myakka and Eau Gallie fine sands	Nearly level, poorly drained sandy soil found on broad plains of the flatwoods. A surface layer of dark gray fine sand overlying light gray, black, dark brown, and brown fine sands.
A1, B1	31 - Tavares-Millhopper fine sands, 0 to 5 percent slopes	Nearly level to gently sloping. A surface layer of dark grayish brown and gray fine sand to about 7 inches. The subsurface layer to a depth of about 45 inches is very pale brown and pale brown fine sand. Underlying soils consist of yellowish brown and white fine sand and light gray sandy clay loam.
C1, C2, D3B	34 - Urban land, 0 to 12 percent slopes	This miscellaneous area is covered by urban facilities, such as shopping centers, parking lots, industrial buildings, etc. The natural soil cannot be observed. Soils in unoccupied areas consist of various type soils. These soils have been altered by grading and shaping, or fill has been used to cover these soils.

TABLE 2
Summary of Laboratory Test Results
Proposed Stormwater Ponds
State Road 426/County Road 419
From Pine Avenue to Lockwood Boulevard
Oviedo, Seminole County, Florida

Approximate Station	Approximate Offset (ft.) From Project Baseline	Pond	Boring	Stratum No.	Sample Depth (feet)	Natural Moisture %	Grain Size Distribution - Percent Passing					OC (%)	Atterberg Limits		AASHTO Classification
							#10 (%)	#40 (%)	#60 (%)	#100 (%)	#200 (%)		Liquid Limit	Plasticity Index	
9+50	205 Rt	A1	AB2	1	0-6	7	100	95	83	29	4	---	NP	NP	A-3
16+00	1,250 Rt	A3	AB1	1	6.5-13	4	100	98	88	41	9	---	NP	NP	A-3
23+00	150 Lt	A2	AB1	1	3-9	2	100	96	83	27	2	---	NP	NP	A-3
60+00	100 Rt	D1	AB1	1	3-7	22	100	97	88	53	9	---	NP	NP	A-3
98+00	100 Rt	E1	AB1	1	2.5-7	25	100	97	86	33	5	---	NP	NP	A-3
40+00	140 Rt	B1	AB1	2	6-8	11	100	92	89	66	15	---	NP	NP	A-2-4
104+00	100 Lt	E2	AB1	2	3-8	29	100	97	83	43	11	---	NP	NP	A-2-4
109+00	100 Rt	F1	AB1	2	2-4	32	100	96	83	41	7	---	NP	NP	A-3
N/A	N/A	F3	AB2	3	10-15	33	99	96	87	54	16	---	---	---	A-2-4
57+50	250 Rt	D1	AB2	4	11-13.5	21	100	98	96	91	36	---	28	12	A-6
65+50	150 Rt	D2	AB2	5	6-9	39	100	100	98	93	84	---	102	75	A-7-5
55+00	300 Lt	C1	AB1	6	0-5	75	99	94	87	58	24	24	---	---	A-8
58+00	100 Lt	D3A	AB1	6	0-3	26	100	97	89	50	13	8	---	---	A-8
58+00	600 Lt	D3B	AB1	6	0-2	58	100	98	88	54	18	18	---	---	A-8

OC = Organic Content -- = Property Not Measured NP = Non Plastic



SECTIONS 9, 10, 11, 13, AND 14
TOWNSHIP 21 SOUTH
RANGE 31 EAST

BASE MAP: USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE MAP, OVIEDO, FLA., 1956
PHOTOREVISED 1980

N

0 500 1000

APPROXIMATE SCALE: 1"=1000'

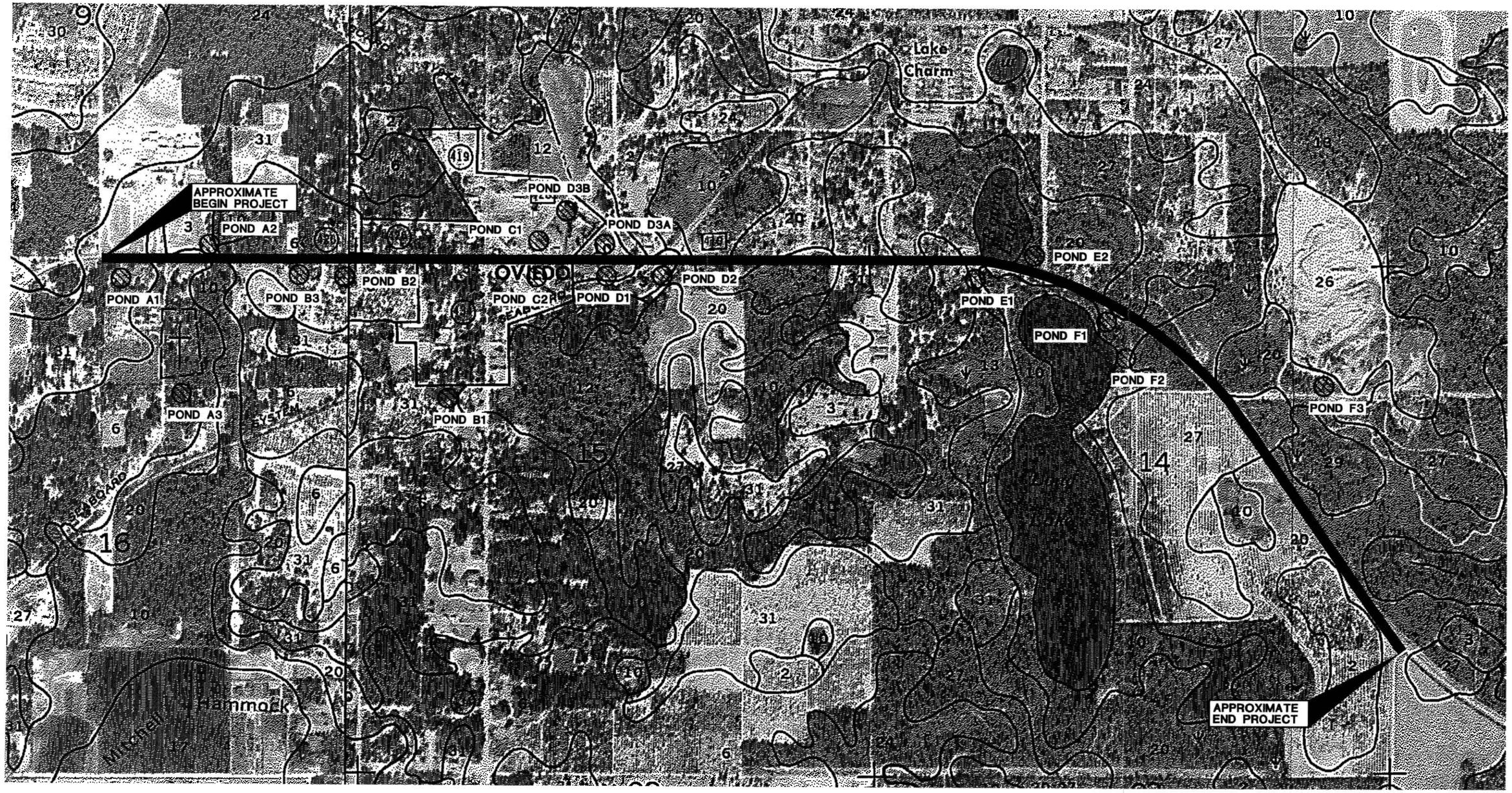
CADD FILE: 02652104.DWG 03/11/04 CD

SITE LOCATION MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PRELIMINARY SUBSURFACE SOIL EXPLORATION
STATE ROAD 426/COUNTY ROAD 419 FROM
PINE AVENUE TO LOCKWOOD BOULEVARD
OVIEDO, SEMINOLE COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 03/08/04
FILE NO. 02-6521	APPROVED BY:	FIGURE: 1



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0 500 1000

APPROXIMATE SCALE: 1"=1000'

OBTAINTED FROM: SOIL SURVEY OF SEMINOLE COUNTY, FLORIDA
ISSUED DATE: MARCH 1990

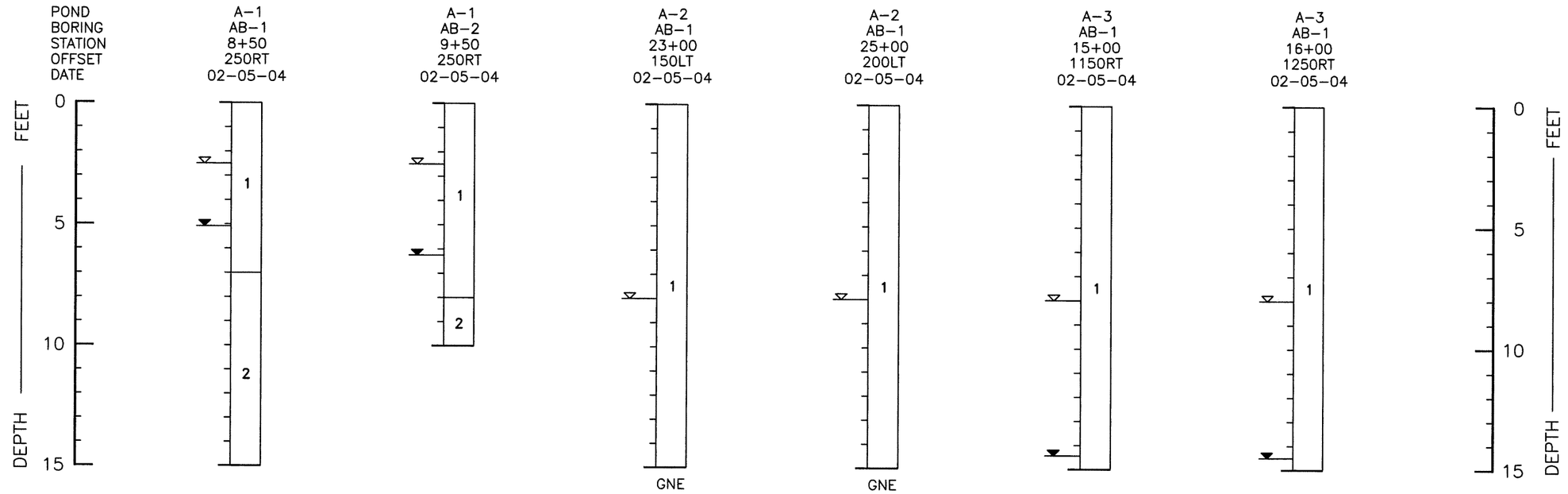
CADD FILE: 02652104.DWG 03/11/04 CD

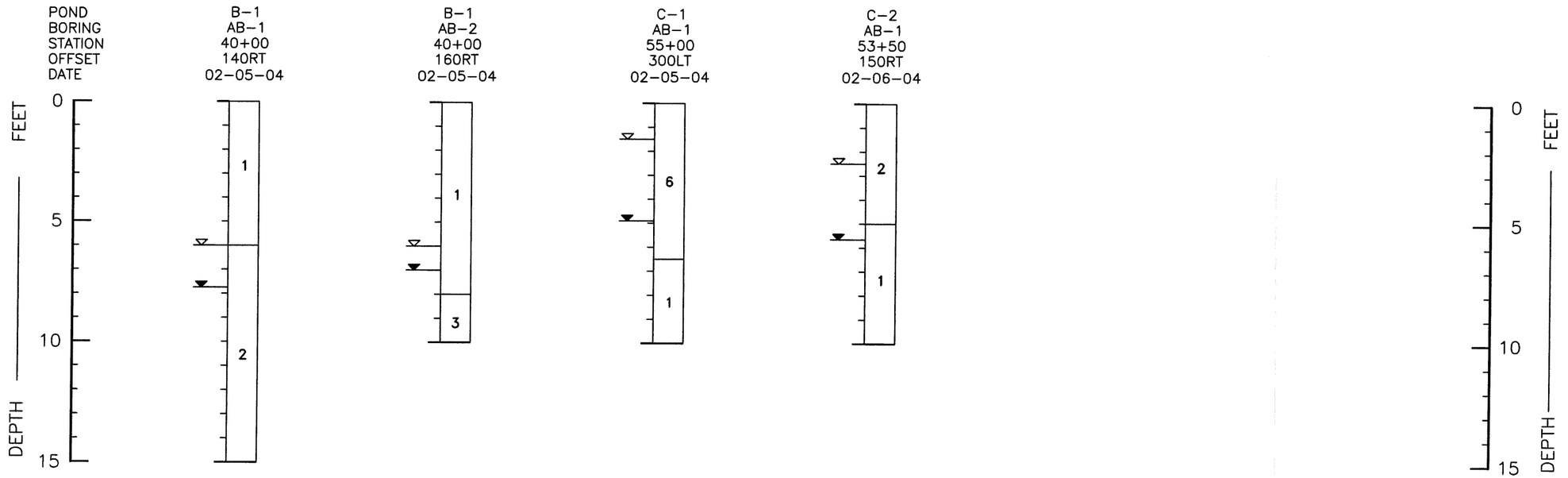
SOIL SURVEY MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

PRELIMINARY SUBSURFACE SOIL EXPLORATION
STATE ROAD 426/COUNTY ROAD 419 FROM
PINE AVENUE TO LOCKWOOD BOULEVARD
OVIEDO, SEMINOLE COUNTY, FLORIDA

DRAWN BY: CD	CHECKED BY:	DATE: 03/08/04
FILE NO. 02-6521	APPROVED BY:	FIGURE: 2





NOTES

LEGEND ▽ ESTIMATED SEASONAL HIGH GROUNDWATER TABLE.
LEGEND ▼ DEPTH GROUNDWATER WAS ENCOUNTERED ON DATE DRILLED.
LEGEND "GNE" GROUNDWATER NOT ENCOUNTERED ON DATE DRILLED.

BORING STATION AND OFFSET REFERENCED TO PROJECT BASELINE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
WILLIAM L. FOX, P.E.
FL. REG. NO. 55385

Ardaman & Associates, Inc.
8008 S. ORANGE AVENUE
ORLANDO, FL. 32859
ENGINEERING AUTHORIZATION NO. 5950

Ardaman & Associates, Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY
S.R. 426	SEMINOLE

AUGER BORING PROFILES
SR 426/CR 419 PD&E STUDY
FROM PINE AVENUE TO LOCKWOOD BOULEVARD
SEMINOLE COUNTY, FLORIDA

SHEET NO.

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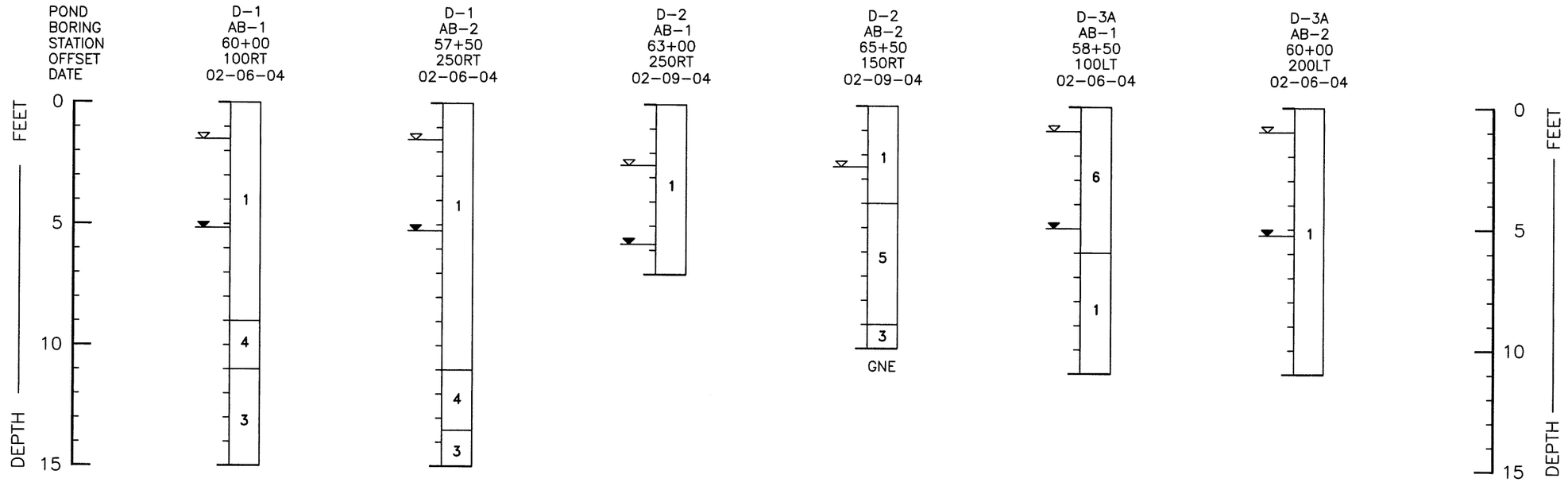

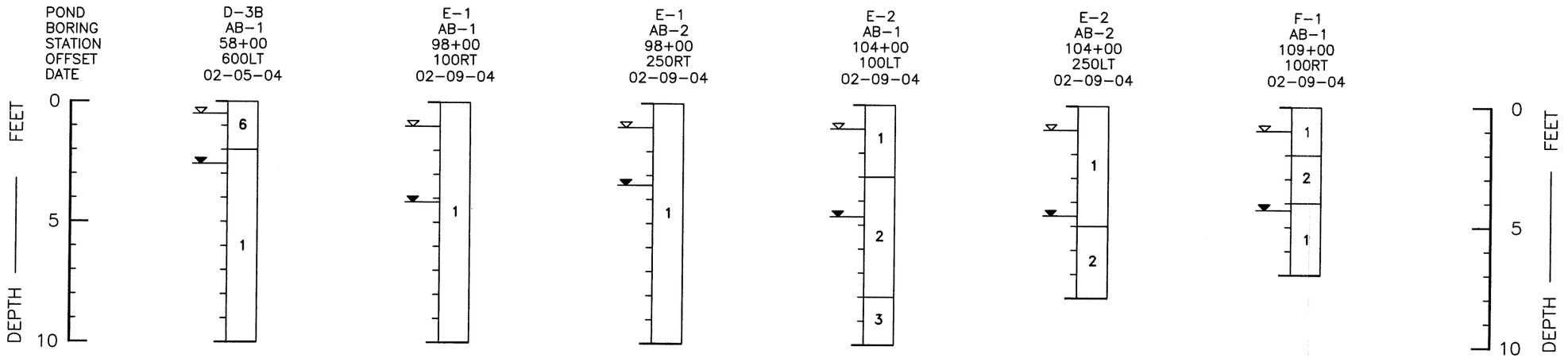

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ROAD NO.	COUNTY
S.R. 426	SEMINOLE

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FROM PINE AVENUE TO LOCKWOOD BOULEVARD
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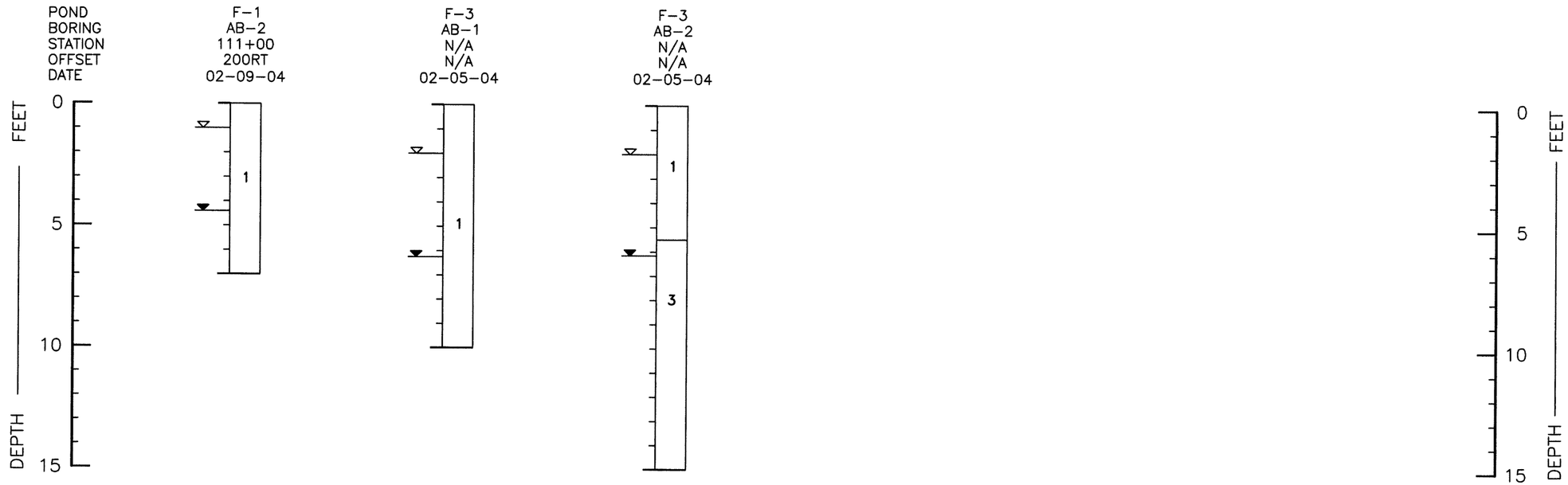

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BORING STATION AND OFFSET REFERENCED TO PROJECT BASELINE

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ENGINEER OF RECORD:
WILLIAM L. FOX, P.E.
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ORLANDO, FL. 32859
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Ardaman & Associates, Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY
S.R. 426	SEMINOLE

AUGER BORING PROFILES
SR 426/CR 419 PD&E STUDY
FROM PINE AVENUE TO LOCKWOOD BOULEVARD
SEMINOLE COUNTY, FLORIDA

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PROJECT: S.R. 426/COUNTY ROAD 419 PD&E STUDY
FROM PINE AVENUE TO LOCKWOOD BOULEVARD

SECTION No: N/A

FPN: N/A

COUNTY: SEMINOLE

FLORIDA DEPARTMENT OF TRANSPORTATION CROSS SECTION OF SOIL SURVEY REPORT OF TESTS

MECHANICAL ANALYSIS

DATE OF SURVEY: 02/05/04 – 02/09/04

SURVEYED BY: CORNELL, RAFFERTY

SURVEY BEGINS AT APPROXIMATE STA. No.: 8+00

SURVEY ENDS AT APPROXIMATE STA. No.: 144+50

LOCATION

TOWNSHIP: 21 SOUTH

RANGE: 31 EAST

SECTION: 9, 10, 11, 13 AND 14

STRATUM NO.	LBR VALUE	% PASSING 10 MESH	% PASSING 40 MESH	% PASSING 60 MESH	% PASSING 100 MESH	% PASSING 200 MESH	CONSTANTS MATERIAL PASS NO. 200 SIEVE: LIQUID LIMIT	CONSTANTS MATERIAL PASS NO. 200 SIEVE: PLASTICITY INDEX	NO. LBR TESTS	NO. GRAD TEST	NO. LL–PI TEST	CLASSIFICATION GROUP	MATERIAL DESCRIPTION	pH	RESISTIVITY ohm–cm	CHLORIDES ppm	SULFATES ppm	ENVIRONMENTAL CLASSIFICATION SUBSTRUCTURE: STEEL	ENVIRONMENTAL CLASSIFICATION SUBSTRUCTURE: CONCRETE
1	---	100	95–98	83–88	27–53	2–9	NP	NP	0	5	0	A–3	LIGHT BROWN TO DARK BROWN, GRAY TO DARK GRAY, GRAYISH BROWN TO DARK GRAYISH BROWN AND REDDISH BROWN FINE SAND TO FINE SAND WITH SILT	---	---	---	---	---	---
2	---	100	92–97	83–89	41–66	7–15	NP	NP	0	3	0	A–3, A–2–4	DARK BROWN TO DARK REDDISH BROWN AND ORANGISH BROWN FINE SAND WITH SILT TO SILTY FINE SAND	---	---	---	---	---	---
3	---	99	96	87	54	16	---	---	0	1	0	A–2–4	BROWN TO GRAYISH BROWN AND BLUISH GRAY FINE SAND WITH CLAY TO CLAYEY FINE SAND	---	---	---	---	---	---
4	---	100	98	96	91	36	28	12	0	1	1	A–6	BLUISH GRAY CLAY	---	---	---	---	---	---
5	---	100	100	98	93	84	102	75	0	1	1	A–7–5	BLUISH GRAY CLAY	---	---	---	---	---	---
6	---	99–100	94–98	87–89	50–58	13–24	---	---	0	3	0	A–8	DARK BROWN TO BLACK SANDY ORGANIC MUCK (O.C. 8–24%)	---	---	---	---	---	---

NOTES

1. STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. ANY STRATUM CONNECTING LINES THAT ARE SHOWN ARE FOR ESTIMATING EARTHWORK ONLY AND DO NOT INDICATE ACTUAL STRATUM LIMITS. SUBSURFACE VARIATIONS BETWEEN BORINGS SHOULD BE ANTICIPATED AS INDICATED IN SECTION 2–4. FOR FURTHER DETAILS SEE SECTION 120–3.

2. LEGEND ▽ ESTIMATED SEASONAL HIGH GROUNDWATER TABLE.
   LEGEND ▼ DEPTH GROUNDWATER WAS ENCOUNTERED ON DATE DRILLED.
   LEGEND "GNE" GROUNDWATER NOT ENCOUNTERED ON DATE DRILLED.

3. THE SYMBOL "___" REPRESENTS AN UNMEASURED PARAMETER.

4. THE SYMBOL "NP" REPRESENTS NON–PLASTIC.

5. STRATA 2, 3, 4 AND 5 MAY RETAIN EXCESS MOISTURE AND BE DIFFICULT TO DRY AND COMPACT.

CADD FILE: 02652105.DWG 03/11/04 SR

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD: WILLIAM L. FOX, P.E. FL. REG. NO. 55385
Ardaman & Associates, Inc. 8008 S. ORANGE AVENUE ORLANDO, FL. 32859 ENGINEERING AUTHORIZATION NO. 5950

Ardaman & Associates, Inc.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY
S.R. 426	SEMINOLE

SOIL SURVEY
SR 426/CR 419 PD&E STUDY
FROM PINE AVENUE TO LOCKWOOD BOULEVARD
SEMINOLE COUNTY, FLORIDA

SHEET NO.

FIGURE 6

APPENDIX I

Auger Boring Procedures

AUGER BORINGS

Auger borings are used when a relatively large, continuous sampling of soil strata close to ground surface is desired. A 4-inch diameter, continuous flite, helical auger with a cutting head at its end is screwed into the ground in 5-foot sections. It is powered by the rotating action of the Kelly bar of a rotary drill rig. The sample is recovered by withdrawing the auger out of the ground without rotating it. The soil sample so obtained, is classified and representative samples put in bags or jars and brought back to the laboratory for classification testing.