Volume III
Calculations Package

Bayou Bonfouca Marsh Creation Project
(PO-104)
St. Tammany Parish, Louisiana

for
State of Louisiana
Office of Coastal Protection and Restoration

December 28, 2011

GeoEngineers
Earth Science + Technology

Volume III
Calculations Package

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana

for
State of Louisiana
Office of Coastal Protection and Restoration

December 28, 2011

GeoEngineers

11955 Lakeland Park Boulevard, Suite 100
Baton Rouge, Louisiana 70809
225.293.2460

Volume III
Calculations Package

Bayou Bonfouca Marsh Creation Project
(PO-104)
St. Tammany Parish, Louisiana

File No. 16715-023-00

December 28, 2011

Prepared for:

State of Louisiana
Office of Coastal Protection and Restoration
P.O. Box 44027
Baton Rouge, Louisiana 70804-4027

Attention: Mr. Andrew Beall

Prepared by:

GeoEngineers, Inc.
11955 Lakeland Park Boulevard, Suite 100
Baton Rouge, Louisiana 70809
225.293.2460

PRELIMINARY

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Josh Pruett, E.I.
Staff Geotechnical Engineer

PRELIMINARY

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Charles L. Eustis, PE
Principal

JMP:CLE:lb

cc: Joe Guillory, EI, CPRA

GeoEngineers

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APPENDICES

INTRODUCTION

This document contains the calculation package in support of GeoEngineers, Inc.'s (GeoEngineers) geotechnical services for the Bayou Bonfouca Marsh Creation Project (PO-104) in St. Tammany Parish, Louisiana. Our services have been completed in accordance with the scope of services dated February 2010, which was sent July 13, 2011 for our consideration. Our services are performed under LDNR Contract No. 2503-11-67 "Geotechnical Services for Coastal Restoration Projects" dated February 7, 2011.

DOCUMENT ORGANIZATION

This calculations package is broken into various appendices in order to catalog the various components of the engineering process. These appendices are organized as follows:

1. Appendix A. Field Logs and Notes – Daily field reports and other documents pertinent to field exploration.
2. Appendix B. Lab Setup Sheets – Lab testing setup documents including test assignments on field produced boring logs.
3. Appendix C. Containment Dike Bearing Capacity and Slope Stability Calculations – Calculation packages for bearing capacity and slope stability.
4. Appendix D. Containment Dike Settlement – Calculation package for settlement of containment dike foundation soils.
5. Appendix E. Marsh Fill and Foundation Settlement – Calculation package for settlement of dredged fill under its own weight and settlement of marsh foundation soils after fill placement.
6. Appendix F. Marsh Creation Calculations – Calculation package for the bulking factor of the dredged fill.

For figures and tables summarizing calculation results, please refer to Volume II - Geotechnical Engineering Report.

LIMITATIONS

This document is subject to the limitations contained in Volume II – Geotechnical Engineering Report. Please refer to the section titled Limitations in Volume II and Appendix II-E for details pertaining to the use of this report.

APPENDICES

GeoEngineers

APPENDIX III-A
Field Logs and Notes

GeoEngineers	**FIELD REPORT**		File Number: 16715-023-00
11955 Lakeland Park Blvd., Suite 100 Baton Rouge, LA 70806 (225) 293-2460	Project: LA DNR/OCPR Bayou Bonfouca Marsh Creation Project (PO-104)		Date: 30 August 11
	Location: St. Tammany Parish, LA	Client: LA Office of Coastal Protection and Restoration	Day: Tuesday Report Number: 1
Prepared by: Ron Bek	Contractor: SER	Weather: Clear and Sunny	Page: 1 of 8

EXPLORATORY BORINGS	DEPTH (FEET)	TODAY (FEET)	TO DATE (FEET)	% COMPLETE
1	40			
2	40			
2	40			
4	40			
5	60			
6	60			
7	40	40	40	100%
8	40	40	40	100%
9	60	25	25	42%
10	20			
11	20			
12	20			
13	20			
14	20			

Summary of Daily Activities:

I mobilized from Baton Rouge, LA to Slidell, LA on August 29, 2011 and then mobilized from Slidell, LA to Heritage Park in Slidell, LA and met SER crew on August 30, 2011. Marsh buggy mounted and pontoon mounted drill rigs were delivered and launched on August 29, 2011. We traveled to and completed borings 7 and 8 and partially completed boring 9, drilling and sampling continuously in the upper 20-feet of the soil and on 5-foot centers thereafter to respective boring completion depths. Undisturbed samples were obtained by pushing Shelby tubes and advancing the bit by rotary wash method (Deck of marsh buggy = 0 feet; deck to water=2.5 feet; water depth ranged between 1.0 to 1.5-feet). Soils encountered generally consisted of peat underlain by organic clay and clay.

GeoEngineers kept track of the ingress and egress route travelling with the marsh buggy in the marsh area. Attached figures show the route taken between the borings and also the coordinates at which the photos were taken. The marsh buggy stayed in shallow water for most of the journey between the borings except when travelling from B-7 to B-8. A little strip of vegetative marsh land was crossed between Borings B-7 and B-8, and the attached photos (P-4 and P-5) show the before and after condition of the marsh.

Crew Members/Rig Type/Field Vane Used:

Ron Bek: Technician (GeoEngineers)
Venu Tammineni: Project Engineer (GeoEngineers)
Terry Jeansonne: Driller (SER)
Kirk and Trent: Roughnecks (SER)

SER marsh buggy mounted drill rig with support cabin boat and air boat.
Field vane serial number 2555; Vane size 2.56-inches x 5.12-inches; Red vane used

One Call Number: 110427230

Observations:

0745 -- 0800: I, Ron Bek of GeoEngineers, mobilized from a hotel in Slidell, LA to Heritage Park in Slidell, LA.

0800 – 0815: Arrived at Heritage Park, met with Venu Tammineni (GeoEngineers) and Terry, Kirk, and Trent (SER). Load sampling equipment and field gear on to SER boats.

0815 – 1020: Travel to boring 7.

1020 – 1245: Began boring 7, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 44-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix. Moved the drill rig couple feet and completed field vane test at 16-feet and 20-feet below mudline.

12:45 – 1300: Travel to boring 8.

1300 – 1400: Began boring 8, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 44-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix.

1400 – 1440: Moved the drill rig couple feet and completed field vane test at 5-feet and 9.5-feet below mudline.

1440 – 1455: Travel to boring 9.

1455 – 1530: Began boring 9, drilling and sampling continuously from 3.5-feet (mudline) to 23.5-feet and on 5-foot centers from 23.5-feet to 28.5-feet. Will resume drilling at this boring tomorrow (August 31, 2011).

1530 – 1650: Travel to Heritage Park.

1650 – 1710: Offload soil samples and field equipment from support cabin boat and air boat.

17:10 – 17:25: Travel from Heritage Park to hotel.

Photo coordinates:

P1	N30°14'57.8"	W089°51'36.2"
P2	N30°14'55.9"	W089°51'35.2"
P3	N30°14'51.1"	W089°51'29.5"
P4	N30°14'48.9"	W089°51'23.8"
P5	N30°14'48.6"	W089°51'20.7"
P6	N30°14'40.0"	W089°50'52.2"

X THIS FIELD REPORT IS PRELIMINARY A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**FIELD REPRESENTATIVE** Ron Beck	**DATE** 08/30/2011
O THIS FIELD REPORT IS FINAL A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**REVIEWED BY** Venu Tammineni	**DATE** 08/31/2011

Facing North – Travelling to Boring B-7
P1- N30°14'57.8", W089°51'36.2"

Facing West –Travelling to Boring B-7
P2- N30°14'55.9", W089°51'35.2"

Facing Southwest – Travelling to Boring B-7
P3- N30°14'51.1", W089°51'29.5"

Facing East - Travelling to Boring B-8 (marsh before)
P4- N30°14'48.9", W089°51'23.8"

Facing West - Travelling to Boring B-8 (marsh after)
P5- N30°14'48.6", W089°51'20.7"

Facing Southeast - Travelling to Boring B-9
P6- N30°14'40.0", W089°50'52.2"

LA DNR/OCPR BAYOU BONFOUCA MARSH
CREATION PROJECT
Reference: Daily Field Report 1, Dated August 30, 2011

LEGEND

○ B-6	BORING LOCATION
→ P-1	PHOTOGRAPH NUMBER (ARROW SHOWS THE DIRECTION OF PHOTOGRAPH)

GeoEngineers	**FIELD REPORT**		File Number: 16715-023-00
11955 Lakeland Park Blvd., Suite 100 Baton Rouge, LA 70806 (225) 293-2460	Project: LA DNR/OCPR Bayou Bonfouca Marsh Creation Project (PO-104)		Date: 31 August 11
	Location: St. Tammany Parish, LA	Client: LA Office of Coastal Protection and Restoration	Day: Wednesday Report Number: 2
Prepared by: Ron Bek	Contractor: SER	Weather: Clear and Sunny, Variable Wind	Page: 1 of 6

EXPLORATORY BORINGS	DEPTH (FEET)	TODAY (FEET)	TO DATE (FEET)	% COMPLETE
1	40	40	40	100%
2	40	40	40	100%
2	40			
4	40			
5	60			
6	60	60	60	100%
7	40		40	100%
8	40		40	100%
9	60	35	60	100%
10	20			
11	20			
12	20			
13	20			
14	20			

Summary of Daily Activities:

I mobilized from a hotel in Slidell, LA to Heritage Park in Slidell, LA and met SER crew. We traveled to and completed borings 9, 6, 1, and 2, drilling and sampling continuously in the upper 20-feet of the soil and on 5-foot centers thereafter to respective boring completion depths. Undisturbed samples were obtained by pushing Shelby tubes and advancing the bit by rotary wash method (Deck of marsh buggy = 0 feet; deck to water ranged between 2.5 to 3.5 feet; water depth ranged between 0.5 to 1.5-feet). Soils encountered generally consisted of peat underlain by organic clay and clay.

GeoEngineers kept track of the ingress and egress route travelling with the marsh buggy in the marsh area. Attached figures show the route taken between the borings and also the coordinates at which the photos were taken. The marsh buggy stayed in shallow water for most of the journey between the borings except when travelling from B-6 to B-1 and B-2 to B-3. The marsh buggy was parked at B-3 in preparation for tomorrow's drilling activities. A portion of vegetative marsh land was crossed to access B-6 and B-3, and the attached photos (P-9, P-26 and P-27) show the before and after conditions of the marsh.

Crew Members/Rig Type/Field Vane Used:

Ron Bek: Technician (GeoEngineers)
Terry Jeansonne: Driller (SER)
Kirk Anslem and Cody Zaunbrecher: Roughnecks (SER)

SER marsh buggy mounted drill rig with support cabin boat and air boat.
Field vane serial number 2555; Vane size 2.56-inches x 5.12-inches; Red vane used

One Call Number: 110427230

Observations:

0640 -- 0650: I, Ron Bek of GeoEngineers, mobilized from a hotel in Slidell, LA to Heritage Park in Slidell, LA.

0650 – 0700: Arrived at Heritage Park, met with Terry, Kirk, and Cody (SER). Load sampling equipment and field gear on to SER boats.

0700 – 0815: Travel to boring 9.

0815 – 0910: Resume boring 9, drilling and sampling on 5-foot centers from 31.5-feet to 62.5-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix. Moved the drill rig couple feet and completed field vane test at 10-feet (reading of 5) below mudline.

0910 – 0940: Travel to boring 6.

0940 – 1040: Began boring 6, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 62-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix. Moved the drill rig couple feet and completed field vane test at 15-feet (reading of 9).

1040 – 1130: Travel to boring 1.

1130 – 1220: Began boring 1, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 44-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix. Field vane tests were not performed at boring 1.

1220 – 1255: Travel to boring 2.

1255 – 1345: Began boring 2, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 44-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix. Moved the drill rig couple feet and completed field vane test at 6-feet (reading of 3) and 14-feet (reading of 8) below mudline.

13:45 – 14:35: Travel to boring 3. A portion of vegetative marsh land was crossed en route to boring 3; the proposed exploratory boring navigation channel was too deep for the swamp buggy to traverse. An alternate path was evaluated including towing the marsh buggy with the support cabin boat toward boring 3; the water was too shallow for the support cabin boat. Parked marsh buggy at boring 3 in preparation for tomorrow's drilling activities.

1435 – 15:30: Travel to Heritage Park.

1530 – 1600: Transfer soil samples to and obtain more soil sampling supply from Dusty Thompson (GeoEngineers) and offload field equipment from support cabin boat and air boat. Dusty will deliver the soil samples to GeoEngineers' office in Baton Rouge, LA for laboratory testing and soils classification.

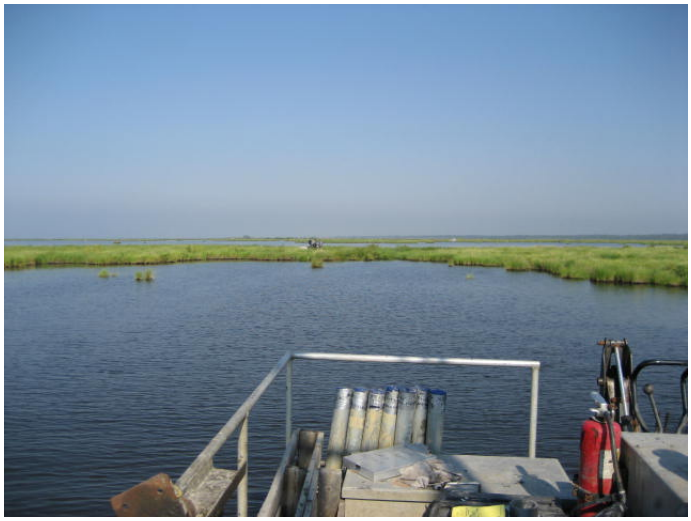
1600 – 1615: Travel from Heritage Park to hotel.

X **THIS FIELD REPORT IS PRELIMINARY** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**FIELD REPRESENTATIVE** Ron Beck	**DATE** 09/01/2011
O **THIS FIELD REPORT IS FINAL** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**REVIEWED BY** Venu Tammineni	**DATE** 09/06/2011

Photo coordinates:

P7	N30°14'35.1"	W089°50'45.1"
P8	N30°14'47.9"	W089°51'19.9"
P9	N30°14'48.8"	W089°51'24.2"
P10	N30°14'46.0"	W089°51'29.7"
P11	N30°14'39.5"	W089°51'35.6"
P12	N30°14'38.2"	W089°51'37.7"
P13	N30°14'38.1"	W089°51'38.2"
P14	N30°14'41.2"	W089°51'52.3"
P15	N30°14'54.7"	W089°52'40.3"
P16	N30°15'08.1"	W089°53'02.5"
P17	N30°15'15.2"	W089°53'05.3"
P18	N30°15'14.2"	W089°53'05.7"
P19	N30°14'56.5"	W089°52'35.8"
P20	N30°15'03.5"	W089°51'51.1"
P21	N30°15'08.8"	W089°51'54.6"
P22	N30°15'08.5"	W089°52'03.0"
P23	N30°15'08.7"	W089°52'02.2"
P24	N30°15'13.8"	W089°51'43.8"
P25	N30°15'26.5"	W089°51'36.3"
P26	N30°15'34.8"	W089°51'35.0"
P27	N30°15'34.1"	W089°51'34.4"

Facing Northwest – Traveling to Boring B-6
P7- N30°14'35.1", W089°50'45.1" (no photo included)



Facing West – Traveling to Boring B-6
P8- N30°14'47.9", W089°51'19.9"

Facing East – Traveling to Boring B-6
P9- N30°14'48.8", W089°51'24.2"

Facing Southwest – Traveling to Boring B-6
P10- N30°14'46.0", W089°51'29.7"

Facing Southwest – Traveling to Boring B-6
P11- N30°14'39.5", W089°51'35.6"

Facing Southwest – Before Drilling Boring B-6
P12- N30°14'38.2", W089°51'37.7"

Facing Southwest – After Drilling Boring B-6
P13- N30°14'38.1", W089°51'38.2"

Facing North – Traveling to Boring B-1
P14- N30°14'41.2", W089°51'52.3"

Facing West – Traveling to Boring B-1
P15- N30°14'54.7", W089°52'40.3"

Facing Northwest – Traveling to Boring B-1
P16- N30°15'08.1", W089°53'02.5"

Facing North – Before Drilling Boring B-1
P17- N30°15'15.2", W089°53'05.3"

Facing Northwest – After Drilling Boring B-1
P18- N30°15'14.2", W089°53'05.7"

Facing East – Travelling to Boring B-2
P19- N30°14'56.5", W089°52'35.8"

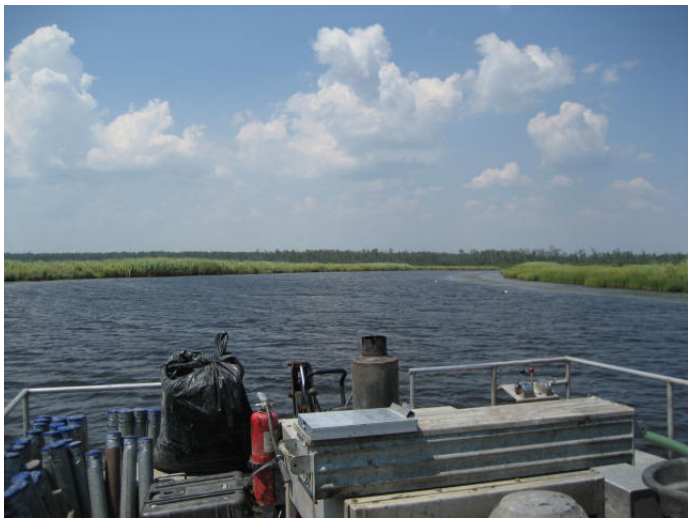
Facing Northeast – Travelling to Boring B-2
P20- N30°15'03.5", W089°51'51.1"

Facing West – Travelling to Boring B-2
P21- N30°15'08.7", W089°51'54.6"

Facing West – Before Drilling Boring B-2
P22- N30°15'08.5", W089°52'03.0"

Facing West – After Drilling Boring B-2
P23- N30°15'08.7", W089°52'02.2"

Facing Northeast – Travelling to Boring B-3
P24- N30°15'13.8", W089°51'43.8"



Facing North – Travelling to Boring B-3
P25- N30°15'26.5", W089°51'36.3"

Facing Southeast – Traveling to Boring B-3
P26- N30°15'34.8", W089°51'35.0"

Facing Northwest – Traveling to Boring B-3
P27- N30°15'34.1", W089°51'34.4"

LA DNR/OCPR BAYOU BONFOUCA MARSH
CREATION PROJECT
Reference: Daily Field Report 2, Dated August 31, 2011

LEGEND

○ B-6	BORING LOCATION
→ P-8	PHOTOGRAPH NUMBER (ARROW SHOWS THE DIRECTION OF PHOTOGRAPH)

GeoEngineers	**FIELD REPORT**		File Number: 16715-023-00
11955 Lakeland Park Blvd., Suite 100 Baton Rouge, LA 70806 (225) 293-2460	Project: LA DNR/OCPR Bayou Bonfouca Marsh Creation Project (PO-104)		Date: 1 September 11
	Location: St. Tammany Parish, LA	Client: LA Office of Coastal Protection and Restoration	Day: Thursday Report Number: 3
Prepared by: Ron Bek	Contractor: SER	Weather: Cloudy, Thunderstorms, Rain, Variable Wind	Page: 1 of 8

EXPLORATORY BORINGS	DEPTH (FEET)	TODAY (FEET)	TO DATE (FEET)	% COMPLETE
1	40		40	100%
2	40		40	100%
3	40	40	40	100%
4	40	40	40	100%
5	60	60	60	100%
6	60		60	100%
7	40		40	100%
8	40		40	100%
9	60		60	100%
10	20			
11	20			
12	20			
13	20			
14	20			

Summary of Daily Activities:

I mobilized from a hotel in Slidell, LA to Heritage Park in Slidell, LA and met SER crew. We traveled to and completed borings 3, 4, and 5, drilling and sampling continuously in the upper 20-feet of the soil and on 5-foot centers thereafter to respective boring completion depths. Undisturbed samples were obtained by pushing Shelby tubes and advancing the bit by rotary wash method (Deck of marsh buggy = 0 feet; deck to water ranged from 2.0 to 2.5 feet; water depth ranged between 1.5 to 2.0-feet). Soils encountered generally consisted of peat underlain by organic clay and clay.

GeoEngineers kept track of the ingress and egress route travelling with the marsh buggy in the marsh area. Attached figures show the route taken between the borings and also the coordinates at which the photos were taken. The marsh buggy stayed in shallow water for most of the journey between the borings except when travelling to B-3. A portion of vegetative marsh land was crossed to depart B-3, and the attached photos (P-28 and P-29) show the before and after condition of the marsh.

Crew Members/Rig Type/Field Vane Used:

Ron Bek: Technician (GeoEngineers)
Terry Jeansonne: Driller (SER)
Kirk Anslem and Cody Zaunbrecher: Roughnecks (SER)

SER marsh buggy mounted drill rig with support cabin boat and air boat.
Field vane serial number 2555; Vane size 2.56-inches x 5.12-inches; Red vane used

One Call Number: 110427230

Observations:

0640 -- 0650: I, Ron Bek of GeoEngineers, mobilized from a hotel in Slidell, LA to Heritage Park in Slidell, LA.

0650 – 0700: Arrived at Heritage Park, met with and Terry, Kirk, and Cody (SER). Load sampling equipment and field gear on to SER boats.

0700 – 0815: Travel to boring 3.

0815 – 0830: Began boring 3, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 44-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix.

0830 – 0840: Moved the drill rig couple feet and completed field vane test at 10-feet (reading of 4) and 15-feet (reading of 7) below mudline.

0840 – 0855: Travel to boring 4.

0855 – 0950: Began boring 4, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 44-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix. Moved the drill rig couple feet and completed field vane test at 5-feet (reading of 4) and 12.5-feet (reading of 17) below mudline.

0950 – 0955: Travel to boring 5.

0955 – 1050: Began boring 5, drilling and sampling continuously from 4.0-feet (mudline) to 24-feet and on 5-foot centers from 24-feet to 64-feet. Upon completion, the top 25 feet of boring was backfilled with Portland cement/bentonite grout mix.

1050 – 1125: Halted drilling activities and stood by during a thunderstorm.

1125 – 1130: Moved the drill rig couple feet and completed field vane test at 10-feet (reading of 14) and 20-feet (reading of 25) below mudline.

1130 – 1200: Travel to boring 6.

1200 – 1230: Halted drilling activities and stood by during a thunderstorm.

1230 – 1300: Completed field vane test at 5-feet (reading of 3) and 10-feet (reading of 6) below mudline.

1300 – 1330: Travel to boring 9. Completed field vane test at 5-feet (reading of 5) below mudline.

1330 – 1430: Travel to Heritage Park.

1430 – 1500: Offload soil samples and field equipment from support cabin boat and air boat.

1500 – 1530: Travel from Heritage Park to hotel and perform maintenance on field equipment at hotel.

X **THIS FIELD REPORT IS PRELIMINARY** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**FIELD REPRESENTATIVE** Ron Beck	**DATE** 08/31/2011
O **THIS FIELD REPORT IS FINAL** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**REVIEWED BY** Venu Tammineni	**DATE** 09/06/2011

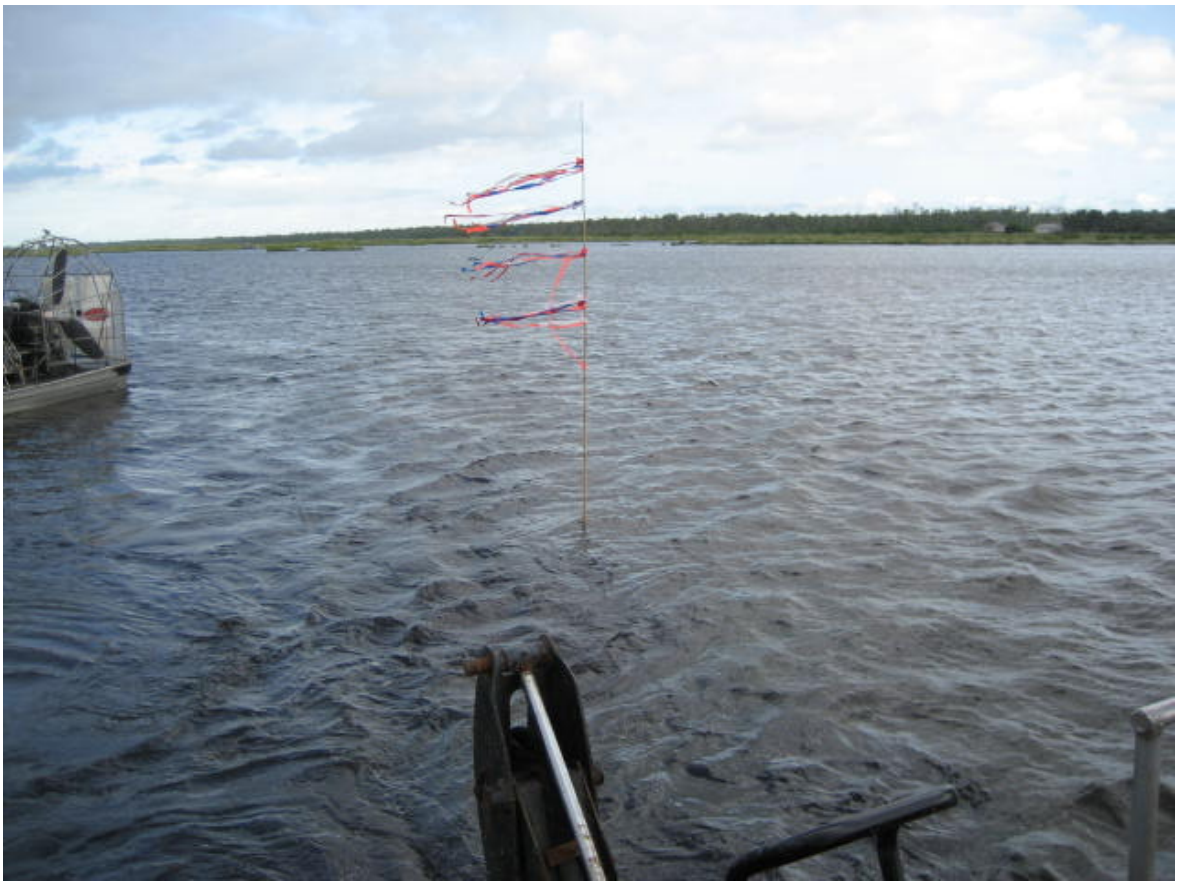
Photo coordinates:

P28	N30°15'32.9"	W089°51'33.5"
P29	N30°15'32.8"	W089°51'31.4"
P30	N30°15'30.7"	W089°51'12.9"
P31	N30°15'30.5"	W089°51'10.5"
P32	N30°15'30.1"	W089°50'58.7"
P33	N30°15'30.3"	W089°50'55.7"

Facing Northwest – At Boring B-3
P28- N30°15'32.9", W089°51'33.5"

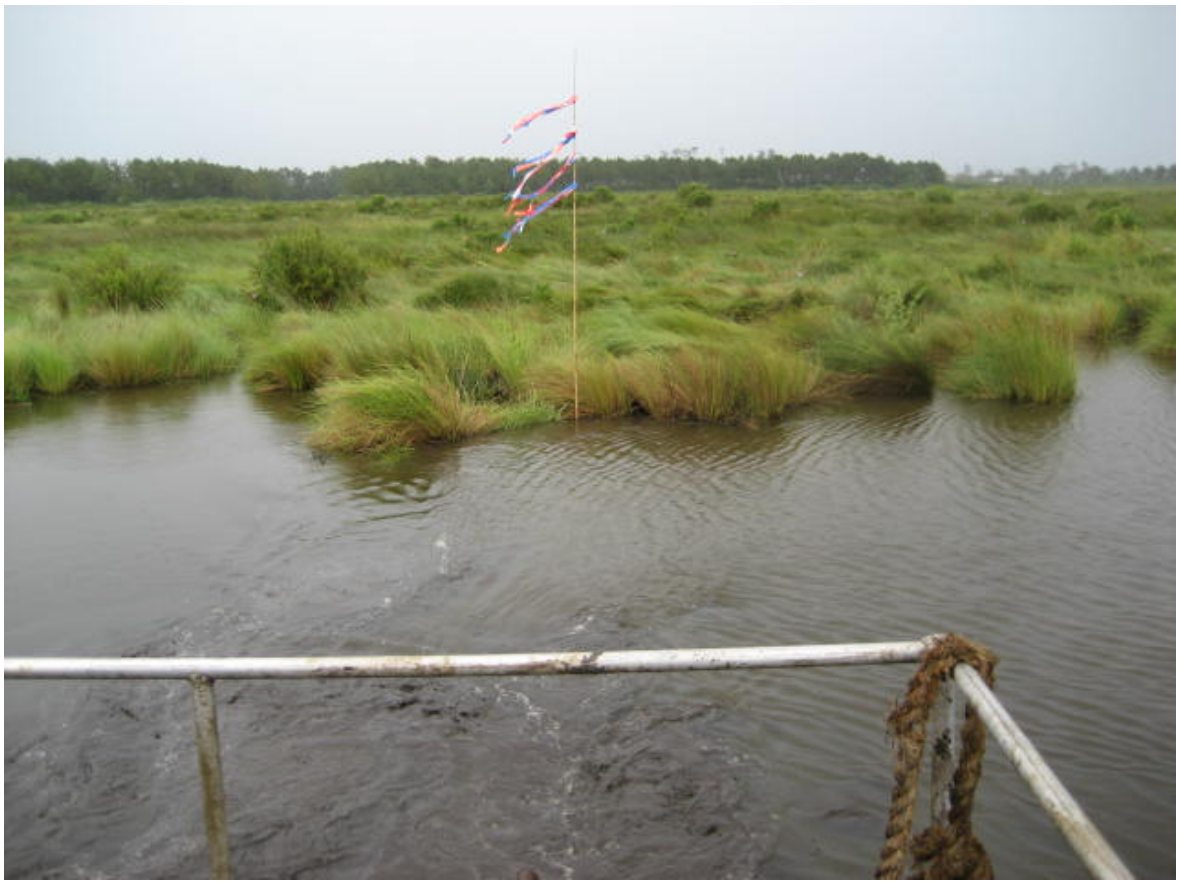
Facing West – After Drilling Boring B-3
P29- N30°15'32.8", W089°51'31.4"

Facing East – Before Drilling Boring B-4
P30- N30°15'30.7", W089°51'12.9"



Facing West – After Drilling Boring B-4
P31- N30°15'30.5", W089°51'10.5"

Facing East – Before Drilling Boring B-5
P32- N30°15'30.1", W089°50'58.7"



Facing East – After Drilling Boring B-5
P33- N30°15'30.3", W089°50'55.7"

LA DNR/OCPR BAYOU BONFOUCA MARSH
CREATION PROJECT
Reference: Daily Field Report 3, Dated September 1, 2011

LEGEND

○ B-3	BORING LOCATION
→ P-28	PHOTOGRAPH NUMBER (ARROW SHOWS THE DIRECTION OF PHOTOGRAPH)

GeoEngineers	**FIELD REPORT**		File Number: 16715-023-00
11955 Lakeland Park Blvd., Suite 100 Baton Rouge, LA 70806 (225) 293-2460	Project: LA DNR/OCPR Bayou Bonfouca Marsh Creation Project (PO-104)		Date: 13 September 11
	Location: St. Tammany Parish, LA	Client: LA Office of Coastal Protection and Restoration	Day: Monday Report Number: 4
Prepared by: Sunil Malla	Contractor: SER	Weather: Sunny and Warm	Page: 1 of 8

EXPLORATORY BORINGS	DEPTH (FEET)	TODAY (FEET)	TO DATE (FEET)	% COMPLETE
10	20	20	20	100%
11	20	20	20	100%
12	20	20	20	100%
13	20	20	20	100%
14	20	20	20	100%

Summary of Daily Activities:

I mobilized from Baton Rouge office to Heritage Park in Slidell, LA and met SER crew. We had to wait about 3 hrs at the park because the pontoon-mounted drill rig had not arrived. We traveled to and completed borings 10 through 14, drilling and sampling continuously to 20-feet from the mud-line. Undisturbed samples were obtained by pushing Shelby tubes and advancing the bit by rotary wash method (Deck of pontoon = 0 feet; deck to water = 1foot; water depth ranged between 9 to 11.5 feet). Soils encountered generally consisted of very soft to medium silty and sandy clay.

GeoEngineers kept track of the route taken between borings in Lake Pontchartrain as shown in attached pictures. The pictures also show the coordinates at which the photos were taken. A picture taken while traveling from boring 10 to boring 6 has also been shown below. The pontoon stayed in about 10 feet of water for most of the journey between the borings.

Crew Members/Rig Type/Field Vane Used:

Sunil Malla: Engineer (GeoEngineers)
Terry Jeansonne: Driller (SER)
Kirk Anslem and Trent Anslem: Roughnecks (SER)

SER pontoon mounted drill rig with a support cabin boat.

One Call Number: 110427230

Observations:

0730 – 0930: I, Sunil Malla of GeoEngineers, mobilize from the Baton Rouge office to Heritage Park in Slidell, LA.

0930 – 1245: I arrive at Heritage Park and meet Terry, Kirk, and Trent (SER). We load Shelby tubes and logging supplies onto the cabin boat. Terry receives a call and tells me that the pontoon mounted drill rig will arrive late because the truck carrying the rig has been rerouted a different way. Meanwhile, we leave to get diesel for the rig.

1245 – 1315: The pontoon rig arrives and is unloaded onto the water.

1315 – 1415: Travel along Bayou Bonfouca to boring 11 location. We conduct a safety meeting after arriving at boring 11 in the presence of Joseph Guillory (OCPR).

1415 – 1500: We drill and sample boring 11 continuously from 10 feet (mudline) to 30 feet.

1500 – 1505: Move to boring 12 location

1505 – 1550: We drill and sample boring 12 continuously from 11 feet (mudline) to 31 feet.

1550 – 1555: Move to boring 14 location.

1555 – 1640: We drill and sample boring 14 continuously from 11 feet (mudline) to 31 feet.

1640 – 1645: Move to boring 13 location.

1645 – 1730: We drill and sample boring 13 continuously from 11 feet (mudline) to 31 feet.

1730 – 1735: Move to boring 10 location.

1735 – 1830: We drill and sample boring 10 continuously from 11.5 feet (mudline) to 31.5 feet.

1830 – 1845: Travel around the boring locations to take pictures of the route taken during drilling.

1845 – 1930: Travel to Heritage Park.

1930 – 2000: We load Shelby tube samples and other logging supplies onto the GeoEngineers truck.

2000 –2200: I travel back to the Baton Rouge office.

2200 – 2230: I unload Shelby tube samples at the Baton Rouge lab.

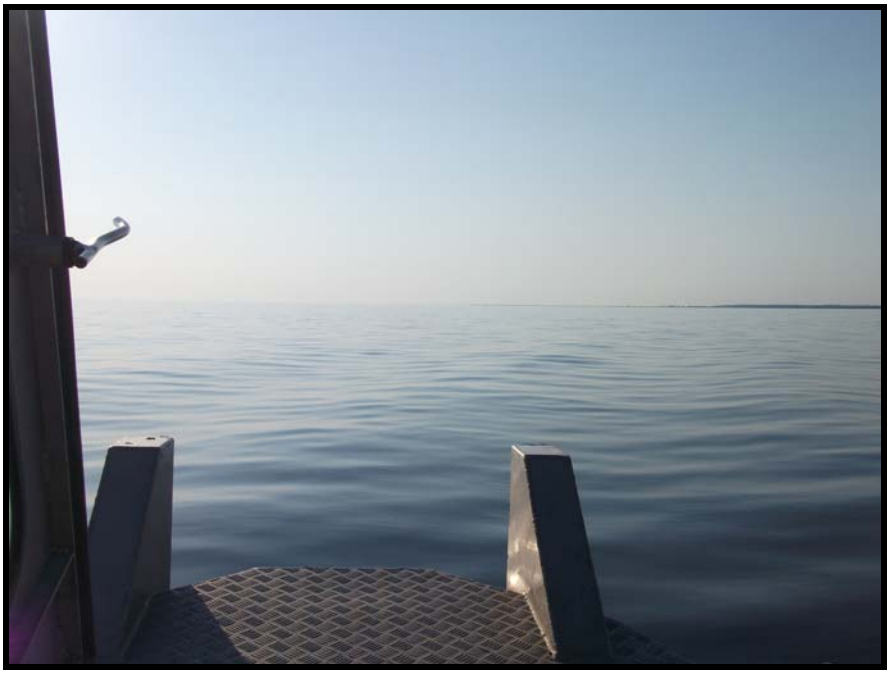
Photo coordinates:

P34	N30°14'11", W089°51'57.6"
P35	N30°13'51.1", W089°52'6.8"
P36	N30°13'31.8", W089°52'04.1"
P37	N30°13'38.7", W089°52'25.6"
P38	N30°14'13.5", W089°52'18.7"
P39	N30°14'38.5", W089°51'44.7"

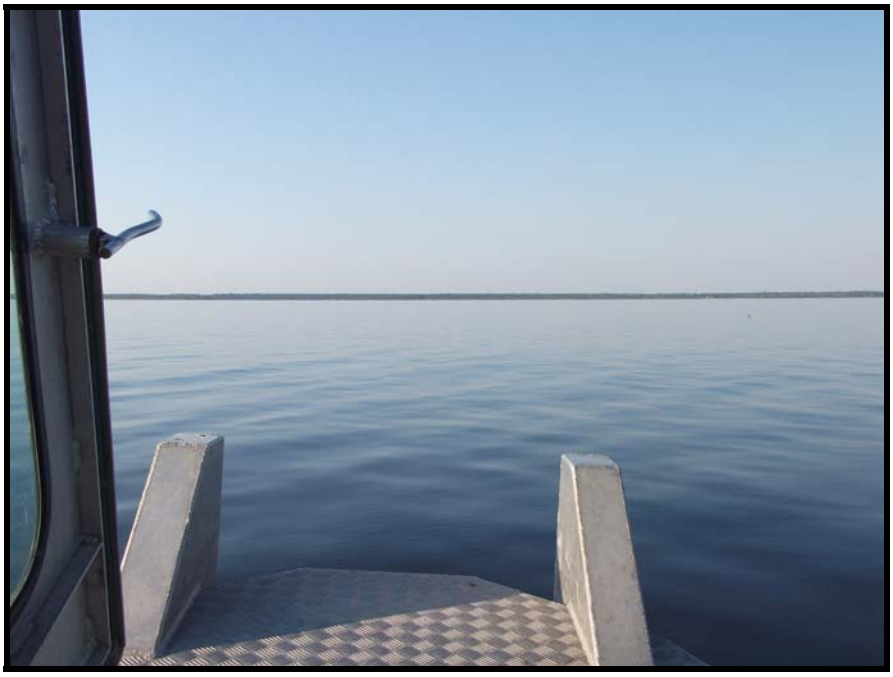
☐ **THIS FIELD REPORT IS PRELIMINARY** A preliminary report is provided solely as evidence that field observation was performed. Observations and/or conclusions and/or recommendations conveyed in the final report may vary from and shall take precedence over those indicated in a preliminary report.	**FIELD REPRESENTATIVE** Sunil Malla	**DATE** 09/12/2011
☑ **THIS FIELD REPORT IS FINAL** A final report is an instrument of professional service. Any conclusions drawn from this report should be discussed with and evaluated by the professional involved.	**REVIEWED BY** Josh Pruett	**DATE** 10/20/2011

Facing Boring 11 to Boring 12
P34- N30°14'11", W089°51'57.6"

Facing Boring 12 to Boring 14
P35- N30°13'51.1", W089°52'6.8"



Facing Boring 14 to Boring 13
P36- N30°13'31.8", W089°52'04.1"



Facing Boring 13 to Boring 10
P37- N30°13'38.7", W089°52'25.6"

Facing Boring 10 to Boring 11
P38- N30°14'13.5", W089°52'18.7"

Facing Boring 10 to Boring 6
P39- N30°14'38.5", W089°51'44.7"

BORING DETAILS			
BORING NO.	LATITUDE	LONGITUDE	BORING DEPTH
B-1	N30° 15' 15.44"	W89° 53' 05.07"	40 FT.
B-2	N30° 15' 08.60"	W89° 52' 03.52"	40 FT.
B-3	N30° 15' 33.38"	W89° 51' 33.85"	40 FT.
B-4	N30° 15' 30.72"	W89° 51' 12.65"	40 FT.
B-5	N30° 15' 30.46"	W89° 50' 55.48"	60 FT.
B-6	N30° 14' 36.49"	W89° 51' 38.77"	60 FT.
B-7	N30° 14' 50.07"	W89° 51' 32.00"	40 FT.
B-8	N30° 14' 43.01"	W89° 50' 59.21"	40 FT.
B-9	N30° 14' 31.75"	W89° 50' 36.06"	60 FT.
B-10	N30° 14' 10.20"	W89° 52' 17.18"	20 FT.
B-11	N30° 14' 07.82"	W89° 51' 55.98"	20 FT.
B-12	N30° 13' 51.89"	W89° 52' 09.01"	20 FT.
B-13	N30° 13' 35.81"	W89° 52' 22.29"	20 FT.
B-14	N30° 13' 34.02"	W89° 52' 22.32"	20 FT.

BAYOU BONFOUCA BOAT LAUNCH

MARSH CREATION AREA 2

SOIL BORING

MARSH CREATION AREA 3

MARSH CREATION AREA 1

EXXON PIPELINE AS PROBED BY HYDRO CONSULTANTS, INC. IN JUNE OF 2011

APPROXIMATE CONTINUATION OF PROBED EXXON PIPELINE

EXXON PIPELINE AS SHOWN IN CMD DATABASE

NAVIGATIONAL CHANNEL

BORROW AREA

PROPOSED POND

1 2 3 4 5 6 7 8 9 10 11 12 13 14 A B C D

PL

LEGEND

Access Route (Marsh Buggy and Airboat)

Access Route (Pontoon and Cabin Boat)

N W E S

2000 0 2000

Feet

Notes:
1. The locations of all features shown are approximate.
Reference: Figure provided by OCPR as part of scope of services for geotechnical investigation & engineering services for the Bayou Bonfouca Marsh Creation Project (PO-104). Original figure titled "Survey Layout", Dated June 2011.

ACCESS ROUTE MAP

BAYOU BONFOUCA MARSH CREATION PROJECT

GEOENGINEERS

Sheet 1A

August 22, 2011

59363 Thompson Road
Slidell, Louisiana 70445

Attention: Cecille H. McCrea, Jr.

Subject: Landowner Notification - Geotechnical Soil Borings
Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana

Dear Mr. McCrea,

GeoEngineers, Inc. is a geotechnical and environmental engineering firm working with Louisiana Department of Natural Resources (LDNR) and Office of Coastal Protection and Restoration (OCPR) on various projects in protecting and rebuilding the Louisiana coastal wetlands. We are currently working on a project estimated to create approximately 522 acres of marsh at the northeastern corner of Lake Pontchartrain in St. Tammany Parish, Louisiana. For this project, we plan on performing fourteen (14) soil borings at locations as shown in the attached figure.

Out of the 14 soil borings, one boring (B-9) is estimated to be in your property area. We will be using a light weight marsh buggy to be performing our borings to a depth of 60 feet below existing mudline. We will ensure that we travel through the deepest portion of the channel and stay in the water logged areas thus reducing damage to the marsh. We will try our best to keep the disturbance to a minimum.

These borings are for marsh creation and **are not** for oil exploration. The boreholes will be less than 6 inches in diameter extending to depth as provided in the attached figures. The work is estimated to begin mid next week.

If you have any objections or would like to discuss the access route further, please feel free to contact Venu Tammineni or Charlie Eustis. Our contact number is 225-293-2460. If we don't hear from you, we will take that as your permission to enter the property.

Thank you very much for your co-operation in rebuilding the coast of Louisiana.
Sincerely,

Venu Tammineni, PE, LEED AP
11955 Lakeland Park Blvd.
Suite 100
Baton Rouge, Louisiana 70809
e-mail: vtammineni@geoengineers.com

Attachments: Borehole access route map

August 22, 2011

58042 Heshima Road
Slidell, Louisiana 70460

Attention: Edward Jewell, et al
c/o Susan Whitaker

Subject: Landowner Notification - Geotechnical Soil Borings
Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana

Dear Mr. Jewell,

GeoEngineers, Inc. is a geotechnical and environmental engineering firm working with Louisiana Department of Natural Resources (LDNR) and Office of Coastal Protection and Restoration (OCPR) on various projects in protecting and rebuilding the Louisiana coastal wetlands. We are currently working on a project estimated to create approximately 522 acres of marsh at the northeastern corner of Lake Pontchartrain in St. Tammany Parish, Louisiana. For this project, we plan on performing fourteen (14) soil borings at locations as shown in the attached figure.

Out of the 14 soil borings, one boring (B-9) is estimated to be in your property area. We will be using a light weight marsh buggy to be performing our borings to a depth of 60 feet below existing mudline. We will ensure that we travel through the deepest portion of the channel and stay in the water logged areas thus reducing damage to the marsh. We will try our best to keep the disturbance to a minimum.

These borings are for marsh creation and **are not** for oil exploration. The boreholes will be less than 6 inches in diameter extending to depth as provided in the attached figures. The work is estimated to begin mid next week.

If you have any objections or would like to discuss the access route further, please feel free to contact Venu Tammineni or Charlie Eustis. Our contact number is 225-293-2460. If we don't hear from you, we will take that as your permission to enter the property.

Thank you very much for your co-operation in rebuilding the coast of Louisiana.
Sincerely,

Venu Tammineni, PE, LEED AP
11955 Lakeland Park Blvd.
Suite 100
Baton Rouge, Louisiana 70809
e-mail: vtammineni@geoengineers.com

Attachments: Borehole access route map

August 22, 2011

P.O. Box 735
Mandeville, Louisiana 70470

Attention: Gustave B. Baldwin, III

Subject: Landowner Notification - Geotechnical Soil Borings
Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana

Dear Mr. Baldwin,

GeoEngineers, Inc. is a geotechnical and environmental engineering firm working with Louisiana Department of Natural Resources (LDNR) and Office of Coastal Protection and Restoration (OCPR) on various projects in protecting and rebuilding the Louisiana coastal wetlands. We are currently working on a project estimated to create approximately 522 acres of marsh at the northeastern corner of Lake Pontchartrain in St. Tammany Parish, Louisiana. For this project, we plan on performing fourteen (14) soil borings at locations as shown in the attached figure.

Out of the 14 soil borings, one boring (B-5) is estimated to be in your property area. We will be using a light weight marsh buggy to be performing our borings to a depth of 60 feet below existing mudline. We will ensure that we travel through the deepest portion of the channel and stay in the water logged areas thus reducing damage to the marsh. We will try our best to keep the disturbance to a minimum.

These borings are for marsh creation and **are not** for oil exploration. The boreholes will be less than 6 inches in diameter extending to depth as provided in the attached figures. The work is estimated to begin mid next week.

If you have any objections or would like to discuss the access route further, please feel free to contact Venu Tammineni or Charlie Eustis. Our contact number is 225-293-2460. If we don't hear from you, we will take that as your permission to enter the property.

Thank you very much for your co-operation in rebuilding the coast of Louisiana.
Sincerely,

Venu Tammineni, PE, LEED AP
11955 Lakeland Park Blvd.
Suite 100
Baton Rouge, Louisiana 70809
e-mail: vtammineni@geoengineers.com

Attachments: Borehole access route map

August 22, 2011

535 Cross Gates Blvd.
Slidell, Louisiana 70461

Attention: Jason Edward Carr

Subject: Landowner Notification - Geotechnical Soil Borings
Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana

Dear Mr. Carr,

GeoEngineers, Inc. is a geotechnical and environmental engineering firm working with Louisiana Department of Natural Resources (LDNR) and Office of Coastal Protection and Restoration (OCPR) on various projects in protecting and rebuilding the Louisiana coastal wetlands. We are currently working on a project estimated to create approximately 522 acres of marsh at the northeastern corner of Lake Pontchartrain in St. Tammany Parish, Louisiana. For this project, we plan on performing fourteen (14) soil borings at locations as shown in the attached figure.

Out of the 14 soil borings, one boring (B-9) is estimated to be in your property area. We will be using a light weight marsh buggy to be performing our borings to a depth of 60 feet below existing mudline. We will ensure that we travel through the deepest portion of the channel and stay in the water logged areas thus reducing damage to the marsh. We will try our best to keep the disturbance to a minimum.

These borings are for marsh creation and **are not** for oil exploration. The boreholes will be less than 6 inches in diameter extending to depth as provided in the attached figures. The work is estimated to begin mid next week.

If you have any objections or would like to discuss the access route further, please feel free to contact Venu Tammineni or Charlie Eustis. Our contact number is 225-293-2460. If we don't hear from you, we will take that as your permission to enter the property.

Thank you very much for your co-operation in rebuilding the coast of Louisiana.
Sincerely,

Venu Tammineni, PE, LEED AP
11955 Lakeland Park Blvd.
Suite 100
Baton Rouge, Louisiana 70809
e-mail: vtammineni@geoengineers.com

Attachments: Borehole access route map

August 22, 2011

122 Courtenay Ave
Pass Christian, MS 39571

Attention: Cynthia Allen

Subject: Landowner Notification - Geotechnical Soil Borings
Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana

Dear Ms. Allen,

GeoEngineers, Inc. is a geotechnical and environmental engineering firm working with Louisiana Department of Natural Resources (LDNR) and Office of Coastal Protection and Restoration (OCPR) on various projects in protecting and rebuilding the Louisiana coastal wetlands. We are currently working on a project estimated to create approximately 522 acres of marsh at the northeastern corner of Lake Pontchartrain in St. Tammany Parish, Louisiana. For this project, we plan on performing fourteen (14) soil borings at locations as shown in the attached figure.

Out of the 14 soil borings, about 3 borings are estimated to be in your property area. We will be using a light weight marsh buggy to be performing our borings to a depth varying from 40 to 60 feet below existing mudline. We will ensure that we travel through the deepest portion of the channel and stay in the water logged areas thus reducing damage to the marsh. We will try our best to keep the disturbance to a minimum.

These borings are for marsh creation and **are not** for oil exploration. The boreholes will be less than 6 inches in diameter extending to depth as provided in the attached figures. The work is estimated to begin mid next week.

If you have any objections or would like to discuss the access route further, please feel free to contact Venu Tammineni or Charlie Eustis. Our contact number is 225-293-2460. If we don't hear from you, we will take that as your permission to enter the property.

Thank you very much for your co-operation in rebuilding the coast of Louisiana.
Sincerely,

Venu Tammineni, PE, LEED AP
11955 Lakeland Park Blvd.
Suite 100
Baton Rouge, Louisiana 70809
e-mail: vtammineni@geoengineers.com

Attachments: Borehole access route map

APPENDIX III-B
Lab Setup Sheets

Bayou Bonfouca Marsh Creation Project (PO-104)
St Tammany Parish, LA

DETAILS OF COST ESTIMATE

FILE NO: 16715-023-00

LABORATORY TESTING

Item	Estimated Cost
1. Lab mini vane: 138 tests @ $30/ea	$ 4,140
2. Extrude samples: 188 @ $20/ea	$ 3,760
3. Preserve samples: 188 @ $20/ea	$ 3,760
4. Unconfined compression tests: 76 @ $35/ea	$ 2,660
5. Unconsolidated undrained triaxial compression tests: 62 @ $50/ea	$ 3,100
6. Consolidation tests: 9 @ $375/ea	$ 3,375
7. Specific gravity tests: 9 @ $90/ea	$ 810
8. Atterberg limit determination tests: 94 @ $60/ea	$ 5,640
9. Moisture content tests: 50 @ $12/ea	$ 600
10. Stress-strain plots: 138 @ $25/ea	$ 3,450
11. Passing #200 sieve: 20 tests @ $30/ea	$ 600
12. Dry sieve analysis: 20 tests @ $50/ea	$ 1,000
13. Hydrometer: 10 tests @ $75/ea	$ 750
14. Organic content: 26 tests @ $40/ea	$ 1,040
15. Engineering Assistant/Engineer log @extrusions: 20 hr. @ $116/hr	$ 2,320
16. Settling column test: 1 @ $7,500/ea	$ 7,500
17. Self-weight consolidation tests: 3 @ $2,300 Miscellaneous tests: $1,000	$ 7,900
SUBTOTAL, LABORATORY	**$ 52,405**

- Testing as shown on boring logs
- Save all samples
- Minivanes on all cohesive/semi-cohesive samples for Borings B-1 through B-9

GeoEngineers

GeoEngineers

Sheet 1 of _____

Made by JMP

Date 9/13/11

LAB TEST ASSIGNMENTS

LJC&A Project No. _____ Fee Schedule BTR Lab

GeoEngineers Project No. 16715-023-00

- [x] SAVE ALL / MARKED UNDISTURBED SAMPLES FOR CONSOLIDATION
- [x] 'U' OR 'QU' ALL / MARKED UNDISTURBED SAMPLES
- [ ] 'U' ON SPT PLUGS
- [x] ATTERBERG LIMITS WHERE MARKED
- [ ] SIEVE **ALL** GRANULAR SAMPLES
- [x] SIEVE WHERE MARKED
- [x] HYDROMETER WHERE MARKED
- [ ] HOLD ENTIRE SAMPLE FOR OTHER TESTING
- [ ] FALLING HEAD PERMEABILITY
- [x] MOISTURE CONTENT AND/OR DENSITY WHERE MARKED
- [ ] MOHS' HARDNESS WHERE MARKED
- [ ] BREAK CORE SAMPLES WHERE MARKED
- [ ] OTHER: DO NOT DISPOSE OF UNUSED/REMAINING SAMPLES UNTIL CLIENT DIRECTS – SAVE EVERYTHING YOU DON'T USE

NOTE: USE GREEN LEAD FOR TESTING ASSIGNMENTS. MARK DESIRED TESTING ON LEFT MARGIN OF FIELD LOGS. USE THE FOLLOWING SYMBOLS FOR TEST IDENTIFICATION:

S SIEVE
H HYDROMETER
U UNCONFINED COMPRESSION
QU UNCONSOLIDATED TRIAXIAL, UNDRAINED
MC MOISTURE CONTENT
AL ATTERBERG LIMIT
FH FALLING HEAD PERMEABILITY
HOLD HOLD FOR OTHER TESTING
MOHS' MOHS' HARDNESS

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation Project
For: OCPR

Boring: B1
File: 16715-023-00
Date: 8/31/11
Technician: RMB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

N 30°15'15.1"
W 089°53'05.3"
0' = top of deck

Deck to H_2O 3.5
water Depth 0.5
Boring Depth: 40

Depth Feet	SAMPLES		MV	REC
0		mudline 4'		
0	S	Br Pt	~~180~~	~~NO RECOVERY~~
2		Br ~~Pt~~ ORG CL w/ TRA SA	150	10"
CONSOL SG, AL 4		Br Pt	~~55~~	~~NO RECOVERY~~
6	P	Br ~~Pt~~ + Org CL w/ LARGE VERTICAL SA STRK ON HALF OF SAMPLE	93	10"
MC, AL 8	ORG			
S 10		-bag G, Si Sa		
12	15	G Sa w/ LARGE ORG CL STRK	NO	6"
U, AL 14		G Sa CL w/ SA	NO	9"
U 16	20	G St Clay w/ ORG MAT & SA	NO	11"
U, AL 18		G St Clay w/ SA PKTS	NO	12"
U 20		G St CL w/ SA PKTS	NO	10"
22	25			
U, AL 24		T St CL	NO	10"
26	30			
28		G & T St CL	NO	12"
U 30				
32	35			
MC, AL 34		G & T St CL	NO	6"
36	40			
38		T St CL	NO	14"
U, AL 40				

40, V S, 10

LOG OF BORING

Project: Bayou Bontouca Marsh Creation
For: OLPR

Boring: B2
File: 16715-023-00
Date: 8/31/11
Technician: KMB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

N 30° 15' 08.4" W 089° 52' 03.6"
0 = top deck
Deck to H_2O = 2.5'
Boring Depth: 40

Water depth = 1.5'

Depth Feet	SAMPLES		MV	REC
0		mud line		
2 UU, ORG	5	Br PT	39	9"
4 UU, AL		Br PT	51	10"
6 UU CONSOL	10	Br PT	22	9"
8 SG, AL, ORG		~~G Br V So org CL~~ ✓ red vane = 3 @ 6', 28 # 2555	50	9"
10 UU, AL		G V So org CL w/ PT		10"
12 UU, ORG	15	Br PT ORG CL w/ SA	98	8"
14 MC, AL		G + Br ~~V Lo CL SA~~	40	5"
16 MC, AL	20	G V So CL w/ ORG MAT ~~red vane = 8 @ 14', 5"~~		
18 UU		G V So CL w/ ORG MAT & TRA SA # 2555	34	7"
20 UU, AL		Br V S org CL	77	10"
22	25			
24 U		Br V So ~~org~~ CL w/ ORG MAT	93	11"
26	30			
28 U, AL		G S. CL	81	9"
30				
32	35			
34 U		G V So CL w/ Si	99	10"
36	40			
38 U, AL		G V So CL w/ Si + ORG MAT	131	7.75"
40				

40, V 10, 15

LOG OF BORING

Project: Bayou Bonfouca Creation Project
For: OCPR

Boring: B-3
File: 16715-023-00
Date: 9/1/11
Technician: RMB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

top of deck = ϕ
deck to water = 2.5'
water depth = 1.5'

N 30°15'32.9"
W 89°51'33.5"

Boring Depth: 44

Depth Feet	SAMPLES		MV	REC	
0		mudline 4'			
5		Br Pt	56	12"	
2		Br Pt ORG CL	52	9"	
4		Br VSO CL w/ org mat ϕ	33	11"	
6		Gr VSO CL w/ org mat	45	12"	
8		Br VSO CL w/ org mat	135	8.5"	
10		Br VSO CL w/ org mat	red vane = 4 @ 10'		
12		Br VSO CL w/ org mat	#2555 68	12"	
14		G VSO CL w/ ORG MAT & SD	73 7	10"	
16		G VLS ~~CL~~ ~~SA~~ CL w/ SD	red vane = @ 15'	9"	a/6
18		Br VSO CL w/ ORG MAT	59 #2555	9"	
20	SD	Gr ~~SI~~ ~~SA~~ CL	N/A	18"	9/9
22		~~SD~~ G CL w/ 1" & 2" SAND LYR @ BOTTOM ~~ED~~			
24		Gr SO CL w/ 2" sand lyr	57	16½"	8/8
26		SO G CL w/ SAND PKTS			
28	FM	Gr ~~ST~~ ~~CL~~ SI w/ CL & SA Tra	N/A	8"	
30					
32					
34		Gr Fm ~~SI~~ SAND w/ CL Tra	N/A	19"	9/9
36					
38		Gr Fm ~~SI~~ SAND w/ CL SLKS	N/A	11"	2/9
40					

40

5,20

LOG OF BORING

Project: Bayou Bonfouca

For: OCPR

Boring: B4

File: 16715 023 00

Date: 9/1/11

Technician: RMB

■ Undisturbed Sample
☒ Standard Penetration Test
◫ Classification Sample
(SLS) Slickensided Sample

Deck top = 0
Deck to H_2O = 2
H_2O depth = 2

N 30° 15' 30.6"
W 089° 51' 12.8"

Boring Depth: 44

Lab (margin)	Depth Feet	Description	VS	Rec	
	0	5 & 20	VS	Rec	
0		mud line	NA	NA	
MC 2	5	Br Pt (bag)	100	11	2/19
		~~Br Pt~~ G SASi w/ orgm AT & CL TRS			
4		G (^VSo) ~~St~~ CL sa st'y cl'ym — red vane = 4 @ 5' #2555	NA	3½"	
6	10	~~G VSo~~ sa si CL ~~....~~ STKS	NA	19"	9/19
UU, AL 10		G VS sa CL	N/A	11"	2/19
UU, AL 12	15	G St sa CL	N/A	8½"	
UU, AL 14		G St CL w/ sa STKS & 2" SASi cl'y @ bottom	N/A	14"	6/8
UU 16	20	G St CL w/ sa STKS	N/A	7"	
MC, AL 18		G St sa CL — red vane = 17 @ 12.5', #2555	N/A	4½"	
UU 20		G St/SA CL w/ sa STKS	N/A	14"	6/8
22	25			9"	
UU, AL 24		G St CL w/ sa STKS & LNS	N/A ~~N/A~~		
26	30				
28					
UU 30		G ~~St~~ & T St CL w/ sa STKS	N/A	7½"	
32	35				
CONSOL SG, AL, UU 34		G & T St CL w/ sa STKS	N/A	15½"	
36	40				
38					
UU 40		G & Br St CL w/ sa STKS	N/A	9"	
	45				

LOG OF BORING

60
V10-20

Project: Bayou Bonfouca Marsh Creation Project
For: OCRP

Boring: B5
File: 16715-023-00
Date: 9/1/11
Technician: RMB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

~~N30°~~ N 30° 15' 30.4"
W 089° 50' 55.7"
Deck top = 0
Deck to H_2O = 2.5' water depth = 1.5
Boring Depth: 64

Depth Feet	SAMPLES		MV	REC
0				
0		Mud line 4'		
UU 2	5	Lo G si sa w/org matt +	71	10
UU,AL 4		Med Sa CL	99	10.5
6	10	Lo G si sa	NA	8.5
8		Lo G Cl Sa	NA	9.0
UU,AL 10		Vso T&G Sa Cl	NA red vane = 14 @ 14	
CONSOL 12	15	med T&G Sa Cl	NA 10' #2555	14
U,SG,AL 12		Fm G ~~Cl Sa~~ Sa Cl	NA	10
UU 14		med G Sa Cl	NA	10.5
UAL 16	20	St G ~~Cl~~ Sa Cl	NA red vane = 25 @	9.0
U 18		St Gr + Br Cl	NA 20' #2555	10.0
U,AL 20			NA	15.0
22	25			
U 24		Fm Br Cl w Sa/lams.	NA	12
26	30	5 inch Sa w Cl layer at Bottom		
28		St G Cl	NA	13
U,AL 30				
32	35			
U 34		St G Cl	NA	10
36	40			
38		Lo Br Si SA	NA	9.5
40				
42	45			
U,AL 44		Med G Cl	292	18
46	50			
47				

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation
For: OCRP

Boring: B5
File: 16715 0230 0
Date: 9/1/11
Technician: KMB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

Boring Depth: 64

Depth Feet	SAMPLES			
46	50			
48			MV	RE
UAL 50		med G Cl	NA	10.5
52	55			
UAL 54		med G Cl w/ shells	NA	10.5
56	60			
58				
MC/AL 60		med G Cl	138	4

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60, V.S, 10

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation Project
For: OCPR

Boring: B-6
File: 16715-023-00
Date: 8/31/11
Technician:

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

N 30° 14' 37.9"
N 089° 51' 37.9" (offset ~80-90' N of stake, in H_2O)

Boring Depth: 60

0' = top of deck Deck to H_2O: 3' water depth: 1'

Depth Feet	SAMPLES		MV	Rec
0		mudline 4'		
2	UU, AL	Br Pt organic wet	35	10
4	UU	Br Pt	52	9
6	UU	Br Pt	45	9.5
8	CONSOL SG, AL	Br Pt	57	10
10		Br Pt	78	9
12	MC, AL UU	Br Pt	105	10
14	SG	Gr Si Sa	110	10
16	UU, AL	G So Sa CL	red vane @ 15' = 9	155 10
18	U	G So Sa CL	#2585	NA 10.5
20	U, AL	G M CL	NA vane refusal @ 16'	8
22			NA red vane = 3 @ 5', 6 @ 10' #2555	13
24	U	G M CL		
26				
28	U, AL	G & T St CL	NA	12
30				9/1/11
32				15
34	U	T St CL	NA	
36				
38	MC, AL	T St CL	NA	13
40				
42				
44	U	T St CL	336	10
46				

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation Project

For: OCPR

Boring: B6

File: 16715-023-00

Date: 8/31/11

Technician: RmB

Depth Feet | SAMPLES

- Undisturbed Sample
- Standard Penetration Test
- Classification Sample
- (SLS) Slickensided Sample

Boring Depth:

48
UAL 50
52
54
56
58
UAL 60

55 | 60 | 65

G St CL — MC 234 — Rec 15

G St CL (miss labeled tube) MC 41

G So Sa CL — 230 — 16

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation
For: OCPR

Boring: B-7
File: 16715-023-00
Date: 8/30/11
Technician: RmB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

V 10,15
N 30° 14' 50.2"
W 089° 51' 31.9"

∅ = Deck
Deck to H_2O = 2.5'
H_2O depth = 1.5'
Boring Depth: 46'

Depth Feet	SAMPLES			
0		Zero (feet) Top of bargedeck	MV	Rec
		2.5'		
		MUD LINE		
5		VSO Br peat	36	red vane, vane # 2555 10
		VSO organic CL w/ org. matter	40	11
		VSO Org CL w/ org matter	44	9
10		VSO org CL w/ org mat	28	6
		VSO org CL w/ org mat	30	vane = 9 @ 16' 6
		VSO CL w/ org mat	41	9
15		VSO CL w/ org mat	85	12
		VSO CL w/ org mat	NA	8
		VSO CL w/ Tr org mat	NA	vane = 9 @ 20'
20		VSO CL w/ Tr org. mat	NA	12
		VSO G CL	NA	11
25				
		med S CL	NA	12
30				
		St G CL, CL	NA	11
35		trace Br		
		St G CL	NA	11
40				
		St Br and G CL	NA	9
45				

LOG OF BORING 40'

Project: Bayou Bonfouca Marsh Creation
For: OCPR

Boring: B-8
File: 16715-023-00
Date: 8/30/11
Technician: RmB

■ Undisturbed Sample
⊠ Standard Penetration Test
◫ Classification Sample
(SLS) Slickensided Sample

V 5,15
Deck to H_2O = 2.5'
H_2O depth = 1.5'

N 30° 14' 42.9" W089° 50' 59.2"

Boring Depth: ~~40~~ 44

Zero (0) feet top of barge deck

Depth Feet	SAMPLES		MV	Rec
0		mudline		
5	VSO	D PT	19	11
	VSO	D org cl	21	10
14	VSO	D org cl	56	vane 4 @ 5' red vane 11
	VSO	G cl tr org	89	# 2555 8
	VSO	G cl	NA	vane 23 @ 9.5' red vane # 2555 12
15	Soft	med G cl	238	9
		med G cl	NA	12
24		med-st Br G sa cl	NA	12
		st Br G sa cl	NA	8
		st Br G sa cl	NA	11
26				
31	VSt	Br and G cl	NA	11
35	VSt	Br and G cl	NA	8
	VSt	Br cl	NA	12
41				
45	VSt	Br cl	274	11

LOG OF BORING

Project: Baye Bofouca Marsh Creation
For: OCPR

Boring: B9
File: 1671502300
Date: 8/30/11
Technician: R M B

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

V10,20 Deck to water = 2.5'
0' = top of barge deck
water depth = 1'

Boring Depth:

N 30°14'31.7"
MV W 089°50' 36.0" Rec

Depth Feet	SAMPLES			
0		mud line 3.5'		
5		VSO D PT	39	NA
		VSO D PT	35	9
		VSO D PT	13	5
10		VSO D org CL	33 red vane - 5 @ 10'	7
		VSO D org CL	11 # 2555	8
15		VSO G CL	168	9
		So G CL	red vane = 5 @ 5', # 2555, 9/1/11 NA	10.5
		med G CL	NA	12
20		med G CL	NA 1800 lbs push force	9
		2+ G CL	NA vane refusal @ 12', no test done b/c might bust instrument	4
25				
		St G CL	NA 8/30/11	10
30		St G CL, Sa lense on bottom	8/31/11 137	10
35		~~DS~~ med g Sa CL	176	6
40		St G CL w/ shells	~~223~~	9
45		TD GM CL w/ shells	280	9.5
50				

LOG OF BORING

Project: Bayou Bonfouca marsh Creation
For: OCPR

Boring: B9
File: 167150230 0
Date: 8/31/11
Technician: RMB

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

Boring Depth: 60'

Depth Feet	SAMPLES				
48					
MC, AL 50		G m CL		MV NA	Rec 3.0
52	55				
U 54		G M CL	sa in bottom	NA	20
56					
58	60				
U, AL 60		G m	CL w/ sa	NA	9

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation project (PO-104)
Boring: B-10
File: 16715-023-00
For: OCPR
Date: 09/12/11
Technician: SMG

Driller: Terry Jeansonne (SER)
pontoon-mounted drill rig.
N 30° 14' 13.0"
W 89° 52' 20.0"
Boring Depth: ~~30~~ 31.5'

■ Undisturbed Sample
☒ Standard Penetration Test
▯ Classification Sample
(SLS) Slickensided Sample
✓ Pontoon deck

Depth Feet				
0				
	Mudline			
MC,AL	V. So. dark gray Si. Sa. Cl	NO		3"
15	Med. gray Si. Cl. w/ Fe nod.	126		12"
MC,AL	So. gray Si. Sa. Cl. w/ Fe. nod.	NO		13"
	St. gray Si. Cl. w/ Fe. nod.	NO		8"
20 MC,AL	St. gray. Si. Cl. w/ Fe. nod.	NO		11"
	St. gray Si. Cl. w/ Fe. nod.	NO		13"
MC,AL 25	Med. gray Si. Cl. w/ Fe. nod.	NO		13"
	Med. gray Si. Cl. w/ Fe. nod.	NO		9"
MC,AL	Med. gray Si. Cl. w/ Fe. nod.	NO		19"
30	Med. gray Si. Cl. w/ Fe. nod.	NO		13"

Boring terminated

MV. Red

* Sieve & Hydrometer on composite sample made from all specimens from this boring (small amt of each)

DO NOT DISCARD SAMPLES - TAKE A PORTION OUT FOR TESTING & SAVE ALL THE REST

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation project (PO-104)
Boring: B-11
File: 16715-023-00
For: OCPR
Date: 09/12/11
Technician: SM

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

Driller: Terry Jeansonne (SER)
pontoon-mounted drill rig
N 30° 14' 10.6"
W 89° 51' 56.1"
↳ pontoon dock

Boring Depth: ~~29~~ 31'

Depth Feet	SAMPLES			
0		▽		
		MV Rec		
5				
10		Mudline.		
		v. so. gray Si. Sa. Cl. w/ Fe. nod	NO	7"
MC, AL		so. gray Si. Sa. Cl. w/ Fe. nod.	NO	9"
15		Med. gray Si. Sa. Cl. w/ Fe. nod	NO	
MC, AL		so. gray Si. Sa. Cl. w/ Fe. nod.	NO	8,5" 13"
20		Med. brown & gray Si. CL. w/ Fe. nod.	NO	9"
MC, AL		Med. green & gray Si. & Sa. Cl. w/ Ca. & Fe. nod	NO	1"
		Stiff. green & gray Si. CL. w/ Fe. nod.	NO	6"
MC, AL	25	Stiff. green & gray Si. CL. w/ Fe. nod.	NO	12"
		St. green & gray Si. CL. w/ Fe. nod.	NO	5"
MC, AL		St. green & gray Si. CL. w/ Fe. nod	NO	6"

Boring terminated

* Sieve & Hydrometer on composite sample made from all specimens from this boring (small amt of each specimen)

DO NOT DISCARD SAMPLES - TAKE A PORTION OUT FOR TESTING & SAVE THE REST

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation project (PO-104)
Boring: B-12
File: 16715-023-00
For: DCPR
Date: 09/12/11
Technician: SMG

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

Driller: Terry Jeansonne (SER)
pontoon-mounted drill rig
N 30° 13' 52"
W 89° 52' 6"
Boring Depth: ~~31'~~ 31'

↓ pontoon dock

MV Rec

Depth Feet	SAMPLES			
0		▽		
		-- Mudline		
MC, AL		V. so. dark gray sa. cl.	NO	7"
		v. so. dark gray sa. cl. w/ shells	NO	9"
MC, AL		med. gray si. cl. w/ Fe. nod.	NO	10"
		Med. gray si. cl. w/ Ca. & Fe. nod.	NO	11"
MC, AL		Med. gray si. cl. w/ ca. & Fe. nod.	NO	12"
		St. gray si. cl. w/ Fe & Ca. nod.	NO	2.5"
MC, AL		Med. gray si. cl. w/ ca. nod.	NO	11"
		Med. Brown & gray si. cl. w/ Fe. nod.	NO	10"
MC, AL		Med. Brown & gray si. cl. w/ Fe. nod.	NO	6.5"
		Med. gray si. cl. w/ Fe. nod.	NO	9"

* Sieve & Hydrometer on composite samples made from all specimens from this boring (small amt of each)

DO NOT DISCARD SAMPLES - TAKE A PORTION OUT FOR TESTING & SAVE ALL THE REST

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation project (PO-104) Boring: B-13
File: 16715-023-00
For: OCPR Date: 09/12/11
Technician: SM

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

Driller: Terry Jeansonne (SECA)
pontoon-mounted drill rig
N 30° 13' 39"
W 89° 52' 25"
Boring Depth: ~~30~~ 31'

Depth Feet | SAMPLES

0 — ▽ pontoon deck

5

10 — mud line

MC,AL — v. so. dark gray si. sa. cl. — 9"

S — ~~v. so.~~ 40 dark gray si. sa. cl. w/ shells — 10"

15 — MC,AL — so. gray si. sa. cl. w/ Fe. nod. — 11"

so. gray si. sa. cl. w/ Fe. nod. — 4"

20 — MC,AL — Med. gray si. sa. cl. w/ Fe. nod. — 12"

Med. gray si. cl. w/ Fe. nod. — 13"

Med. gray si. cl. w/ Fe. nod. — 13"

25 — MC,AL — Med. gray si. cl. w/ Fe. nod. — 12"

Med. gray si. cl. w/ Fe. nod. — 9"

30 — MC,AL — Med. gray very si cl w/ Fe. nod — 12"

MC,AL

Boring terminated.

*Sieve & Hydrometer on composite sample made of all specimens from this boring (small amt of each)

DO NOT DISCARD SAMPLES - TAKE A PORTION OUT FOR TESTING & SAVE ALL THE REST

LOG OF BORING

Project: Bayou Bonfouca Marsh Creation project (PO-104)
Boring: B-14
File: 16715-023-00
For: OCPR
Date: 09/12/11
Technician: SMG

Undisturbed Sample
Standard Penetration Test
Classification Sample
(SLS) Slickensided Sample

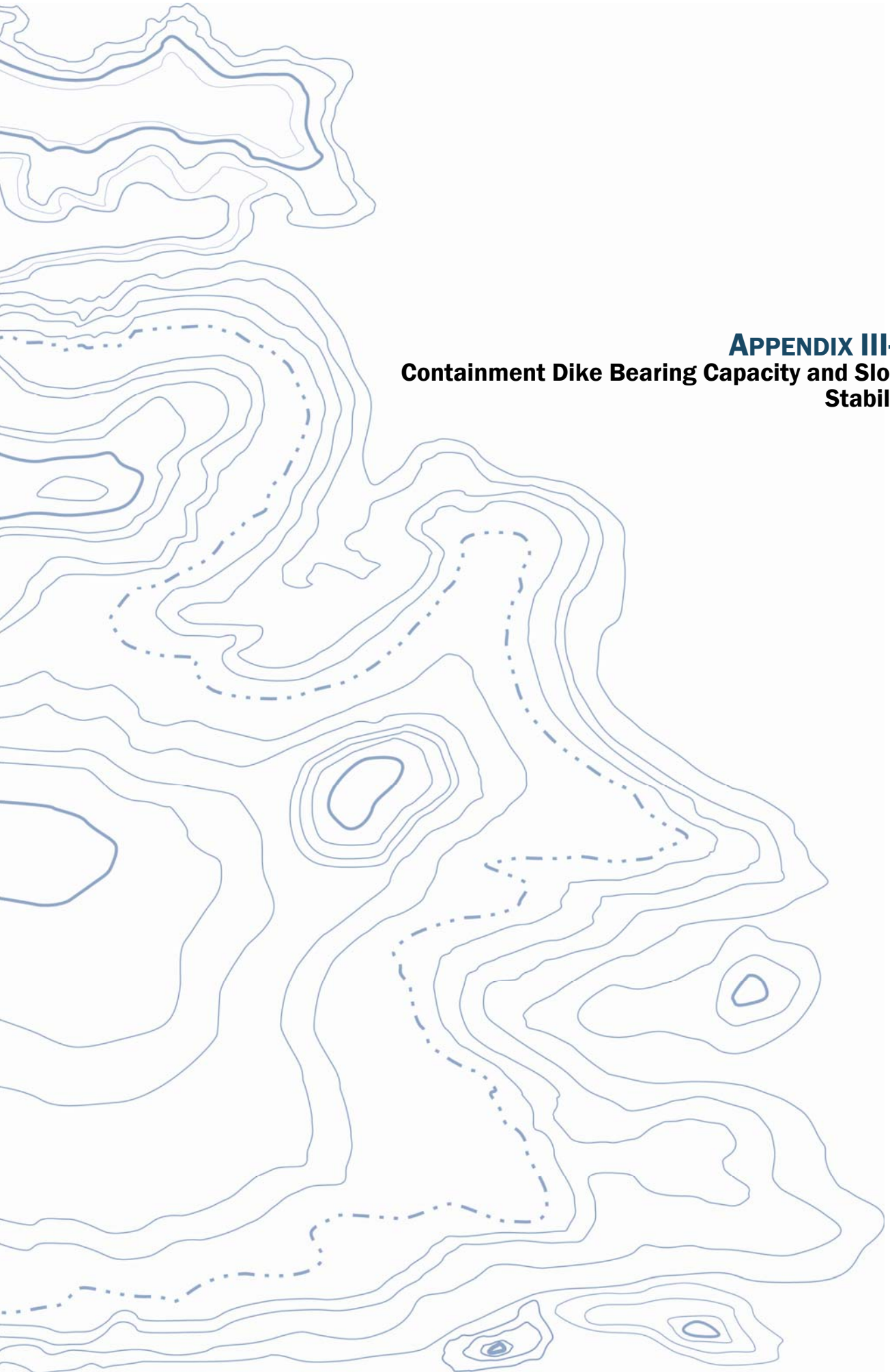
Driller: Terry Jeansonne (SER)
pontoon-mounted drill rig
N 30° 13' 40"
W 89° 52' 25"
Pontoon mounted

Boring Depth: ~~30~~ 31'

Depth Feet	SAMPLES		
0		▽	Rec
5			
10		Mudline	
		V. So. dark gray Sa. Cl.	9"
MC 15		V. So. dark gray Si. Sa. Cl. w/ Fe. nod.	2"
		V. So. gray Si. Sa. Cl. w/ Fe. nod. & shells	8"
MC,AL		V. So. gray Si. Sa. Cl. w/ Fe. nod.	8.5"
20		V. So. gray Si. Sa. Cl. w/ Fe. nod.	6.5"
MC,AL		V. So. ~~gray~~ brownish gray Si. Cl. w/ Fe. nod.	8"
		~~V. So.~~ Med. gray Si. Cl. w/ Fe. nod. Cuttings	8"
25 MC,AL		St. gray Si. Cl. w/ Fe. nod. & Ca. nod.	4"
		med. brown & gray Si. Cl. w/ Fe. nod.	9"
MC,AL 30		St. brown & gray Si. Cl. w/ Fe. nod.	9.5"
		Boring terminated.	

* Sieve & Hydrometer on composite sample made of all specimens from this boring

DO NOT DISCARD SAMPLES - TAKE A PORTION OUT FOR TESTING & SAVE ALL THE REST.



APPENDIX III-C
Containment Dike Bearing Capacity and Slope Stability

Bearing Capacity Calculation Approach for the Containment Dike
Bayou Bonfouca Marsh Creation (PO-104)

1. Seven of the nine soil profiles presented in the geotechnical engineering report (Volume II) dated December 22, 2011 were used to represent conditions under the proposed earthen containment levees. Stratum thicknesses and shear strength properties of these profiles were employed in the bearing analysis.
2. Based on the assumed average mudline elevations, earthen containment dike sections were developed and analyzed for bearing stability. The details of the containment dike are given below:
    i. Containment dike constructed using 80 pcf total weight material (with the exception of the dike in the vicinity of B-5, which is constructed using 100 pcf total weight material).
    ii. Crown elevation of +5.5 feet NAVD 88 for most locations. Dikes in the vicinity of borings B-2 and B-7 are constructed to a crown elevation of 4.5 ft and 5.0 ft NAVD 88, respectively.
    iii. Crown width of 5 feet for most locations. Dikes in the vicinity of borings B-2 and B-7 have a crown width of 25 ft. Those in the vicinity of B-3 have a crown width of 10 ft.
    iv. The side slopes of the containment dike are 3H:1V (Horizontal : Vertical) for dikes in the vicinity of soil borings B-1, B-5, and B-6. Dikes at the other locations have 5H:1V side slopes.
    v. Average elevation of the existing mudline for "land" based dikes is 0 ft NAVD 88 and average elevation of the mudline for "water" based dikes is -1 ft NAVD 88, as shown on the attached sheets in the calculation package.
    vi. Water elevation was assumed at 0.8 ft NAVD 88 for bearing calculations.
3. Equivalent loaded width of the embankment was calculated using the side slopes, mudline elevations, and crown elevation.
4. Stratum thicknesses, shear strength from the first two strata below the containment dike, and equivalent loaded width were used to estimate a bearing capacity factor using NAVFAC DM-7 Figure 11-5.
5. The shear strength of the first stratum was multiplied by the estimated bearing factor to estimate the ultimate bearing capacity of the soil.
6. Factor of safety against general bearing failure was computed by dividing the ultimate bearing capacity by the calculated pressure of the embankment.
7. Results are shown in the Calculation package and in the body of the report

Calculation Checksheet

Project No. 16715-023-00 Project Title: Bayou Bonfouca Marsh Creation (PO-104)

Deliverable Title: Bearing Capacity

Calculations Description: Bearing capacity and factor of safety against bearing failure under earthen containment levees was determined using design soil parameters and the method described in NAVFAC DM-7 Figure 11-5 for determining ultimate bearing capacity in a two-layered cohesive soil. Levee geometries determined during slope stability calculations were used for bearing calculations.

Originator: JMP Checked by: P. Clary Date: 12/20/2010

Checking method (describe):

Comments: The surface sand layer in soil boring B-5 was treated as a cohesive material for the sake of bearing and slope stability calculations. However, the sand layer was considered incompressible for settlement calculations. Cohesion at B-5 was determined by unconfined-undrained triaxial tests in the lab.

Attach checksheets, numbered consecutively.

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project Id: 16715-023-00

Earthen Containment Levee Foundation Bearing Capacity

Boring Id.	Crown Elevation	Crown Width (ft)	Assumed Average Mudline Elevation	Side Slopes	Depth of First Layer, T (ft)	Equivalent Width of Embankment, B (ft)	T/B	First Layer Cohesion, C1 (psf)	Second Layer Cohesion, C2 (psf)	C2/C1	Bearing Capacity Factor, Nc	Ultimate Bearing Capacity, psf	Embankment Pressure, psf	Factor of Safety
B-1	5.5	5	0	3H:1V	11	21.5	0.51	200	1000	5.0	5.8	1160	440	2.64
B-2	4.5	25	0	5H:1V	4	47.5	0.08	110	85	0.8	4.4	484	360	1.34
B-3	5.5	10	0	5H:1V	4	37.5	0.11	120	130	1.1	6.1	732	440	1.66
B-5	5.5	5	0	3H:1V	10	21.5	0.47	200	300	1.5	5.7	1140	550	2.07
B-6	5.5	5	0	3H:1V	7	21.5	0.33	100	170	1.7	6.8	680	440	1.55
B-7	5	25	-1	5H:1V	17	55	0.31	90	1000	11.1	7	630	418	1.51
B-9	5.5	5	-1	5H:1V	6	37.5	0.16	80	200	2.5	10	800	458	1.75

Notes:

1 Embankment geometries based on slope stability with dredged fill material
2 Bearing calculation based on NAVFAC DM-7 Figure 11-5
3 For B-1 calculation, the sand layer from elevation -8 ft to elevation -11 ft was incorporated into the OH layer above it
4 Sand behavior in boring B-5 assumed to act as clay based on lab testing
5 Containment Dike fill at B-5 assumed to have unit weight of 100 pcf based on foundation soil unit weights. Fill at all other locations assumed to be 80 pcf based on foundation soil unit weights

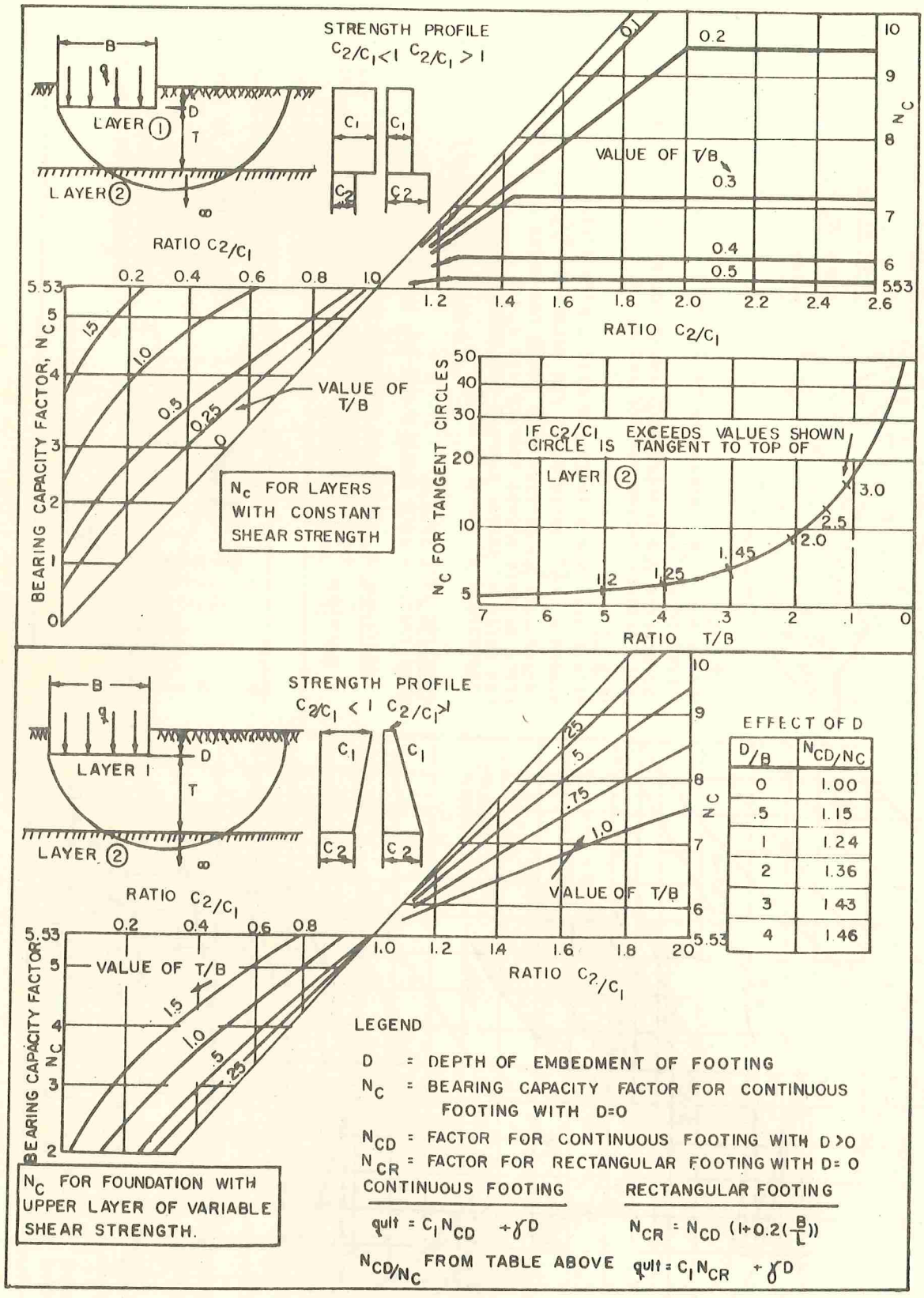


FIGURE 11-5
Ultimate Bearing Capacity on Two Layer Cohesive Soil ($\phi = 0$)

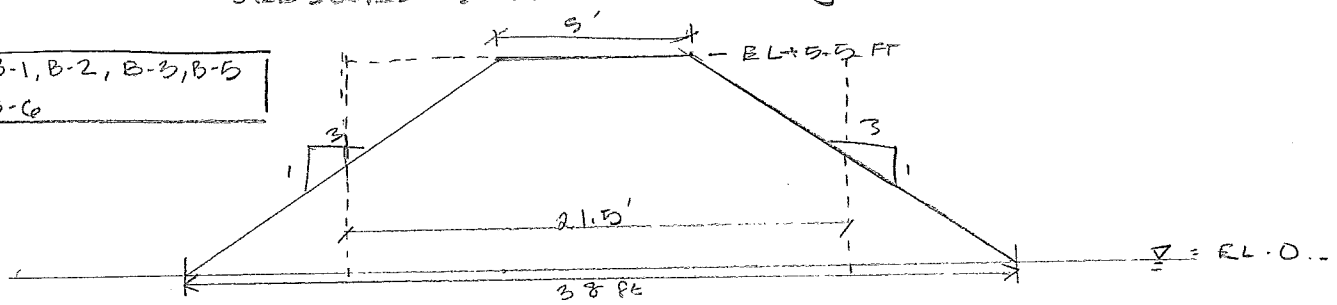
project Bayou Bonfouca Marsh Creation project no. 16715-023-00

by JMP date 11/29/11 sheet 1 of ____ checked by ____

Containment Dike Bearing Capacity Prep

Assumptions: Water table at 0.0 ft NAVD 88
Crown El = 5.5 ft NAVD 88
Crown width = 5 ft
γ_{FILL} = 80 pcf for all but boring B-5, where γ_{FILL} = 100 pcf
Side slopes = 3H:1V for all but boring B-9, where slopes are 5H:1V

B-1, B-2, B-3, B-5
B-6

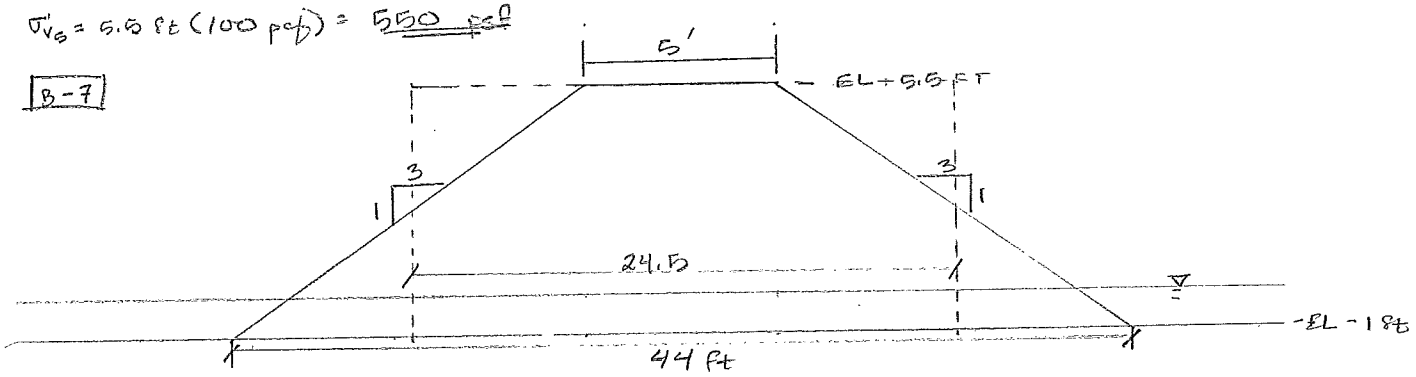


Effective width: 21.5 ft

$\sigma'_{V_{1-3,6}}$ = 5.5 ft (80 pcf) = 440 psf

σ'_{V_5} = 5.5 ft (100 pcf) = 550 psf

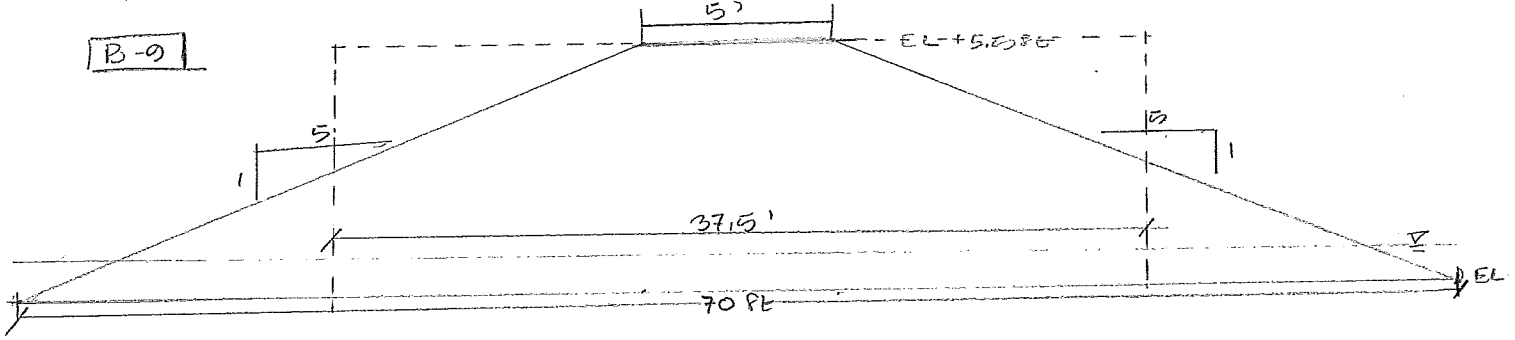
B-7



Effective width: 24.5 ft

σ'_{V_7} = 5.5 ft (80 pcf) + 1 (80 - 62.4) = 457.6 psf ≈ 458 psf

B-9



Effective width: 37.5 ft

σ'_{V_9} = 5.5 (80 pcf) + 1 (80 - 62.4) = 457.6 psf ≈ 458 psf

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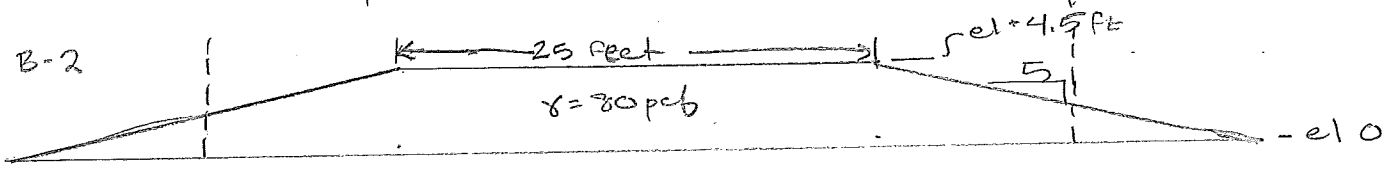
project Bayou Bonfouca Marsh Creation (Bo-104) project no. 16715-023-00

by JMP date 12/19/2011 sheet ____ of ____ checked by ____

Bearing with fill-based geometries

B-1 Same as previous

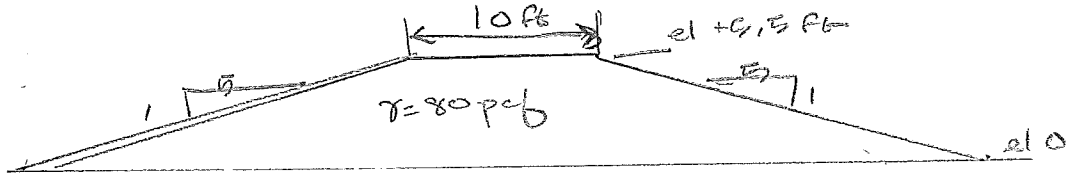
B-2



25 ft + 5(4.5 - 0) = Weq = 47.5 ft

4.5 ft (80 pcf) = 360 psf

B-3



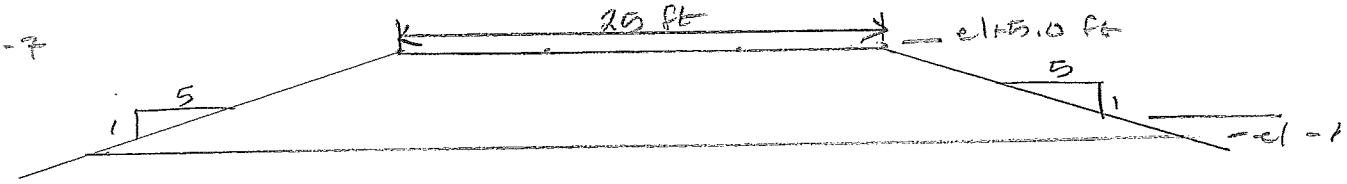
10 ft + 5(5.5 - 0) = 37.5 ft

5.5 (80) = 440 psf

B-5 Same as previous

B-6 Same as previous

B-7



Weq = 25 + 5(5.0 + ϕ) = 55 ft
5.0 (80) + 1 (80 - 62.4) =

B-9 Same as previous

project Bayou Bonfouca March Creation project no. 16715-023-00

by JMP date 11/30/11 sheet ____ of ____ checked by ____

Containment Dike Considerations

FILL UNIT WEIGHT MAY VARY FROM ONE BORING TO THE NEXT

80 pcf seems reasonable assumption for all but B-5.

For B-5, use 80% of CL γ (10'-18')

$0.8(125) = 100$ pcf

GeoEngineers
Earth Science + Technology

Slope Stability Calculation Approach for the Containment Dike
Bayou Bonfouca Marsh Creation (PO-104)

1. A total of 9 profiles were developed from the 9 soil borings after analyzing shear strength, unit weight, and moisture content profiles of each boring.
2. Three separate scenarios were assumed to evaluate containment dike sections. The first assumed a marsh fill elevation of +4.5 ft NAVD 88 before the dredge fill was placed. Stability into the containment dike borrow cut was analyzed. The second assumed dredged fill was in place at the maximum elevation and stability away from the dredged fill was analyzed. The third scenario modifies the second scenario to take into account reductions to marsh fill elevations due to relatively low settlement in the marsh creation areas. All elevations are listed in reference to NAVD 88.
    a. For the unfilled marsh area scenario, earthen containment dike sections were developed and analyzed for overall stability. The details of the containment dike are given below:
        i. Containment dike constructed using soils excavated from the marsh creation area (fill unit weight assumed to be 80 pcf for all locations except B-5, which was assumed to be 100 pcf)
        ii. Crown elevation of +5.5 feet (includes 1 foot of freeboard)
        iii. Crown width of 5 feet
        iv. The side slopes of the containment dike are 3H:1V (Horizontal : Vertical) for the grassy/land areas and 5H:1V for the open water areas
        v. Assumed average foundation elevations are -1 ft in open water areas and 0 ft on grassy/land areas
        vi. Water elevation assumed at 0 ft
        vii. Bottom of borrow excavation for containment dike is El. -10 feet
    b. For the filled marsh area scenario, earthen containment dike sections were developed and analyzed for overall stability. The details of the containment dike are given below.
        i. Containment dike constructed using soils excavated from the marsh creation area (fill unit weight assumed to be 80 pcf for all locations except B-5, which was assumed to be 100 pcf)
        ii. Crown elevation of +5.5 feet at most locations (includes 1 foot of freeboard); exceptions are B-2 and B-7, which had stable crown elevations of 4.5 ft and 5.0 ft, respectively
        iii. Crown width of 5 feet at locations near B-1, B-5, B-6, and B-9. Stable crown width at B-2 and B-7 is 25 ft; at B-3, stable crown width is 10 ft
        iv. The side slopes of the containment dike are 3H:1V (Horizontal : Vertical) for locations near B-1, B-5, and B-6. At B-2, B-3, B-7, and B-9, side slopes are 5H:1V
        v. Foundation, water, and borrow excavation elevations are the same as scenario one.
    c. For the reduced marsh fill scenario, earthen containment dike sections were modified and analyzed for overall stability. The details of the containment dike are given below.
        i. Containment dike constructed using soils excavated from the marsh creation area (fill unit weight assumed to be 80 pcf for all locations except B-5, which was assumed to be 100 pcf)
        ii. Crown elevation of +4.0 feet at most locations (includes 1 foot of freeboard); exceptions are B-3 and B-5, which had stable crown elevations of 5.0 ft
        iii. Crown width of 5 feet at locations near B-1, B-5, B-6, and B-9. Stable crown width at B-2 is 25 ft, B-3 stable crown width is 10 ft, and B-7 stable crown width is 15 ft
        iv. The side slopes of the containment dike are 3H:1V (Horizontal : Vertical) for locations near B-1, B-5, and B-6. At B-2, B-3, B-7, and B-9, side slopes are 5H:1V
        v. Foundation, water, and borrow excavation elevations are the same as scenario one.
3. Results (refer to Appendix II-B for specific results)
    a. Scenario two (maximum marsh fill behind the containment dike) had lower factors of safety than scenario one (no marsh fill).
    b. Crown and marsh fill elevation reductions improved the factors of safety against slope failure.

Calculation Checksheet

Project No. 16715-023-00 Project Title: Bayou Bonfouca Marsh Creation (PO-104)

Deliverable Title: Slope stability of earthen containment levees

Calculations Description: Stability of the containment dikes was computed using Spencer's method and the computer program SLOPE/W by GeoSlope International, Inc. Stable geometries were generally established based on containment levees constructed with in-situ soils with a constructed unit weight of 80 pcf and cohesion of 60 psf. The containment dike in the area of soil boring B-5 was given a constructed unit weight of 100 pcf and 100 psf based on the soils in the top 10 feet of the profile at that boring. Design soil parameters based on laboratory test data were used to construct the soil profile in the model. Stability calculations assumed dredged fill at its maximum constructed elevation (1 ft below the crown of the earthen containment levee).

Originator: JMP Checked by: D. Clay Date: 12/21/11

Checking method (describe):

Comments: The surface sand layer in soil boring B-5 was treated as a cohesive material for the sake of bearing and slope stability calculations. However, the sand layer was considered incompressible for settlement calculations. Cohesion at B-5 was determined by unconfined-undrained triaxial tests in the lab.

Attach checksheets, numbered consecutively.

Slope Stability Containment Dike B-2

File Information

Created By: Venu Tammineni
Revision Number: 167
Last Edited By: Josh M. Pruett
Date: 12/21/2011
Time: 1:44:51 PM
File Name: Containment Dike_B-2_w_fill at 3 ft.gsz
Directory: P:\16\16715023\00\Working\Analyses\Slope Stability\Containment Dike\
Last Solved Date: 12/21/2011
Last Solved Time: 1:45:04 PM

Project Settings

Length(L) Units: feet
Time(t) Units: Seconds
Force(F) Units: lbf
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D

Analysis Settings

Slope Stability Containment Dike B-2

Kind: SLOPE/W
Method: Spencer
Settings
    Apply Phreatic Correction: No
    PWP Conditions Source: Piezometric Line
    Use Staged Rapid Drawdown: No
Slip Surface
    Direction of movement: Right to Left
    Use Passive Mode: No
    Slip Surface Option: Entry and Exit
    Critical slip surfaces saved: 1
    Optimize Critical Slip Surface Location: No
    Tension Crack
        Tension Crack Option: (none)
FOS Distribution
    FOS Calculation Option: Constant

Advanced
- Number of Slices: 30
- Optimization Tolerance: 0.01
- Minimum Slip Surface Depth: 0.1 ft
- Optimization Maximum Iterations: 2000
- Optimization Convergence Tolerance: 1e-007
- Starting Optimization Points: 8
- Ending Optimization Points: 16
- Complete Passes per Insertion: 1
- Driving Side Maximum Convex Angle: 5 °
- Resisting Side Maximum Convex Angle: 1 °

Materials

Containment Dike Fill
- Model: Mohr-Coulomb
- Unit Weight: 80 pcf
- Cohesion: 60 psf
- Phi: 0 °
- Phi-B: 0 °
- Pore Water Pressure
  - Piezometric Line: 1

Peat and Organic Clay
- Model: Mohr-Coulomb
- Unit Weight: 67 pcf
- Cohesion: 110 psf
- Phi: 0 °
- Phi-B: 0 °
- Pore Water Pressure
  - Piezometric Line: 1

Organic Clay - 1
- Model: Mohr-Coulomb
- Unit Weight: 80 pcf
- Cohesion: 85 psf
- Phi: 0 °
- Phi-B: 0 °
- Pore Water Pressure
  - Piezometric Line: 1

Organic Clay - 2
- Model: Mohr-Coulomb
- Unit Weight: 104 pcf
- Cohesion: 85 psf
- Phi: 0 °

Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Clay and Silty Clay

Model: Mohr-Coulomb
Unit Weight: 106 pcf
Cohesion: 150 psf
Phi: 0 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (0, 0) ft
Left-Zone Right Coordinate: (49.17093, 2.83419) ft
Left-Zone Increment: 30
Right Projection: Range
Right-Zone Left Coordinate: (67.99532, 4) ft
Right-Zone Right Coordinate: (122, 0) ft
Right-Zone Increment: 30
Radius Increments: 8

Slip Surface Limits

Left Coordinate: (0, 0) ft
Right Coordinate: (220, -1.5) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X (ft)	Y (ft)
	0	0
	35	0
	50	3
	220	3

Surcharge Loads

Surcharge Load 1

Surcharge (Unit Weight): 96 pcf
Direction: Normal

Coordinates

	X (ft)	Y (ft)
	85	3
	220	3

Regions

	Material	Points	Area (ft^2)
Region 1	Containment Dike Fill	2,3,4,5	180
Region 2	Peat and Organic Clay	1,2,5,6,19,11	524
Region 3	Peat and Organic Clay	20,9,10,12	70.625
Region 4	Organic Clay - 1	13,11,19,7,8,20,12,14	2002
Region 5	Organic Clay - 2	15,13,14,16	2860
Region 6	Clay and Silty Clay	17,15,16,18	2860

Points

	X (ft)	Y (ft)
Point 1	0	0
Point 2	35	0
Point 3	55	4
Point 4	80	4
Point 5	100	0
Point 6	125	0
Point 7	155	-10
Point 8	170	-10
Point 9	195.5	-1.5
Point 10	220	-1.5
Point 11	0	-4
Point 12	220	-4
Point 13	0	-14

Point 14	220	-14
Point 15	0	-27
Point 16	220	-27
Point 17	0	-40
Point 18	220	-40
Point 19	137	-4
Point 20	188	-4

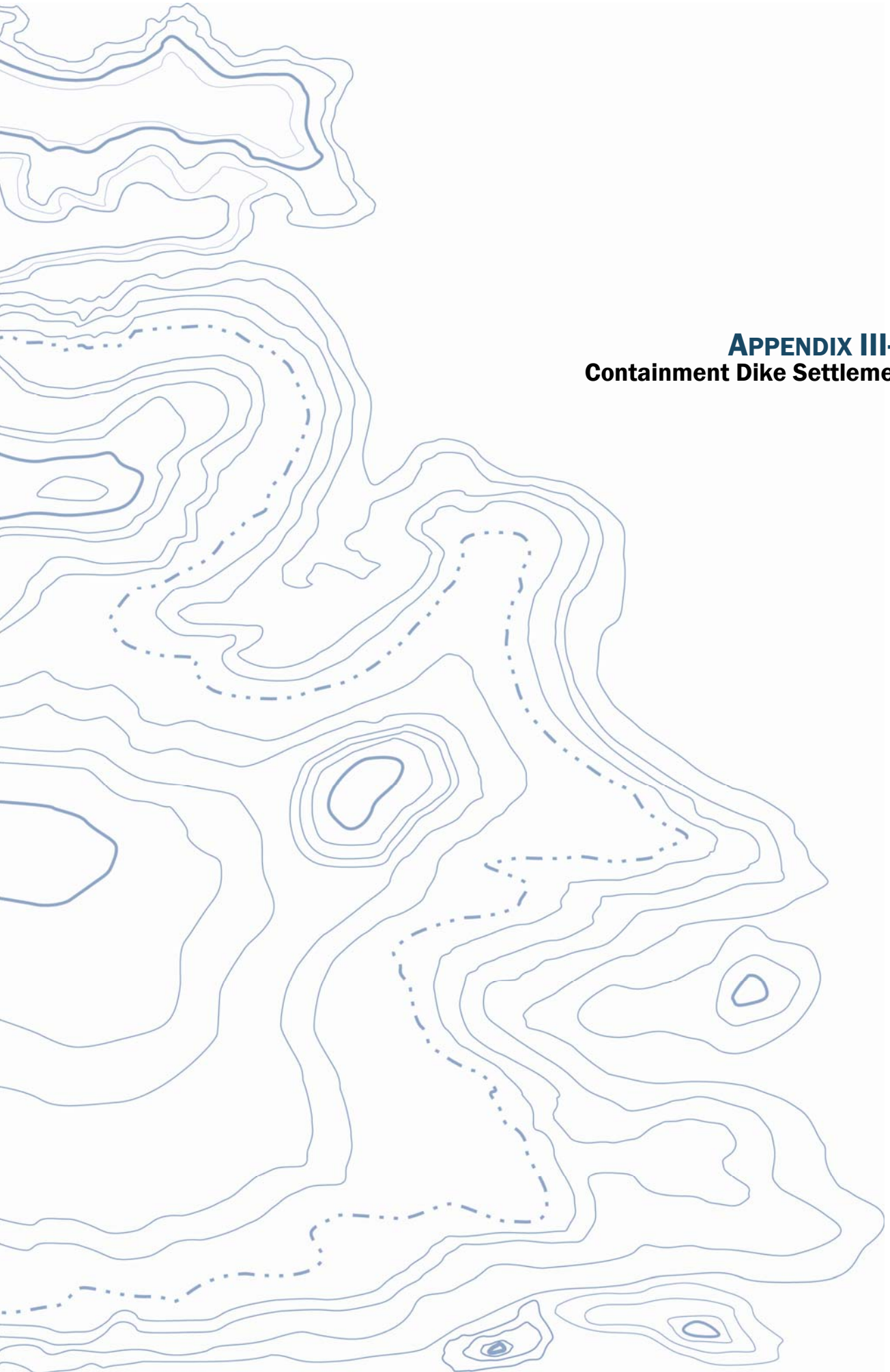
Critical Slip Surfaces

	Slip Surface	FOS	Center (ft)	Radius (ft)	Entry (ft)	Exit (ft)
1	1355	1.28	(60.67, 40.557)	67.596	(114.747, 0)	(6.59354, 0)

Slices of Slip Surface: 1355

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	1355	8.216203	-2	124.80072	249.99359	0	110
2	1355	11.659367	-5.919742	369.39415	507.01454	0	85
3	1355	15.30037	-9.489837	592.17471	787.41616	0	85
4	1355	18.941375	-12.570095	784.36836	1028.2213	0	85
5	1355	22.541645	-15.216685	949.51197	1263.8359	0	85
6	1355	26.101175	-17.493215	1091.5881	1495.4393	0	85
7	1355	29.660705	-19.472425	1215.083	1695.6649	0	85
8	1355	33.220235	-21.183075	1321.8137	1867.6256	0	85
9	1355	36.875	-22.67989	1438.6182	2047.2	0	85

10	1355	40.625	-23.967895	1565.7859	2234.858	0	85
11	1355	44.375	-25.016305	1678.0058	2397.2251	0	85
12	1355	48.125	-25.83652	1775.9883	2535.5876	0	85
13	1355	52.5	-26.495415	1840.508	2665.6851	0	85
14	1355	56.698105	-26.900015	1865.7649	2739.3749	0	85
15	1355	60.670055	-27	1872.0045	2741.6105	0	85
16	1355	64.64951	-26.89938	1865.7355	2723.2042	0	85
17	1355	68.06073	-26.61109	1847.7432	2686.3682	0	85
18	1355	71.47195	-26.14722	1818.7858	2631.3086	0	85
19	1355	74.88317	-25.50406	1778.6483	2557.6917	0	85
20	1355	78.29439	-24.67629	1727.0007	2464.9889	0	85
21	1355	82.5	-23.361665	1644.9711	2280.6601	0	85
22	1355	86.875	-21.71888	1542.4487	2091.0092	0	85
23	1355	90.625	-20.00247	1435.3437	1963.445	0	85
24	1355	94.375	-17.995725	1310.1278	1805.7938	0	85
25	1355	98.125	-15.66736	1164.8518	1614.8845	0	85
26	1355	100.2891	-14.20915	1073.8458	1490.8881	0	85
27	1355	102.3987	-12.570095	971.56705	1351.0834	0	85
28	1355	106.0397	-9.489837	779.35825	1098.317	0	85
29	1355	109.6807	-5.919742	556.58585	806.61576	0	85
30	1355	113.1239	-2	312.00179	489.989	0	110



APPENDIX III-D
Containment Dike Settlement

Calculation Approach for Settlement and Time Rate of Settlement for Earthen Containment Levees Bayou Bonfouca Marsh Creation (PO-104)

1. Settlement parameters were developed for each soil boring as shown in the attached spreadsheets. The following description explains how the parameters were developed.
    a. One consolidation test was completed for each boring. Samples for each consolidation test were selected from varying depths and materials.
    b. A total of 9 consolidation test results were analyzed and graphs were reconstructed to determine compression (C_c), recompression (C_r), and vertical consolidation (C_v) coefficients, initial void ratios (e_0), and maximum past pressures (P_c).
    c. Correlations presented in equations 1 through 3 (shown in the spreadsheets in Appendix III-D) were used to calculate e_0, C_c, and C_r for all soil layers.
    d. GeoEngineers developed different correlations based on the analyses of the consolidation test results as follows:
        i. e_0 was computed using correlations established from the results of laboratory consolidation testing for this project.
        ii. w vs. C_c: C_c=0.0054*((w*S.G.)-35) was found to provide sufficient accuracy based on the test data for this and other projects for all compressible soil types. C_c for each of the soil layers was determined based on the moisture contents estimated during soil profile development.
        iii. C_r was taken to be 10 percent of C_c for all compressible soil types based on consolidation test results from this project.
        iv. C_v values were estimated using a graphical correlation established by GeoEngineers based on this and other coastal protection and restoration projects.
    e. For soil layers without a representative consolidation test, the above mentioned correlations/calculation methods were used to estimate C_c, C_r, and C_v.
    f. Maximum past pressure (P_c) was obtained from the consolidation test curves for the soil layers with a representative consolidation test. For other soil layers, the overconsolidation ratio (OCR) was estimated from the equation OCR = $(c/(P_0' * 0.22))^{(1/0.8)}$. This equation was taken from Figure 7.1 of "Recommended Practice for soft ground site characterization," by Charles Ladd and Don DeGroot. P_c was estimated by multiplying the effective overburden pressure (P_0') by OCR.
    g. In cases where P_0' was greater than P_c, P_0' was used as the maximum past pressure under the assumption that the soil is normally consolidated.
2. In this area, clay shear strength for a normally consolidated soil profile will be approximately 22% of the effective overburden pressure. This relationship is shown as the C/P line on the shear strength profiles. Based on this relationship, it generally appears that the soils are overconsolidated, with the exception of some deeper soil layers in certain locations. This affects the settlement parameters in these zones.
3. Both vertical and horizontal drainage were considered. Vertical drainage to the phreatic surface or to the nearest granular soil layer has been considered. The presence of small sand and silt layers within clay was considered in the vertical drainage path evaluation. In some of the soil profiles, the preferential drainage path in the deeper soil layers is horizontal. For these cases, the horizontal drainage coefficient, C_h, was assumed to be twice the magnitude of C_v.
4. Consolidation of foundation soils was modeled using a one-dimensional consolidation program.
5. Time rate of settlement was computed using spreadsheet calculations based on Terzaghi's one-dimensional consolidation theory.

Calculation Checksheet

Project No. 16715-023-00 Project Title: Bayou Bonfouca Marsh Creation (PO-104)

Deliverable Title: Containment Dike Settlement and Time Rate of Settlement

Calculations Description: Settlement calculations were performed using a computer program based on Terzaghi's theorem of one-dimensional consolidation settlement and Boussinesq stress distribution. Consolidation and drainage properties were based on laboratory tests, soil profiles, and correlations based on this and other coastal projects. Horizontal drainage distances were determined using hand and spreadsheet calculations.

(Time rate settlement calculations of borings 1, 2, 3, 5, 6, 7, 9 are correct)

Originator: JMP Checked by: SM Date: 12/21/2011

Checking method (describe):

Comments:

Attach checksheets, numbered consecutively.

GeoEngineers

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-1

Initial Fill Elevation = 5.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	0.236961015	0.019746751
45	0.123287671	0.271788064	0.022649005
60	0.164383562	0.301148381	0.025095698
90	0.246575342	0.350400856	0.029200071
150	0.410958904	0.428504015	0.035708668
180	0.493150685	0.46157613	0.038464678
365	1	0.606204965	0.05051708
545	1.493150685	0.68910005	0.057425004
730	2	0.740510716	0.061709226
1095	3	0.791267611	0.065938968
1460	4	0.813637275	0.067803106
1825	5	0.825144851	0.068762071
3650	10	0.845618935	0.070468245
7300	20	0.852865507	0.071072126
18250	50	0.853993625	0.071166135
Long Term		0.854	0.071166667
Construction		0.1708	0.014233333

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-1

Initial Fill Elevation = 5.5 ft

Layer 1

Total layer sett@ 30 days: 0.649 in
Cv: 0.02 ft^2/day
Hdr: 4 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.0375	21.85097	0.14181279
45	0.05625	26.76186	0.17368448
60	0.075	30.90194	0.20055357
90	0.1125	37.84699	0.24562695
150	0.1875	48.86025	0.31710303
180	0.225	53.52372	0.34736897
365	0.45625	73.70446	0.47834194
545	0.68125	84.90877	0.55105794
730	0.9125	91.47159	0.59365061
1095	1.36875	97.23399	0.63104857
1460	1.825	99.1029	0.64317783
1825	2.28125	99.70904	0.6471117
3650	4.5625	99.99896	0.64899322
7300	9.125	100	0.649
18250	22.8125	100	0.649

Layer 2

Total layer sett@ 30 days: 0 in
Cv: 1 ft^2/day
Hdr: 1 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	30	100	0
45	45	100	0
60	60	100	0
90	90	100	0
150	150	100	0
180	180	100	0
365	365	100	0
545	545	100	0
730	730	100	0
1095	1095	100	0
1460	1460	100	0
1825	1825	100	0
3650	3650	100	0
7300	7300	100	0
18250	18250	100	0

Layer 3

Total layer sett@ 30 days: 0.082 in
Cv: 1.5 ft^2/day
Hdr: 3 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	5	99.99965	0.082
45	7.5	100	0.082
60	10	100	0.082
90	15	100	0.082
150	25	100	0.082
180	30	100	0.082
365	60.83333	100	0.082
545	90.83333	100	0.082
730	121.6667	100	0.082
1095	182.5	100	0.082
1460	243.3333	100	0.082
1825	304.1667	100	0.082
3650	608.3333	100	0.082
7300	1216.667	100	0.082
18250	3041.667	100	0.082

Layer 4

Total layer sett@ 30 days: 0.086 in
Cvh: 0.24 ft^2/day
Hdr: 26 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.010651	11.64523	0.0100149
45	0.015976	14.26243	0.01226569
60	0.021302	16.46884	0.0141632
90	0.031953	20.17012	0.01734631
150	0.053254	26.03952	0.02239399
180	0.063905	28.52486	0.02453138
365	0.129586	40.61942	0.0349327
545	0.193491	49.63472	0.04268586
730	0.259172	57.44454	0.04940231
1095	0.388757	68.93857	0.05928717
1460	0.518343	77.44048	0.06659881
1825	0.647929	83.6153	0.07190916
3650	1.295858	96.68884	0.0831524
7300	2.591716	99.86477	0.0858837
18250	6.47929	99.99999	0.08599999

Layer 5

Total layer sett@ 30 days: 0.037 in
Cvh: 0.24 ft^2/day
Hdr: 35.75 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.005634	8.46925602	0.003134
45	0.00845	10.3726779	0.003838
60	0.011267	11.9773367	0.004432
90	0.016901	14.6691817	0.005428
150	0.028168	18.9378322	0.007007
180	0.033801	20.7453557	0.007676
365	0.068541	29.5413995	0.01093
545	0.102342	36.0979788	0.013356
730	0.137082	41.7778479	0.015458
1095	0.205624	51.1672049	0.018932
1460	0.274165	59.0827991	0.021861
1825	0.342706	65.1999725	0.024124
3650	0.685412	85.0630083	0.031473
7300	1.370825	97.2481152	0.035982
18250	3.427062	99.982792	0.036994

0.854

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-2

Initial Fill Elevation = 5.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	1.028361396	0.085696783
45	0.123287671	1.257866411	0.104822201
60	0.164383562	1.449502133	0.120791844
90	0.246575342	1.765030638	0.147085887
150	0.410958904	2.249777571	0.187481464
180	0.493150685	2.45061501	0.204217918
365	1	3.370437685	0.280869807
545	1.493150685	3.975806769	0.331317231
730	2	4.429901593	0.369158466
1095	3	5.05146038	0.420955032
1460	4	5.487036899	0.457253075
1825	5	5.832701917	0.486058493
3650	10	7.057098804	0.588091567
7300	20	8.685250181	0.723770848
18250	50	11.1507809	0.929231742
Long Term		12.736	1.061333333
Construction		2.5472	0.212266667

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-2

Initial Fill Elevation = 5.5 ft

Layer 1

Total layer sett@ 30 days: 0.201 in
Cv: 0.12 ft^2/day
Hdr: 4 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.225	53.52372	0.10758268
45	0.3375	64.74995	0.13014741
60	0.45	73.29572	0.14732439
90	0.675	84.67419	0.17019513
150	1.125	94.95213	0.19085378
180	1.35	97.10299	0.195177
365	2.7375	99.90563	0.20081033
545	4.0875	99.99663	0.20099322
730	5.475	99.99989	0.20099978
1095	8.2125	100	0.201
1460	10.95	100	0.201
1825	13.6875	100	0.201
3650	27.375	100	0.201
7300	54.75	100	0.201
18250	136.875	100	0.201

Layer 2

Total layer sett@ 30 days: 0.54 in
Cv: 0.02 ft^2/day
Hdr: 11.63 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.004436	7.51538043	0.040583
45	0.006654	9.20442364	0.049704
60	0.008872	10.6283529	0.057393
90	0.013308	13.0170207	0.070292
150	0.02218	16.8049015	0.090746
180	0.026616	18.4088473	0.099408
365	0.053971	26.21421	0.141557
545	0.080587	32.0323347	0.172975
730	0.107943	37.0724913	0.200191
1095	0.161914	45.4043436	0.245183
1460	0.215885	52.4284201	0.283113
1825	0.269857	58.6167556	0.31653
3650	0.539714	78.5994579	0.424437
7300	1.079427	94.3512349	0.509497
18250	2.698568	99.8961181	0.539439

Layer 3

Total layer sett@ 30 days: 9.287 in
Cvh: 0.04 ft^2/day
Hdr: 34 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.001038	3.635522	0.337631
45	0.001557	4.452587	0.413512
60	0.002076	5.141404	0.477482
90	0.003114	6.296909	0.584794
150	0.00519	8.129274	0.754966
180	0.006228	8.905174	0.827023
365	0.01263	12.68097	1.177682
545	0.018858	15.49546	1.439063
730	0.02526	17.9336	1.665494
1095	0.037889	21.96409	2.039805
1460	0.050519	25.36195	2.355364
1825	0.063149	28.35552	2.633377
3650	0.126298	40.10076	3.724157
7300	0.252595	56.71103	5.266754
18250	0.631488	82.93681	7.702342

Layer 4

Total layer sett@ 30 days: 1.562 in
Cvh: 2 ft^2/day
Hdr: 40.5 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.03658	21.5812	0.3370984
45	0.05487	26.43147	0.41285954
60	0.07316	30.52043	0.47672913
90	0.109739	37.37974	0.58387156
150	0.182899	48.25704	0.75377494
180	0.219479	52.86294	0.82571907
365	0.445054	72.96776	1.13975646
545	0.664533	84.27313	1.31634636
730	0.890108	90.98703	1.42121741
1095	1.335162	96.99493	1.51506088
1460	1.780216	98.99806	1.54634976
1825	2.225271	99.66594	1.55678197
3650	4.450541	99.99862	1.5619785
7300	8.901082	100	1.562
18250	22.25271	100	1.562

Layer 5

Total layer sett@ 30 days: 1.146 in
Cvh: 2 ft^2/day
Hdr: 48.75 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.025247	17.9289999	0.205466
45	0.03787	21.9584507	0.251644
60	0.050493	25.3554348	0.290573
90	0.07574	31.0539387	0.355878
150	0.126233	40.0904625	0.459437
180	0.151479	43.9169013	0.503288
365	0.307166	62.0097927	0.710632
545	0.458646	73.8594669	0.846429
730	0.614333	82.1988814	0.941999
1095	0.921499	91.6589078	1.050411
1460	1.228665	96.0916041	1.10121
1825	1.535832	98.1686381	1.125013
3650	3.071663	99.9586332	1.145526
7300	6.143327	99.9999789	1.146
18250	15.35832	100	1.146

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-3

Initial Fill Elevation = 5.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	2.577340813	0.214778401
45	0.123287671	3.053193633	0.254432803
60	0.164383562	3.404754189	0.283729516
90	0.246575342	3.920195422	0.326682952
150	0.410958904	4.63781392	0.386484493
180	0.493150685	4.922594664	0.410216222
365	1	6.186116356	0.515509696
545	1.493150685	7.029354535	0.585779545
730	2	7.723115172	0.643592931
1095	3	8.723626095	0.726968841
1460	4	9.455361157	0.787946763
1825	5	9.9847314	0.83206095
3650	10	11.09814068	0.924845056
7300	20	11.36486509	0.947072091
18250	50	11.37599927	0.947999939
Long Term		11.376	0.948
Construction		2.2752	0.1896

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-3

Initial Fill Elevation = 5.5 ft

Layer 1
Total layer sett@ 30 days: 0.262 in
Cv: 0.07 ft^2/day
Hdr: 4 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.13125	40.87942	0.10710408
45	0.196875	50.06686	0.13117517
60	0.2625	57.81223	0.15146804
90	0.39375	69.31894	0.18161563
150	0.65625	83.94834	0.21994466
180	0.7875	88.38967	0.23158093
365	1.596875	98.42476	0.25787287
545	2.384375	99.77442	0.26140899
730	3.19375	99.96939	0.26191981
1095	4.790625	99.99941	0.26199844
1460	6.3875	99.99999	0.26199997
1825	7.984375	100	0.262
3650	15.96875	100	0.262
7300	31.9375	100	0.262
18250	79.84375	100	0.262

Layer 2
Total layer sett@ 30 days: 0.537 in
Cv: 0.02 ft^2/day
Hdr: 7.07 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.012004	12.3626414	0.066387
45	0.018005	15.1410816	0.081308
60	0.024007	17.4834151	0.093886
90	0.036011	21.412723	0.114986
150	0.060018	27.6437065	0.148447
180	0.072022	30.2821632	0.162615
365	0.146044	43.1218193	0.231564
545	0.218066	52.692511	0.282959
730	0.292088	60.5694739	0.325258
1095	0.438132	72.5020169	0.389336
1460	0.584176	80.8235104	0.434022
1825	0.730221	86.6267372	0.465186
3650	1.460441	97.7941361	0.525155
7300	2.920882	99.9399848	0.536678
18250	7.302205	99.9999988	0.537

Layer 3
Total layer sett@ 30 days: 8.072 in
Cv: 0.02 ft^2/day
Hdr: 7.5 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.010667	11.65385	0.940699
45	0.016	14.27299	1.152116
60	0.021333	16.48103	1.330349
90	0.032	20.18506	1.629338
150	0.053333	26.0588	2.103466
180	0.064	28.54599	2.304232
365	0.129778	40.6495	3.281228
545	0.193778	49.67147	4.009481
730	0.259556	57.48708	4.640357
1095	0.389333	68.98269	5.568283
1460	0.519111	77.48319	6.254443
1825	0.648889	83.65407	6.752557
3650	1.297778	96.70449	7.805986
7300	2.595556	99.86605	8.061187
18250	6.488889	99.99999	8.071999

Layer 4
Total layer sett@ 30 days: 1.455 in
Cv: 1 ft^2/day
Hdr: 7.5 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.533333	78.25981	1.13868026
45	0.8	88.74237	1.29120149
60	1.066667	94.17051	1.37018092
90	1.6	98.43686	1.43225631
150	2.666667	99.88761	1.45336471
180	3.2	99.96986	1.45456151
365	6.488889	99.99999	1.45499987
545	9.688889	100	1.455
730	12.97778	100	1.455
1095	19.46667	100	1.455
1460	25.95556	100	1.455
1825	32.44444	100	1.455
3650	64.88889	100	1.455
7300	129.7778	100	1.455
18250	324.4444	100	1.455

Layer 5
Total layer sett@ 30 days: 1.05 in
Cv 1 ft^2/day
Hdr: 20 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.075	30.9019362	0.32447
45	0.1125	37.8469878	0.397393
60	0.15	43.7019372	0.45887
90	0.225	53.5237235	0.561999
150	0.375	67.8658532	0.712591
180	0.45	73.295717	0.769605
365	0.9125	91.4715881	0.960452
545	1.3625	97.1909915	1.020505
730	1.825	99.1029011	1.04058
1095	2.7375	99.9056347	1.049009
1460	3.65	99.9900738	1.049896
1825	4.5625	99.9989559	1.049989
3650	9.125	100	1.05
7300	18.25	100	1.05
18250	45.625	100	1.05

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-5

Initial Fill Elevation = 5.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	0.234441905	0.019536825
45	0.123287671	0.264842892	0.022070241
60	0.164383562	0.286245804	0.023853817
90	0.246575342	0.318591349	0.026549279
150	0.410958904	0.367699996	0.030641666
180	0.493150685	0.388389038	0.032365753
365	1	0.48904359	0.040753633
545	1.493150685	0.559410797	0.046617566
730	2	0.614660536	0.051221711
1095	3	0.687578099	0.057298175
1460	4	0.729821914	0.060818493
1825	5	0.754295303	0.062857942
3650	10	0.785800392	0.065483366
7300	20	0.787990632	0.065665886
18250	50	0.788	0.065666667
Long Term		0.788	0.065666667
Construction		0.1576	0.013133333

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-5

Initial Fill Elevation = 5.5 ft

Layer 1
Total layer sett@ 30 days: 0 in
Cv: 10 ft^2/day
Hdr: 3.33 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	27.05408	100	0
45	40.58112	100	0
60	54.10816	100	0
90	81.16224	100	0
150	135.2704	100	0
180	162.3245	100	0
365	329.158	100	0
545	491.4825	100	0
730	658.316	100	0
1095	987.474	100	0
1460	1316.632	100	0
1825	1645.79	100	0
3650	3291.58	100	0
7300	6583.16	100	0
18250	16457.9	100	0

Layer 2
Total layer sett@ 30 days: 0.069 in
Cv: 0.79 ft^2/day
Hdr: 4.47 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	1.186133	95.6590431	0.066005
45	1.779199	98.9955457	0.068307
60	2.372266	99.7675792	0.06884
90	3.558398	99.9875559	0.068991
150	5.930664	99.9999643	0.069
180	7.116797	99.9999981	0.069
365	14.43128	100	0.069
545	21.54808	100	0.069
730	28.86256	100	0.069
1095	43.29385	100	0.069
1460	57.72513	100	0.069
1825	72.15641	100	0.069
3650	144.3128	100	0.069
7300	288.6256	100	0.069
18250	721.5641	100	0.069

Layer 3
Total layer sett@ 30 days: 0.082 in
Cv: 1 ft^2/day
Hdr: 6.33 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.74871	87.22327	0.071523
45	1.123066	94.92797	0.077841
60	1.497421	97.98654	0.080349
90	2.246131	99.6827	0.08174
150	3.743552	99.99212	0.081994
180	4.492262	99.99876	0.081999
365	9.109309	100	0.082
545	13.60157	100	0.082
730	18.21862	100	0.082
1095	27.32793	100	0.082
1460	36.43724	100	0.082
1825	45.54655	100	0.082
3650	91.09309	100	0.082
7300	182.1862	100	0.082
18250	455.4655	100	0.082

Layer 4
Total layer sett@ 30 days: 0 in
Cv: 20 ft^2/day
Hdr: 1.67 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	215.1386	100	0
45	322.7079	100	0
60	430.2772	100	0
90	645.4158	100	0
150	1075.693	100	0
180	1290.832	100	0
365	2617.519	100	0
545	3908.351	100	0
730	5235.039	100	0
1095	7852.558	100	0
1460	10470.08	100	0
1825	13087.6	100	0
3650	26175.19	100	0
7300	52350.39	100	0
18250	130876	100	0

Layer 5
Total layer sett@ 30 days: 0.637 in
Cv: 0.2 ft^2/day
Hdr: 18.167 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.01818	15.2141421	0.096914
45	0.027269	18.6334425	0.118695
60	0.036359	21.5160461	0.137057
90	0.054539	26.3516671	0.16786
150	0.090898	34.019856	0.216706
180	0.109078	37.266885	0.23739
365	0.221185	53.0680675	0.338044
545	0.330263	64.1147248	0.408411
730	0.442371	72.7881532	0.463661
1095	0.663556	84.2351803	0.536578
1460	0.884742	90.8668624	0.578822
1825	1.105927	94.7088388	0.603295
3650	2.211854	99.6546926	0.6348
7300	4.423708	99.9985293	0.636991
18250	11.05927	100	0.637

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-6

Initial Fill Elevation = 5.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	0.222214367	0.018517864
45	0.123287671	0.265188815	0.022099068
60	0.164383562	0.300704358	0.025058696
90	0.246575342	0.358113221	0.029842768
150	0.410958904	0.439374924	0.036614577
180	0.493150685	0.469526204	0.039127184
365	1	0.580867513	0.048405626
545	1.493150685	0.634779857	0.052898321
730	2	0.666509721	0.055542477
1095	3	0.696409037	0.058034086
1460	4	0.707454965	0.05895458
1825	5	0.711563324	0.059296944
3650	10	0.713982564	0.059498547
7300	20	0.713999999	0.0595
18250	50	0.714	0.0595
Long Term		0.714	0.0595
Construction		0.1428	0.0119

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-6

Initial Fill Elevation = 5.5 ft

Layer 1
Total layer sett@ 30 days: 0.42 in
Cv: 0.03 ft^2/day
Hdr: 5.23 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.032903	20.46796	0.08596544
45	0.049355	25.06803	0.10528574
60	0.065807	28.94607	0.1215735
90	0.09871	35.45155	0.14889652
150	0.164516	45.76776	0.19222458
180	0.19742	50.13607	0.21057148
365	0.400323	69.81264	0.2932131
545	0.597743	81.45493	0.34211071
730	0.800646	88.76031	0.37279332
1095	1.20097	95.81512	0.4024235
1460	1.601293	98.44184	0.41345572
1825	2.001616	99.41985	0.41756336
3650	4.003232	99.99585	0.41998256
7300	8.006464	100	0.42
18250	20.01616	100	0.42

Layer 2
Total layer sett@ 30 days: 0.098 in
Cv: 0.08 ft^2/day
Hdr: 4 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.15	43.7019372	0.042828
45	0.225	53.5237235	0.052453
60	0.3	61.3319184	0.060105
90	0.45	73.295717	0.07183
150	0.75	87.2638691	0.085519
180	0.9	91.2043931	0.08938
365	1.825	99.1029011	0.097121
545	2.725	99.9026782	0.097905
730	3.65	99.9900738	0.09799
1095	5.475	99.9998902	0.098
1460	7.3	99.9999988	0.098
1825	9.125	100	0.098
3650	18.25	100	0.098
7300	36.5	100	0.098
18250	91.25	100	0.098

Layer 3
Total layer sett@ 30 days: 0 in
Cv: 10 ft^2/day
Hdr: 1 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	300	100	0
45	450	100	0
60	600	100	0
90	900	100	0
150	1500	100	0
180	1800	100	0
365	3650	100	0
545	5450	100	0
730	7300	100	0
1095	10950	100	0
1460	14600	100	0
1825	18250	100	0
3650	36500	100	0
7300	73000	100	0
18250	182500	100	0

Layer 4
Total layer sett@ 30 days: 0.031 in
Cv: 5 ft^2/day
Hdr: 2 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	37.5	100	0.031
45	56.25	100	0.031
60	75	100	0.031
90	112.5	100	0.031
150	187.5	100	0.031
180	225	100	0.031
365	456.25	100	0.031
545	681.25	100	0.031
730	912.5	100	0.031
1095	1368.75	100	0.031
1460	1825	100	0.031
1825	2281.25	100	0.031
3650	4562.5	100	0.031
7300	9125	100	0.031
18250	22812.5	100	0.031

Layer 5
Total layer sett@ 30 days: 0.119 in
Cv: 0.2 ft^2/day
Hdr: 7.83 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.097865	35.29953	0.042006
45	0.146798	43.2329183	0.051447
60	0.19573	49.921074	0.059406
90	0.293595	60.7158517	0.072252
150	0.489325	75.7656405	0.090161
180	0.58719	80.9656238	0.096349
365	1.190692	95.7076106	0.113892
545	1.777882	98.9922757	0.117801
730	2.381383	99.7727509	0.11873
1095	3.572075	99.9879689	0.118986
1460	4.762767	99.999363	0.118999
1825	5.953459	99.9999663	0.119
3650	11.90692	100	0.119
7300	23.81383	100	0.119
18250	59.53459	100	0.119

Layer 6
Total layer sett@ 30 days: 0.046 in
Cv: 0.33 ft^2/day
Hdr: 8 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.154688	44.37953	0.020415
45	0.232031	54.3536	0.025003
60	0.309375	62.21631	0.02862
90	0.464063	74.2066	0.034135
150	0.773438	87.97965	0.040471
180	0.928125	91.7942	0.042225
365	1.882031	99.22068	0.045642
545	2.810156	99.92113	0.045964
730	3.764063	99.99251	0.045997
1095	5.646094	99.99993	0.046
1460	7.528125	100	0.046
1825	9.410156	100	0.046
3650	18.82031	100	0.046
7300	37.64063	100	0.046
18250	94.10156	100	0.046

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-7

Initial Fill Elevation = 4.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	1.104457764	0.092038147
45	0.123287671	1.352678982	0.112723249
60	0.164383562	1.561939149	0.130161596
90	0.246575342	1.912976962	0.159414747
150	0.410958904	2.413528496	0.201127375
180	0.493150685	2.601801492	0.216816791
365	1	3.238567984	0.269880665
545	1.493150685	3.472515254	0.289376271
730	2	3.585049236	0.298754103
1095	3	3.698597988	0.308216499
1460	4	3.760376806	0.313364734
1825	5	3.798515648	0.316542971
3650	10	3.859939552	0.321661629
7300	20	3.86874105	0.322395087
18250	50	3.868999795	0.32241665
Long Term		3.869	0.322416667
Construction		0.7738	0.064483333

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-7

Initial Fill Elevation = 5.5 ft

Layer 1

Total layer sett@ 30 days: 0.668 in
Cv: 0.03 ft^2/day
Hdr: 7.97 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.014169	13.4313	0.08972107
45	0.021253	16.44991	0.10988542
60	0.028337	18.99472	0.12688476
90	0.042506	23.26369	0.15540146
150	0.070843	30.0333	0.20062242
180	0.085011	32.89983	0.21977085
365	0.172384	46.84937	0.31295382
545	0.257396	57.24738	0.3824125
730	0.344768	65.37663	0.43671589
1095	0.517153	77.37409	0.51685895
1460	0.689537	85.21427	0.56923136
1825	0.861921	90.33773	0.60345602
3650	1.723842	98.8485	0.66030801
7300	3.447684	99.98365	0.66789075
18250	8.61921	100	0.668

Layer 2

Total layer sett@ 30 days: 2.958 in
Cv: 0.02 ft^2/day
Hdr: 2.67 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.084164	32.7355335	0.968317
45	0.126247	40.0926768	1.185941
60	0.168329	46.2950354	1.369407
90	0.252493	56.6996072	1.677174
150	0.420822	71.3018483	2.109109
180	0.504987	76.6844586	2.268326
365	1.024001	93.5232037	2.766416
545	1.528988	98.1374424	2.902906
730	2.048002	99.4826024	2.942695
1095	3.072003	99.9586678	2.956777
1460	4.096004	99.9966982	2.957902
1825	5.120004	99.9997362	2.957992
3650	10.24001	100	2.958
7300	20.48002	100	2.958
18250	51.20004	100	2.958

Layer 3

Total layer sett@ 30 days: 0.228 in
Cv: 0.33 ft^2/day
Hdr: 18 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.030556	19.72423	0.04497125
45	0.045833	24.15715	0.05507831
60	0.061111	27.89428	0.06359896
90	0.091667	34.16338	0.0778925
150	0.152778	44.10473	0.10055878
180	0.183333	48.31431	0.11015663
365	0.371759	67.60782	0.15414582
545	0.555093	79.39648	0.18102397
730	0.743519	87.05851	0.19849339
1095	1.115278	94.82955	0.21621137
1460	1.487037	97.93427	0.22329014
1825	1.858796	99.17469	0.22611829
3650	3.717593	99.9916	0.22798085
7300	7.435185	100	0.228
18250	18.58796	100	0.228

Layer 4

Total layer sett@ 30 days: 0.015 in
Cv: 0.66 ft^2/day
Hdr: 52 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.007322	9.65571216	0.001448
45	0.010984	11.8257839	0.001774
60	0.014645	13.6552391	0.002048
90	0.021967	16.724184	0.002509
150	0.036612	21.5908288	0.003239
180	0.043935	23.6515679	0.003548
365	0.08909	33.6798474	0.005052
545	0.133025	41.1549364	0.006173
730	0.17818	47.630497	0.007145
1095	0.267271	58.335207	0.00875
1460	0.356361	66.3531569	0.009953
1825	0.445451	72.9942405	0.010949
3650	0.890902	91.0046771	0.013651
7300	1.781805	99.0019841	0.01485
18250	4.454512	99.998637	0.015

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-9

Initial Fill Elevation = 5.5 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0
30	0.082191781	0.60317295	0.050264413
45	0.123287671	0.709916384	0.059159699
60	0.164383562	0.797253427	0.066437786
90	0.246575342	0.929279988	0.077439999
150	0.410958904	1.10048758	0.091707298
180	0.493150685	1.155807931	0.096317328
365	1	1.301457876	0.108454823
545	1.493150685	1.336769471	0.111397456
730	2	1.350523954	0.112543663
1095	3	1.361387856	0.113448988
1460	4	1.365378842	0.11378157
1825	5	1.366954461	0.113912872
3650	10	1.367989388	0.113999116
7300	20	1.367999999	0.114
18250	50	1.368	0.114
Long Term		1.368	0.114
Construction		0.2736	0.0228

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-9

Initial Fill Elevation =5.5 ft

Layer 1

Total layer sett@ 30 days: 0.279 in
Cv: 0.23 ft^2/day
Hdr: 8.62 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.092861	34.38526	0.09593488
45	0.139292	42.11317	0.11749575
60	0.185723	48.6281	0.13567241
90	0.278584	59.55702	0.16616409
150	0.464306	74.22212	0.2070797
180	0.557168	79.50171	0.22180978
365	1.129812	95.01172	0.2650827
545	1.68698	98.73883	0.27548135
730	2.259624	99.69309	0.27814373
1095	3.389436	99.98112	0.27894732
1460	4.519248	99.99884	0.27899676
1825	5.64906	99.99993	0.2789998
3650	11.29812	100	0.279
7300	22.59624	100	0.279
18250	56.4906	100	0.279

Layer 2

Total layer sett@ 30 days: 0.127 in
Cv: 0.02 ft^2/day
Hdr: 4.43 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.030573	19.7299942	0.025057
45	0.04586	24.1642092	0.030689
60	0.061147	27.9024254	0.035436
90	0.09172	34.1733524	0.0434
150	0.152867	44.1176083	0.056029
180	0.18344	48.3284185	0.061377
365	0.371976	67.625171	0.085884
545	0.555417	79.4129579	0.100854
730	0.743953	87.0723694	0.110582
1095	1.115929	94.8378528	0.120444
1460	1.487906	97.938697	0.124382
1825	1.859882	99.1768987	0.125955
3650	3.719764	99.9916438	0.126989
7300	7.439528	99.9999991	0.127
18250	18.59882	100	0.127

Layer 3

Total layer sett@ 30 days: 0.152 in
Cv: 5 ft^2/day
Hdr: 10.83 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	1.278893	96.54726	0.14675184
45	1.91834	99.28748	0.15091697
60	2.557787	99.85296	0.1517765
90	3.83668	99.99374	0.15199048
150	6.394467	99.99999	0.15199998
180	7.67336	100	0.152
365	15.55987	100	0.152
545	23.23323	100	0.152
730	31.11974	100	0.152
1095	46.67961	100	0.152
1460	62.23948	100	0.152
1825	77.79935	100	0.152
3650	155.5987	100	0.152
7300	311.1974	100	0.152
18250	777.9935	100	0.152

Layer 4

Total layer sett@ 30 days: 0.81 in
Cv: 0.12 ft^2/day
Hdr: 5.17 ft

time, t (days	Tv	U	Sett@30
0	0	0	0
30	0.134686	41.4110046	0.335429
45	0.202029	50.7179155	0.410815
60	0.269371	58.5640044	0.474368
90	0.404057	70.0895383	0.567725
150	0.673428	84.6146338	0.685379
180	0.808114	88.9655625	0.720621
365	1.638676	98.5791614	0.798491
545	2.44679	99.8066256	0.808434
730	3.277351	99.9751003	0.809798
1095	4.916027	99.9995636	0.809996
1460	6.554703	99.9999924	0.81
1825	8.193379	99.9999999	0.81
3650	16.38676	100	0.81
7300	32.77351	100	0.81
18250	81.93379	100	0.81

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 1 by JMP December 7, 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	=	5
NUMBER OF SOIL COMPRESSIBILITIES	=	5
NUMBER OF SETTLEMENT POINTS	=	1
NUMBER OF LOADED AREAS	=	3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	=	1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	4.000	8.000	1.00	19.60	1	.078	.281
2	10.000	4.000	1.00	61.60	2	.280	.000
3	16.500	9.000	1.00	61.60	3	.680	.860
4	30.500	19.000	1.00	51.60	4	1.448	1.487
5	50.000	20.000	1.00	51.60	5	2.454	1.710

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 1 by JMP December 7, 2011

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 0 to 8 ft

F %	.00	1.26	18.77
P,KSF	.04	.81	2.82

0 SOIL COMPRESSIBILITY NO. 2
Sand from 8 to 12 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS .000 %

0 SOIL COMPRESSIBILITY NO. 3
Three points 12 to 21 ft

F %	.00	1.58	2.87
P,KSF	.04	7.31	9.31

0 SOIL COMPRESSIBILITY NO. 4
Three points 21 to 40 ft

F %	.00	2.08	4.72
P,KSF	.04	6.05	8.05

0 SOIL COMPRESSIBILITY NO. 5
Three points 40 to 60 ft

F % .00 2.03 4.98
P,KSF .04 5.30 7.30

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 1 by JMP December 7, 2011

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 1 by JMP December 7, 2011

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	89.25	200.00	16.50	400.00	.000	.174	.000	0
A2	RECT	100.00	200.00	5.00	400.00	.000	.390	.000	0
A3	RECT	110.75	200.00	16.50	400.00	.000	.174	.000	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 1 by JMP December 7, 2011

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
4.000	.315
10.000	.233
16.500	.191
30.500	.136
50.000	.091

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Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 1 by JMP December 7, 2011

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.649
2	.000
3	.082
4	.086
5	.037
TOTAL SETTLE.	.854

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 2 by JMP December 7, 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.000	4.000	1.00	4.60	1	.009	.000
2	9.000	10.000	1.00	17.60	2	.106	.333
3	20.500	13.000	1.00	41.60	3	.465	.000
4	33.500	13.000	1.00	43.60	4	1.019	.000
5	50.000	20.000	1.00	43.60	4	1.738	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 2 by JMP December 7, 2011

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 0 to 4 ft

F %	.00	.71	19.23
P,KSF	.04	1.34	3.34

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	.82	26.95
P,KSF	.04	.44	2.44

0 SOIL COMPRESSIBILITY NO. 3
Normally consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 33.133 %

0 SOIL COMPRESSIBILITY NO. 4
Normally consolidated 27 to 40 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 2 by JMP December 7, 2011

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 2 by JMP December 7, 2011

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	76.25	200.00	22.50	400.00	.000	.135	.000	0
A2	RECT	100.00	200.00	25.00	400.00	.000	.310	.000	0
A3	RECT	123.75	200.00	22.50	400.00	.000	.135	.000	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 2 by JMP December 7, 2011

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.000	.309
9.000	.291
20.500	.238
33.500	.189
50.000	.147

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FOUNDATION SETTLEMENT ANALYSIS

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.201
2	.540
3	9.287
4	1.562
5	1.146
TOTAL SETTLE.	12.737

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 3 by JMP December 1, 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.000	4.000	1.00	10.60	1	.021	.000
2	9.000	10.000	1.00	21.60	2	.150	.532
3	20.500	13.000	1.00	37.60	3	.503	.000
4	33.500	13.000	1.00	47.60	4	1.057	.000
5	50.000	20.000	1.00	47.60	4	1.842	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 3 by JMP December 1, 2011

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 0 to 4 ft

F %	.00	.81	19.80
P,KSF	.04	1.23	3.23

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.22	19.59
P,KSF	.04	.83	2.83

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 31.897 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 40 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 3 by JMP December 1, 2011

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 3 by JMP December 1, 2011

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	81.25	200.00	27.50	400.00	.000	.174	.000	0
A2	RECT	100.00	200.00	10.00	400.00	.000	.390	.000	0
A3	RECT	118.75	200.00	27.50	400.00	.000	.174	.000	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 3 by JMP December 1, 2011

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.000	.382
9.000	.304
20.500	.228
33.500	.182
50.000	.142

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 3 by JMP December 1, 2011

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.262
2	.537
3	8.072
4	1.455
5	1.050
TOTAL SETTLE.	11.376

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 5 by JMP December 1, 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 5
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	5.000	10.000	1.00	64.60	1	.323	.000
2	14.000	8.000	1.00	62.60	2	.896	.848
3	28.000	20.000	1.00	57.60	3	1.723	1.230
4	40.500	5.000	1.00	57.60	4	2.443	.000
5	51.500	17.000	1.00	50.60	5	3.017	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 5 by JMP December 1, 2011

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
One point (Sand) 0 to 10 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS .000 %

0 SOIL COMPRESSIBILITY NO. 2
Three points 10 to 18 ft

F %	.00	.99	4.86
P,KSF	.04	1.51	3.51

0 SOIL COMPRESSIBILITY NO. 3
Three points 18 to 38 ft

F %	.00	1.69	3.16
P,KSF	.04	7.04	9.04

0 SOIL COMPRESSIBILITY NO. 4
One point (Sand) 38 to 43 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS .000 %

0 SOIL COMPRESSIBILITY NO. 5
Normally consolidated 43 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 19.034 %

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 5 by JMP December 1, 2011

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	89.25	200.00	16.50	400.00	.000	.229	.000	0
A2	RECT	100.00	200.00	5.00	400.00	.000	.500	.000	0
A3	RECT	110.75	200.00	16.50	400.00	.000	.229	.000	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
5.000	.384
14.000	.268
28.000	.188
40.500	.141
51.500	.116

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Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 5 by JMP December 1, 2011

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.000
2	.069
3	.082
4	.000
5	.637
TOTAL SETTLE.	.788

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 6 by JMP December 7, 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 6
NUMBER OF SOIL COMPRESSIBILITIES	= 6
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	3.500	7.000	1.00	19.60	1	.069	.154
2	9.000	4.000	1.00	12.60	2	.162	.312
3	12.000	2.000	1.00	57.60	3	.245	.000
4	15.000	4.000	1.00	66.60	4	.436	.408
5	26.500	19.000	1.00	53.60	5	1.078	1.305
6	48.000	24.000	1.00	52.60	6	2.219	1.507

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 0 to 7 ft

F %	.00	.82	25.78
P,KSF	.04	.71	2.71

0 SOIL COMPRESSIBILITY NO. 2
Three points 7 to 11 ft

F %	.00	.74	21.24
P,KSF	.04	1.11	3.11

0 SOIL COMPRESSIBILITY NO. 3
One Point 11 to 13 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS .000 %

0 SOIL COMPRESSIBILITY NO. 4
Three points 13 to 17 ft

F %	.00	.65	2.61
P,KSF	.04	1.79	3.79

0 SOIL COMPRESSIBILITY NO. 5

Three points 17 to 36 ft

F %	.00	1.99	4.34
P,KSF	.04	6.08	8.08

0 SOIL COMPRESSIBILITY NO. 6

Three points 36 to 60 ft

F %	.00	1.64	5.26
P,KSF	.04	3.16	5.16

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	89.25	200.00	16.50	400.00	.000	.174	.000	0
A2	RECT	100.00	200.00	5.00	400.00	.000	.390	.000	0
A3	RECT	110.75	200.00	16.50	400.00	.000	.174	.000	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
3.500	.325
9.000	.241

12.000	.217
15.000	.199
26.500	.149
48.000	.095

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.420
2	.098
3	.000
4	.031
5	.119
6	.046
TOTAL SETTLE.	.713

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
16715-023-00 Boring 7 by JMP December 19, 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 4
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	7.500	13.000	1.00	17.60	1	.114	.318
2	16.000	4.000	1.00	43.60	2	.316	.753
3	29.000	22.000	1.00	57.60	3	1.037	1.289
4	50.000	20.000	1.00	57.60	4	2.246	.320

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1 to 14 ft

F %	.00	.80	28.39
P,KSF	.04	.56	2.56

0 SOIL COMPRESSIBILITY NO. 2
Three points 14 to 18 ft

F %	.00	.87	29.26
P,KSF	.04	.44	2.44

0 SOIL COMPRESSIBILITY NO. 3
Three points 18 to 40 ft

F %	.00	2.02	4.22
P,KSF	.04	6.57	8.57

0 SOIL COMPRESSIBILITY NO. 4
Three points 40 to 60 ft

F %	.00	.39	2.98
P,KSF	.04	5.42	7.42

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	72.50	200.00	30.00	400.00	.000	.145	1.000	0
A2	RECT	100.00	200.00	25.00	400.00	.000	.368	1.000	0
A3	RECT	127.50	200.00	30.00	400.00	.000	.145	1.000	0

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
7.500	.354
16.000	.311
29.000	.249
50.000	.182

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.668
2	2.958
3	.228
4	.015
TOTAL SETTLE.	3.868

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 4
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 3
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	4.000	6.000	1.00	6.60	1	.020	.000
2	9.500	5.000	1.00	60.60	2	.191	.394
3	28.000	32.000	1.00	60.60	3	1.312	1.077
4	52.000	16.000	1.00	53.60	4	2.711	.000

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Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1 to 7 ft

F %	.00	.50	28.59
P,KSF	.04	.70	2.70

0 SOIL COMPRESSIBILITY NO. 2
Three points 7 to 12 ft

F %	.00	.88	4.68
P,KSF	.04	1.32	3.32

0 SOIL COMPRESSIBILITY NO. 3
Three points 12 to 44 ft

F %	.00	1.35	3.76
P,KSF	.04	3.18	5.18

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 44 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 21.336 %

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	100.000	200.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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FOUNDATION SETTLEMENT ANALYSIS

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TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	81.25	200.00	32.50	400.00	.000	.163	1.000	0
A2	RECT	100.00	200.00	5.00	400.00	.000	.408	1.000	0
A3	RECT	118.75	200.00	32.50	400.00	.000	.163	1.000	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
4.000	.347
9.500	.251
28.000	.177
52.000	.126

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Bayou Bonfouca Marsh Creation (PO-104) Containment Foundation Settle
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TABLE 8 - COMPUTED SETTLEMENT IN INCHES

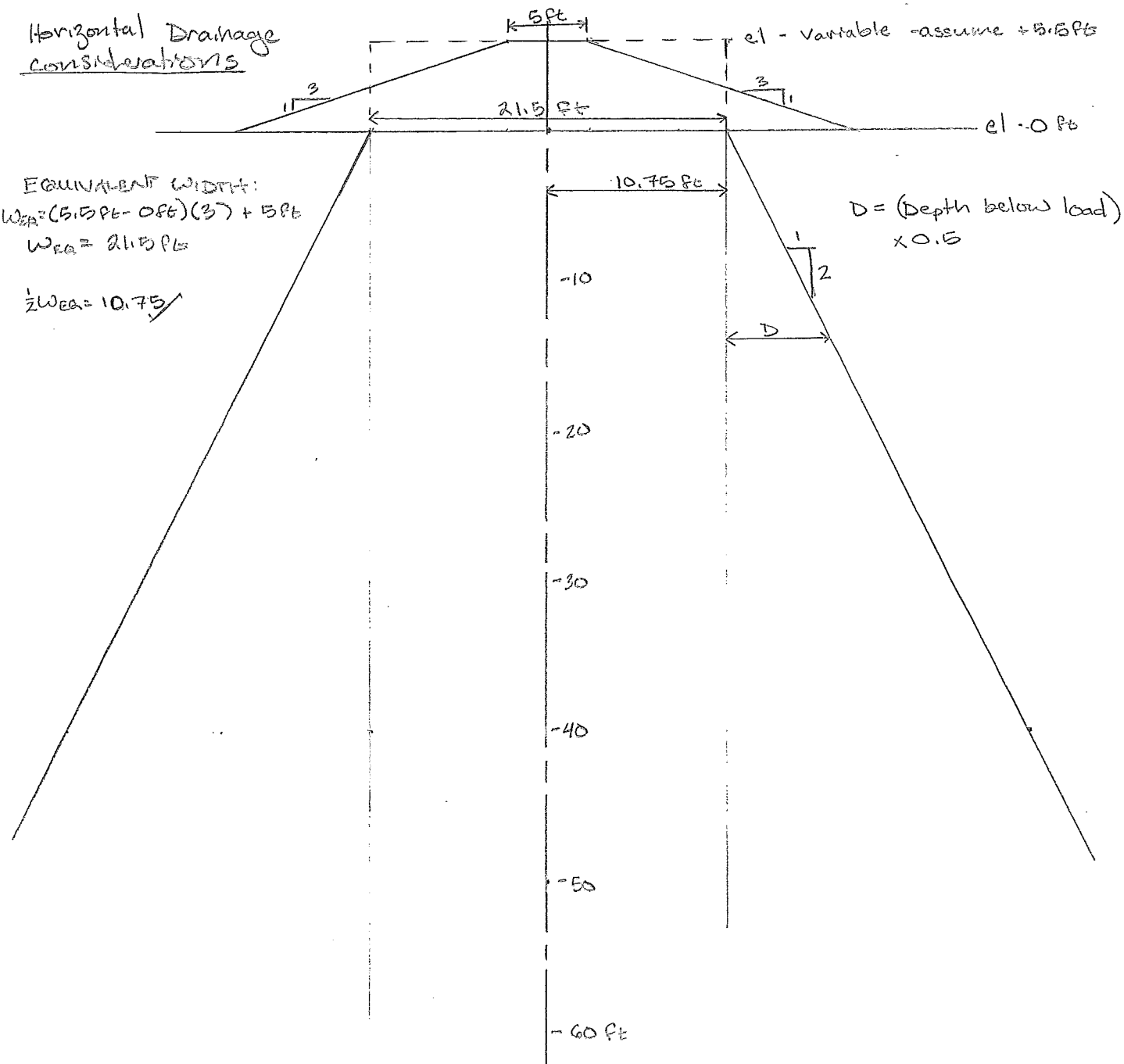
SETTLEMENT POINT NO. 1

LAYER	
1	.279
2	.127
3	.152
4	.810
TOTAL SETTLE.	1.367

project Bayou Bonfouca Marsh Creation project no. 16719-023-00

by JMP date 12/16/2011 sheet 1 of ____ checked by ____

Horizontal Drainage Considerations



EQUIVALENT WIDTH:

$W_{EQ} = (5.5\text{ ft} - 0\text{ ft})(3) + 5\text{ ft}$

$W_{EQ} = 21.5\text{ ft}$

$\frac{1}{2} W_{EQ} = 10.75$

D = (Depth below load) $\times 0.5$

HORIZONTAL DRAINAGE DISTANCE FOR CONTAINMENT DIKE W/ CROWN AT EL +5.5, BASE AT EL. 0 FT, AND 3H:1V SIDE SLOPES

$H_{dr} = 10.75 + 0.5H$ ✓ where H = depth of drainage point

GENERIC FORMULA FOR DRAINAGE BELOW DIKE CENTER LINE

$H_{dr} = \frac{1}{2}\left[(EL_{crown} - EL_{base})(M) + W_{crown}\right] + 0.5H$

EX: M = 3H:1V, $EL_{base} = -1$, $EL_{crown} = 5.5$, $W_{crown} = 5$ ft

$H_{dr} = \frac{\left[(5.5 - (-1))(3) + 5\right]}{2} + 0.5H = 18.75\text{ ft} + 0.5H$

GeoEngineers
Earth Science + Technology

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-1	
Crown Width:	5.0	ft
Crown elevation:	5.5	ft
Base elevation:	0.0	ft
Side Slope (H:V):	3.0	
Equivalent Width:	21.5	ft

ELEV FEET			Depth below containment ft			Layer thickness ft	Depth to layer center below load ft	Hdr vert. for layer ft	Hdr horiz. at center of layer ft	Cv vertical ft^2/day	Cv horizontal ft^2/day	Cv vert/Hdr^2	Cv horz/Hdr^2
0	-	-8	0	-	8	8	4	4	12.75	0.02	0.04	0.0013	0.0002
-8	-	-12	8	-	12	4	10	1	15.75	1.00	2.00	1.0000	0.0081
-12	-	-21	12	-	21	9	16.5	3	19	1.50	3.00	0.1667	0.0083
-21	-	-40	21	-	40	19	30.5	19.85	26	0.12	0.24	0.0003	0.0004
-40	-	-60	40	-	60	20	50	39.85	35.75	0.12	0.24	0.0001	0.0002

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-2	
Crown Width:	25.0	ft
Crown elevation:	4.5	ft
Base elevation:	0.0	ft
Side Slope (H:V):	5.0	
Equivalent Width:	47.5	ft

ELEV FEET			Depth below containment ft			Layer thickness ft	Depth to layer center below load ft	Hdr vert. for layer ft	Hdr horiz. at center of layer ft	Cv vertical ft^2/day	Cv horizontal ft^2/day	Cv vert/Hdr^2	Cv horz/Hdr^2
0	-	-4	0	-	4	4	2	4	24.75	0.12	0.24	0.0075	0.0004
-4	-	-14	4	-	14	10	9	11.63	28.25	0.02	0.04	0.0001	0.0000
-14	-	-27	14	-	27	13	20.5	24.63	34	0.02	0.04	0.000033	0.000035
-27		-40	27	-	40	13	33.5	187.18	40.5	1.00	2.00	0.0000	0.0012
-40		-60	40	-	60	20	50	207.18	48.75	1.00	2.00	0.0000	0.0008

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-3	
Crown Width:	10.0	ft
Crown elevation:	5.5	ft
Base elevation:	0.0	ft
Side Slope (H:V):	5.0	
Equivalent Width:	37.5	ft

ELEV FEET			Depth below containment ft			Layer thickness ft	Depth to layer center below load ft	Hdr vert. for layer ft	Hdr horiz. at center of layer ft	Cv vertical ft^2/day	Cv horizontal ft^2/day	Cv vert/Hdr^2	Cv horz/Hdr^2
0	-	-4	0	-	4	4	2	4	19.75	0.07	0.14	0.0044	0.0004
-4	-	-14	4	-	14	10	9	7.07	23.25	0.02	0.04	0.0004	0.0001
-14	-	-27	14	-	27	13	20.5	7.5	29	0.02	0.05	0.0004	0.0001
-27	-	-40	27	-	40	13	33.5	7.5	35.5	1.00	2.00	0.0178	0.0016
-40	-	-60	40	-	60	20	50	20	43.75	1.00	2.00	0.0025	0.0010

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-5	
Crown Width:	5.0	ft
Crown elevation:	5.5	ft
Base elevation:	0.0	ft
Side Slope (H:V):	3.0	
Equivalent Width:	21.5	ft

ELEV FEET			Depth below containment ft			Layer thickness ft	Depth to layer center below load ft	Hdr vert. for layer ft	Hdr horiz. at center of layer ft	Cv vertical ft^2/day	Cv horizontal ft^2/day	Cv vert/Hdr^2	Cv horz/Hdr^2
0	-	-10	0	-	10	10	5	3.33	13.25	10.00	20.00	0.9018	0.1139
-10	-	-18	10	-	18	8	14	4.47	17.75	0.79	1.57	0.0393	0.0050
-18	-	-38	18	-	38	20	28	6.33	24.75	1.00	2.00	0.0250	0.0033
-38		-43	38	-	43	5	40.5	1.67	31	20.00	40.00	7.1713	0.0416
-43		-60	43	-	60	17	51.5	18.167	36.5	0.20	0.40	0.0006	0.0003

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-6	
Crown Width:	5.0	ft
Crown elevation:	5.5	ft
Base elevation:	0.0	ft
Side Slope (H:V):	3.0	
Equivalent Width:	21.5	ft

ELEV FEET			Depth below containment ft			Layer thickness ft	Depth to layer center below load ft	Hdr vert. for layer ft	Hdr horiz. at center of layer ft	Cv vertical ft^2/day	Cv horizontal ft^2/day	Cv vert/Hdr^2	Cv horz/Hdr^2
1	-	-7	0	-	7	7	3.5	5.23	12.5	0.03	0.06	0.0012	0.0004
-7	-	-11	7	-	11	4	9	4	15.25	0.08	0.16	0.0050	0.0007
-11	-	-13	11	-	13	2	12	0.5	16.75	10.00	20.00	40.0000	0.0713
-13	-	-17	13	-	17	4	15	2	18.25	5.00	10.00	1.2500	0.0300
-17	-	-36	17	-	36	19	26.5	7.83	24	0.20	0.40	0.0033	0.0007
-36	-	-60	36	-	60	24	48	8	34.75	0.33	0.66	0.0052	0.0005

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-7	
Crown Width:	25.0	ft
Crown elevation:	5.0	ft
Base elevation:	-1.0	ft
Side Slope (H:V):	5.0	
Equivalent Width:	55.0	ft

ELEV FEET			Depth below containment ft			Layer thickness ft	Depth to layer center below load ft	Hdr vert. for layer ft	Hdr horiz. at center of layer ft	Cv vertical ft^2/day	Cv horizontal ft^2/day	Cv vert/Hdr^2	Cv horz/Hdr^2
0	-	-14	0	-	13	13	6.5	7.97	30.75	0.03	0.05	0.0004	0.0001
-14	-	-18	13	-	17	4	15	2.67	35	0.02	0.04	0.0028	0.0000
-18	-	-40	17	-	39	22	28	18	41.5	0.33	0.66	0.0010	0.0004
-40		-60	39	-	59	20	49	38	52	0.33	0.66	0.00023	0.00024

Project:	Bayou Bonfouca Marsh Creation (PO-104)	
Project Id:	16715-023-00	
Boring No.:	B-9	
Crown Width:	5.0	ft
Crown elevation:	5.5	ft
Base elevation:	-1.0	ft
Side Slope (H:V):	5.0	
Equivalent Width:	37.5	ft

ELEV			Depth below containment			Layer thickness	Depth to layer center below load	Hdr vert. for layer	Hdr horiz. at center of layer	Cv vertical	Cv horizontal	Cv vert/Hdr^2	Cv horz/Hdr^2
FEET			ft		ft	ft	ft	ft	ft	ft^2/day	ft^2/day		
1	-	-7	0	-	6	6	3	8.62	20.25	0.23	0.46	0.0031	0.0011
-7	-	-12	6	-	11	5	8.5	4.43	23	0.02	0.04	0.0010	0.0001
-12	-	-44	11	-	43	32	27	10.83	32.25	5.00	10.00	0.0426	0.0096
-44		-60	43	-	59	16	51	5.17	44.25	0.12	0.24	0.0045	0.0001

APPENDIX III-E
Marsh Fill and Foundation Settlement

Settlement Calculation Approach for the Dredged Fill Marsh Creation Area
Bayou Bonfouca Marsh Creation (PO-104)

1. Settlement parameters were developed for each soil layer for all borings as shown in the parameter spreadsheets provided in this Appendix. Settlement parameters for Borings B-2 through B-5, and B-7 through B-9 were used for settlement estimates for the marsh creation area. Settlement parameters were developed as follows.
    (a) One consolidation test was done for each of the above mentioned soil borings and the samples for the consolidation tests were selected from varying depths and materials.
    (b) Consolidation test results were analyzed and graphs were reconstructed to determine compression (C_c), recompression (C_r), and vertical consolidation (C_v) coefficients, initial void ratios (e_0) and maximum past pressures (P_c).
    (c) Correlations presented in equations 1 through 3 (shown in the spreadsheets in Appendix III-E) were used to calculate e_0 and C_c for all the soil layers.
    (d) GeoEngineers developed different correlations based on the analyses of the consolidation test results as follows:
        (i) Void Ratio (e_o) was estimated based on water content test results for various samples and the best fit curve drawn through plotted points from consolidation test results.
        (ii) Moisture Content (w) Vs. C_v: A best fit curve was drawn through the plotted points from this and other coastal projects and C_v for the soil layers were obtained depending upon the moisture content.
        (iii) w Vs. C_c: C_c=0.0054*((w*S.G.)-35) was found to provide sufficient accuracy based on the test data for this and other projects for all compressible soil types; C_c was obtained for the soil layers based on the moisture content.
        (iv) C_r was taken to be 10% of C_c for all cohesive and semi-cohesive soils.
    (e) For the soil layers without a representative consolidation test, the above mentioned correlations were used to estimate C_c, C_r , C_v, and e_0.
    (f) Past previous pressure (P_c) were obtained from the consolidation test curves for the soil layers with a representative consolidation test. For other soil layers, the overconsolidation ratio (OCR) was estimated from the equation OCR = (c/(P_0' * 0.22))^(1/0.8). This equation was taken from Figure 7.1 of "Recommended practice for soft ground site characterization," by Charles Ladd and Don DeGroot. P_c was estimated by multiplying the overburden pressure (P_0) by OCR.
    (g) In cases where P'$_0$ was greater than P_c, P_0' was used as the maximum past pressure under the assumption that the soil is normally consolidated.
2. In this area, clay shear strength for a normally consolidated soil profile will be approximately 22% of the effective overburden pressure. This relationship is shown as the C/P line on the shear strength profiles. Based on this relationship, it appears that the top 20 feet of the soil profile is over-consolidated throughout the design profiles. For all but two of the borings (B-2 and B-3), the top 40 feet are overconsolidated. Beyond 40 feet depth, some of the layers are still overconsolidated. This affects the settlement parameters selected for design.
3. Due to the broad fill area, the drainage is vertical for all the soil layers. Drainage to the phreatic surface or to the nearest granular soil layer has been considered for these soil layers. The presence of small sand and silt layers within clay was considered in the drainage path evaluation.

Settlement of the marsh creation area consists primarily of two separate processes: consolidation of the dredged fill and consolidation of the foundation soils. Consolidation of the dredged fill was modeled using PSDDF (Primary Consolidation, Secondary Compression, and Desiccation of Dredged Fill), a program created for the United States Army Corps of Engineers to simulate finite strain consolidation in dredged fill materials. Consolidation of the foundations soils was modeled iteratively using a one-dimensional consolidation program.

To account for the effects of progressive dredged fill densification and submergence below the waterline caused by foundation soil settlement, we re-computed effective vertical stress and corresponding settlement at various time intervals after fill placement. The typical steps at some time = t were as follows:

1. Calculate settlement for soil beneath the fill based on the elapsed time and the effective stress calculated for the application of a single lift of fill and determine the new mudline elevation.
2. From PSDDF determine the change in thickness of the dredged fill to calculate the fill density and the new fill surface elevation. The new fill surface elevation is influenced by both the foundation settlement and the change in fill thickness computed by PSDDF.
3. Re-compute the effective vertical stress based on the new elevations of the fill surface and mudline, and a constant water elevation of 0.8 feet NAVD 88.
4. Use the new lower effective stress to re-compute settlement.

This was repeated at days 45, 60, 90, 180, 365, 1095 (3 years), 1825 (5 years), 3650 (10 years), and 7300 (20 years). Day 1 of the PSDDF calculation was taken as 30 days after the start of filling, allowing 30 days to complete placement of the hydraulic fill. Therefore, day 30 for foundation soil settlement calculations is day 1 for PSDDF calculations.

The sum of the dredged fill settlement and the underlying soil settlement was used to determine the total settlement at the surface of the dredge fill area after filling is complete. Settlement of dredged fill evaluations were performed for a single lift scenario with fill placed in a range of elevations from +2.0 to +4.5 feet. Results were plotted at 0.5-foot intervals (based on initial constructed fill elevation) alongside a line representing the marsh target elevation (+1.1 ft) to establish the best estimate for initial fill elevation.

Calculation Checksheet

Project No. 16715-023-00 Project Title: Bayou Bonfouca Marsh Creation (PO-104)

Deliverable Title: Marsh Fill and Foundation Settlement and Time Rate of Settlement

Calculations Description: Settlement of dredged fill was computed using the USACE computer program PSDDF based on the results of self-weight consolidation testing performed at LSU. Marsh foundation settlement calculations were performed using a computer program based on Terzaghi's theorem of one-dimensional consolidation settlement and Boussinesq stress distribution. Consolidation and drainage properties were based on laboratory tests, soil profiles, and correlations based on this and other coastal projects. Settlements were adjusted to account for progressive densification and buoyancy of fill using spreadsheet calculations

Originator: JMP , VT Checked by: VT , JMP Date: 12/20/2011

Checking method (describe):

Comments:

Attach checksheets, numbered consecutively.

GeoEngineers

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-1

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1 e_o	EQ. 2 Consol. C_c	EQ. 2 Use MC C_c	EQ. 3 Consol. C_r	EQ. 3 C_r	DESIGN PARAMETERS Adopted C_c	DESIGN PARAMETERS Adopted $C_c/(1+e)$	DESIGN PARAMETERS Adopted Cr	DESIGN PARAMETERS Adopted $C_r/(1+e)$	C_v[1] ft^2/day	Pc Consol tsf
0	-	-8	0.200	115	2.08	82	38	2.397	1.99	1.105	0.116	0.111	1.105	0.325	0.111	0.033	0.02	0.260
-8	-	-12	0.000	30	2.67	124	95	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	
-12	-	-21	1.000	28	2.66	124	97	0.745		0.213		0.021	0.213	0.122	0.021	0.012	1.50	
-21		-40	1.000	45	2.73	114	79	1.226		0.473		0.047	0.473	0.213	0.047	0.021	0.12	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 Cr= 0.10Cc

Note:

1 Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

2 OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

3 Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-1, depths 6 to 8 feet (el -1.7 to -3.7)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-2

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1 e_o	EQ. 2 Consol. C_c	EQ. 2 Use MC C_c	EQ. 3 Consol. C_r	EQ. 3 C_r	DESIGN PARAMETERS Adopted C_c	DESIGN PARAMETERS Adopted Cc/(1+e)	DESIGN PARAMETERS Adopted Cr	DESIGN PARAMETERS Adopted Cr/(1+e)	C_v[1] ft^2/day	Pc Consol tsf
-1	-	-4	0.110	460	1.97	67	12	9.056		4.701		0.470	4.701	0.468	0.470	0.047	0.12	
-4	-	-14	0.085	165	2.19	80	30	3.436	1.57	1.759	0.155	0.176	1.565	0.353	0.155	0.035	0.02	0.130
-14	-	-27	0.085	120	2.08	104	47	2.494		1.157		0.116	1.157	0.331	0.116	0.033	0.02	
-27		-40	0.150	30	2.67	106	82	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	
-40		-60	0.150	30	2.67	106	82	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 $Cr = 0.10Cc$

Note:

[1] Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

[2] OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

[3] Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-2, depths 10 to 12 feet (el -6.2 to -8.2)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-3

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1 e_o	EQ. 2 Consol. C_c	EQ. 2 Use MC C_c	EQ. 3 Consol. C_r	EQ. 3 C_r	DESIGN PARAMETERS Adopted C_c	DESIGN PARAMETERS Adopted Cc/(1+e)	DESIGN PARAMETERS Adopted Cr	DESIGN PARAMETERS Adopted Cr/(1+e)	C_v[1] ft^2/day	Pc Consol tsf
-2	-	-4	0.120	370	1.98	73	16	7.319		3.763		0.376	3.763	0.452	0.376	0.045	0.07	
-4	-	-14	0.130	133	2.06	84	36	2.744		1.293		0.129	1.293	0.345	0.129	0.035	0.02	
-14	-	-27	0.130	82	2.77	100	55	2.274	1.35	1.039	0.001	0.104	1.052	0.321	0.105	0.032	0.02	0.220
-27	-	-40	0.100	30	2.67	110	85	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	
-40	-	-60	0.100	30	2.67	110	85	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 $Cr = 0.10Cc$

Note:

[1] Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

[2] OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

[3] Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-3, depths 22 to 24 feet (el -17.6 to -19.6)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-4

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1 e_o	EQ. 2 Consol. C_c	EQ. 2 Use MC C_c	EQ. 3 Consol. C_r	EQ. 3 C_r	DESIGN PARAMETERS Adopted C_c	DESIGN PARAMETERS Adopted Cce	DESIGN PARAMETERS Adopted Cr	DESIGN PARAMETERS Adopted Cre	C_v[1] ft^2/day	Pc Consol tsf
-2	-	-4	0.100	350	1.98	70	16	6.933		3.555		0.355	3.555	0.448	0.355	0.045	0.06	
-4	-	-10	0.100	30	2.67	110	85	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	
-10	-	-24	0.930	22	2.62	128	105	0.576		0.122		0.012	0.122	0.077	0.012	0.008	5.00	
-24		-42	0.930	37	2.64	114	83	1.025	0.46	0.338	0.111	0.034	0.461	0.228	0.111	0.055	0.33	3.000
-42		-60	0.930	37	2.64	114	83	1.025	0.46	0.338	0.111	0.034	0.461	0.228	0.111	0.055	0.33	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 Cr= 0.10Cc

Note:

[1] Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

[2] OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

[3] Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-4, depths 37 to 39 feet (el -34.5 to -36.5)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-5

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1 e_o	EQ. 2 Consol. C_c	EQ. 2 Use MC C_c	EQ. 3 Consol. C_r	EQ. 3 C_r	DESIGN PARAMETERS Adopted C_c	DESIGN PARAMETERS Adopted Cc[2]	DESIGN PARAMETERS Adopted Cr	DESIGN PARAMETERS Adopted Cr[3]	C_v[1] ft^2/day	Pc Consol tsf
-2	-	-10	0.000	30	2.67	127	98	0.802		0.244		0.024	0.000	0.000	0.000	0.000	10.00	
-10	-	-18	0.300	23	2.63	125	102	0.600	0.17	0.137	0.016	0.014	0.169	0.106	0.016	0.010	0.79	0.600
-18	-	-38	1.170	30	2.67	120	92	0.802		0.244		0.024	0.244	0.135	0.024	0.014	1.00	
-38		-43	0.000	30	2.67	120	92	0.802		0.244		0.024	0.244	0.135	0.024	0.014	20.00	
-43		-60	0.650	40	2.71	113	81	1.085		0.397		0.040	0.397	0.190	0.040	0.019	0.20	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 $Cr = 0.10Cc$

Note:

[1] Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

[2] OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

[3] Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-5, depths 14 to 16 feet (el -10.2 to -12.2)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-6

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1	EQ. 2		EQ. 3	DESIGN PARAMETERS					Pc
									Consol.	Use MC	Consol.		Adopted	Adopted	Adopted	Adopted		Consol
								e_o	C_c	C_c	C_r	C_r	C_c	Cc$_\varepsilon$	Cr	Cr$_\varepsilon$	C_v[1] ft^2/day	tsf
1	-	-7	0.100	275	1.99	82	22	5.485	1.43	2.773	0.091	0.277	2.773	0.428	0.277	0.043	0.03	0.160
-7	-	-11	0.170	400	1.97	75	15	7.898		4.076		0.408	4.076	0.458	0.408	0.046	0.08	
-11	-	-13	0.000	30	2.67	120	92	0.802		0.244		0.024	0.244	0.135	0.024	0.014	10.00	
-13	-	-17	0.300	20	2.59	129	108	0.519		0.091		0.009	0.091	0.060	0.009	0.006	5.00	
-17	-	-36	0.950	40	2.71	116	83	1.085		0.397		0.040	0.397	0.190	0.040	0.019	0.20	
-36	-	-60	0.650	36	2.70	115	85	0.972		0.336		0.034	0.336	0.170	0.034	0.017	0.33	

Equations:

EQ. 1a $e_0 = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_0 = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 $Cr = 0.10Cc$

Note:

[1] Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

[2] OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

[3] Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-6, depths 10 to 12 feet (el -4.8 to -6.8)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-7

ELEV			COHESION	M.C		UNIT WEIGHT		EQ. 1	EQ. 2		EQ. 3		DESIGN PARAMETERS					Pc
						WET	DRY		Consol.	Use MC	Consol.		Adopted	Adopted	Adopted	Adopted	C_v[1]	Consol
FEET			KSF	%	S.G	PCF	PCF	e_o	C_c	C_c	C_r	C_r	C_c	Cc̄	Cr	Cr̄	ft^2/day	tsf
-2	-	-14	0.090	250	2.00	80	23	5.003	1.13	2.512	0.108	0.251	2.512	0.419	0.251	0.042	0.03	0.120
-14	-	-18	0.090	175	2.03	106	39	3.555		1.731		0.173	1.731	0.380	0.173	0.038	0.02	
-18	-	-40	1.000	40	2.71	120	86	1.085		0.397		0.040	0.397	0.190	0.040	0.019	0.33	
-40		-60	1.000	40	2.71	120	86	1.085		0.397		0.040	0.397	0.190	0.040	0.019	0.33	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 Cr= 0.10Cc

Note:

1 Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

2 OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

3 Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-7, depths 12 to 14 feet (el -8.1 to -10.1)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-8

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1	EQ. 2	EQ. 2	EQ. 3	DESIGN PARAMETERS					Pc
									Consol.	Use MC	Consol.		Adopted	Adopted	Adopted	Adopted	Consol
FEET			KSF	%		PCF	PCF	e_o	C_c	C_c	C_r	C_r	C_c	Cc[2]	Cr	Cr[3]	tsf
-2	-	-5	0.050	530	1.96	70	11	10.407	4.99	5.431	0.514	0.543	5.431	0.476	0.543	0.048	0.080
-5	-	-7	0.130	91	2.13	78	41	1.934		0.855		0.086	0.855	0.292	0.086	0.029	
-7	-	-17	0.450	21	2.61	129	107	0.547		0.106		0.011	0.106	0.069	0.011	0.007	
-17		-39	1.000	40	2.71	118	84	1.085		0.397		0.040	0.397	0.190	0.040	0.019	
-39		-60	1.000	40	2.71	118	84	1.085		0.396		0.040	0.396	0.190	0.040	0.019	

	ELEV FEET		C_v[1] ft^2/day
	-2	-5	0.20
	-5	-7	0.02
	-7	-17	5.00
	-17	-39	0.20
	-39	-60	0.20

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 $Cr = 0.10Cc$

Note:

[1] Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

[2] OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

[3] Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-8, depths 4 to 6 feet (el 1.4 to -0.6)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Bayou Bonfouca Marsh Creation Project (PO-104)
St. Tammany Parish, Louisiana
SETTLEMENT PARAMETERS FOR B-9

ELEV FEET			COHESION KSF	M.C %	S.G	UNIT WEIGHT WET PCF	UNIT WEIGHT DRY PCF	EQ. 1 e_o	EQ. 2 Consol. C_c	EQ. 2 Use MC C_c	EQ. 3 Consol. C_r	EQ. 3 C_r	DESIGN PARAMETERS Adopted C_c	DESIGN PARAMETERS Adopted Cce	DESIGN PARAMETERS Adopted Cr	DESIGN PARAMETERS Adopted Cre	C_v[1] ft^2/day	Pc Consol tsf
1	-	-7	0.080	560	1.96	69	10	10.986		5.743		0.574	5.743	0.479	0.574	0.048	0.23	
-7	-	-12	0.200	24	2.66	123	99	0.638	0.20	0.155	0.021	0.016	0.155	0.095	0.016	0.009	0.02	0.240
-12	-	-44	0.600	24	2.67	123	99	0.722		0.157		0.016	0.196	0.114	0.021	0.012	0.02	
-44		-60	0.400	45	2.74	116	80	1.232		0.476		0.048	0.476	0.213	0.048	0.021	0.12	

Equations:

EQ. 1a $e_o = 0.0193*M.C. + 0.1775$ (organic)

EQ. 1b $e_o = 0.0283*M.C. - 0.0471$ (inorganic)

EQ. 2 $C_c = 0.0054*((S.G.*M.C.)-35)$ (NAVFAC)

EQ. 3 $Cr = 0.10Cc$

Note:

1 Cv values for materials were estimated using a correlation developed using consolidation test results from this and other coastal projects.

2 OCR = (c/(p' * 0.22))^(1/0.8) (Recommended practice for soft ground site characterization: Aruthur Casagrande Lecture Figure 7.1)

3 Assumed OCR =1 if OCR<1 from calculations

Conslidation test results from Boring B-9, depths 13 to 15 feet (el -9.2 to -11.2)

References:

"Foundation Design: Principles and Practices" Donald Coduto 1994

"NAVFAC DM-7.1 Soil Mechanics" 1982

"GeoEngineers" based on our experience with coastal soils

"Soil Mechanics" Lambe and Whitman 1969

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
File No.: 16715-023-00
Analyses Loc: Boring 3

SG:	2.7	Initial Fill El	2 ft	Initial Stress	192.3737 psf
e0:	2.16	Initial Mudline El	-1.5 ft	Sett @ 30 day	0.2163 ft
Vvi:	0.683544	Initial γ	95.97 pcf		
Vs:	0.316456	Water El.	0.8 ft		

Construction period is 0 - 30 days

Ending Fill El	2	ft
Ending Mudline El	-1.7163	ft
Ending γ	95.97	pcf
Fill Thickness	3.7163	ft
Ending Stress:	199.6	psf
	0.200	ksf

30 - 45 days (0 - 15 days PSDDF)

Total Foundation Settlement:	0.2652	ft
Ending Mudline El:	-1.765	ft
PSDDF Settlement:	1.173	ft
Ending Fill El:	**0.778**	**ft**
Ending Fill Thickness:	2.5433	ft
Vv30:	0.3679	
e15:	1.1626	
MC:	0.4306	
Ending γ:	111.45	pcf
Effective Stress:	124.75	psf
	0.125	ksf

45 - 60 days (15 - 30 days PSDDF)

Total Foundation Settlement:	0.1929	ft
Ending Mudline El:	-1.765	ft
PSDDF Settlement:	1.196	ft
Ending Fill El:	**0.755**	**ft**
Ending Fill Thickness:	2.5203	ft
Vv30:	0.3617	
e30:	1.1430	
MC:	0.4233	
Ending γ:	111.90	pcf
Effective Stress:	124.75	psf
	0.125	ksf

60 - 90 days (30 - 60 days PSDDF)

Total Foundation Settlement:	0.2215	ft
Ending Mudline El:	-1.765	ft
PSDDF Settlement:	1.221	ft
Ending Fill El:	**0.730**	**ft**
Ending Fill Thickness:	2.4953	ft
Vv30:	0.3550	
e60:	1.1218	
MC:	0.4155	
Ending γ:	112.40	pcf
Effective Stress:	124.75	psf
	0.125	ksf

90 - 180 days (60 - 150 days PSDDF)

Total Foundation Settlement:	0.2767	ft
Ending Mudline El:	-1.777	ft
PSDDF Settlement:	1.235	ft
Ending Fill El:	**0.705**	**ft**
Ending Fill Thickness:	2.4813	ft
Vv30:	0.3512	
e150:	1.1099	
MC:	0.4111	
Ending γ:	112.68	pcf
Effective Stress:	124.75	psf
	0.125	ksf

180 - 365 days (150 - 365 days PSDDF)

Total Foundation Settlement:	0.3452	ft
Ending Mudline El:	-1.845	ft
PSDDF Settlement:	1.235	ft
Ending Fill El:	**0.636**	**ft**
Ending Fill Thickness:	2.4813	ft
Vv30:	0.3512	
e365:	1.1099	
MC:	0.4111	
Ending γ:	112.68	pcf
Effective Stress:	124.75	psf
	0.125	ksf

365 - 1095 days

Total Foundation Settlement:	0.4771	ft
Ending Mudline El:	-1.977	ft
PSDDF Settlement:	1.235	ft
Ending Fill El:	**0.504**	**ft**
Ending Fill Thickness:	2.4813	ft
Vv30:	0.3512	
e1095:	1.1099	
MC:	0.4111	
Ending γ:	112.68	pcf
Effective Stress:	124.75	psf
	0.125	ksf

1095 - 1825 days

Total Foundation Settlement:	0.5417	ft
Ending Mudline El:	-2.042	ft
PSDDF Settlement:	1.235	ft
Ending Fill El:	**0.440**	**ft**
Ending Fill Thickness:	2.4813	ft
Vv30:	0.3512	
e1825:	1.1099	
MC:	0.4111	
Ending γ:	112.68	pcf
Effective Stress:	124.75	psf
	0.125	ksf

1825 - 3650 days

Total Foundation Settlement:	0.5988	ft
Ending Mudline El:	-2.099	ft
PSDDF Settlement:	1.235	ft
Ending Fill El:	**0.383**	**ft**
Ending Fill Thickness:	2.4813	ft
Vv30:	0.3512	
e3650:	1.1099	
MC:	0.4111	
Ending γ:	112.68	pcf
Effective Stress:	124.75	psf
	0.125	ksf

3650 - 7300 days

Total Foundation Settlement:	0.6124	ft
Ending Mudline El:	-2.112	ft
PSDDF Settlement:	1.235	ft
Ending Fill El:	**0.369**	**ft**
Ending Fill Thickness:	2.4813	ft
Vv30:	0.3512	
e7300:	1.1099	
MC:	0.4111	
Ending γ:	112.68	pcf
Effective Stress:	124.75	psf
	0.125	ksf

****
Consolidation and desiccation of soft layers---dredged fill
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Problem PSDDF Boring B-3 Initial Fill El 2 ft

**********Soil data for dredged fill**********

Material Type	Specific Gravity	Ca/Cc	Cr/Cc	Saturation Limit	Disication Limit
1	2.700	.015	.121	1.715	1.648

Material type : 1

I	Void Ratio	Effective Stress	Perm-eability	k/1+e PK	Beta	Dsde	Alpha
1	2.160	.000E+00	.343E+01	.109E+01	.123E+01	-.114E+02	-.123E+02
2	1.280	.100E+02	.320E-02	.140E-02	.108E+01	-.250E+02	-.351E-01
3	1.160	.250E+02	.131E-02	.606E-03	.540E-02	-.200E+03	-.121E+00
4	1.080	.500E+02	.672E-03	.323E-03	.254E-02	-.441E+03	-.143E+00
5	.990	.100E+03	.347E-03	.174E-03	.127E-02	-.833E+03	-.145E+00
6	.900	.200E+03	.181E-03	.953E-04	.677E-03	-.167E+04	-.159E+00
7	.810	.400E+03	.950E-04	.525E-04	.417E-03	-.286E+04	-.150E+00
8	.760	.600E+03	.650E-04	.369E-04	.311E-03	-.400E+04	-.148E+00

Summary of lifts and print detail

Time days	Material Type	Fill Height	# Sub-layers	Void ratio	Start Day	Dessic. Month	Print detai
0.	1	3.7	12	2.16	30.	6	1
15.					30.	6	1
30.					30.	6	1
60.					30.	6	1
110.					30.	6	1
150.					30.	6	1
365.					30.	6	1
545.					30.	6	1
730.					30.	6	1
1095.					30.	6	1
1460.					30.	6	1
1825.					30.	6	1
3650.					30.	6	1
7300.					30.	6	1
*****					30.	6	1

Summary of monthly rainfall and evaporation potential

Month	Rainfall	Evaporation
1	.540	.190
2	.420	.280
3	.500	.400
4	.400	.540
5	.480	.600
6	.360	.640
7	.550	.560
8	.490	.530
9	.430	.460
10	.260	.440
11	.430	.290
12	.390	.210

**********Calculation data**********

tau	Lower layer Void ratio	Lower layer Permeability	drainage path Length
.241E-01	7.319	.10000E-03	z = 6.01

Summary of desiccation parameters

Parameter	Value
Surface Drainage Efficiency	.80
maximum evaporation efficiency	.75
saturation at desiccation limit	.32
maximum crust thickness	.08
time to desic. after initial fill	30.00
month of initial desiccation	6
elevation of fixed water table	.80
elevation of top of incompres. found.	-1.72

**********Initial Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	3.72	1.18	2.16	2.16	2.16	1
3.41	3.41	1.08	2.16	2.16	1.28	1
3.10	3.10	.98	2.16	2.16	1.19	1
2.79	2.79	.88	2.16	2.16	1.14	1
2.48	2.48	.78	2.16	2.16	1.11	1
2.17	2.17	.69	2.16	2.16	1.08	1
1.86	1.86	.59	2.16	2.16	1.06	1
1.55	1.55	.49	2.16	2.16	1.04	1
1.24	1.24	.39	2.16	2.16	1.02	1
.93	.93	.29	2.16	2.16	1.00	1
.62	.62	.20	2.16	2.16	.99	1
.31	.31	.10	2.16	2.16	.98	1
.00	.00	.00	2.16	2.16	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
3.72	.00	.00	.00	.00	.00	1
3.41	29.72	.00	29.72	19.32	10.40	1
3.10	59.44	.00	59.44	38.65	20.79	1
2.79	89.16	.00	89.16	57.97	31.19	1
2.48	118.88	.00	118.88	77.30	41.58	1
2.17	148.60	.00	148.60	96.62	51.98	1
1.86	178.33	.00	178.33	115.95	62.38	1
1.55	208.05	.00	208.05	135.27	72.77	1
1.24	237.77	.00	237.77	154.60	83.17	1
.93	267.49	.00	267.49	173.92	93.57	1
.62	297.21	.00	297.21	193.25	103.96	1
.31	326.93	.00	326.93	212.57	114.36	1
.00	356.65	.00	356.65	231.90	124.75	1

Time = 0. Degree of Consolidation = 0.%

Total Settlement = .000

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 0. = .000

Settlement caused by Secondary Compression at time 0. = .000

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material

3.72	2.54	1.18	2.16	2.16	2.16	1
3.41	2.29	1.08	2.16	1.28	1.28	1
3.10	2.07	.98	2.16	1.19	1.19	1
2.79	1.86	.88	2.16	1.16	1.14	1
2.48	1.65	.78	2.16	1.16	1.11	1
2.17	1.43	.69	2.16	1.16	1.08	1
1.86	1.22	.59	2.16	1.15	1.06	1
1.55	1.01	.49	2.16	1.14	1.04	1
1.24	.80	.39	2.16	1.12	1.02	1
.93	.60	.29	2.16	1.09	1.00	1
.62	.39	.20	2.16	1.06	.99	1
.31	.20	.10	2.16	1.01	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.54	.00	.00	.00	.00	.00	1
2.29	26.24	10.40	15.84	15.84	.00	1
2.07	50.27	20.79	29.48	29.48	.00	1
1.86	73.95	24.80	49.16	42.76	6.39	1
1.65	97.56	24.99	72.57	55.98	16.59	1
1.43	121.16	25.83	95.33	69.18	26.15	1
1.22	144.74	27.75	116.98	82.36	34.62	1
1.01	168.25	31.44	136.82	95.48	41.34	1
.80	191.68	37.54	154.14	108.51	45.63	1
.60	214.96	46.33	168.63	121.39	47.24	1
.39	238.04	63.66	174.38	134.08	40.30	1
.20	260.88	87.50	173.38	146.52	26.86	1
.00	283.44	124.75	158.69	158.69	.00	1

Time = 15. Degree of Consolidation = 95.%

Total Settlement = 1.173

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 15. = 1.173

Settlement caused by Secondary Compression at time 15. = .000

Surface Elevation = .83

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.52	1.18	2.16	2.16	2.16	1
3.41	2.27	1.08	2.16	1.28	1.28	1
3.10	2.05	.98	2.16	1.19	1.19	1
2.79	1.83	.88	2.16	1.16	1.14	1
2.48	1.62	.78	2.16	1.15	1.11	1
2.17	1.41	.69	2.16	1.13	1.08	1
1.86	1.21	.59	2.16	1.12	1.06	1
1.55	1.00	.49	2.16	1.10	1.04	1
1.24	.79	.39	2.16	1.08	1.02	1

.93	.59	.29	2.16	1.05	1.00	1
.62	.39	.20	2.16	1.03	.99	1
.31	.19	.10	2.16	1.00	.98	1
.00	.00	.00	2.16	.97	.97	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
2.52	.00	.00	.00	.00	.00	1
2.27	26.24	10.40	15.84	15.84	.00	1
2.05	50.27	20.79	29.48	29.48	.00	1
1.83	73.96	24.96	49.01	42.77	6.23	1
1.62	97.53	29.19	68.34	55.94	12.40	1
1.41	121.01	33.23	87.78	69.03	18.75	1
1.21	144.41	37.96	106.45	82.03	24.42	1
1.00	167.71	43.70	124.01	94.93	29.08	1
.79	190.88	50.83	140.05	107.71	32.34	1
.59	213.92	64.78	149.14	120.35	28.79	1
.39	236.78	80.26	156.53	132.82	23.70	1
.19	259.48	96.48	163.00	145.12	17.88	1
.00	282.00	124.75	157.24	157.24	.00	1

Time = 30. Degree of Consolidation = 97.%

Total Settlement = 1.196

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 30. = 1.196

Settlement caused by Secondary Compression at time 30. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .80

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
3.72	2.50	1.18	2.16	2.16	2.16	1
3.41	2.24	1.08	2.16	1.28	1.28	1
3.10	2.02	.98	2.16	1.19	1.19	1
2.79	1.81	.88	2.16	1.15	1.14	1
2.48	1.60	.78	2.16	1.12	1.11	1
2.17	1.39	.69	2.16	1.10	1.08	1
1.86	1.19	.59	2.16	1.08	1.06	1
1.55	.99	.49	2.16	1.06	1.04	1
1.24	.79	.39	2.16	1.04	1.02	1
.93	.59	.29	2.16	1.02	1.00	1
.62	.39	.20	2.16	1.00	.99	1
.31	.19	.10	2.16	.99	.98	1
.00	.00	.00	2.16	.97	.97	1

	***** Stresses *****		***** Pore Pressures *****			

XI	Total	Effective	Total	Static	Excess	Material
2.50	1.32	.00	1.32	1.32	.00	1
2.24	27.55	10.40	17.16	17.16	.00	1
2.02	51.59	20.79	30.80	30.80	.00	1
1.81	75.25	28.80	46.45	44.06	2.39	1
1.60	98.69	37.41	61.28	57.11	4.17	1
1.39	121.99	44.15	77.84	70.01	7.83	1
1.19	145.16	50.23	94.93	82.78	12.14	1
.99	168.22	60.61	107.60	95.44	12.16	1
.79	191.16	71.09	120.07	107.99	12.08	1
.59	213.99	81.66	132.32	120.42	11.90	1
.39	236.69	92.23	144.46	132.73	11.73	1
.19	259.29	105.16	154.13	144.93	9.20	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 60. Degree of Consolidation = 99.%

Total Settlement = 1.221

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 60. = 1.221

Settlement caused by Secondary Compression at time 60. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .78

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
2.48	2.14	.00	2.14	2.14	.00	1
2.23	28.36	10.40	17.96	17.96	.00	1
2.01	52.41	20.79	31.62	31.62	.00	1
1.80	76.04	31.19	44.85	44.85	.00	1
1.59	99.42	41.58	57.83	57.83	.00	1

1.38	122.62	49.88	72.74	70.63	2.10	1
1.18	145.67	61.84	83.83	83.29	.54	1
.98	168.59	72.30	96.29	95.82	.47	1
.78	191.41	81.68	109.74	108.24	1.49	1
.58	214.13	90.25	123.89	120.57	3.32	1
.39	236.76	98.19	138.57	132.80	5.77	1
.19	259.31	111.15	148.16	144.95	3.21	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 110. Degree of Consolidation = 100.%

Total Settlement = 1.234

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 110. = 1.234

Settlement caused by Secondary Compression at time 110. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .77

**********Current Conditions in Dredged Fill**********

***** Coordinates *****

***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.59	1
.58	214.15	91.22	122.93	120.58	2.35	1
.39	236.77	98.97	137.80	132.81	4.99	1
.19	259.31	111.98	147.32	144.95	2.37	1

.00	281.77	124.75	157.02	157.02	.00	1

Time = 150. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 150. = 1.235

Settlement caused by Secondary Compression at time 150. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

***** Coordinates *****

***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 365. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 365. = 1.235

Settlement caused by Secondary Compression at time 365. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 545. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 545. = 1.235

Settlement caused by Secondary Compression at time 545. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 730. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 730. = 1.235

Settlement caused by Secondary Compression at time 730. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 1095. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 1095. = 1.235

Settlement caused by Secondary Compression at time 1095. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

******************Current Conditions in Dredged Fill******************

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1

3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 1460. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 1460. = 1.235

Settlement caused by Secondary Compression at time 1460. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

******************Current Conditions in Dredged Fill******************

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1

.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 1825. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 1825. = 1.235

Settlement caused by Secondary Compression at time 1825. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 3650. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 3650. = 1.235

Settlement caused by Secondary Compression at time 3650. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1

1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1
.00	281.77	124.75	157.02	157.02	.00	1

Time = 7300. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time 7300. = 1.235

Settlement caused by Secondary Compression at time 7300. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

**********Current Conditions in Dredged Fill**********

***** Coordinates *****

***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
3.72	2.48	1.18	2.16	2.16	2.16	1
3.41	2.23	1.08	2.16	1.28	1.28	1
3.10	2.01	.98	2.16	1.19	1.19	1
2.79	1.80	.88	2.16	1.14	1.14	1
2.48	1.59	.78	2.16	1.11	1.11	1
2.17	1.38	.69	2.16	1.08	1.08	1
1.86	1.18	.59	2.16	1.06	1.06	1
1.55	.98	.49	2.16	1.04	1.04	1
1.24	.78	.39	2.16	1.02	1.02	1
.93	.58	.29	2.16	1.01	1.00	1
.62	.39	.20	2.16	.99	.99	1
.31	.19	.10	2.16	.98	.98	1
.00	.00	.00	2.16	.97	.97	1

***** Stresses *****

***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
2.48	2.19	.00	2.19	2.19	.00	1
2.23	28.41	10.40	18.01	18.01	.00	1
2.01	52.46	20.79	31.67	31.67	.00	1
1.80	76.09	31.19	44.90	44.90	.00	1
1.59	99.47	41.58	57.88	57.88	.00	1
1.38	122.66	50.16	72.50	70.68	1.82	1
1.18	145.71	62.38	83.33	83.33	.00	1
.98	168.63	72.77	95.86	95.86	.00	1
.78	191.44	82.58	108.86	108.27	.58	1
.58	214.15	91.23	122.92	120.58	2.33	1
.39	236.77	98.98	137.79	132.81	4.98	1
.19	259.31	112.00	147.31	144.95	2.36	1

.00	281.77	124.75	157.02	157.02	.00	1

Time = 18250. Degree of Consolidation = 100.%

Total Settlement = 1.235

Settlement at End of Primary Consolidation = 1.237

Settlement caused by Primary Consolidation at time18250. = 1.235

Settlement caused by Secondary Compression at time18250. = .000

Settlement Due to Desiccation = .000

Surface Elevation = .76

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-3 (Initial Fill Elevation 2 ft)

Initial Fill Elevation = 2 ft

Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)	Settlement 45 days (in)	Foundation Settlement (ft)	Settlement 60 days (in)	Foundation Settlement (ft)	Settlement 90 days (in)	Foundation Settlement (ft)	Settlement 150 days (in)	Foundation Settlement (ft)	Settlement 180 days (in)	Foundation Settlement (ft)	Settlement 365 days (in)	Foundation Settlement (ft)	Settlement 545 days (in)	Foundation Settlement (ft)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.082191781	2.596021676	0.21633514	2.691927266	0.224327272	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686
45	0.123287671	3.069038052	0.255753171	3.182305431	0.265192119	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906
60	0.164383562	3.414832398	0.284569367	3.540725094	0.295060424	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723
90	0.246575342	3.917979628	0.326498302	4.062151659	0.338512638	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689
150	0.410958904	4.611671762	0.38430598	4.780895966	0.398407997	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513
180	0.493150685	4.88603237	0.407169364	5.065138004	0.422094834	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783
365	1	6.085609006	0.507134084	6.307616681	0.525634723	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827
545	1.493150685	6.86184843	0.571820703	7.111253977	0.592604498	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028
730	2	7.488458384	0.624038199	7.759815473	0.646651289	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104
1095	3	8.382943479	0.698578623	8.685496716	0.723791393	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778
1460	4	9.035017902	0.752918159	9.360293301	0.780024442	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538
1825	5	9.506629517	0.792219126	9.848342027	0.820695169	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928
3650	10	10.49902965	0.874919138	10.87536139	0.906280116	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635
7300	20	10.73704767	0.894753972	11.12169889	0.926808241	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802
18250	50	10.74699934	0.895583279	11.13199932	0.92766661	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962

Time (days)	Time (years)	Settlement 730 days (in)	Foundation Settlement (ft)	Settlement 1095 days (in)	Foundation Settlement (ft)	Settlement 4 years (in)	Foundation Settlement (ft)	Settlement 5 years (in)	Foundation Settlement (ft)	Settlement 10 years (in)	Foundation Settlement (ft)	Settlement 20 years (in)	Foundation Settlement (ft)	Settlement 50 years (in)	Foundation Settlement (ft)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.082191781	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686	1.758560235	0.146546686
45	0.123287671	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906	2.079814877	0.173317906
60	0.164383562	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723	2.315156679	0.192929723
90	0.246575342	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689	2.658260274	0.221521689
150	0.410958904	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513	3.132306159	0.261025513
180	0.493150685	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783	3.319941391	0.276661783
365	1	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827	4.141881918	0.345156827
545	1.493150685	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028	4.675728337	0.389644028
730	2	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104	5.107572485	0.42563104
1095	3	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778	5.724837333	0.477069778
1460	4	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538	6.17490645	0.514575538
1825	5	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928	6.500387133	0.541698928
3650	10	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635	7.185055625	0.598754635
7300	20	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802	7.349145626	0.612428802
18250	50	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962	7.355999549	0.612999962

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-3 (Initial fill to 2 ft.)

Initial Fill Elevation = 2 ft

Layer 1

Total layer sett@ 30 days:	0.116	in	(from SETANL)
Total layer sett@ 45:	0.119		
Total layer sett@ 60:	0.088		
Total layer sett@ 90:	0.088		
Total layer sett@ 150:	0.088		
Total layer sett@ 180:	0.088		
Total layer sett@ 365:	0.088		
Total layer sett@ 545:	0.088		
Total layer sett@ 730:	0.088		
Total layer sett@ 1095:	0.088		
Total layer sett@ 1460:	0.088		
Total layer sett@ 1825:	0.088		
Total layer sett@ 3650:	0.088		
Total layer sett@ 20:	0.088		
Total layer sett@ 50:	0.088		
Cv:	0.07	ft^2/day	
Hdr:	4	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730	Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.13125	40.87942	0.04742013	0.048647	0.035974	0.035974	0.035974	0.035974	0.035974	0.035974	0.035974	0.035974	0.035974	0.03597389	0.035974	0.035974	0.035974
45	0.196875	50.06686	0.05807756	0.05958	0.044059	0.044059	0.044059	0.044059	0.044059	0.044059	0.044059	0.044059	0.044059	0.04405884	0.044059	0.044059	0.044059
60	0.2625	57.81223	0.06706219	0.068797	0.050875	0.050875	0.050875	0.050875	0.050875	0.050875	0.050875	0.050875	0.050875	0.05087476	0.050875	0.050875	0.050875
90	0.39375	69.31894	0.08040997	0.08249	0.061001	0.061001	0.061001	0.061001	0.061001	0.061001	0.061001	0.061001	0.061001	0.06100067	0.061001	0.061001	0.061001
150	0.65625	83.94834	0.09738008	0.099899	0.073875	0.073875	0.073875	0.073875	0.073875	0.073875	0.073875	0.073875	0.073875	0.07387454	0.073875	0.073875	0.073875
180	0.7875	88.38967	0.10253202	0.105184	0.077783	0.077783	0.077783	0.077783	0.077783	0.077783	0.077783	0.077783	0.077783	0.07778291	0.077783	0.077783	0.077783
365	1.596875	98.42476	0.11417272	0.117125	0.086614	0.086614	0.086614	0.086614	0.086614	0.086614	0.086614	0.086614	0.086614	0.08661379	0.086614	0.086614	0.086614
545	2.384375	99.77442	0.11573833	0.118732	0.087801	0.087801	0.087801	0.087801	0.087801	0.087801	0.087801	0.087801	0.087801	0.08780149	0.087801	0.087801	0.087801
730	3.19375	99.96939	0.1159645	0.118964	0.087973	0.087973	0.087973	0.087973	0.087973	0.087973	0.087973	0.087973	0.087973	0.08797307	0.087973	0.087973	0.087973
1095	4.790625	99.99941	0.11599931	0.118999	0.087999	0.087999	0.087999	0.087999	0.087999	0.087999	0.087999	0.087999	0.087999	0.08799948	0.087999	0.087999	0.087999
1460	6.3875	99.99999	0.11599999	0.119	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.08799999	0.088	0.088	0.088
1825	7.984375	100	0.116	0.119	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
3650	15.96875	100	0.116	0.119	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
7300	31.9375	100	0.116	0.119	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088
18250	79.84375	100	0.116	0.119	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088	0.088

Layer 2

Total layer sett@ 30 days:	0.428	in	(from SETANL)
Total layer sett@ 45:	0.44		
Total layer sett@ 60:	0.317		
Total layer sett@ 90:	0.317		
Total layer sett@ 150:	0.317		
Total layer sett@ 180:	0.317		
Total layer sett@ 365:	0.317		
Total layer sett@ 545:	0.317		
Total layer sett@ 730:	0.317		
Total layer sett@ 1095:	0.317		
Total layer sett@ 1460:	0.317		
Total layer sett@ 1825:	0.317		
Total layer sett@ 3650:	0.317		
Total layer sett@ 20:	0.317		
Total layer sett@ 50:	0.317		
Cv:	0.02	ft^2/day	
Hdr:	7.07	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730
0	0	0	0	0	0	0	0	0	0	0	0
30	0.012004	12.3626414	0.052912	0.054396	0.03919	0.03919	0.03919	0.03919	0.03919	0.03919	0.03919
45	0.018005	15.1410816	0.064804	0.066621	0.047997	0.047997	0.047997	0.047997	0.047997	0.047997	0.047997
60	0.024007	17.4834151	0.074829	0.076927	0.055422	0.055422	0.055422	0.055422	0.055422	0.055422	0.055422
90	0.036011	21.412723	0.091646	0.094216	0.067878	0.067878	0.067878	0.067878	0.067878	0.067878	0.067878
150	0.060018	27.6437065	0.118315	0.121632	0.087631	0.087631	0.087631	0.087631	0.087631	0.087631	0.087631
180	0.072022	30.2821632	0.129608	0.133242	0.095994	0.095994	0.095994	0.095994	0.095994	0.095994	0.095994
365	0.146044	43.1218193	0.184561	0.189736	0.136696	0.136696	0.136696	0.136696	0.136696	0.136696	0.136696
545	0.218066	52.692511	0.225524	0.231847	0.167035	0.167035	0.167035	0.167035	0.167035	0.167035	0.167035
730	0.292088	60.5694739	0.259237	0.266506	0.192005	0.192005	0.192005	0.192005	0.192005	0.192005	0.192005
1095	0.438132	72.5020169	0.310309	0.319009	0.229831	0.229831	0.229831	0.229831	0.229831	0.229831	0.229831
1460	0.584176	80.8235104	0.345925	0.355623	0.256211	0.256211	0.256211	0.256211	0.256211	0.256211	0.256211
1825	0.730221	86.6267372	0.370762	0.381158	0.274607	0.274607	0.274607	0.274607	0.274607	0.274607	0.274607
3650	1.460441	97.7941361	0.418559	0.430294	0.310007	0.310007	0.310007	0.310007	0.310007	0.310007	0.310007
7300	2.920882	99.9399848	0.427743	0.439736	0.31681	0.31681	0.31681	0.31681	0.31681	0.31681	0.31681
18250	7.302205	99.9999988	0.428	0.44	0.317	0.317	0.317	0.317	0.317	0.317	0.317

Layer 4

Total layer sett@ 30 days:	1.554	in	(from SETANL)
Total layer sett@ 45:	1.613		
Total layer sett@ 60:	1.041		
Total layer sett@ 90:	1.041		
Total layer sett@ 150:	1.041		
Total layer sett@ 180:	1.041		
Total layer sett@ 365:	1.041		
Total layer sett@ 545:	1.041		
Total layer sett@ 730:	1.041		
Total layer sett@ 1095:	1.041		
Total layer sett@ 1460:	1.041		
Total layer sett@ 1825:	1.041		
Total layer sett@ 3650:	1.041		
Total layer sett@ 20:	1.041		
Total layer sett@ 50:	1.041		
Cv:	1	ft^2/day	
Hdr:	7.5	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730	Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.533333	78.25981	1.21615747	1.262331	0.814685	0.814685	0.814685	0.814685	0.814685	0.814685	0.814685	0.814685	0.814685	0.81468464	0.814685	0.814685	0.814685
45	0.8	88.74237	1.37905644	1.431414	0.923808	0.923808	0.923808	0.923808	0.923808	0.923808	0.923808	0.923808	0.923808	0.92380808	0.923808	0.923808	0.923808
60	1.066667	94.17051	1.46340972	1.51897	0.980315	0.980315	0.980315	0.980315	0.980315	0.980315	0.980315	0.980315	0.980315	0.98031501	0.980315	0.980315	0.980315
90	1.6	98.43686	1.52970881	1.587787	1.024728	1.024728	1.024728	1.024728	1.024728	1.024728	1.024728	1.024728	1.024728	1.02472771	1.024728	1.024728	1.024728
150	2.666667	99.88761	1.55225344	1.611187	1.03983	1.03983	1.03983	1.03983	1.03983	1.03983	1.03983	1.03983	1.03983	1.03983001	1.03983	1.03983	1.03983
180	3.2	99.96986	1.55353167	1.612514	1.040686	1.040686	1.040686	1.040686	1.040686	1.040686	1.040686	1.040686	1.040686	1.04068627	1.040686	1.040686	1.040686
365	6.488889	99.99999	1.55399986	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.04099991	1.041	1.041	1.041
545	9.688889	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
730	12.97778	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
1095	19.46667	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
1460	25.95556	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
1825	32.44444	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
3650	64.88889	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
7300	129.7778	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
18250	324.4444	100	1.554	1.613	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041

Layer 5

Total layer sett@ 30 days:	1.411	in	(from SETANL)
Total layer sett@ 45:	1.467		
Total layer sett@ 60:	0.935		
Total layer sett@ 90:	0.935		
Total layer sett@ 150:	0.935		
Total layer sett@ 180:	0.935		
Total layer sett@ 365:	0.935		
Total layer sett@ 545:	0.935		
Total layer sett@ 730:	0.935		
Total layer sett@ 1095:	0.935		
Total layer sett@ 1460:	0.935		
Total layer sett@ 1825:	0.935		
Total layer sett@ 3650:	0.935		
Total layer sett@ 20:	0.935		
Total layer sett@ 50:	0.935		
Cv:	1	ft^2/day	
Hdr:	20	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730
0	0	0	0	0	0	0	0	0	0	0	0
30	0.075	30.9019362	0.436026	0.453331	0.288933	0.288933	0.288933	0.288933	0.288933	0.288933	0.288933
45	0.1125	37.8469878	0.534021	0.555215	0.353869	0.353869	0.353869	0.353869	0.353869	0.353869	0.353869
60	0.15	43.7019372	0.616634	0.641107	0.408613	0.408613	0.408613	0.408613	0.408613	0.408613	0.408613
90	0.225	53.5237235	0.75522	0.785193	0.500447	0.500447	0.500447	0.500447	0.500447	0.500447	0.500447
150	0.375	67.8658532	0.957587	0.995592	0.634546	0.634546	0.634546	0.634546	0.634546	0.634546	0.634546
180	0.45	73.295717	1.034203	1.075248	0.685315	0.685315	0.685315	0.685315	0.685315	0.685315	0.685315
365	0.9125	91.4715881	1.290664	1.341888	0.855259	0.855259	0.855259	0.855259	0.855259	0.855259	0.855259
545	1.3625	97.1909915	1.371365	1.425792	0.908736	0.908736	0.908736	0.908736	0.908736	0.908736	0.908736
730	1.825	99.1029011	1.398342	1.45384	0.926612	0.926612	0.926612	0.926612	0.926612	0.926612	0.926612
1095	2.7375	99.9056347	1.409669	1.465616	0.934118	0.934118	0.934118	0.934118	0.934118	0.934118	0.934118
1460	3.65	99.9900738	1.41086	1.466854	0.934907	0.934907	0.934907	0.934907	0.934907	0.934907	0.934907
1825	4.5625	99.9989559	1.410985	1.466985	0.93499	0.93499	0.93499	0.93499	0.93499	0.93499	0.93499
3650	9.125	100	1.411	1.467	0.935	0.935	0.935	0.935	0.935	0.935	0.935
7300	18.25	100	1.411	1.467	0.935	0.935	0.935	0.935	0.935	0.935	0.935
18250	45.625	100	1.411	1.467	0.935	0.935	0.935	0.935	0.935	0.935	0.935

Layer 3

Total layer sett@ 30 days:	7.238	in	(from SETANL)
Total layer sett@ 45:	7.493		
Total layer sett@ 60:	4.975		
Total layer sett@ 90:	4.975		
Total layer sett@ 150:	4.975		
Total layer sett@ 180:	4.975		
Total layer sett@ 365:	4.975		
Total layer sett@ 545:	4.975		
Total layer sett@ 730:	4.975		
Total layer sett@ 1095:	4.975		
Total layer sett@ 1460:	4.975		
Total layer sett@ 1825:	4.975		
Total layer sett@ 3650:	4.975		
Total layer sett@ 20:	4.975		
Total layer sett@ 50:	4.975		
Cv:	0.02	ft^2/day	
Hdr:	7.5	ft	

Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr	time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730	Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.03919	0.03919	0.03919	0.03919	0.03919	0.03919	30	0.010667	11.65385	0.843506	0.873223	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779	0.579779
0.047997	0.047997	0.047997	0.047997	0.047997	0.047997	45	0.016	14.27299	1.033079	1.069475	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081	0.710081
0.055422	0.055422	0.055422	0.055422	0.055422	0.055422	60	0.021333	16.48103	1.192897	1.234924	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931	0.819931
0.067878	0.067878	0.067878	0.067878	0.067878	0.067878	90	0.032	20.18506	1.460995	1.512467	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207	1.004207
0.087631	0.087631	0.087631	0.087631	0.087631	0.087631	150	0.053333	26.0588	1.886136	1.952586	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425	1.296425
0.095994	0.095994	0.095994	0.095994	0.095994	0.095994	180	0.064	28.54599	2.066158	2.138951	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163	1.420163
0.136696	0.136696	0.136696	0.136696	0.136696	0.136696	365	0.129778	40.6495	2.942211	3.045867	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313	2.022313
0.167035	0.167035	0.167035	0.167035	0.167035	0.167035	545	0.193778	49.67147	3.595221	3.721884	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156	2.471156
0.192005	0.192005	0.192005	0.192005	0.192005	0.192005	730	0.259556	57.48708	4.160915	4.307507	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982	2.859982
0.229831	0.229831	0.229831	0.229831	0.229831	0.229831	1095	0.389333	68.98269	4.992967	5.168873	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889	3.431889
0.256211	0.256211	0.256211	0.256211	0.256211	0.256211	1460	0.519111	77.48319	5.608233	5.805815	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789	3.854789
0.274607	0.274607	0.274607	0.274607	0.274607	0.274607	1825	0.648889	83.65407	6.054882	6.2682	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179	4.16179
0.310007	0.310007	0.310007	0.310007	0.310007	0.310007	3650	1.297778	96.70449	6.999471	7.246067	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048	4.811048
0.31681	0.31681	0.31681	0.31681	0.31681	0.31681	7300	2.595556	99.86605	7.228305	7.482963	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336	4.968336
0.317	0.317	0.317	0.317	0.317	0.317	18250	6.488889	99.99999	7.237999	7.492999	4.975	4.975	4.975	4.975	4.975	4.975	4.975	4.975	4.975	4.975	4.975	4.975	4.975

Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0
0.288933	0.288933	0.288933	0.288933	0.288933	0.288933
0.353869	0.353869	0.353869	0.353869	0.353869	0.353869
0.408613	0.408613	0.408613	0.408613	0.408613	0.408613
0.500447	0.500447	0.500447	0.500447	0.500447	0.500447
0.634546	0.634546	0.634546	0.634546	0.634546	0.634546
0.685315	0.685315	0.685315	0.685315	0.685315	0.685315
0.855259	0.855259	0.855259	0.855259	0.855259	0.855259
0.908736	0.908736	0.908736	0.908736	0.908736	0.908736
0.926612	0.926612	0.926612	0.926612	0.926612	0.926612
0.934118	0.934118	0.934118	0.934118	0.934118	0.934118
0.934907	0.934907	0.934907	0.934907	0.934907	0.934907
0.93499	0.93499	0.93499	0.93499	0.93499	0.93499
0.935	0.935	0.935	0.935	0.935	0.935
0.935	0.935	0.935	0.935	0.935	0.935
0.935	0.935	0.935	0.935	0.935	0.935

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	=	5
NUMBER OF SOIL COMPRESSIBILITIES	=	4
NUMBER OF SETTLEMENT POINTS	=	1
NUMBER OF LOADED AREAS	=	1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	=	1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.192	1.500	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.192
9.000	.192
20.500	.192
33.500	.192
50.000	.192

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT
POINT NO. 1

LAYER	
1	.116
2	.428
3	7.238
4	1.554
5	1.411

TOTAL SETTLE. 10.747

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	=	5
NUMBER OF SOIL COMPRESSIBILITIES	=	4
NUMBER OF SETTLEMENT POINTS	=	1
NUMBER OF LOADED AREAS	=	1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	=	1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.200	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT
POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.200
9.000	.200
20.500	.200
33.500	.200
50.000	.200

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.119
2	.440
3	7.493
4	1.613
5	1.467
TOTAL SETTLE.	11.132

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
2	.317
3	4.975
4	1.041
5	.935
TOTAL SETTLE.	7.356

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
2	.317
3	4.975
4	1.041
5	.935
TOTAL SETTLE.	7.356

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS = 5
NUMBER OF SOIL COMPRESSIBILITIES = 4
NUMBER OF SETTLEMENT POINTS = 1
NUMBER OF LOADED AREAS = 1
MODE (1 = U.S. GRAVITATIONAL UNITS
2 = SI ABSOLUTE UNITS) = 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

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Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

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Three points 4 to 14 ft

F %	.00	1.23	19.22

P,KSF .04 .86 2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
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5	.935
TOTAL SETTLE.	7.356

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
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0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
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TOTAL SETTLE.	7.356

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS = 5
NUMBER OF SOIL COMPRESSIBILITIES = 4

NUMBER OF SETTLEMENT POINTS = 1
NUMBER OF LOADED AREAS = 1
MODE (1 = U.S. GRAVITATIONAL UNITS
2 = SI ABSOLUTE UNITS) = 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F % .00 .85 17.94
P,KSF .04 1.44 3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F % .00 1.23 19.22
P,KSF .04 .86 2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
2	.317

	3	4.975
	4	1.041
	5	.935

TOTAL SETTLE. 7.356

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	=	5
NUMBER OF SOIL COMPRESSIBILITIES	=	4
NUMBER OF SETTLEMENT POINTS	=	1
NUMBER OF LOADED AREAS	=	1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	=	1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.088
2	.317
3	4.975
4	1.041
5	.935
TOTAL SETTLE.	7.356

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
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Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

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0 SOIL COMPRESSIBILITY NO. 1
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F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

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Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
2	.317
3	4.975
4	1.041
5	.935
TOTAL SETTLE.	7.356

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	CENTER COORD Y FT	AREA DIMEN. XLEN FT	AREA DIMEN. YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
2	.317
3	4.975
4	1.041
5	.935

TOTAL SETTLE. 7.356

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 7300 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 7300 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 7300 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 7300 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.125	1.500	0

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 7300 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.125
9.000	.125
20.500	.125
33.500	.125
50.000	.125

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 7300 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.088
2	.317
3	4.975
4	1.041
5	.935
TOTAL SETTLE.	7.356

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
File No.: 16715-023-00
Analyses Loc: Boring 3

SG:	2.7	Initial Fill El	4.5 ft	Initial Stress	432.2977 psf
e0:	2.16	Initial Mudline El	-1.5 ft	Sett @ 30 day	0.4322 ft
Vvi:	0.683544	Initial γ	95.97 pcf		
Vs:	0.316456	Water El.	0.8 ft		

Construction period is 0 - 30 days

Ending Fill El	4.5	ft
Ending Mudline El	-1.9322	ft
Ending γ	95.97	pcf
Fill Thickness	6.4322	ft
Ending Stress:	446.8	psf
	0.447	ksf

30 - 45 days (0 - 15 days PSDDF)

Total Foundation Settlement:	0.5248	ft
Ending Mudline El:	-2.025	ft
PSDDF Settlement:	2.063	ft
Ending Fill El:	**2.344**	**ft**
Ending Fill Thickness:	4.3692	ft
Vv30:	0.3628	
e15:	1.1465	
MC:	0.4246	
Ending γ:	111.82	pcf
Effective Stress:	312.30	psf
	0.312	ksf

45 - 60 days (15 - 30 days PSDDF)

Total Foundation Settlement:	0.4336	ft
Ending Mudline El:	-2.025	ft
PSDDF Settlement:	2.092	ft
Ending Fill El:	**2.315**	**ft**
Ending Fill Thickness:	4.3402	ft
Vv30:	0.3583	
e30:	1.1322	
MC:	0.4194	
Ending γ:	112.15	pcf
Effective Stress:	310.49	psf
	0.310	ksf

60 - 90 days (30 - 60 days PSDDF)

Total Foundation Settlement:	0.4943	ft
Ending Mudline El:	-2.025	ft
PSDDF Settlement:	2.191	ft
Ending Fill El:	**2.216**	**ft**
Ending Fill Thickness:	4.2412	ft
Vv30:	0.3429	
e60:	1.0836	
MC:	0.4013	
Ending γ:	113.31	pcf
Effective Stress:	304.31	psf
	0.304	ksf

90 - 180 days (60 - 150 days PSDDF)

Total Foundation Settlement:	0.6051	ft
Ending Mudline El:	-2.105	ft
PSDDF Settlement:	2.286	ft
Ending Fill El:	**2.041**	**ft**
Ending Fill Thickness:	4.1462	ft
Vv30:	0.3281	
e150:	1.0369	
MC:	0.3841	
Ending γ:	114.48	pcf
Effective Stress:	293.37	psf
	0.293	ksf

180 - 365 days (150 - 365 days PSDDF)

Total Foundation Settlement:	0.7293	ft
Ending Mudline El:	-2.229	ft
PSDDF Settlement:	2.35	ft
Ending Fill El:	**1.853**	**ft**
Ending Fill Thickness:	4.0822	ft
Vv30:	0.3182	
e365:	1.0055	
MC:	0.3724	
Ending γ:	115.29	pcf
Effective Stress:	281.63	psf
	0.282	ksf

365 - 1095 days

Total Foundation Settlement:	0.9688	ft
Ending Mudline El:	-2.469	ft
PSDDF Settlement:	2.366	ft
Ending Fill El:	**1.597**	**ft**
Ending Fill Thickness:	4.0662	ft
Vv30:	0.3157	
e1095:	0.9976	
MC:	0.3695	
Ending γ:	115.50	pcf
Effective Stress:	265.68	psf
	0.266	ksf

1095 - 1825 days

Total Foundation Settlement:	1.0451	ft
Ending Mudline El:	-2.545	ft
PSDDF Settlement:	2.366	ft
Ending Fill El:	**1.521**	**ft**
Ending Fill Thickness:	4.0662	ft
Vv30:	0.3157	
e1825:	0.9976	
MC:	0.3695	
Ending γ:	115.50	pcf
Effective Stress:	260.92	psf
	0.261	ksf

1825 - 3650 days

Total Foundation Settlement:	1.1352	ft
Ending Mudline El:	-2.635	ft
PSDDF Settlement:	2.366	ft
Ending Fill El:	**1.431**	**ft**
Ending Fill Thickness:	4.0662	ft
Vv30:	0.3157	
e3650:	0.9976	
MC:	0.3695	
Ending γ:	115.50	pcf
Effective Stress:	255.30	psf
	0.255	ksf

3650 - 7300 days

Total Foundation Settlement:	1.1385	ft
Ending Mudline El:	-2.639	ft
PSDDF Settlement:	2.366	ft
Ending Fill El:	**1.428**	**ft**
Ending Fill Thickness:	4.0662	ft
Vv30:	0.3157	
e7300:	0.9976	
MC:	0.3695	
Ending γ:	115.50	pcf
Effective Stress:	255.09	psf
	0.255	ksf

****
Consolidation and desiccation of soft layers---dredged fill
****

Problem PSDDF Boring B-3 Initial Fill El 4.5 ft

**********Soil data for dredged fill**********

Material Type	Specific Gravity	Ca/Cc	Cr/Cc	Saturation Limit	Disication Limit
1	2.700	.015	.121	1.715	1.648

Material type : 1

I	Void Ratio	Effective Stress	Perm-eability	k/1+e PK	Beta	Dsde	Alpha
1	2.160	.000E+00	.343E+01	.109E+01	.123E+01	-.114E+02	-.123E+02
2	1.280	.100E+02	.320E-02	.140E-02	.108E+01	-.250E+02	-.351E-01
3	1.160	.250E+02	.131E-02	.606E-03	.540E-02	-.200E+03	-.121E+00
4	1.080	.500E+02	.672E-03	.323E-03	.254E-02	-.441E+03	-.143E+00
5	.990	.100E+03	.347E-03	.174E-03	.127E-02	-.833E+03	-.145E+00
6	.900	.200E+03	.181E-03	.953E-04	.677E-03	-.167E+04	-.159E+00
7	.810	.400E+03	.950E-04	.525E-04	.417E-03	-.286E+04	-.150E+00
8	.760	.600E+03	.650E-04	.369E-04	.311E-03	-.400E+04	-.148E+00

Summary of lifts and print detail

Time days	Material Type	Fill Height	# Sub-layers	Void ratio	Start Day	Dessic. Month	Print detai
0.	1	6.4	12	2.16	30.	6	1
15.					30.	6	1
30.					30.	6	1
60.					30.	6	1
110.					30.	6	1
150.					30.	6	1
365.					30.	6	1
545.					30.	6	1
730.					30.	6	1
1095.					30.	6	1
1460.					30.	6	1
1825.					30.	6	1
3650.					30.	6	1
7300.					30.	6	1
*****					30.	6	1

Summary of monthly rainfall and evaporation potential

Month	Rainfall	Evaporation
1	.540	.190
2	.420	.280
3	.500	.400
4	.400	.540
5	.480	.600
6	.360	.640
7	.550	.560
8	.490	.530
9	.430	.460
10	.260	.440
11	.430	.290
12	.390	.210

**********Calculation data**********

tau	Lower layer Void ratio	Lower layer Permeability	drainage path Length
.721E-01	7.319	.10000E-03	z = 6.01

Summary of desiccation parameters

Parameter	Value
Surface Drainage Efficiency	.80
maximum evaporation efficiency	.75
saturation at desiccation limit	.32
maximum crust thickness	.08
time to desic. after initial fill	30.00
month of initial desiccation	6
elevation of fixed water table	.80
elevation of top of incompres. found.	-1.93

**********Initial Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	6.43	2.04	2.16	2.16	2.16	1
5.90	5.90	1.87	2.16	2.16	1.22	1
5.36	5.36	1.70	2.16	2.16	1.12	1
4.82	4.82	1.53	2.16	2.16	1.07	1
4.29	4.29	1.36	2.16	2.16	1.04	1
3.75	3.75	1.19	2.16	2.16	1.01	1
3.22	3.22	1.02	2.16	2.16	.98	1
2.68	2.68	.85	2.16	2.16	.97	1
2.14	2.14	.68	2.16	2.16	.95	1
1.61	1.61	.51	2.16	2.16	.93	1
1.07	1.07	.34	2.16	2.16	.92	1
.54	.54	.17	2.16	2.16	.90	1
.00	.00	.00	2.16	2.16	.89	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
6.43	.00	.00	.00	.00	.00	1
5.90	51.44	.00	51.44	33.45	17.99	1
5.36	102.88	.00	102.88	66.89	35.99	1
4.82	154.32	.00	154.32	100.34	53.98	1
4.29	205.77	.00	205.77	133.79	71.98	1
3.75	257.21	.00	257.21	167.24	89.97	1
3.22	308.65	.00	308.65	200.68	107.96	1
2.68	360.09	.00	360.09	234.13	125.96	1
2.14	411.53	.00	411.53	267.58	143.95	1
1.61	462.97	.00	462.97	301.03	161.94	1
1.07	514.41	.00	514.41	334.47	179.94	1
.54	565.85	.00	565.85	367.92	197.93	1
.00	617.30	.00	617.30	401.37	215.93	1

Time = 0. Degree of Consolidation = 0.%

Total Settlement = .000

Settlement at End of Primary Consolidation = 2.277

Settlement caused by Primary Consolidation at time 0. = .000

Settlement caused by Secondary Compression at time 0. = .000

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material

6.43	4.37	2.04	2.16	2.16	2.16	1
5.90	3.94	1.87	2.16	1.22	1.22	1
5.36	3.57	1.70	2.16	1.16	1.12	1
4.82	3.20	1.53	2.16	1.16	1.07	1
4.29	2.83	1.36	2.16	1.16	1.04	1
3.75	2.47	1.19	2.16	1.16	1.01	1
3.22	2.10	1.02	2.16	1.15	.98	1
2.68	1.74	.85	2.16	1.14	.97	1
2.14	1.38	.68	2.16	1.12	.95	1
1.61	1.02	.51	2.16	1.09	.93	1
1.07	.67	.34	2.16	1.04	.92	1
.54	.33	.17	2.16	.97	.90	1
.00	.00	.00	2.16	.89	.89	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.37	.00	.00	.00	.00	.00	1
3.94	44.95	17.99	26.96	26.96	.00	1
3.57	86.04	24.90	61.13	50.05	11.08	1
3.20	126.90	24.90	102.01	72.92	29.08	1
2.83	167.76	25.18	142.58	95.79	46.80	1
2.47	208.60	25.85	182.75	118.63	64.12	1
2.10	249.41	27.01	222.40	141.45	80.96	1
1.74	290.15	29.93	260.22	164.20	96.03	1
1.38	330.75	36.22	294.53	186.80	107.73	1
1.02	371.05	47.79	323.27	209.11	114.16	1
.67	410.87	74.24	336.64	230.94	105.70	1
.33	450.11	117.51	332.60	252.17	80.43	1
.00	488.59	215.93	272.66	272.66	.00	1

Time = 15. Degree of Consolidation = 91.%

Total Settlement = 2.063

Settlement at End of Primary Consolidation = 2.277

Settlement caused by Primary Consolidation at time 15. = 2.063

Settlement caused by Secondary Compression at time 15. = .000

Surface Elevation = 2.44

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.34	2.04	2.16	2.16	2.16	1
5.90	3.91	1.87	2.16	1.22	1.22	1
5.36	3.54	1.70	2.16	1.16	1.12	1
4.82	3.17	1.53	2.16	1.16	1.07	1
4.29	2.81	1.36	2.16	1.16	1.04	1
3.75	2.44	1.19	2.16	1.15	1.01	1
3.22	2.08	1.02	2.16	1.14	.98	1
2.68	1.72	.85	2.16	1.12	.97	1
2.14	1.36	.68	2.16	1.09	.95	1

1.61	1.01	.51	2.16	1.06	.93	1
1.07	.66	.34	2.16	1.01	.92	1
.54	.33	.17	2.16	.95	.90	1
.00	.00	.00	2.16	.89	.89	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
4.34	.00	.00	.00	.00	.00	1
3.91	44.95	17.99	26.96	26.96	.00	1
3.54	86.03	24.92	61.12	50.05	11.07	1
3.17	126.89	25.48	101.40	72.91	28.50	1
2.81	167.71	26.49	141.22	95.74	45.48	1
2.44	208.49	28.40	180.09	118.52	61.57	1
2.08	249.18	31.87	217.31	141.21	76.09	1
1.72	289.71	37.65	252.07	163.75	88.31	1
1.36	330.00	46.18	283.82	186.05	97.77	1
1.01	369.95	63.86	306.09	208.01	98.08	1
.66	409.46	90.41	319.05	229.52	89.53	1
.33	448.40	143.33	305.07	250.47	54.60	1
.00	486.74	215.93	270.81	270.81	.00	1

Time = 30. Degree of Consolidation = 92.%

Total Settlement = 2.092

Settlement at End of Primary Consolidation = 2.277

Settlement caused by Primary Consolidation at time 30. = 2.092

Settlement caused by Secondary Compression at time 30. = .000

Settlement Due to Desiccation = .000

Surface Elevation = 2.41

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
6.43	4.24	2.04	2.16	1.65	1.65	1
5.90	3.85	1.87	2.16	1.12	1.12	1
5.36	3.49	1.70	2.16	1.16	1.07	1
4.82	3.13	1.53	2.16	1.15	1.04	1
4.29	2.76	1.36	2.16	1.13	1.00	1
3.75	2.40	1.19	2.16	1.12	.98	1
3.22	2.04	1.02	2.16	1.10	.96	1
2.68	1.69	.85	2.16	1.08	.95	1
2.14	1.34	.68	2.16	1.05	.93	1
1.61	.99	.51	2.16	1.01	.92	1
1.07	.66	.34	2.16	.97	.90	1
.54	.32	.17	2.16	.93	.89	1
.00	.00	.00	2.16	.89	.88	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
4.24	.00	.00	.00	.00	.00	1
3.85	38.58	38.58	.00	.00	.00	1
3.49	79.29	24.98	54.31	22.71	31.60	1
3.13	120.07	29.23	90.83	45.50	45.34	1
2.76	160.72	32.95	127.77	68.16	59.61	1
2.40	201.23	37.52	163.71	90.68	73.03	1
2.04	241.57	43.38	198.19	113.02	85.17	1
1.69	281.69	51.22	230.47	135.14	95.33	1
1.34	321.52	67.36	254.16	156.98	97.18	1
.99	361.02	86.64	274.38	178.49	95.89	1
.66	400.13	117.01	283.12	199.60	83.52	1
.32	438.81	163.14	275.67	220.29	55.38	1
.00	477.05	215.93	261.12	240.53	20.59	1

Time = 60. Degree of Consolidation = 91.%

Total Settlement = 2.191

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 60. = 2.147

Settlement caused by Secondary Compression at time 60. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.31

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
6.43	4.18	2.04	2.16	1.65	1.65	1
5.90	3.79	1.87	2.16	1.12	1.12	1
5.36	3.43	1.70	2.16	1.11	1.07	1
4.82	3.07	1.53	2.16	1.10	1.04	1
4.29	2.72	1.36	2.16	1.09	1.00	1
3.75	2.36	1.19	2.16	1.08	.98	1
3.22	2.01	1.02	2.16	1.06	.96	1
2.68	1.67	.85	2.16	1.03	.95	1
2.14	1.32	.68	2.16	1.01	.93	1
1.61	.98	.51	2.16	.98	.92	1
1.07	.65	.34	2.16	.95	.90	1
.54	.32	.17	2.16	.92	.89	1
.00	.00	.00	2.16	.89	.88	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
4.18	.00	.00	.00	.00	.00	1
3.79	38.58	38.58	.00	.00	.00	1
3.43	78.95	40.14	38.81	22.38	16.43	1
3.07	119.26	42.62	76.65	44.69	31.95	1
2.72	159.46	46.40	113.06	66.90	46.16	1

2.36	199.51	52.49	147.02	88.95	58.07	1
2.01	239.37	63.44	175.93	110.82	65.11	1
1.67	279.01	76.22	202.78	132.46	70.32	1
1.32	318.38	90.57	227.81	153.84	73.97	1
.98	357.47	112.38	245.09	174.94	70.16	1
.65	396.26	144.96	251.30	195.73	55.57	1
.32	434.73	177.21	257.53	216.21	41.32	1
.00	472.91	215.93	256.98	236.39	20.59	1

Time = 110. Degree of Consolidation = 93.%

Total Settlement = 2.255

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 110. = 2.211

Settlement caused by Secondary Compression at time 110. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.25

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.15	2.04	2.16	1.65	1.65	1
5.90	3.76	1.87	2.16	1.12	1.12	1
5.36	3.40	1.70	2.16	1.10	1.07	1
4.82	3.04	1.53	2.16	1.08	1.04	1
4.29	2.69	1.36	2.16	1.07	1.00	1
3.75	2.34	1.19	2.16	1.05	.98	1
3.22	2.00	1.02	2.16	1.03	.96	1
2.68	1.65	.85	2.16	1.01	.95	1
2.14	1.32	.68	2.16	.99	.93	1
1.61	.98	.51	2.16	.96	.92	1
1.07	.65	.34	2.16	.94	.90	1
.54	.32	.17	2.16	.92	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.15	.00	.00	.00	.00	.00	1
3.76	38.58	38.58	.00	.00	.00	1
3.40	78.87	44.63	34.24	22.29	11.95	1
3.04	118.98	49.40	69.59	44.41	25.17	1
2.69	158.93	57.47	101.46	66.37	35.09	1
2.34	198.71	66.93	131.78	88.15	43.62	1
2.00	238.30	77.52	160.78	109.75	51.03	1
1.65	277.67	89.19	188.49	131.13	57.36	1
1.32	316.82	103.64	213.18	152.28	60.90	1
.98	355.72	130.23	225.48	173.18	52.30	1
.65	394.36	157.03	237.33	193.83	43.50	1
.32	432.75	183.15	249.59	214.22	35.37	1

.00	470.89	215.93	254.97	234.38	20.59	1

Time = 150. Degree of Consolidation = 95.%

Total Settlement = 2.286

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 150. = 2.243

Settlement caused by Secondary Compression at time 150. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.21

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.08	2.04	2.16	1.65	1.65	1
5.90	3.69	1.87	2.16	1.12	1.12	1
5.36	3.34	1.70	2.16	1.07	1.07	1
4.82	2.99	1.53	2.16	1.04	1.04	1
4.29	2.64	1.36	2.16	1.02	1.00	1
3.75	2.30	1.19	2.16	1.00	.98	1
3.22	1.97	1.02	2.16	.98	.96	1
2.68	1.63	.85	2.16	.96	.95	1
2.14	1.30	.68	2.16	.94	.93	1
1.61	.97	.51	2.16	.93	.92	1
1.07	.65	.34	2.16	.92	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.08	.00	.00	.00	.00	.00	1
3.69	38.58	38.58	.00	.00	.00	1
3.34	78.73	53.95	24.78	22.16	2.62	1
2.99	118.50	71.28	47.22	43.93	3.29	1
2.64	157.97	85.06	72.90	65.40	7.50	1
2.30	197.19	96.72	100.47	86.64	13.83	1
1.97	236.21	114.11	122.10	107.66	14.44	1
1.63	275.05	132.83	142.21	128.50	13.71	1
1.30	313.71	150.07	163.64	149.17	14.47	1
.97	352.21	166.08	186.13	169.68	16.45	1
.65	390.57	181.02	209.54	190.04	19.50	1
.32	428.78	194.96	233.83	210.26	23.56	1
.00	466.87	215.93	250.95	230.36	20.59	1

Time = 365. Degree of Consolidation = 97.%

Total Settlement = 2.350

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 365. = 2.307

Settlement caused by Secondary Compression at time 365. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.15

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.33	1.70	2.16	1.07	1.07	1
4.82	2.98	1.53	2.16	1.04	1.04	1
4.29	2.64	1.36	2.16	1.01	1.00	1
3.75	2.30	1.19	2.16	.99	.98	1
3.22	1.96	1.02	2.16	.97	.96	1
2.68	1.63	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.94	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.65	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.33	78.71	55.92	22.79	22.14	.66	1
2.98	118.43	74.57	43.86	43.86	.00	1
2.64	157.82	89.25	68.58	65.26	3.32	1
2.30	196.97	102.80	94.17	86.41	7.76	1
1.96	235.90	123.64	112.25	107.34	4.91	1
1.63	274.64	141.80	132.84	128.09	4.75	1
1.30	313.22	157.92	155.30	148.68	6.62	1
.97	351.66	172.47	179.19	169.12	10.07	1
.65	389.96	185.77	204.19	189.43	14.76	1
.32	428.14	198.07	230.07	209.62	20.46	1
.00	466.21	219.24	246.96	229.69	17.27	1

Time = 545. Degree of Consolidation = 98.%

Total Settlement = 2.361

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 545. = 2.317

Settlement caused by Secondary Compression at time 545. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.14

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.99	.98	1
3.22	1.96	1.02	2.16	.97	.96	1
2.68	1.63	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	89.89	67.93	65.25	2.67	1
2.29	196.94	104.99	91.96	86.39	5.57	1
1.96	235.85	126.40	109.45	107.30	2.16	1
1.63	274.57	144.87	129.69	128.02	1.67	1
1.30	313.12	161.14	151.98	148.58	3.40	1
.97	351.52	175.69	175.83	168.99	6.84	1
.64	389.79	188.90	200.89	189.27	11.63	1
.32	427.95	202.08	225.87	209.42	16.45	1
.00	465.99	224.79	241.20	229.47	11.73	1

Time = 730. Degree of Consolidation = 98.%

Total Settlement = 2.364

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 730. = 2.321

Settlement caused by Secondary Compression at time 730. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.14

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.98	.98	1
3.22	1.96	1.02	2.16	.96	.96	1
2.68	1.62	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	90.20	67.61	65.25	2.36	1
2.29	196.93	106.09	90.84	86.38	4.47	1
1.96	235.83	127.85	107.98	107.28	.71	1
1.62	274.53	146.55	127.98	127.98	.00	1
1.30	313.06	163.11	149.96	148.52	1.43	1
.97	351.45	177.82	173.62	168.91	4.71	1
.64	389.70	191.08	198.62	189.17	9.45	1
.32	427.83	206.37	221.46	209.31	12.15	1
.00	465.85	228.87	236.98	229.33	7.65	1

Time = 1095. Degree of Consolidation = 98.%

Total Settlement = 2.366

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 1095. = 2.323

Settlement caused by Secondary Compression at time 1095. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.13

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1

5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.98	.98	1
3.22	1.96	1.02	2.16	.96	.96	1
2.68	1.62	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses ***** ***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	90.20	67.61	65.25	2.36	1
2.29	196.93	106.09	90.84	86.38	4.47	1
1.96	235.83	127.85	107.98	107.28	.71	1
1.62	274.53	146.55	127.98	127.98	.00	1
1.30	313.06	163.15	149.91	148.52	1.39	1
.97	351.45	177.90	173.54	168.91	4.63	1
.64	389.70	191.19	198.51	189.17	9.34	1
.32	427.83	206.62	221.21	209.31	11.91	1
.00	465.85	229.10	236.74	229.33	7.41	1

Time = 1460. Degree of Consolidation = 98.%

Total Settlement = 2.366

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 1460. = 2.323

Settlement caused by Secondary Compression at time 1460. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.13

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.98	.98	1
3.22	1.96	1.02	2.16	.96	.96	1
2.68	1.62	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1

1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	90.20	67.61	65.25	2.36	1
2.29	196.93	106.09	90.84	86.38	4.47	1
1.96	235.83	127.85	107.98	107.28	.71	1
1.62	274.53	146.55	127.98	127.98	.00	1
1.30	313.06	163.15	149.91	148.52	1.39	1
.97	351.45	177.90	173.54	168.91	4.63	1
.64	389.70	191.19	198.51	189.17	9.34	1
.32	427.83	206.62	221.21	209.31	11.91	1
.00	465.85	229.10	236.74	229.33	7.41	1

Time = 1825. Degree of Consolidation = 98.%

Total Settlement = 2.366

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 1825. = 2.323

Settlement caused by Secondary Compression at time 1825. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.13

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.98	.98	1
3.22	1.96	1.02	2.16	.96	.96	1
2.68	1.62	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

	***** Stresses *****		***** Pore Pressures *****			

XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	90.20	67.61	65.25	2.36	1
2.29	196.93	106.09	90.84	86.38	4.47	1
1.96	235.83	127.85	107.98	107.28	.71	1
1.62	274.53	146.55	127.98	127.98	.00	1
1.30	313.06	163.15	149.91	148.52	1.39	1
.97	351.45	177.90	173.54	168.91	4.63	1
.64	389.70	191.19	198.51	189.17	9.34	1
.32	427.83	206.62	221.21	209.31	11.91	1
.00	465.85	229.10	236.74	229.33	7.41	1

Time = 3650. Degree of Consolidation = 98.%

Total Settlement = 2.366

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 3650. = 2.323

Settlement caused by Secondary Compression at time 3650. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.13

**********Current Conditions in Dredged Fill**********

	***** Coordinates *****		***** Void Ratios *****			
A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.98	.98	1
3.22	1.96	1.02	2.16	.96	.96	1
2.68	1.62	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

	***** Stresses *****		***** Pore Pressures *****			
XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	90.20	67.61	65.25	2.36	1

2.29	196.93	106.09	90.84	86.38	4.47	1
1.96	235.83	127.85	107.98	107.28	.71	1
1.62	274.53	146.55	127.98	127.98	.00	1
1.30	313.06	163.15	149.91	148.52	1.39	1
.97	351.45	177.90	173.54	168.91	4.63	1
.64	389.70	191.19	198.51	189.17	9.34	1
.32	427.83	206.62	221.21	209.31	11.91	1
.00	465.85	229.10	236.74	229.33	7.41	1

Time = 7300. Degree of Consolidation = 98.%

Total Settlement = 2.366

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time 7300. = 2.323

Settlement caused by Secondary Compression at time 7300. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.13

**********Current Conditions in Dredged Fill**********

***** Coordinates *****

***** Void Ratios *****

A	XI	Z	Einitial	E	Eeop	Material
6.43	4.07	2.04	2.16	1.65	1.65	1
5.90	3.68	1.87	2.16	1.12	1.12	1
5.36	3.32	1.70	2.16	1.07	1.07	1
4.82	2.97	1.53	2.16	1.04	1.04	1
4.29	2.63	1.36	2.16	1.01	1.00	1
3.75	2.29	1.19	2.16	.98	.98	1
3.22	1.96	1.02	2.16	.96	.96	1
2.68	1.62	.85	2.16	.95	.95	1
2.14	1.30	.68	2.16	.93	.93	1
1.61	.97	.51	2.16	.92	.92	1
1.07	.64	.34	2.16	.91	.90	1
.54	.32	.17	2.16	.90	.89	1
.00	.00	.00	2.16	.89	.88	1

***** Stresses *****

***** Pore Pressures *****

XI	Total	Effective	Total	Static	Excess	Material
4.07	.00	.00	.00	.00	.00	1
3.68	38.58	38.58	.00	.00	.00	1
3.32	78.71	55.94	22.77	22.14	.63	1
2.97	118.43	74.57	43.86	43.86	.00	1
2.63	157.82	90.20	67.61	65.25	2.36	1
2.29	196.93	106.09	90.84	86.38	4.47	1
1.96	235.83	127.85	107.98	107.28	.71	1
1.62	274.53	146.55	127.98	127.98	.00	1
1.30	313.06	163.15	149.91	148.52	1.39	1
.97	351.45	177.90	173.54	168.91	4.63	1
.64	389.70	191.19	198.51	189.17	9.34	1
.32	427.83	206.62	221.21	209.31	11.91	1

.00	465.85	229.10	236.74	229.33	7.41	1

Time = 18250. Degree of Consolidation = 98.%

Total Settlement = 2.366

Settlement at End of Primary Consolidation = 2.371

Settlement caused by Primary Consolidation at time18250. = 2.323

Settlement caused by Secondary Compression at time18250. = .000

Settlement Due to Desiccation = .043

Surface Elevation = 2.13

Project: Bayou Bonfouca Marsh Creation (PO-104)
Project No.: 16715-023-00
Boring: B-3 (Initial Fill Elevation 4.5 ft)

Initial Fill Elevation = 2 ft				Settlement 45 days		Settlement 60 days		Settlement 90 days		Settlement 150 days		Settlement 180 days		Settlement 365 days		Settlement 545 days	
Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.082191781	5.186807148	0.432233929	5.332484583	0.444373715	3.960132394	0.330011033	3.938185791	0.328182149	3.873259314	0.32277161	3.873259314	0.32277161	3.754160695	0.312846725	3.632971883	0.302747657
45	0.123287671	6.126120463	0.510510039	6.297929636	0.52482747	4.679183118	0.389931926	4.653298959	0.387774913	4.576694021	0.381391168	4.576694021	0.381391168	4.436158047	0.369679837	4.29313318	0.357761098
60	0.164383562	6.809385335	0.567448778	7.000054152	0.583337846	5.203348761	0.433612397	5.174622358	0.43121853	5.089569741	0.424130812	5.089569741	0.424130812	4.93351804	0.411126503	4.774675418	0.397889618
90	0.246575342	7.798848294	0.649904024	8.016609231	0.668050769	5.963994532	0.496999544	5.931177736	0.494264811	5.83396788	0.48616399	5.83396788	0.48616399	5.655547577	0.471295631	5.47389295	0.456157746
150	0.410958904	9.155445216	0.762953768	9.409957855	0.784163155	7.009484244	0.584123687	6.971097696	0.580924808	6.857341484	0.571445124	6.857341484	0.571445124	6.648408151	0.554034013	6.43563901	0.536303251
180	0.493150685	9.690658768	0.807554897	9.959581594	0.829965133	7.422450411	0.618537534	7.381869933	0.615155828	7.26161136	0.60513428	7.26161136	0.60513428	7.040661179	0.586721765	6.815649785	0.567970815
365	1	12.01641928	1.001368273	12.34702267	1.028918556	9.222254269	0.768521189	9.172203862	0.764350322	9.023902464	0.751991872	9.023902464	0.751991872	8.751004118	0.729250343	8.47314961	0.706095801
545	1.493150685	13.50421261	1.125351051	13.87322877	1.156102398	10.37980541	0.864983784	10.3237953	0.860316275	10.15777584	0.84648132	10.15777584	0.84648132	9.852009833	0.821000819	9.540760387	0.795063366
730	2	14.69733241	1.2247777	15.09668593	1.258057161	11.31096068	0.942580057	11.25022617	0.937518847	11.07008881	0.9225074	11.07008881	0.9225074	10.73814038	0.894845032	10.40029605	0.866691338
1095	3	16.39398611	1.366165509	16.83610652	1.403008877	12.637433	1.053119417	12.5700205	1.047501708	12.36988575	1.030823813	12.36988575	1.030823813	12.00085721	1.000071434	11.62534529	0.968778774
1460	4	17.62980151	1.469150126	18.10300667	1.508583889	13.60401809	1.133668174	13.53175385	1.127646154	13.31706104	1.109755087	13.31706104	1.109755087	12.92104574	1.076753811	12.51812297	1.043176914
1825	5	18.52370977	1.543642481	19.01940287	1.584950239	14.30315745	1.191929787	14.22738559	1.185615466	14.00215918	1.166846598	14.00215918	1.166846598	13.58661981	1.132218317	13.16386802	1.096989001
3650	10	20.40596567	1.700497139	20.9490678	1.74575565	15.7749167	1.314576392	15.69176245	1.307646871	15.4443324	1.2870277	15.4443324	1.2870277	14.98764842	1.248970702	14.52311832	1.21025986
7300	20	20.85805997	1.738171664	21.41257992	1.78438166	16.12821052	1.344017543	16.04328465	1.336940388	15.79050927	1.315875773	15.79050927	1.315875773	15.32392503	1.276993752	14.84934674	1.237445562
18250	50	20.87699875	1.739749896	21.43199872	1.785999893	16.14299902	1.345249919	16.05799903	1.338166586	15.80499904	1.317083254	15.80499904	1.317083254	15.33799907	1.278166589	14.8629991	1.238583258

		Settlement 730 days		Settlement 1095 days		Settlement 4 years		Settlement 5 years		Settlement 10 years		Settlement 20 years		Settlement 50 years	
Time (days)	Time (years)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)	Settlement (in)	Foundation Settlement (ft)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.082191781	3.632971883	0.302747657	3.632971883	0.302747657	3.454897112	0.287908093	3.454897112	0.287908093	3.398950884	0.283245907	3.331334759	0.27761123	3.331334759	0.27761123
45	0.123287671	4.29313318	0.357761098	4.29313318	0.357761098	4.08299566	0.340249638	4.08299566	0.340249638	4.016962881	0.334746907	3.93713487	0.328094572	3.93713487	0.328094572
60	0.164383562	4.774675418	0.397889618	4.774675418	0.397889618	4.541325907	0.378443826	4.541325907	0.378443826	4.467982945	0.372331912	4.379291646	0.36494097	4.379291646	0.36494097
90	0.246575342	5.47389295	0.456157746	5.47389295	0.456157746	5.207084532	0.433923711	5.207084532	0.433923711	5.123187275	0.426932273	5.021689942	0.418474162	5.021689942	0.418474162
150	0.410958904	6.43563901	0.536303251	6.43563901	0.536303251	6.123188881	0.51026574	6.123188881	0.51026574	6.024870461	0.502072538	5.905875738	0.492156311	5.905875738	0.492156311
180	0.493150685	6.815649785	0.567970815	6.815649785	0.567970815	6.485227308	0.540435609	6.485227308	0.540435609	6.381224806	0.531768734	6.2553432	0.5212786	6.2553432	0.5212786
365	1	8.47314961	0.706095801	8.47314961	0.706095801	8.064970167	0.672080847	8.064970167	0.672080847	7.936356496	0.661363041	7.780729499	0.648394125	7.780729499	0.648394125
545	1.493150685	9.540760387	0.795063366	9.540760387	0.795063366	9.083268123	0.75693901	9.083268123	0.75693901	8.939040254	0.744920021	8.764582904	0.730381909	8.764582904	0.730381909
730	2	10.40029605	0.866691338	10.40029605	0.866691338	9.903458162	0.82528818	9.903458162	0.82528818	9.746773052	0.812231088	9.557299227	0.796441602	9.557299227	0.796441602
1095	3	11.62534529	0.968778774	11.62534529	0.968778774	11.07273018	0.922727515	11.07273018	0.922727515	10.89838725	0.908198938	10.68763111	0.890635926	10.68763111	0.890635926
1460	4	12.51812297	1.043176914	12.51812297	1.043176914	11.92490411	0.993742009	11.92490411	0.993742009	11.73770745	0.978142287	11.51145829	0.95928819	11.51145829	0.95928819
1825	5	13.16386802	1.096989001	13.16386802	1.096989001	12.5412744	1.0451062	12.5412744	1.0451062	12.34477874	1.028731562	12.10732067	1.008943389	12.10732067	1.008943389
3650	10	14.52311832	1.21025986	14.52311832	1.21025986	13.83863089	1.15321924	13.83863089	1.15321924	13.62254173	1.135211811	13.36146329	1.113455274	13.36146329	1.113455274
7300	20	14.84934674	1.237445562	14.84934674	1.237445562	14.14997165	1.179164304	14.14997165	1.179164304	13.92916948	1.160764123	13.6624081	1.138534008	13.6624081	1.138534008
18250	50	14.8629991	1.238583258	14.8629991	1.238583258	14.16299914	1.180249928	14.16299914	1.180249928	13.94199915	1.161833263	13.67499917	1.139583264	13.67499917	1.139583264

Project: Bayou Bonfouca Marsh Creation Project (PO-104)
Project No.: 16715-023-00
Boring: B-3 (Initial fill to 4.5 ft.)

Initial Fill Elevation = 4.5 ft

Layer 1

Total layer sett@ 30 days:	0.171	in	(from SETANL)
Total layer sett@ 45:	0.174		
Total layer sett@ 60:	0.149		
Total layer sett@ 90:	0.149		
Total layer sett@ 150:	0.147		
Total layer sett@ 180:	0.147		
Total layer sett@ 365:	0.145		
Total layer sett@ 545:	0.142		
Total layer sett@ 730:	0.142		
Total layer sett@ 1095:	0.142		
Total layer sett@ 1460:	0.138		
Total layer sett@ 1825:	0.138		
Total layer sett@ 3650:	0.137		
Total layer sett@ 20:	0.135		
Total layer sett@ 50:	0.135		
Cv:	0.07	ft^2/day	
Hdr:	4	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730	Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.13125	40.87942	0.06990381	0.07113	0.06091	0.06091	0.060093	0.060093	0.059275	0.058049	0.058049	0.058049	0.056414	0.0564136	0.056005	0.055187	0.055187
45	0.196875	50.06686	0.08561433	0.087116	0.0746	0.0746	0.073598	0.073598	0.072597	0.071095	0.071095	0.071095	0.069092	0.06909227	0.068592	0.06759	0.06759
60	0.2625	57.81223	0.09885891	0.100593	0.08614	0.08614	0.084984	0.084984	0.083828	0.082093	0.082093	0.082093	0.079781	0.07978088	0.079203	0.078047	0.078047
90	0.39375	69.31894	0.11853539	0.120615	0.103285	0.103285	0.101899	0.101899	0.100512	0.098433	0.098433	0.098433	0.09566	0.09566014	0.094967	0.093581	0.093581
150	0.65625	83.94834	0.14355167	0.14607	0.125083	0.125083	0.123404	0.123404	0.121725	0.119207	0.119207	0.119207	0.115849	0.11584872	0.115009	0.11333	0.11333
180	0.7875	88.38967	0.15114633	0.153798	0.131701	0.131701	0.129933	0.129933	0.128165	0.125513	0.125513	0.125513	0.121978	0.12197774	0.121094	0.119326	0.119326
365	1.596875	98.42476	0.16830634	0.171259	0.146653	0.146653	0.144684	0.144684	0.142716	0.139763	0.139763	0.139763	0.135826	0.13582617	0.134842	0.132873	0.132873
545	2.384375	99.77442	0.17061426	0.173607	0.148664	0.148664	0.146668	0.146668	0.144673	0.14168	0.14168	0.14168	0.137689	0.1376887	0.136691	0.134695	0.134695
730	3.19375	99.96939	0.17094766	0.173947	0.148954	0.148954	0.146955	0.146955	0.144956	0.141957	0.141957	0.141957	0.137958	0.13795776	0.136958	0.134959	0.134959
1095	4.790625	99.99941	0.17099898	0.173999	0.148999	0.148999	0.146999	0.146999	0.144999	0.141999	0.141999	0.141999	0.137999	0.13799918	0.136999	0.134999	0.134999
1460	6.3875	99.99999	0.17099998	0.174	0.149	0.149	0.147	0.147	0.145	0.142	0.142	0.142	0.138	0.13799998	0.137	0.135	0.135
1825	7.984375	100	0.171	0.174	0.149	0.149	0.147	0.147	0.145	0.142	0.142	0.142	0.138	0.138	0.137	0.135	0.135
3650	15.96875	100	0.171	0.174	0.149	0.149	0.147	0.147	0.145	0.142	0.142	0.142	0.138	0.138	0.137	0.135	0.135
7300	31.9375	100	0.171	0.174	0.149	0.149	0.147	0.147	0.145	0.142	0.142	0.142	0.138	0.138	0.137	0.135	0.135
18250	79.84375	100	0.171	0.174	0.149	0.149	0.147	0.147	0.145	0.142	0.142	0.142	0.138	0.138	0.137	0.135	0.135

Layer 2

Total layer sett@ 30 days:	0.695	in	(from SETANL)
Total layer sett@ 45:	0.707		
Total layer sett@ 60:	0.58		
Total layer sett@ 90:	0.577		
Total layer sett@ 150:	0.571		
Total layer sett@ 180:	0.571		
Total layer sett@ 365:	0.559		
Total layer sett@ 545:	0.546		
Total layer sett@ 730:	0.546		
Total layer sett@ 1095:	0.546		
Total layer sett@ 1460:	0.527		
Total layer sett@ 1825:	0.527		
Total layer sett@ 3650:	0.521		
Total layer sett@ 20:	0.514		
Total layer sett@ 50:	0.514		
Cv:	0.02	ft^2/day	
Hdr:	7.07	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730
0	0	0	0	0	0	0	0	0	0	0	0
30	0.012004	12.3626414	0.08592	0.087404	0.071703	0.071332	0.070591	0.070591	0.069107	0.0675	0.0675
45	0.018005	15.1410816	0.105231	0.107047	0.087818	0.087364	0.086456	0.086456	0.084639	0.08267	0.08267
60	0.024007	17.4834151	0.12151	0.123608	0.101404	0.100879	0.09983	0.09983	0.097732	0.095459	0.095459
90	0.036011	21.412723	0.148818	0.151388	0.124194	0.123551	0.122267	0.122267	0.119697	0.116913	0.116913
150	0.060018	27.6437065	0.192124	0.195441	0.160333	0.159504	0.157846	0.157846	0.154528	0.150935	0.150935
180	0.072022	30.2821632	0.210461	0.214095	0.175637	0.174728	0.172911	0.172911	0.169277	0.165341	0.165341
365	0.146044	43.1218193	0.299697	0.304871	0.250107	0.248813	0.246226	0.246226	0.241051	0.235445	0.235445
545	0.218066	52.692511	0.366213	0.372536	0.305617	0.304036	0.300874	0.300874	0.294551	0.287701	0.287701
730	0.292088	60.5694739	0.420958	0.428226	0.351303	0.349486	0.345852	0.345852	0.338583	0.330709	0.330709
1095	0.438132	72.5020169	0.503889	0.512589	0.420512	0.418337	0.413987	0.413987	0.405286	0.395861	0.395861
1460	0.584176	80.8235104	0.561723	0.571422	0.468776	0.466352	0.461502	0.461502	0.451803	0.441296	0.441296
1825	0.730221	86.6267372	0.602056	0.612451	0.502435	0.499836	0.494639	0.494639	0.484243	0.472982	0.472982
3650	1.460441	97.7941361	0.679669	0.691405	0.567206	0.564272	0.558405	0.558405	0.546669	0.533956	0.533956
7300	2.920882	99.9399848	0.694583	0.706576	0.579652	0.576654	0.570657	0.570657	0.558665	0.545672	0.545672
18250	7.302205	99.9999988	0.695	0.707	0.58	0.577	0.571	0.571	0.559	0.546	0.546

Layer 4

Total layer sett@ 30 days:	3.186	in	(from SETANL)
Total layer sett@ 45:	3.279		
Total layer sett@ 60:	2.406		
Total layer sett@ 90:	2.392		
Total layer sett@ 150:	2.351		
Total layer sett@ 180:	2.351		
Total layer sett@ 365:	2.276		
Total layer sett@ 545:	2.2		
Total layer sett@ 730:	2.2		
Total layer sett@ 1095:	2.2		
Total layer sett@ 1460:	2.088		
Total layer sett@ 1825:	2.088		
Total layer sett@ 3650:	2.053		
Total layer sett@ 20:	2.011		
Total layer sett@ 50:	2.011		
Cv:	1	ft^2/day	
Hdr:	7.5	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730	Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0.533333	78.25981	2.49335759	2.566139	1.882931	1.871975	1.839888	1.839888	1.781193	1.721716	1.721716	1.721716	1.634065	1.63406486	1.606674	1.573805	1.573805
45	0.8	88.74237	2.82733193	2.909862	2.135141	2.122718	2.086333	2.086333	2.019776	1.952332	1.952332	1.952332	1.852941	1.8529407	1.821881	1.784609	1.784609
60	1.066667	94.17051	3.00027244	3.087851	2.265742	2.252559	2.213949	2.213949	2.143321	2.071751	2.071751	2.071751	1.96628	1.96628024	1.933321	1.893769	1.893769
90	1.6	98.43686	3.13619836	3.227745	2.368391	2.35461	2.314251	2.314251	2.240423	2.165611	2.165611	2.165611	2.055362	2.05536164	2.020909	1.979565	1.979565
150	2.666667	99.88761	3.18241922	3.275315	2.403296	2.389312	2.348358	2.348358	2.273442	2.197527	2.197527	2.197527	2.085653	2.08565327	2.050693	2.00874	2.00874
180	3.2	99.96986	3.18503984	3.278012	2.405275	2.391279	2.350291	2.350291	2.275314	2.199337	2.199337	2.199337	2.087371	2.08737074	2.052381	2.010394	2.010394
365	6.488889	99.99999	3.18599971	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.08799981	2.053	2.011	2.011
545	9.688889	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
730	12.97778	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
1095	19.46667	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
1460	25.95556	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
1825	32.44444	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
3650	64.88889	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
7300	129.7778	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011
18250	324.4444	100	3.186	3.279	2.406	2.392	2.351	2.351	2.276	2.2	2.2	2.2	2.088	2.088	2.053	2.011	2.011

Layer 5

Total layer sett@ 30 days:	2.997	in	(from SETANL)
Total layer sett@ 45:	3.091		
Total layer sett@ 60:	2.227		
Total layer sett@ 90:	2.213		
Total layer sett@ 150:	2.174		
Total layer sett@ 180:	2.174		
Total layer sett@ 365:	2.101		
Total layer sett@ 545:	2.027		
Total layer sett@ 730:	2.027		
Total layer sett@ 1095:	2.027		
Total layer sett@ 1460:	1.92		
Total layer sett@ 1825:	1.92		
Total layer sett@ 3650:	1.886		
Total layer sett@ 20:	1.845		
Total layer sett@ 50:	1.845		
Cv:	1	ft^2/day	
Hdr:	20	ft	

time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730
0	0	0	0	0	0	0	0	0	0	0	0
30	0.075	30.9019362	0.926131	0.955179	0.688186	0.68386	0.671808	0.671808	0.64925	0.626382	0.626382
45	0.1125	37.8469878	1.134274	1.16985	0.842852	0.837554	0.822794	0.822794	0.795165	0.767158	0.767158
60	0.15	43.7019372	1.309747	1.350827	0.973242	0.967124	0.95008	0.95008	0.918178	0.885838	0.885838
90	0.225	53.5237235	1.604106	1.654418	1.191973	1.18448	1.163606	1.163606	1.124533	1.084926	1.084926
150	0.375	67.8658532	2.03394	2.097734	1.511373	1.501871	1.475404	1.475404	1.425862	1.375641	1.375641
180	0.45	73.295717	2.196673	2.265571	1.632296	1.622034	1.593449	1.593449	1.539943	1.485704	1.485704
365	0.9125	91.4715881	2.741403	2.827387	2.037072	2.024266	1.988592	1.988592	1.921818	1.854129	1.854129
545	1.3625	97.1909915	2.912814	3.004174	2.164443	2.150837	2.112932	2.112932	2.041983	1.970061	1.970061
730	1.825	99.1029011	2.970114	3.063271	2.207022	2.193147	2.154497	2.154497	2.082152	2.008816	2.008816
1095	2.7375	99.9056347	2.994172	3.088083	2.224898	2.210912	2.171948	2.171948	2.099017	2.025087	2.025087
1460	3.65	99.9900738	2.996703	3.090693	2.226779	2.21278	2.173784	2.173784	2.100791	2.026799	2.026799
1825	4.5625	99.9989559	2.996969	3.090968	2.226977	2.212977	2.173977	2.173977	2.100978	2.026979	2.026979
3650	9.125	100	2.997	3.091	2.227	2.213	2.174	2.174	2.101	2.027	2.027
7300	18.25	100	2.997	3.091	2.227	2.213	2.174	2.174	2.101	2.027	2.027
18250	45.625	100	2.997	3.091	2.227	2.213	2.174	2.174	2.101	2.027	2.027

Layer 3

Total layer sett@ 30 days:	13.828	in	(from SETANL)
Total layer sett@ 45:	14.181		
Total layer sett@ 60:	10.781		
Total layer sett@ 90:	10.727		
Total layer sett@ 150:	10.562		
Total layer sett@ 180:	10.562		
Total layer sett@ 365:	10.257		
Total layer sett@ 545:	9.948		
Total layer sett@ 730:	9.948		
Total layer sett@ 1095:	9.948		
Total layer sett@ 1460:	9.49		
Total layer sett@ 1825:	9.49		
Total layer sett@ 3650:	9.345		
Total layer sett@ 20:	9.17		
Total layer sett@ 50:	9.17		
Cv:	0.02	ft^2/day	
Hdr:	7.5	ft	

Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr	time, t (days	Tv	U	Sett@30	Sett@45	Sett@60	Sett@90	Sett@150	Sett@180	Sett@365	Sett@545	Sett@730	Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.0675	0.065151	0.065151	0.064409	0.063544	0.063544	30	0.010667	11.65385	1.611494	1.652632	1.256402	1.250108	1.23088	1.23088	1.195335	1.159325	1.159325	1.159325	1.10595	1.10595	1.089052	1.068658	1.068658
0.08267	0.079794	0.079794	0.078885	0.077825	0.077825	45	0.016	14.27299	1.973669	2.024053	1.538771	1.531064	1.507514	1.507514	1.463981	1.419877	1.419877	1.419877	1.354507	1.354507	1.333811	1.308833	1.308833
0.095459	0.092138	0.092138	0.091089	0.089865	0.089865	60	0.021333	16.48103	2.278997	2.337175	1.77682	1.76792	1.740727	1.740727	1.69046	1.639533	1.639533	1.639533	1.56405	1.56405	1.540152	1.511311	1.511311
0.116913	0.112845	0.112845	0.11156	0.110061	0.110061	90	0.032	20.18506	2.79119	2.862443	2.176151	2.165251	2.131946	2.131946	2.070382	2.00801	2.00801	2.00801	1.915562	1.915562	1.886294	1.85097	1.85097
0.150935	0.145682	0.145682	0.144024	0.142089	0.142089	150	0.053333	26.0588	3.603411	3.695399	2.809399	2.795328	2.752331	2.752331	2.672851	2.592329	2.592329	2.592329	2.47298	2.47298	2.435195	2.389592	2.389592
0.165341	0.159587	0.159587	0.15777	0.15565	0.15565	180	0.064	28.54599	3.947339	4.048106	3.077543	3.062128	3.015027	3.015027	2.927962	2.839755	2.839755	2.839755	2.709014	2.709014	2.667622	2.617667	2.617667
0.235445	0.227252	0.227252	0.224665	0.221646	0.221646	365	0.129778	40.6495	5.621013	5.764506	4.382423	4.360472	4.2934	4.2934	4.169419	4.043812	4.043812	4.043812	3.857638	3.857638	3.798696	3.727559	3.727559
0.287701	0.27769	0.27769	0.274528	0.27084	0.27084	545	0.193778	49.67147	6.868571	7.043912	5.355082	5.328259	5.246301	5.246301	5.094803	4.941318	4.941318	4.941318	4.713823	4.713823	4.641799	4.554874	4.554874
0.330709	0.319201	0.319201	0.315567	0.311327	0.311327	730	0.259556	57.48708	7.949313	8.152242	6.197682	6.166639	6.071785	6.071785	5.896449	5.718814	5.718814	5.718814	5.455524	5.455524	5.372167	5.271565	5.271565
0.395861	0.382086	0.382086	0.377736	0.37266	0.37266	1095	0.389333	68.98269	9.538926	9.782435	7.437024	7.399773	7.285952	7.285952	7.075554	6.862398	6.862398	6.862398	6.546457	6.546457	6.446432	6.325713	6.325713
0.441296	0.42594	0.42594	0.42109	0.415433	0.415433	1460	0.519111	77.48319	10.71438	10.98789	8.353463	8.311622	8.183775	8.183775	7.947451	7.708028	7.708028	7.708028	7.353155	7.353155	7.240804	7.105209	7.105209
0.472982	0.456523	0.456523	0.451325	0.445261	0.445261	1825	0.648889	83.65407	11.56769	11.86298	9.018746	8.973572	8.835543	8.835543	8.580398	8.321907	8.321907	8.321907	7.938772	7.938772	7.817473	7.671079	7.671079
0.533956	0.515375	0.515375	0.509507	0.502662	0.502662	3650	1.297778	96.70449	13.3723	13.71366	10.42571	10.37349	10.21393	10.21393	9.918979	9.620162	9.620162	9.620162	9.177256	9.177256	9.037034	8.867801	8.867801
0.545672	0.526684	0.526684	0.520687	0.513692	0.513692	7300	2.595556	99.86605	13.80948	14.162	10.76656	10.71263	10.54785	10.54785	10.24326	9.934674	9.934674	9.934674	9.477288	9.477288	9.332482	9.157717	9.157717
0.546	0.527	0.527	0.521	0.514	0.514	18250	6.488889	99.99999	13.828	14.181	10.781	10.727	10.562	10.562	10.257	9.947999	9.947999	9.947999	9.489999	9.489999	9.344999	9.169999	9.169999

Sett@1095	Sett@1460	Sett@5yr	Sett@10yr	Sett@20yr	Sett@50yr
0	0	0	0	0	0
0.626382	0.593317	0.593317	0.582811	0.570141	0.570141
0.767158	0.726662	0.726662	0.713794	0.698277	0.698277
0.885838	0.839077	0.839077	0.824219	0.806301	0.806301
1.084926	1.027655	1.027655	1.009457	0.987513	0.987513
1.375641	1.303024	1.303024	1.27995	1.252125	1.252125
1.485704	1.407278	1.407278	1.382357	1.352306	1.352306
1.854129	1.756254	1.756254	1.725154	1.687651	1.687651
1.970061	1.866067	1.866067	1.833022	1.793174	1.793174
2.008816	1.902776	1.902776	1.869081	1.828449	1.828449
2.025087	1.918188	1.918188	1.88422	1.843259	1.843259
2.026799	1.919809	1.919809	1.885813	1.844817	1.844817
2.026979	1.91998	1.91998	1.88598	1.844981	1.844981
2.027	1.92	1.92	1.886	1.845	1.845
2.027	1.92	1.92	1.886	1.845	1.845
2.027	1.92	1.92	1.886	1.845	1.845

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	=	5
NUMBER OF SOIL COMPRESSIBILITIES	=	4
NUMBER OF SETTLEMENT POINTS	=	1
NUMBER OF LOADED AREAS	=	1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	=	1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS
Page 1

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.432	1.500	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.432
9.000	.432
20.500	.432
33.500	.432
50.000	.432

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 by JMP December 2011

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT
POINT NO. 1

LAYER	
1	.171
2	.695
3	13.828
4	3.186
5	2.997

TOTAL SETTLE. 20.877

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	=	5
NUMBER OF SOIL COMPRESSIBILITIES	=	4
NUMBER OF SETTLEMENT POINTS	=	1
NUMBER OF LOADED AREAS	=	1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	=	1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F % .00 .85 17.94
P,KSF .04 1.44 3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F % .00 1.23 19.22
P,KSF .04 .86 2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.447	1.500	0

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT
POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.447
9.000	.447
20.500	.447
33.500	.447
50.000	.447

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 30 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.174
2	.707
3	14.181
4	3.279
5	3.091
TOTAL SETTLE.	21.431

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.312	1.500	0

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.312
9.000	.312
20.500	.312
33.500	.312
50.000	.312

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 45 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.149
2	.580
3	10.781
4	2.406
5	2.227
TOTAL SETTLE.	16.143

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.310	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.310
9.000	.310
20.500	.310
33.500	.310
50.000	.310

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 60 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.149
2	.577
3	10.727
4	2.392
5	2.213
TOTAL SETTLE.	16.059

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22

P,KSF .04 .86 2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.304	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.304
9.000	.304

20.500	.304
33.500	.304
50.000	.304

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 90 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.147
2	.571
3	10.562
4	2.351
5	2.174
TOTAL SETTLE.	15.806

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.293	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.293
9.000	.293
20.500	.293
33.500	.293
50.000	.293

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 180 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.145
2	.559
3	10.257
4	2.276
5	2.101

TOTAL SETTLE. 15.337

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS = 5
NUMBER OF SOIL COMPRESSIBILITIES = 4

NUMBER OF SETTLEMENT POINTS = 1
NUMBER OF LOADED AREAS = 1
MODE (1 = U.S. GRAVITATIONAL UNITS
2 = SI ABSOLUTE UNITS) = 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F % .00 .85 17.94
P,KSF .04 1.44 3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F % .00 1.23 19.22
P,KSF .04 .86 2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*

1	4000.000	4000.000	1

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.282	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.282
9.000	.282
20.500	.282
33.500	.282
50.000	.282

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 365 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.142
2	.546

3	9.948
4	2.200
5	2.027

TOTAL SETTLE. 14.863

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (FO) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.266	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.266
9.000	.266
20.500	.266
33.500	.266
50.000	.266

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1095 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO.	1
LAYER	
1	.138
2	.527
3	9.490
4	2.088
5	1.920
TOTAL SETTLE.	14.164

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 4 - SETTLEMENT POINT DATA

0 POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 5 - LOADED AREA INFORMATION

0 AREA	SHAPE	CENTER COORD X FT	Y FT	AREA DIMEN. XLEN FT	YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.261	1.500	0

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.261
9.000	.261
20.500	.261
33.500	.261
50.000	.261

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 1825 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

LAYER	
1	.137
2	.521
3	9.345
4	2.053
5	1.886

TOTAL SETTLE. 13.942

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 1 - PROBLEM CONTROL DATA

NUMBER OF SOIL LAYERS	= 5
NUMBER OF SOIL COMPRESSIBILITIES	= 4
NUMBER OF SETTLEMENT POINTS	= 1
NUMBER OF LOADED AREAS	= 1
MODE (1 = U.S. GRAVITATIONAL UNITS 2 = SI ABSOLUTE UNITS)	= 1

TABLE 2 - SOIL AND LAYER INFORMATION

SOIL LAYER NO.	DEPTH TO CENTER FT	LAYER THICKNESS FT	LAYER THICK. FACTOR	UNIT WEIGHT LB/FT**3	SOIL COMP NO.	OVERBURDEN PRESSURE KSF	INIT VERTICAL STRAIN (F0) %
1	2.750	2.500	1.00	10.60	1	.013	.000
2	9.000	10.000	1.00	21.60	2	.134	.486
3	20.500	13.000	1.00	37.60	3	.487	.000
4	33.500	13.000	1.00	47.60	4	1.041	.000
5	50.000	20.000	1.00	47.60	4	1.826	.000

1 Louis J. Capozzoli & Assoc. Geotechnical Engineers Baton Rouge, La
FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 3 - SOIL COMPRESSIBILITY DATA AND SOURCE

0 SOIL COMPRESSIBILITY NO. 1
Three points 1.5 to 4 ft

F %	.00	.85	17.94
P,KSF	.04	1.44	3.44

0 SOIL COMPRESSIBILITY NO. 2
Three points 4 to 14 ft

F %	.00	1.23	19.22
P,KSF	.04	.86	2.86

0 SOIL COMPRESSIBILITY NO. 3
Normally Consolidated 14 to 27 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 32.137 %

0 SOIL COMPRESSIBILITY NO. 4
Normally Consolidated 27 to 60 ft

THE SLOPE OF THE F(%)-LOG P CURVE IS 13.543 %

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 4 - SETTLEMENT POINT DATA

POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*	POINT NO,	POINT COORDINATES X FT	Y FT	LAYER NO.*
1	4000.000	4000.000	1				

* NUMBER OF SOIL LAYER AT WHICH SETTLEMENT COMPUTATION BEGINS

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Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 5 - LOADED AREA INFORMATION

AREA	SHAPE	CENTER COORD X FT	CENTER COORD Y FT	AREA DIMEN. XLEN FT	AREA DIMEN. YLEN FT	AREA SLOPE	APPLIED PRESSURE KSF	AREA ELEV. FT	PRNT FLAG
A1	RECT	4000.00	4000.00	8000.00	8000.00	.000	.255	1.500	0

0
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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 7 - AVERAGE STRESS INCREASE

SETTLEMENT POINT NO. 1

DEPTH,FT	STRESS,KSF
2.750	.255
9.000	.255
20.500	.255
33.500	.255
50.000	.255

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FOUNDATION SETTLEMENT ANALYSIS

Bayou Bonfouca Marsh Creation Project (PO-104)
16715-023-00 B-3 Foundation Settlement @ 3650 days

TABLE 8 - COMPUTED SETTLEMENT IN INCHES

SETTLEMENT POINT NO. 1

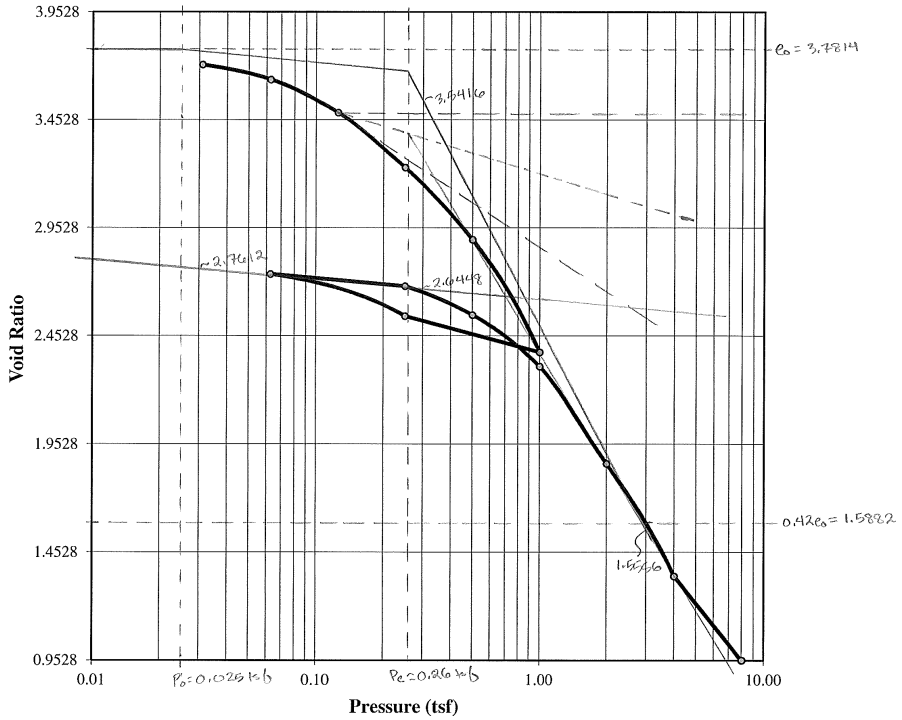
LAYER	
1	.135
2	.514
3	9.170
4	2.011
5	1.845

TOTAL SETTLE. 13.675

107 ticks = 1.0
(60 ticks = 1")

GEOENGINEERS

Consolidation Test
Test Results



	Before	After	Liquid Limits:	141	Test Date:	19 Sept 11
Moisture (%):	135.28	62.03	Plastic Limits:	42		
Dry Density (pcf):	33.51	68.95	Plasticity Index (%):	99		
Saturation (%):	91.76	120.00				
Void Ratio:	3.7814	0.9508	Specific Gravity:	2.574	Measured	

Soil Description:	Organic clay (OH)		0.42e_o = 1.5882
Project Number:	16715-023-00	Depth: 6 - 8 feet	Remarks: Mudline depth: 4ft, submerged
Sample Number:		Boring Number: 1	$\gamma = (1+w)(\gamma_d) = (2.574)(62.4)(0.51)$
Project:	LDNR/OCPR Bayou Bonfouca Marsh Creation		$= 78.84$ = Yave (assume)
Client:	Louisiana Office of Coastal Protection and Restoration		$\gamma' = 16.44$ pcf
Location:			$P_o' = 3'(116.44\ pcf) = 49.32$ psf

$P_c = 0.26$ tsf
$P_o' = 0.025$ tsf
$OCR = \frac{0.26}{0.026} = 10.4$
$C_c = \frac{3.6416 - 1.6556}{\log(3/0.3)} = 1.9860$
$CR = \frac{C_c}{1+e_o} = \frac{1.986}{4.7814} = 0.4154$

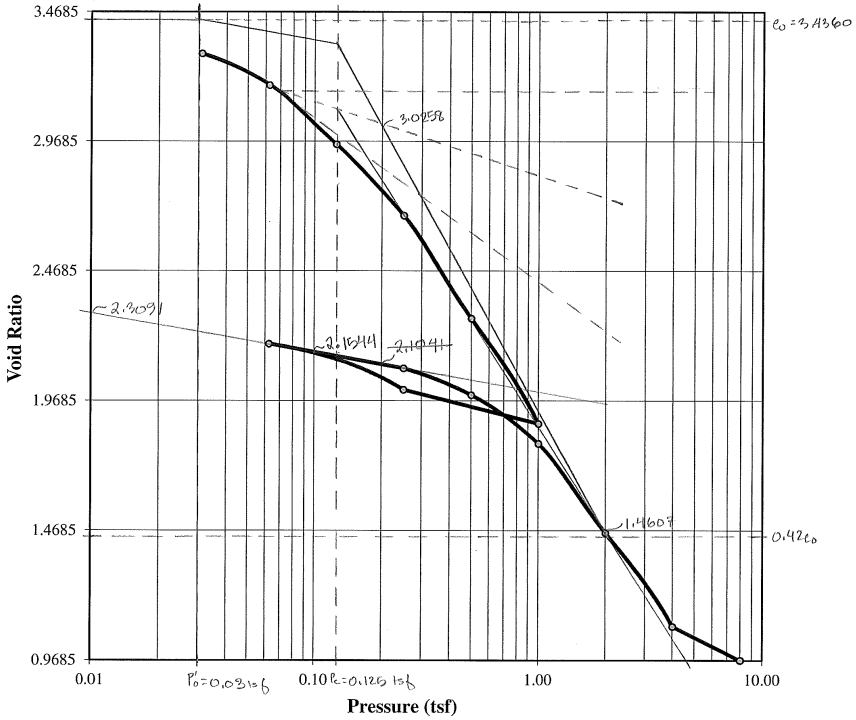
$C_r = \frac{2.7612 - 2.6448}{\log(0.3/0.03)} = 0.1164$
$RR = \frac{C_r}{1+e_o} = \frac{0.1164}{4.7814} = 0.0243$

C_v @ P_o' = not on chart..
say 1000 ft²/yr
C_v @ P_o' ≈ 2.74 ft²/day
C_v @ P_c ≈ 11.204 ft²/yr
= 0.031 ft²/day

32 ticks = 0.1
(320 ticks = 1")

GEOENGINEERS

Consolidation Test
Test Results



	Before	After	Liquid Limits:	150	Test Date:	19 Sept 11
Moisture (%):	156.84	59.29	Plastic Limits:	35		
Dry Density (pcf):	30.78	61.02	Plasticity Index (%):	115		
Saturation (%):	99.85	104.82				
Void Ratio:	3.4360	0.9731	Specific Gravity:	2.186	Measured	

Soil Description:	Organic clay (OH)		0.42e_o = 1.4431
Project Number:	16715-023-00	Depth: 10 - 12 feet	Remarks: Mudline depth: 4ft, submerged
Sample Number:		Boring Number: 2	$\gamma = 2.0 \cdot 78(2.1686) = 79.10$
Project:	LDNR/OCPR Bayou Bonfouca Marsh Creation		$\gamma' = 16.68$ pcf
Client:	Louisiana Office of Coastal Protection and Restoration		$P_o' = 2(70.5 - 62.4) + 2(64.4 - 62.4) + 2(74.8 - 62.4)$
Location:			$+ 1(60.06)$
			$= 60.460$ psf

$P_o = 0.0302$ tsf
$P_c = 0.125$ tsf
$OCR = \frac{0.125}{0.0302} = 4.14$
$C_c = \frac{3.0258 - 1.4607}{\log(3/0.2)} = 1.5651$

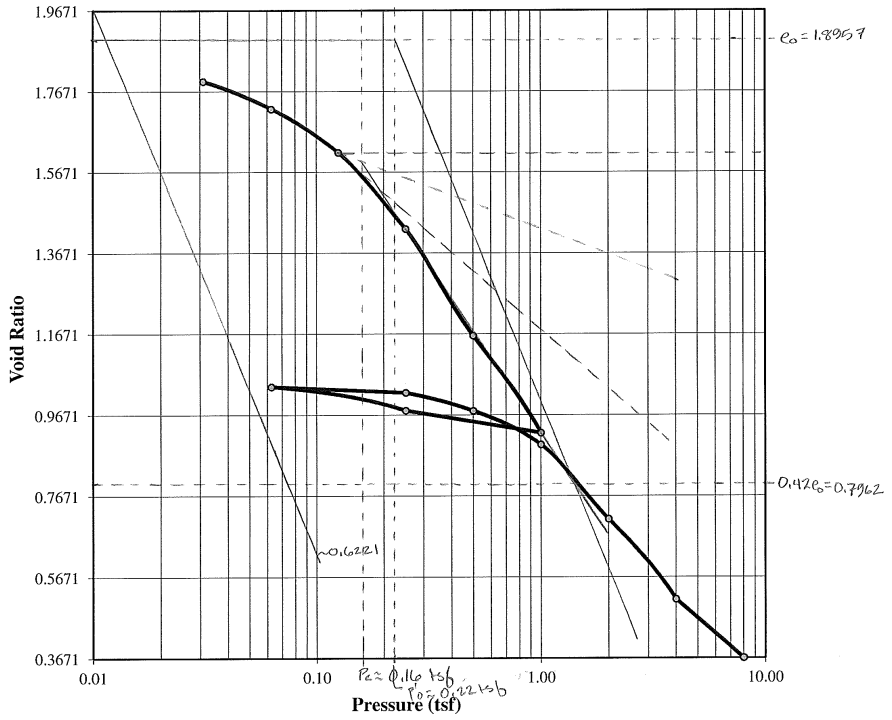
$CR = \frac{1.5651}{4.4360} = 0.3528$
$C_r = \frac{2.3091 - 2.1544}{\log(0.1/0.01)} = 0.1547$
$RR = \frac{0.1547}{4.4360} = 0.0349$

C_v @ P_o' = 8.255 ft²/yr
= 0.0226 ft²/day
C_v @ P_c = 6.09 ft²/yr
= 0.01672 ft²/day

40 blows = 0.2
(100 blows = 1")

GeoEngineers

Consolidation Test
Test Results



	Before	After	Liquid Limits:	107	Test Date:	26 Oct 2011
Moisture (%):	99.80	41.00	Plastic Limits:	30		
Dry Density (pcf):	44.36	89.89	Plasticity Index (%):	77		
Saturation (%):	108.14	195.27				
Void Ratio:	1.8957	0.3652	Specific Gravity:	2.064	Measured	

Soil Description:	Organic clay (OH)		0.42e₀ = 0.7962
Project Number:	16715-023-00	Depth: 22 - 24 feet	Remarks: γ = 1.998 (44.26 pcf) = 88.6 pcf γavg @ 22-24 ft = 88.1 pcf γavg = (72.9 + 73.8 + 80.9 + 85.8 + 86 + 92.5 + 88.6 + 101.16 + 93.6 + 88.1)/10 = 85.7 pcf γ'avg = 23.3 pcf
Sample Number:		Boring Number: 3	
Project:	LDNR/OCPR Bayou Bonfouca Marsh Creation		
Client:	Louisiana Office of Coastal Protection and Restoration		
Location:	St. Tammany Parish, LA		

P'o = 23.3 (10 ft) = 442.7 psf
= 0.22 tsf
OCR = 0.16 / 0.22 ≈ 0.73
OCR < 1
Behaves as Normally consolidated

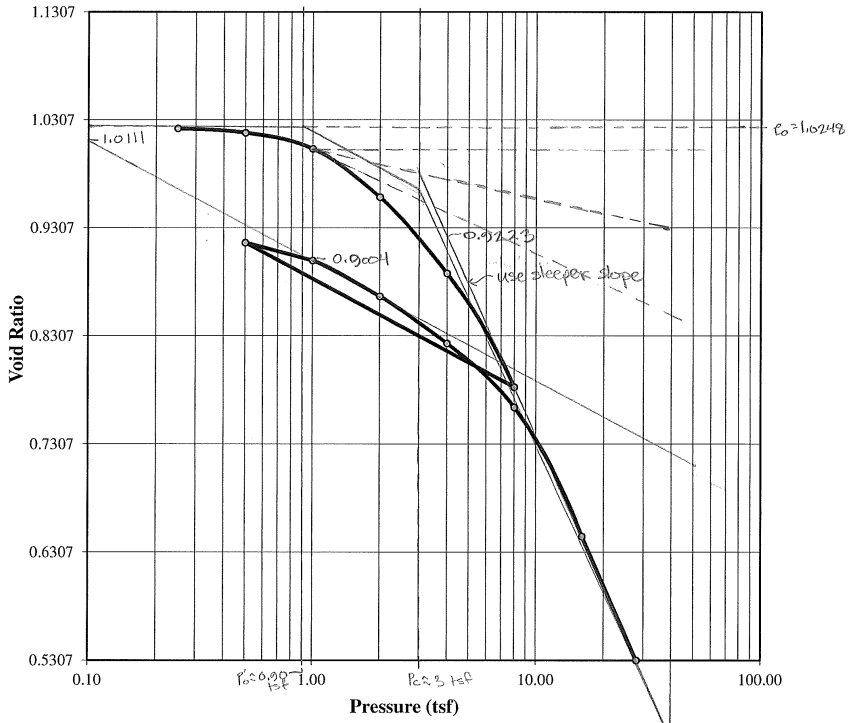
Cc = (1.9671 − 0.6221) / log(0.1/0.01)
= 1.345
CR = 1.345 / 2.8957 = 0.4645

Cv@P'o ≈ 2 ft²/yr
≈ 0.005 ft²/day

40 blows = 0.2
(100 blows = 1")

GeoEngineers

Consolidation Test
Test Results



	Before	After	Liquid Limits:	72	Test Date:	05 OCT 2011
Moisture (%):	39.03	26.51	Plastic Limits:	27		
Dry Density (pcf):	81.30	103.94	Plasticity Index (%):	45		
Saturation (%):	100.24	119.35				
Void Ratio:	1.0248	0.5305	Specific Gravity:	2.642	Assumed	

Soil Description:	Tan and light gray clay (CH)		0.42e₀ = 0.4304
Project Number:	16715-023-00	Depth: 37 - 39 feet	Remarks: γ = 81.2 pcf (1.3903) = 113.0 pcf γavg = (70(2) + 110(6) + 2(124.6 + 127.8 + 128.2 + 128.2(2)) + 122.3(4) + 111.9(4) + 111.3(4))/24 γavg = 115.5 pcf γ'avg = 53.1 pcf
Sample Number:		Boring Number: 4	
Project:	LDNR/OCPR Bayou Bonfouca Marsh Creation		
Client:	Louisiana Office of Coastal Protection and Restoration		
Location:			

* assigned based on material at similar location

P'o = 53.1 pcf (34 feet) = 1,805.4 psf
≈ 0.902 tsf
OCR = 3/0.902 = 3.32
Cc = (0.9223 − 0.4615) / log(10/1) = 0.4608
CR = 0.4608 / 2.0248 = 0.2276

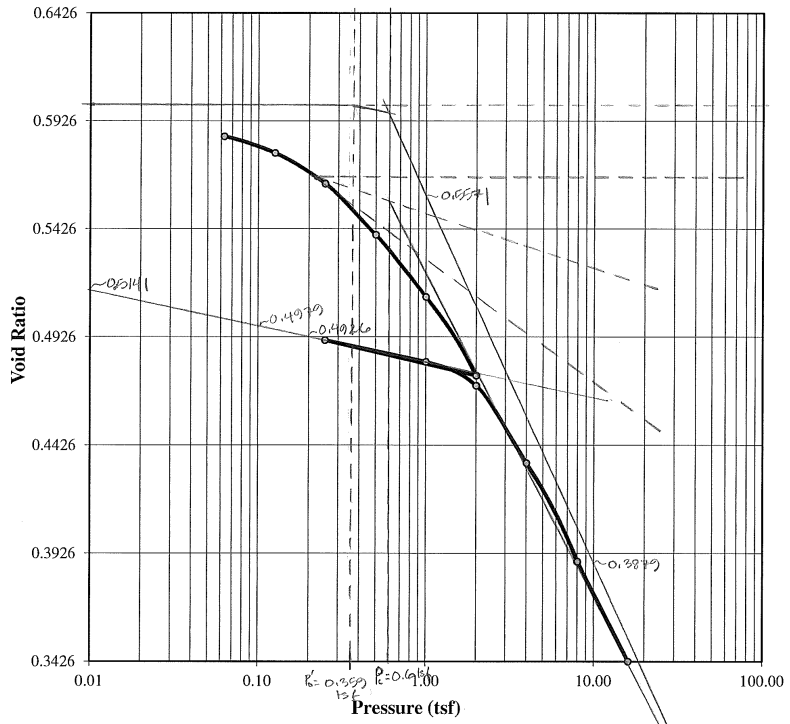
Cr = (1.0111 − 0.9004) / log(1/0.1) = 0.1107
RR = 0.1107 / 2.0248 = 0.0547
Cv@P'o ≈ 899 ft²/yr
= 2.4 ft²/day

Cv@P'c = 121.2 ft²/yr
= 0.33 ft²/day

107 ticks = 0.1
(60 ticks = 1")

GeoEngineers

Consolidation Test
Test Results



	Before	After				
Moisture (%):	22.72	15.89	**Liquid Limits:**	33	**Test Date:**	23 Sept 11
Dry Density (pcf):	102.51	119.85	**Plastic Limits:**	14		
Saturation (%):	99.63	113.56	**Plasticity Index (%):**	19		
Void Ratio:	0.5999	0.3460	**Specific Gravity:**	2.625	Measured	

Soil Description: Very sandy clay (CL)

0.42e₀ = 0.252

Project Number: 16715-023-00 **Depth:** 14 - 16 feet

Sample Number: **Boring Number:** 5

Project: LDNR/OCPR Bayou Bonfouca Marsh Creation

Client: Louisiana Office of Coastal Protection and Restoration

Location:

Remarks: Mudline depth: 4 ft, submerged

γ = 102.51 pcf (1.2272) = 125.8 pcf

γ' = 63.4 pcf

γ_av = (125.8)2 + (126.2)4 + (131.2)4 + 1(137.8) / 11

= 127.76 pcf

γ_av = 65.26 pcf

P'o = 62.36 × 4 (11 ft) = 718 psf
= 0.359 tsf

Pc = 0.6 tsf

OCR = 0.6 / 0.359 = 1.671

Cc = (0.5571 − 0.3879) / log(10/1) = 0.1692

CR = 0.1692 / 1.5999 = 0.1058

Cr = (0.5141 − 0.4929) / log(0.6/0.01) = 0.0162

RR = 0.0162 / 1.5999 = 0.0101

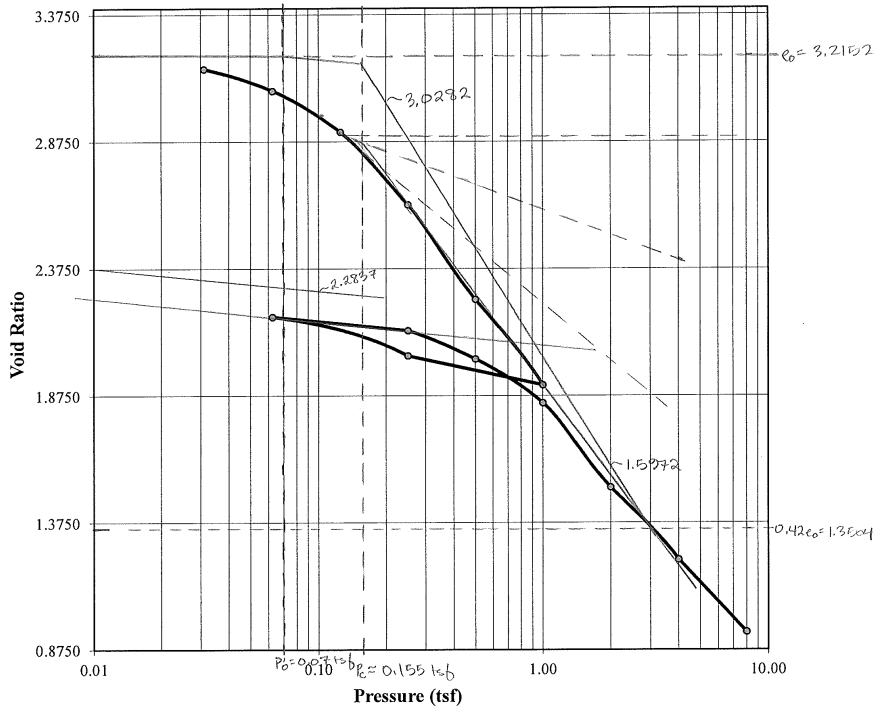
Cv_bo@P'o ≈ 193 ft²/yr
= 0.53 ft²/day

Cv_bo@P'c ≈ 2877 ft²/yr
= 0.7886 ft²/day

63 ticks = 0.5
(60 ticks = 1")

GeoEngineers

Consolidation Test
Test Results



	Before	After				
Moisture (%):	149.33	52.29	**Liquid Limits:**	125	**Test Date:**	17 Oct 11
Dry Density (pcf):	32.99	57.51	**Plastic Limits:**	48		
Saturation (%):	103.41	82.06	**Plasticity Index (%):**	77		
Void Ratio:	3.2152	0.9452	**Specific Gravity:**	2.231	Measured	

Soil Description: Organic Clay (OH)

0.42e₀ = 1.3504

Project Number: 16715-023-00 **Depth:** 10 - 12 feet

Sample Number: **Boring Number:** 6

Project: LDNR/OCPR Bayou Bonfouca Marsh Creation

Client: Louisiana Office of Coastal Protection and Restoration

Location: St. Tammany Parish, LA

Remarks: γ = 2.4933 (32.99) = 82.25 pcf

Mudline at 4' depth

γ_avg = (87.3 + 80.9 + 78.0) + 82.25 / 4

≈ 82.4 pcf

γ'_avg = 20.0 pcf

P'o = 20 pcf (7ft) = 140 psf
= 0.07 tsf

OCR = 0.155 / 0.07 = 2.21

Cc = (3.0282 − 1.5972) / log(2/0.2) = 1.431

CR = 1.431 / 4.2152 = 0.3395

Cr = (2.275 − 2.2837) / log(0.1/0.01) = 0.0013

RR = 0.0013 / 4.2152 = 0.0217

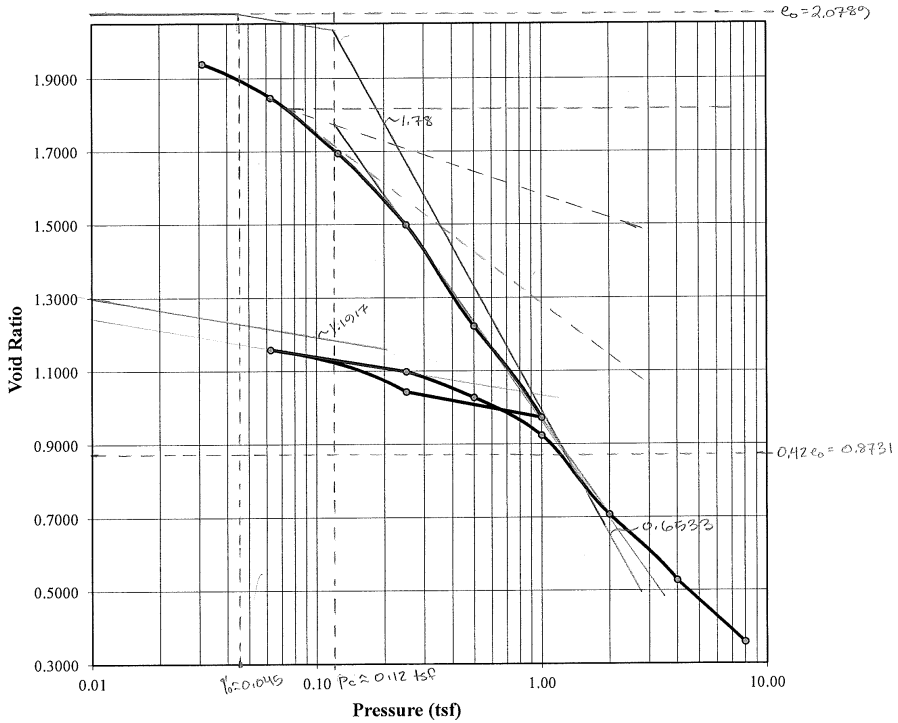
Cv_bo@P'o = 9.34 ft²/yr
= 0.026 ft²/day

Cv_bo@Pc ≈ 10 ft²/yr
= 0.027 ft²/day
≈ 0.03 ft²/day

30 ticks = 0.2
(150 ticks = 1")

GeoEngineers

Consolidation Test
Test Results



	Before	After				
Moisture (%):	160.01	38.01	**Liquid Limits:**	323	**Test Date:**	17 Oct 11
Dry Density (pcf):	33.63	86.86	**Plastic Limits:**	103		
Saturation (%):	127.58	326.89	**Plasticity Index (%):**	220		
Void Ratio:	2.0789	0.3596	**Specific Gravity:**	1.660	Measured	

Soil Description: Organic clay (OH) — 0.42 e₀ = 0.8731

Project Number: 16715-023-00 — **Depth:** 12 - 14 feet

Sample Number: — **Boring Number:** 7

Project: LDNR/OCPR Bayou Bonfouca Marsh Creation

Client: Louisiana Office of Coastal Protection and Restoration

Location: St. Tammany Parish, LA

Remarks: γ = 2.660 (23.62 pcf) = 87.4 pcf
Mudline at 4' depth
γ_avg = (70.56 + 71.342 + 74.42) / 3 = 72.2 pcf
γ_avg = 9.8 say 10 pcf

p'₀ ≈ 10 pcf (9 pcf) = 90 psf
= 0.045 tsf

OCR = 0.12 / 0.045 = 2.67

Cc = (1.78 − 0.665333) / log(2/0.2) = 1.1267

CR = 1.1267 / 3.0789 = 0.36589

Cr = (1.3 − 1.1917) / log(.1/0.1) = 0.1083

RR = 0.1083 / 3.0789 = 0.0352

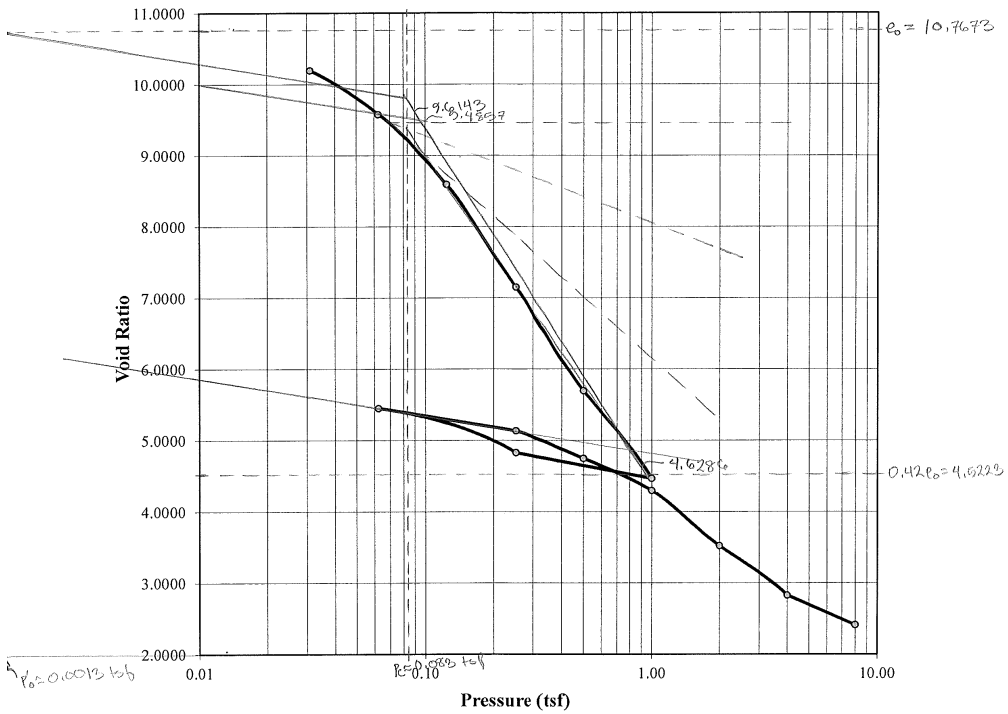
Cv_tsb @ p'₀ = 5.84 ft²/yr
= 0.016 ft²/day
≈ 0.02 ft²/day

Cv_tsb @ Pc = 3.65 ft²/yr
= 0.01 ft²/day

35 ticks ≈ 1.0
(600 ticks = 1")

GeoEngineers

Consolidation Test
Test Results



	Before	After				
Moisture (%):	545.92	154.66	**Liquid Limits:**	641	**Test Date:**	26 Oct 11
Dry Density (pcf):	10.07	27.61	**Plastic Limits:**	192		
Saturation (%):	96.25	89.20	**Plasticity Index (%):**	449		
Void Ratio:	10.7673	2.4204	**Specific Gravity:**	1.897	Measured	

Soil Description: Peat (PT) — 0.42 e₀ = 4.5223

Project Number: 16715-023-00 — **Depth:** 4 - 6 feet

Sample Number: — **Boring Number:** 8

Project: LDNR/OCPR Bayou Bonfouca Marsh Creation

Client: Louisiana Office of Coastal Protection and Restoration

Location: St. Tammany Parish, LA

Remarks: Mudline at 4' depth
completely submerged.
γ = 64.459 (10.07) = 65.04 pcf
γ' = 65 − 62.4 = 2.6 pcf
p'₀ = 2.6 pcf × 1 ft = 2.6 psf

p'₀ = 0.0013 tsf

OCR = 0.0693 / 0.0013 = 53.8

Cc = (9.6143 − 4.6788) / log(0.9/0.09) = 4.986

CR = 4.986 / 11.7673 = 0.4237

Cr = (10 − 9.4857) / log(0.1/0.01) = 0.5143

RR = 0.5143 / 11.7673 = 0.0437

Cv_tsb @ p'₀ ≈ 313 ft²/yr (assumed based on next closest measured value)
= 0.8606 ft²/day

Cv_tsb @ Pc = 188 ft²/yr
= 0.5156 ft²/day

28 tricks = 0.05
(40 tricks = 1")

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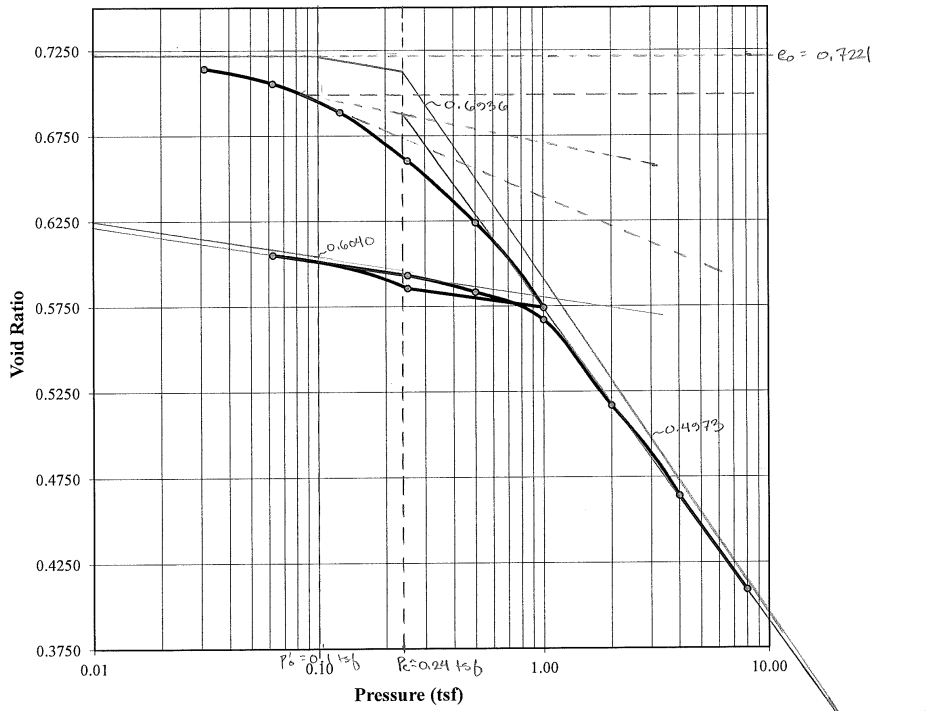
Consolidation Test
Test Results



	Before	After				
Moisture (%):	26.39	16.61	**Liquid Limits:**	27	**Test Date:**	18 Oct 11
Dry Density (pcf):	96.67	116.40	**Plastic Limits:**	13		
Saturation (%):	97.10	102.31	**Plasticity Index (%):**	14		
Void Ratio:	0.7221	0.4078	**Specific Gravity:**	2.674	Measured	

Soil Description: Very sandy clay (CL)

0.42 e_o = 0.3033

Project Number: 16715-023-00 **Depth:** 13.5 - 15.5 fe

Sample Number: **Boring Number:** 9

Project: LDNR/OCPR Bayou Bonfouca Marsh Creation

Client: Louisiana Office of Coastal Protection and Restoration

Location: St. Tammany Parish, LA

Remarks: γ = 1.2629 x 96.67 pcf = 122.2 pcf
Mudline @ 3.15 feet depth.
γ_{avg} = (63.2x2 + 70.4 + 76.6x2 + 107.2x2) / 11 = 122.2
≈ 81.2 pcf
γ'_{avg} ≈ 81.2 - 62.4 = 18.8

P'_o = 18.8 pcf x 11 ft = 207.8 psf
= 0.104 tsf Say 0.1 tsf

OCR = 0.24 tsf / 0.1 tsf = 2.4

C_c = (0.6036 - 0.4973) / log(1/0.2) = 0.1063

CR = 0.1063 / 1.7221 = 0.1140

C_r = (0.6250 - 0.6040) / log(1.1/0.01) = 0.021

RR = 0.021 / 1.7221 = 0.0122

C_v @ P'_o ≈ 3.5 ft²/yr
= 0.01 ft²/day

C_v @ P'_c ≈ 6.8 ft²/yr
= 0.019 ft²/day
= 0.02 ft²/day

APPENDIX III-F
Marsh Creation (Bulking Factor) Calculations

Marsh Creation – Fill to Cut Ratio
Bayou Bonfouca Marsh Creation (PO-104)

The fill to cut ratio evaluation was based on settling column and self weight consolidation test results performed on composite soil sample prepared from marsh fill collected on-site by LSU. The following information was considered in evaluating the fill to cut ratio:

1. A total marsh creation area of 533 acres.
2. Assumed design marsh fill elevation of 4 feet.
3. Based on Appendix C of EM5027, assumed the rate of dredging activity to be 600 cubic yards per hour and working for 17 hours a day.
4. Based on the grain size distribution test performed on the composite sample prepared from combining soil samples from all the borrow area borings (B-10 through B-14), the on-site cut soils comprise approximately 50% by volume of material >#200 sieve and 50% by volume of fine grained soil (silt & clay). Please refer to results from the self-weight consolidation test performed at LSU for the grain size distribution.

The "Bulking Factor," which gives a similar ratio as calculated from the EM 5027 method for the short duration of 1 day, is based on the guidance from the "Handbook of Dredging Engineering" by John B. Herbich (2nd Edition, pages 6.25-27).

Based on these values, and an assumed construction period longer than 60 days, we suggest the use of a fill to cut ratio equal to 2.2 be used for estimating purposes. This means for every 2.2 cubic yard placed in the marsh site, 1 cubic yard will be cut from the adjacent canal. This value assumes no losses during the dredging process.

Calculation Checksheet

Project No. 16715-023-00 Project Title: Bayou Bonfouca Marsh Creation (PO-104)

Deliverable Title: Bulking factor/fill-to-cut ratio calculations

Calculations Description: Used results of the Settling Column test performed at LSU, the grain size distribution reported for the Self-Weight Consolidation test performed at LSU, and the method found in USACE's EM-1110-2-2057 to estimate the fill-to-cut ratio.

Originator: C. Eustis Checked by: VT / JMP Date: 12/21/2011
12/22/2011

Checking method (describe):

Comments:

Attach checksheets, numbered consecutively.

project Bayou Bonfouca project no. 16715-023-00

by LJE date 11/15/11 sheet 1 of 4 checked by VT

1. Create 522 acres of marsh
Nourish 42 acres of existing marsh
Use 5 cells of the 522 acres = 104.4 acres/cell
104.4 acres/cell (43,560 ft²/acre) –
Say 4' = height of fill –
Vol. fill/cell = 104.4 acres/cell (43,560 ft²/acre)(4 ft ht.)
Vol fill/cell = 18,190,656 ft³ ÷ 27 ft³/yd³
Vol fill/cell = 673,728 yd³ actually equals Vcut –

2. Vol of cut/day* = 600 yd³/hr.
17 hrs/day
10,200 yd³/day –

Time to fill one cell = 673,728 yd³ / 10,200 yd³/day = 66 days –

3. So for calculation use avg time = 66 days / 2 = 33 days

4. Design solids concentration = Cd ; x = avg time
Cd = 263.79 x^0.1591 (From Dr. Moe's report, p. 3) –
Cd = 263.79(33)^0.1591 = 460 g/L –

5. Compute eo ; $e_o = \frac{G_s \gamma_w}{C_d} - 1$ *
Gs = 2.70 (From Dr. Zang's report, p. 4)
γw = 1000 g/L
$e_o = \frac{2.70 (1000\ g/L)}{460\ g/L} - 1 = 4.87$ –

* p. C-6, EM-1110-2-5027

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project Bayou Bonfouca project no. 16715-023-00

by EEG date 11/15/11 sheet 2 of 4 checked by VT

6, Sand and shells = 50% (per Dr. Zhang's report pg. 5 #6 and our hydrometer)

Thus $V_{sd} = \frac{1}{2}\left(6\frac{87}{73}, \frac{925}{728}\ yd^3\right) = 3\frac{43}{36}, \frac{962.5}{864}\ yd^3$

and $V_{in\text{-}fines} = \frac{1}{2}\left(6\frac{87}{73}, \frac{925}{728}\ yd^3\right) = 3\frac{43}{36}, \frac{962.5}{864}\ yd^3$

7, $e_i = \frac{W_c\, SG}{SD}$ (from p. C-7, EM-1110-2-5027)

W_c avg: 29.7+%
27.39%
25.31%
3 | 82.++%
27.+8%

$G_S = 2.70$

$SD = 1.0$

$e_i = \frac{.2748\,(2.70)}{} = 0.742$

8, $V_F = V_i\left[\frac{e_o - e_i'}{1+e_i} + 1\right]$ $e_o = 3.37$

$V_F = 3\frac{43}{36}, \frac{962.5}{864}\ yd^3\left[\frac{3.37 - 0.742}{1.742} + 1\right]$

$V_F = 1,135,127\ yd^3$

$V = V_{sd} + V_F = 3\frac{43}{36}, \frac{962.5}{864}\ yd^3 + 1,135,127\ yd^3$

Fill $V = 1,477,991.5\ yd^3$ / call

Fill to cut ratio $= \frac{Fill\ V}{V\ cut} = \frac{4\frac{503}{477}, \frac{991.5}{991}\ yd^3}{6\frac{87}{73}, \frac{925}{728}\ yd^3}$

Fill to cut ratio = 2.18 (Say 2.2)

2.18 ok
Same ratio

GeoEngineers
Earth Science + Technology

project Bayou Bonfouca project no. 16715-023-00

by EJE date 26 OCT 11 sheet 3 of 4 checked by VT

Reference: Handbook of Dredging Engineering
by John B. Herbich
McGraw-Hill, 2nd Edition

p. 6.27, Bulking Factor = .005(LL) + 2.66
" = .0043(PI) + 2.80
" = .31(LI) + 2.87

From Dr. Zhang's report p. 4:

Sample	w_c (%)	LL (%)	PL (%)	PI (%)	LI = $\frac{w_c - PL}{PI}$ (Zhang Computed)
CS1	29.74	34.50	15.72	18.78	0.747
CS2	27.39	23.95	18.97	4.98	1.691
CS3	25.31	28.50	13.98	14.52	0.780

CS1 LI = $\frac{w_c - PL}{PI} = \frac{29.74 - 15.72}{18.78} = .747$

CS2 LI = $\frac{27.39 - 18.92}{4.98} = 1.691$

CS3 LI = $\frac{25.31 - 13.98}{14.52} = .780$

1. BF = Bulking Factor = .005(LL) + 2.66
CS1: BF = .005(34.50) + 2.66 = 2.83
CS2: BF = .005(23.95) + 2.66 = 2.78
CS3: BF = .005(28.5) + 2.66 = 2.66
$BF_{1\,AVG} = 2.76$

2. BF = .0043(PI) + 2.80
CS1: BF = .0043(18.78) + 2.80 = 2.88
CS2: BF = .0043(4.98) + 2.80 = 2.82
CS3: BF = .0043(14.52) + 2.80 = 2.86
$BF_{2\,AVG} = 2.85$

3. BF = .31(LI) + 2.87
CS1; BF = .31(.747) + 2.87 = 3.10
CS2; BF = .31(1.691) + 2.87 = 3.39
CS3; BF = .31(.780) + 2.87 = 3.11
$BF_{3\,AVG} = 3.20$

AVG of $BF_1 + BF_2 + BF_3$ is 2.94

SAY BF = 3.0

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by LLE date 26OCT11 sheet 4 of 4 checked by VT

P. 6-25 Harbich reference:

BF = 1.897 + .013 (% Fines)

BF = 1.897 + .013 (used 100% fines)

BF = 3.2

If 87.3% fines:

BF = 1.897 + .013 (83.7) = 2.99 ← from sheet 2

SAY BF = 3.0

this would be F.11 to cut ratio = 3.0

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Final Report:

Settling Properties of Sediment Slurry for the Louisiana Department of Natural Resources / Office of Coastal Protection and Restoration Bayou Bonfouca Marsh Creation (PO-104)

GeoEngineers Project Number: 16715-023-00

Submitted to:

Joshua M. Pruett, and
Charles L. Eustis, P.E.
GeoEngineers, Inc.
11955 Lakeland Park Blvd., Suite 100
Baton Rouge, LA 70809
Phone: (225) 293-2460
Fax: (225) 293-2463
Email: jpruett@geoengineers.com
ceustis@geoengineers.com

Submitted by:

William M. Moe, Ph.D., P.E.
Professor
Department of Civil and Environmental Engineering
Louisiana State University
Baton Rouge, LA 70803-6405
Phone: (225) 578-9174
Fax: (225) 578-8652
Email: moemwil@lsu.edu

October 7, 2011

1.0 Introduction, Scope, and Objectives

The objective of the experimental testing reported herein was to evaluate zone settling and compression settling properties of sediments which may be hydraulically dredged as part of the Louisiana Department of Natural Resources / Office of Coastal Protection and Restoration Bayou Bonfouca Marsh Creation (PO-104) (GeoEngineers project number 16715-023-00).

2.0 Experimental Procedures and Results

Water (labeled as: 16715-023-00, B-10 to B-14) and homogenized sediment samples (labeled as: B-10 to B-14) from the proposed dredging location were provided by GeoEngineers, Inc. for laboratory testing. The salinity of water provided from the proposed dredging site, measured in duplicate for each water sample in terms of total dissolved solids (TDS) following *Standard Methods*[1], ranged from 4.6 to 5.1 g/L, with an average of 4.8 g/L.

Slurry was prepared using an equal mass (wet basis) from the five homogenized sediment samples and water from the proposed dredging location. Slurry containing the fine-grained fraction of sediments was obtained by thoroughly mixing the slurry and then allowing coarse grained materials (e.g., sand and shells), to separate by differential settling as described in the US Army Corps of Engineers Manual No. 1110-2-5027[2]. The fine-grained sediment slurry was loaded into a large-scale (8.0 inch ID) column while mixing with air sparging as described in the US Army Corps of Engineers Manual No. 1110-2-5027[2]. Solids concentrations in the slurry at the start of the settling test were measured in samples collected along the height of the column, as described in the US Army Corps of Engineers Manual No. 1110-2-5027[2]. The total suspended solids (TSS) concentration at the start of the settling test was 135.4 g/L, close to but slightly less than the recommended testing concentration of 150 g/L.

A clear sediment-water interface was observed shortly after the start of the settling test (<30 minutes), indicating zone settling. The height of the sediment-water interface above the bottom of the column was measured and recorded over a period lasting more than 15 days as depicted in Figure 1 (see Appendix A for tabulated data).

50 mL samples were collected from the clarified layer above the sediment-water interface for measurement of TSS as described in the US Army Corps of Engineers Manual No. 1110-2-5027[2]. Because the TSS concentrations in the samples collected for characterization of flocculent settling in the zone above the sediment-water interface were low, the mass of suspended solids retained on the filters was lower than the 5 mg recommended by the US Army Corps of Engineers Manual No. 1110-2-5027[2]. Based on the data collected, the TSS concentration in all samples for analysis of the flocculent settling above the sediment-water interface are reported here as <100 mg/L (calculated as the minimum residue mass required for acceptable analysis, 5 mg, divided by the sample volume filtered, 0.05 L).

As shown in Figure 1, zone settling was observed during the first portion of the settling test, followed by compression settling thereafter.

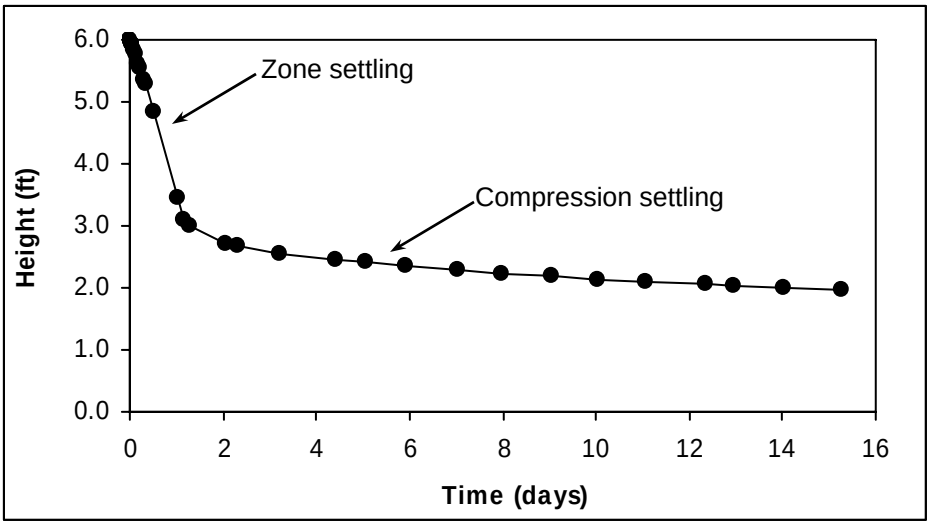


Figure 1: Interface height as a function of time during the pilot-scale settling test.

Data for the first 1.2 days of the settling test, during which zone settling was observed, is depicted separately in Figure 2. A linear regression was performed with the resulting equation and correlation coefficient depicted on the graph. The slope of the regression line, which corresponds to the zone settling velocity, was 2.44 ft/day (0.102 ft/hour).

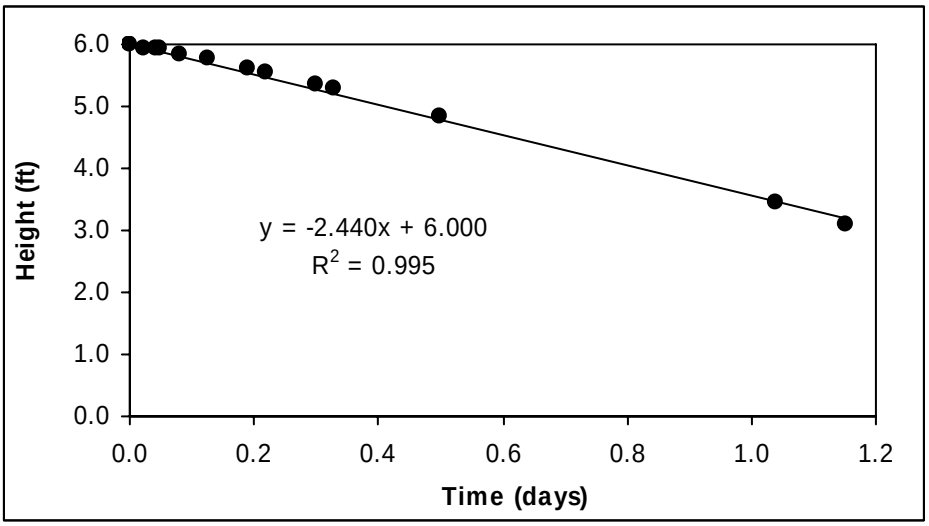


Figure 2: Interface height as a function of time during the zone settling portion of the pilot-scale settling test.

For the portion of the settling test during which compression settling was observed, the concentration in the settled solids at each time interval was calculated using the following equation (equation 3-11 in ref. 2).

$$C = \frac{C_o H_i}{H_t}$$

Where:

C = slurry suspended solids concentration at time t (g/L)
C_o = initial slurry suspended solids concentration (g/L)
H_i = initial slurry height (ft)
H_t = height of the interface at time t (ft)

The corresponding suspended solids concentration as a function of time during compression settling is depicted in Figure 3.

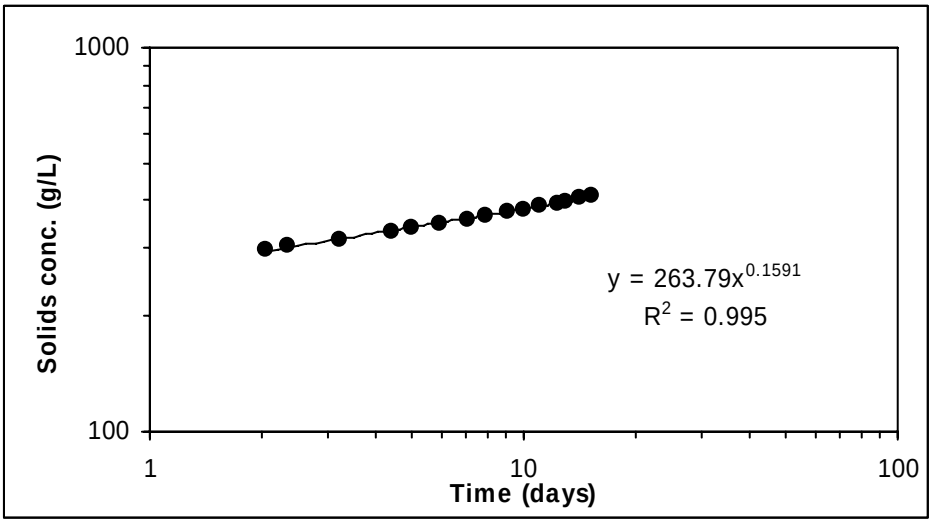


Figure 3: Concentration of settled solids as a function of time during the compression settling portion of the pilot-scale settling test.

3.0 References

[1] American Public Health Association (1998) *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, American Water Works Association, Water Pollution Control Federation, Washington, DC.

[2] US Army Corps of Engineers (1987) *Engineering and Design - Confined Disposal of Dredged Material*, Engineer Manual No. 1110-2-5027.

Appendix A: Interface height as a function of time during the pilot-scale column settling test.

The height of the interface above the bottom of the column was recorded as a function of time as summarized in the table below.

Elapsed duration (hr)	Interface Height (ft)
0.00	6.000
0.53	5.950
1.00	5.950
1.17	5.929
1.92	5.850
3.00	5.758
4.58	5.613
5.28	5.538
7.18	5.363
7.87	5.292
12.00	4.850
24.92	3.450
27.63	3.083
30.75	2.992
49.00	2.717
55.92	2.671
76.92	2.558
106.0	2.450
121.0	2.404
142.5	2.342
169.3	2.275
191.0	2.225
217.3	2.179
241.0	2.138
265.3	2.100
296.0	2.058
311.1	2.042
337.0	2.008
366.3	1.975

Sediment Geotechnical Properties for the Bayou Bonfouca Marsh Creation Project

FINAL REPORT

Submitted to:

Joshua M. Pruett and Charles L. Eustis, P.E.

GeoEngineers, Inc.

11955 Lakeland Park Blvd., Suite 100

Baton Rouge, LA 70809

Phone: (225) 293-2460

Fax: (225) 293-2463

Email: jpruett@geoengineers.com

ceustis@geoengineers.com

Submitted by:

Guoping (Gregg) Zhang, Ph.D., P.E.

Associate Professor

Department of Civil & Environmental Engineering

Louisiana State University

Baton Rouge, LA 70803

Phone: (225) 578-6047

Fax: (225) 578-8652

Email: gzhang@lsu.edu

October 25, 2011

INTRODUCTION

This report presents the results of laboratory testing conducted at the Louisiana State University to determine the index and self-weight consolidation properties of the hydraulic fill material to be used for the Bayou Bonfouca Marsh Creation Project. These tests were conducted on five composite samples that were homogenized from tube samples taken from different borings, B-10, B-11, B-12, B-13, and B-14, respectively.

EXPERIMENTS

Five buckets of composite soil samples homogenized from Borings B-10 to B-14, respectively, were provided by GeoEngineers, Inc. for laboratory testing. Based on the quantity of the samples provided, further combination and mixing of the five samples were performed, resulting in three composite samples for subsequent index and self-weight consolidation testing (Table 1). Sufficient mixing of each composite sample was then performed before utilization. Basic index properties, including specific gravity, Atterberg limits, and particle size distribution were determined on each of the composite samples (i.e., CS1 to CS3 in Table 1) by following the relevant ASTM standard methods.

Table 1. Three composite samples mixed from tube samples of different borings.

Composite sample ID	Boring for the sample
CS1	B-10
CS2	B-11 and B-13
CS3	B-12 and B-14

Three self-weight consolidation tests were also performed on the three composite samples (CS1 to CS3), respectively. These consolidation tests followed the methods specified in the US Army Corps of Engineers Manual No. 1110-2-5027 (USACE, 1987) and the University of Texas Method (Pedersen, 2001). A low pressure loading system was employed to perform the tests. The homogenized composite samples were diluted to a consistency of (1.0-1.5) times the liquid limit (1.0-1.5 x w_L) of the samples to make sure the samples were reconstituted to a slurry consistency allowing free flow under gravity, which eases sample preparation. One-dimensional incremental loading method was used for the consolidation, with stresses ranging from 10 to 400 psf. Both the Casagrande (or Log time) and Taylor (or Root time) methods were employed to analyze the results to determine the coefficient of consolidation, c_v.

RESULTS

Table 2 summarizes the specific gravity and Atterberg limits of the three composite samples.

Figure 1 shows the particle size distribution curves for the three composite samples.

Tables 3, 4, and 5 summarize the three self-weight consolidation test results for the three composite samples, respectively.

Figures 2, 3, and 4 present the self-weight consolidation curves of the three composite samples, respectively.

Figures 5, 6, and 7 present the relationship between the coefficient of consolidation and vertical effective stress and the relationship between void ratio and coefficient of hydraulic conductivity for the three composite samples, respectively.

REFERENCES

American Society for Testing and Materials (ASTM) (2006). Annual Book of ASTM Standards, Vol. 04.08.

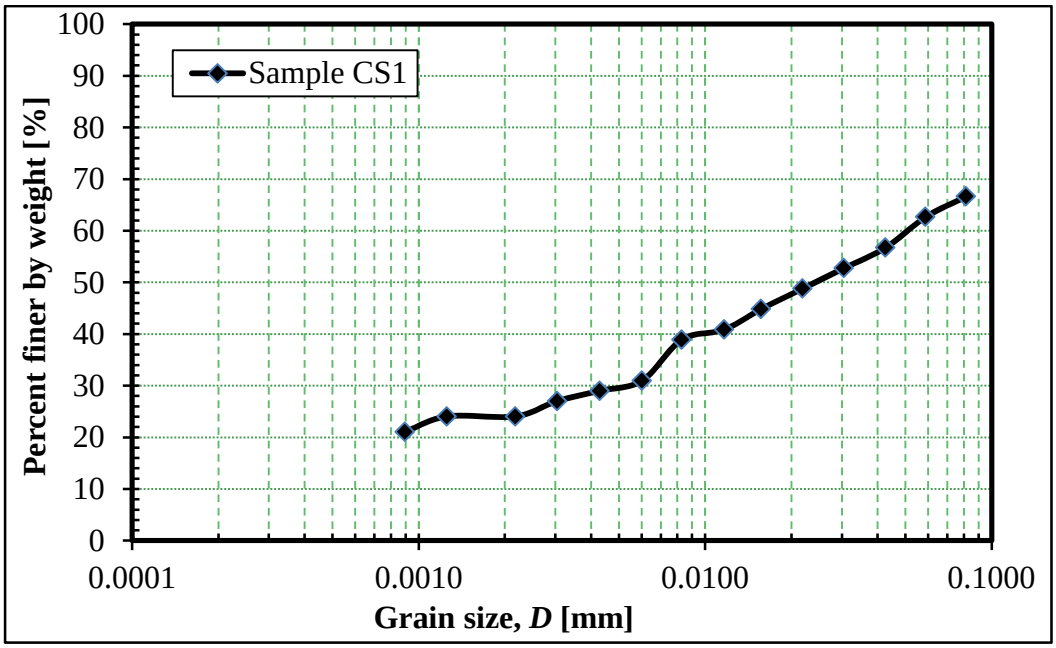
Pedersen, R.C. (2001). Model Offshore Soil Deposit: Design, Preparation, and Characterization. M.S. Thesis, University of Texas at Austin.

US Army Corps of Engineers (USACE) (1987). Engineering and Design – Confined Disposal of Dredged Material, Engineering Manual No. 1110-2-5027.

Table 2. Summary of index properties of the three composite samples.

Sample ID	Natural water content w (%)	Specific gravity G_s	Liquid limit w_L (%)	Plastic limit w_P (%)	Plasticity index I_P (%)
CS1	29.74	2.70	34.50	15.72	18.78
CS2	27.39	2.70	23.95	18.97	4.98
CS3	25.31	2.69	28.50	13.98	14.52

Note: During index testing, the samples were found to contain a lot of shells.



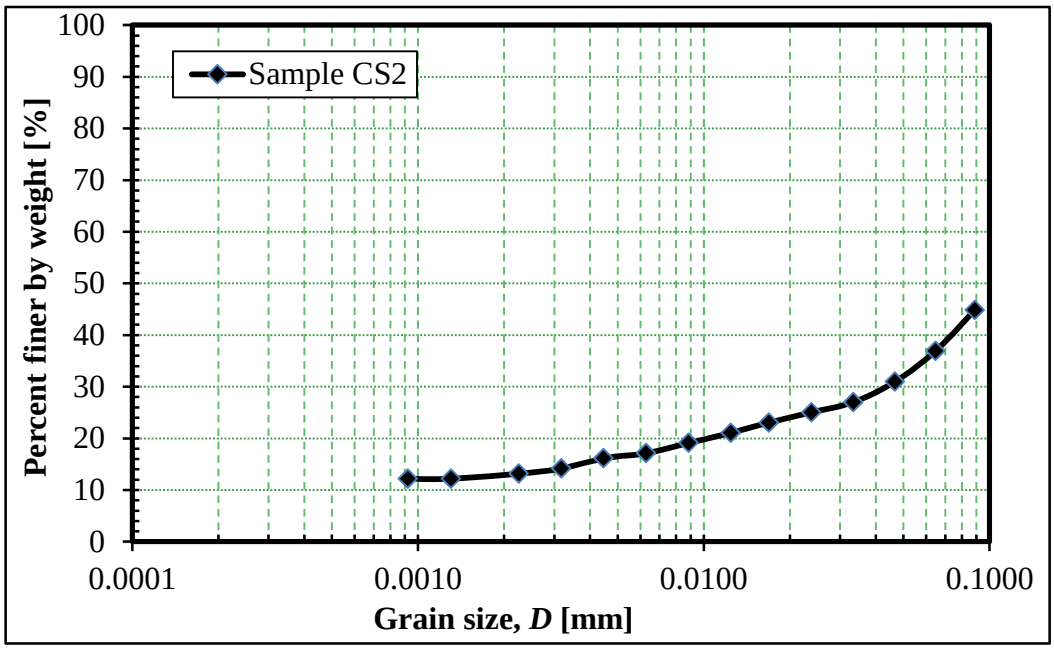


Figure 1. Particle size distribution curves for the three composite samples (to be continued).

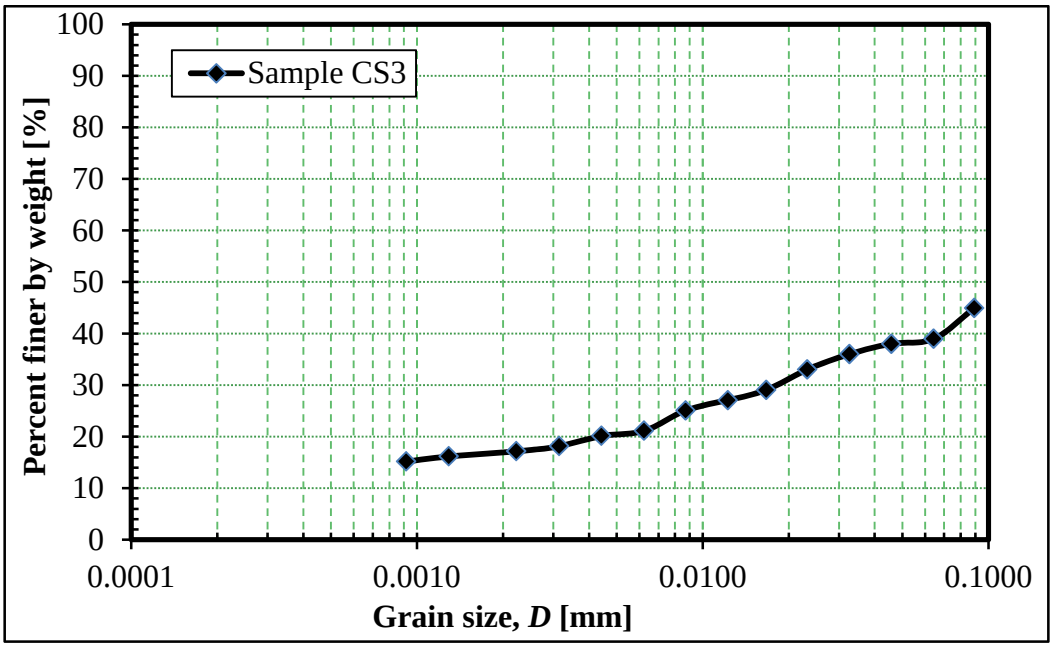


Figure 1. Particle size distribution curves for the three composite samples (continued).

Table 3. Self weight consolidation test results for the composite sample CS1.

σ'_v	d_{100}	ε_{100}	Δe_{100}	t_{50}	t_{90}	c_v (log(t))	c_v (sqrt(t))
[psf]	[in]			[min]	[min]	[ft^2/min]	[ft^2/min]
10							
25	0.056	0.056	0.14464	190	702.25	1.69718E-06	1.9766E-06
50	0.0906	0.0906	0.234	200	492.84	1.46413E-06	2.5576E-06
100	0.1242	0.1242	0.32078	105	380.25	2.58763E-06	3.0758E-06
200	0.19	0.19	0.49073	180	756.25	1.34165E-06	1.3746E-06
400	0.2442	0.2442	0.63072	95	368.64	2.19005E-06	2.4294E-06

e_0	H_f	H_i	H_d	e_{100}	c_c	$c_{\alpha\varepsilon}$	$c_{\alpha e}$	σ'_a	γ_w	k	k
1.5828	[in]	[in]	[in]		0.417			[psf]	[pcf]	[ft/min]	[ft/day]
	1	1							62.4		
	0.942	1	0.4855	1.43816		0.0109	0.02805	17.5		4.24E-07	0.000611
	0.9086	0.942	0.46265	1.3488		0.008	0.02066	37.5		1.71E-07	0.000246
	0.874	0.9086	0.44565	1.26202		0.0057	0.0147	75		1.51E-07	0.000217
	0.8067	0.8739	0.42015	1.09207		0.0125	0.03226	150		3.91E-08	5.63E-05
	0.7533	0.8066	0.38998	0.95208		0.005	0.01284	300		3.19E-08	4.6E-05

Table 4. Self weight consolidation test results for the composite sample CS2.

σ'_v	d_{100}	ε_{100}	Δe_{100}	t_{50}	t_{90}	c_v (log(t))	c_v (sqrt(t))
[psf]	[in]			[min]	[min]	[ft^2/min]	[ft^2/min]
10							
25	0.0422	0.0422	0.08653	62	196	5.27253E-06	7.1793E-06
50	0.068	0.068	0.13943	28	51.84	1.08361E-05	2.5194E-05
100	0.1022	0.1022	0.20955	37	174.24	7.67905E-06	7.0193E-06
200	0.143	0.143	0.29321	27	86.49	9.69299E-06	1.3025E-05
400	0.1704	0.1704	0.34939	20	96.04	1.20993E-05	1.0846E-05

e_0	H_f	H_i	H_d	e_{100}	c_c	$c_{\alpha\varepsilon}$	$c_{\alpha e}$	σ'_a	γ_w	k	k
1.0504	[in]	[in]	[in]		0.228			[psf]	[pcf]	[ft/min]	[ft/day]
	1	1							62.4		
	0.9553	1	0.48883	0.96387		0.0026	0.00533	17.5		9.07E-07	0.001307
	0.9285	0.9553	0.47094	0.91097		0.0046	0.00935	37.5		8.7E-07	0.001253
	0.8945	0.9284	0.45573	0.84085		0.0035	0.00707	75		3.08E-07	0.000444
	0.855	0.8945	0.43738	0.75719		0.0016	0.00335	150		1.95E-07	0.00028
	0.8272	0.8551	0.42058	0.70101		0.0023	0.00472	300		1.21E-07	0.000175

Table 5. Self weight consolidation test results for the composite sample CS3.

σ'_v	d_{100}	ε_{100}	Δe_{100}	t_{50}	t_{90}	c_v (log(t))	c_v (sqrt(t))
[psf]	[in]			[min]	[min]	[ft^2/min]	[ft^2/min]
10							
25	0.0322	0.0322	0.06786	45	163.84	7.32095E-06	8.6555E-06
50	0.0574	0.0574	0.12097	95	361	3.26442E-06	3.6979E-06
100	0.0874	0.0874	0.18419	40	148.84	7.34312E-06	8.4948E-06
200	0.134	0.134	0.2824	42	125.44	6.43436E-06	9.2736E-06
400	0.172	0.172	0.36248	40	108.16	6.12309E-06	9.7475E-06

e_0	H_f	H_i	H_d	e_{100}	c_c	$c_{\alpha\varepsilon}$	$c_{\alpha e}$	σ'_a	γ_w	k	k
1.1075	[in]	[in]	[in]		0.25			[psf]	[pcf]	[ft/min]	[ft/day]
	1	1							62.4		
	0.9629	1	0.49073	1.0396		0.0043	0.0091	17.5		1.34E-06	0.001935
	0.9415	0.963	0.47612	0.98649		0.002	0.00415	37.5		2.8E-07	0.000403
	0.9121	0.9414	0.46336	0.92327		0.0005	0.00098	75		3.15E-07	0.000453
	0.8656	0.9122	0.44445	0.82506		0.0008	0.00176	150		1.38E-07	0.000198
	0.8268	0.8657	0.42312	0.74498		0.0021	0.00434	300		6.56E-08	9.44E-05

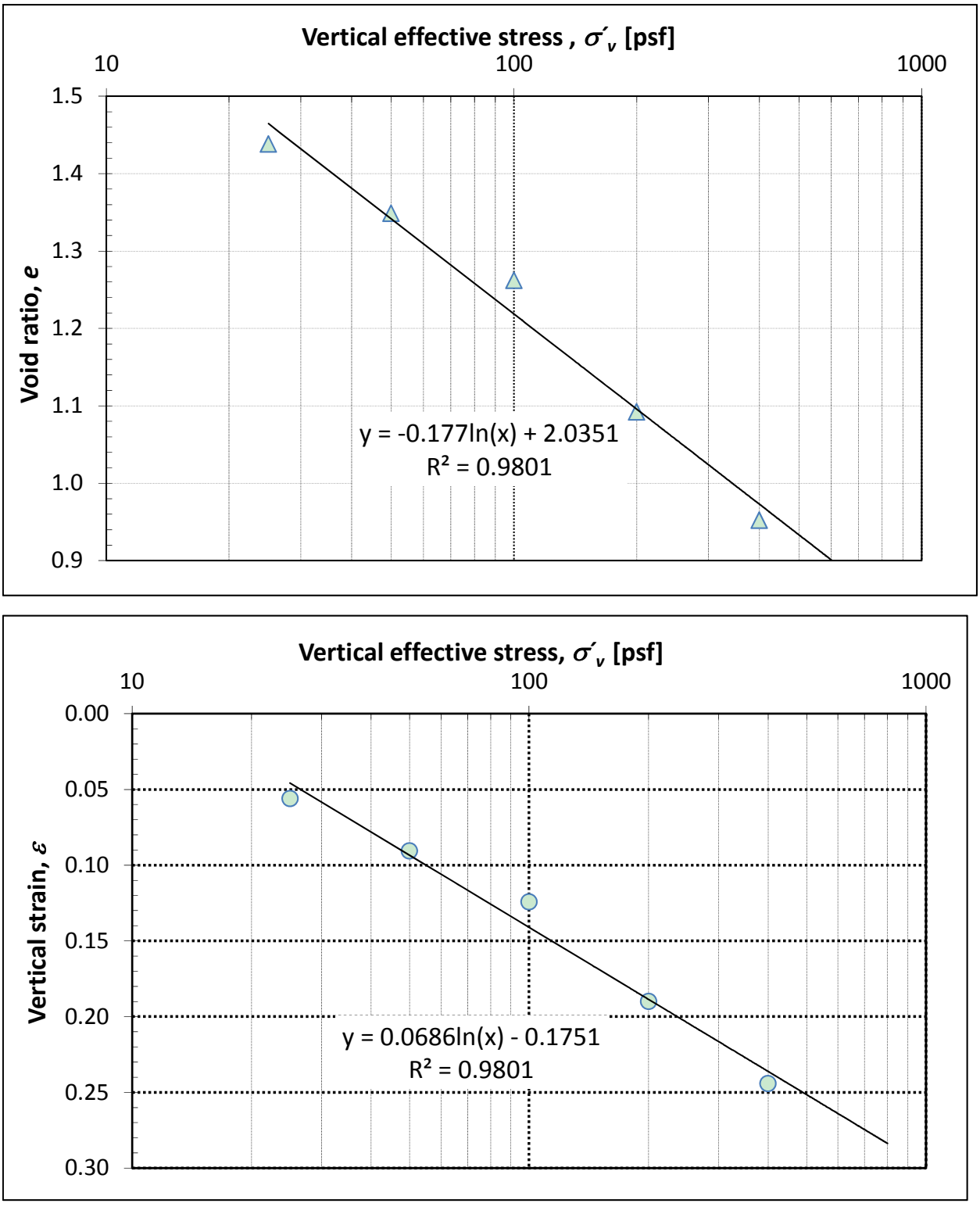
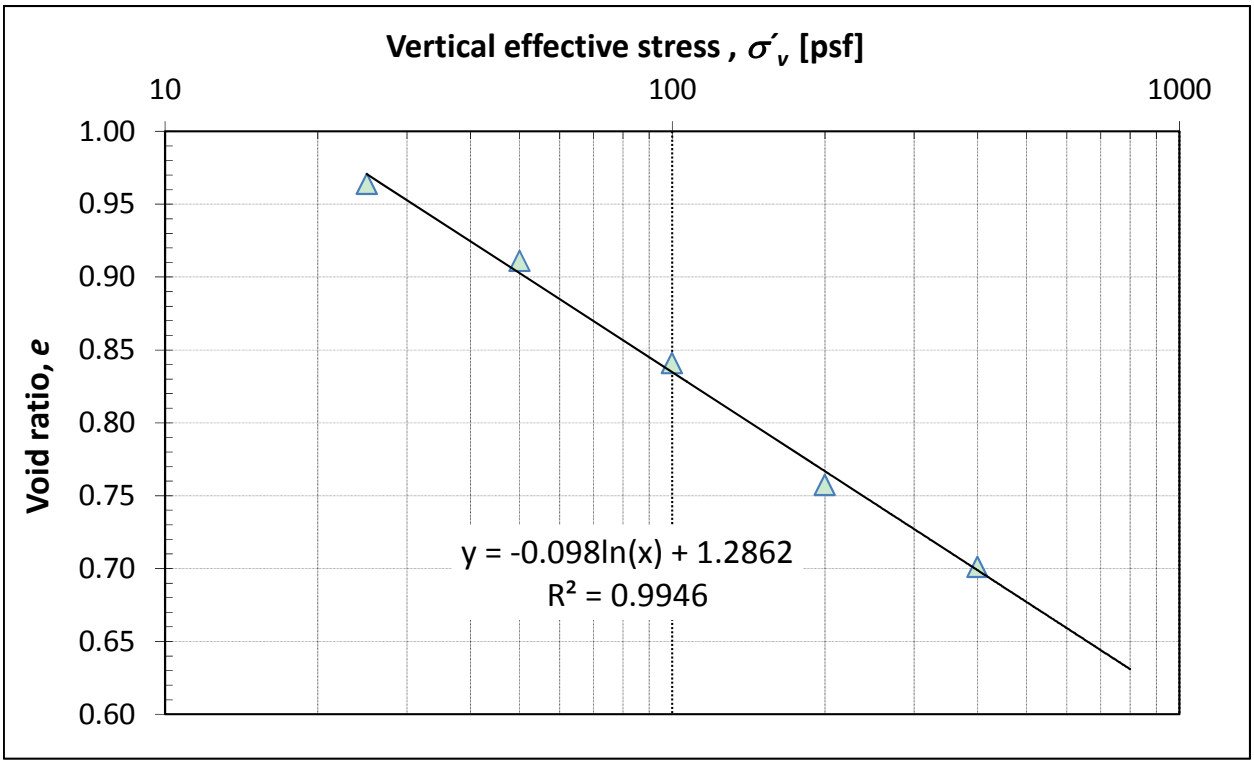


Figure 2. The self-weight consolidation curves for Sample CS1.



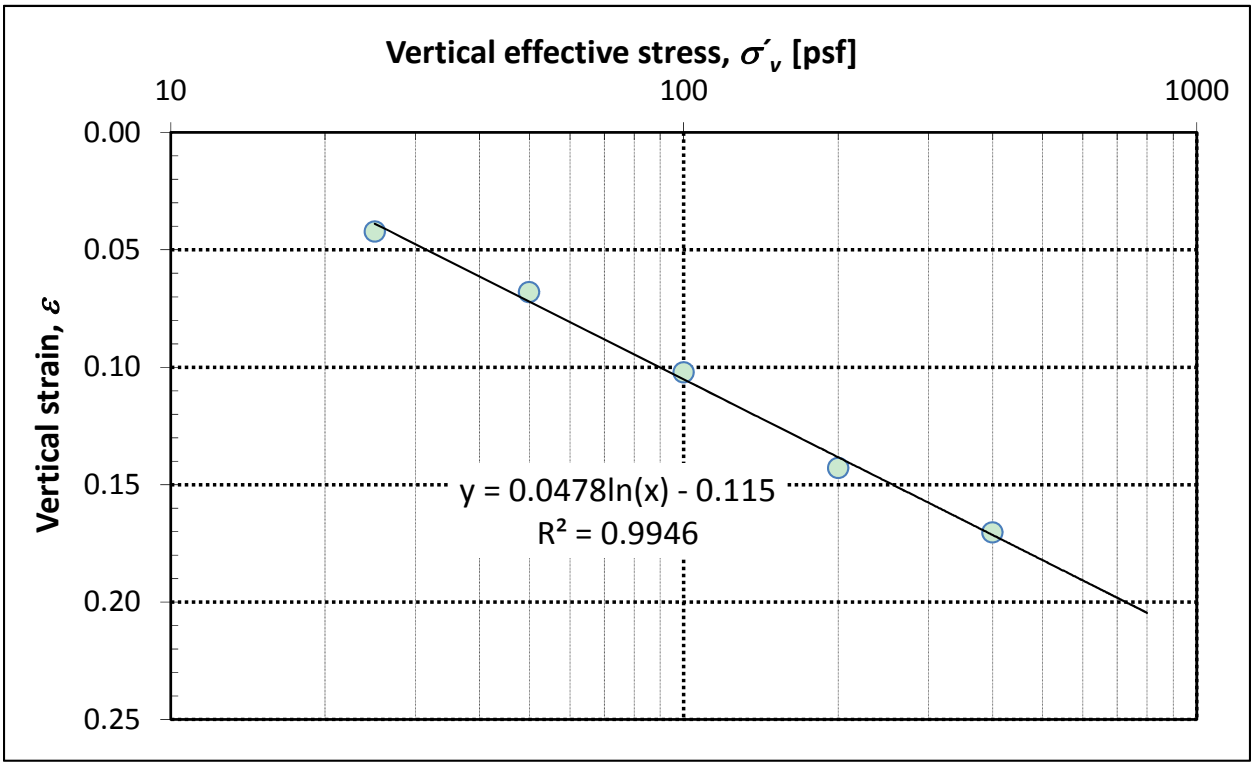
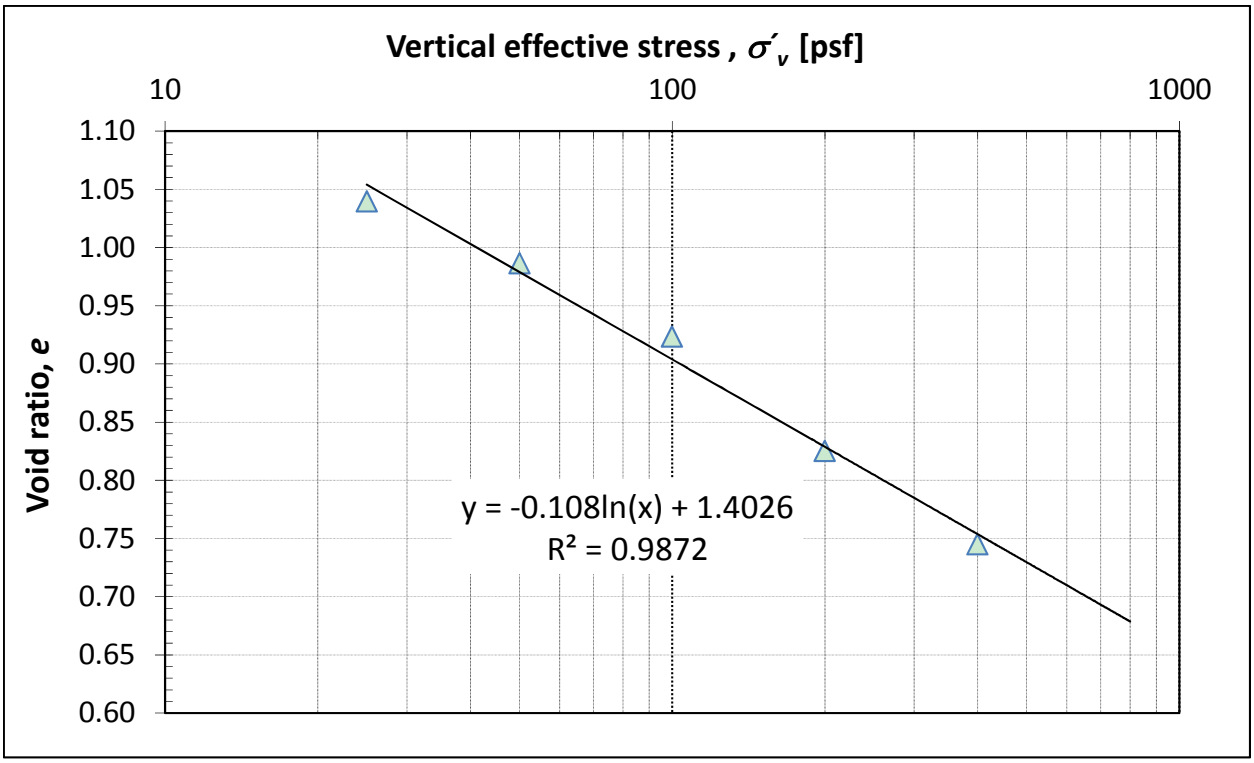


Figure 3. The self-weight consolidation curves for Sample CS2.



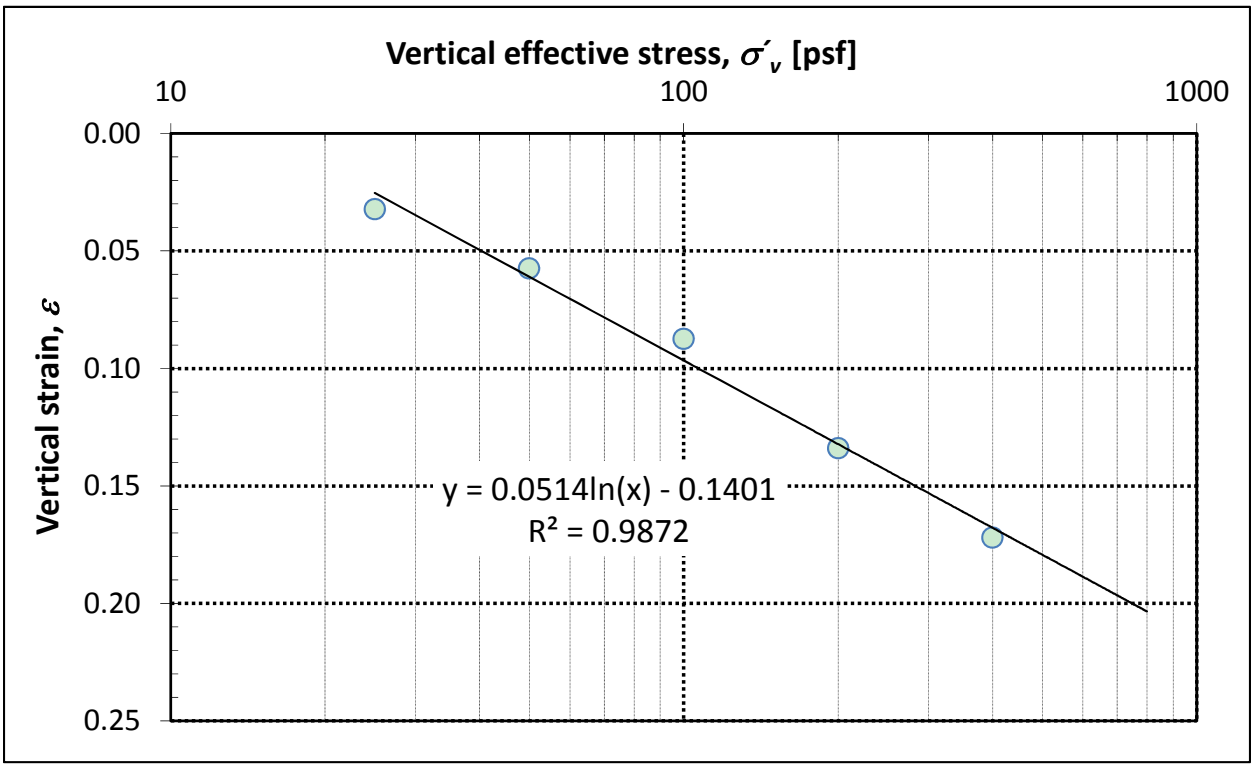
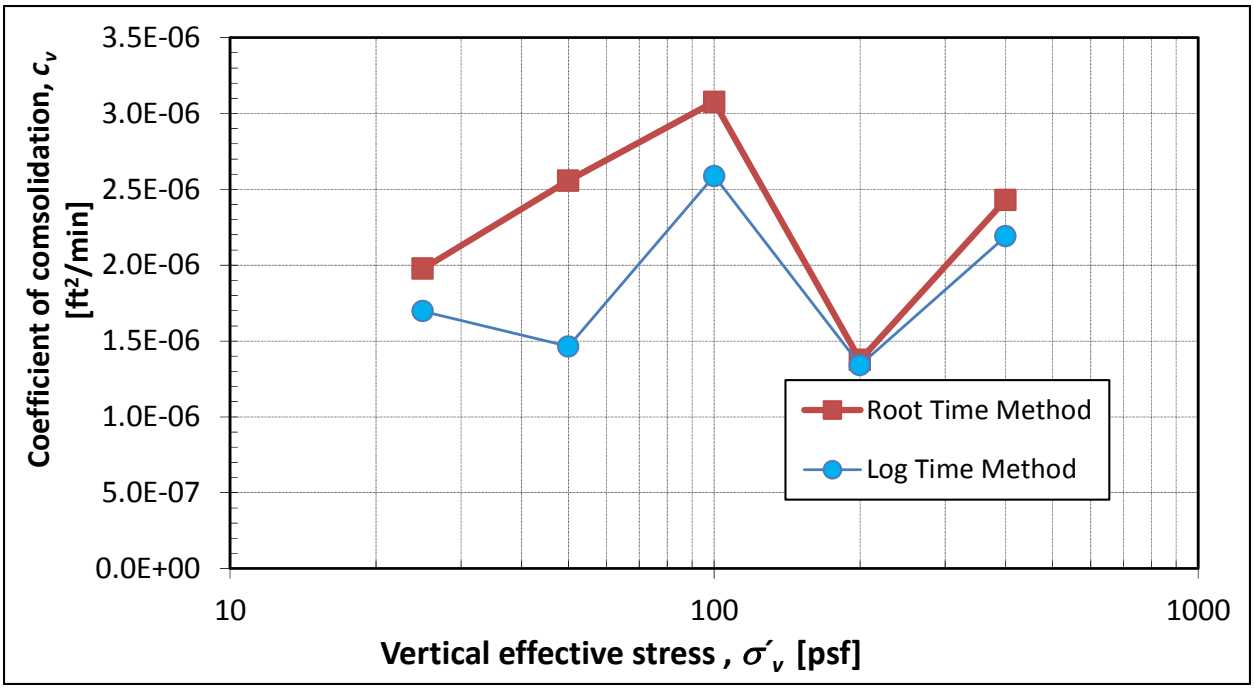


Figure 4. The self-weight consolidation curves for Sample CS3.



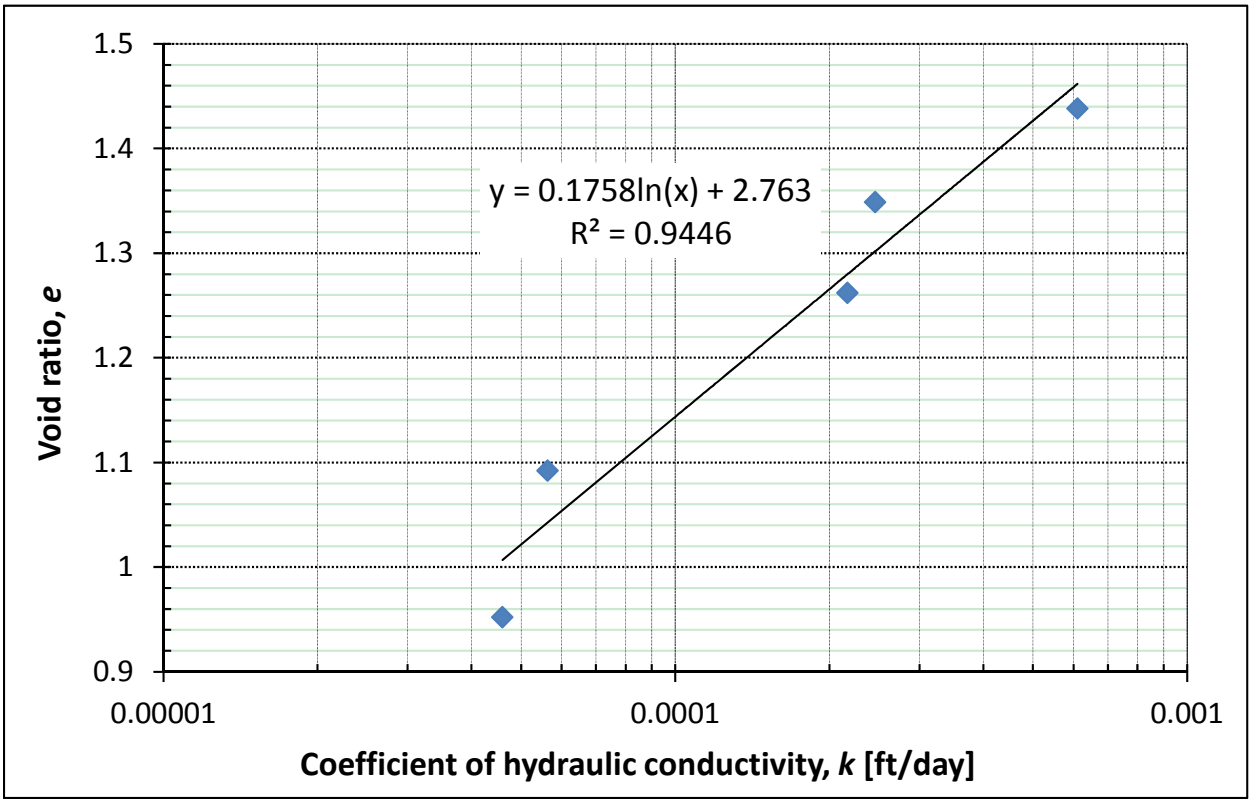
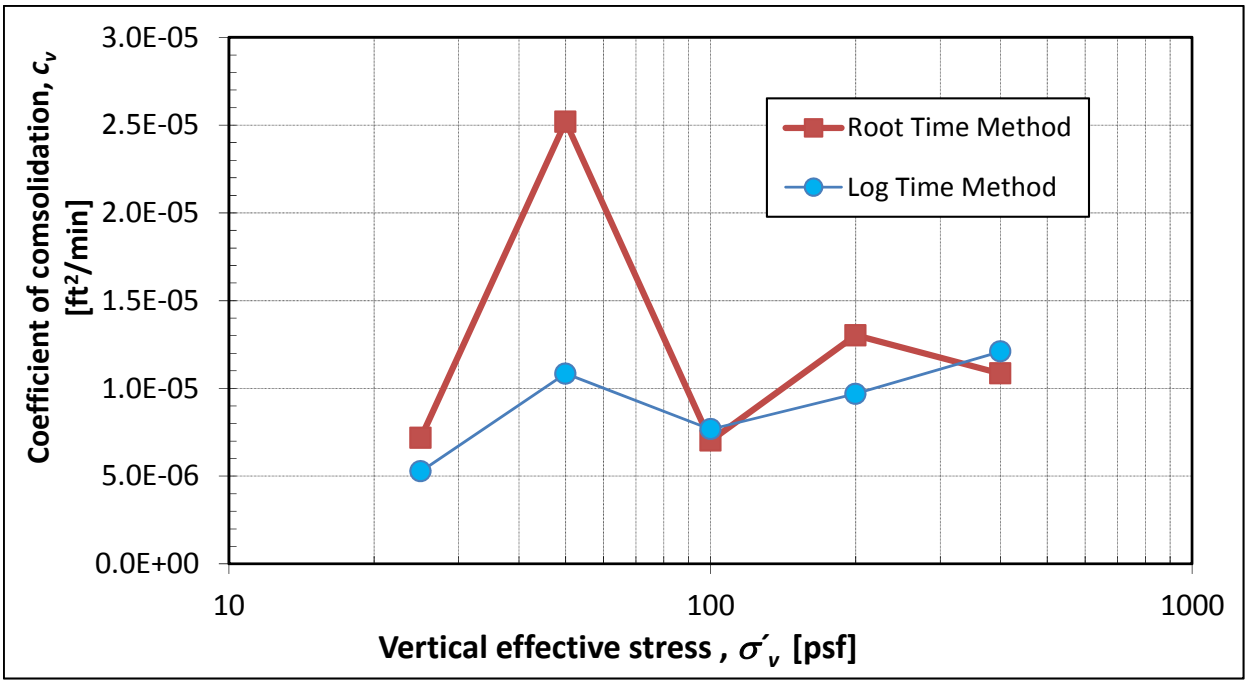


Figure 5. Coefficient of consolidation and coefficient of hydraulic conductivity for Sample CS1.



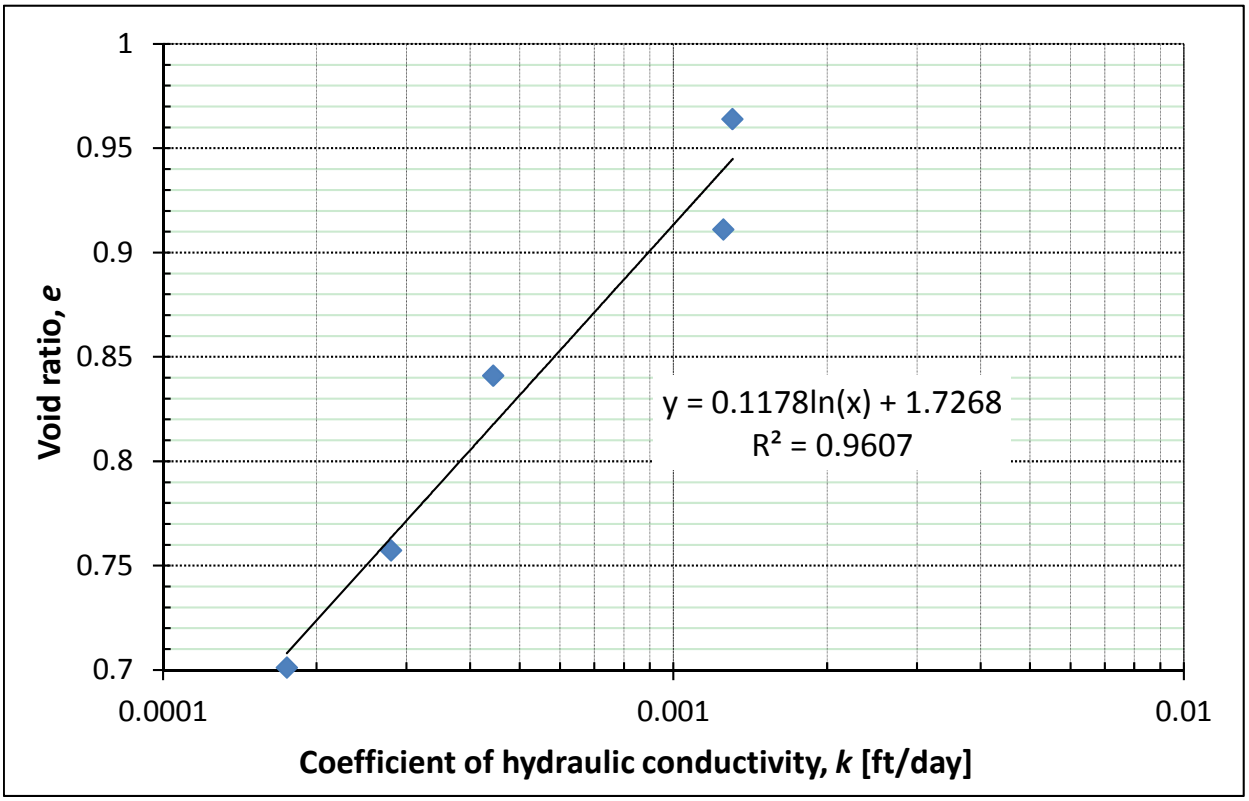
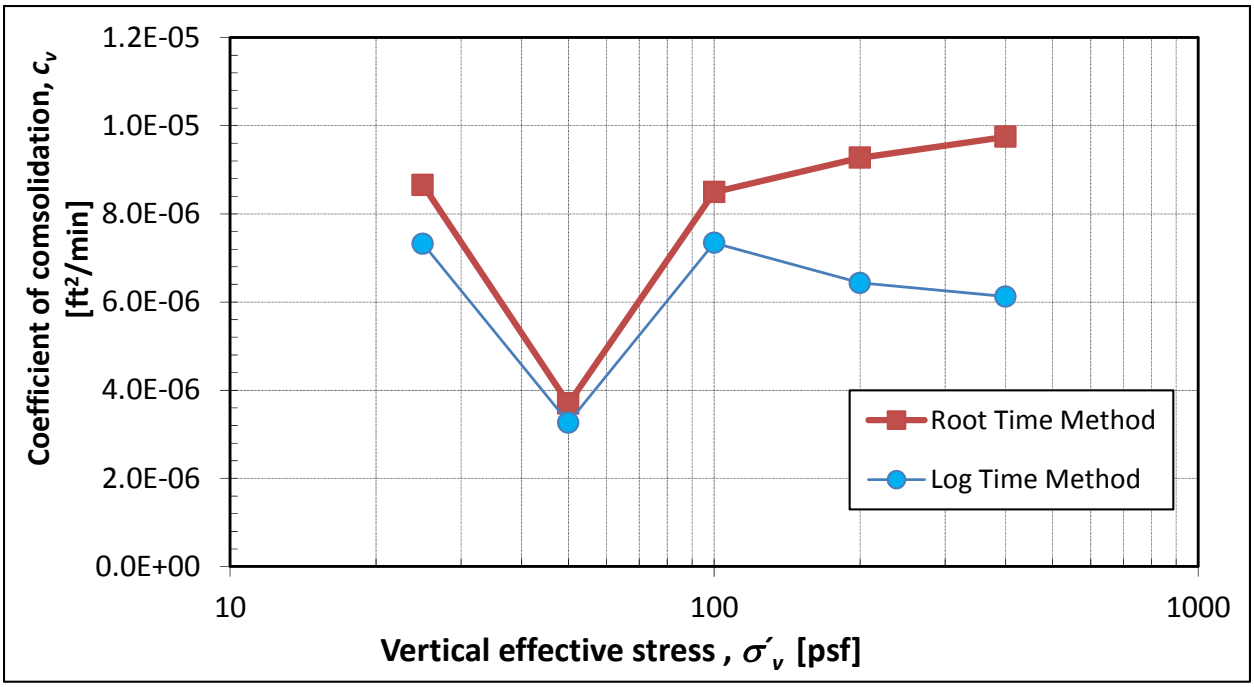


Figure 6. Coefficient of consolidation and coefficient of hydraulic conductivity for Sample CS2.



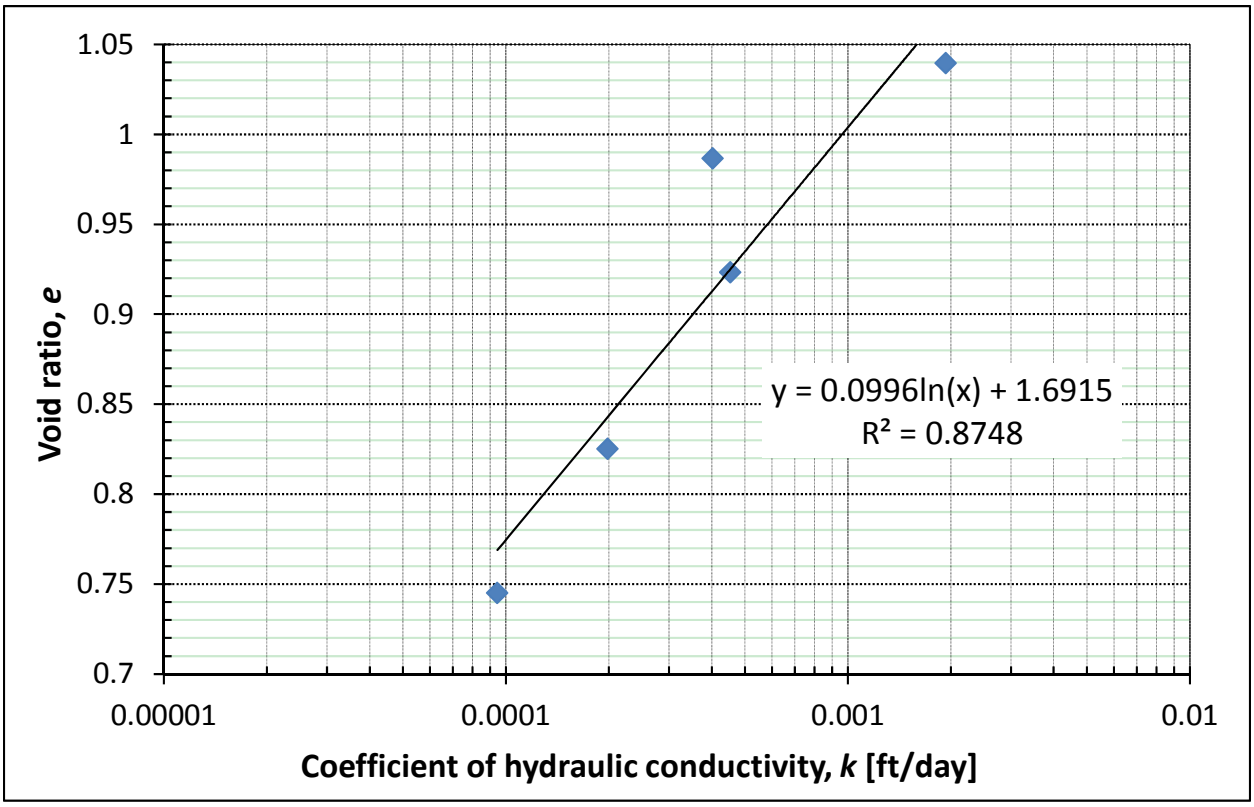


Figure 7. Coefficient of consolidation and coefficient of hydraulic conductivity for Sample CS3.

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