SMITH+GARDNER
ENGINEERS

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14 N. Boylan Avenue, Raleigh NC 27603

TEL
919.828.0577

WEB
www.smithgardnerinc.com

June 23, 2014

APPROVED 7/14/2014
Division of Waste Management -
Solid Waste Section JM
Permit # 2906-MSWLF-2008

Mr. John Murray, P.E.
Regional Engineer
NC DENR - Division of Waste Management
610 E. Center Ave.
Mooresville, NC 28115

RE: Davidson County MSW Landfill (Permit No. 29-06)
Phase 2 - Area 2 - Cell 1 Construction
Construction Quality Assurance (CQA) Report

Received 6/23/2014

Dear John:

On behalf of Davidson County, Smith Gardner, Inc. (S+G) would like to submit the enclosed construction quality assurance (CQA) report for the construction of the Phase 2 - Area 2 - Cell 1 municipal solid waste (MSW) landfill unit for your review.

As you are aware, the County is anxious to begin operations in Cell 1A as soon as possible as space in the existing Area 1 unit is becoming limited. If necessary, S+G can provide a certification of Cell 1A separately from the entire Cell 1.

Should you have any questions or comments on this report, please contact me at your earliest convenience.

Sincerely,
SMITH GARDNER, INC.

Pieter K. Scheer, P.E.
Project Manager
pieter@smithgardnerinc.com

Enclosure

cc: Charlie Brushwood, Davidson County
Steven Sink, Davidson County
Ed Mussler, P.E., NCDWM
Hugh Jernigan, NCDWM

Appendix O

Record Drawings

Construction Quality Assurance Report
Phase 2, Area 2, Cell 1 Construction
Davidson County MSW Landfill

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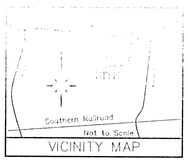


NCGS Grid North
by Local Established
Monuments

Topographic As-Built Survey for :

DAVIDSON COUNTY
INTEGRATED SOLID WASTE MANAGEMENT

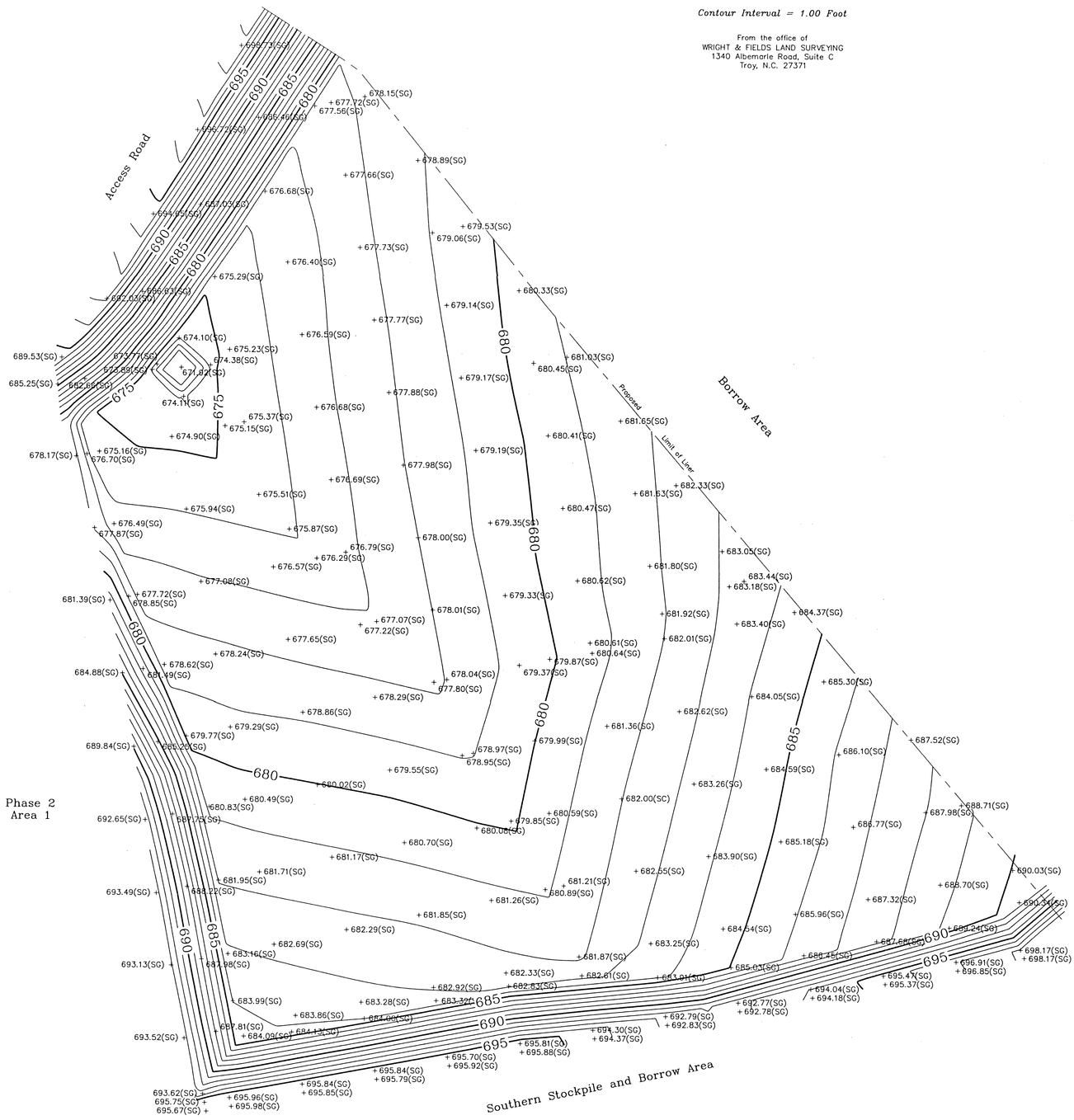
Top of Subgrade Surface Verification for Cell No. 1 of Phase 2, Area 2 at the Davidson County MSW Landfill Site

Thomasville Township, Davidson County, North Carolina
Deed Reference Book 639 Page 473, Book 643 Page 395, and Book 1342 Page 1782.
Surveyed by Thomas J. Fields, PLS-2906, in January and February 2014.
REVISED & UPDATED on April 30th, 2014

40 0 40
Scale is in Feet
1" = 40'

Contour Interval = 1.00 Foot

From the office of
WRIGHT & FIELDS LAND SURVEYING
1340 Albemarle Road, Suite C
Troy, N.C. 27371



NORTH CAROLINA
DAVIDSON COUNTY

I, Thomas J. Fields, certify that this plat was drawn from an actual field survey done by me and is in all respects correct to the best of my knowledge and belief. Surface elevations shown on this plat represent measurements made of the finished SUBGRADE surface at the construction site of Cell 1, Area 2. Witness my original signature and official stamp this the 30th day of April 2014.

Thomas J. Fields
SURVEYOR PLS-2906

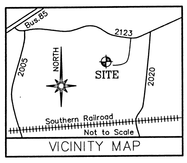
No horizontal control within 2000 feet.

NORTH CAROLINA PROFESSIONAL SEAL L-2906 LAND SURVEYOR THOMAS JEFFREY FIELDS

LEGEND

Elevation at Existing Contours	690
Spot Elevations at Subgrade	+690.05(SG)
One Foot Contour Interval (minor contours)	
Five Foot Contour Interval (major contours)	

Job No. 2013-94



VICINITY MAP

NCGS Grid North
by Local Established
Monuments

Topographic As-Built Survey for :

DAVIDSON COUNTY
INTEGRATED SOLID WASTE MANAGEMENT

Top of Clay Surface Verification for Cell No. 1 of Phase 2, Area 2 at the Davidson County MSW Landfill Site

Thomasville Township, Davidson County, North Carolina
Deed Reference Book 639 Page 473, Book 643 Page 395, and Book 1342 Page 1782.
Surveyed by Thomas J. Fields, PLS-2906, in February 2014.

REVISED & UPDATED on April 30th, 2014.

40 0 40
Scale is in Feet
1"= 40'

Contour Interval = 1.00 Foot

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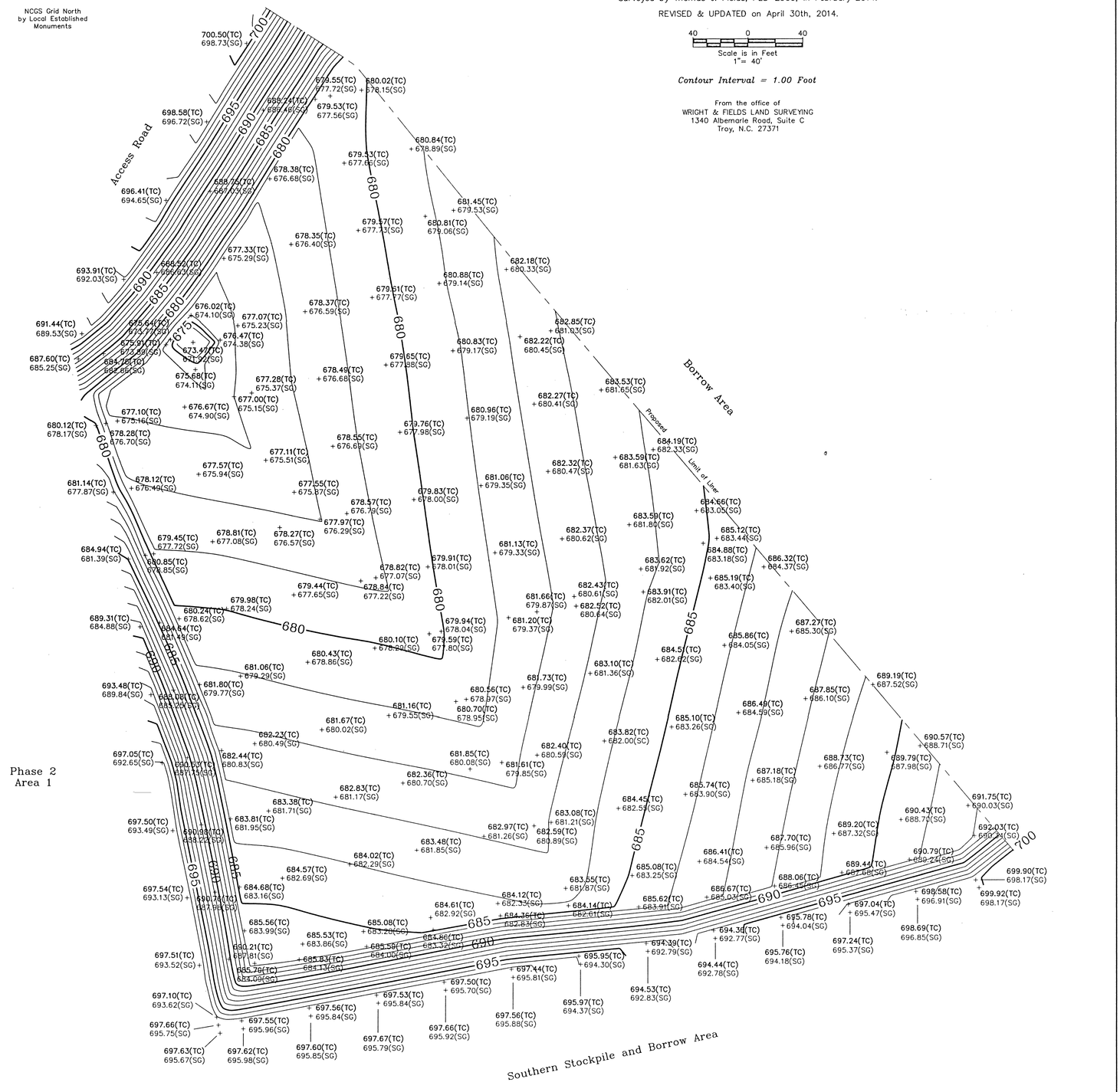
Troy, N.C. 27371



NORTH CAROLINA
DAVIDSON COUNTY

I, Thomas J. Fields, certify that this plat was drawn from an actual field survey done by me and is in all respects correct to the best of my knowledge and belief. Surface elevations shown on this plat represent measurements made of the finished TOP OF CLAY surface at the construction site of Cell 1, Area 2. Witness my original signature and official stamp this the 30th day of April 2014.

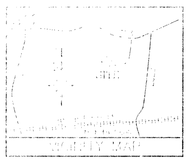
Thomas J. Fields
SURVEYOR PLS-2906

NORTH CAROLINA PROFESSIONAL SEAL L-2003 LAND SURVEYOR THOMAS JEFFREY FIELDS

No horizontal control within 2000 feet.

LEGEND

Elevation at Existing Contours	690
Spot Elevations at Clay Surface	+681.55(TC)
Spot Elevations at Subgrade	+679.55(SG)
One Foot Contour Interval (minor contours)	
Five Foot Contour Interval (major contours)	



Topographic As-Built Survey for :

DAVIDSON COUNTY
INTEGRATED SOLID WASTE MANAGEMENT

Top of Soil and Cover Verification for Cell No. 1 of Phase 2, Area 2 at the Davidson County MSW Landfill Site

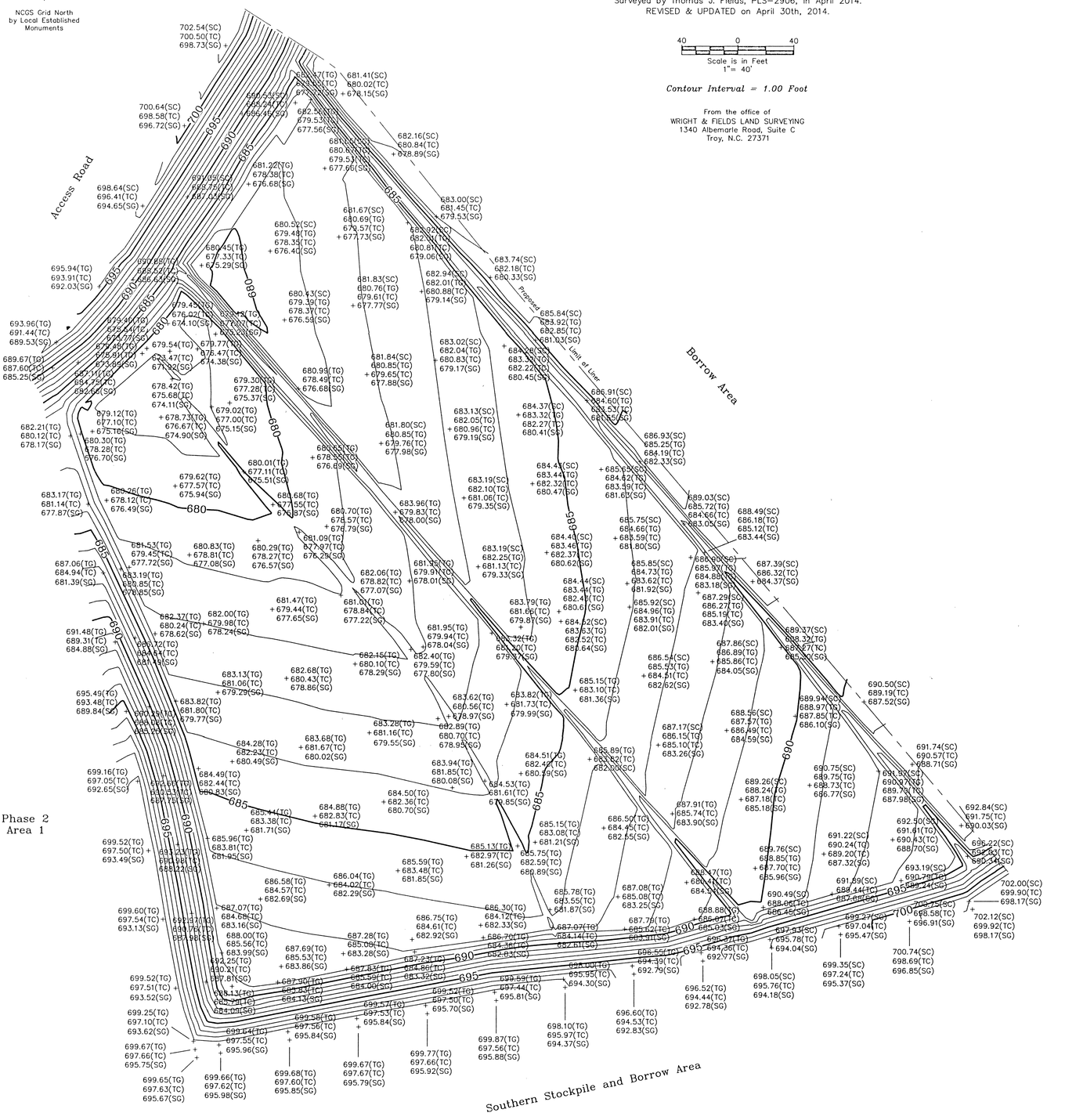
Thomasville Township, Davidson County, North Carolina
Deed Reference Book 639 Page 473, Book 643 Page 395, and Book 1342 Page 1782.
Surveyed by Thomas J. Fields, PLS-2906, in April 2014.
REVISED & UPDATED on April 30th, 2014.

40 0 40
Scale is in Feet
1" = 40'

Contour Interval = 1.00 Foot

From the office of
WRIGHT & FIELDS LAND SURVEYING
1340 Albemarle Road, Suite C
Troy, N.C. 27371

NCGS Grid North
by Local Established
Monuments



LEGEND

Existing Contours	690
Spot Elevations at Soil Cover Surface	•694.55(SC)
Spot Elevations at Gravel Surface	•693.55(TG)
Spot Elevations at Clay Surface	•691.55(TC)
Spot Elevations at Subgrade	•690.05(SG)
One Foot Contour Interval (minor contours)	
Five Foot Contour Interval (major contours)	

NORTH CAROLINA
DAVIDSON COUNTY

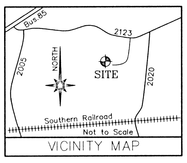
I, Thomas J. Fields, certify that this plat was drawn from an actual field survey done by me and is in all respects correct to the best of my knowledge and belief. Surface elevations shown on this plat represent measurements made of the finished TOP OF GRAVEL and TOP OF SOIL COVER surface at the construction site of Cell 1, Area 2. Witness my original signature and official stamp this the 30th day of April 2014.

Thomas J. Fields
SURVEYOR PLS-2906

NORTH CAROLINA PROFESSIONAL SEAL L-2906 LAND SURVEYOR THOMAS JEFFREY FIELDS

No horizontal control within 2000 feet.

Job No. 2013-94



VICINITY MAP

As-Built Survey for :

DAVIDSON COUNTY
INTEGRATED SOLID WASTE MANAGEMENT

HDPE Geomembrane Liner As-Built for Cell 1 of Phase 2, Area 2 at the Davidson County MSW Landfill Site

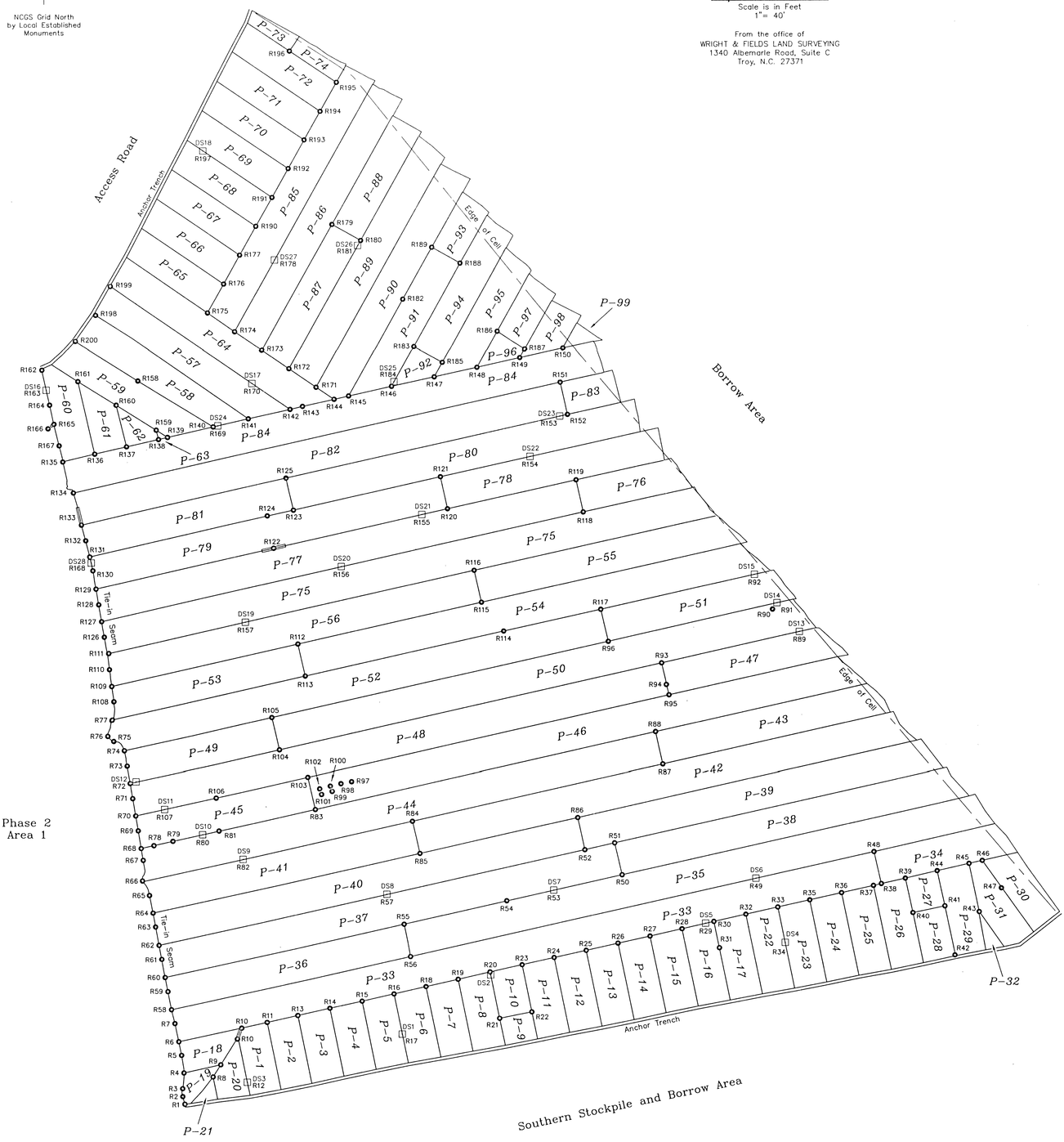
Thomasville Township, Davidson County, North Carolina
Deed Reference Book 639 Page 473, Book 643 Page 395, and Book 1342 Page 1782.
Surveyed by Thomas J. Fields, PLS-2906, in March 2014.

REVISED & UPDATED on April 30th, 2014.

40 0 40
Scale is in Feet
1" = 40'

From the office of
WRIGHT & FIELDS LAND SURVEYING
1340 Albemarle Road, Suite C
Troy, N.C. 27371

NCGS Grid North
by Local Established
Monuments



NORTH CAROLINA
DAVIDSON COUNTY

I, Thomas J. Fields, certify that this plat was drawn from an actual field survey done by me and is in all respects correct to the best of my knowledge and belief. This plat was prepared for engineering and verification purposes only and is not intended for recordation, conveyance, or sale. Witness my original signature and official stamp this the 30th day of April 2014.

Thomas J. Fields
SURVEYOR PLS-2906

No horizontal control within 2000 feet.

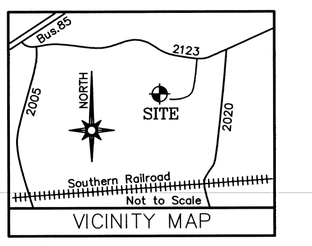
NORTH CAROLINA PROFESSIONAL SEAL L-2906 LAND SURVEYOR THOMAS JEFFREY FIELDS

HDPE Geomembrane Area
2D Surface Area = 279,573.8 Sq.Ft.
3D Surface Area = 281,318.4 Sq.Ft.

Legend

P-39 ..... denotes Panel Numbers
DS10 ..... denotes Destruct Numbers
R20 ..... denotes Repair Numbers
⊡ ..... denotes Destruct Symbols
● ..... denotes Repair Symbols

Job No. 2013-94



VICINITY MAP

Drop Inlet Data

D.I.–1 Invert Elevation = 676.12 FT
D.I.–2 Invert Elevation = 673.17 FT
D.I.–3 Invert Elevation = 668.47 FT

As–Built Survey for :

DAVIDSON COUNTY
INTEGRATED SOLID WASTE MANAGEMENT

The Leachate Collection System within the Area 2 Cell 1 Site

Thomasville Township, Davidson County, North Carolina
Deed Reference Book 639 Page 473, Book 643 Page 395, and Book 1342 Page 1782.
Topographic As–Built Survey by Thomas J. Fields, PLS–2906, in April 2014.
REVISED & UPDATED on June 17th, 2014.
SEE LEACHATE SYSTEM AS–BUILT NOTE BELOW.

40 0 40
Scale is in Feet
1"= 40'

Contour Interval = 1.00 Foot

From the office of
WRIGHT & FIELDS LAND SURVEYING
1340 Albemarle Road, Suite C
Troy, N.C. 27371

NCGS Grid North
by Local Established
Monuments

Revised 6/23/2014, APPROVED 7/14/2014

DI–1
DI–2
DI–3
Access Road
30" RCP
18" CPP
pipe flare
Invert=
676.66 FT
6" Pipe
Clean–Out
Invert=
699.10 FT
Force Main
Tee–Isolation
Valve Box
See FM Note
18" Riser
Invert=
697.48 FT
18" Riser
Invert=
697.51 FT
6" Pipe
Clean–Out
Invert=
695.72 FT
Force Main
Ivaults
6" Leachate Pipe
6" Leachate Pipe (by plans)
Proposed
Limit of Liner
Borrow Area
6" Pipe
Clean–Out
Invert=
693.52 FT
Existing
6" Pipe
Clean–Out
Invert=
694.43 FT
6" Leachate Pipe (by plans)
6" Leachate Pipe (by plans)
Phase 2
Area 1
6" Pipe
Clean–Out
Invert=
698.04 FT
6" Pipe
Clean–Out
Invert=
698.92 FT
Southern Stockpile and Borrow Area

LEGEND

Existing Contours 690
Spot Elevations at Subgrade . . . . . + 650.00
One Foot Contour Interval (minor contours)
Five Foot Contour Interval (major contours)
Bollards . . . . . •
2" Vertical Risers . . . . . o
Reinforced Concrete Pipe . . . . . RCP
Corrugated Plastic Pipe . . . . . CPP
Force Main Valve Vaults . . . . . vaults

LEACHATE SYSTEM AS–BUILT NOTE:

At the time of this survey, all of the Leachate Pipes were covered with stone and not accessible for measurement. We measured the extreme ends of the Leachate Pipes that extended through the stone at the northern end and the southern end of the New Cell. All other data used to produce this As–Built Drawing were provided by Nathan Russell of J.T. Russell and Sons, Inc., measured by them with their GPS equipment at the approximate time of installation of pipes and the cover stone. I did not witness any of these measurements.

FM NOTE (Force Main Tie–In):

Data for the Force Main Tee–Isolation Valve Box was provided by Chris Stone of Smith–Gardner, Inc.

NORTH CAROLINA
DAVIDSON COUNTY

I, Thomas J. Fields, certify that this plat was drawn from an actual field survey done by me and is in all respects correct to the best of my knowledge and belief. My measurements were made to the extreme ends of the Leachate Pipes that were exposed above the Cover Gravel of Cell 1 Area 2 as described in the Leachate System As–Built Note shown hereon. Witness my original signature and official seal this the 17th day of June 2014.

Thomas J. Fields
SURVEYOR PLS–2906

NORTH CAROLINA PROFESSIONAL SEAL L–2906 LAND SURVEYOR THOMAS JEFFREY FIELDS

No horizontal control within 2000 feet.

Job No. 2013–94