

April 13, 2017

Solid Waste Section  
Department of Environmental Protection  
South District Office  
2295 Victoria Avenue, Suite 364  
Ft. Myers, Florida 33902

Re:   Sarasota County  
      Central County Solid Waste Disposal Complex  
      Permit No. 0130542-022-SO/01 (Mod# 0130542-027-SO/MM)  
      WACS No. 51614  
      Annual Topographic Survey and Remaining Site Life Report - 2016

To Whom It May Concern:

In accordance with Specific Condition C.14.b of the above referenced permit for the Central County Solid Waste Disposal Complex (CCSWDC), the Sarasota County Solid Waste Department is pleased to submit the annual topographic survey and remaining site life report. As shown in the supporting calculations the Phase II Class I Landfill Area has approximately 6.7 years of remaining site life from December 3, 2016 assuming a moderate increase in waste tonnage per year until reaching capacity. The topographic survey dated December 3, 2016, performed by Kucera International, Inc. and provided in Attachment A, demonstrates that the Phase II landfill slopes do not exceed 3 to 1 (H:V) and the top elevations do not exceed the maximum permitted design elevation of 121 feet NGVD.

During the past year, filling of Phase II has been performed in general accordance with the permit-approved Fill Sequence Plan; however, as depicted in the topographic survey, a portion of Lift 6 in Subcell 2 had to be constructed earlier than planned in order to ensure that the initial placement of waste in Subcell 3 did not occur during the wet season. By delaying the placement of waste in Subcell 3 until the end of the wet season, operational challenges, which presented risks that the County was not willing to incur were avoided. Those risks included the potential generation of a substantial quantity of leachate due to the open Subcell 3, limitations to operating in Subcell 3 during the initial select waste placement during wet weather, and the operation of two working faces located a substantial distance from each other during placement of the select waste layer in Subcell 3. The stormwater drainage from the top of Phase II Subcells 1 and 2 is not impacted by the portion of the Lift 6 that was constructed.

The following calculations are provided in support of the site life determination.

**Objective:**

Calculate the remaining landfill air space and site life in the Phase II Landfill Area located at the Central County Solid Waste Disposal Complex. The Phase I Landfill Area was closed as of November 2011 (closure certification received from FDEP in June 2013) and did not receive any waste during the subject period.

**Knowns:**

- Topographic survey prepared by Kucera International, Inc. dated December 3, 2016 and provided to the Sarasota County Solid Waste Department by Advanced Disposal, Inc. The signed and sealed report of survey and topographic survey map sheets are provided in Attachment A for reference.
- The volume of air space used in Phase II as calculated using AutoCADD by comparing the December 2015 to December 2016 topographic survey. Please refer to the volume report prepared by SCS Engineers provided in Attachment B.
- Solid Waste tonnage from December 13, 2015 to December 2, 2016 as reported by scale records for the date range. Please refer to the table provided in Attachment C.

**Assumptions:**

- Total Phase II Air Space= 6,000,000 cu. yards.
- The final cover soil volume is based on 3 feet of soil which includes a 1.0 foot intermediate cover layer, 1.5 foot protective final cover layer, and 0.5 foot vegetative cover soil layer.
- The final cover surface area for Phase II is 2,659,448 square feet.
- Final Cover Soil Volume= 3 feet x 2,659,448 sq. feet / 27 feet/cu. yard= 295,494 cu. yards
- Operational Air Space Used in Phase II as of December 3, 2016 calculated by adding volume of waste filled in 2016 by comparing surface of waste fill from December 15, 2015 topographic survey to surface of waste fill from December 3, 2016 topographic survey and adding total air space consumed from 2015 report. The surface volume report prepared by SCS Engineers is provided in Attachment B providing the 2016 waste volume used in Phase II.
- Average Monthly Waste Acceptance Rate was 24,273 tons/month (based on December 2015 through November 2016, this does not include December 1 – December 2, 2016). See table provided in Attachment C.
- Apparent Landfill Density equal to contractual density of 1,336 lbs/cu. yards. The apparent landfill density is waste tonnage measured by the scales divided by the Operational Air Space Used which includes waste and initial (daily) cover soils.

- Operational Air Space Available, Used, and Remaining include the volume of waste and initial (daily) cover soils.

**Calculations:**

1. Total Phase II Air Space- Final Cover Soil Volume = Operational Air Space Available

$$6,000,000 \text{ cu. yards} - 295,494 \text{ cu. yards} = 5,704,506 \text{ cu. yards}$$

2. Operational Air Space Available - Operational Air Space Used in Phase II as of December 15, 2015 – Operational Air Space Used between December 15, 2015 and December 3, 2016 = Operational Air Space Remaining

$$5,704,506 \text{ cu. yards} - 1,984,445 \text{ cu. yards} - 408,986 \text{ cu. yards} = 3,311,075 \text{ cu. yards}$$

3. Operational Air Space Remaining X Apparent Landfill Density = Remaining Waste Tonnage

$$3,311,075 \text{ cu. yards} \times 1,336 \text{ lbs/cu. yard} / 2,000 \text{ lbs/ton} = 2,211,798 \text{ tons}$$

4. Remaining Waste Tonnage / Average Monthly Waste Acceptance Rate = Remaining Site Life

$$2,211,798 \text{ tons} / 24,273 \text{ tons/month} = 91 \text{ months} = 7.6 \text{ years from December 3, 2016}$$

Therefore, the Phase II Landfill is projected to reach capacity on or about the beginning of July 2024 assuming 0% increase in waste tonnage through the operational life of Phase II. This is in contrast to the projected date of June 2025 from the April 2016 site life report. The decrease in site life of approximately 12 months is attributed to an increase of waste accepted from 23,319 tons per month in 2015 to 24,273 tons per month in 2016. This is a 4.1% increase in the average monthly tonnage accepted for disposal in the Class I landfill as opposed to the population projected increase of 1.36% used in last year's site life calculation. The subsequent projected year's tonnages were then adjusted to match the new higher tonnage rate; in addition, the percent increase in tonnage for each year was increased since it appears population projection increases are not sufficiently estimating the incoming waste tonnage. Increasing the projected tonnages and annual percentage increase for each year resulted in the decrease in site life shown in this year's report.

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Using a year-to-year tonnage increase of 3.16%, which was the increase in tonnage from 2015 to 2016, the remaining site life of the Phase II Landfill is currently estimated as 6.7 years. This results in Phase II reaching capacity on or about September 2023. Please refer to the calculation sheet provided in Attachment D.

Please contact me anytime at 941-861-1572 if you have questions or require additional information regarding the site life report and attachments.

Sincerely,

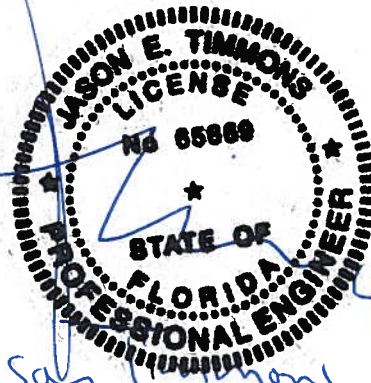


Jason Timmons, PE  
Solid Waste Engineer  
FL PE#65869

Xc: Lois Rose, Sarasota County  
File

Attachments (4)

- Attachment A - Topographic Survey
- Attachment B - Volume Report
- Attachment C - Tonnage Report
- Attachment D - Site Life Calculations



Jason Timmons  
FL PE# 65869

4/13/17

ATTACHMENT A

TOPOGRAPHIC SURVEY

# Survey Report for Sarasota Landfill

<b>Kucera International Project No:</b>	<b>36462 Sarasota Landfill</b>
<b>Type of Survey:</b>	<b>Topographic Survey</b>
<b>Date of Survey:</b>	<b>This map is based on aerial photography collected December 3, 2016</b>
<b>Site:</b>	<b>Sarasota Landfill</b>
<b>Client:</b>	<b>Advanced Disposal</b>

## **Accuracy Statement:**

This survey meets or exceeds National Map Accuracy Standards. Ninety percent of the mapping should meet or exceed the tolerances stated below when the photogrammetric value is compared to a field survey value for well-defined features. This mapping also meets or exceeds the Florida Minimum Technical Standards.

### **Vertical:**

Photogrammetrically derived breaklines and mass points have been collected to generate contours with an estimated vertical accuracy of 0.5'. Dashed contours in obscured areas are approximate and should be field checked before using. Spot elevations and well defined features have been measured to an estimated vertical accuracy of 0.25'.

### **Horizontal:**

Well defined features have been measured to an estimated horizontal accuracy of 1.25'.

### **Map Plotting:**

This map is intended to be plotted at a scale of 1:600 or smaller.

## **Lineage:**

This topographic map is based on a control supplied to Kucera International in December 2016 by Advanced Disposal. The digital photography was georeferenced to the existing control data. A copy of the survey report is contained in Appendix II.

## **Datum:**

**Horizontal:** Florida State Plane Coordinate System, Florida West Zone (902),  
North American Datum of 1983 (1990 Adjustment).

**Vertical Datum:** Elevations based on the National Geodetic Vertical Datum of 1929  
(NGVD29)

**Units:** U.S. Survey Feet



**KUCERA**  
INTERNATIONAL INC.

38133 Western Parkway  
Willoughby, OH 44094  
Phone: 440-975-4230

## **Targeted Control Points Used for Photogrammetric Mapping:**

### **Datums:**

Horizontal: Florida State Plane Coordinate System, Florida West Zone (902),  
North American Datum of 1983 (1990 Adjustment).

Vertical: Elevations based on the National Geodetic Vertical Datum of 1929  
(NGVD29).

U.S. Survey Feet

<b>Point #</b>	<b>Northing</b>	<b>Easting</b>	<b>Elevation</b>	<b>Description</b>
409	1040770.365	527860.694	24.628	MTP HV09 NLD _TRAV PT
410	1040929.414	528304.597	25.961	MTP HV10 NLD _TRAV PT
401R	1043964.040	527495.730	25.954	MTP HV01 NLD _TRAV PT
402R	1043963.723	528453.386	25.809	MTP HV02 NLD _TRAV PT
403R	1043892.215	529898.683	25.654	MTP HV03 NLD _TRAV PT
404R	1043937.564	531107.626	25.809	MTP HV04 NLD _TRAV PT
405R	1042293.329	527196.058	25.788	MTP HV05 NLD _TRAV PT
406	1042430.947	528354.214	40.959	MTP HV06 NLD _TRAV PT
407	1042411.856	529754.924	32.962	MTP HV07 NLD _TRAV PT
408	1042440.188	531272.462	28.324	MTP HV08 NLD _TRAV PT
413	1042134.822	531272.932	25.804	MTP HV08A NLD _TRAV PT
411	1040920.850	529879.691	25.834	MTP HV11 NLD _TRAV PT
412	1040945.386	531196.850	25.876	MTP HV12 NLD _TRAV PT

### **Abbreviations**

US – United States

RMS – Root Mean Square

& - And

CO – County

FL – Florida

E – East

W – West

N – North

S – South

' – Feet

NGVD29 – National Geodetic Vertical Datum of 1929





























NAD83 – North American Datum of 1983



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## Legend

	PAVED ROAD		BRUSHLINE
	UNPAVED ROAD		10' INDEX CONTOUR
	UNPAVED DRIVE OR PARKING		2' INTERMEDIATE CONTOUR
	TRAIL		DEPRESSION CONTOUR
	GUARDRAIL		SPOT ELEVATION
	BUILDING		HORIZONTAL AND VERTICAL CONTROL POINT
	DECK		VERTICAL CONTROL POINT
	MISC. OBJECT (LINE)		UTILITY POLE
	MISC. OBJECT (SYMBOL)		LIGHT POLE
	BRIDGE		TREE
	FENCE		SWAMP AREA
	WATERLINE (LAKE, STREAM, RIVER)		TANK / SILO
	DITCH		PIPE INLET
	CULVERT		
	TREELINE		



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### **Measurement Methods:**


This map was produced using aerial photogrammetric methods using photography captured on December 3, 2016 using an UltraCam Eagle digital camera. The imagery was collected at a flight height of 4300' above ground. The digital images were then georeferenced using Inpho Match AT aerotriangulation software. A report of the control point residuals is contained in Appendix 1. The existing mapping was then updated using BAE Socet Set combined with Cardinal Systems VR-1 mapping software. Areas of change were delineated and the existing breakline and mass point information was updated. Contours in the changed area were generated using Cardinal Systems VR-1 mapping software and the data was tied into the existing mapping. In areas where the ground is obscured by trees or heavy shadows the contours should be treated as approximate and they do not meet the accuracy standards stated above.

### **Limitations:**

Field surveys should be used when a greater accuracy is required than the accuracy stated in this report.

**Note: This report and accompanying map titled Topographic Survey of Sarasota Landfill are not full and complete without the other and are not valid without the signature and original raised seal of a Florida licensed surveyor and mapper.**

Signed: \_\_\_\_\_

  
John Antalovich Sr., FL PSM No. LS5437

Seal: \_\_\_\_\_

Date: \_\_\_\_\_

1-13-17

Kucera International Inc. License No.: \_\_\_\_\_

LB6643



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INTERNATIONAL INC.

38133 Western Parkway  
Willoughby, OH 44094  
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## APPENDIX I

### Horizontal / Vertical Control Point Residuals (US Feet)

Point ID	Residual X	Residual Y	Residual Z	Type
	US Feet	US Feet	US Feet	
406	-0.091	0.087	-0.028	HV
407	-0.054	0.00	0.026	HV
408	0.012	0.012	0.076	HV
409	-0.114	-0.054	-0.034	HV
410	-0.057	-0.121	-0.007	HV
411	-0.076	-0.004	-0.013	HV
412	-0.146	-0.126	0.00	HV
413	-0.103	-0.003	0.08	HV
401R	0.034	0.071	-0.003	HV
402R	0.06	0.142	-0.01	HV
403R	0.069	0.047	-0.022	HV
404R	0.168	-0.093	-0.017	HV
405R	-0.079	-0.029	-0.048	HV

Type:

HV – horizontal and vertical

VE – vertical only



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## **APPENDIX II**

### **SURVEY CONTROL REPORT**



**KUCERA**  
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Willoughby, OH 44094  
Phone: 440-975-4230

[illegible]

WMP NLD = EXISTING TRAVERSE POINT SUPPLIED BY SARASOTA COUNTY  
WMP HV03 NLD\_TRAV PT = AERIAL TARGET SET WITH NAIL AND DISK L37856

Elevations shown hereon are relative to National Geodetic Vertical Datum (NGVD) at 1929 based on Sarasota County Bench Mark located on the west side of the Sarasota County, Solid Waste Disposal Administration Building, as shown on Specific Purpose Survey map issued by Sarasota County Survey-Mapping, Project Number 080037, dated 3-18-08. Bench Mark is a 3'-1/2" Concrete Survey Monument with a brass disk - SARASOTA COUNTY BM, with a published elevation of 22.01 feet (NGVD) 1929.

This survey was performed for the sole and exclusive benefit of the University or individual townspeople. Likewise, any results of this survey are for private purposes other than will be used, originally intended, without the written permission of the undersigned Surveyor & Mapper will be the responsibility of the user. The undersigned Surveyor & Mapper will be held harmless by the user.

The Undersigned Surveyor & Mapper


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not continue to

conduct a CONTROL SURVEY of a portion of the Sarasota County Solid Waste Disposal Complex, located in Sarasota County, Florida, was completed under our direction on June 8, 2015.

This CONTROL SURVEY meets the "Standards of Practice" set forth by the Florida Board of Surveying & Mapping, pursuant to Section 472.027, Florida Statutes, and Chapter 51-17000, Florida Administrative Code. No other person or entity may rely upon this survey.

STANTEC CONSULTING SERVICES, INC. (1877866)  
5900 Professional Parkway East  
Sarasota, Florida 34240-8414

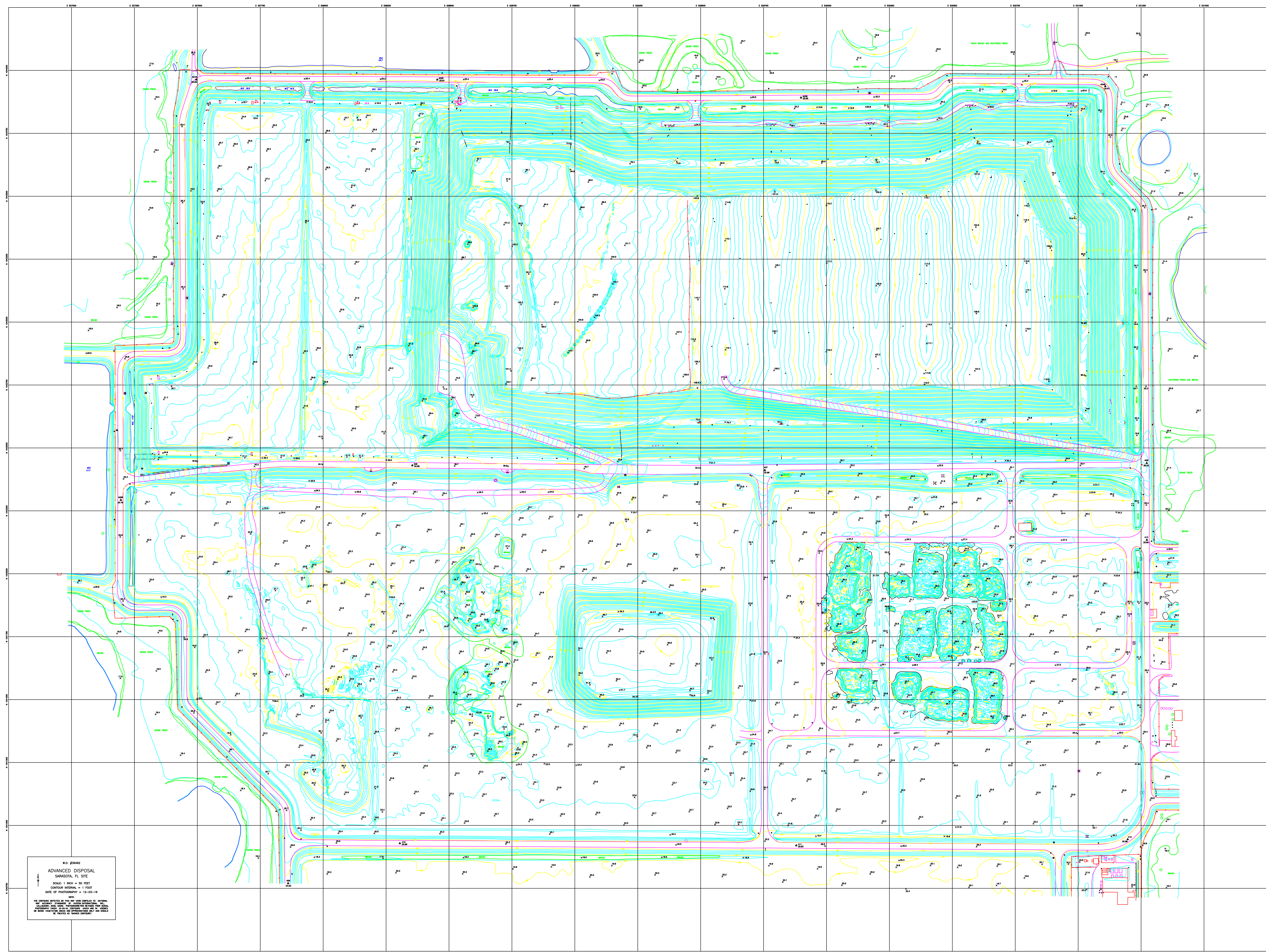
Phone: (341) 397-8300  
By:   
Robert R. Cunningham, P.S.M. No. 3924  
Date of Signature: 09/30/2016

NOTE: This Certification is only for the lands as described. It is not a certification of title, zoning, easements or freedom of encumbrances. This Sketch of Survey and Certification are not valid without the signature and original raised seal of a Florida Licensed Surveyor and

The seal appearing on this document was authorized by Robert R. Cunningham on 09/30/2016.

[illegible]







THIS PLAN HAS BEEN DEVELOPED BY AERIAL PHOTOGRAMMETRIC METHODS FROM PHOTOGRAPHS DATED 12-03-2016  
MAPPING DONE BY:

**KUCERA INTERNATIONAL INC.**

HEADQUARTERS: WILLOUGHBY, OHIO  
PLANT CITY, FL - COLUMBUS, OH - PITTSBURGH, PA

See report of topographic survey of lands in Secs. 2 & 3, Twp. 38S, Range 19 E. Sarasota Co., FL dated 12-03-2016. This topographic map and attached report are not valid without the signature and original raised seal of a Florida licensed surveyor and mapper which can be found on the report. The map and report are not full and complete without the other.

John Antalovich, Sr. P.S.M. No. LS5437

NOTES: Accuracy Specifications

1.) The contours depicted on this map were compiled to national map accuracy standards by Kucera International, Inc., Willoughby, Ohio, using photogrammetric methods from aerial photography taken 12-03-16. Contours which are in wooded or dense vegetation areas are approximations only and should be treated as "dashed contours".

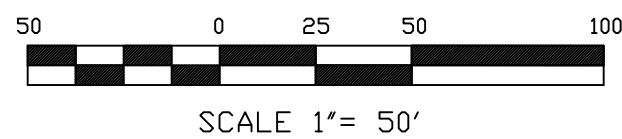
2.) Buildings are shown roofline only.

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LEGEND

- 5' CONTOUR ELEVATION, FEET (MSL)
- 1' CONTOUR
- FENCE
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- DITCH (WATER) LINE
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- TREE
- CATCH BASIN
- PIPE INLET
- MANHOLE



ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

Revisions

No.	Description	Date	By	No.	Description	Date	By

Approved By:

Checked By:

Drawn By:

Project Location:

SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No.

T-01-05075-175

Scale:

As Shown

Sheet Number:

Date:

DEC. 03, 2016

1 of 16



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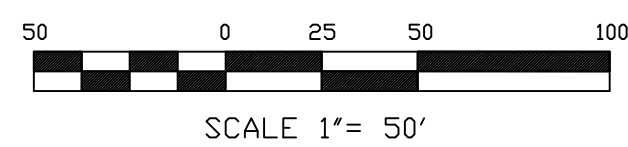
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Date: DEC. 03, 2016 2 of 16



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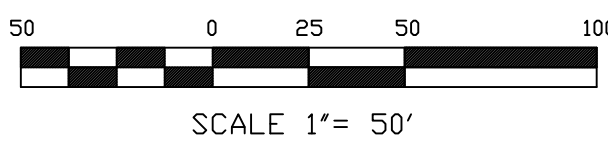
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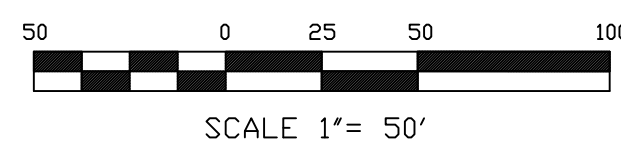
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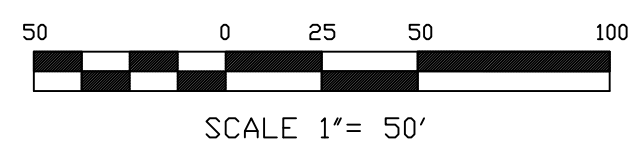
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DITCH (WATER) LINE  
HORIZONTAL & VERTICAL CONTROL POINT  
SPOT ELEVATION  
POWER POLE  
NON-UTILITY POLE  
GUYWIRE  
LIGHT POLE  
POST  
SIGN  
TREE  
CATCH BASIN  
PIPE INLET  
MANHOLE



ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

Revisions

No.	Description	Date	By	No.	Description	Date	By

Approved By:  
Checked By:  
Drawn By:

Project Location:

SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No. T-01-05075-175

Scale: As Shown Sheet Number: 5 of 16  
Date: DEC. 03, 2016



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THIS PLAN HAS BEEN DEVELOPED BY AERIAL PHOTOGRAMMETRIC  
METHODS FROM PHOTOGRAPHS DATED 12-03-2016  
MAPPING DONE BY:

**KUCERA INTERNATIONAL INC.**

HEADQUARTERS: WILLOUGHBY, OHIO  
PLANT CITY, FL - COLUMBUS, OH - PITTSBURGH, PA

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John Antalovich, Sr. P.S.M. No. LS5437

NOTES: Accuracy Specifications

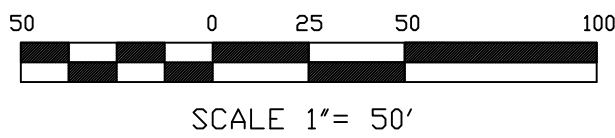
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LEGEND

- 5' CONTOUR ELEVATION, FEET (MSL)
- 1' CONTOUR
- FENCE
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- TREE LINE
- DITCH (WATER) LINE
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4000 Knights Trail Road  
Nokomis, Florida 34275

Revisions

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SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No.

T-01-05075-175

Scale:

As Shown

Sheet Number:

Date:

DEC. 03, 2016

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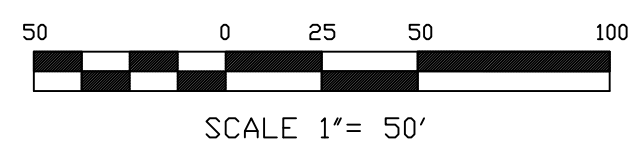
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ADVANCED DISPOSAL  
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Nokomis, Florida 34275

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SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No. T-01-05075-175

Scale:	As Shown	Sheet Number:
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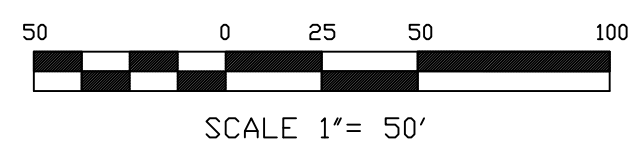
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ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

Revisions

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SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No. T-01-05075-175

Scale:	As Shown	Sheet Number:
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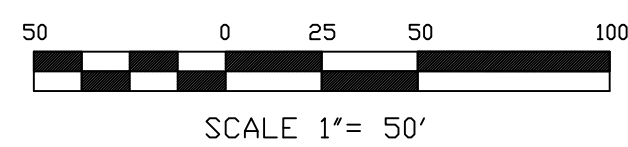
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ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

Revisions

No.	Description	Date	By

Approved By:

Checked By:

Drawn By:

Project Location:

SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No. T-01-05075-175

Scale: As Shown Sheet Number:

Date: DEC. 03, 2016 9 of 16



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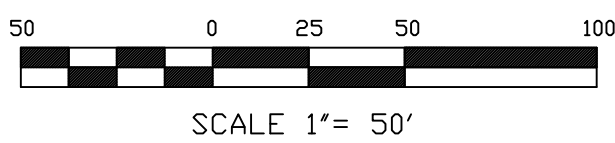
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ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

**Revisions**

No.	Description	Date	By	No.	Description	Date	By

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Drawn By:

Project Location:

SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No.

T-01-05075-175

Scale:

As Shown

Date:

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A B C D E F G H



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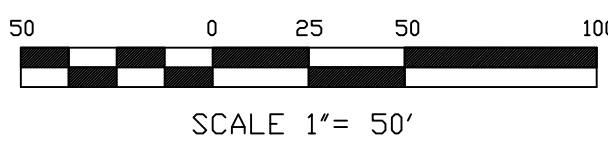
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ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

Revisions

No.	Description	Date	By	No.	Description	Date	By

Approved By:

Checked By:

Drawn By:

Project Location:

SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No.

T-01-05075-175

Scale:

As Shown

Date:

DEC. 03, 2016

Sheet Number:

11 of 16

A B C D E F G H



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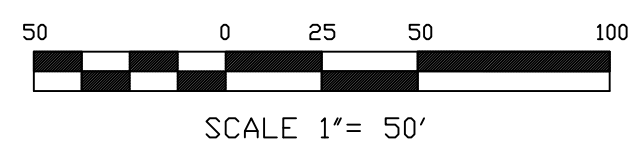
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ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

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SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No. T-01-05075-175

Scale:	As Shown	Sheet Number:
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1



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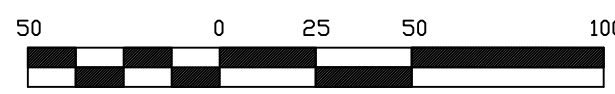
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SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No.	T-01-05075-175		
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N 1041250

N 1041000

N 1040750

E 527000 E 527250 E 527500 E 527750 E 528000

1

2

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4

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N 1041250

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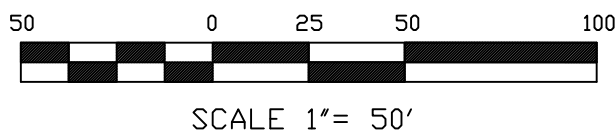
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NOKOMIS, FL

SARASOTA LANDFILL

Drawing No. T-01-05075-175

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A B C D E F G H



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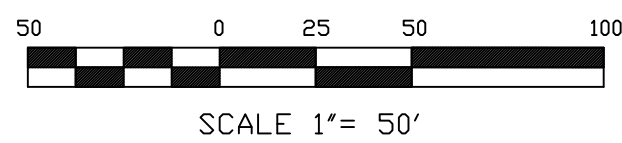
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SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

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T-01-05075-175

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DEC. 03, 2016

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A B C D E F G H

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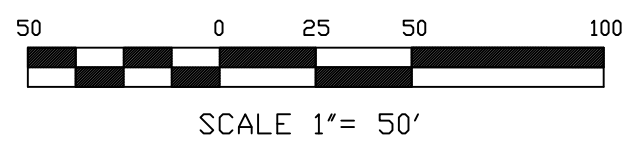
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- GUYWIRE
- LIGHT POLE
- POST
- SIGN
- TREE
- CATCH BASIN
- PIPE INLET
- MANHOLE



ADVANCED DISPOSAL  
4000 Knights Trail Road  
Nokomis, Florida 34275

**Revisions**

No.	Description	Date	By	No.	Description	Date	By

Approved By:

Checked By:

Drawn By:

Project Location:

SITE TOPOGRAPHIC MAP  
NOKOMIS, FL

SARASOTA LANDFILL

Drawing No.

T-01-05075-175

Scale:

As Shown

Date:

DEC. 03, 2016

Sheet Number:

16 of 16

A B C D E F G H

**ATTACHMENT B**

**VOLUME REPORT**



## SCS ENGINEERS

April 11, 2017  
File No. PO172573

Mr. Jason Timmons, P.E.  
Sarasota County Public Utilities  
Solid Waste Engineer  
4000 Knights Trail Road  
Nokomis, FL 34275

Subject: WA#775 – Support Services for Solid Waste  
Volume Calculations Phase II and Soil Stockpile Area (Phase III)  
Central County Solid Waste Disposal Complex, Nokomis, Florida

Dear Jason:

SCS Engineers (SCS) has reviewed the topographic surveys provided by Kucera International, Inc. (Kucera) for the Central County Solid Waste Disposal Complex (CCSWDC) to calculate the volumes within the Phase II and the soil stockpile area (Phase III). As requested by the Sarasota County, SCS performed the following calculations:

1. Phase II volumes between December 2015 and December 2016
2. Soil stockpile area (Phase III) volume between December 2015 and December 2016
3. Soil stockpile area (Phase III) volume between June 2016 and December 2016

The following presents our calculations and results:

### **Phase II volumes between December 2015 and December 2016**

The topographic surveys provided by Kucera were created using photographic methods from aerial photography taken in December 13, 2015 and December 3, 2016. The limits used as part of this calculation included the Phase I/II overlay liner system on the east side, Subcell 3 on the west and the Subcells 1, 2, and 3 limits on the north and south side of Phase II. The surface areas for both surveys were created and compared to determine the cut and fill volumes. Figure 1 provides a cross-section representing existing conditions at the time of each respective survey.

	<b>Volume (Cubic Yards)</b>
<b>Volume Cut</b>	38,671.81
<b>Volume Fill</b>	447,657.50
<b>Volume Total</b>	408,985.69
<b>Compare Surface</b>	December 3, 2016
<b>Base Surface</b>	December 13, 2015



### Soil Stockpile Area (Phase III) volumes between December 2015 and December 2016

The topographic surveys provided by Kucera were created using photographic methods from aerial photography taken in December 13, 2015 and December 3, 2016. The limits used as part of this calculation included the west portion of the Phase III area. The surface areas for both surveys were created and compared to determine the cut and fill volumes.

	<b>Volume (Cubic Yards)</b>
<b>Volume Cut</b>	82,442.94
<b>Volume Fill</b>	7,733.02
<b>Volume Total</b>	74,709.92
<b>Compare Surface</b>	December 3, 2016
<b>Base Surface</b>	December 13, 2015

### Soil Stockpile Area (Phase III) volumes between June 2016 and December 2016

The topographic surveys provided by Kucera were created using photographic methods from aerial photography taken in June 3, 2016 and December 3, 2016. The limits used as part of this calculation included the waste portion of the Phase III area. The surface areas for both surveys were created and compared to determine the cut and fill volumes.

	<b>Volume (Cubic Yards)</b>
<b>Volume Cut</b>	38,712.74
<b>Volume Fill</b>	6,823.29
<b>Volume Total</b>	31,889.45
<b>Compare Surface</b>	December 3, 2016
<b>Base Surface</b>	June 3, 2016

Please call us if you require any clarifications or additional information.

Sincerely,



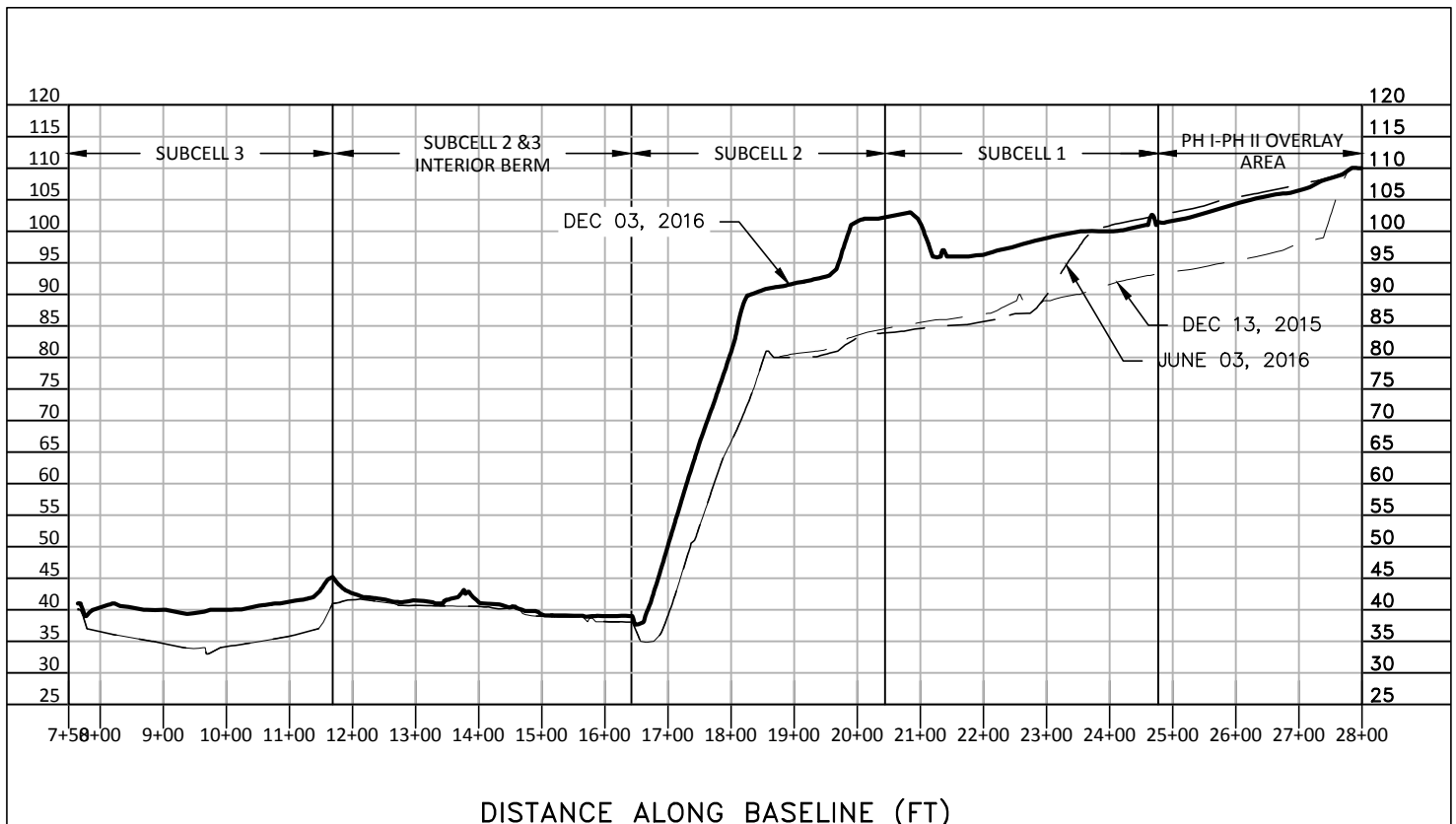
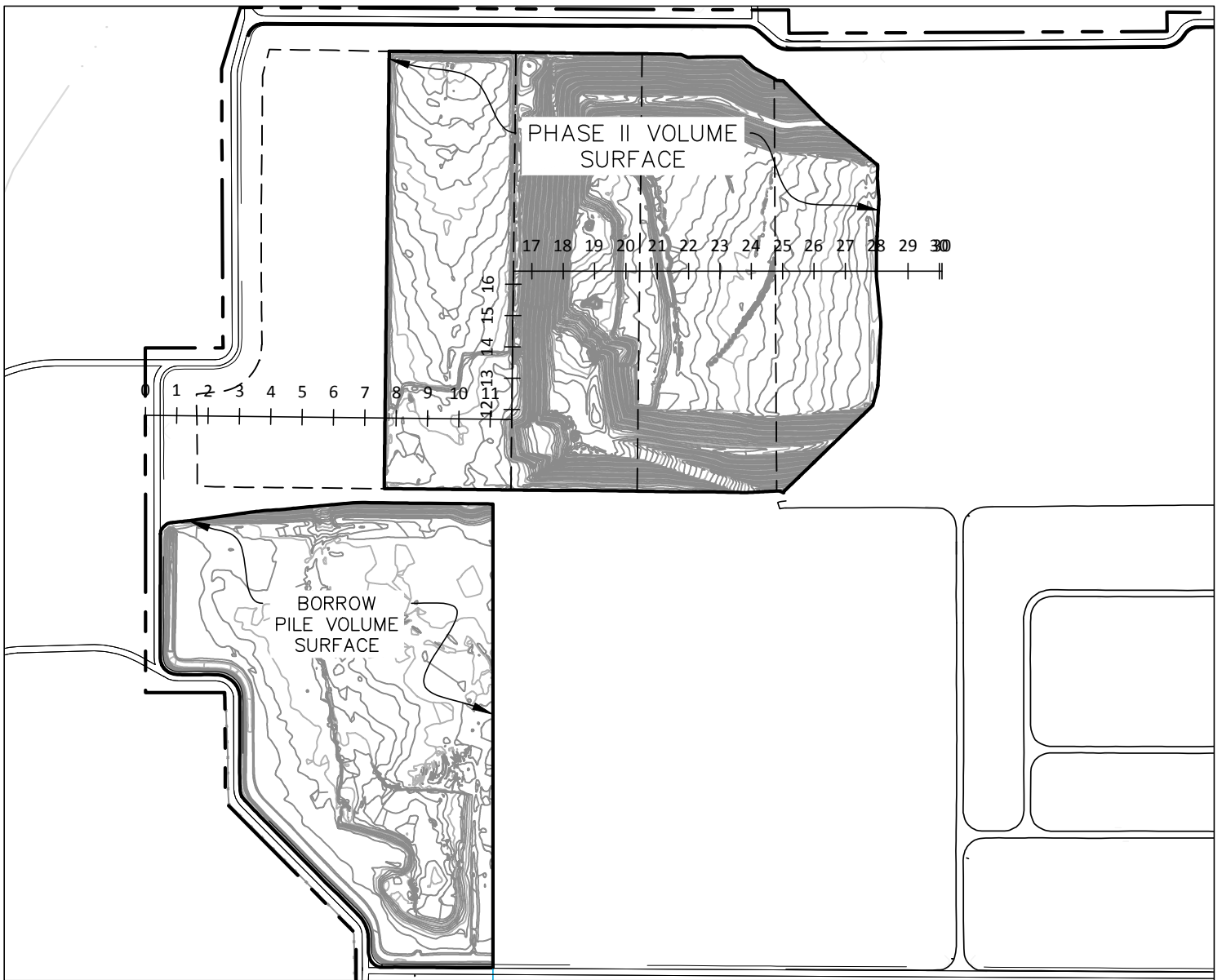
Carlo Lebron, P.E.  
Project Director  
**SCS ENGINEERS**



Carlos Restrepo, P.E.  
Sr. Project Professional  
**SCS ENGINEERS**



**Figure 1**  
**Phase II cross-section representing existing conditions at the time of each respective survey**  
**and Survey Limits used for volume calculations**



**ATTACHMENT C**

**TONNAGE REPORT**

CCSWDC Monthly Tonnage to Class I Landfill December 13, 2015 to December 2, 2016

Month	Tonnage to Class I Landfill (tons)	
Dec 13 to Dec 31, 2015	15,212	
Jan-16	24,563	
Feb-16	24,580	
Mar-16	27,166	
Apr-16	24,875	
May-16	24,323	
Jun-16	23,902	
Jul-16	22,487	
Aug-16	24,461	
Sep-16	23,307	
Oct-16	22,516	
Nov-16	23,788	
Dec 1 to Dec 2, 2016	2,081	
<b>Average</b>	<b>24,273</b>	December 2015 through November 2016
<b>Total</b>	<b>283,261</b>	December 13, 2015 through December 2, 2016

Source: CCSWDC scalehouse tonnage reports.

# ATTACHMENT D

## SITE LIFE CALCULATIONS

**Sarasota County Central County Solid Waste Disposal Complex Phase II Landfill Site Life  
April 13, 2017**

Total Available Disposal Volume of Phase II = 6,000,000 cubic yards  
 Final Cover Soil Volume (3 feet) = 295,494 cubic yards  
 Total Available Waste Disposal Volume of Phase II = 5,704,506 cubic yards  
 Operational Days per Year = 308 days

Year	Calendar Year	Projected Population <sup>1</sup>	Percent Increase <sup>2</sup>	Waste Received <sup>3</sup> (tons/day)	Waste Received <sup>3</sup> (tons/year)	Assumed Density <sup>4</sup> (tons/cy)	Volume of Waste Received per year (cy)	Cumulative Capacity Used in Phase II (cy)	Volume of Class I Remaining (cy)	Notes Date of Topo
-	2010	-	-	-	-	-	-	0	5,704,506	
-	2011	-	-	Partial Year	150,866	0.66	227,022	227,022	5,477,484	
-	2012	-	-	860	264,846	0.50	530,885	757,907	4,946,599	12/01/2012
-	2013	-	-	841	259,155	0.62	415,644	1,173,551	4,530,955	12/08/2013
-	2014	-	-	865	266,453	0.65	408,868	1,582,419	4,122,087	12/01/2014
-	2015	392,090	-	913	281,149	0.70	402,026	1,984,445	3,720,061	12/13/2015
0	2016	397,420	-	942	290,036	0.71	408,986	2,393,430	3,311,075	12/03/2016
1	2017	402,389	3.16%	971	299,204	0.67	447,911	2,841,341	2,863,164	Current Year
2	2018	407,055	3.16%	1,002	308,663	0.67	462,070	3,303,411	2,401,095	
3	2019	411,522	3.16%	1,034	318,420	0.67	476,676	3,780,087	1,924,419	
4	2020	415,923	3.16%	1,067	328,485	0.67	491,744	4,271,831	1,432,675	
5	2021	420,263	3.16%	1,100	338,869	0.67	507,288	4,779,119	925,387	
6	2022	424,522	3.16%	1,135	349,580	0.67	523,324	5,302,443	402,063	
7	2023	428,684	3.16%	1,171	360,631	0.67	539,866	5,842,309	-137,804	
8	2024	432,732	3.16%	1,208	372,031	0.67	556,932	6,399,241	-694,736	
9	2025	436,649	3.16%	1,246	383,791	0.67	574,537	6,973,778	-1,269,272	
<b>Design Life<sup>6</sup> = 6.74 years from date of last topo.</b>										
<b>Approximate Date of Completion = 09/01/2023</b>										

Notes:

- 1 SHOWN FOR INFORMATIONAL PURPOSES ONLY - Population Data from the Florida Demographic Estimating Conference, December 2015 and UF, BEBR, Florida Population Studies, Volume 49, Bulletin 174, January 2016 medium county projections provided by the Office of Economic and Demographic Research (EDR).
- 2 The percent increase is based on the previous years tonnage increase from the year before, i.e. [(2016 tonnage - 2015 tonnage) / 2015 tonnage] x 100%. This has been revised from previous years since population % increase has not accurately predicted the tonnage increase observed over the last several years.
- 3 Tonnage based on scale data reports.
- 4 The assumed density is an apparent density with cover soil included in volume, therefore a reduction of the total available volume of the landfill is not required for this calculation. This value is a conservative estimate of the actual compacted density in the landfill. The densities before the current year are actual from volume and tonnage data. For projected years, 2017 and beyond, the current contractual density of 1,336 lbs/cy or 0.67 tons/cy is used for projected volume of waste received.
- 5 The total available volume was calculated using AutoCAD.
- 6 The design life of the landfill was determined by dividing the volume of waste remaining in the previous year before airspace becomes negative in the table by the total amount of waste that is generated in that year and adding the number of years previous (eg. 398,143 (year 8) / 434,582 (year 9) + 8 years = design life).