One-rdg. _____
P. Hrngs. _____
Pgs. 39
Filed: 08-30-16

Sponsored by: Burnett

First Reading: _____ Second Reading: _____

COUNCIL BILL NO. 2016- 210 SPECIAL ORDINANCE NO. _____

AN ORDINANCE

AUTHORIZING the City Manager, or his designee, to enter into an amended Contract of Obligation with the Missouri Department of Natural Resources whereby the City agrees to financially secure the future closure and post-closure care of all currently active and previously completed portions of the City's Sanitary Landfill by adding $178,304 to its existing Contract of Obligation to account for inflation.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF SPRINGFIELD, MISSOURI, as follows:

Section 1 – The City Manager, or his designee, is hereby authorized to enter into an amended Contract of Obligation with the Missouri Department of Natural Resources (MDNR), by executing an amended agreement substantially similar in form and content to "Exhibit A" attached hereto.

Section 2 – This ordinance shall be in full force and effect from and after passage.

Passed at meeting: _____

_____
Mayor

Attest: _____, City Clerk

Filed as Ordinance: _____

Approved as to form: _____, Assistant City Attorney

Approved for Council action: _____, City Manager

EXPLANATION TO COUNCIL BILL NO: 2016- 210

FILED: 08-30-16

ORIGINATING DEPARTMENT: Environmental Services

PURPOSE: To authorize the City Manager, or his designee, on behalf of the City, to enter into an amended Contract of Obligation, "Exhibit A" with the Missouri Department of Natural Resources (MDNR), whereby the City agrees to financially secure the future closure and post-closure care of all currently active and previously completed portions of the City's Sanitary Landfill.

BACKGROUND INFORMATION: In accordance with applicable state and federal solid waste regulations, the City is required to submit and maintain a Financial Assurance Instrument (FAI) acceptable to the MDNR, to secure the future closure and post-closure care of all currently active and previously closed solid waste disposal areas within the City's permitted Sanitary Landfill. The FAI must also be amended periodically to account for the effects of inflation on previously calculated and approved engineering cost estimates for that purpose. State regulations also permit a city or county to submit and amend a Contract of Obligation for this purpose.

On September 28, 2015, the City Council adopted Special Ordinance No. 26634 authorizing the City Manager to enter into an amended Contract of Obligation in the amount of $12,319,601 to secure the future closure and post-closure care of all currently approved disposal areas of the Sanitary Landfill. The City's Contract of Obligation is secured by a pledge of future city sales tax reserves, if necessary, for this purpose.

For the current year, the Solid Waste Management Division (SWMD) proposes to amend the existing Contract of Obligation by adding $178,304 to account for the effects of inflation to the end of the second quarter 2016, and for additional minor changes to the City's previously approved engineering cost estimates and FAI/CO.

REMARKS: As presented in the attached letter report, "Exhibit B" from SCS ENGINEERS dated August 4, 2016, the net effect of this proposed amendment will be to increase the City's current liability for landfill closure and post-closure care by $178,304 to $12,497,905. These cost estimates have been reviewed and accepted by the staff of the SWMD and the Finance Department. This amended and executed Contract of Obligation is due to be submitted to MDNR by September 28, 2016.

This ordinance supports the following Field Guide 2030 goal(s): Chapter 8, Natural Environment; Major Goal 9, Reduce solid waste and improve recycling within our community.

Submitted by:

Errin Kemper,
Asst. Director of Environmental Services

Recommended by:

Steve Meyer,
Director of Environmental Services

Approved by:

Greg Burris,
City Manager

Exhibit A

CONTRACT OF OBLIGATION

THIS AGREEMENT is made and entered into by and between the City of Springfield, Missouri, hereinafter referred to as City, and the Department of Natural Resources, hereinafter referred to as MoDNR.

WHEREAS, the City has submitted a permit application for the construction, operation and maintenance of a solid waste disposal area to MoDNR pursuant to the requirements of sections 260.200 to 260.345, RSMo, the Missouri Solid Waste Management Law and the rules promulgated thereunder ("Law"); and

WHEREAS, pursuant to the Missouri Solid Waste Management Rules, 10 CSR 80-2.030(4)(D) 7., a municipality or county may execute a "Contract of Obligation" ("CO") to satisfy the requirements for a Financial Assurance Instrument ("FAI") in applying for a permit to operate a solid waste disposal area.

NOW THEREFORE, in consideration of the issuance of Permit No. 107703 by MoDNR to the City for the operation of a solid waste disposal area and in consideration of the mutual covenants contained herein, MoDNR and the City hereby agree as follows:

1. The City is hereby bound unto MoDNR in the sum of $12,497,905 and hereby authorizes the Director of MoDNR, or designee, to collect said sum from any funds being disbursed or to be disbursed by the state of Missouri to the City, upon failure of the City to close and/or provide post-closure care for the solid waste disposal area in accordance with the requirements of the Law, and the approved closure and or post-closure plans.

2. Should MoDNR find that the City has failed to properly close and/or provide post closure care for the solid waste disposal area, MoDNR shall notify the City of such finding and pursuant to 260.235, RSMo, shall afford the opportunity for administrative and judicial review of such findings.

3. The City hereby authorizes the Director of the Department of Revenue and the State Treasurer to withhold from any funds being disbursed or to be disbursed by the state of Missouri to the City, the sum of $12,497,905 upon receiving notice from the Director of MoDNR of the City's failure to properly close and/or provide post closure care for the solid waste disposal area.

4. This contract shall terminate upon written notice from MoDNR that the City is released from the requirements for a Financial Assurance Instrument for closure and/or post-closure care, as required by the Law.

5. If the City desires to terminate this contract prior to completing proper closure and/or post-closure for the solid waste disposal area it must:

(a) Send a notice of termination in writing, addressed and delivered to the MoDNR, 120 days before the termination will occur; and

(b) Post with the MoDNR an acceptable alternative Financial Assurance Instrument, as provided for by the Law or by any rules adopted pursuant to the Law within 90 days after the notice of termination is received by MoDNR; and

(c) Receive a written acknowledgment from MoDNR of receipt by MoDNR of an acceptable alternative Financial Assurance Instrument. If the City does not provide an acceptable alternative Financial Assurance Instrument within the time limit specified above, this contract shall remain in effect until terminated as specified in 4 of this contract.

6. The City has by ordinance, attached hereto as Attachment A, and which by this reference is incorporated herein, and expressly made a part of this agreement authorized the signatory hereof to execute this Contract of Obligation and bind the City to the terms thereof.

7. The effective date of this contract is the date this contract is signed by the Director of the Missouri Department of Natural Resources.

IN WITNESS WHEREOF the parties hereto have set their hands and seals.

CITY OF SPRINGFIELD, MISSOURI	MISSOURI DEPARTMENT OF NATURAL RESOURCES
BY: _____	BY:_____
City Manager or his/her designee	Director
DATE: _____	DATE:_____

CERTIFICATE OF DIRECTOR OF FINANCE

I certify that the expenditure contemplated by this document is within the purpose of the appropriation to which it is to be charged and that there is an unencumbered balance of appropriated and available funds to pay therefor.

_____

Director of Finance or Acting Director

APPROVED AS TO FORM

_____

City Attorney or Assistant City Attorney

Exhibit B

August 4, 2016
File No. 27213331.21

Mr. Erick Roberts
City of Springfield
Solid Waste Division
P.O. Box 8368
Springfield, Missouri 65801

Re: City of Springfield Sanitary Landfill
2016 Closure and Post-Closure Cost Estimate Calculation Update Summary

Dear Mr. Roberts:

This letter provides the revised closure and post-closure cost estimates updated for use in funding the City's financial assurance instrument (FAI) for the Springfield Landfill as required by the Missouri Solid Waste Regulations. In this letter you will find revised Closure and Post-Closure Cost Worksheets for the entire landfill and each individual constructed landfill unit and other supporting documentation for the revised costs. The costs were updated to adjust for inflation since the previous update dated August 11, 2015.

To adjust for inflation, the most recently published Implicit Price Deflator (IPD) for the Gross Domestic Product as determined by the U.S. Department of Commerce was used as required by the Missouri Solid Waste Regulations. The most recently published IPD is for the second quarter of 2016 (IPD = 111.237). The IPD for the first quarter 2004 base year for the inflation calculations was 88.108. A copy of the IPD table is included as an attachment to this letter. The revised cost estimates are as follows.

Closure & Post-Closure Cost Estimate – Entire Constructed Landfill

Closure Cost Estimate (Noble Hill/Cell 1, North Ravine, Compound Area, South Ravine Phase 1, Cell 2 Phase 1)	$ 8,229,286
Post-Closure Cost Estimate	$ 4,268,619
Total Closure/Post-Closure Cost Estimate (2nd Quarter 2016)	**$12,497,905**

Closure & Post-Closure Cost Estimate – Noble Hill / Cell 1

Closure Cost Estimate	$ 5,913,405
Post-Closure Cost Estimate	$ 3,610,303
Total Closure/Post-Closure Cost Estimate (2nd Quarter 2016)	**$ 9,523,708**

Closure & Post-Closure Cost Estimate – North Ravine Cell

Closure Cost Estimate	$ 483,768
Post-Closure Cost Estimate	$ 145,304
Total Closure/Post-Closure Cost Estimate (2nd Quarter 2016)	**$ 629,072**

Closure & Post-Closure Cost Estimate – Compound Area Cell

Closure Cost Estimate	$ 434,404
Post-Closure Cost Estimate	$ 130,477
Total Closure/Post-Closure Cost Estimate (2nd Quarter 2016)	**$ 564,881**

Closure & Post-Closure Cost Estimate – South Ravine Phase 1

Closure Cost Estimate	$ 679,103
Post-Closure Cost Estimate	$ 180,889
Total Closure/Post-Closure Cost Estimate (2nd Quarter 2016)	**$ 859,992**

Closure & Post-Closure Cost Estimate – Cell 2 Phase 1

Closure Cost Estimate	$ 718,606
Post-Closure Cost Estimate	$ 201,646
Total Closure/Post-Closure Cost Estimate (2nd Quarter 2016)	**$ 920,252**

Based on the above information, the City's FAI should be adjusted to reflect the revised closure and post-closure cost estimate total. The August 2015 approved cost estimate was $12,319,601; therefore, the new FAI total must be increased by $178,304 to $12,497,905. Copies of the MDNR closure and post-closure cost estimate worksheets for the entire landfill and each individual unit are attached along with a spreadsheet summary of the inflation calculations.

A table depicting the incremental closure and post-closure cost estimates and the remaining waste volume for each constructed landfill cell is also attached to this letter. The remaining waste volume for each cell as of July 8, 2016 is based on volumetric calculations prepared by SCS Engineers. These volumetric calculations were performed utilizing quarterly survey data obtained from the active constructed landfill areas and the facility permit drawings.

SCS Engineers appreciates the opportunity to continue providing solid waste engineering services for the City. Should you have any questions or would like more information, please do not hesitate to call us at (913) 681-0030.

Sincerely,

Nathan Hamm, P.E.
Vice President
SCS ENGINEERS

Doug Doerr, P.E.
Senior Vice President
SCS ENGINEERS

nah/dld

cc: Doug Durrington

Attachments – CPC Summary Table and Inflation Calculations
CPC Cost Estimate Worksheets
Implicit Price Deflator Table
Soil Usage Estimate Calculations

Incremental Closure and Post-Closure Cost Estimate Summary Table

Incremental Closure/Post-Closure Cost Estimate Summary
August 2016 Update
City of Springfield Sanitary Landfill

Phase	Landfill Development Area (ac)	Remaining Waste Volume (CY)	Waste Capacity (tons)	Closure Cost	Post-Closure Cost	Total Closure and Post-Closure Costs
Noble Hill/Cell 1	119.8	34,427	20,656	$5,913,405	$3,610,303	$9,523,708
North Ravine	4.9	34,428	20,657	$483,768	$145,304	$629,072
Compound Area	4.4	136,758	82,055	$434,404	$130,477	$564,881
South Ravine Phase 1	6.1	0	0	$679,103	$180,889	$859,992
Cell 2 Phase 1	6.8	974,100	584,460	$718,606	$201,646	$920,252
South Ravine Phase 2	7.0					
South Ravine Phase 3	8.0					
Cell 2 Phase 2	14.0					
Totals	171.0	1,179,713	707,828	$8,229,286	$4,268,619	$12,497,905

Notes:
1. Landfill development area reflects area of bottom liner constructed or to be constructed. South Ravine northern boundary based on October 2000 MDNR approved permit drawings.
2. Remaining waste volume for Noble Hill/Cell 1, North Ravine, Compound Cell, South Ravine Phase 1, and Cell 2 Phase 1 based on 2nd quarter 2016 volume calculations by SCS Engineers (through July 8, 2016).
3. Remaining waste capacity in tons based on 1,200 lb/cy waste density.
4. Closure and post-closure costs are based on the MDNR worksheets MO 780-1882 (4-04).
5. Inseparable post-closure costs allocated to phases based on percentage of total constructed area.
6. Costs are in 2nd quarter 2016 dollars.

Closure and Post-Closure Cost Estimates
City of Springfield Sanitary Landfill
August 2016

1st quarter 2004 Implicit Price Deflator (IPD)	88.108
2nd quarter 2016 IPD	111.237
Inflation Factor (2016 IPD/2004 IPD)	1.2625

Entire Landfill	
2016 Closure Cost (in 2004$)	$6,518,209
2016 Post Closure Cost (in 2004$)	$3,381,064
2016 Total Closure/Post-Closure Costs (in 2004$)	$9,899,273
2016 Closure Cost (in 2nd qtr 2016$)	$8,229,286
2016 Post Closure Cost (in 2nd qtr 2016$)	$4,268,619
2016 Total Closure/Post-Closure Costs (in 2nd qtr 2016$)	**$12,497,905**

Noble Hill / Cell 1	
2016 Closure Cost (in 2004$)	$4,683,858
2016 Post Closure Cost (in 2004$)	$2,859,629
2016 Total Closure/Post-Closure Costs (in 2004$)	$7,543,487
2016 Closure Cost (in 2nd qtr 2016$)	$5,913,405
2016 Post Closure Cost (in 2nd qtr 2016$)	$3,610,303
2016 Total Closure/Post-Closure Costs (in 2nd qtr 2016$)	**$9,523,708**

North Ravine Cell	
2016 Closure Cost (in 2004$)	$383,180
2016 Post Closure Cost (in 2004$)	$115,092
2016 Total Closure/Post-Closure Costs (in 2004$)	$498,272
2016 Closure Cost (in 2nd qtr 2016$)	$483,768
2016 Post Closure Cost (in 2nd qtr 2016$)	$145,304
2016 Total Closure/Post-Closure Costs (in 2nd qtr 2016$)	**$629,072**

Compound Area Cell	
2016 Closure Cost (in 2004$)	$344,080
2016 Post Closure Cost (in 2004$)	$103,348
2016 Total Closure/Post-Closure Costs (in 2004$)	$447,428
2016 Closure Cost (in 2nd qtr 2016$)	$434,404
2016 Post Closure Cost (in 2nd qtr 2016$)	$130,477
2016 Total Closure/Post-Closure Costs (in 2nd qtr 2016$)	**$564,881**

South Ravine Phase I	
2016 Closure Cost (in 2004$)	$537,901
2016 Post Closure Cost (in 2004$)	$143,277
2016 Total Closure/Post-Closure Costs (in 2004$)	$681,178
2016 Closure Cost (in 2nd qtr 2016$)	$679,103
2016 Post Closure Cost (in 2nd qtr 2016$)	$180,889
2016 Total Closure/Post-Closure Costs (in 2nd qtr 2016$)	**$859,992**

Cell 2 Phase I	
2016 Closure Cost (in 2004$)	$569,190
2016 Post Closure Cost (in 2004$)	$159,719
2016 Total Closure/Post-Closure Costs (in 2004$)	$728,909
2016 Closure Cost (in 2nd qtr 2016$)	$718,606
2016 Post Closure Cost (in 2nd qtr 2016$)	$201,646
2016 Total Closure/Post-Closure Costs (in 2nd qtr 2016$)	**$920,252**

Closure and Post-Closure Cost Estimate Worksheets

Entire Landfill Closure and Post-Closure Cost Worksheets

MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOLID WASTE MANAGEMENT PROGRAM

CLOSURE AND POST-CLOSURE COST WORKSHEET

This worksheet is only required for those facilities that accept waste after Jan. 1, 2004. Others may use the worksheet if they choose.

DATE	NAME OF FACILITY	PERMIT NUMBER
08/03/2016	City of Springfield Sanitary Landfill	107703

Total permitted acreage (including undeveloped areas)		Total acreage with waste in place (including officially closed areas)		Total acreage with official closure approval	
SUBTITLE D	NON-SUBTITLE D	SUBTITLE D	NON-SUBTITLE D	SUBTITLE D	NON-SUBTITLE D
51.2	119.8	22.2	119.8	0.0	12.9

1. HOW MANY ACRES IS THIS FINANCIAL ASSURANCE INSTRUMENT (FAI) INTENDED FOR?

129.1 acres for closure 142.0 acres for post-closure

2. DESCRIPTION OF AREA (CELL NUMBER, ETC.)

Noble Hill/Cell 1, North Ravine, Compound Area, South Ravine Phase 1, Cell 2 Phase 1

3. WHAT IS THE APPROVED FINAL COVER SYSTEM DESIGN?

☑ Subtitle D: one foot of compacted clay overlain with a geomembrane, a drainage layer and two feet of vegetative soil.
☑ Standard soil cover: two feet of compacted clay overlain with one foot of vegetative soil.
(If your facility has both subtitle D and non-subtitle D areas, separate worksheets are advisable for these areas to avoid confusion.)

4. HAS AN EASEMENT BEEN GRANTED TO THE MISSOURI DEPARTMENT OF NATURAL RESOURCES FOR ACCESS TO AND USE OF THE BORROW MATERIAL FOR CAP CONSTRUCTION?

☑ YES ☐ NO

5. WHAT IS THE AVERAGE ROUND-TRIP DISTANCE FROM THE LANDFILL (OR PHASE) TO THE BORROW AREA? ROUND TRIP DISTANCE SHOULD BE TO THE NEAREST ½ MILE IF LESS THAN FIVE MILES. IF MORE THAN FIVE MILES, ROUND TRIP DISTANCE SHOULD BE TO THE NEAREST MILE. IF THE DEPARTMENT DOES NOT HAVE AN EASEMENT TO THE BORROW AREA, THE ROUND TRIP HAUL DISTANCE IS ASSUMED TO BE 10 MILES.

2.0 miles

6. WHAT IS THE APPROXIMATE VOLUME OF SOIL REMAINING IN THE BORROW AREA?

1,326,000.0 clay (cubic yards) 320,000 vegetative soil (cubic yards)

7. WHAT IS THE APPROVED GAS CONTROL SYSTEM DESIGN?

☑ Active extraction system ☐ Passive venting system ☐ No gas control system

If you have an active extraction system, check the appropriate box

☐ a. Required to control gas migration
☐ b. Required under NSPS
☐ c. Required by other agency (city, county, etc.)
☑ d. Specified only by design engineer

If you check box "d", is any part of the active gas system constructed at this time?

☑ Yes ☐ No If yes, please provide a general description of the portion(s) of the system that have been installed.

Active gas collection system installed in Noble Hill / Cell 1, North Ravine, and Compound Area. Horizontal collectors only in the South Ravine Phase 1 Cell.

Note: Owners of Subtitle D facilities must provide a closure financial assurance instrument for either an active extraction system or a passive venting system. You must provide a closure FAI for an active system only when you are: 1) Required to install the system by MoDNR to control off-site gas migration, or 2) Required to install the system under the Federal New Source Performance Standards (NSPS), or 3) Required to install the system by another regulatory agency (city, county, etc.)

If you own a Subtitle D facility and meet any of the conditions, complete Form A. If you own a Subtitle D facility and do not meet any of these conditions, you are only required to provide a closure FAI for a passive venting system. Complete Form B. If you own a non-Subtitle D facility (with a soil cap), you are not required to provide a closure FAI for a gas control system at all unless you also meet at least one of the above conditions. If you have installed any portion of an active gas control system, you must provide post-closure maintenance funds for the portion of the system that has been constructed. Do this by checking the appropriate box on the post-closure cost worksheet and adding that amount to the total.

8. HOW MANY GROUNDWATER MONITORING WELLS DO YOU HAVE?

14 wells

9. LIST THE PRIMARY AND SECONDARY WASTEWATER TREATMENT PLANTS USED FOR LEACHATE DISPOSAL, AND THE COST OF DISPOSAL.

Springfield WW Treatment Facility (Primary plant) $ 0.00140 per gallon _____ (Secondary plant) $ _____ per gallon

☑ Check if the facility discharges directly to a wastewater treatment plant.

10. WHAT IS THE ESTIMATED POST-CLOSURE LEACHATE GENERATION RATE AND HOW WAS IT DERIVED?

0.013 (gal/acre/day) ☑ HELP model ☐ Other (explain)

CLOSURE COSTS

FINAL COVER SYSTEM

Subtitle D (composite cover) 22.2 acres x $ 78,200.00 (FROM TABLE 1) per acre = $ 1,736,040.00

Non-Subtitle D (soil cover) 106.9 acres x $ 43,590.00 (FROM TABLE 1) per acre = $ 4,659,771.00

GAS CONTROL SYSTEM

Active extraction system (Complete Form A and write the amount in the right column). Installed $ 0.00

Passive gas venting system (Complete Form B and write the amount in the right column). $ 98,311

Note: Owners are not required to provide an FAI for an **active** gas system unless required to install the system for one of the reasons listed under section 7 of this worksheet. However, owners of Subtitle D landfills are required to provide an FAI for a **passive** gas system if they do not provide one for an active system.

OTHER CRITICAL DESIGN FEATURES

Include total cost for construction of other critical design features. Attach separate sheet(s) for cost calculations. Storm water structures Noble Hill $ 24,087.00

TOTAL CLOSURE COST (sum of all lines) $ $6,518,209

POST-CLOSURE COSTS

INSEPARABLE ANNUAL COSTS

Annual landfill inspection and reporting			$ 1,000.00
Gas monitoring and reporting			$ 4,450.00
Annual groundwater sampling and analysis cost		14 wells x $2,000=	$ 28,000.00
Annual groundwater monitoring system maintenance and statistics cost.			$ 13,700.00
☑ Leachate system maintenance (Check if applicable and write this amount in space provided)	$3,100		$ 3,100.00
☑ Leachate testing (Check if applicable and write this amount in space provided)	$2,250		$ 2,250.00
☑ Active gas extraction system maintenance and utilities (Check if applicable and write this amount in space provided)	$17,600		$ 17,600.00
☑ Passive gas system maintenance (Check if applicable and write this amount in space provided)	$1,600		$ 1,600.00

SEPARABLE ANNUAL COSTS

Cap repair and maintenance		142.0 acres x $278.00 (FROM TABLE 1) =	$ 39,476.00
☑ Leachate treatment (check if applicable)		22.2 acres x 4.75 (GAL/ACRE/YEAR) x 0.00140 (COST PER GAL) =	$ 0.15
☐ Leachate hauling (check if applicable)		_____ acres x _____ (GAL/ACRE/YEAR) x =	$ 0.00

ANNUAL COSTS FOR OTHER CRITICAL DESIGN FEATURES

Include total annual cost for maintenance of other critical design features. Attach separate sheet(s) for cost calculations. Noble Hill Leachate Treatment $ 1,526.00

TOTAL ANNUAL POST-CLOSURE COST

Sum of all annual post-closure costs $ 112,702

TOTAL POST-CLOSURE COST

Annual post-closure costs x 30 years $ 3,381,064

MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOLID WASTE MANAGEMENT PROGRAM

FORM B – PASSIVE GAS SYSTEM WORKSHEET

Complete this form only if you own a Subtitle D facility and did not check boxes 7a, 7b, or 7c of the Closure and Post-Closure Cost Worksheet. If you are permitted to install an active system, but checked box 7d (voluntary active system), the number and depths of vents should be the same as the number and depths of wells in the active system.

GAS VENT INSTALLATION

1. DRILLING, CASING, SCREEN

12 # vents x 89.0 (AVG. DEPTH) ft x $79. / ft = $ 84,372.00

2. VENT SEALS

12 # vents x 346.0 each = $ 4,152.00

3. TOTAL VENT SYSTEM INSTALLATION COST

(sum lines 1 and 2) $ 88,524.00

PROFESSIONAL SERVICES

4. DESIGN ENGINEER

Total from line 3 x 6.0% = $ 5,311.44

5. FIELD SERVICES

Total from line 3 x 3.7% = $ 3,275.39

6. FINAL REPORT

$ 1,200.00

7. TOTAL PROFESSIONAL SERVICES

(sum of lines 4, 5 and 6) $ 9,786.83

TOTAL GAS VENT SYSTEM COST

(sum of lines 3 and 7) $ 98,311

Individual Landfill Unit Closure Cost Worksheets

CLOSURE COSTS

Noble Hill / Cell 1

Final Cover System

☐	Subtitle D (composite) cover	0	acres x	$ 78,200 (from Table 1)	per acre =	$0
X	Non-Subtitle D (soil) cover	106.9	acres x	$ $43,590 (from Table 2)	per acre =	$4,659,771

Gas Control System

Note: Owners are not required to provide an FAI for an **active** gas system unless you are required to install the system for one of the reasons listed on page two of this worksheet. However, all owners of Subtitle D landfills are required to provide an FAI for a passive gas system if they do not provide one for an active system.

X	Active gas extraction system (Complete Form A and write the amount in the blank at right)	$0	Installed
☐	Passive gas venting system (Complete Form B and write the amount in the blank at right)		

Other Critical Design Features

Include total cost for construction of other critical design features (attach separate sheet(s) for cost calculations)

Storm water structures $24,087 (in 2004$)

TOTAL CLOSURE COST (sum of all lines) $4,683,858

CLOSURE COSTS

North Ravine

Final Cover System

[X]	Subtitle D (composite) cover	4.9	acres x	$ 78,200 (from Table 1)	per acre =	$383,180	
[ ]	Non-Subtitle D (soil) cover	0	acres x	$ $43,590 (from Table 2)	per acre =	$0	

Gas Control System

Note: Owners are not required to provide an FAI for an **active** gas system unless you are required to install the system for one of the reasons listed on page two of this worksheet. However, all owners of Subtitle D landfills are required to provide an FAI for a passive gas system if they do not provide one for an active system.

[X]	Active gas extraction system (Complete Form A and write the amount in the blank at right)	$0	Installed
[ ]	Passive gas venting system (Complete Form B and write the amount in the blank at right)	$0	

Other Critical Design Features

Include total cost for construction of other critical design features (attach separate sheet(s) for cost calculations) _____ (in 2004$)

TOTAL CLOSURE COST (sum of all lines) $383,180

CLOSURE COSTS

Compound Area Cell

Final Cover System

[X]	Subtitle D (composite) cover	4.4	acres x	$ 78,200 (from Table 1)	per acre =	$344,080
[ ]	Non-Subtitle D (soil) cover	0	acres x	$ $43,590 (from Table 2)	per acre =	$0

Gas Control System

Note: Owners are not required to provide an FAI for an **active** gas system unless you are required to install the system for one of the reasons listed on page two of this worksheet. However, all owners of Subtitle D landfills are required to provide an FAI for a passive gas system if they do not provide one for an active system.

[X]	Active gas extraction system (Complete Form A and write the amount in the blank at right)	$0	Installed
[ ]	Passive gas venting system (Complete Form B and write the amount in the blank at right)	$0	

Other Critical Design Features

Include total cost for construction of other critical design features (attach separate sheet(s) for cost calculations) _____ (in 2004$)

TOTAL CLOSURE COST (sum of all lines) $344,080

CLOSURE COSTS

South Ravine Phase I

Final Cover System

[X]	Subtitle D (composite) cover	6.1	acres x	$ 78,200 (from Table 1)	per acre =	$477,020
[ ]	Non-Subtitle D (soil) cover	0	acres x	$ $43,590 (from Table 2)	per acre =	$0

Gas Control System

Note: Owners are not required to provide an FAI for an **active** gas system unless you are required to install the system for one of the reasons listed on page two of this worksheet. However, all owners of Subtitle D landfills are required to provide an FAI for a passive gas system if they do not provide one for an active system.

[ ]	Active gas extraction system (Complete Form A and write the amount in the blank at right)	$0
[X]	Passive gas venting system (Complete Form B and write the amount in the blank at right)	$60,881

Other Critical Design Features

Include total cost for construction of other critical design features (attach separate sheet(s) for cost calculations) _____ (in 2004$)

TOTAL CLOSURE COST (sum of all lines) $537,901

South Ravine Phase I

Complete this form only if you own a Subtitle D facility and did not check boxes 7a, 7b, and 7c on page 2 of this worksheet.
If you are permitted to install an active system, but checked box 7d (voluntary active system), the number and depths of vents should be the same as the number and depths of wells in the active system.

GAS VENT INSTALLATION

1	Drilling, casing, screen	7	# vents x	94	avg. depth x	$79	=	$51,982	
2	Vent seals	7	# vents x			$346	=	$2,422	
3	TOTAL INSTALLATION COST (sum 1 and 2)								$54,404

PROFESSIONAL SERVICES

4	Design Engineer	$54,404	Total Installation costs x			6%	=	$3,264	
5	Field services	$54,404	Total Installation costs x			3.7%	=	$2,013	
6	Final report							$ 1,200.00	
7	TOTAL PROFESSIONAL SERVICES (sum 4, 5, and 6)								$6,477

TOTAL PASSIVE GAS SYSTEM COST (sum 3 and 7) $60,881

CLOSURE COSTS

Cell 2 Phase I

Final Cover System

[X]	Subtitle D (composite) cover	6.8	acres x	$ 78,200 (from Table 1)	per acre =	$531,760
[ ]	Non-Subtitle D (soil) cover	0	acres x	$ $43,590 (from Table 2)	per acre =	$0

Gas Control System

Note: Owners are not required to provide an FAI for an **active** gas system unless you are required to install the system for one of the reasons listed on page two of this worksheet. However, all owners of Subtitle D landfills are required to provide an FAI for a passive gas system if they do not provide one for an active system.

[ ]	Active gas extraction system (Complete Form A and write the amount in the blank at right)	$0
[X]	Passive gas venting system (Complete Form B and write the amount in the blank at right)	$37,430

Other Critical Design Features

Include total cost for construction of other critical design features (attach separate sheet(s) for cost calculations) _____ (in 2004$)

TOTAL CLOSURE COST (sum of all lines) $569,190

Cell 2 Phase I

Complete this form only if you own a Subtitle D facility and did not check boxes 7a, 7b, and 7c on page 2 of this worksheet.
If you are permitted to install an active system, but checked box 7d (voluntary active system), the number and depths of vents should be the same as the number and depths of wells in the active system.

GAS VENT INSTALLATION

1	Drilling, casing, screen	5	# vents x	82	avg. depth x	$79	=	$32,390	
2	Vent seals	5	# vents x			$346	=	$1,730	
3	TOTAL INSTALLATION COST (sum 1 and 2)								$34,120

PROFESSIONAL SERVICES

4	Design Engineer	$34,120	Total Installation costs x			6%	=	$2,047	
5	Field services	$34,120	Total Installation costs x			3.7%	=	$1,262	
6	Final report							$ -	**Included in South Ravine P I
7	TOTAL PROFESSIONAL SERVICES (sum 4, 5, and 6)								$3,310

TOTAL PASSIVE GAS SYSTEM COST (sum 3 and 7) $37,430

Individual Landfill Unit Post-Closure Cost Worksheets

Inseparable Costs All Areas

INSEPARABLE COSTS

Annual landfill inspection and reporting							$1,000
Gas monitoring and reporting							$4,450
Annual groundwater sampling and analysis cost	14	wells	x	$ 2,000.00	=		$28,000
Annual groundwater monitoring system maintenance and statistics costs							$13,700
[X] Leachate system maintenance (Check if applicable and write this amount in space provided)				$ 3,100.00			$3,100
[X] Leachate testing (check if applicable) (Check if applicable and write this amount in space provided)				$ 2,250.00			$2,250
[X] Active gas extraction system maintenance and utilities (Check if applicable and write this amount in space provided)				$ 17,600.00			$17,600
[X] Passive gas system maintenance (check if applicable) (Check if applicable and write this amount in space provided)				$ 1,600.00			$1,600

SEPARABLE COSTS

Cap repair and maintenance	0	acres	x	$ 278.00 (from Table 3)	=		$0
[ ] Leachate treatment (check if applica	0.0 acres	x	4.75 gal / acre / year	x	$0.00140 cost per gal	=	$0.00
[ ] Leachate hauling (check if applicabl	0.0 acres	x	4.75 gal / acre / year	x	$0.0000 cost per gal	=	$0.00
[ ]							$0

Other Critical Design Features

Include annual cost for maintenance of critical design features (attach separate sheet(s) for cost calculations) $0

TOTAL ANNUAL POST-CLOSURE COST (2004 dollars) $71,700

TOTAL POST-CLOSURE COSTS (Total annual cost X 30 years) (2004 dollars) $2,151,000

SEPARABLE ANNUAL COSTS

Noble Hill / Cell 1

Cap repair and maintenance	119.8	acres	x	$ 278.00 (from Table 3)			=		$33,304
☐ Leachate treatment (check if applicable)		acres	x	4.75 gal / acre / year	x	$0.00140 cost per gal	=		$0.00
☐ Leachate hauling (check if applicable	0.0	acres	x	4.75 gal / acre / year	x	$0.0000 cost per gal	=		$0.00
☒ Leachate disposal cost for standard soil cover area (Noble Hill) (1,090,000 gallons/yr @ $0.0014/gallon)									$1,526

Other Critical Design Features

Include annual cost for maintenance of critical design features $0

(attach separate sheet(s) for cost calculations)

TOTAL ANNUAL POST-CLOSURE COST (2004 dollars) $34,830

TOTAL POST-CLOSURE COSTS (Total annual cost X 30 years) (2004 dollars) $1,044,912

SEPARABLE ANNUAL COSTS North Ravine

Cap repair and maintenance		4.9	acres	x	$ 278.00 (from Table 3)			=		$1,362.20
X	Leachate treatment (check if applica	4.9	acres	x	4.75 gal / acre / year	x	$0.00140 cost per gal	=		$0.03
	Leachate hauling (check if applicable)		acres	x	4.75 gal / acre / year	x	$0.0000 cost per gal	=		$0.00
										$0

Other Critical Design Features

Include annual cost for maintenance of critical design features $0

(attach separate sheet(s) for cost calculations)

TOTAL ANNUAL POST-CLOSURE COST (2004 dollars) $1,362

TOTAL POST-CLOSURE COSTS (Total annual cost X 30 years) (2004 dollars) $40,867

SEPARABLE ANNUAL COSTS

Compound Area

Cap repair and maintenance	4.4	acres	x	$ 278.00 (from Table 3)				=	$1,223.20
[X]	Leachate treatment (check if applica	4.4	acres	x	4.75 gal / acre / year	x	$0.00140 cost per gal	=	$0.03
[ ]	Leachate hauling (check if applicable)		acres	x	4.75 gal / acre / year	x	$0.0000 cost per gal	=	$0.00
[ ]									$0

Other Critical Design Features

Include annual cost for maintenance of critical design features $0

(attach separate sheet(s) for cost calculations)

TOTAL ANNUAL POST-CLOSURE COST (2004 dollars) $1,223

TOTAL POST-CLOSURE COSTS (Total annual cost X 30 years) (2004 dollars) $36,697

SEPARABLE ANNUAL COSTS

South Ravine Phase 1

Cap repair and maintenance		6.1	acres	x	$ 278.00 (from Table 3)			=	$1,695.80
[X]	Leachate treatment (check if applica	6.1	acres	x	4.75 gal / acre / year	x	$0.00140 cost per gal	=	$0.04
[ ]	Leachate hauling (check if applicable)		acres	x	4.75 gal / acre / year	x	$0.0000 cost per gal	=	$0.00
[ ]									$0

Other Critical Design Features

Include annual cost for maintenance of critical design features $0

(attach separate sheet(s) for cost calculations)

TOTAL ANNUAL POST-CLOSURE COST (2004 dollars) $1,696

TOTAL POST-CLOSURE COSTS (Total annual cost X 30 years) (2004 dollars) $50,875

SEPARABLE COSTS

Cell 2 Phase I

Cap repair and maintenance		6.8	acres	x	$ 278.00 (from Table 3)			=		$1,890
X	Leachate treatment (check if applica	6.8	acres	x	4.75 gal / acre / year	x	$0.00140 cost per gal	=		$0.05
	Leachate hauling (check if applicable)		acres	x	4.75 gal / acre / year	x	$0.0000 cost per gal	=		$0.00
										$0

Other Critical Design Features

Include annual cost for maintenance of critical design features $0

(attach separate sheet(s) for cost calculations)

TOTAL ANNUAL POST-CLOSURE COST (2004 dollars)	$1,890
TOTAL POST-CLOSURE COSTS (Total annual cost X 30 years) (2004 dollars)	$56,713

Implicit Price Deflator Table

Bureau of Economic Analysis

Table 1.1.9. Implicit Price Deflators for Gross Domestic Product

[Index numbers, 2009=100] Seasonally adjusted

Last Revised on: July 29, 2016 - Next Release Date August 26, 2016

Line		2004	2004	2004	2004	2005	2005	2005	2005	2006	2006	2006	2006
		I	II	III	IV	I	II	III	IV	I	II	III	IV
1	**Gross domestic product**	**88.108**	**88.875**	**89.422**	**90.049**	**90.883**	**91.543**	**92.399**	**93.100**	**93.832**	**94.587**	**95.247**	**95.580**
2	**Personal consumption expenditures**	**88.791**	**89.415**	**89.935**	**90.645**	**91.114**	**91.720**	**92.726**	**93.452**	**93.885**	**94.609**	**95.286**	**95.122**
3	Goods	94.314	94.844	94.917	96.022	95.851	96.210	97.808	97.909	97.845	98.607	99.181	97.485
4	Durable goods	109.212	109.111	108.279	108.429	108.211	108.076	107.315	107.082	106.657	106.190	105.743	105.096
5	Nondurable goods	86.948	87.770	88.273	89.834	89.681	90.278	93.051	93.313	93.424	94.793	95.876	93.665
6	Services	86.051	86.719	87.460	87.974	88.762	89.493	90.204	91.241	91.924	92.630	93.359	93.971
7	**Gross private domestic investment**	**89.258**	**90.350**	**91.018**	**91.899**	**92.899**	**93.881**	**95.085**	**96.305**	**97.326**	**97.868**	**98.416**	**99.195**
8	Fixed investment	89.155	90.114	90.980	91.841	92.844	93.833	95.036	96.249	97.206	97.864	98.405	99.225
9	Nonresidential	90.375	90.934	91.315	91.883	92.782	93.500	94.036	94.956	95.616	96.161	96.787	97.645
10	Structures	70.124	71.715	73.683	75.919	78.184	80.278	83.205	86.568	88.852	91.109	92.802	95.269
11	Equipment	98.238	98.577	98.300	98.326	98.811	98.943	98.449	98.373	98.245	98.027	98.325	98.667
12	Intellectual property products	95.149	95.109	95.109	95.070	95.437	95.899	96.062	96.534	97.084	97.402	97.612	97.909
13	Residential	88.901	90.675	92.507	93.963	95.181	96.723	99.281	101.136	102.776	103.730	104.106	104.845
14	Change in private inventories	---	---	---	---	---	---	---	---	---	---	---	---
15	**Net exports of goods and services**	---	---	---	---	---	---	---	---	---	---	---	---
16	Exports	89.399	90.661	91.191	92.070	93.757	94.374	95.046	95.646	96.344	97.658	98.972	98.875
17	Goods	90.661	92.191	92.593	93.485	94.465	95.194	95.751	96.413	96.944	98.464	99.869	99.970
18	Services	86.659	87.307	88.137	88.994	92.310	92.673	93.627	94.081	95.186	96.005	97.104	96.540
19	Imports	86.439	87.570	88.819	90.889	91.451	92.471	94.686	96.483	96.673	97.710	98.726	97.525
20	Goods	86.448	87.945	89.010	91.203	91.859	93.158	95.532	97.639	97.677	98.734	99.829	98.398
21	Services	87.652	86.908	89.126	90.577	90.661	90.219	91.637	91.813	92.810	93.759	94.373	94.336
22	**Government consumption expenditures and gross investment**	**82.432**	**83.403**	**84.440**	**85.506**	**86.786**	**87.611**	**88.757**	**89.776**	**90.842**	**91.849**	**92.508**	**93.128**
23	Federal	86.997	87.538	87.988	88.404	90.620	91.098	91.846	92.219	93.996	94.423	94.555	94.814
24	National defense	86.578	87.143	87.611	88.129	90.543	91.032	91.799	92.198	94.181	94.612	94.735	94.996
25	Nondefense	87.736	88.232	88.650	88.882	90.745	91.203	91.915	92.238	93.650	94.071	94.218	94.473
26	State and local	79.770	80.980	82.349	83.785	84.526	85.550	86.925	88.318	88.969	90.316	91.282	92.116
	Addendum:												
27	Gross national product	88.083	88.850	89.398	90.026	90.861	91.520	92.378	93.080	93.810	94.565	95.224	95.557

Bureau of Economic Analysis

Table 1.1.9. Implicit Price Deflators for Gross Domestic Product

[Index numbers, 2009=100] Seasonally adjusted

Last Revised on: July 29, 2016 - Next Release Date August 26, 2016

Line		2007 I	2007 II	2007 III	2007 IV	2008 I	2008 II	2008 III	2008 IV	2009 I	2009 II	2009 III	2009 IV	2010 I	2010 II
1	**Gross domestic product**	**96.654**	**97.194**	**97.531**	**97.956**	**98.516**	**98.995**	**99.673**	**99.815**	**100.062**	**99.895**	**99.873**	**100.169**	**100.522**	**100.968**
2	**Personal consumption expenditures**	**96.008**	**96.771**	**97.319**	**98.296**	**99.139**	**100.177**	**101.197**	**99.746**	**99.182**	**99.626**	**100.253**	**100.936**	**101.279**	**101.393**
3	Goods	98.175	99.253	99.474	100.698	101.718	102.927	104.662	100.064	98.374	99.416	100.684	101.503	101.783	101.143
4	Durable goods	104.573	104.102	103.414	102.994	102.657	101.863	101.581	100.831	100.338	100.219	99.550	99.915	99.525	98.921
5	Nondurable goods	94.967	96.827	97.505	99.560	101.248	103.442	106.159	99.717	97.467	99.041	101.224	102.261	102.863	102.209
6	Services	94.957	95.560	96.274	97.125	97.878	98.831	99.501	99.579	99.561	99.727	100.048	100.664	101.035	101.515
7	**Gross private domestic investment**	**99.836**	**99.896**	**100.004**	**100.207**	**100.379**	**100.835**	**101.335**	**102.423**	**101.779**	**100.293**	**98.987**	**98.896**	**98.839**	**98.857**
8	Fixed investment	99.842	99.997	100.023	100.093	100.318	100.552	101.259	101.965	101.364	100.142	99.198	99.235	98.977	99.022
9	Nonresidential	98.290	98.610	98.648	98.736	99.175	99.606	100.741	101.981	101.423	100.215	99.209	99.075	98.721	98.947
10	Structures	96.470	96.947	97.827	99.061	100.225	101.113	102.878	104.874	103.580	100.419	97.666	97.518	97.980	98.554
11	Equipment	98.959	99.100	98.521	97.842	97.724	97.746	98.896	100.765	100.777	100.439	99.883	98.910	97.860	97.809
12	Intellectual property products	98.641	99.107	99.362	99.599	100.225	100.840	101.318	100.927	100.314	99.739	99.564	100.381	100.293	100.635
13	Residential	105.368	105.071	105.090	105.161	104.726	104.279	103.355	101.919	101.121	99.829	99.147	99.879	100.033	99.331
14	Change in private inventories	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	**Net exports of goods and services**	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	Exports	99.546	100.583	101.319	102.839	104.412	107.287	108.916	102.389	98.968	98.920	100.194	101.746	102.638	103.773
17	Goods	100.540	101.731	102.340	104.010	105.669	109.298	110.842	102.596	98.487	99.036	100.312	101.932	102.979	104.348
18	Services	97.451	98.140	99.169	100.359	101.742	102.862	104.664	101.987	99.954	98.685	99.943	101.357	101.940	102.578
19	Imports	97.891	99.522	101.305	105.419	108.881	114.506	117.626	105.094	96.310	97.836	101.265	104.339	105.904	105.387
20	Goods	98.847	100.567	102.373	107.032	111.032	117.209	120.698	106.077	95.622	97.569	101.507	104.966	106.928	106.311
21	Services	94.284	95.486	97.184	98.671	99.597	102.664	104.107	100.896	99.083	98.895	100.271	101.726	101.552	101.455
22	**Government consumption expenditures and gross investment**	**94.897**	**95.715**	**96.458**	**97.465**	**99.046**	**100.282**	**101.317**	**100.455**	**99.830**	**99.693**	**99.984**	**100.488**	**101.667**	**102.423**
23	Federal	96.566	97.161	97.461	98.055	99.602	100.422	100.936	100.158	100.179	99.652	99.811	100.361	101.715	102.446
24	National defense	96.733	97.339	97.707	98.466	100.003	101.036	101.590	100.574	100.361	99.616	99.742	100.296	101.670	102.261
25	Nondefense	96.254	96.829	97.004	97.294	98.857	99.287	99.727	99.400	99.849	99.719	99.941	100.484	101.804	102.785
26	State and local	93.896	94.844	95.849	97.104	98.706	100.198	101.560	100.644	99.608	99.721	100.098	100.572	101.634	102.406
	Addendum:														
27	Gross national product	96.631	97.172	97.510	97.939	98.502	98.989	99.674	99.805	100.056	99.893	99.876	100.174	100.640	101.078

Bureau of Economic Analysis

Table 1.1.9. Implicit Price Deflators for Gross Domestic Product

[Index numbers, 2009=100] Seasonally adjusted

Last Revised on: July 29, 2016 - Next Release Date August 26, 2016

Line		2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV	2012 I	2012 II	2012 III	2012 IV	2013 I	2013 II	2013 III	2013 IV
1	**Gross domestic product**	**101.429**	**101.949**	**102.399**	**103.145**	**103.768**	**103.917**	**104.466**	**104.943**	**105.508**	**105.935**	**106.349**	**106.570**	**107.084**	**107.636**
2	**Personal consumption expenditures**	**101.693**	**102.233**	**102.999**	**104.041**	**104.593**	**104.954**	**105.561**	**105.884**	**106.231**	**106.803**	**107.183**	**107.227**	**107.623**	**108.086**
3	Goods	101.304	102.305	103.792	105.582	106.094	106.177	106.732	106.516	106.581	106.973	106.829	105.824	105.914	105.904
4	Durable goods	98.293	97.817	97.680	98.071	97.843	97.320	97.112	96.685	96.131	95.757	95.470	94.883	94.267	93.766
5	Nondurable goods	102.755	104.485	106.782	109.270	110.154	110.551	111.511	111.412	111.813	112.624	112.559	111.324	111.815	112.087
6	Services	101.884	102.198	102.607	103.278	103.851	104.351	104.984	105.578	106.066	106.729	107.377	107.966	108.519	109.230
7	**Gross private domestic investment**	**99.033**	**99.553**	**99.884**	**100.213**	**100.641**	**100.903**	**101.284**	**101.833**	**101.930**	**102.402**	**102.931**	**103.257**	**103.540**	**103.959**
8	Fixed investment	99.138	99.569	99.941	100.442	100.704	100.962	101.482	101.905	102.309	102.535	102.872	103.380	103.902	104.498
9	Nonresidential	99.092	99.492	99.897	100.428	100.744	101.052	101.723	102.153	102.462	102.516	102.568	102.876	103.185	103.448
10	Structures	99.107	99.712	100.044	101.260	102.304	103.499	104.806	106.013	106.409	106.299	106.622	107.660	108.385	109.679
11	Equipment	98.046	98.290	98.478	98.823	98.931	99.165	99.573	99.656	99.937	100.268	100.161	100.087	100.207	99.745
12	Intellectual property products	100.379	100.850	101.583	101.943	102.085	101.913	102.561	102.993	103.286	103.018	103.120	103.530	103.839	104.525
13	Residential	99.325	99.899	100.115	100.474	100.479	100.501	100.319	100.711	101.571	102.581	104.158	105.514	106.918	108.902
14	Change in private inventories	---	---	---	---	---	---	---	---	---	---	---	---	---	---
15	**Net exports of goods and services**	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	Exports	104.024	106.456	109.183	111.511	112.156	110.950	111.684	111.986	111.920	112.287	112.610	111.788	111.972	111.899
17	Goods	104.719	107.895	111.142	113.815	114.401	112.807	113.437	113.531	113.480	113.658	113.842	112.568	112.602	112.132
18	Services	102.576	103.399	104.995	106.569	107.334	106.963	107.920	108.677	108.579	109.363	109.995	110.141	110.649	111.442
19	Imports	104.743	107.149	111.480	114.891	114.814	114.543	115.757	115.046	113.371	114.516	114.809	113.593	113.075	113.080
20	Goods	105.519	108.181	113.286	117.199	117.172	117.028	118.348	117.418	115.316	116.595	116.873	115.393	114.695	114.433
21	Services	101.478	102.754	103.591	104.741	104.457	103.617	104.331	104.601	104.841	105.382	105.750	105.732	106.033	107.254
22	**Government consumption expenditures and gross investment**	**102.937**	**103.670**	**104.702**	**105.811**	**106.249**	**106.116**	**107.014**	**107.129**	**107.438**	**107.941**	**108.336**	**108.625**	**109.129**	**110.111**
23	Federal	102.848	103.424	104.585	105.526	105.893	105.690	106.258	106.492	106.639	106.661	106.787	107.031	107.456	109.100
24	National defense	102.473	103.037	104.438	105.441	105.760	105.444	106.234	106.444	106.582	106.608	106.641	106.760	107.098	108.205
25	Nondefense	103.524	104.121	104.853	105.684	106.132	106.133	106.309	106.583	106.746	106.765	107.054	107.510	108.080	110.618
26	State and local	102.999	103.843	104.783	106.009	106.497	106.414	107.544	107.576	107.997	108.835	109.412	109.727	110.283	110.830
	Addendum:														
27	Gross national product	101.538	102.059	102.519	103.270	103.892	104.043	104.593	105.069	105.629	106.057	106.473	106.696	107.209	107.760

Bureau of Economic Analysis

Table 1.1.9. Implicit Price Deflators for Gross Domestic Product

[Index numbers, 2009=100] Seasonally adjusted

Last Revised on: July 29, 2016 - Next Release Date August 26, 2016

Line		2014 I	2014 II	2014 III	2014 IV	2015 I	2015 II	2015 III	2015 IV	2016 I	2016 II
1	**Gross domestic product**	**108.117**	**108.709**	**109.165**	**109.300**	**109.310**	**109.919**	**110.253**	**110.504**	**110.630**	**111.237**
2	**Personal consumption expenditures**	**108.618**	**109.130**	**109.421**	**109.419**	**108.976**	**109.470**	**109.782**	**109.890**	**109.967**	**110.496**
3	Goods	106.052	106.117	105.852	104.910	102.731	103.045	102.807	102.144	101.110	101.325
4	Durable goods	93.213	92.769	92.220	91.510	90.988	90.837	90.236	89.818	89.624	89.111
5	Nondurable goods	112.639	113.002	112.908	111.839	108.683	109.276	109.264	108.459	106.916	107.579
6	Services	109.963	110.709	111.296	111.791	112.270	112.859	113.465	113.987	114.660	115.358
7	**Gross private domestic investment**	**104.819**	**105.303**	**105.889**	**106.312**	**106.427**	**106.352**	**106.589**	**106.786**	**106.873**	**107.339**
8	Fixed investment	105.312	105.691	106.316	106.769	106.912	106.846	107.184	107.300	107.467	108.008
9	Nonresidential	103.915	104.298	104.613	104.849	105.012	104.932	105.141	105.117	105.173	105.456
10	Structures	110.934	111.861	112.744	113.292	112.622	111.905	112.165	112.108	111.678	112.497
11	Equipment	100.032	100.398	100.599	100.881	101.255	101.265	101.286	101.301	101.367	101.386
12	Intellectual property products	104.726	104.743	104.835	104.779	105.199	105.414	105.885	105.821	106.163	106.510
13	Residential	111.183	111.543	113.484	114.844	114.895	114.878	115.709	116.355	116.936	118.420
14	Change in private inventories	---	---	---	---	---	---	---	---	---	---
15	**Net exports of goods and services**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
16	Exports	112.777	112.767	112.493	110.535	107.886	107.635	106.541	105.031	103.661	104.662
17	Goods	113.108	112.785	112.091	109.313	105.848	105.371	103.808	101.725	99.070	100.469
18	Services	112.107	112.759	113.389	113.209	112.286	112.500	112.395	112.086	113.411	113.568
19	Imports	114.534	114.084	113.481	111.446	106.840	105.528	104.309	102.255	100.678	101.205
20	Goods	116.097	115.475	114.690	112.307	106.928	105.297	103.944	101.525	99.614	100.219
21	Services	107.755	108.095	108.332	107.888	106.875	107.064	106.469	106.115	106.090	106.260
22	**Government consumption expenditures and gross investment**	**110.597**	**111.114**	**111.666**	**111.670**	**111.083**	**111.680**	**111.815**	**111.833**	**111.711**	**112.390**
23	Federal	108.893	109.321	109.725	109.788	109.845	110.093	110.097	109.882	110.286	110.808
24	National defense	108.314	108.620	108.941	108.927	108.853	109.063	109.010	108.766	109.015	109.504
25	Nondefense	109.884	110.507	111.044	111.228	111.489	111.799	111.889	111.719	112.358	112.930
26	State and local	111.771	112.346	112.996	112.962	111.966	112.783	113.000	113.165	112.712	113.490
	Addendum:										
27	Gross national product	108.241	108.830	109.283	109.414	109.405	110.011	110.344	110.593	110.714	---

Soil Usage Estimate Calculations

SCS ENGINEERS

CALCULATION SHEET

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PROJECT NO. 2721331.21

CLIENT City of Springfield, MO
PROJECT 2016 FAI Update

SUBJECT Soil Usage Estimate

Prepared by NH **Date** 8/3/16
Reviewed by DD **Date** 8/3/16

Purpose: Estimate the volume of borrow soil remaining for future cell construction and closure projects.

Assumptions and Information:

Previous borrow source volume estimate from August 2015 FAI submittal =1,383,000 cubic yards

Assume a 5:1 waste to soil daily cover.

Airspace consumed information obtained from quarterly volume calculations for the active landfill:

3rd Quarter 2015 = 85,400 CY (Beginning July 2, 2015)

4th Quarter 2015 = 76,200 CY

1st Quarter 2016 = 114,900 CY

2nd Quarter 2016 = 67,200 CY (Through July 8, 2016)

TOTAL = 343,700 CY

Calculations:

Soil Consumed for Daily Cover = 343,700 CY (1/6) = 57,283 CY

Remaining Borrow Source Soil = 1,383,000 CY – 57,283 CY = 1,325,717 CY ≈ **1,326,000 CY**