Region 2000 Services Authority
Called Meeting Agenda
November 10, 2026, 3:00 p.m.

Virtual Meeting

Electronic connection:
https://us02web.zoom.us/j/84987937850?pwd=Z6npsV9sbnEmlb0AP3XsiffW4eQtpb.1

Dial In: (646) 558-8656 Zoom Meeting ID: 849 8793 7850 Passcode: 156997

1) Welcome ..... Greg Patrick, Chair

2) Invocation of Virtual Meeting Policy (attachment) ..... Chair & Staff

3) Resolution for Rezoning & Special Use Permit Applications (attachment) ..... Chair & Staff

4) Adjournment ..... Chair

Region 2000 Services Authority Policy for All-Virtual Meetings

1. The Board Chairperson of the Region 2000 Services Authority may, upon determining that a meeting is required, whether regular or special, call a virtual meeting of the Authority Board if, in his/her judgement, a virtual meeting will encourage participation necessary for a quorum of the body.

2. A quorum of the Authority Board must affirm a virtual meeting by majority vote.

3. An audio recording of the virtual meeting shall be maintained along with the meeting minutes.

4. This policy shall be invoked no more than once per calendar year.

RESOLUTION

WHEREAS, the Region 2000 Services Authority would like to direct staff to apply to Campbell County to rezone property for landfill expansion in order to meet time limits for the expansion of the landfill.

NOW THEREFORE, BE IT RESOLVED that the Board of the Region 2000 Services Authority directs staff to make application to the Community Development Office of Campbell County for a rezoning request and special use permit (and any other applicable required permits or authorizations) for an expansion of the landfill on such land use-related terms as are stated in the document entitled "Region 2000 Regional Landfill Livestock Road Facility Rezoning and SUP Application for Lateral Expansion (dated) November 9, 2026."

Adopted this 10th day of November 2026.

_____

Chair

2200 S. Main Street, Ste. A
Blacksburg, VA 24060
T 540.552.0444
TRCcompanies.com

Region 2000 Services Authority Regional Landfill
Livestock Road Facility
Rezoning and SUP Application for Lateral Expansion
November 9, 2026
Submitted by TRC Engineers, Inc. on behalf of Region 2000 Services Authority

This action before the Campbell County Planning Commission and Board of Supervisors (the County) is a request for Rezoning and Special Use Permit for property located southeast of the Livestock Road Landfill, identified as Tax Parcel TM 33-A-50A. This narrative addresses the "First Steps" of the Campbell County review process.

The current landfill was developed in 2008 after the County's property containing the original Permit No. 285, issued by the Virginia Department of Environmental Quality (VDEQ), was divided and a new Permit No. 610, issued for a lined disposal unit on 97.758 acres, was assigned to the Region 2000 Service Authority (the Authority). Within that site, shown in **Attachment 1**, Phases III – V of the landfill are operational and have a projected remaining service life of 5 years (the landfill will be full in early 2029).

The subject property (T 33-A-50A and 33-A-50) is owned by the Authority and is shown conceptually in **Attachment 2**. Zoning for the entire 347.325-acre tract is Agricultural (A-1). The Authority is requesting a zoning change to Industrial – Heavy (I-H) and a Special Use Permit for a portion of the 213.4-acre Parcel 33-A-50A. The acreage of the land proposed for rezoning to Industrial-Heavy is 142.8 acres and is defined in the attached exhibit titled Conceptual Landfill Expansion. The 70.6-acre balance of Tax Map #33-(A)-50A will remain in an Agricultural-1 zoning district.

The Authority plans to develop a contiguous lateral expansion with sequential phases (Phase VI-X), which adds approximately 60.4 acres to the current 55-acre lined footprint. The expansion will overlap the existing side slopes (i.e., a "piggy-back" expansion). Peak elevations remaining at or below the currently permitted final grades of 1,046 ft Mean Sea Level (MSL). The expansion will be designed in accordance with Virginia Solid Waste Management Regulations (9VAC20-81). The proposed expansion and appurtenances are shown in **Attachment 3**.

Surrounding properties include a mix of agricultural and residential uses. The expansion will not impact traffic patterns or offsite activities within the surrounding community. The Authority has implemented programs to mitigate noise and fugitive emissions at its current permitted landfill facility. No changes to road access, buildings or utilities serving the site are proposed. Onsite there will be new leachate and landfill gas management facilities that will require electrical power, along with upgrades to the current erosion and sedimentation control and air quality permits. These items will be addressed in future permitting efforts.

The Authority is proposing forested, 500-foot-wide property line buffers for the expansion area, more restrictive than the County's requirements for Industrial zoning and Virginia's solid waste buffer requirements. Regulatory buffer requirements will be observed on adjacent natural resources – no streams or wetlands have been identified within the expansion footprint. Cross sections through the site plan, shown in **Attachments 4, and 5** provide several line-of-sight perspectives that indicate the expansion will not be highly visible to the major roads or residences in the vicinity.

The landfill expansion will provide an estimated 24 years of future disposal capacity. The schedule for development is shown in **Attachment 6.** The schedule includes a two-step local government approval: 1) Rezoning and Special Use Permit (the current action); 2) Local government certification of zoning and special use approval to be applied in a Notice of Intent for VDEQ review, to be completed in late 2027 or early 2028 as the first of a three-part permitting process.

After the Notice of Intent is approved, concurrent permitting activities will include completion of a Solid Waste Permit Application Part A hydrogeologic investigation with test borings submitted for review by VDEQ, and a Part B final survey/platting of the property and facility design submitted for review. These sections will be followed by public hearings, bidding, construction and certification of the first partial phase (VI-A). This work will commence in late 2027 and end in 2033, with an anticipated commencement of waste placement in early 2034.

Please contact me with any questions or comments.

Sincerely,

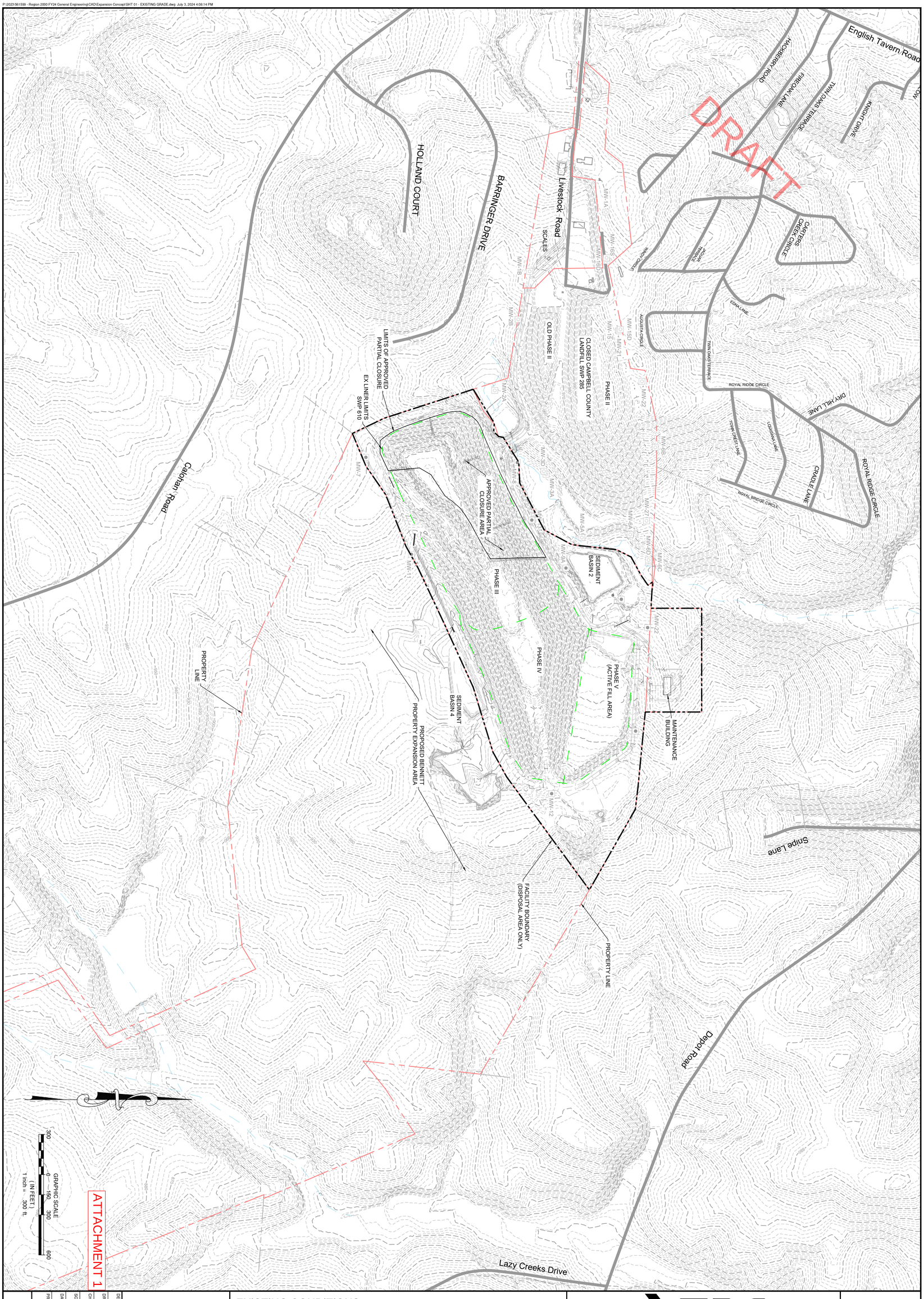
TRC Engineers, Inc.



Michael D. Lawless, CPG, PG

Principal Geologist

P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Expansion Concept\SHT 01 - EXISTING GRADE.dwg July 3, 2024 4:08:14 PM



ATTACHMENT 1

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	1" = 300'
DATE:	JUNE 2024
PROJECT NUMBER	561599
	1 OF 4

REVISIONS

EXISTING CONDITIONS

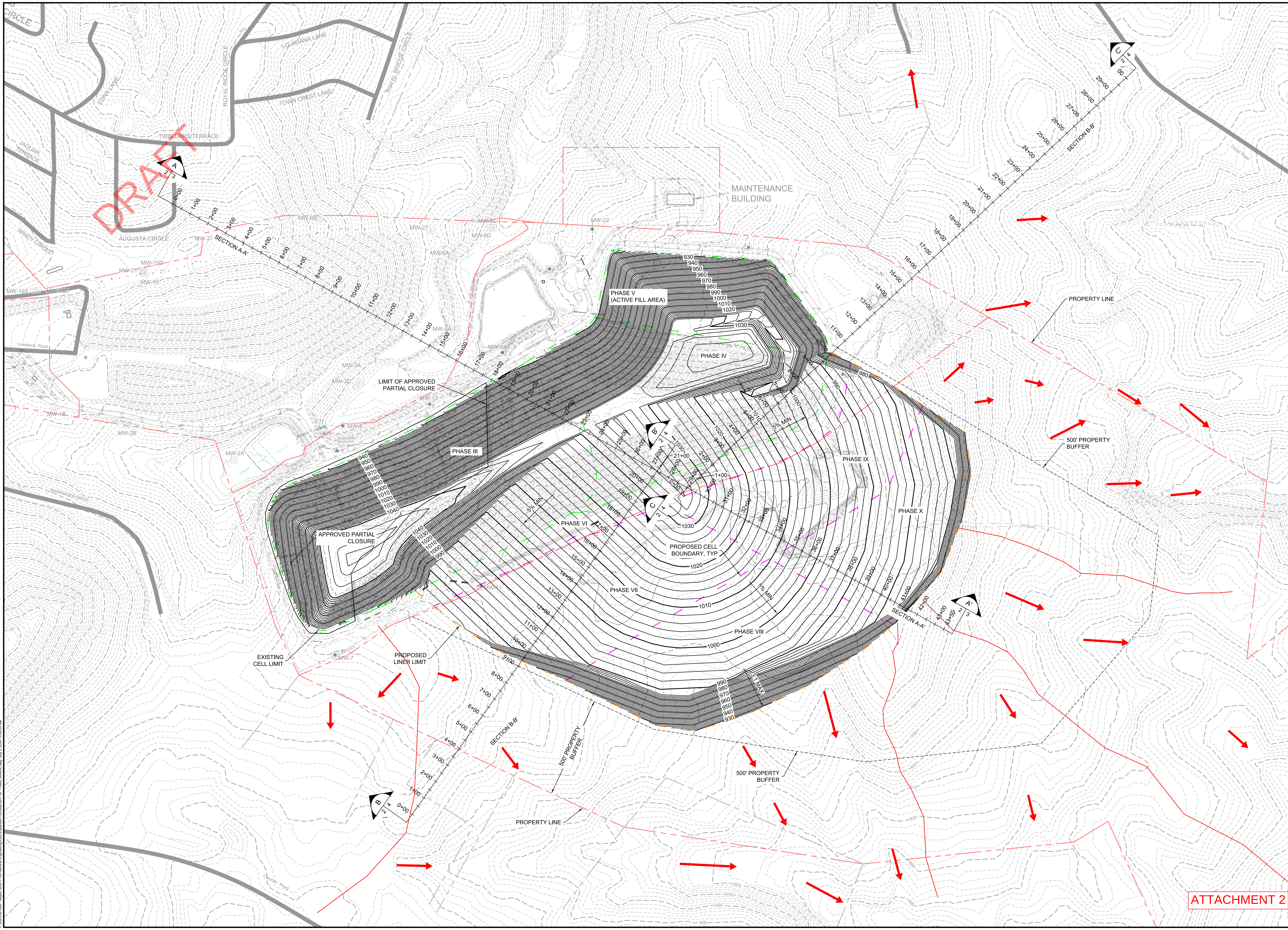
CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL

LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

TRC

629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com

• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Northern Virginia



P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Expansion Concept\SHT 02 - FINAL GRADE.dwg July 5, 2024 10:49:05 AM

TRC

629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com

• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Northern Virginia

PROPOSED FINAL GRADE

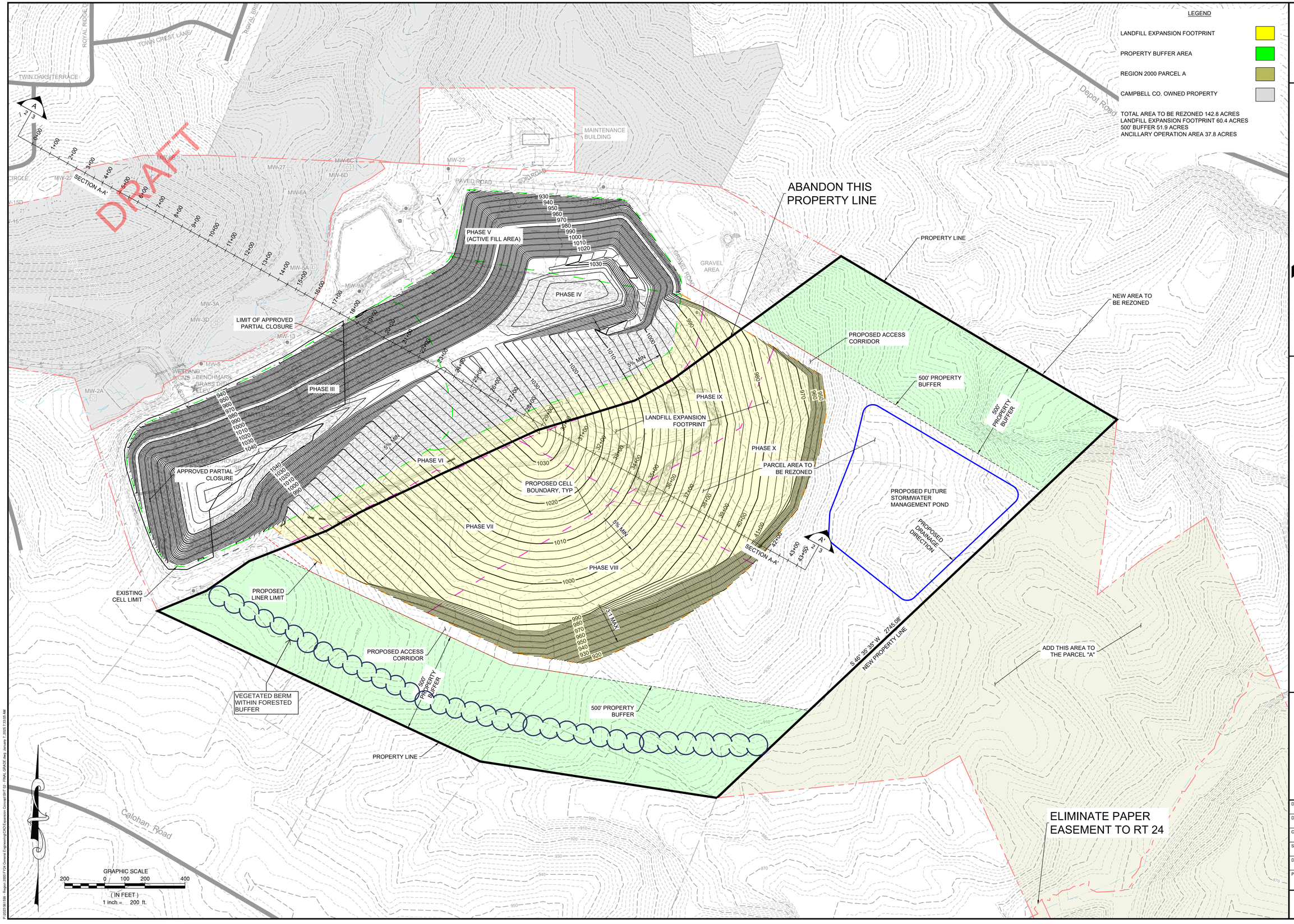
CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL

LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	1" = 200'
DATE:	JUNE 2024
PROJECT NUMBER:	561599

2 OF 4



TRC
629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Charlottesville, VA
• Northern Virginia

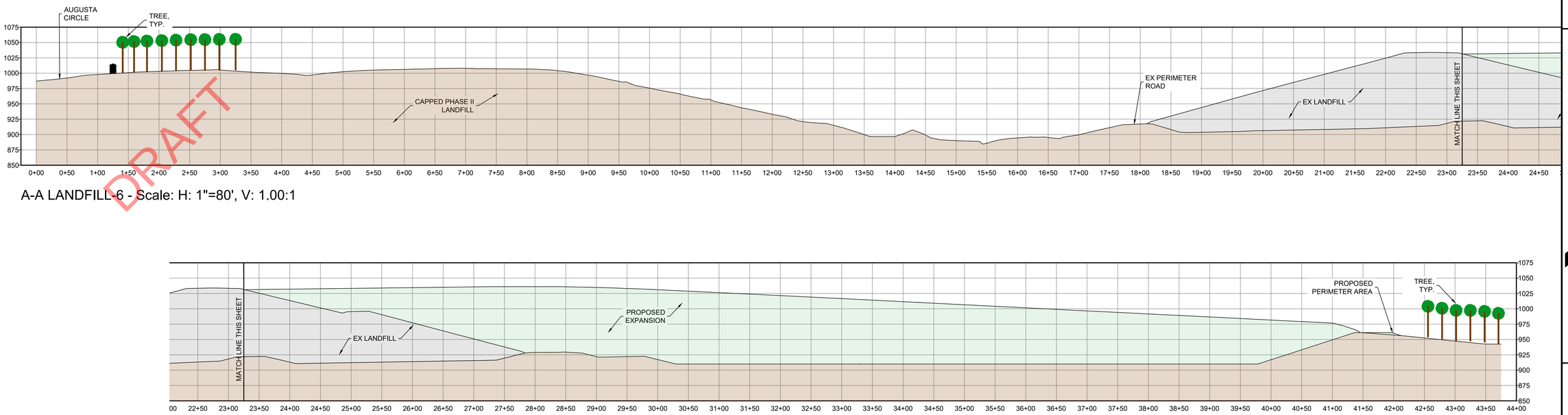
PROPOSED FINAL GRADE
CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL
LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	1" = 200'
DATE:	JUNE 2024
PROJECT NUMBER:	561599

2
OF 4

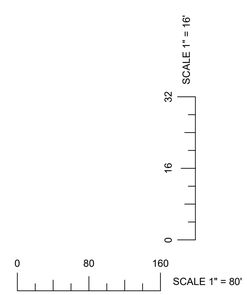
20250106 1BK Region 2000 FYA Gravel Engineering\CAD\Expansion Concept\SHT 02 - FINAL GRADE.dwg January 7, 2025 10:50 AM



DRAFT

A-A LANDFILL-6 - Scale: H: 1"=80', V: 1.00:1

A
2 | 3
SECTION A-A'



ATTACHMENT 4

TRC
629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Northern Virginia
• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA

CONCEPTUAL LANDFILL EXPANSION PROFILE - 1

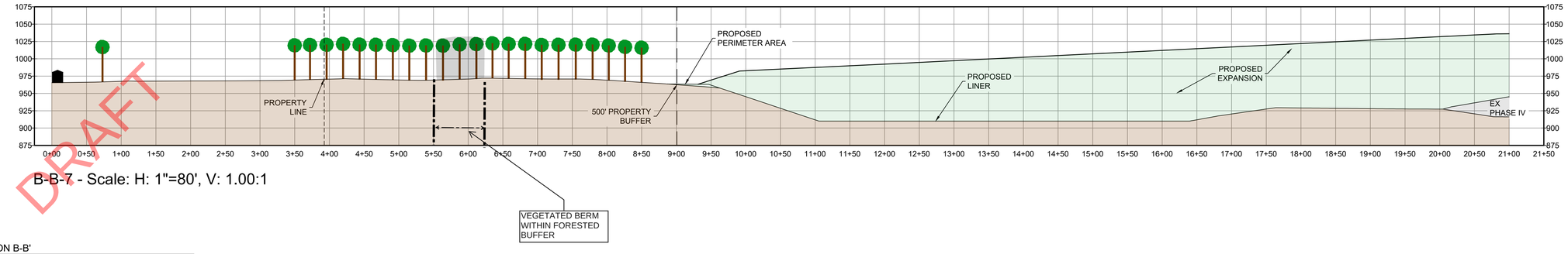
CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL

LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	AS SHOWN
DATE:	JUNE 2024
PROJECT NUMBER:	561599

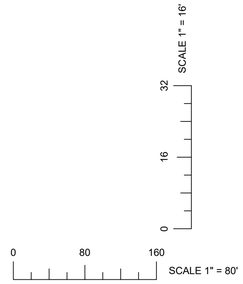
P:\2023\561599 - Region 2000 PTAR General Engineering\CAD\Expansion Concept\SHT 03 - CROSS SECTION 1.dwg, June 13, 2024 11:59:16 AM

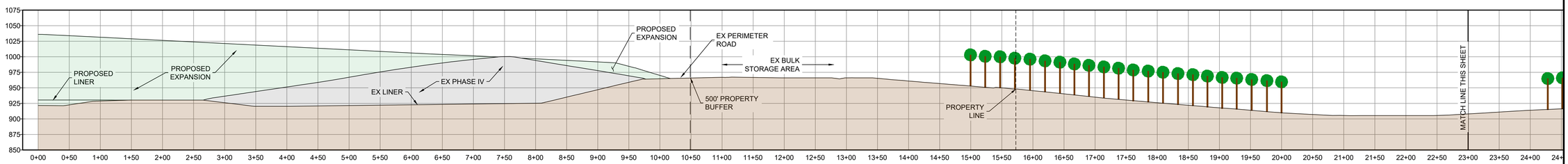


B-B-7 - Scale: H: 1"=80', V: 1.00:1

DRAFT

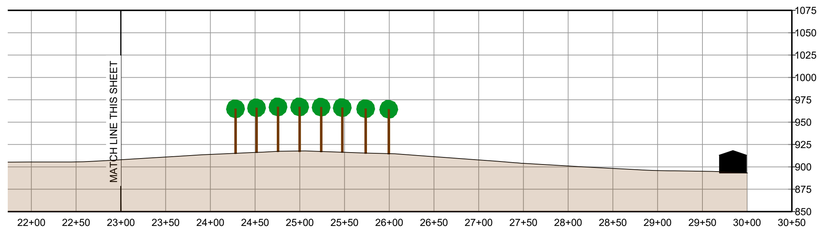
B
2 | 4
SECTION B-B'





C-C LANDFILL-37 - Scale: H: 1"=80', V: 1.00:1

C
2 | 4
SECTION C-C'



ATTACHMENT 4

TRC
629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA
• Northern Virginia

CONCEPTUAL LANDFILL EXPANSION PROFILE - 2

CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL

LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

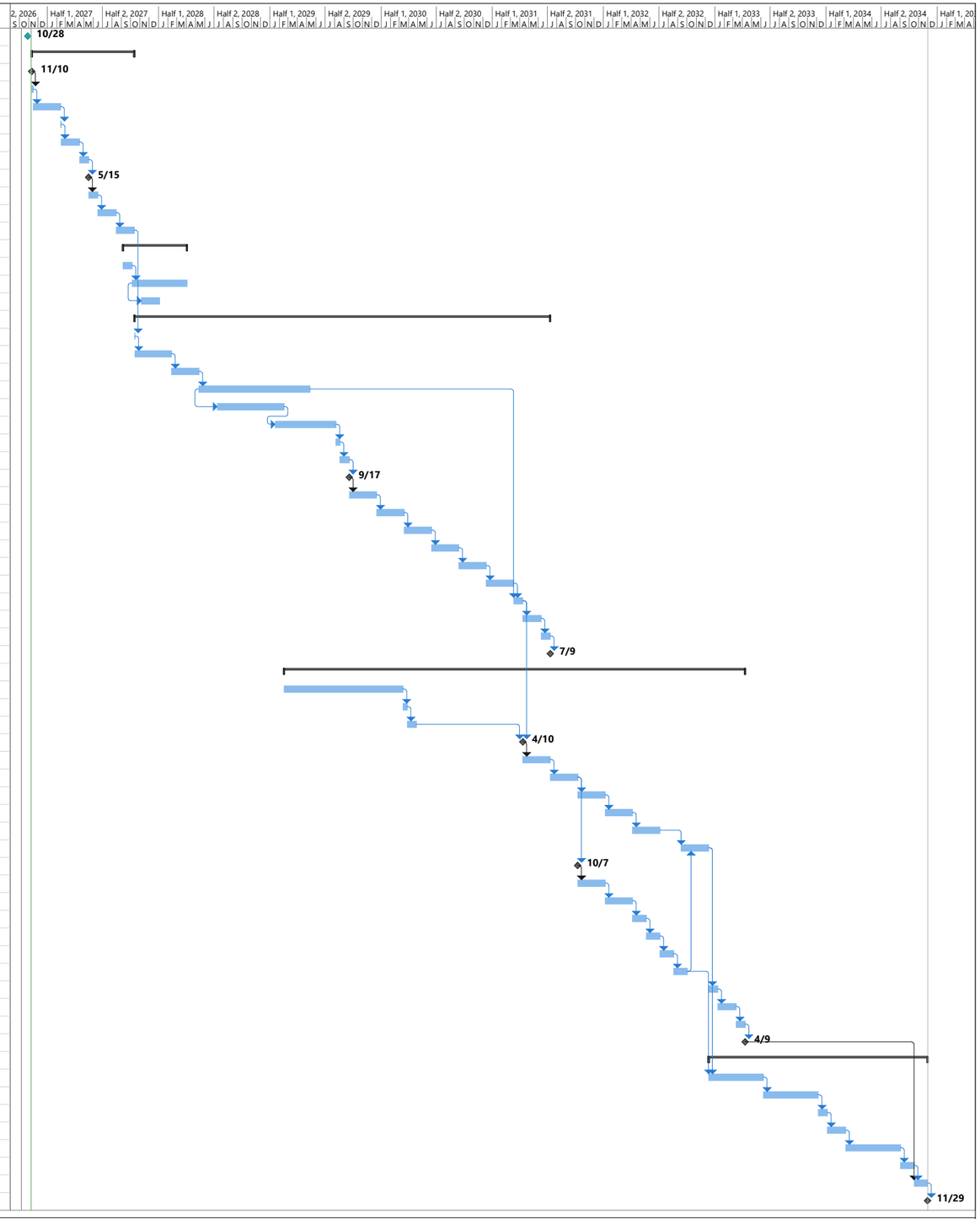
REVISIONS

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	AS SHOWN
DATE:	JUNE 2024
PROJECT NUMBER:	561599

4
OF 4

P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Exhibits\ Concept\SH 04 - CROSS SECTION 2.dwg June 13, 2024 | 8:53:21 AM

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Text1
1		**Region 2000- Board Meeting**	0 days	**Wed 10/28/26**	Wed 10/28/26		
2		**Rezoning- Bennett Property**	**337 days**	**Tue 11/10/26**	**Tue 10/12/27**		
3		Campbell County Board Meeting	0 days	Tue 11/10/26	Tue 11/10/26		Assumes: Board approves Landfill Project
4		Submit Rezoning Application to County	5 days	Tue 11/10/26	Sat 11/14/26	3	
5		Planning Commission Review -County	90 days	Sun 11/15/26	Fri 2/12/27	4	
6		Planning Commission Hearing	2 days	Sat 2/13/27	Sun 2/14/27	5	
7		Board of Supervisors Review -County	60 days	Mon 2/15/27	Thu 4/15/27	6	
8		Board of Supervisors Hearing- County	30 days	Fri 4/16/27	Sat 5/15/27	7	
9		Public Meeting	0 days	Sat 5/15/27	Sat 5/15/27	8	
10		Public Comment Period	30 days	Sun 5/16/27	Mon 6/14/27	9	
11		Response to Public Comments	60 days	Tue 6/15/27	Fri 8/13/27	10	
12		Zoning Amendment Approval	60 days	Sat 8/14/27	Tue 10/12/27	11	
13		**Survey**	**210 days**	**Mon 9/6/27**	**Sun 4/2/28**		
14		Survey coordination and schedule to start project	30 days	Mon 9/6/27	Tue 10/5/27		
15		Topo Survey - Bennett Property and Sorting Facility	180 days	Wed 10/6/27	Sun 4/2/28	14	
16		SUE	60 days	Fri 11/5/27	Mon 1/3/28	15SS+30 days	
17		**Part A**	**1365 days**	**Thu 10/14/27**	**Wed 7/9/31**		
18		Managers coordination and schedule to start project	1 day	Thu 10/14/27	Thu 10/14/27	12	
19		Natural Resources Investigation	120 days	Fri 10/15/27	Fri 2/11/28	18	
20		JPA prep	90 days	Sat 2/12/28	Thu 5/11/28	19	
21		Wetland permitting	365 days	Fri 5/12/28	Fri 5/11/29	20	
22		Hydro-Geo Investigation	220 days	Tue 7/11/28	Thu 2/15/29	21SS+60 days	
23		Part A Document Preparation	200 days	Wed 1/17/29	Sat 8/4/29	22FS-30 days	
24		Client Review	14 days	Sun 8/5/29	Sat 8/18/29	23	
25		Revisions per Client Review	30 days	Sun 8/19/29	Mon 9/17/29	24	
26		Part A Submitted to DEQ	0 days	Mon 9/17/29	Mon 9/17/29	25	
27		DEQ Completeness Review	90 days	Tue 9/18/29	Sun 12/16/29	26	
28		Response to Completeness Review (TRC)	90 days	Mon 12/17/29	Sat 3/16/30	27	
29		DEQ Technical Review (TR) 1	90 days	Sun 3/17/30	Fri 6/14/30	28	
30		Response to TR1 (TRC)	90 days	Sat 6/15/30	Thu 9/12/30	29	
31		DEQ Technical Review (TR) 2	90 days	Fri 9/13/30	Wed 12/11/30	30	
32		Response to TR2 (TRC)	90 days	Thu 12/12/30	Tue 3/11/31	31	
33		Final DEQ Review and Draft Permit Conditions	30 days	Wed 3/12/31	Thu 4/10/31	32,21	
34		Public Comment and Meeting	60 days	Fri 4/11/31	Mon 6/9/31	33	
35		Part A Conditions and Permitting Completion	30 days	Tue 6/10/31	Wed 7/9/31	34	
36		Part A of Solid Waste Permit Complete	0 days	Wed 7/9/31	Wed 7/9/31	35	
37		**Part B**	**1514 days**	**Fri 2/16/29**	**Sat 4/9/33**		Assume start during Part A duration
38		Part B Document Preparation	390 days	Fri 2/16/29	Tue 3/12/30		
39		Client Review	14 days	Wed 3/13/30	Tue 3/26/30	38	
40		Revisions per Client Review	30 days	Wed 3/27/30	Thu 4/25/30	39	
41		Part B Submitted to DEQ	0 days	Thu 4/10/31	Thu 4/10/31	40,33	
42		DEQ Completeness Review	90 days	Fri 4/11/31	Wed 7/9/31	41	
43		Response to Completeness Review	90 days	Thu 7/10/31	Tue 10/7/31	42	
44		DEQ TR1	90 days	Wed 10/8/31	Mon 1/5/32	43	
45		Response to TR1	90 days	Tue 1/6/32	Sun 4/4/32	44	
46		DEQ TR2	90 days	Mon 4/5/32	Sat 7/3/32	45	
47		Response DEQ TR2	90 days	Sun 9/12/32	Fri 12/10/32	46,54FS-20 days	
48		Submittal to Local Permitting Authority	0 days	Tue 10/7/31	Tue 10/7/31	43	
49		Local Permitting Review 1	90 days	Wed 10/8/31	Mon 1/5/32	48	
50		Response to Local Permitting Comments (1)	90 days	Tue 1/6/32	Sun 4/4/32	49	
51		Local Permitting Review 2	45 days	Mon 4/5/32	Wed 5/19/32	50	
52		Response to Local Permitting Comments (2)	45 days	Thu 5/20/32	Sat 7/3/32	51	
53		Local Permitting Review 3	45 days	Sun 7/4/32	Tue 8/17/32	52	
54		Response to Local Permitting Comments (3)	45 days	Wed 8/18/32	Fri 10/1/32	53	
55		Final Reviews and DEQ Draft Permit Modules	30 days	Sat 12/11/32	Sun 1/9/33	47	
56		Public Comment and Meeting	60 days	Mon 1/10/33	Thu 3/10/33	55	
57		Part B Modules and Permitting Complete	30 days	Fri 3/11/33	Sat 4/9/33	56	
58		Part B of Solid Waste Permit Complete	0 days	Sat 4/9/33	Sat 4/9/33	57	
59		**New Cell Construction**	**719 days**	**Sat 12/11/32**	**Wed 11/29/34**		Assume start during Part B design
60		Design/Bid Document Preparation	180 days	Sat 12/11/32	Wed 6/8/33	47,54	
61		Local Permitting for single phase	180 days	Thu 6/9/33	Mon 12/5/33	60	
62		Bid Phase	30 days	Tue 12/6/33	Wed 1/4/34	61	
63		Procurement	60 days	Thu 1/5/34	Sun 3/5/34	62	
64		Construction	180 days	Mon 3/6/34	Fri 9/1/34	63	
65		CQA Report Preparation	45 days	Sat 9/2/34	Mon 10/16/34	64	
66		DEQ Review	44 days	Tue 10/17/34	Wed 11/29/34	58,65	
67		CTO Issued	0 days	Wed 11/29/34	Wed 11/29/34	66	



DRAFT

Project: Schedule Region 2000
Date: Mon 11/9/26

Task · Split · Milestone · Summary · Project Summary · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · External Tasks · External Milestone · Deadline · Progress · Manual Progress

2200 S. Main Street, Ste. A
Blacksburg, VA 24060

T 540.552.0444
TRCcompanies.com

Voluntary Proffer Statement

Rezoning Request

Region 2000 Services Authority
361 Livestock Road, Rustburg, VA 24588

PROJECT: Region 2000 Services Authority Lateral Expansion
TAX MAP #33-(A)-50A
LOCATION: Adjacent to 1099 Livestock Road

DATE: November 9, 2026

I. General Information

The Region 2000 Services Authority is applying for a rezoning request and concurrent special use permit to expand the existing landfill onto an adjoining parcel identified as tax map #33-(A)-50A, which measures 213.4 acres. The acreage of the land proposed for rezoning to Industrial-Heavy is 142.8 acres and is defined in the attached exhibit titled Conceptual Landfill Expansion. The 70.6-acre balance of Tax Map #33-(A)-50A will remain in an Agricultural-1 zoning district.

The scope of the expansion is to provide 24 additional years of capacity. As a lateral expansion, the permitted height of the existing landfill will not be exceeded. The footprint of the landfill will measure 60.4 as preliminarily designed.

II. Proffer #1

The Region 2000 Services Authority proffers a 500-foot forested buffer adjacent to the property boundaries of neighboring landowners contiguous to Tax Map #33-(A)-50A. The Authority volunteers this proffer in support of its rezoning application. The forested buffer will be maintained throughout landfill operation, closure, and post-closure periods and will function as Conserved Open Space in accordance with the DEQ Stormwater Management Handbook. The Authority will prepare and follow a long-term vegetation management plan with the goal of maintaining the buffers in a natural vegetative condition per the DEQ Handbook. The Plan will limit active management and will include managing factors such as the unintended consequences of passive recreation, control invasive species, tree and understory maintenance, etc.

III. Proffer #2

The Region 2000 Services Authority proffers an elevation limit for the lateral expansion equal to the permitted elevation of the final grade of the existing landfill, which measures 1,046 feet above mean sea level. The Authority volunteers this proffer in support of its rezoning application.

IV. Proffer #3

The Region 2000 Services Authority proffers a footprint limit of 60.4 acres for the expanded area of the landfill. I.e., new cells receiving solid waste will occupy no more than 60.4 additional acres adjacent to existing cells.

V. Closing Statement

The Region 2000 Services Authority proposes these changes to its application, which are consistent with its application submitted as PL-24-196. The lateral expansion will result in no height increase relative to the current landfill. New landfill cells will not be closer than 500 feet to the boundaries of the rezoning request, as depicted on the attached drawing.

X _____ Date: _____November 9, 2026_____

Applicant: Region 2000 Services Authority

REZONING AND SPECIAL USE PERMIT APPLICATION PROPOSAL

DRAFT

Region 2000 Regional Landfill
Livestock Road Facility Lateral Expansion

Submitted to: Campbell County Board of Supervisors

Submitted by: Region 2000 Services Authority

Virginia's Region 2000 Local Government Council
Region 2000 Services Authority
361 Livestock Road
Rustburg, VA 24588
434-455-6079

November 9, 2026

Table of Contents

Section Page

EXECUTIVE SUMMARY **1**
SECTION 1 – BACKGROUND INFORMATION **3**
Livestock Road Facility (SWP 610) 3
Regulatory Status 5
Solid Waste 5
Air Quality 5
SECTION 2 – PROPOSED LANDFILL EXPANSION **6**
Design Schedule 6
Expansion Footprint 7
Design Volume 7
Phase VI Design 8
Landfill Profiles 8
Design summary 8
SECTION 3 – NUISANCE MITIGATION AND ABATEMENT MEASURES **9**
Traffic 10
SECTION 4 – COMMUNITY BENEFITS **20**

Exhibits

Exhibit 1. Site Map 6
Exhibit 2. Per Ton Cost of Service Disposal Rate (FY 2023 - FY 2025) 19

Tables

Table 1. Livestock Road Facility Cell Phase and Volumes 5
Table 2. Total Capital Costs Projections 18
Table 3. Key Differences Between GBB and Expansion Proposal Assumptions 20

Appendices

Appendix A. Conceptual Plan Sheets
Existing Conditions
Conceptual Landfill Expansion
Profile 1
Profile 2

Appendix B. Expansion Cost Estimates
Total Construction Cost Estimate
Average Phase (Cell) Cost Estimates
Phase VI (Initial 2-Year Cell) Cost Estimate

DRAFT

Expansion Post-Closure Care Cost Estimates

Attachments

Attachment 1	Preliminary Schedule
Attachment 2	Table of Waste Quantities

DRAFT

EXECUTIVE SUMMARY

The Region 2000 Services Authority (Authority) has developed this Proposal for a 24-year Landfill Expansion of the Region 2000 Regional Landfill – Livestock Road Facility (Landfill or Facility), which is being submitted to the Campbell County Board of Supervisors. This Proposal presents relevant considerations addressing the recommended course of action for expanding the Landfill, which will enable acceptance and disposal of the solid waste generated within the region via landfilling operations for approximately an additional 24 years.

As reported previously by the Authority in various forums and documents, the waste disposal units comprising the existing Landfill, referred to as Phases III, IV, and V, are estimated to have sufficient remaining capacity (airspace volume) to manage the quantity of waste being accepted for approximately five more years, which correlates to sometime around early 2029. This proposal outlines the planning, permitting, design, construction, and financial analyses required to be accomplished to facilitate continued landfilling in an initial cell of the Expansion Area.

This Proposal presents a conceptual approach for the development of additional waste disposal units that comprise the Expansion Area.

Expansion of the Regional Landfill presents several benefits including:

- Greater control over long-term solid waste management and related costs compared to a transfer station scenario.
- There is also the likelihood of significant revenues generated from the landfill gas to energy project discussed herein.
- Low tipping fees .
- Community Benefits
    - Employment opportunities
    - Support of economic development initiatives related to commercial, industrial, and residential development
    - Potential development of a park on a portion of the Authority's property

DRAFT

LANDFILL EXPANSION APPROACH

The proposed conceptual Expansion Area is located to the south of, and adjacent to, existing Phases III, IV, and V. The Expansion Area provides approximately 8 million cubic yards of additional airspace volume and covers an area of approximately 60 acres. The Authority intends to develop and fill the Expansion Area in a sequence that consists of Cells VI through X, some of which will "piggyback" over the existing southern slope of the current Landfill.

The height of the expansion area will not exceed the currently permitted height of the landfill, 1,046 ft MSL and a 500-ft minimum forested buffer zone will be maintained along the southern and northern property lines measured from the liner limits.

NUISANCE MITIGATION AND ABATEMENT MEASURES

The Authority recognizes the heightened sensitivity of surrounding communities to potential odors originating from the Facility. The Authority has shown resolve in implementing aggressive and successful odor mitigation by installing an efficient LFG collection and control system consisting of vertical extraction wells, horizontal collectors, and leachate cleanouts connected to vacuum via LFG collection piping network routed to a blower/flare station. The Facility has implemented several LFG collection system expansion events since the initial installation of the LFG collection system in 2016. The Authority will continue this commitment and level of resolve with planned LFG collection system expansion events every 2 to 3 years while active landfilling operations continue in the proposed Expansion Area. A conceptual layout drawing of the proposed Expansion Area LFG Collection System is included in Appendix C. The preliminary budgetary costs for LFG infrastructure within the Expansion Area are estimated to be $8.8 million (2024 dollars) over the life of the Expansion Area. In addition, the LFG system operational costs are estimated to be approximately $127,000 annually (2024 dollars). A breakdown of these ballpark costs is provided in Appendix C.

In addition, the Facility will continue to implement supplemental measures to mitigate and abate odors that have proven effective at the site as needed. The Facility has previously employed a perimeter odor neutralizing system, a mobile Odor-Boss odor cannon to neutralize odor downwind of the active workface, and an enhanced Posi-Shell temporary intermediate cover system on the side slope to better seal the landfill surface to mitigate fugitive emissions and odors. A vegetated berm will be constructed along Calohan Road within a 500-foot buffer.

The Facility's hours of operation are from 7:00 AM through 4:00 PM Monday through Friday, and 7:00 AM through 12:00 PM Saturday. The Facility will manage dust according to permit requirements. The Facility has managed other nuisances and site improvements historically by installing a sound barrier wall to mitigate noise, litter pick up, and grounds maintenance to enhance the appearance of the facility to visitors.

DRAFT

COMMUNITY BENEFITS

Expansion of the Landfill will allow the region to continue to manage its solid waste for an additional 24 years maintaining control over its waste management strategies in an efficient and cost-effective manner. The expansion will continue to provide employment opportunities and support economic development initiatives in the region in support of additional commercial, industrial, and residential development.

The community benefits from having an active landfill from the job creation aspect to fostering the business development in the surrounding area along Calohan Road and U.S. Route 29. In addition, the proposed Expansion Area at the Facility offers control and security over tipping and waste hauling fees under the presence of a municipally owned and operated local landfill. The community also benefits from the environmental stewardship from the reduced greenhouse gas emissions (i.e., carbon footprint) by hauling to a local landfill as opposed to an alternate, which would be more than an hour haul each direction. Other community benefits may include sponsoring events or hosting an event, such as litter picking, or contributing benches or equipment to a local park.

SECTION 1 – BACKGROUND INFORMATION

LIVESTOCK ROAD FACILITY (SWP 610)

The Region 2000 Regional Landfill - Livestock Road Facility (LRF) is a municipal solid waste (MSW) management facility located east of U.S Route 29, at the end of State Route 674, approximately five miles south of Lynchburg, in Campbell County, Virginia. The LRF is owned and operated by the Region 2000 Services Authority (Authority). The LRF is comprised of three permitted waste disposal units Phases III, IV and V, of which Phase IV and V are the current active units. Refer to the Site Map in Exhibit 1. The Authority issued a Solid Waste Permit (No. 610) in March 15, 2012 for operations of the Phase III landfill, which is currently filled and partially capped. The Authority began landfilling operations in Phase IV, on April 18, 2017, and commenced landfilling operations in Phase V in Summer 2023.

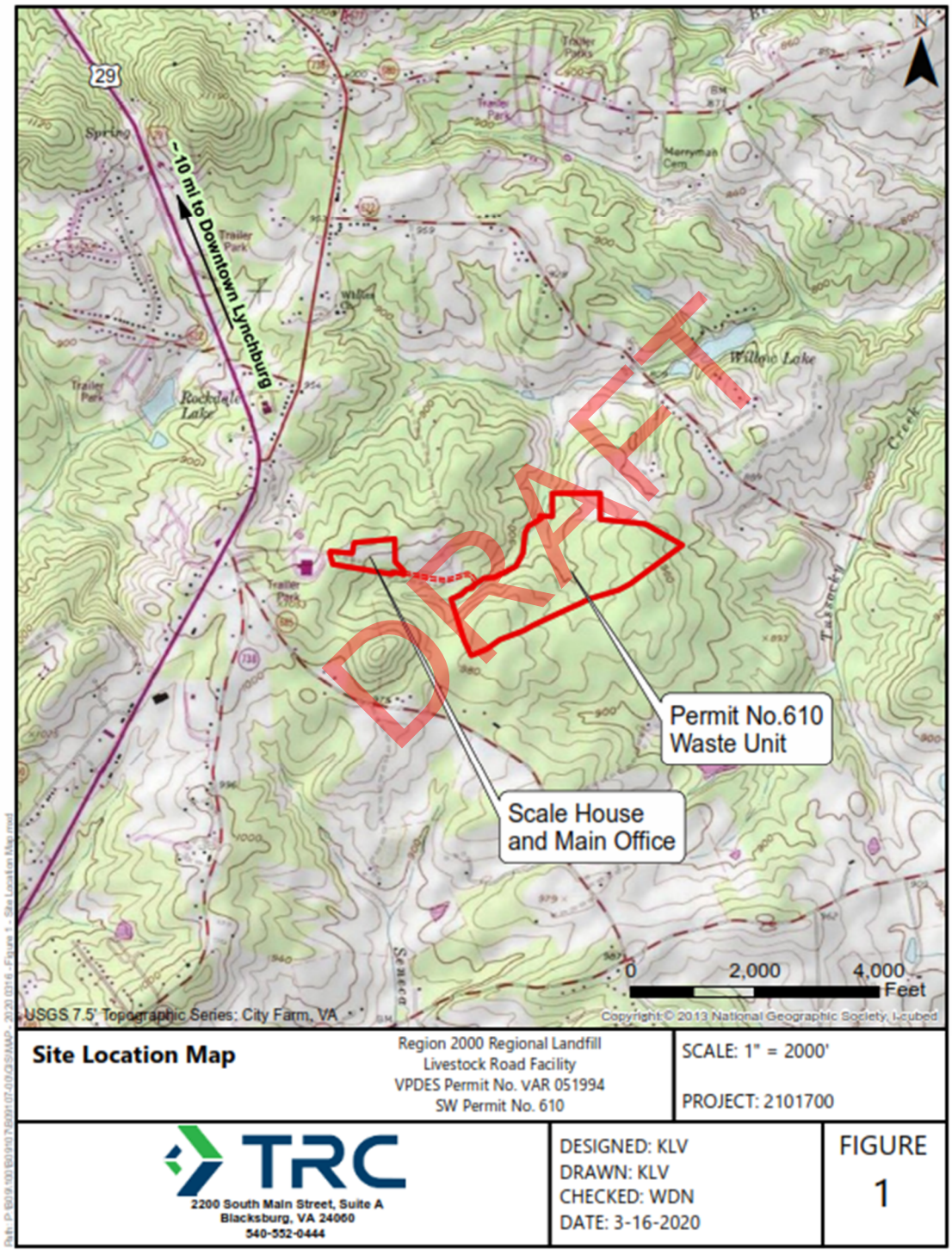
Upon completion of all currently permitted phases, the LRF is anticipated to have a total footprint of 55 acres and a maximum design capacity of approximately 5.98 million cubic yards of solid waste as shown in Table 1. Approximately 1.89 million tons of waste has been disposed in Phases IV and V to date. During 2023, the LRF disposed of over 204,000 tons of waste and is expected to receive over 200,000 tons during 2024. Based on the anticipated waste acceptance rates, the LRF is expected to achieve full design capacity in early 2029. The LRF accepts municipal solid waste (MSW) consisting primarily of household and commercial wastes from the City of Lynchburg and the counties of Appomattox, Campbell and Nelson. The LRF does not accept significant quantities of construction and demolition (C&D) or industrial wastes. Table 1 describes the anticipated Phase, Current Condition, Life Span and Waste Volume in Million Cubic Yards (MCY) for the LRF.

DRAFT

Table 1. Livestock Road Facility Cell Phase and Volumes

Filling Phase	Current Fill Condition	Total Life Span (years)	Estimated Remaining Life Span (years)	Design Waste Volume (Million CY)	Design Waste Mass (Million Tons)
Phase III	Completed	19	NA	2.69	1.9
Phase IV	Active	7.4	2	1.84	1.3
Phase V	Active	5.9	3	1.45	1.0
Totals		**32.3**	**5**	**5.98**	**4.2**

Exhibit 1. Site Map



REGULATORY STATUS

Solid Waste

The facility operates as outline above and is in compliance with SWP 610.

Air Quality

Currently, the LRF is equipped with an active landfill gas (LFG) collection and control system within the Phase III and Phase IV areas. A combustion unit (i.e., flare station) is located on the north side between Phase III and Phase IV.

The LRF is subject to the New Source Performance Standards (NSPS) for municipal solid waste landfills under 40 CFR 60 Subpart XXX, and other provisions of the Clean Air Act, and the LRF has been issued a Stationary Source Air Permit and a Title V Air Operating Permit (No. 21547). However, based on the most recent Tier II Sampling event, conducted in October 2021, the LRF has demonstrated that the projected annual emissions rate of non-methane organic compounds (NMOCs) through 2026 is less than the regulatory applicability threshold of 34 Mg/yr that requires installation and operation of a mandatory LFG collection and control system. Thus, the existing active LFG system is considered voluntary with respect to the Clean Air Act provisions.

However, based on current fill rates and NMOC generation rates, it is likely that the Landfill will trigger the regulatory applicability threshold within the next 10 years and therefore, will become subject to the LFG collection and control system requirement and operating provisions outlined in 40 CFR 60 Subpart XXX. In advance of these regulatory requirements, The Authority plans to continue conducting design and installation of the expansion of the active LFG collection and control system to achieve various objectives, such as odor mitigation and abatement, as well as to allow for the sale and beneficial use of the LFG for energy recovery purposes. The Authority continues to coordinate with the Virginia Department of Environmental Quality (VDEQ) regarding regulatory permitting and compliance requirements.

The Authority's primary goals are to operate the LFG collection and control system in a manner that prioritizes odor mitigation, abatement, and control, as well as to accomplish compliance with the applicable Clean Air Act and Solid Waste regulations.

DRAFT

SECTION 2 – PROPOSED LANDFILL EXPANSION

A conceptual 24-year expansion design for the Region 2000 Regional Landfill, DEQ SWP 610, is presented herein to increase the landfill's air space capacity and to extend the landfill life. The purpose of the conceptual design is to piggyback onto the existing Phase III/IV/V areas to provide approximately 24 years of additional service life to the existing landfill without interrupting disposal operations for the Authority since the existing Landfill air space is anticipated to be exhausted in 2029. The expansion contains several key design considerations including:

- Address mitigation of areas of concern including traffic and the control of odor, noise, vector, and litter.
- Expansion onto the Authority' property (formerly known as the Bennett property) showing an approximate 24-year expansion footprint and landfill final grade topographic contours.
- Provide a 500-foot minimum buffer zone on the southern property line from the liner limits.
- Maximize northern buffer zone along the northern property line.
- Keeping the expansion area's peak elevation under the existing landfill's peak elevation of 1,046 feet mean sea level (MSL).
- Provide for a 2-year cell (Phase VI) that can be constructed in a short period.
- Enable a partial closure of the northern slopes of Phases IV and V soon after expansion construction.
- Design volume to allow for a 0.5% annual increase for tonnage projection.

DRAFT

DESIGN SCHEDULE

The existing Landfill is anticipated to reach capacity early 2029, so an expansion is being proposed to extend the life by about 24 years and maintain the current landfilling operations without an increase in waste acceptance (other than the anticipated annual increase due to a growing population). The anticipated landfill expansion design and permitting preliminary schedule is shown in Attachment 1. As shown in the schedule, the first cell, Phase VI, will not be operational before the existing landfill is filled to capacity. This will require the Authority to implement alternative solid waste management such as a construction of a waste sorting facility in the interim.

The exiting landfill's end of life is based on the most recent capacity reported to DEQ, dated 5/17/2024, as surveyed by Geologic on 1/30/2024 and analysis by TRC. The first step towards constructing the next cell (Phase VI), local land use permitting (Step 1) requires rezoning and Special Use Permit similar to the work completed in 2014 for the current landfill area. The next step, local land use permitting (Step 2,) is local government certification in accordance with the Notice of Intent (NOI) and this part requires Step 1 to be completed prior to starting. The and Special Use Permit Application and Rezoning Request (#PL-24-196) contained in the Application Amendment documents are presented above.

The Part A design can also be started after the first local land use planning step is complete. The preliminary schedule is anticipated to have the notice of intent, required drilling, and application submitted by early Calendar Year (CY) 2029. The review process largely depends on the regulator's review speed and is anticipated to take about one year due to more than one comment response period being anticipated.

After the Part A application has been submitted, the major amendment to the solid waste management plan (SWMP), the Part B landfill design, and the site plan application can start. The

SWMP major amendment is expected to be complete within the year. The Part B design is anticipated to take about one year before the Part B application is submitted. This will be about the same time as the Part A application is completed and approved. The Part B will need to reflect any changes made during the Part A application process. It should be noted that Part A and B permitting (Landfill permitting) will be reviewed by DEQ in accordance with 9VAC20-81 regulations and Submission Instructions 1 and that some overlap in permitting is allowed; however, DEQ may not review any Part B submittal until the Part A application is approved. After the Part B application is submitted, the air permitting and stormwater permitting phases can commence and will likely take about one year.

If the Part B design application is submitted by the end of CY 2031, then the site plan application process, including the construction plans, will also start following the Part B design application. It is anticipated that construction can start on Phase VI during calendar year 2033, which is anticipated to be in time to be completed prior to the current landfill capacity running out. Temporary authorization to construct may be required if the Part B design is not approved or the final permit issued prior to the existing landfill volume being exhausted.

EXPANSION FOOTPRINT

The expansion area lined footprint required for this 24-year conceptual design is approximately 60.2 acres. This area includes the proposed approximate limits of liner extents and ties into the existing limits of liner. The entire expansion liner area will depend on the perimeter road, perimeter stormwater management devices, and other items to be installed which are appropriate for landfill operations requirements. The proposed limits of liner expansion footprint provide more than 500-feet minimum buffer zone along the southern and northern property lines. The landfill footprint will be expanded over one of the existing borrow areas and land which has previously been cleared as a result of previous landfill construction projects, so a large portion of the land being expanded over is already clear of vegetation. Furthermore, no known streams or wetlands are impacted as part of this expansion footprint which will simplify the Part A permitting process.

DRAFT

DESIGN VOLUME

The design volume of the expansion area is based on maintaining the existing south slope of Phases III, IV, and V and grading up at 2% from the liner limit for approximately 110 feet before sloping down to a base grade elevation of 910 feet MSL at a 3 to 1 slope. The expansion area base grade elevation is based on the average elevation in Phases IV and V and was used to get an approximate landfill footprint needed to provide about 24 years of additional service life. Actual base grade elevations and expansion design volume will differ following base grade slope and sump design because the conceptual base grade is flat at elevation 910 without any slope to allow for future sump, berm, and slope design as required. The proposed landfill footprint and volume includes about 13% additional volume over the 24-year design period requirement to prevent minor footprint expansions that may be needed later on in the design phase due to differences in base grade and sump elevation, existing overfill in the piggybacked portion of the landfill, or any deviation in waste tonnage increases during the design and permitting phase periods.

The existing topographic conditions and surrounding areas of the landfill and proposed expansion area are shown in Appendix A Sheet 1 - Existing Conditions. The landfill expansion will piggyback onto the southern side of the existing landfill and will continue southeast as shown in Appendix A Sheet 2 - Proposed Final Grade. The final grade topographic contours for the expansion area were designed using a minimum 5% slope down from the expansion peak of elevation 1,038 feet MSL. This leads to a narrow transition zone which is between 5% and 33.3% before the landfill grades

down to the perimeter existing grades at a 3:1 slope. The expansion peak elevation is located between the two existing permitted peaks and will be lower than the existing landfill permitted peak elevation of 1,046 feet MSL by about 8 feet. The peak is also small in surface area and is the smallest required to maintain positive drainage from the landfill. The 5% slope at the top of the landfill will allow significant settlement to occur over the top area without affecting the landfill's ability to drain to proposed stormwater management systems.

The annual landfill tonnage projection that was used to estimate the volume required to provide at least 24 years of service life is provided in Attachment 2. The tonnage projection starts with the most recent annualized data reported in 2024 and continues until the summer of 2028. This 2028 estimated tonnage value is then used as the basis for the 20-year service life and annual increase in tonnage landfilled because early 2029 is the anticipated end of the current landfill's life. The table assumes a 0.5% annual increase in tonnage landfilled. The Landfill Utilization Factor (LUF) of 1,258 pounds per cubic yard that was assumed in this calculation is based on the 2024 calendar year capacity report dated May 17, 2024 and as such, a volume landfilled value is provided in the table instead of tonnage because the volume is required for landfill size estimating purposes. The projection assumes that landfill compaction and waste characteristics remain constant and that the same or better LUF can be achieved during the entire 24 years. Additional volume was calculated for the cap system (approximately 3 feet between the top of final grade and the top of required six-inch daily cover) over the expansion area. Note that the expansion area cap system includes part of the existing landfill and so its area is greater than the expansion area liner footprint.

PHASE VI DESIGN

The 110-foot length base grade sloping towards the existing cells from the existing liner limits effectively continues the existing liner slope where the new liner will drain leachate into the existing landfill cells. This sloped section constitutes the entire cell area of Phase VI and is made so the cell can be constructed quickly because the leachate drains into the existing leachate system and requires very little grading to construct. As such, a new sump and additional leachate infrastructure may not be needed for this cell (pending additional leachate design calculations). The cell will piggyback onto the existing landfill at a 3:1 slope. The piggyback will stop near the existing peak and will not extend over to the northern side of Phases IV and V so they can be capped when those areas are completely built out.

LANDFILL PROFILES

As presented in the Appendix A Sheets 3 and 4 – Conceptual Landfill Expansion Profiles 1 and 2, the proposed landfill expansion will largely not be visible from nearby housing areas due the existing landfill and heavy surrounding forests which will remain within the 500-foot buffer zone. A vegetated berm will be constructed along Calohan Road within the 500-foot buffer.

DESIGN SUMMARY

Based on the proposed landfill expansion requirements, the 24-year landfill expansion footprint will require approximately 60.2 acres directly abutting the southeast side of the existing landfill and will leave over 500 feet of forested buffer zone to the south and north of the expansion area. The expansion area peak will be lower than the existing landfill peak and a smaller cell, Phase VI, can be quickly constructed to provide the two years of immediate life required to maintain current operations while allowing the northern slopes to be capped when they are filled out.

DRAFT

SECTION 3 – NUISANCE MITIGATION AND ABATEMENT MEASURES

ODORS

The Facility has implemented an Odor Management Plan and is required to operate in a manner that controls odors in accordance with the Facility's air quality permits, solid waste permit, and applicable regulatory requirements.

LFG Collection and Control System

Beginning in 2016, the Authority has aggressively installed, expanded, and operated a voluntary LFG collection and control system in the existing Landfill to reduce potential odors at the Facility. The Facility's phased approach features frequent LFG collection system expansions, including connection of leachate cleanouts to vacuum, and installation of horizontal collectors early in the life of a new cell to mitigate potential odors attributed to fugitive LFG emissions. The Authority is currently implementing this approach in Phases IV and V of the existing permitted Landfill and has completed four system expansions since the initial LFG Collection System installation in 2016.

The Authority plans to implement frequent LFG collection system expansions into Phases VI through X of the proposed Expansion Area in conjunction with the sequential waste placement operations. This will be accomplished on an accelerated schedule beginning with connection of the leachate cleanouts to the LFG system to apply vacuum, and then installation of horizontal collectors in the early waste lifts, followed by LFG vertical extraction wells, LFG piping, and dewatering infrastructure. Similar to the existing system, the LFG collection system infrastructure proposed for the Expansion Area will also have a dedicated dewatering system of airline and force main piping in a common trench with the LFG collection header, dewatering pumps in the LFG vertical wells, and a condensate sump.

DRAFT

The Authority intends to implement these frequent LFG Collection System expansions utilizing approximately 56 vertical extraction wells, 9 horizontal collectors, 20 leachate cleanouts, LFG Collection System piping, and dewatering piping. A conceptual layout drawing of the proposed Expansion Area LFG Collection System is included in Appendix C. The actual number, location, alignment, configuration, and function of proposed features depicted in this conceptual layout drawing may need to be modified to accommodate field conditions, filling sequence, regulatory requirements, or other relevant considerations.

The Authority estimates that the total cost of engineering and construction for the proposed LFG collection system expansion events will be approximately $8.8 million (in 2024 dollars) over the life of the Expansion Area. The existing LFG control system is planned to be upgraded to a new 3,000 scfm blower/flare station as LFG flow quantities increase (estimated to occur around 2040 or so). In addition, the Authority expects LFG system operational costs of approximately $127,000 (2024 dollars). A breakdown of these preliminary budgetary costs is provided in Appendix C.

Supplemental Odor Mitigation Measures

The Authority has historically used alternative methods as well to mitigate and/or prevent odors from forming. In 2016, the Authority implemented a Byers-Scientific Ambient Air Odor Mitigation System to deploy an odor neutralizing agent under positive pressure via suspended 6-inch HDPE perforated pipe along the outside access road of the existing Phase III Landfill. This system is currently deployed on an "as-needed" basis. The Authority also deployed an enhanced Posi-Shell intermediate cover

system on nearly 7 acres of the northern and western slope of Phase III as a temporary cover system to reduce fugitive emissions and odors, as well as leachate seeps and erosion control prior to Partial Capping activities in Phase III. The Authority also has an Odor-Boss odor cannon, which is a mobile odor neutralizing sprayer that can be setup along the access road strategically downwind of the landfill to target site-specific areas.

The Authority will implement a similar approach to odor mitigation and abatement in the proposed Expansion Area. The Authority will implement frequent LFG Collection System expansions, as well as supplemental methods to mitigate and abate working face odors, landfill gas odors and emissions, leachate seeps, and will proactively address erosion in order to maintain suitable cover material. The Landfill has achieved greater than 99 percent reduction in odor complaints since 2015. Refer to Historical Odor Complaint Graph included in Appendix C.

NOISE

The Authority operates the Facility in a manner that limits and reduces noise pollution as much as possible. The Authority has constructed an earthen berm and sound barrier walls from the landfill entrance near the administration building beyond the scales. The Authority also maintains forested areas which behave as a natural sound barrier. The Authority has posted signs requesting customer trucks refrain from using engine brakes when approaching the scale. The Facility only operates within the hours of operation, 7:00 AM through 4:00 PM Monday through Friday, and 7:00 AM through 12:00 PM Saturday, to minimize noise disturbances. Additional noise control measures are not anticipated to be required as no increase in activity is to occur.

DRAFT

DUST

The Landfill controls particulate emissions in accordance with the Facility's air quality permits and applicable regulatory requirements. The facility operates a water truck that sprays water on haul roads and the fill face area throughout the operating day.

LITTER

The Authority controls litter by patrolling the perimeter access roads and collecting litter, which may have fallen from a waste collections vehicle, in trash bags on a near daily basis. This practice will continue with respect to the proposed Expansion Area. The current daily Posi-Shell and weekend six-inch soil cover helps to reduce the amount of litter that is created from the working face at the end of each day.

TRAFFIC

The Facility's hours of operation are from 7:00 AM through 4:00 PM Monday through Friday, and 7:00 AM through 12:00 PM Saturday. The Facility has staff and a water truck to maintain dust within the haul roads on site. Equipment operators direct haul traffic at the working face to maintain safety of the waste haulers and Facility staff.

SECTION 4 - COMMUNITY BENEFITS

Expansion of the landfill will allow the region to continue to manage its solid waste for an additional 24 years maintaining control over its waste management strategies in an efficient and cost-effective manner. The expansion will continue to provide employment opportunities and support economic development initiatives in the region in support of additional commercial, industrial, and residential development in the surrounding area along Calohan Road and U.S. Route 29.

The proposed Expansion Area at the Facility offers control and security over tipping and waste hauling fees under the presence of a municipally owned and operated local landfill. The community also benefits from the environmental stewardship from the reduced carbon footprint by hauling to a local landfill as opposed to an alternate, which would be more than an hour haul each direction. Other community benefits may include sponsoring events or hosting an event, such as litter picking, or contributing benches or equipment to a local park.

It is critical that a timely decision on this proposal be made in order to allow an adequate period for assembling the permit application documents, designing the expansion and associated infrastructure as well as regulatory review and approval.

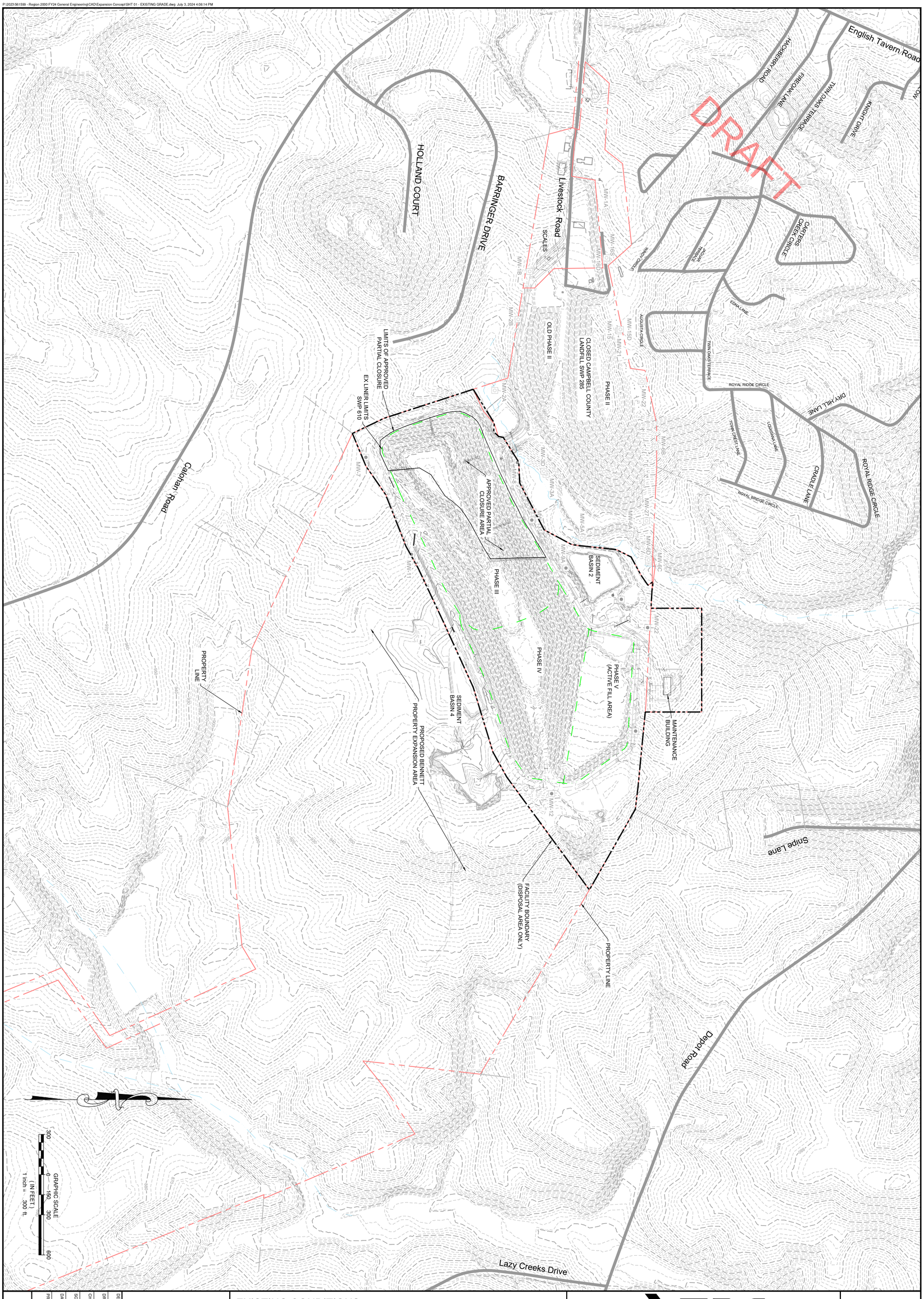
DRAFT

Appendix A

Conceptual Plan Sheets

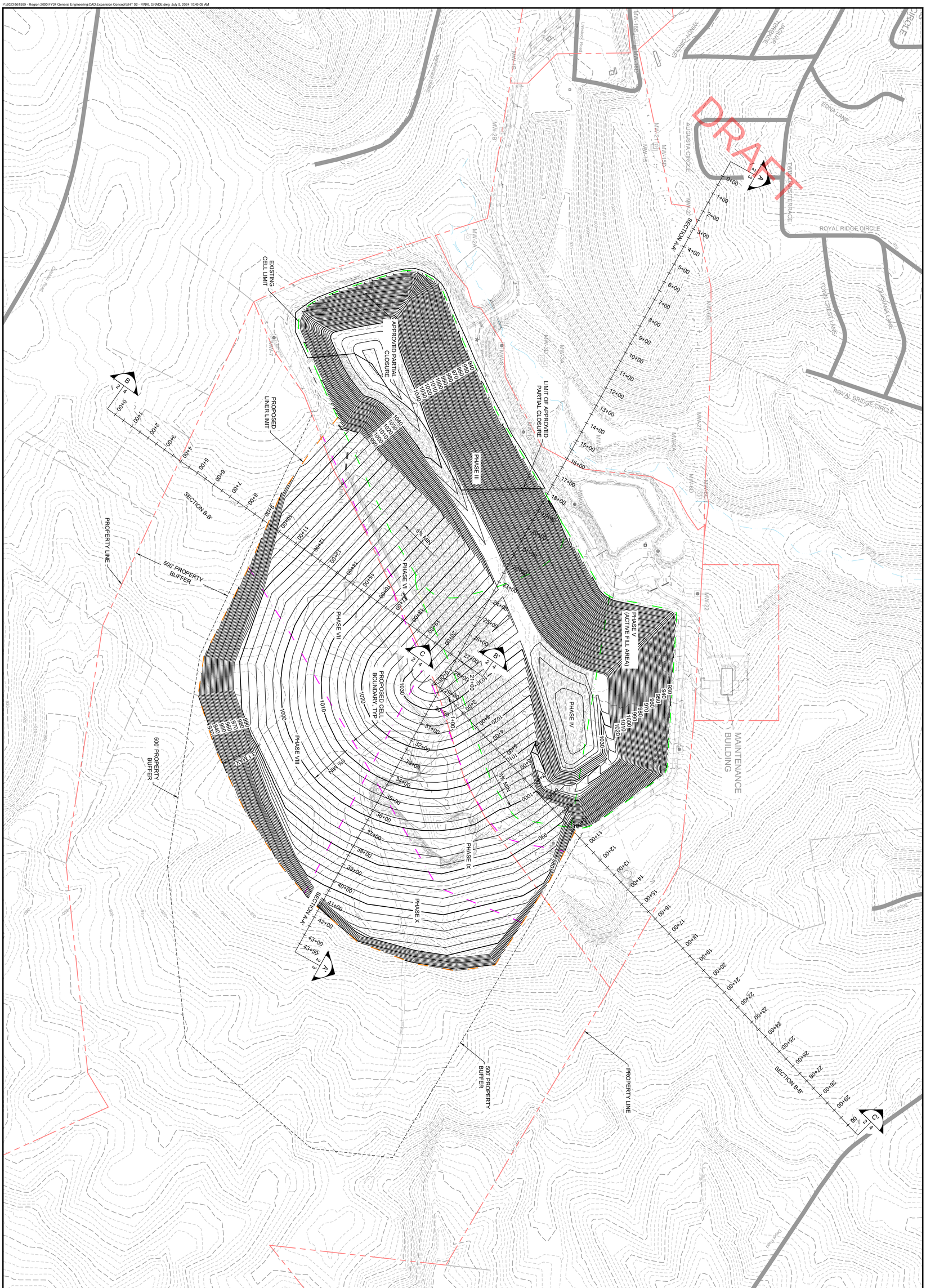
DRAFT

P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Expansion Concept\SHT 01 - EXISTING GRADE.dwg July 3, 2024 4:08:14 PM



DESIGNED BY: AST	REVISIONS	EXISTING CONDITIONS	TRC
DRAWN BY: FJR		CONCEPTUAL LANDFILL EXPANSION	629 Phoenix Drive, Suite 100 Virginia Beach, VA 23452 757-300-2596 www.trccompanies.com
CHECKED BY: AST		REGION 2000 REGIONAL LANDFILL	• Richmond, VA • Blacksburg, VA • Charlottesville, VA
SCALE: 1" = 300'		LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA	• Hampton Roads, VA • Raleigh, NC • Fayetteville, NC • Northern Virginia
DATE: JUNE 2024			
PROJECT NUMBER 561599			
1 OF 4			

P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Expansion Concept\SHT 02 - FINAL GRADE.dwg July 5, 2024 10:40:05 AM



PROPOSED FINAL GRADE

CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL

LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

REVISIONS

DESIGNED BY: AST
DRAWN BY: FJR
CHECKED BY: AST
SCALE: 1" = 200'
DATE: JUNE 2024
PROJECT NUMBER: 561599
2 OF 4

TRC
629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com
• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Northern Virginia

DRAFT

A-A LANDFILL-6 - Scale: H: 1"=80', V: 1.00:1

A
2 | 3
SECTION A-A'

TRC
629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com
• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Northern Virginia

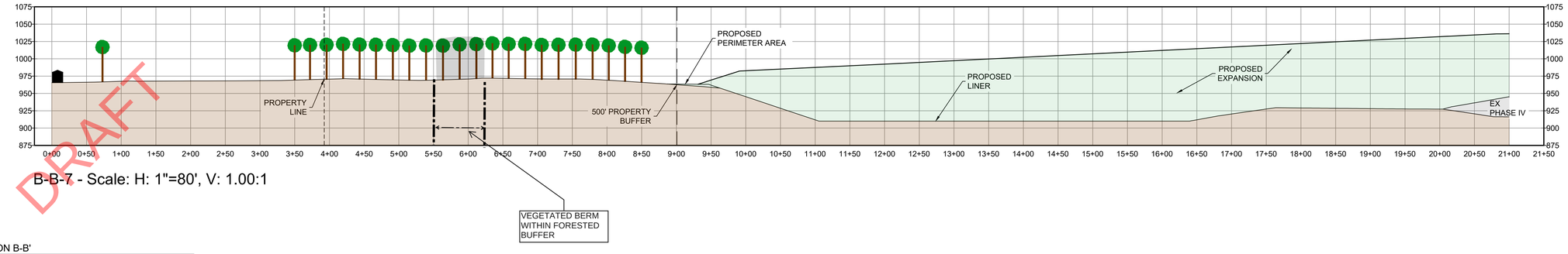
CONCEPTUAL LANDFILL EXPANSION PROFILE - 1

CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL
LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	AS SHOWN
DATE:	JUNE 2024
PROJECT NUMBER:	561599

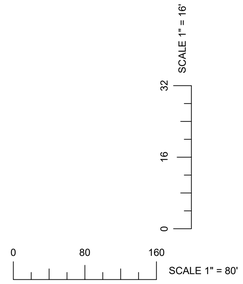
P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Exhibits\ Concept\SHT 03 - CROSS SECTION 1.dwg June 13, 2024 11:59:16 AM

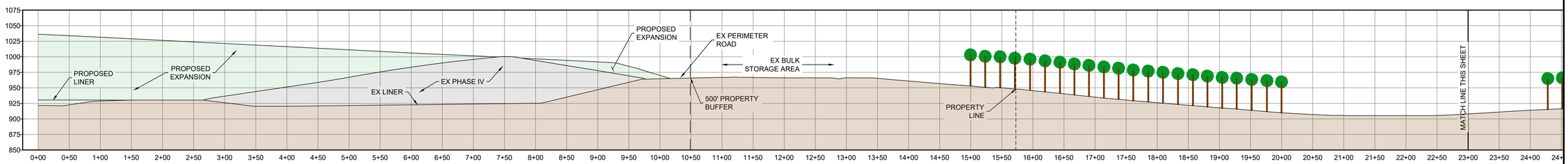


B-B-7 - Scale: H: 1"=80', V: 1.00:1

DRAFT

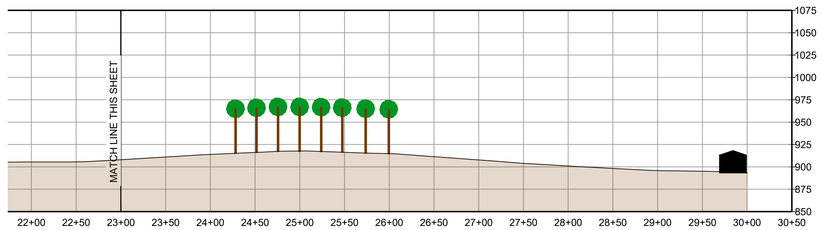
B
2 | 4
SECTION B-B'





C-C LANDFILL-37 - Scale: H: 1"=80', V: 1.00:1

C
2 | 4
SECTION C-C'



ATTACHMENT 4

TRC
629 Phoenix Drive, Suite 100
Virginia Beach, VA 23452
757-300-2596
www.trccompanies.com
• Hampton Roads, VA
• Raleigh, NC
• Fayetteville, NC
• Richmond, VA
• Blacksburg, VA
• Charlottesville, VA
• Northern Virginia

CONCEPTUAL LANDFILL EXPANSION PROFILE - 2

CONCEPTUAL LANDFILL EXPANSION
REGION 2000 REGIONAL LANDFILL

LIVESTOCK ROAD FACILITY, CAMPBELL COUNTY, VIRGINIA

REVISIONS

DESIGNED BY:	AST
DRAWN BY:	FJR
CHECKED BY:	AST
SCALE:	AS SHOWN
DATE:	JUNE 2024
PROJECT NUMBER:	561599

4
OF 4

P:\2023\561599 - Region 2000 FY24 General Engineering\CAD\Exhibits\ Concept\SH 04 - CROSS SECTION 2.dwg June 13, 2024 | 8:53:21 AM

Appendix B
Expansion Cost Estimates

DRAFT

Region 2000 Solid Waste Authority
Livestock Road 2050 Expansion Construction Cost Estimate
6/13/2024

ITEM	SOURCE	UNIT COST	QUANTITY	EST. COST
Entire Expansion Area Liner	**TRC**		60.2 AC	
Entire Expansion Area Cap	**TRC**		73.6 AC	
Cut required within liner footprint	**TRC**		2,690,000 CY	
Total fill required	**TRC**		2,690,000 CY	
LINER AND SITE LAYOUT ITEMS				
Clearing				
Site Clearing	RS Means	$ 9,300	50 AC	$465,000
Liner Earthwork				
Liner Stakeout	Engineer Estimate	$ 403,340	1 LS	$403,340
Ramp	Engineer Estimate	$ 20,000	2 LS	$40,000
Liner Anchor Trench	Cell 2 +20%	$ 27	4,530 LF	$122,310
Tie-in to Phase III-V Liner	Cell 2 +20%	$ 65	2,500 LF	$162,500
Clay Liner Placement and Compaction	Spotsylvania	$ 6.79	194,245 CY	$1,318,926
Move and Stockpile Excavated Soil	R-Board G1/G3 Bid	$ 4.00	2,690,000 CY	$10,760,000
Excavation to Base Grade	RS Means	$ 4.50	2,690,000 CY	$12,105,000
Controlled Subgrade Preparation				
12" Excavation to Subgrade in Cell	RS Means	$ 4.50	97,200 CY	$437,400
12" Controlled Fill to Base Grade	Spotsylvania	$ 6.79	97,200 CY	$659,988
Perimeter Road				
Perimeter Road (25' wide - 4,530' long)	R-Board G1/G3 Bid	$ 1.50	113,250 SF	$169,875
Sediment Basins				
Sediment Basins	Engineer Estimate	$ 250,000	5 EA	$1,250,000
Liner Seeding				
Temporary Liner Seeding	RS Means	$ 5,050	2 AC	$10,100
Permanent Liner Seeding	RS Means	$ 5,050	20 AC	$101,000
Liner Geomembrane				
Liner Geomembrane	Manufacturer Quote	$ 8	291,368 SY	$2,330,944
Liner Geotextile				
Filter Geotextile	RS MEANS	$ 3	291,368 SY	$874,104
Leachate Collection and Sump				
Leachate Collection and Sump	Engineer Estimate	$ 4,000,000	1 EA	$4,000,000
Leachate Storage Tank	Engineer Estimate	$ 3,500,000	1 LS	$3,500,000
Leachate Collection System Stone				
18" Drainage Layer Gravel	R-Board G1/G3 Bid	$ 27	291,368 SY	$7,866,936
Rain Cover				
Rain Cover	R-Board G1/G3 Bid	$ 4.65	291,368 SY	$1,354,861
Groundwater				
Groundwater Monitoring Wells	Engineer Estimate	$ 3,000.00	24 EA	$72,000
Landfill Gas Monitoring				
Landfill Gas Probes	Engineer Estimate	$ 3,000.00	24 EA	$72,000
SUBTOTAL - NO ESC OR SWM				***$48,076,284***
Liner Erosion Sediment Control (ESC)				
ESC Practices	Engineer Estimate	1.5% Sub.	1 LS	$721,144
General Stormwater Management				
General Stormwater Management	Engineer Estimate	3% Sub.	1 LS	$1,442,289
SUBTOTAL FOR LINER				**$50,239,717**
Mobilization ($42,500 + 1% over $1.5M)	Specifications			$529,897
CONSTRUCTION COST ESTIMATE				***$50,769,614***
Contingency		20%		$10,153,923
TOTAL LINER COST				**$60,923,537**

DRAFT

LINER COST PER ACRE				$1,012,019
CAP ITEMS				
Cap Earthwork				
Cap Stakeout	Engineer Estimate	$ 493,120	1 LS	$493,120
Cap Anchor Trench	Cell 2 +20%	$ 27	4,530 LF	$122,310
Cap Fill and Compact	R-Board G1/G3 Bid	$4	356,224 CY	$1,424,896
Cap Perimeter Stone Column (With Geotextile)	R-Board G1/G3 Bid/RS Means	$ 60	4,530 SY	$271,800
Cap GCL				
Cap GCL	R-Board G1/G3 Bid	$ 8.50	356,224 SY	$3,027,904
Cap Geomembrane				
Cap Geomembrane	Manufacturer Quote	$ 8	356,224 SY	$2,849,792
Cap Geocomposite Drainage Net				
Geocomposite Drainage Net (GDN)	R-Board G1/G3 Bid	$ 2	356,224 SY	$712,448
Cap Seeding				
Temporary Cap Seeding	RS Means	$ 5,050	7.36 AC	$37,168
Permanent Cap Seeding	RS Means	$ 5,050	73.6 AC	$371,680
Stormwater Changes and Maintenance				
Stormwater Changes and Maintenance	Engineer Estimate	$ 1,000,000	1 LS	$1,000,000
Soil Stockpiles				
Soil Stockpile Closure and Seeding (LFG by others)	Engineer Estimate	$ 50,000	1 LS	$50,000
SUBTOTAL - NO ESC OR CAP SWM				***$10,361,118***
Cap Erosion Sediment Control (ESC)				
ESC Practices	Engineer Estimate	5% Sub.	1 LS	$518,056
Cap Stormwater Management System				
Cap Stormwater Management System	Engineer Estimate	15% Sub.	1 LS	$1,554,168
SUBTOTAL FOR CAP				***$12,433,342***
Mobilization ($42,500 + 1% over $1.5M)	Specifications			$151,833
CONSTRUCTION COST ESTIMATE				***$12,585,175***
Contingency		20%		$2,517,035
TOTAL CAP COST				**$15,102,210**
CAP COST PER ACRE				$205,193

DRAFT

Region 2000 Solid Waste Authority
Livestock Road 2050 Expansion Construction Cost Estimate - Phase VI
6/13/2024

ITEM	SOURCE	UNIT COST	QUANTITY	EST. COST
Phase VI Cell	**TRC**		6.5 AC	
Estimated Cut required	**TRC**		7,000 CY	
Estimated Fill required	**TRC**		28,000 CY	
Clearing				
Site Clearing	RS Means	$ 9,300	10 AC	$93,000
Liner Earthwork				
Liner Stakeout	Engineer Estimate	$ 43,550	1 LS	$43,550
Ramp	Engineer Estimate	$ 20,000	1 LS	$20,000
Liner Anchor Trench	Cell 2 +20%	$ 27	2,900 LF	$78,300
Tie-in to Phase III-V liner	Cell 2 +20%	$ 65	2,500 LF	$162,500
Clay Liner placement and compaction	Spotsylvania	$ 6.79	20,973 CY	$142,409
Excavation to Base Grade	RS Means	$ 4.50	7,000 CY	$31,500
Move and stockpile excavated soil	R-Board G1/G3 Bid	$ 4.00	28,000 CY	$112,000
Controlled Subgrade Preparation				
12" Excavation to Subgrade in Cell	RS Means	$ 4.50	10,500 CY	$47,250
12" Controlled Fill to Base Grade	Spotsylvania	$ 6.79	10,500 CY	$71,295
Perimeter Road				
Perimeter Road (assume 25' wide - 2900' long)	R-Board G1/G3 Bid	$ 1.50	72,500 SF	$108,750
Stormwater Management				
Stormwater Management	Engineer Estimate	$ 500,000	1 LS	$500,000
Sediment Basins	Engineer Estimate	$ 250,000	2 EA	$500,000
Seeding				
Temporary Seeding	RS Means	$ 5,050	0.4 AC	$2,020
Permanent Seeding	RS Means	$ 5,050	4 AC	$20,200
Liner Geomembrane				
Liner Geomembrane	Manufacturer Quote	$ 8	31,460 SY	$251,680
Liner Geotextile				
Liner Geotextile	RS MEANS	$ 3	31,460 SY	$94,380
Leachate Collection				
Leachate Collection	Engineer Estimate	$ 350,000	1 EA	$350,000
Leachate Collection System Stone				
18" Drainage Layer Gravel	R-Board G1/G3 Bid	$ 27	31,460 SY	$849,420
Rain Cover				
Rain Cover	R-Board G1/G3 Bid	$ 4.65	31,460 SY	$146,289
Groundwater Monitoring Wells				
Groundwater Monitoring Wells	Engineer Estimate	$ 3,000.00	24 EA	$72,000
Landfill Gas Monitoring				
Landfill Gas Monitoring Probes	Engineer Estimate	$ 3,000.00	24 EA	$72,000
Erosion Sediment Control				
Erosion Sediment Control	Engineer Estimate	$ 250,000	1 LS	$250,000
SUBTOTAL				$4,018,543
Mobilization ($42,500 + 1% over $1.5M)	Specifications			$67,685
CONSTRUCTION COST ESTIMATE				***$4,086,228***
Contingency		20%		$817,246
TOTAL COST				**$4,903,474**
COST PER ACRE				$754,381

DRAFT

Assumptions:
1. Leachate collection system can be expanded without additional infrastructure needed.

Region 2000 Solid Waste Authority
Livestock Road 2050 Expansion Construction Cost Estimate - Average Cell (Phase) Costs
6/13/2024

Cell Name	Approximate Construction Completion	Cell Capacity (CY)	Cell Area (ac)	Estimated Construction Cost
Phase VI	Summer 2028	1,463,254	6.5	$6,578,123
Phase VII	Summer 2030	2,122,577	15.7	$15,888,696
Phase VIII	Summer 2036	1,853,032	16.1	$16,293,504
Phase IX	Winter 2041	1,454,012	10.9	$11,031,006
Phase X	Winter 2045	1,103,101	11	$11,132,208

Assumptions:
1. Average per acre cost ($1,012,019/acre) from total construction cost estimate for liner portion used to estimate cell cost.

DRAFT

REGION 2000 EXPANSION - POST-CLOSURE ESTIMATE
PERMIT 610 - LIVESTOCK ROAD LANDFILL
REGION 2000 SERVICES AUTHORITY
Revised June 26, 2024

Revised to include Bennett Expansion Concept

Worksheet CEW-02: FORMAT FOR THE ESTIMATION OF POST-CLOSURE COSTS

FILL IN THE BOXES. THE REST WILL BE CALCULATED FOR YOU

			Calculation or Conversion		
I. Groundwater and Underdrain Monitoring					
a. Total number of monitoring wells	**38**	wells and underdrains			
b. Total number of sampling events/year	4	events/yr	a x b	152	samples/yr
c. Quantity of additional samples (e.g. QA/QC)	**2**	samples/event	a x c	76	samples/yr
d. Total samples per year			b + c	228	samples/yr
e. Analysis unit cost (Table 3.1 constituents)	$653.00	/sample			
f. *Total Analysis cost*			d x e	*$148,884*	/yr
g. GW Monitoring unit cost	**$4,438.00**	/event	b x g	$17,752	
i. *Total sampling cost*			f + g	*$166,636*	/yr
j. Engineering fees & reports	**$8,875**	/yr			
Yearly Groundwater Monitoring Cost			i + j	***$175,511***	***/yr***
II. Landfill Gas Monitoring, Maintenance, and Control					
a. Frequency of LFG compliance monitoring	4	events/yr			
b. LFG Monitoring unit cost	**$2,200.00**	/event			
c. *Total perimeter LFG monitoring cost*			a x b	*$8,800*	/yr
d. Frequency of suface monitoring (air permit)	4	events/yr			
e. Surface monitoring unit cost	$7,000.00	/event			
f. *Total surface monitoring cost*			d x e	*$28,000*	/yr
g. Control system operating unit cost	**$30,000**	/yr			
h. Frequency of LFG control system inspections	24	events/yr			
i. Control system inspection cost	$2,500.00	/event			
j. *Total control system cost*			g + (h x i)	*$90,000*	/yr
Yearly Landfill Gas Monitoring, Maintenance, & Control Cost			c + f + j	***$126,800***	***/yr***
LFG costs provided by SCS on 6/25/2024.					
III. Leachate Management					
a. Quantity of leachate generated	1,054,798	gal/yr			
On-site Leachate Management or Pre-Treatment					
b. On-site treatment operating unit cost	$0.00	/gal			
c. *Total on-site management cost*			a x b	*$0*	/yr
Leachate Disposal					
d. Private disposal unit cost	$0.00	/gal			
e. POTW disposal unit cost		/gal			
f. Direct discharge to POTW unit cost	$0.0086	/gal			
g. Pump & Haul unit cost	$0.00	/gal			
h. Subtotal leachate disposal unit cost			d + e + f + g	$0.0086	
i. *Total leachate disposal cost*			a x h	*$9,093*	/yr
j. Leachate sampling & analysis unit cost	$653.00	/sample			
k. Frequency of leachate sampling & analysis	4	sample/yr			
l. *Total leachate sampling & analysis cost*			j x k	*$2,612*	/yr
Yearly Leachate Management Cost			c + i + l	***$11,705***	***/yr***
IV. Cap Maintenance & Repair					
a. Closed Landfill Area	115.6	acres			
60.2 ac expansion area + 55.4 ac Phase III-V.					
Mowing & Fertilization					
b. Mowing frequency	2	visits/yr			
c. Mowing unit cost	$113.00	/acre/visit			
d. *Total mowing cost*			a x b x c	*$26,126*	/yr
e. Fertilizer frequency	-	visits/yr			
f. Fertilizer unit cost	$0.00	/acre/visit			
g. *Total fertilizer cost*			a x e x f	*$0*	/yr

DRAFT

REGION 2000 EXPANSION - POST-CLOSURE ESTIMATE
PERMIT 610 - LIVESTOCK ROAD LANDFILL
REGION 2000 SERVICES AUTHORITY
Revised June 26, 2024

Revised to include Bennett Expansion Concept

Cap Erosion & Repair					
h. Area to reseed/year			33% x a	38.5	acres
i. Reseeding unit cost	$1,962.00	/acre			
j. *Total reseeding cost*			h x i	*$75,602.40*	/yr
k. Area of cap erosion/year			10% x a	11.6	acres
l. Cap erosion repair unit cost	$392.00	/acre			
m Mobilization/Demobilization	$655.00	/yr			
n. *Total cap erosion repair cost*			(k x l) + m	*$5,187*	/yr
Yearly Cap Maintenance & Repair cost			d + g + j + n	***$106,915***	***/yr***
V. Sediment Basin Maintenance & Repair					
a. Sediment basin cleanout frequency, 6 basins	3	years	1 / a	0.33	event/yr
b. Sediment basin cleanout unit cost	$13,073	/event			
c. Mobilization/Demobilization	$0	/event			
d. *Total sediment basin maintenance cost*			a x (b + c) x 6 basins	*$26,147*	/yr
e. Total number of stormwater sampling locations	-	locations			
f. Stormwater sampling frequency	-	events/yr			
g. Total number of stormwater samples			e x f	0	samples/yr
h. Analysis unit cost (VPDES permit parameters)	$0	/sample			
i. *Total Analysis cost*			g x h	*$0*	/yr
j. Mobilization unit cost	$0.00	/event			
k. Technician field unit cost	$0.00	/event			
l. *Total sampling cost*			f x (j + k)	*$0.00*	/yr
m Engineering fees & reports	$0	/yr			
n. *Total Stormwater Sampling & Analysis cost*			f + i + j	*$0*	/yr
Yearly Sediment Basin Maintenance & Repair			d + n	***$26,147***	***/yr***
VI. Vector & Rodent Control					
a. Vector and rodent control unit cost	$1,365	/yr			
Yearly Vector and Rodent Control Cost			a	***$1,365***	***/yr***
VII. Post-Closure Care General Inspections					
a. General Inspection unit cost	$1,902	/inspection			
b. Number of inspections per year	1				
Yearly Post-Closure Care General Inspection Cost			a x b	***$1,902***	***/yr***

DRAFT

Annual Post-Closure Care Cost (APCC)			I + … + VII	$450,344 /yr
Length of post-closure care (LPCC)	30	years		
Post-Closure Care Cost			APCC x LPCC	$13,510,322
Engineering & Documentation			Engineering Sum	$9,805
Post-Closure Care Evaluation	$6,537			
Post-Closure Care Certification	$3,268			
Cost for survey and deed notation (if not completed at time of landfill closure)				
FA Mechanism Maintenance Cost	$0	/yr	FA maintenance x LPCC	$0

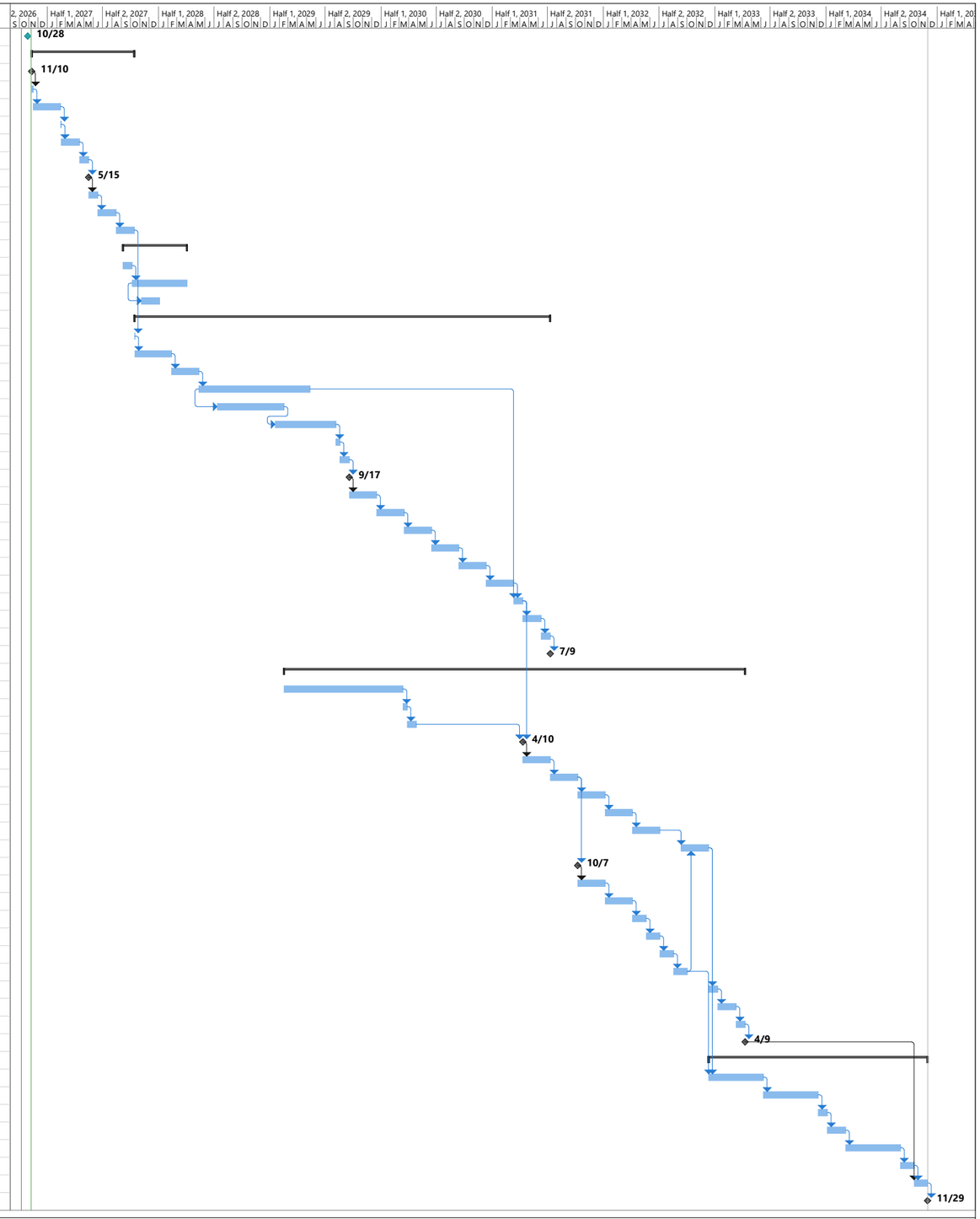
Region 2000 and Member Jurisdictions use Local Government Financial Tests. There is no maintenance cost.

Total Post-Closure Care Cost (2024 Dollars) — Post-Closure Cost + Engineering + FA Maintenance — **$13,520,127**

Attachments
Preliminary Schedule
Table of Waste Quantities

DRAFT

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Text1
1		**Region 2000- Board Meeting**	0 days	**Wed 10/28/26**	Wed 10/28/26		
2		**Rezoning- Bennett Property**	**337 days**	**Tue 11/10/26**	**Tue 10/12/27**		
3		Campbell County Board Meeting	0 days	Tue 11/10/26	Tue 11/10/26		Assumes: Board approves Landfill Project
4		Submit Rezoning Application to County	5 days	Tue 11/10/26	Sat 11/14/26	3	
5		Planning Commission Review -County	90 days	Sun 11/15/26	Fri 2/12/27	4	
6		Planning Commission Hearing	2 days	Sat 2/13/27	Sun 2/14/27	5	
7		Board of Supervisors Review -County	60 days	Mon 2/15/27	Thu 4/15/27	6	
8		Board of Supervisors Hearing- County	30 days	Fri 4/16/27	Sat 5/15/27	7	
9		Public Meeting	0 days	Sat 5/15/27	Sat 5/15/27	8	
10		Public Comment Period	30 days	Sun 5/16/27	Mon 6/14/27	9	
11		Response to Public Comments	60 days	Tue 6/15/27	Fri 8/13/27	10	
12		Zoning Amendment Approval	60 days	Sat 8/14/27	Tue 10/12/27	11	
13		**Survey**	**210 days**	**Mon 9/6/27**	**Sun 4/2/28**		
14		Survey coordination and schedule to start project	30 days	Mon 9/6/27	Tue 10/5/27		
15		Topo Survey - Bennett Property and Sorting Facility	180 days	Wed 10/6/27	Sun 4/2/28	14	
16		SUE	60 days	Fri 11/5/27	Mon 1/3/28	15SS+30 days	
17		**Part A**	**1365 days**	**Thu 10/14/27**	**Wed 7/9/31**		
18		Managers coordination and schedule to start project	1 day	Thu 10/14/27	Thu 10/14/27	12	
19		Natural Resources Investigation	120 days	Fri 10/15/27	Fri 2/11/28	18	
20		JPA prep	90 days	Sat 2/12/28	Thu 5/11/28	19	
21		Wetland permitting	365 days	Fri 5/12/28	Fri 5/11/29	20	
22		Hydro-Geo Investigation	220 days	Tue 7/11/28	Thu 2/15/29	21SS+60 days	
23		Part A Document Preparation	200 days	Wed 1/17/29	Sat 8/4/29	22FS-30 days	
24		Client Review	14 days	Sun 8/5/29	Sat 8/18/29	23	
25		Revisions per Client Review	30 days	Sun 8/19/29	Mon 9/17/29	24	
26		Part A Submitted to DEQ	0 days	Mon 9/17/29	Mon 9/17/29	25	
27		DEQ Completeness Review	90 days	Tue 9/18/29	Sun 12/16/29	26	
28		Response to Completeness Review (TRC)	90 days	Mon 12/17/29	Sat 3/16/30	27	
29		DEQ Technical Review (TR) 1	90 days	Sun 3/17/30	Fri 6/14/30	28	
30		Response to TR1 (TRC)	90 days	Sat 6/15/30	Thu 9/12/30	29	
31		DEQ Technical Review (TR) 2	90 days	Fri 9/13/30	Wed 12/11/30	30	
32		Response to TR2 (TRC)	90 days	Thu 12/12/30	Tue 3/11/31	31	
33		Final DEQ Review and Draft Permit Conditions	30 days	Wed 3/12/31	Thu 4/10/31	32,21	
34		Public Comment and Meeting	60 days	Fri 4/11/31	Mon 6/9/31	33	
35		Part A Conditions and Permitting Completion	30 days	Tue 6/10/31	Wed 7/9/31	34	
36		Part A of Solid Waste Permit Complete	0 days	Wed 7/9/31	Wed 7/9/31	35	
37		**Part B**	**1514 days**	**Fri 2/16/29**	**Sat 4/9/33**		Assume start during Part A duration
38		Part B Document Preparation	390 days	Fri 2/16/29	Tue 3/12/30		
39		Client Review	14 days	Wed 3/13/30	Tue 3/26/30	38	
40		Revisions per Client Review	30 days	Wed 3/27/30	Thu 4/25/30	39	
41		Part B Submitted to DEQ	0 days	Thu 4/10/31	Thu 4/10/31	40,33	
42		DEQ Completeness Review	90 days	Fri 4/11/31	Wed 7/9/31	41	
43		Response to Completeness Review	90 days	Thu 7/10/31	Tue 10/7/31	42	
44		DEQ TR1	90 days	Wed 10/8/31	Mon 1/5/32	43	
45		Response to TR1	90 days	Tue 1/6/32	Sun 4/4/32	44	
46		DEQ TR2	90 days	Mon 4/5/32	Sat 7/3/32	45	
47		Response DEQ TR2	90 days	Sun 9/12/32	Fri 12/10/32	46,54FS-20 days	
48		Submittal to Local Permitting Authority	0 days	Tue 10/7/31	Tue 10/7/31	43	
49		Local Permitting Review 1	90 days	Wed 10/8/31	Mon 1/5/32	48	
50		Response to Local Permitting Comments (1)	90 days	Tue 1/6/32	Sun 4/4/32	49	
51		Local Permitting Review 2	45 days	Mon 4/5/32	Wed 5/19/32	50	
52		Response to Local Permitting Comments (2)	45 days	Thu 5/20/32	Sat 7/3/32	51	
53		Local Permitting Review 3	45 days	Sun 7/4/32	Tue 8/17/32	52	
54		Response to Local Permitting Comments (3)	45 days	Wed 8/18/32	Fri 10/1/32	53	
55		Final Reviews and DEQ Draft Permit Modules	30 days	Sat 12/11/32	Sun 1/9/33	47	
56		Public Comment and Meeting	60 days	Mon 1/10/33	Thu 3/10/33	55	
57		Part B Modules and Permitting Complete	30 days	Fri 3/11/33	Sat 4/9/33	56	
58		Part B of Solid Waste Permit Complete	0 days	Sat 4/9/33	Sat 4/9/33	57	
59		**New Cell Construction**	**719 days**	**Sat 12/11/32**	**Wed 11/29/34**		Assume start during Part B design
60		Design/Bid Document Preparation	180 days	Sat 12/11/32	Wed 6/8/33	47,54	
61		Local Permitting for single phase	180 days	Thu 6/9/33	Mon 12/5/33	60	
62		Bid Phase	30 days	Tue 12/6/33	Wed 1/4/34	61	
63		Procurement	60 days	Thu 1/5/34	Sun 3/5/34	62	
64		Construction	180 days	Mon 3/6/34	Fri 9/1/34	63	
65		CQA Report Preparation	45 days	Sat 9/2/34	Mon 10/16/34	64	
66		DEQ Review	44 days	Tue 10/17/34	Wed 11/29/34	58,65	
67		CTO Issued	0 days	Wed 11/29/34	Wed 11/29/34	66	



DRAFT

Project: Schedule Region 2000
Date: Mon 11/9/26

Task · Split · Milestone · Summary · Project Summary · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · External Tasks · External Milestone · Deadline · Progress · Manual Progress

REGION 2000 SERVICES AUTHORITY
LIVESTOCK ROAD FACILITY - Permit 610
LANDFILL EXPANSION - BENNETT PROPERTY
Prepared: 6/14/2024

YEAR		Volume Landfilled			Tonnage Reported the Summer of	Notes
1	197,496	314,000	CY		2024	Filling Phase V
2	198,483	315,570	CY		2025	
3	199,476	317,148	CY		2026	
4	200,473	318,734	CY		2027	End Phase V Service life
5	201,476	320,327	CY		2028	Start Phase VI Service Life 2028 Summer
6	202,483	321,929	CY		2029	
7	203,495	323,539	CY		2030	Start Phase VII Service Life 2030 summer
8	204,513	325,156	CY		2031	
9	205,535	326,782	CY		2032	
10	206,563	328,416	CY		2033	
11	207,596	330,058	CY		2034	
12	208,634	331,708	CY		2035	
13	209,677	333,367	CY		2036	Start Phase VIII Service Life 2036 Summer
14	210,726	335,034	CY		2037	
15	211,779	336,709	CY		2038	
16	212,838	338,392	CY		2039	
17	213,902	340,084	CY		2040	
18	214,972	341,785	CY		2041	Start Phase IX Service Life 2041 Winter
19	216,047	343,494	CY		2042	
20	217,127	345,211	CY		2043	
21	218,212	346,937	CY		2044	
22	219,304	348,672	CY		2045	Start Phase X Service Life 2045 Winter
23	220,400	350,415	CY		2046	
24	221,502	352,167	CY		2047	
25	222,610	353,928	CY		2048	
26	223,723	355,698	CY		2049	End Phase X Service Life 2049 Summer
Total Estimated Landfilled Volume 2028-2047 (20-Year Duration)		**6,720,183**	**CY**			
Cap Material Depth		1	YD			
Approximate Cap Area		73.6	AC			
Cap Material Volume		356,224	YD			
Average Annual Volume Used		**336,009**	**CY**			
Total 20-YR Volume Needed		**7,076,407**	**CY**			

Notes:
1. LUF assumed is 1,248 pounds per cubic yard.

DRAFT