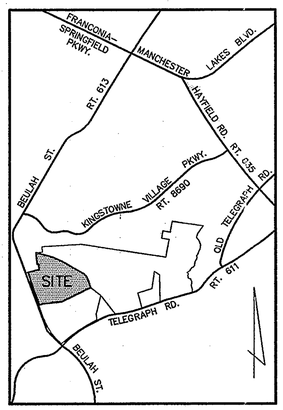
HILLTOP CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

Lee District Fairfax County, Virginia

GENERALIZED DEVELOPMENT PLAN / SPECIAL EXCEPTION AMENDMENT



VICINITY MAP
SCALE : 1"= 2,000'

Applicant:

Hilltop Sand and Gravel Company, Inc.
7950 Telegraph Road
Alexandria, VA 22315

Application No. SEA 78-L-074-6 Staff C. Lewis
APPROVED SE SP PLAN
SEE DEV CONDS DATED 3.6.09
Date of (BOS) (BZA) approval 3.9.09
Sheet 1 of 7

Sheet Index

Hilltop Construction and Demolition Debris Landfill
Generalized Development Plan / Special Exception Amendment

Dewberry

Dewberry & Davis LLC
A Dewberry Company

8401 ARLINGTON BLVD.
FAIRFAX, VA 22031
PHONE: 703.849.0100
FAX: 703.849.0519
www.dewberry.com

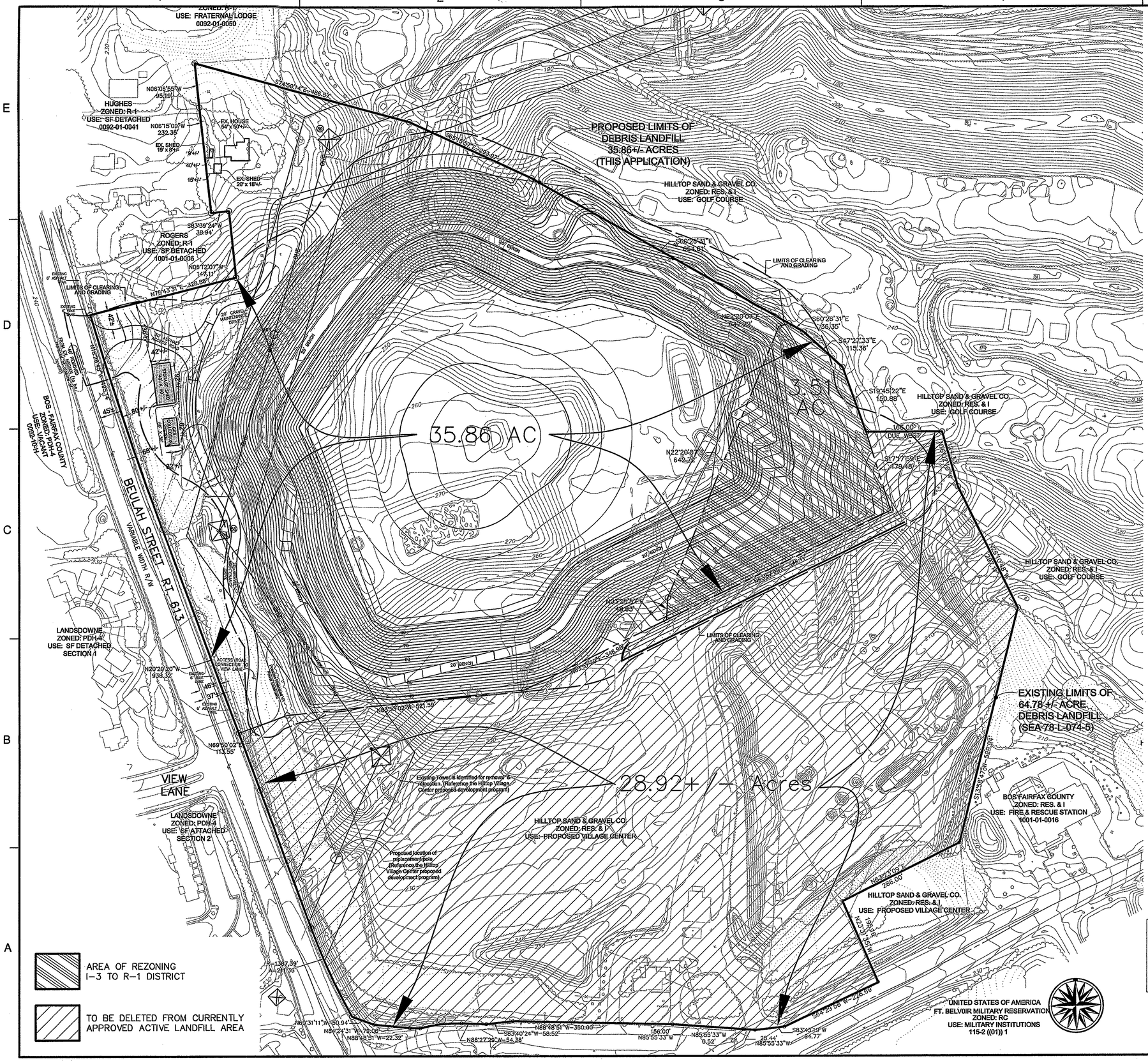
SEAL

COMMONWEALTH OF VIRGINIA
TIMOTHY CHARLES CULLETON
Lic. No. 20112
12-16-08
PROFESSIONAL ENGINEER

RECEIVED
Department of Planning & Zoning
DEC 18 2008
Zoning Evaluation Division

Revision: 12.16.08
Revision: 12.02.08
Revision: 10.17.08
February 12, 2008

M-10694



PREVIOUSLY APPROVED AREA OF DEBRIS LANDFILL: (SEA 78-L-074-5)	64.78+/- ACRES
PROPOSED REDUCTION OF DEBRIS LANDFILL THIS APPLICATION	28.92+/- ACRES
REVISED EXTENT OF DEBRIS LANDFILL THIS APPLICATION	35.86+/- ACRES

SEE NOTES AND TABULATION – SHEET 3 OF 7

Application No. SEA 78-L-074-6 Staff E. Lewis
APPROVED SE / SP PLAN
SEE DEV CONDS DATED 3.6.09
Date of (BOS) (BZA) approval 3.9.09
Sheet 2 of 7

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HILLTOP CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

GENERALIZED DEVELOPMENT PLAN / SPECIAL EXCEPTION AMENDMENT

LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL

COMMONWEALTH OF VIRGINIA
TIMOTHY CHARLES CULLEITON
Lic. No. 20112
12.16.08
PROFESSIONAL ENGINEER

KEY PLAN

SCALE
0' 100' 200'

No.	DATE	BY	Description
3	12.16.98	dmc	Correct Limits of Previously Approved SEA
2	12.02.08	DMC	ADD DETAIL
1	10.17.08		No Change

REVISIONS

DRAWN BY ARW
APPROVED BY
CHECKED BY LM
DATE February 12, 2008

TITLE

Hilltop Construction and Demolition Debris Landfill

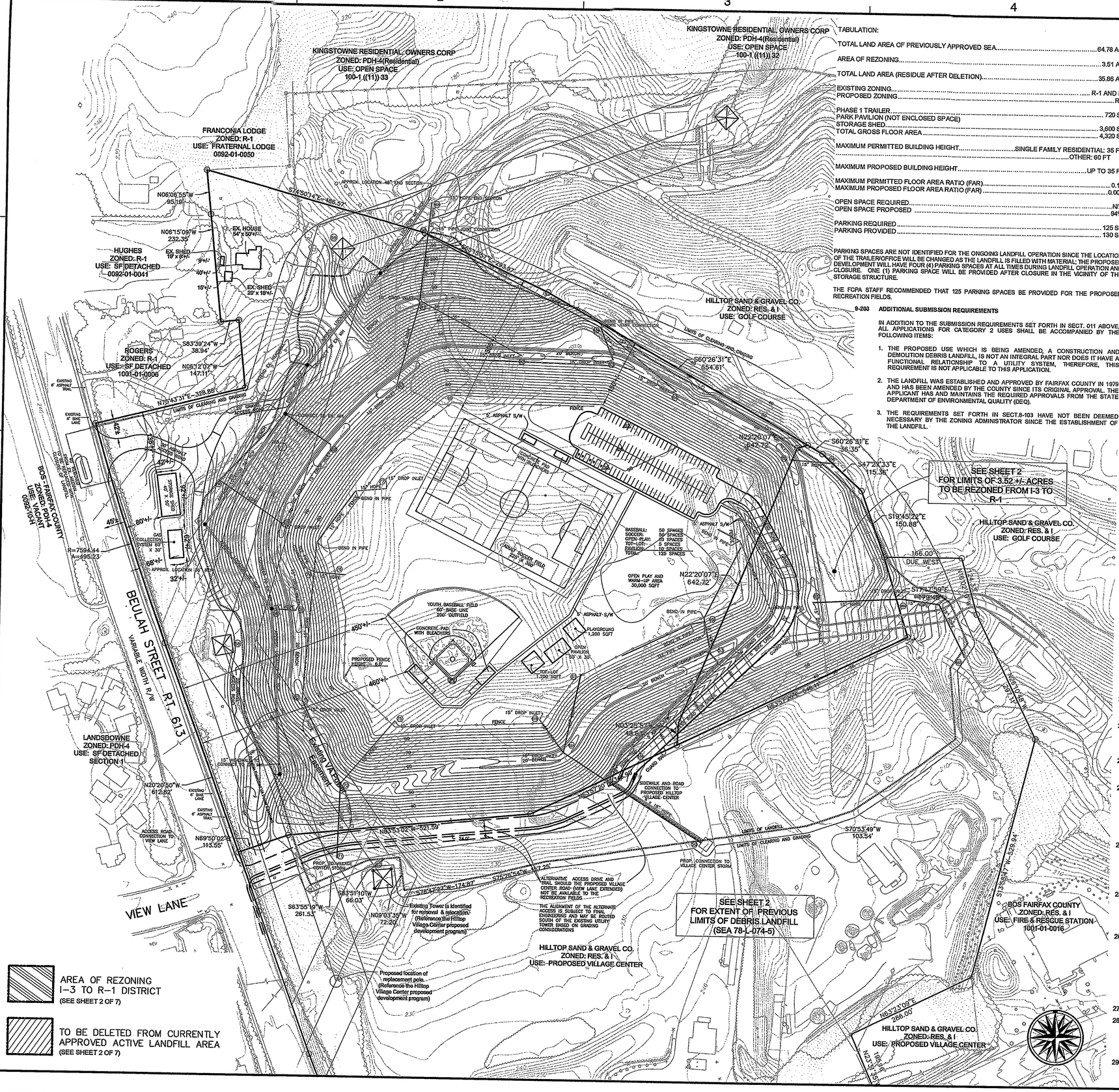
GDP / SEA
PHASE I

PROJECT NO.

2

SHEET NO. 2 OF 7

M-10694



TABULATION:

TOTAL LAND AREA OF PREVIOUSLY APPROVED SEA	64.78 AC
AREA OF REZONING	3.51 AC
TOTAL LAND AREA (RESIDUE AFTER DELETION)	35.86 AC
EXISTING ZONING	R-1 AND I-3
PROPOSED ZONING	R-1
PHASE 1 TRAILER	720 SF
PARK PAVILION (NOT ENCLOSED SPACE)	
STORAGE SHED	3,600 SF
TOTAL GROSS FLOOR AREA	4,320 SF
MAXIMUM PERMITTED BUILDING HEIGHT	SINGLE FAMILY RESIDENTIAL: 35 FT OTHER: 60 FT
MAXIMUM PROPOSED BUILDING HEIGHT	UP TO 35 FT
MAXIMUM PERMITTED FLOOR AREA RATIO (FAR)	0.10
MAXIMUM PROPOSED FLOOR AREA RATIO (FAR)	0.003
OPEN SPACE REQUIRED	N/A
OPEN SPACE PROPOSED	94%
PARKING REQUIRED	125 SP
PARKING PROVIDED	130 SP

PARKING SPACES ARE NOT IDENTIFIED FOR THE ONGOING LANDFILL OPERATION SINCE THE LOCATION OF THE TRAILER/OFFICE WILL BE CHANGED AS THE LANDFILL IS FILLED WITH MATERIAL; THE PROPOSED DEVELOPMENT WILL HAVE FOUR (4) PARKING SPACES AT ALL TIMES DURING LANDFILL OPERATION AND CLOSURE. ONE (1) PARKING SPACE WILL BE PROVIDED AFTER CLOSURE IN THE VICINITY OF THE STORAGE STRUCTURE.

THE FCPA STAFF RECOMMENDED THAT 125 PARKING SPACES BE PROVIDED FOR THE PROPOSED RECREATION FIELDS.

9-203 ADDITIONAL SUBMISSION REQUIREMENTS

IN ADDITION TO THE SUBMISSION REQUIREMENTS SET FORTH IN SECT. 011 ABOVE, ALL APPLICATIONS FOR CATEGORY 2 USES SHALL BE ACCOMPANIED BY THE FOLLOWING ITEMS:

1. THE PROPOSED USE WHICH IS BEING AMENDED, A CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL, IS NOT AN INTEGRAL PART NOR DOES IT HAVE A FUNCTIONAL RELATIONSHIP TO A UTILITY SYSTEM, THEREFORE, THIS REQUIREMENT IS NOT APPLICABLE TO THIS APPLICATION.
2. THE LANDFILL WAS ESTABLISHED AND APPROVED BY FAIRFAX COUNTY IN 1979 AND HAS BEEN AMENDED BY THE COUNTY SINCE ITS ORIGINAL APPROVAL. THE APPLICANT HAS AND MAINTAINS THE REQUIRED APPROVALS FROM THE STATE DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ).
3. THE REQUIREMENTS SET FORTH IN SECT.8-103 HAVE NOT BEEN DEEMED NECESSARY BY THE ZONING ADMINISTRATOR SINCE THE ESTABLISHMENT OF THE LANDFILL.

NOTES:

1. THE PROPERTY THAT IS THE SUBJECT OF THE SPECIAL EXCEPTION AMENDMENT (SEA) AND GENERALIZED DEVELOPMENT PLAN IS IDENTIFIED ON THE FAIRFAX COUNTY TAX MAPS AS 100-1 ((1)) PART 9.
2. THE APPLICANT PROPOSES TO REVISE THE SEA TO REDUCE THE LAND AREA OF THE 64.78 ACRE LANDFILL TO 35.86 ACRES, WHICH IS A REDUCTION OF 28.92 ACRES. THE APPLICANT PROPOSES TO ADJUST THE GRADES TO PERMIT AN INCREASE IN THE AMOUNT OF FILL PERMITTED FROM 8.5 MILLION CUBIC YARDS TO 8.55 MILLION CUBIC YARDS TO PERMIT CONTINUED OPERATION OF A CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL ON AN INTERIM BASIS (PHASE 1). ONCE CONTOURS ARE BROUGHT TO GRADE AN ACTIVE RECREATION AREA WILL BE ESTABLISHED (PHASE 2). THE APPLICANT PROPOSES TO REZONE 3.51 ACRES FROM THE I-3 TO THE R-1 DISTRICT TO PERMIT THE ESTABLISHMENT OF AN ACTIVE RECREATION FACILITY ON APPROXIMATELY ELEVEN (11) ACRES WHEN THE LANDFILL MEETS ITS APPROVED CONTOUR ELEVATIONS AND IS CLOSED.
3. THE TOPOGRAPHIC INFORMATION HEREON IS FROM AERIAL SURVEY, AT TWO FOOT CONTOUR ELEVATIONS, FROM VIRGINIA RESOURCE MAPPING FLOWN IN DECEMBER 2007.
4. THE BOUNDARY INFORMATION IS FIELD RUN BY DEWBERRY & DAVIS LLC.
5. A STATEMENT THAT CONFIRMS THE OWNERSHIP OF THE PROPERTY, AND THE NATURE OF THE APPLICANT'S INTEREST IN SAME, IS PROVIDED IN A SEPARATE ASSOCIATED DOCUMENT.
6. PUBLIC UTILITIES ARE AVAILABLE TO THE SITE AND WILL BE EXTENDED AS REQUIRED BY THE PROPOSAL.
7. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO GRAVES ON THE SUBJECT PROPERTY.
8. THERE IS NO FLOODPLAIN, RESOURCE PROTECTION AREA (RPA) OR ENVIRONMENTAL QUALITY CORRIDOR (EQC) ON THE SUBJECT PROPERTY.
9. THERE ARE EXISTING STRUCTURES ON THE SUBJECT PROPERTY THAT SHALL REMAIN.
10. THERE IS A UTILITY GREATER THAN TWENTY-FIVE (25) FEET ON THE SUBJECT PROPERTY IN THE FORM OF A 130 FOOT VEPCO EASEMENT WHICH HOUSES OVERHEAD TRANSMISSION LINES. AN EXISTING TOWER SOUTHWEST OF THE SUBJECT PROPERTY IS PROPOSED FOR RELOCATION WHICH WILL RESULT IN ADJUSTMENT TO THE UTILITY EASEMENT ALIGNMENT, AS DEPICTED ON THE GRAPHIC. IN ADDITION, THERE ARE NO MAJOR UNDERGROUND UTILITIES ON THE SUBJECT PROPERTY.
11. THE USE OF ADJACENT PROPERTY TO THE NORTH AND EAST IS A GOLF COURSE OPERATION ON TOP OF A CLOSED LANDFILL; A MIXED USE DEVELOPMENT (HILLTOP VILLAGE CENTER) IS PROPOSED ON THE 33 ACRES TO THE SOUTH. THE WESTERN BOUNDARY ABUTS BEULAH STREET AND FOUR (4) R-1 ZONED PARCELS ARE LOCATED TO THE NORTHWEST, ONE OF WHICH IS THE FRANCONIA LODGE.
12. THE EXISTING SITE DOES NOT INCLUDE SCENIC ASSETS WORTHY OF PROTECTION..
13. STORMWATER MANAGEMENT WILL BE PROVIDED AND WILL COMPLY WITH THE REQUIREMENTS OF THE PUBLIC FACILITIES MANUAL AS DETERMINED BY THE DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES (DPWES). IT IS ANTICIPATED THAT THE STORMWATER MANAGEMENT WILL BE CONTROLLED BY TWO (2) WET PONDS ON PROPERTY UNDER THE SAME OR AFFILIATE OWNERSHIP AS THE APPLICANT OF THIS SUBMISSION.
14. IN PHASE 1 OF THE PROPOSED DEVELOPMENT PROJECT, THERE WILL BE A NEED FOR A 12X60 FOOT TRAILER ON A 1000 SQUARE FOOT PAD WHICH WILL BE USED FOR THE ADMINISTRATION OF THE ACTIVE LANDFILL AND FOR COLLECTING TIPPING FEES FROM USERS. IT IS NOTED THAT THE LOCATION OF THE TRAILER AND PAD WILL BE MOVED PERIODICALLY TO ACCOMMODATE THE CHANGING GRADES BUT AT NO POINT WILL IT BE PLACED CLOSER TO THE PERIMETER OF THE SUBJECT PROPERTY THAN ALLOWED UNDER THE BULK REGULATION OF THE R-1 ZONE PURSUANT TO PARAGRAPH 2B OF SECT. 3-107 AS STIPULATED IN PARAGRAPH 2 OF SECTION 9-204 OF THE ZONING ORDINANCE.
15. THE COMPREHENSIVE PLAN MAP IDENTIFIES A PEDESTRIAN / BICYCLE TRAIL ALONG THE BEULAH STREET FRONTAGE OF THE PROPERTY WHICH IS AS SHOWN ON THE GRAPHIC.
16. THERE ARE PROPOSED IMPROVEMENTS TO THE EXISTING PUBLIC RIGHT-OF-WAY WHERE THE PROPERTY IS CONTIGUOUS TO BEULAH STREET AS SHOWN HEREON. A STATEMENT OF IMPROVEMENTS PROPOSED AND THE TIMING OF SUCH IMPROVEMENTS SHALL BE PROVIDED AS DESCRIBED IN THE PROFFERS ASSOCIATED WITH RZ 2008-MD-009.
17. INTERIM ACCESS FROM BEULAH STREET TO THE LANDFILL OPERATION WILL BE ACCOMMODATED BY THE INTERIM SHORTENING THE MEDIAN IN BEULAH STREET AS SHOWN ON THE GRAPHIC. UPON ACCEPTANCE OF THE LANDFILL CLOSURE BY DEQ, THE MEDIAN SEGMENT WILL BE REPLACED.
18. THE SUBJECT PROPERTY IS IN THE LEHIGH COMMUNITY PLANNING SECTOR (RH-4) IN THE ROSE HILL PLANNING DISTRICT OF AREA IV. THE COMPREHENSIVE PLAN RECOMMENDS PRIVATE RECREATION AND AS AN OPTION RESIDENTIAL USE AT 2-3 DWELLING UNITS PER ACRE, PROVIDED THERE IS SUBSTANTIAL PARCEL CONSOLIDATION AND CONSOLIDATED ACCESS. THIS PROPOSAL IS IN CONFORMANCE WITH THE COMPREHENSIVE PLAN.
19. THE PROPOSED DEVELOPMENT AS PRESENTED WILL PROVIDE AN ACTIVE RECREATION FACILITY IN THIS AREA OF THE COUNTY. THIS APPLICATION PROPOSES CONVERTING THE LANDFILL AREA TO AN ACTIVE RECREATION COMPLEX UPON CLOSURE OF THE LANDFILL IN ACCORDANCE WITH (1) REVISION NO 2. CLOSURE AND POST CLOSURE CARE PLAN, HILLTOP SAND AND GRAVEL LANDFILL, PREPARED BY SCS ENGINEERS, DATED AUGUST 27, 2008 AND REVISED THROUGH OCTOBER 14, 2008, AND (2) VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY APPROVAL FOR THE HILLTOP CONSTRUCTION DEBRIS LANDFILL, PERMIT NO. 326, CLOSURE AND POST-CLOSURE CARE PLAN FOR PHASES II AND III DATED NOVEMBER 10, 2008. THE AREA CONSISTS OF APPROXIMATELY ELEVEN (11) ACRES AND IT IS PLANNED TO INCLUDE AN ADULT SOCCER FIELD, YOUTH BASEBALL FIELD, OPEN PLAY AREA, TOT LOT, PLAYGROUND, PAVILION AND ACCESSORY PARKING AS REQUIRED.
20. THE EXACT PHASING SCHEDULE OF THIS PROPOSAL WILL COINCIDE WITH THE REFERENCED CLOSURE PLAN ACHIEVING THE PLANNED CAPACITY OF THE LANDFILL WHICH WILL BE DICTATED BY MARKET CONDITIONS.
21. VEHICULAR ACCESS TO THE PROPOSED RECREATION CENTER SHALL BE FROM THE PROPOSED HILLTOP VILLAGE CENTER VIEW LANE EXTENDED ACCESS DRIVE. IN THE EVENT SAID ACCESS DRIVE IS NOT AVAILABLE TO ACCESS THE RECREATION AREA, THE APPLICANT WILL CONSTRUCT A HALF SECTION OF THAT DRIVE AS DEPICTED ON THE GRAPHIC.
22. IT IS UNDERSTOOD THAT MINOR ADJUSTMENTS INCLUDING THOSE REQUESTED BY THE FAIRFAX COUNTY PARK AUTHORITY, IN THE ORIENTATION OF THE RECREATION FACILITIES MAY BE MADE AT TIME OF SITE PLAN.
23. AT A MINIMUM, PARKING WILL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 11 OF THE FAIRFAX COUNTY ZONING ORDINANCE. THE NUMBER AND LOCATION OF ACCESSIBLE PARKING SPACES WILL BE DETERMINED AT TIME OF SITE PLAN SUBMISSION AND WILL BE IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 11 OF THE ZONING ORDINANCE. THE APPLICANT RESERVES THE RIGHT TO ADD ADDITIONAL PARKING SPACES PROVIDED THE AMOUNT OF OPEN SPACE AND THE DISTANCE TO THE PERIMETER LOT LINES IS NOT DIMINISHED.
24. PURSUANT TO PAR. 9 OF SECT. 9-205 OF THE ZONING ORDINANCE, THE APPLICANT REQUESTS A WAIVER TO PERMIT SITE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO PARKING, VEHICULAR DRIVES, SIDEWALKS, PLAYFIELDS AND LANDSCAPING WITHIN THE LIMITS OF A FORMER LANDFILL PRIOR TO THE STIPULATED TWENTY (20) YEAR PERIOD FROM TERMINATION OF THE LANDFILL OPERATIONS SUBJECT TO THE APPROVAL CRITERIA SAID PARAGRAPH 9.
25. PURSUANT TO PAR. 1 OF SECT. 13-304 OF THE ZONING ORDINANCE, A WAIVER OF THE TRANSITIONAL SCREENING AND BARRIER REQUIREMENTS IS REQUESTED ON THE NORTH, EAST, SOUTH AND WESTERN BOUNDARIES OF THE SUBJECT PROPERTY. THE REUSE OF THE PROPERTY AS A RECREATION FACILITY IN LIEU OF THE EXISTING LANDFILL OPERATION CREATES AN ENHANCED COMMUNITY AMENITY.
26. THE PROPOSED USE WILL NOT GENERATE, UTILIZE, STORE, TREAT OR DISPOSE OF ANY HAZARDOUS OR TOXIC SUBSTANCES AS SET FORTH IN TITLE 40, CODE OF FEDERAL REGULATIONS PARTS 116.4, 302.4 AND 355 WITH THE EXCEPTION OF METHANE, GENERATED BY THE LANDFILL, WHICH WILL BE REGULATED IN ACCORDANCE WITH THE RULES AND POLICIES OF THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY AND THE FAIRFAX COUNTY FIRE MARSHALL'S OFFICE; ANY HAZARDOUS WASTE AS SET FORTH IN THE COMMONWEALTH OF VIRGINIA/DEPARTMENT OF WASTE MANAGEMENT VR 672-10-1 - VIRGINIA HAZARDOUS WASTE MANAGEMENT REGULATIONS; AND/OR ANY PETROLEUM PRODUCTS AS DEFINED IN TITLE 40, CODE OF FEDERAL REGULATIONS PART 280.
27. ARCHITECTURAL ELEVATIONS ARE NOT RELEVANT TO THIS PROPOSAL.
28. THE PROPOSED IMPROVEMENTS TO THE SITE AND BUILDINGS ARE BASED ON PRELIMINARY DESIGN. IT IS TO BE UNDERSTOOD THAT THE FINAL IMPROVEMENTS MAY BE MODIFIED IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN PAR. 4 OF SECT. 9-004 OF THE ZONING ORDINANCE SO LONG AS THE OPEN SPACE REPRESENTED IN THE TABULATION AND THE MINIMUM DIMENSIONS TO THE PERIPHERAL LOT LINES ARE NOT DIMINISHED.
29. TO THE BEST OF OUR KNOWLEDGE, THE PROPOSED DEVELOPMENT CONFORMS TO ALL CURRENT APPLICABLE LAND DEVELOPMENT ORDINANCES AND ADOPTED STANDARDS EXCEPT AS NOTED HEREIN.

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HILLTOP CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

GENERALIZED DEVELOPMENT PLAN / SPECIAL EXCEPTION AMENDMENT

LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL

COMMONWEALTH OF VIRGINIA
TIMOTHY CHARLES CULLEITON
Lic. No. 20112
12.16.08
PROFESSIONAL ENGINEER

KEY PLAN
Application No. 78-L-074-6 Staff C Lewis
APPROVED (SE) SP PLAN
SEE DEV CONDS DATED 3.6.09
Date of (BOS) (BZA) approval 3.9.09
Sheet 3 of 7

SCALE
0' 100' 200'

No.	DATE	BY	Description
3	12.16.08	DMC	ADJUST TABULATION TO CONFORM TO PREVIOUSLY APPROVED SEA
2	12.02.08	DMC	REV. LAYOUT / ADDITIONAL DETAIL
1	10.17.08		Rec.Facility Layout

REVISIONS

DRAWN BY ARW
APPROVED BY
CHECKED BY LM
DATE February 12, 2008

TITLE

Hilltop Construction and Demolition Debris Landfill

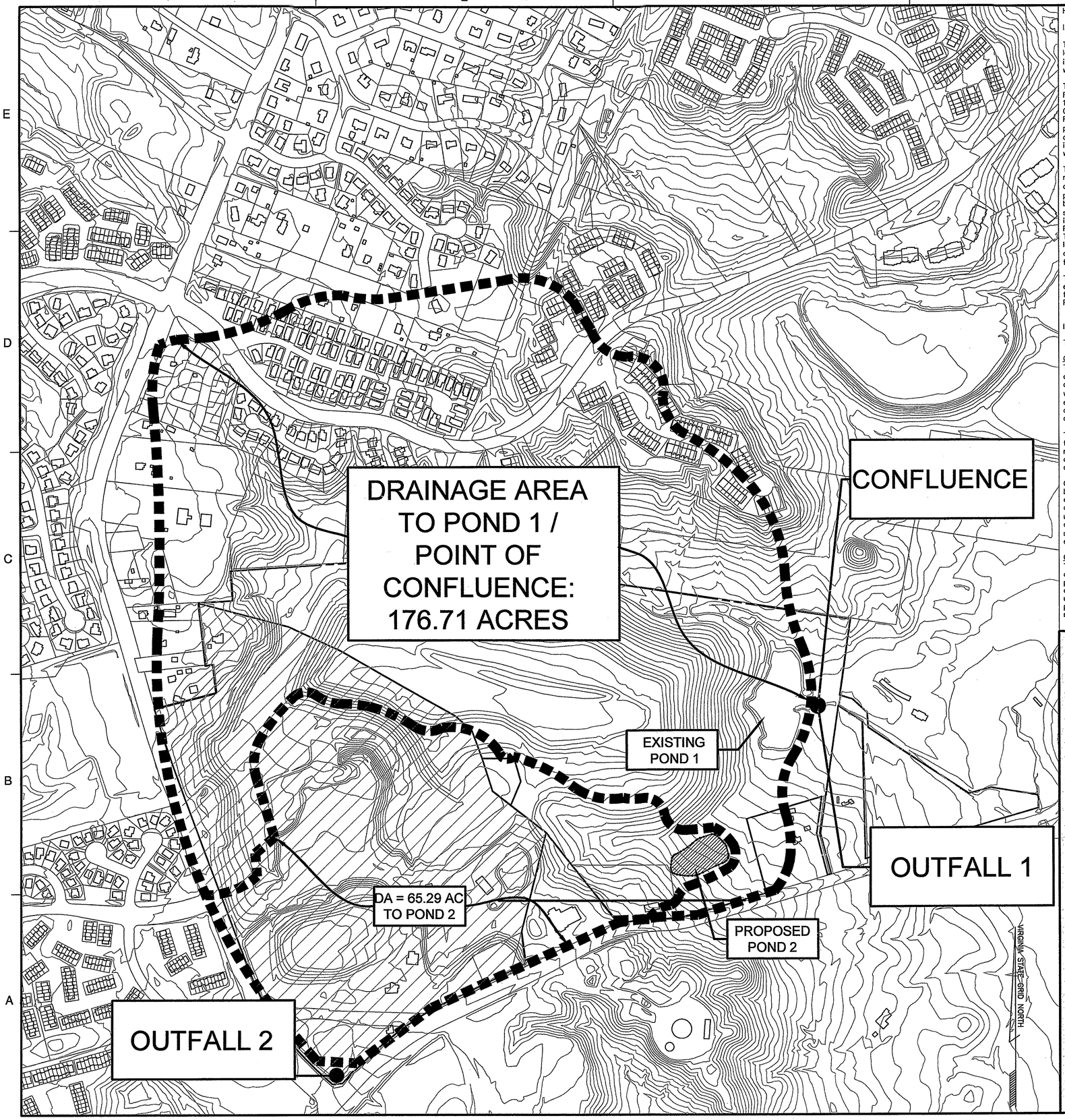
GDP / SEA
PHASE II

PROJECT NO.

3

SHEET NO. 3 OF 7

M-10694



Hilltop Village Center and Recreation Area Stormwater Management (SWM) AND DRAINAGE OUTFALL Narrative

I. Stormwater Management

The Hilltop Village Center (33± AC) and Recreation Area (35.86 AC) (project site) is a 68.86 acre development located in southeastern Fairfax County predominantly within the Dogue Creek watershed. The project site includes commercial and recreational uses and is a part of the overall Hilltop Sand and Gravel site (151 acres) where existing land use includes an active debris land fill and a nine hole golf course.

The majority of the overall Hilltop Sand and Gravel site, including the proposed Hilltop Village Center and Recreation Area site, drains to an existing stormwater management facility (wet pond) known as existing Pond 1. The drainage area for existing Pond 1 is 242 acres, of which 136 acres comes from the Hilltop Sand and Gravel site and 106 acres comes from the adjacent Kingstowne development. A 1996 site plan for the Hilltop Reclamation Project demonstrated that the existing Pond 1 provides stormwater detention and BMP for that portion of the Hilltop site draining to the facility assuming current land uses (i.e. nine hole golf course and active debris land fill). A small portion of the proposed Hilltop Village Center site (4 acres) located at the intersection of Telegraph Road and Beulah Street does not drain to existing Pond 1 but instead drains to the west into an existing storm sewer system along Telegraph Road, labeled as Outfall 2.

The proposed commercial and recreational uses for the Hilltop Village Center and Recreational Area site will result in increased runoff to Pond 1 which would exceed its original design capacity. Therefore, the majority of the proposed runoff from the 68.86 acre project site will be directed to a proposed new SWM facility (wet pond) referred to as future Pond 2 located 600 feet southwest of Pond 1 outside of the 70 acre project site but within the original Hilltop Sand and Gravel site. In addition, approximately 3 of the 4 acres of the project site that naturally drains to Telegraph Road (Outfall 2) will be directed into Pond 2 to avoid increasing runoff into the existing Telegraph storm sewer system and maintain an adequate drainage outfall. The discharge from Pond 2 will be conveyed via a proposed storm sewer pipe to the outfall immediately downstream of Pond 1. The stormwater detention design for Pond 2 is such that the combined discharge from Ponds 1 and 2 will be less than the predevelopment discharge into the outfall downstream of Pond 1 as shown in the attached computations (HEC–1 model output). The computations for pre–developed runoff and existing Pond 1 are taken from the approved site plan for the Hilltop Reclamation project (County Plan No. 3365–LF–001–1).

The normal pool volume of Pond 2 has been sized to provide 4 times the runoff of the mean storm for the entire acreage of the Hilltop Sand and Gravel site draining to the facility thereby providing a 50% P removal for this area. BMP computations are provided showing that Pond 2 alone will provide the required 40% overall P removal for the 68.86 acre Hilltop Village Center and Recreation Area site.

II. Drainage Outfall

There are two existing drainage outfalls for the 68.86 acre project site.

Outfall No. 1
The majority of the site (65.29 acres) naturally drains to existing Pond 1 which discharges to an engineered drainage channel having a drainage area of approximately 242 acres (minor floodplain). The 242 acres is comprised of the 65.29 site drainage area, as well as an additional 176.71 acres routed through Pond 1, which is more than 90% of the site's 65.29 drainage area and is therefore the point of confluence. This engineered channel was analyzed 150' down stream with three separate cross section to determine no overtopping of the channel occurs, and the 2 year velocity was determined to be non–erosive. See computation sheets for cross sections.

The proposed site design includes construction of a new stormwater management facility (Pond 2) to augment the performance of existing Pond 1. Together these facilities will work in parallel to reduce proposed site runoff for the 2 and 10–year storms to below predevelopment flow rates. Runoff from the majority of the 70 acre project site will be directed to proposed Pond 2 and then into a proposed storm sewer system discharging into the engineered channel downstream of Pond 1, a minor floodplain.

Computations will be provided which demonstrate that the engineered channel and associated roadway culverts between Pond 1 and the major floodplain can adequately convey the combined 2 and 10–year discharges exiting from Ponds 1 and 2. The stream channel within the major floodplain immediately downstream of the confluence with the engineered channel will be evaluated for adequacy to convey the 2–year storm. For the uncontrolled portion of the site directed towards Telegraph Road (U–1) the existing storm sewer system will be evaluated for adequacy to convey the required 10–year design storm. The second portion of the site that is uncontrolled (U–2) will be conveyed to the existing Pond 1 as it does today, and no increase in runoff is expected as the proposed development in that area is vegetated ground cover.

Outfall No.2
The remainder of the site (4 acres identified as U–2) drains to the west into an existing storm sewer system along Telegraph Road. It is proposed that 3 of the 4 acres be diverted to proposed Pond 2 in order that post development flow rates to this outfall are not increased and the existing storm sewer system will have adequate capacity for the 10–year design storm. If this diversion is determined to not be feasible then underground detention will be proposed in this location to attenuate the 2– and 10–year runoff to at or below predevelopment discharge rates such that the existing storm sewer outfall can adequately convey proposed runoff from the project site.

MINIMUM STORMWATER INFORMATION FOR REZONING, SPECIAL EXCEPTION, SPECIAL PERMIT AND DEVELOPMENT PLAN APPLICATIONS

The following information is required to be shown or provided in all zoning applications, or a waiver request of the submission requirement with justification shall be attached. Note: Waivers will be acted upon separately. Failure to adequately address the required submission information may result in a delay in processing this application.

This information is required under the following Zoning Ordinance paragraphs:

Special Permits (8-011 2J & 2L)	Special Exceptions (9-011 2J & 2L)
Cluster Subdivision (9-615 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & 14))
Development Plans PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1O)
FDP P Districts (except PRC) (16-502 1F & 1Q)	Amendments (18-202 10F & 10I)

☒ 1. Plat is at a minimum scale of 1" – 50' (unless it is depicted on one sheet with a minimum scale of 1" = 100'.

☒ 2. A graphic depicting the stormwater management facility(ies) and limits of clearing and grading accommodate the stormwater management facility(ies), storm drainage pipe systems and outlet protection, pond spillways, access roads, site outfalls, energy dissipation devices, and stream stabilization measures as shown on Sheet 6.

☒ 3. Provide:

Facility Name/ Type & No.	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	If pond, dam height (ft)
Wet Pond	48.91	16.38	65.29	82,764	1,075,932	32.0
(e.g. dry pond A, infill, trench, underground, vault, etc.)						
Totals	48.91	16.38	65.29	82,764	1,075,932	32.0

☒ 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 6. Pond inlet and outlet pipe systems are shown on Sheet 6.

☒ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 6. Type of maintenance access road surface noted on the plat is 6 (e.g. asphalt, geoblock, gravel, etc.).

☒ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 6.

☒ 7. A stormwater management narrative which contains a description of how detention and best management practice requirements will be met is provided on Sheet 5.

☒ 8. A description of the existing conditions of each numbered site outfall extended downstream from the site to a point which is at least 100 times the site area or which has a drainage area of at least one square mile (640 acres) is provided on Sheet 5.

☒ 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 5.

☒ 10. Existing topography with maximum contour intervals of two (2) feet and a note as to whether it is an air survey or field run is provided on Sheets 3,4.

☐ 11. A submission waiver is requested for N/A.

☐ 12. Stormwater management is not required because N/A.

Industry Letter 05-03 dated 02/02/05

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SEE DEV CONDS DATED 3-6-09
of (BOS) (BZA) approval 3-9-09
Sheet 4 of 7

SCALE
0' 250' 500'

3	12.16.08	DMC	No Change this Sheet
2	12.02.08	DMC	Outfall
1	10.17.08		No Change
No.	DATE	BY	Description

REVISIONS

DRAWN BY ARW
APPROVED BY
CHECKED BY LM
DATE February 12, 2008

TITLE

Hilltop Construction and Demolition Debris Landfil

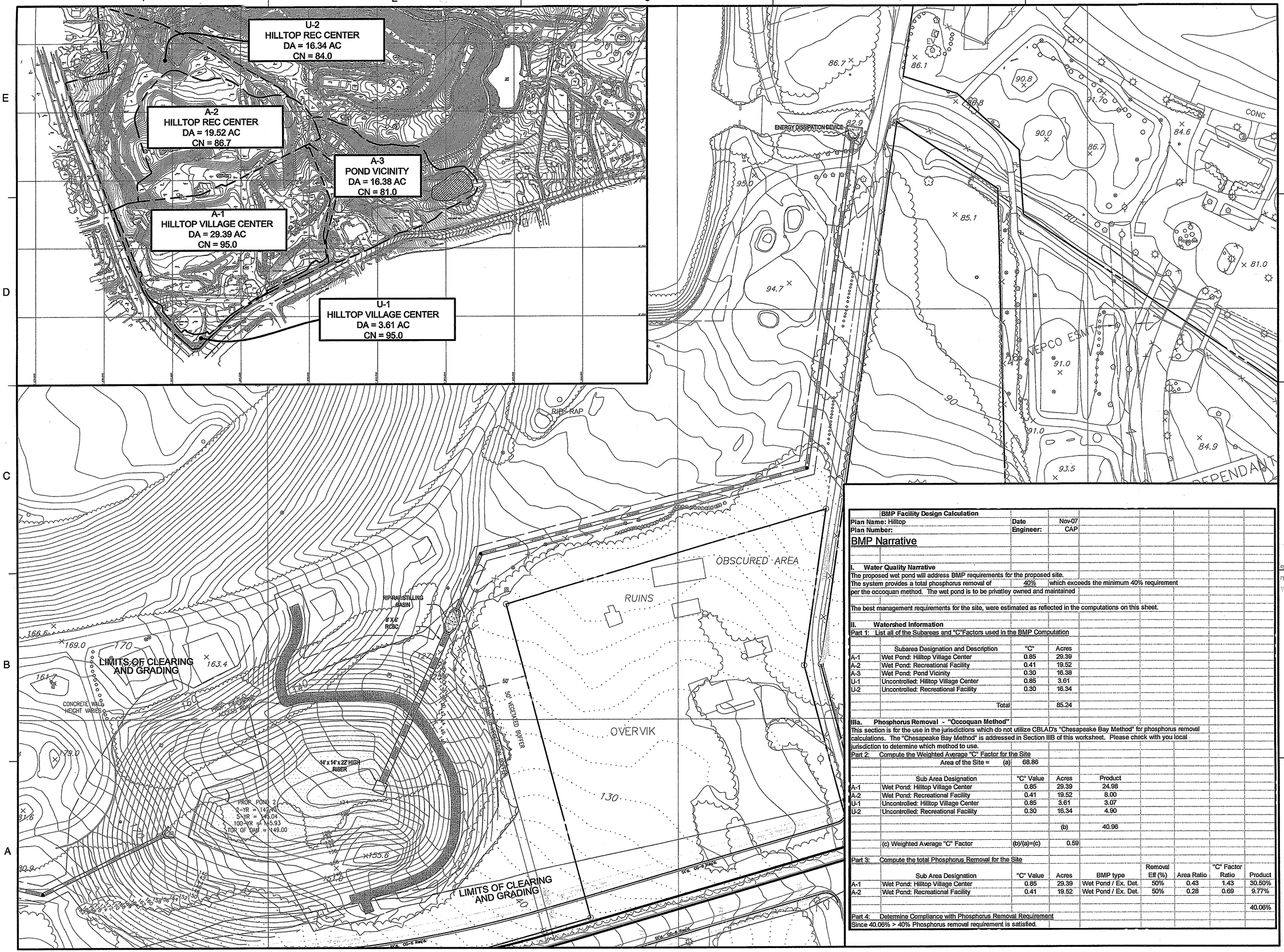
GDP / SEA
Stormwater Outfall Narrative

PROJECT NO.

4

SHEET NO. 4 OF 7

M-10694



BMP Facility Design Calculation			
Plan Name: Hilltop	**Date**	Nov-07	
Plan Number:	**Engineer:**	CAP	

BMP Narrative

I. Water Quality Narrative

The proposed wet pond will address BMP requirements for the proposed site.
The system provides a total phosphorus removal of 40% which exceeds the minimum 40% requirement per the occoquan method. The wet pond is to be privatley owned and maintained

The best management requirements for the site, were estimated as reflected in the computations on this sheet.

II. Watershed Information

Part 1: List all of the Subareas and "C"Factors used in the BMP Computation

	Subarea Designation and Description	"C"	Acres
A-1	Wet Pond: Hilltop Village Center	0.85	29.39
A-2	Wet Pond: Recreational Facility	0.41	19.52
A-3	Wet Pond: Pond Vicinity	0.30	16.38
U-1	Uncontrolled: Hilltop Village Center	0.85	3.61
U-2	Uncontrolled: Recreational Facility	0.30	16.34
	Total		85.24

IIIa. Phosphorus Removal - "Occoquan Method"

This section is for the use in the jurisdictions which do not utilize CBLAD's "Chesapeake Bay Method" for phosphorus removal calculations. The "Chesapeake Bay Method" is addressed in Section IIIB of this worksheet. Please check with you local jurisdiction to determine which method to use.

Part 2: Compute the Weighted Average "C" Factor for the Site

Area of the Site = (a) 68.86

	Sub Area Designation	"C" Value	Acres	Product
A-1	Wet Pond: Hilltop Village Center	0.85	29.39	24.98
A-2	Wet Pond: Recreational Facility	0.41	19.52	8.00
U-1	Uncontrolled: Hilltop Village Center	0.85	3.61	3.07
U-2	Uncontrolled: Recreational Facility	0.30	16.34	4.90
			(b)	40.96
	(c) Weighted Average "C" Factor	(b)/(a)=(c)	0.59	

Part 3: Compute the total Phosphorus Removal for the Site

	Sub Area Designation	"C" Value	Acres	BMP type	Removal Eff (%)	Area Ratio	"C" Factor Ratio	Product
A-1	Wet Pond: Hilltop Village Center	0.85	29.39	Wet Pond / Ex. Det.	50%	0.43	1.43	30.50%
A-2	Wet Pond: Recreational Facility	0.41	19.52	Wet Pond / Ex. Det.	50%	0.28	0.69	9.77%
								40.06%

Part 4: Determine Compliance with Phosphorus Removal Requirement

Since 40.06% > 40% Phosphorus removal requirement is satisfied.

Dewberry

Dewberry & Davis LLC
8403 ARLINGTON BLVD.
FAIRFAX, VA 22031
PHONE: 703.849.0100
FAX: 703.849.0519
www.dewberry.com

HILLTOP CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

GENERALIZED DEVELOPMENT PLAN / SPECIAL EXCEPTION AMENDMENT

LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL

COMMONWEALTH OF VIRGINIA
TIMOTHY CHARLES CULLEITON
Lic. No. 20112
12.16.08
PROFESSIONAL ENGINEER

KEY PLAN

SCALE

Application No(s). SEA 78-L-074-6 Staff C. Lewis

APPROVED SE / SP PLAN

SEE DEV CONDS DATED 3.10.09

Date of (BOS) (BZA) approval 3.9.09

Sheet 5 of 7

No.	DATE	BY	Description
3	12.16.08	DMC	No Change-This Sheet
2	12.02.08	DMC	
1	10.17.08		No Change

REVISIONS

DRAWN BY ARW

APPROVED BY

CHECKED BY LM

DATE February 12, 2008

TITLE

Hilltop Construction and Demolition Debris Landfi

GDP / SEA
Stormwater Narratives

PROJECT NO.

5

SHEET NO. 5 OF 7

M-10694

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998               *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   14JAN08  TIME  11:10:43  *
*                                      *
****************************************

****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*        609 SECOND STREET             *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************

     X     X  XXXXXXX   XXXXX          X
     X     X  X        X     X        XX
     X     X  X        X              X X
     XXXXXXX  XXXX     X        XXXXX  X
     X     X  X        X              X
     X     X  X        X     X        X
     X     X  XXXXXXX   XXXXX        XXX


 THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

 THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
 THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1                              HEC-1 INPUT                                    PAGE  1

 LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

                *DIAGRAM
    1           ID  Hilltop Sand & Gravel SWM
    2           ID  Existing Conditions
    3           ID        USING RAINFALL DATA FROM FFX CO PFM AND NRCS TYPE II 24-HR STORM
    4           ID       FILENAME        Existing.IH1
    5           IT      2                    800
    6           IO      5
                *
    7           JR    PREC     3.2     5.2     7.3

    8           KK  PREDEV
    9           KM  Predevelopment Conditions Hydrograph - Open Space in Good Condition
   10           KO                                  21
   11           BA   0.378
   12           IN       6
   13           PC     0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
   14           PC  .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
   15           PC    .022  .02321  .02442  .02565  .02688  .02813  .02938  .03065  .03192  .03321
   16           PC  .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
   17           PC    .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
   18           PC    .063  .06461  .06624  .06789  .06956  .07125  .07296  .07469  .07644  .07821
   19           PC    .08  .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
   20           PC    .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
   21           PC     .12  .12225  .12460  .12705  .12960  .13225    .135  .13785  .14080  .14385
   22           PC    .147   .1502  .15340   .1566   .1598    .163  .16628  .16972  .17332  .17708
   23           PC    .181  .18512  .18948  .19408  .19892    .204   .2094   .2152   .2214    .228
   24           PC    .235  .24268  .25132  .26092  .27148    .283  .30684  .35436  .43079  .56786
   25           PC    .663  .68196  .69864  .71304  .72516    .735  .74344  .75136  .75876  .76564
   26           PC    .772  .77796  .78364  .78904  .79416    .799  .8036    .808   .8122   .8162
   27           PC     .82  .82367  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
   28           PC  .85350  .85647  .85936  .86219  .86494  .86763  .87024  .87279  .87526  .87767
   29           PC     .88  .88229  .88455  .88679    .889  .89119  .89335  .89549   .8976  .89969
   30           PC  .90175  .90379   .9058  .90779  .90975  .91169   .9136  .91549  .91735  .91919
   31           PC    .921  .92279  .92455  .92629    .928  .92969  .93135  .93299   .9346  .93619
   32           PC  .93775  .93929   .9408  .94229  .94375  .94519   .9466  .94799  .94935  .95069
   33           PC    .952   .9533  .95459  .95588  .95716  .95844  .95971   .96098  .96224   .9635
   34           PC  .96475    .966  .96724  .96848  .96971  .97094  .97216  .97338  .97459   .9758
   35           PC    .977   .9782  .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
   36           PC  .98875   .9899  .99104  .99218  .99331  .99444  .99556  .99668  .99779   .9989
   37           PC     1.0
   38           LS              79
   39           UD   0.372
                *

   40           KK  INFLOW
   41           KM  Existing Conditions Inflow to Existing SWM Pond 1 (without Prop Hilltop Villag
   42           KO                                  21
   43           BA   0.378
   44           LS            84.17
   45           UD   0.288
                *

1                              HEC-1 INPUT                                    PAGE  2

 LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   46           KK  EXSWM1
   47           KM  Route Through Existing SWM Pond 1 With Existing 12.5' Weir
   48           KO                                  21
   49           RS       1    STOR       0
   50           SV       0    1.34     4.7    8.59   12.79   17.34   18.52
   51           SE      85      86      88      90      92      94    94.5
   52           SQ       0   13.26    37.5   68.89  106.07  148.23  194.86  245.55     300  357.97
   53           SQ  419.26   483.7  551.14  647.96  769.51  908.02 1060.66 1225.77 1402.21 1589.13
   54           SE      85    85.5      86    86.5      87    87.5      88    88.5      89    89.5
   55           SE      90    90.5      91    91.5      92    92.5      93    93.5      94    94.5
   56           ZZ

1                  SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

     8      PREDEV
              .
              .
    40        .       INFLOW
              .         V
              .         V
    46        .       EXSWM1

  (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998               *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   14JAN08  TIME  11:10:43  *
*                                      *
****************************************

****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*        609 SECOND STREET             *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************
*
```

```
                    Hilltop Sand & Gravel SWM
                    Existing Conditions
                         USING RAINFALL DATA FROM FFX CO PFM AND NRCS TYPE II 24-HR STORM
                         FILENAME        Existing.IH1

  6 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN          2  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME       0000  STARTING TIME
                        NQ        800  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     2    0  ENDING DATE
                     NDTIME       0238  ENDING TIME
                     ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL     .03 HOURS
                       TOTAL TIME BASE   26.63 HOURS

               ENGLISH UNITS
                    DRAINAGE AREA          SQUARE MILES
                    PRECIPITATION DEPTH    INCHES
                    LENGTH, ELEVATION      FEET
                    FLOW                   CUBIC FEET PER SECOND
                    STORAGE VOLUME         ACRE-FEET
                    SURFACE AREA           ACRES
                    TEMPERATURE            DEGREES FAHRENHEIT

    JP            MULTI-PLAN OPTION
                     NPLAN          1  NUMBER OF PLANS

    JR            MULTI-RATIO OPTION
                     RATIOS OF PRECIPITATION
                    3.20      5.20      7.30


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


                 **************
                 *            *
  8 KK           *   PREDEV   *
                 *            *
                 **************

 10 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        800  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


                 **************
                 *            *
 40 KK           *   INFLOW   *
                 *            *
                 **************

 42 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        800  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


                 **************
                 *            *
 46 KK           *   EXSWM1   *
                 *            *
                 **************

 48 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                     IPNCH          0  PUNCH COMPUTED HYDROGRAPH
                      IOUT         21  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        800  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT       .033  TIME INTERVAL IN HOURS

1

          PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                    FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                          TIME TO PEAK IN HOURS

                                                RATIOS APPLIED TO PRECIPITATION

                                                          2-YEAR:   10-YEAR:  100-YR:
 OPERATION      STATION      AREA    PLAN                 RATIO 1   RATIO 2   RATIO 3
                                                          3.20      5.20      7.30

 HYDROGRAPH AT
+               PREDEV        .38     1    FLOW          244.      557.      909.
                                           TIME         12.27     12.27     12.23

 HYDROGRAPH AT
+               INFLOW        .38     1    FLOW          370.      755.     1169.
                                           TIME         12.17     12.17     12.17

 ROUTED TO
+               EXSWM1        .38     1    FLOW          274.      604.     1038.
                                           TIME         12.33     12.30     12.27

                                      ** PEAK STAGES IN FEET **
                                       1   STAGE         88.76     91.27     92.93
                                           TIME         12.33     12.30     12.27
```

Application No. SP-2006-0046 Staff C. Lewis
APPROVED (SE) DEP PLAN
SEE DEV CONDS DATED 3.6.09
Date of (BOS) (BZA) approval 3.9.09
Sheet 6 of 7

Dewberry

Dewberry & Davis LLC
8403 ARLINGTON BLVD.
FAIRFAX, VA 22031
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www.dewberry.com

HILLTOP
CONSTRUCTION AND
DEMOLITION DEBRIS
LANDFILL

GENERALIZED DEVELOPMENT PLAN /
SPECIAL EXCEPTION AMENDMENT

LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL

COMMONWEALTH OF VIRGINIA
TIMOTHY CHARLES CULLEITON
Lic. No. 20112
12.16.08
PROFESSIONAL ENGINEER

KEY PLAN

SCALE

No.	DATE	BY	Description
3	12.16.08	DMC	No Change-This Sheet
2	12.02.08	DMC	
1	10.17.08	–	No Change

REVISIONS

DRAWN BY ARW
APPROVED BY
CHECKED BY LM
DATE February 12, 2008

TITLE

Hilltop Construction and Demolition Debris Landfil

GDP / SEA
Stormwater Management

PROJECT NO.

6

SHEET NO. 6 OF 7

M-10694

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   27JAN08  TIME  11:59:31   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*   U.S. ARMY CORPS OF ENGINEERS        *
*   HYDROLOGIC ENGINEERING CENTER       *
*        609 SECOND STREET              *
*      DAVIS, CALIFORNIA 95616          *
*         (916) 756-1104                *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X      X      X        XX
X     X  X      X      X         X
XXXXXXX  XXXX   X      XXXXX     X
X     X  X      X             X  X
X     X  X      X      X      X  X
X     X  XXXXXXX  XXXXX       XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
              *DIAGRAM
    1         ID        HILLTOP VILLAGE CENTER AND RECREATIONAL CENTRE
    2         ID        PROPOSED CONDITIONS
    3         ID        USING RAINFALL DATA FROM FFX PFM AND NRCS TYPE II 24-HR STORM
    4         ID        FILENAME: Prop_Rev.ih1
    5         IT     2                    800
    6         IO     5
              *
    7         JR   PREC     3.2     5.2     7.3   10.95   18.25    8.35

    8         KK  BASIN1
    9         KM  Inflow to Existing SWM Pond 1
   10         KO                                      21
   11         BA   0.281
   12         IN       6
   13         PC     0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
   14         PC  .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
   15         PC    .022  .02321  .02442  .02565  .02689  .02813  .02938  .03065  .03192  .03321
   16         PC  .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
   17         PC    .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
   18         PC    .063  .06461  .06624  .06789  .06956  .07125  .07296  .07469  .07644  .07821
   19         PC     .08  .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
   20         PC    .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
   21         PC     .12  .12225  .12460  .12705  .12960  .13225    .135  .13785  .14080  .14385
   22         PC    .147   .1502  .15340   .1566   .1598    .163  .16628  .16972  .17332  .17708
   23         PC    .181  .18512  .18948  .19408  .19892    .204   .2094   .2152   .2214    .228
   24         PC    .235  .24268  .25132  .26092  .27148    .283  .30684  .35436  .43079  .56786
   25         PC    .663  .68196  .69864  .71304  .72516    .735  .74344  .75136  .75876  .76564
   26         PC    .772  .77796  .78364  .78904  .79416    .799   .8036    .808   .8122   .8162
   27         PC     .82  .82367  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
   28         PC  .85350  .85647  .85936  .86219  .86494  .86763  .87024  .87279  .87526  .87767
   29         PC     .88  .88229  .88455  .88679    .889  .89119  .89335  .89549   .8976  .89969
   30         PC  .90175  .90379   .9058  .90779  .90975  .91169   .9136  .91549  .91735  .91919
   31         PC    .921  .92279  .92455  .92629    .928  .92969  .93135  .93299   .9346  .93619
   32         PC  .93775  .93929   .9408  .94229  .94375  .94519   .9466  .94799  .94935  .95069
   33         PC    .952   .9533  .95459  .95588  .95716  .95844  .95971  .96098  .96224   .9635
   34         PC  .96475    .966  .96724  .96848  .96971  .97094  .97216  .97338  .97459   .9758
   35         PC    .977   .9782  .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
   36         PC  .98875   .9899  .99104  .99218  .99331  .99444  .99556  .99668  .99779   .9989
   37         PC    1.0
   38         LS          84.17
   39         UD   0.288

   40         KK  EXSWM1       1
   41         KM  Route Through Existing SWM Pond 1 With Existing 12.5' Weir
   42         KO                                      21
   43         RS       1     STOR       0
   44         SV       0     1.34     4.7     8.59    12.79   17.34   18.52
   45         SE      85       86      88       90      92      94    94.5
   46         SQ       0    13.26    37.5    68.89  106.07  148.23  194.86  245.55     300  357.97
   47         SQ  419.26    483.7  551.14  647.96  769.51  908.02 1060.66 1225.77 1402.21 1589.13
   48         SE      85     85.5      86     86.5      87    87.5      88    88.5      89    89.5
   49         SE      90     90.5      91     91.5      92    92.5      93    93.5      94    94.5
```

1 HEC-1 INPUT PAGE 2

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   50         KK  BASIN2
   51         KM  Inflow to Proposed SWM Pond 2
   52         KO                                      21
   53         BA   0.101
   54         LS          90
   55         UD    0.15

   56         KK  PRSWM2
   57         KM  Route Through Proposed SWM Pond 2
   58         KO                                      21
   59         RS       1     ELEV     142
   60         SA    0.07     0.16     0.38     0.48     0.57     0.67     0.76     0.98     1.22     1.34
   61         SA    1.47     1.61     1.75      1.9      136      138      140      142      144      146
   62         SE     128      130      132      134
   63         SE     148      150      152      154
   64         SL     142      4.5      0.6      0.5
   65         SS   147.5       56        3      1.5
   66         ST     152      500      2.6      1.5

   67         KK  COMB12
   68         KM  Combine Outflow From SWM Ponds 1 and 2
   69         KO                                      21
   70         HC       2
              *
   71         ZZ
```

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

RATIOS APPLIED TO PRECIPITATION

OPERATION	STATION	AREA	PLAN		2-YEAR: RATIO 1 3.20	10-YEAR: RATIO 2 5.20	100-YR: RATIO 3 7.30	FBH 1.5x100 RATIO 4 10.95	SDF 2.5x100 RATIO 5 18.25	NOAA ATLAS 14 RATIO 6 8.35
HYDROGRAPH AT										
+	BASIN1	.28	1	FLOW	275.	562.	869.	1401.	2448.	1022.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
ROUTED TO										
+	EXSWM1	.28	1	FLOW	200.	433.	727.	1276.	2299.	889.
				TIME	12.33	12.33	12.30	12.23	12.23	12.27
			** PEAK STAGES IN FEET **							
			1	STAGE	88.05	90.11	91.82	93.64	96.40	92.43
				TIME	12.33	12.33	12.30	12.23	12.23	12.27
HYDROGRAPH AT										
+	BASIN2	.10	1	FLOW	169.	308.	452.	700.	1189.	524.
				TIME	12.03	12.03	12.03	12.03	12.03	12.03
ROUTED TO										
+	PRSWM2	.10	1	FLOW	40.	120.	343.	644.	1140.	437.
				TIME	12.37	12.27	12.13	12.10	12.07	12.10
			** PEAK STAGES IN FEET **							
			1	STAGE	145.43	148.04	148.93	149.79	150.95	149.22
				TIME	12.37	12.27	12.13	12.10	12.07	12.10
2 COMBINED AT										
+	COMB12	.38	1	FLOW	240.	547.	967.	1723.	3125.	1190.
				TIME	12.33	12.30	12.23	12.20	12.17	12.20

1 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION PRSWM2
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

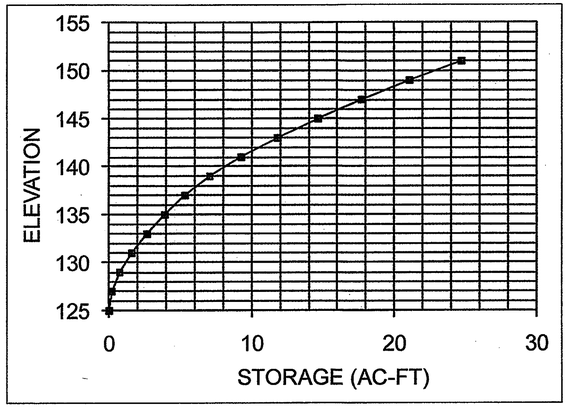
	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	142.00	147.50	152.00
STORAGE	7.	14.	21.
OUTFLOW	0.	51.	1672.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
3.20	145.43	.00	11.	40.	.00	12.37	.00
5.20	148.04	.00	15.	120.	.00	12.27	.00
7.30	148.93	.00	16.	343.	.00	12.13	.00
10.95	149.79	.00	17.	644.	.00	12.10	.00
18.25	150.95	.00	19.	1140.	.00	12.07	.00
8.35	149.22	.00	16.	437.	.00	12.10	.00

*** NORMAL END OF HEC-1 ***

NOTE: A DATUM SHIFT IN THE POND ELEVATION OCCURRED, WHICH REQUIRES THE ELEVATIONS IN THE COMPUTATIONS TO BE REDUCED BY 3 FEET. THE SHAPE OF THE POND HAS BEEN MAINTAINED AND THE STAGE STORAGE CURVE HAS BEEN UPDATED.

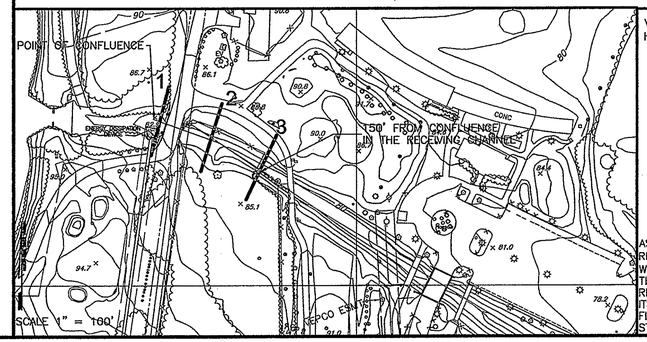
STAGE STORAGE CURVE FOR PROPOSED POND 2



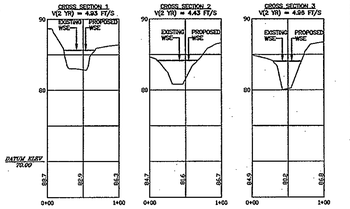
STAGE VS. STORAGE USING CONIC METHOD

PROJECT:	Hilltop Village Center
ENGINEER / DATE:	GLC / 1-26-08

ELEVATION (FEET)	AREA (ACRES)	INCREMENTAL VOLUME (ACRE-FEET)	TOTAL VOLUME (ACRE-FEET)
125	0.07		0.0000
127	0.16	0.2239	0.2239
129	0.38	0.5244	0.7483
131	0.48	0.8581	1.6063
133	0.57	1.0487	2.6550
135	0.67	1.2387	3.8937
137	0.76	1.4291	5.3227
139	0.98	1.7353	7.0581
141	1.22	2.1956	9.2537
143	1.34	2.5591	11.8128
145	1.47	2.8090	14.6218
147	1.61	3.0789	17.7007
149	1.75	3.3590	21.0597
151	1.9	3.6490	24.7087



V: SCALE 1" = 10'
H: SCALE 1" = 100'



AS SHOWN ON THE OUTFALL NARRATIVE SHEET, THE POINT OF CONFLUENCE REPRESENTS THE POINT AT WHICH POND 2 DRAINAGE AREA (65.29 AC) IS COMBINED WITH A DRAINAGE AREA GREATER THAN 90% (176.71 AC). IT IS OF THE OPINION OF THE ENGINEER THAT THE OUTFALL IS ADEQUATE DUE TO THE FACT THAT THE RECEIVING CHANNEL HAS CAPACITY TO CONVEY THE 10 YEAR STORM FLOW WITHIN ITS BANKS AT NON-EROSIVE VELOCITIES FOR THE RIP-RAP LINED CHANNEL. THE FLOW VALUES WERE COMPUTED IN THE HEC MODEL ABOVE. THE CHANNEL IS STABLE AND HEAVILY VEGETATED AS WELL AS HEAVILY COVERED IN RIP-RAP

Dewberry

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HILLTOP CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

GENERALIZED DEVELOPMENT PLAN / SPECIAL EXCEPTION AMENDMENT

LEE DISTRICT
FAIRFAX COUNTY, VIRGINIA

SEAL

COMMONWEALTH OF VIRGINIA
TIMOTHY CHARLES CULLETON
Lic. No. 20112
12.16.08
PROFESSIONAL ENGINEER

KEY PLAN

SCALE
Application No. SEA 78-L-074-6 Staff C. Lewis
APPROVED SE / SP PLAN
SEE DEV. CONDS DATED 3.9.09
Date of (BOS) (BZA) approval 3.9.09
Sheet 7 of 7

No.	DATE	BY	Description
3	12.16.08	DMC	No Change-This Sheet
2	12.02.08	DMC	Outfall X-Sect
1	10.17.08		No Change

REVISIONS

DRAWN BY ARW
APPROVED BY
CHECKED BY LM
DATE February 12, 2008

TITLE

Hilltop Construction and Demolition Debris Landfill

GDP / SEA
Stormwater Management

PROJECT NO.

7

SHEET NO. 7 OF 7

M-10694