EROSION & SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
The purpose of this plan is to facilitate the construction of a 6" Sanitary Sewer Forcemain, which conveys raw sewage to a new Wastewater Treatment Plant. The new treatment plant includes a laboratory building and effluent pump station. The effluent pump station will pump treated effluent through multiple 1-1/2" low pressure forcemains to a system of mass drainfields. This entire sytem is being created to provide sewage treatment and disposal for Westlake Village, a residential and commercial development which is situated adjacent to Hwy. 122, approximately 1 mile west of Westlake Corner, and adjacent to the Booker T. Washington National Monument, in Franklin County, Virginia.

EXISTING SITE CONDITIONS
The existing site is covered with trees, shrubs, and grassy vegetation.

ADJACENT AREAS
Rural farm land.
CRITICAL EROSION AREAS

UTILIZED STRUCTURAL AND VEGETATIVE MEASURES
1. SILT FENCE (SECTION 3.05)
Temporary silt fence shall be installed as indicated on the site plan.

2. TEMPORARY SEEDING (SECTION 3.31)
Temporary seeding will be placed on all disturbed areas that will not be brought to final grade within one year or less. Temporary seeding will aid in the reduction of dust and sediment. Temporary seeding will be annual ryegrass (50 lbs./ac), Feb. 16 - April 30, German millet (60 lbs./ac), May 1 - Aug. 31.

3. PERMANENT SEEDING (SECTION 3.32)
All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Erosion control blankets will be installed over fill slopes which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching.

4. MULCHING (SECTION 3.35)
Mulch shall be used over all seeded areas and shall be applied in accordance with standard and specification 3.35 of the Virginia Erosion and Sediment Control Handbook, latest edition.

GENERAL NOTES

1. All vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards of and specifications of the Virginia Erosion and Sediment Control Handbook, latest edition, and Virginia regulations.

2. The plan approving authority must be notified one week prior to the preconstruction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.

3. All erosion and sediment control measures are to be placed prior to or as the first step in clearing.

4. A copy of the approved erosion and sediment control plans shall be maintained on site at all times.

5. The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.

6. All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.

7. The contractor shall inspect all erosion and sediment control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS

Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade has been reached on any portion of the site. Temporary soil stabilization shall be applied within seven (7) days to denuded areas that may be at final grade but will remain dormant (undisturbed) for longer than thirty (30) days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one (1) year.

During construction of the project, soil stockpiles shall be stabilized or protected with sediment trapping measures. The contractor is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site.

A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that, in the opinion of the local program administrator or agent, is uniform, mature enough to survive and will inhibit erosion.

Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in the land disturbing activity and shall be made functional before upslope land disturbances occurs.

Stabilization measures shall be applied to earthen structures such as dams, dikes, and diversions immediately after installation.

Cut and fill slopes shall be constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one (1) year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Before newly constructed stormwater conveyance channels are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

When work in a live watercourse is preformed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary stream crossing constructed of nonerodible material shall be provided. All applicable federal, state and local regulations pertaining to working in or crossing live watercourses shall be met.

The bed and banks of any watercourse shall be stabilized immediately after work in the watercourse is completed.

Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
A. No more than 500 linear feet of trench may be opened at one time.
B. Excavated material shall be placed on the uphill side of trenches.
C. Effluent from dewatering operations shall be filtered or passed thru an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
E. Applicable safety regulations shall be complied with.
D. Restabilization shall be accomplished within these regulations.

Where construction vehicle access routes intersect paved public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a public road surface, the road shall be cleaned thoroughly at the end of the day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.

All erosion and sediment control structures and systems shall be maintained, inspected and repaired as needed to insure continued performance of their intended function. An inspection shall be made following any runoff producing storm event at least once in every two-week period and within 48 hours.

All temporary erosion and sediment control measures shall be removed within thirty (30) days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program administrator. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

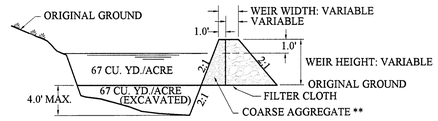
ORGANIC MULCH MATERIALS AND APPLICATION RATES			
Mulches	Rate per acre	Rate per 1000SF	NOTES
Straw or hay	1½ - 2 tons (min. 2 tons for winter cover)	70 - 90 lbs	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber mulch	minimum 1500 lbs.	35 lbs	Do not use as mulch for winter cover or during hot, dry periods.* Apply as slurry.
Corn stalks	4 - 6 tons	185 - 275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. Apply with mulch blower or by hand.
Wood chips	4 - 6 tons	185 - 275 lbs.	Free of coarse matter. Air- dried. Treat with 12 lbs. nitrogen per ton. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
Bark chips or shredded bark	50 - 70 cu.yds.	1 -2 CY	Free of coarse matter. Air- dried. Do not use in fine turf areas. Apply with mulch blower, chip handler, or by hand.
* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs/ac. or 45 lbs./1000 sq.ft.			

NOTES
1. Before mulching, complete required grading and install needed sediment control practices.
2. Lime and fertilizer should be incorporated and surface roughening accomplished as needed. Seed should be applied before mulching except in the following cases:
   a. Where seed is to be applied as part of a hydroseeder slurry containing fiber mulch.
   b. Where seed is to be applied following a straw mulch spread during winter months.
3. Application. Mulch material shall be spread uniformly, by hand or machine. When spreading straw by hand, divide the area to be mulched into approximately 1,000 SF sections and place 70-90 lbs. (1 ½ to 2 bales) of straw in each section to facilitate uniform distribution.
4. Mulch anchoring. Straw mulch must be anchored immediately after spreading to prevent displacement. Other organic mulches listed in table do not require anchoring. The following methods of anchoring straw may be used:
   a. Mulch anchoring tool (often referred to as a krimper or krimper tool). This is a tractor-drawn implement designed to punch mulch into the soil surface. This method provides good erosion control with straw. It is limited to use on slopes no steeper than 3:1 where equipment can operate safely. Machinery shall be operated along the contours.
   b. Fiber mulch. Apply fiber mulch by means of a hydroseeder at a rate of 500-750 lbs./ acre over top of straw mulch or hay. It has an added benefit of providing additional mulch to the newly seeded area.
   c. Liquid mulch binders. Application of liquid mulch binders and tackifiers should be heaviest at the edges of areas and at crests of ridges and banks, to prevent displacement . The remainder of the area should have binder applied uniformly. Binder may be applied after mulch is spread or may be sprayed into mulch as it is being blown onto the soil.
5. Mulch nettings. Lightweight plastic, cotton, or paper nets may be stapled over the mulch according to manufacturer's recommendations.
6. Peg and twine. Because it is labor-intensive, this method is feasible only in small areas where other methods cannot be used. Drive 8-10 inch wooden pegs to within 3 inches of the soil surface, every 4 feet in all directions. Stakes may be driven before or after straw is spread. Secure mulch by stretching twine between pegs in a criss-cross-within-a square. Turn twine 2 or more times around each peg.
7. Chemical mulches, synthetic binders, and asphalt binders may be used in situations as described in VESCH.
8. Maintenance. All mulches and soil coverings should be inspected periodically (particularly after rainstorms) to check for erosion. Where erosion is observed in mulched areas, additional mulch should be applied. Nets and mats should be inspected after rainstorms for dislocation or failure. If washouts or breakage occur, re-install netting or matting as necessary after repairing damage to the slope or ditch. Inspections should take place up until grasses are firmly established. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface; repair as needed.

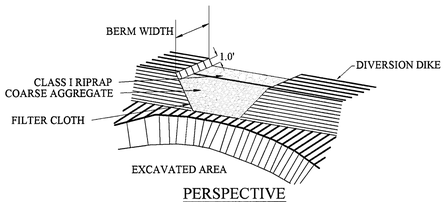
ACS DESIGN MU - MULCHING
This information is based on and modeled after Standard & Specification 3.35 of the Virginia Erosion & Sediment Control Handbook, Rev. 2003

CHEMICAL MULCHES

Chemical mulches* may be used alone only in the following situations:
A. Where no other mulching material is available
B. In conjunction with temporary seeding during the times when mulch is not required for that practice.
C. From March 15 to May 1 and August 15 to September 30, provided that they are used on areas with slopes no steeper than 4:1, which have been roughened in accordance with surface roughening, Standard and Specification 3.29 of the Virginia Erosion and Sediment Control Handbook, latest edition. If rill erosion occurs, another mulch material shall be applied immediately.
*Note: chemical mulches may be used to bind other mulches or with fiber mulch in a hydroseeded slurry at any time. Manufacturer's recommendations for application of chemical mulches shall be followed.



CROSS-SECTION



PERSPECTIVE

NOTES:
1. Basin size is surface area of sediment trap at base of stone outlet.
2. Side slopes of excavated areas should be no steeper than 1:1.
3. Side slopes of embankment shall be 2:1 or flatter.
4. ** Coarse aggregate shall BE VDOT #3,#357 OR #5
5. Trap will probably be kept in service permanently.

TEMPORARY SEDIMENT TRAP DATA								
ST-#	DRAINAGE AREA (Ac.)	STORAGE (CY) REQ'D.	STORAGE (CY) ON HAND	WEIR LENGTH	WEIR HEIGHT	BERM HEIGHT	BASIN WIDTH	BASIN LENGTH
	3	67 CY (wet) 67 CY (dry)	67.8CY(wet) 83.0CY(dry)	18'	1.5'	1'	36'	66'

ACS DESIGN TEMPORARY SEDIMENT TRAP

SEED MIX SELECTION	
SEEDING DATE	SEED MIX
1 SEPTEMBER TO 15 FEBRUARY	ANNUAL RYEGRASS @ 25 LB-50 LB / ACRE CEREAL (WINTER) RYE @ 25 LB-50 LB / ACRE
16 FEBRUARY TO 30 APRIL	ANNUAL RYEGRASS @ 60 LB-100 LB / ACRE
MAY 1 TO 31 AUGUST	ANNUAL RYEGRASS @ 60 LB-100 LB / ACRE
1 SEPTEMBER TO 15 OCTOBER	K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF

LIME:
pH below 4.2: 3 tons per acre of agricultural limestone
pH 4.2 to 5.2: 2 tons per acre of agricultural limestone
pH 5.2 to 6: 1 ton per acre of agricultural limestone

FERTILIZER:
10-20-10 @ 600 lb / acre

MULCH:
Shall be used over all seeded areas and shall be applied in accordance with Standard and Specification 3.35 of the Virginia Erosion and Sediment Control Handbook, latest edition.

SOIL CONDITIONING:
Incorporation of lime and fertilizer, selection of certified seed, mulching, maintenance of new seedlings, and reseeding shall be in accordance with specifications contained within the Virginia Erosion and Sediment Control Handbook, latest edition.

Additional seeding to be performed as required by the inspector.

SEED APPLICATION:
Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder on a firm, friable seedbed. Maximum seeding depth shall be 1/4 inch.

ACS DESIGN TS - TEMPORARY SEEDING
This information is based on and modeled after Standard & Specification 3.31 of the Virginia Erosion & Sediment Control Handbook, Rev. 2003

TYPE A SEED MIX SELECTION	
SEEDING DATE	SEED MIX
15 OCTOBER TO 1 FEBRUARY	KY-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 SF
1 FEBRUARY TO 1 JUNE	KY-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER	KY-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF
1 SEPTEMBER TO 15 OCTOBER	KY-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF

TYPE B (SLOPES 3:1 OR STEEPER) SEED MIX SELECTION	
SEEDING DATE	SEED MIX
15 MARCH TO 1 MAY	CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
15 AUGUST TO 1 OCTOBER	CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF

LIME:
140 lb / 1000 sf pulverized agricultural limestone

FERTILIZER:
5-20-10 @ 25 lb / 1000 sf
38-0-0 @ 7 lb / 1000 sf

MULCH:
Shall be used over all seeded areas and shall be applied in accordance with Standard and Specification 3.35 of the Virginia Erosion and Sediment Control Handbook, latest edition.

SOIL CONDITIONING:
Incorporation of lime and fertilizer, selection of certified seed, mulching, maintenance of new seedlings, and reseeding shall be in accordance with specifications contained within the Virginia Soil Erosion and Sediment Control Handbook, latest edition.

Additional seeding to be performed as required by the inspector.

SEED APPLICATION:
Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder on a firm, friable, seedbed. Maximum seeding depth shall be 1/4 inch.

ACS DESIGN PS - PERMANENT SEEDING
This information is based on and modeled after Standard & Specification 3.32 of the Virginia Erosion & Sediment Control Handbook, Rev. 2003

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WESTLAKE VILLAGE
CENTRAL SEWER SYSTEM
FRANKLIN COUNTY, VIRGINIA

DRAWN BY:	AH
DESIGNED BY:	DME
CHECKED BY:	DME
DATE:	15 JUNE 2007
JOB NUMBER:	06145

REVISIONS:
No. 1
No. 2
No. 3
No. 4

SHEET NO.:
C2.1

EROSION & SEDIMENT CONTROL DETAILS