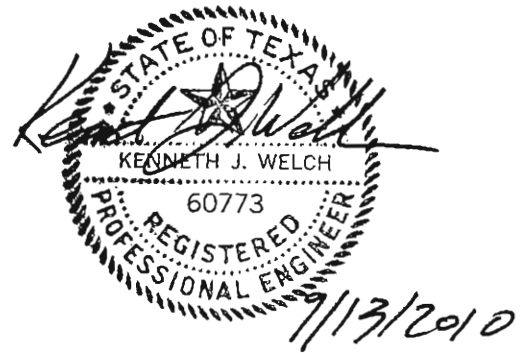


**ATASCOCITA RECYCLING AND DISPOSAL FACILITY**

**ATTACHMENT C1  
APPENDIX C1-F**

**INTERMEDIATE COVER  
EROSION AND SEDIMENTATION CONTROL PLAN**



Includes pages C1-F-1 through C1-F-10

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9/13/2010

## NARRATIVE

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30 TAC §330.305(d)

This appendix presents temporary erosion and sediment control structures for the intermediate cover phase of landfill development. Temporary means the time between the construction of intermediate cover and the construction of final cover or the placement of additional waste, as the case may be. Intermediate top slope surfaces and external side slopes, for the purposes of compliance with 30 TAC §330.305(d) are:

- a) above grade slopes that directly drain to the site perimeter stormwater management system (i.e., areas where the stormwater directly flows to a perimeter channel or detention pond)
- b) have received intermediate cover
- c) have either reached their permitted elevation, or will subsequently remain inactive for longer than 180 days

Slopes that drain to ongoing waste placement, pre-excavated areas, areas that have received only daily cover, or areas under construction that have not received waste are not covered under this appendix.

## EXISTING CONDITIONS SUMMARY

Drawing C1-F-1 shows the area in Phase 3 where final cover has been constructed. The remaining area in Phases 1 through 4 has received daily or intermediate cover. Phase 5 is currently undeveloped and excavation is in progress. Phase 6 is the proposed expansion area. No development has occurred in Phase 6.

Fill operations are ongoing in Phases 1 through 4. Areas where fill operations are currently ongoing will receive daily cover. Areas that have been inactive longer than 180 days have received intermediate cover. Temporary erosion control measures may need to be installed on existing intermediate cover areas to control erosion and minimize soil loss if these areas have less than 60 percent vegetative coverage. Intermediate cover areas that have existing well established vegetation (at least 60 percent coverage) will not be disturbed to construct temporary erosion control features.

Areas that reach their permitted elevation or plan to remain inactive for longer than 180 days will receive intermediate cover. As areas receive intermediate cover, temporary erosion control measures will be constructed. Temporary erosion and sediment control features will be placed within 180 days from when the intermediate cover is constructed. All intermediate cover areas will be managed to control erosion and achieve predicted soil loss of less than 50 tons per acre per year.

Stormwater runoff from Phases 1 through 4 currently drains to the perimeter channels, west ditch, west tributary, east ditch, and east tributary. The west ditch and west tributary convey stormwater runoff to the west pond. The east ditch and east tributary convey stormwater runoff to the east pond. Best Management Practices (BMPs) will continue to be employed to repair and correct erosion damage, settlement buildup, and damage to stormwater control structures.

The Atascocita RDF has a stormwater pollution prevention plan (SWPPP) prepared consistent with the TPDES general permit. The SWPPP is up to date and maintained in the site operating record. The SWPPP provides detailed BMPs including training and implementation strategies to reduce the potential of pollutants in stormwater discharge. This plan also includes detailed stormwater and erosion control measures for current landfill construction activities.

## **EROSION AND SEDIMENT CONTROL LANDFILL COVER PHASES**

The purpose of this section is to define the landfill cover phases and where they are addressed throughout the Atascocita RDF permit:

Daily Cover – Daily cover is defined in §330.165(a). Daily cover consists of 6 inches of well compacted earthen material not previously mixed with garbage, rubbish, or other solid waste applied at the end of each operating day. The placement and erosion control practices for daily cover areas are defined in Part IV – Site Operating Plan.

Intermediate Cover – Intermediate cover is defined in §330.165(c). Intermediate cover consists of at least 12 inches of suitable earthen material and is graded and maintained to prevent erosion and ponding of water. The placement requirements and erosion control practices for intermediate cover areas are defined in this appendix.

Final Cover – Final cover is defined in Subchapter K. The placement and erosion control practices for final cover areas are defined in Appendix C1-E. Final cover at the Atascocita RDF will be managed as provided for in the closure and postclosure plan required by 30 TAC 330 Subchapter K, Closure and Post-closure.

## **BEST MANAGEMENT PRACTICES**

Vegetation and temporary erosion control structures provide the most effective means to reduce the amount of soil loss during operation of the landfill. BMPs utilized for erosion and sediment control may be broadly categorized as nonstructural and structural controls. Nonstructural controls addressing erosion include the following:

- Minimization of the disruption of the natural features, drainage, topography, and vegetative cover features
- Phased development to minimize the area of bare soil exposed at any given time
- Plans to disturb only the smallest area necessary to perform current activities

- Plans to confine sediment to the construction area during the construction phase
- Scheduling of construction activities during the time of year with the least erosion potential, when practicable
- Specific plans for the stabilization of exposed surfaces in a timely manner

Structural controls are preventative and also mitigative since they control erosion and sediment movement. Structural controls addressing erosion include the following:

- **Vegetative and Non-Vegetative Stabilization.** A soil stabilization and vegetation schedule is provided in this appendix.
- **Check Dams.** Check dams may be constructed using gravel, rock, gabions, compost socks, or sand bags to reduce flow velocity and therefore erosion in a perimeter channel or detention pond.
- **Filter Berms.** Filter berms may be constructed of mulch, woodchips, brush, compost, shredded woodwaste, or synthetic filter materials. Mesh socks may be filled with compost, mulch, woodchips, brush, or shredded woodwaste. Filter berms or filled mesh socks may be installed at the bottom of slopes, throughout the perimeter drainage system, and on side slopes. The maximum drainage area to the filter berm or filled mesh sock will not exceed 2 acres. Specifications for the filter berms are provided on Drawing C1-F-3, Detail TD11.
- **Baled Hay.** Hay bales, straw bales, or baled hay shall be a minimum of 30 inches in length, and be composed entirely of vegetable matter. Hay bales shall be embedded in the soil a minimum of 4 inches and where possible one-half the height of the hay bale.
- **Sediment Traps.** Sediment traps are small excavated areas that function as a sediment basin. Sediment traps allow for the settling of suspended sediment in stormwater runoff. Sediment traps may be constructed in perimeter channels, temporary internal channels, and at entrances to detention ponds. The maximum drainage area contributing to a sediment trap will not exceed 10 acres.
- **Temporary Sediment Control Fence or Silt Fence.** Silt fences or fabric filter fences may be used where there is sheet flow. The maximum drainage area contributing flow to the silt fence will not exceed the manufacturer's specification but in no case be greater than 0.5 acre per 100 feet of fence. To ensure sheet flow, a gravel collar or level spreader may be used upslope of the silt fence.
- **Swales.** These structures will be constructed of a material with the top 6 inches capable of sustaining native plant growth. Rolled erosion control mats or blankets made from natural or synthetic fiber, grass, or compost/mulch/straw blankets may be used as erosion protection along the flowline, if necessary. These structures direct the flow to the drainage system. The use of these structures is to decrease down slope velocities of runoff that could cause erosion on the intermediate cover slopes.

- **Letdown Chutes.** Letdown chutes are bermed conveyance structures constructed on the intermediate cover slopes. Flow will be directed to the letdown chutes via swales, then conveyed to the perimeter drainage system. The letdown chutes will be lined with an FML geomembrane, turf reinforcement mats, blankets, riprap, concrete, gabions, crushed concrete, or stone.

Erosion will be controlled by vegetation on top slopes, side slopes, and in drainage conveyance structures with flow velocities less than or equal to 5 fps. For drainage conveyance structures with flow velocities greater than 5 fps, turf reinforcement, rock riprap, concrete, gabions, or other appropriate materials will be used for surface reinforcement.

During site development, both structural and non-structural BMPs will be employed to control erosion. Intermediate cover erosion and sediment control structures are shown on Drawings C1-F-1 through C1-F-4.

The potential for wind erosion of the intermediate cover surface will be mitigated through the placement of the temporary intermediate cover erosion control measures and establishment of the vegetative cover. Temporary measures to be used if wind erosion is observed include surface roughening, surface wetting, application of tackifiers, placement of woodchips or mulch, or hydromulching the intermediate cover surface.

## **SOIL STABILIZATION AND VEGETATION SCHEDULE**

The soil stabilization and vegetation schedule is as follows:

- Areas that will remain inactive for periods greater than 180 days will receive intermediate cover.
- Intermediate cover on slopes will be stabilized by tracking into the slope. Soil stabilization can be enhanced by mulching, the addition of soil tackifiers, soil treatment, or any combination of these measures. The intermediate cover will be graded to provide positive drainage.
- Temporary erosion control structures will be installed within 180 days from when intermediate cover is constructed.
- The intermediate cover area will be seeded or sodded as soon as practical, following placement of intermediate cover and will be documented in the site operating record. All intermediate cover areas will be managed to control erosion and achieve a predicted soil loss of less than 50 tons per acre per year. A 60 percent vegetative cover will be established over the intermediate cover areas within 180 days from intermediate cover construction unless prevented by climatic events (e.g., drought, rainfall, etc.). Additional temporary erosion control measures will be implemented during these events to facilitate the establishment of vegetative cover.

- Mulch, woodchips, or compost may be used as a layer placed over the intermediate cover to protect the exposed soil surface from erosive forces and conserve soil moisture until vegetation can be established. The mulch, woodchips, or compost will be used to stabilize recently graded or seeded areas. The mulch, woodchips, or compost will be spread evenly over a recently seeded area and tracked into the surface to protect the soil from erosion and moisture loss, if required to promote the establishment of vegetation. These materials are not required for the establishment of vegetation on the intermediate cover; however, they may be used if the Atascocita RDF determines they are needed to promote vegetative growth or to provide additional erosional stability to the intermediate cover surface. These materials will vary in thickness but will not be placed to a thickness that inhibits vegetative growth.
- The intermediate cover and temporary erosion control structures will be maintained as detailed in the Stormwater System Maintenance Plan below.
- Final cover will be constructed as the site develops. Temporary erosion control features will be removed as permanent erosion control structures are constructed.

#### **STORMWATER SYSTEM MAINTENANCE PLAN**

The Atascocita RDF will restore and repair temporary stormwater systems such as channels, drainage swales, chutes, and flood control structures in the event of wash-out or failure. In addition, the BMPs discussed in this appendix will also be replaced or repaired in the event of failure. Excessive sediment will be removed, as needed, so that the drainage structures function as designed. Site inspections by landfill personnel will be performed weekly or within 48 hours of a rainfall event of 0.5 inches or more.

The following items will be evaluated during the inspections:

- Erosion of intermediate cover areas, perimeter ditches, temporary chutes, swales, detention ponds, berms, and other drainage features
- Settlement of intermediate cover areas, final cover areas, perimeter ditches, chutes, swales, and other drainage features
- Silt and sediment build-up in perimeter ditches, chutes, swales, and detention ponds
- Presence of ponded water on intermediate cover or behind temporary erosion control structures
- Obstructions in drainage features
- Presence of erosion or sediment discharge at offsite stormwater discharge locations
- Temporary erosion and sediment control features

Maintenance activities will be performed to correct damaged or deficient items noted during the site inspections. These activities will be performed as soon as possible after the inspection. The time frame for correction of damaged or deficient items will vary based on weather, ground conditions, and other site-specific conditions.

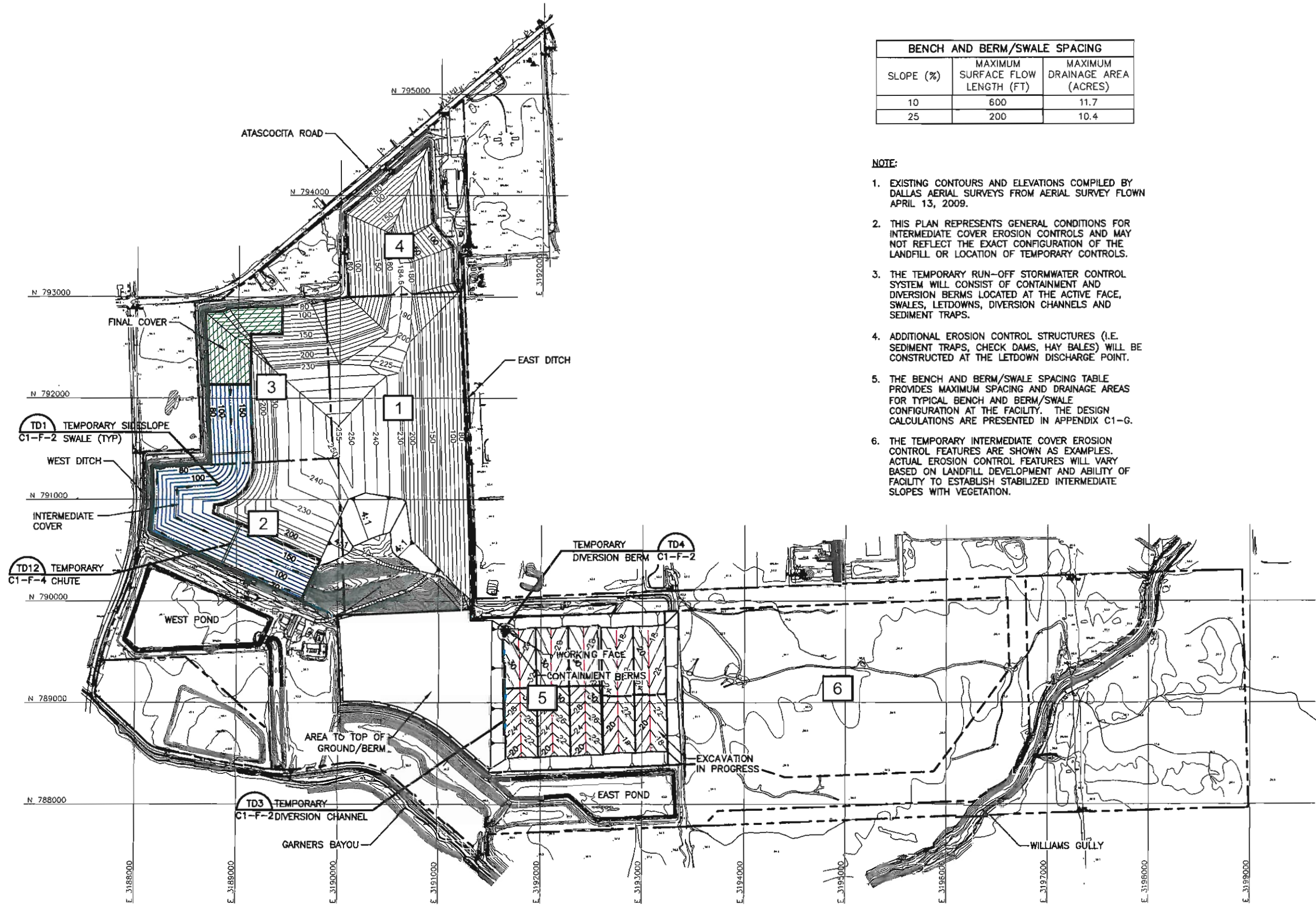
Maintenance activities will consist of the following, as needed:

- Placement of additional temporary or permanent vegetation
- Placement, grading, and stabilization of additional soils in eroded areas or in areas that have settled
- Replacement of riprap or other structural lining
- Removal of obstructions from drainage features
- Removal of silt and sediment build-up from the temporary erosion control structures
- Removal of ponded water on the intermediate cover or behind temporary erosion control structures
- Repairs to erosion and sedimentation controls
- Installation of additional erosion and sedimentation controls

Documentation and training requirements are discussed below:

- Site inspections by landfill personnel will be performed weekly or within 48 hours of a rainfall event of 0.5 inches or more.
- Documentation of the inspection will be included in the site operating record.
- Documentation of maintenance activities that were performed to correct damaged or deficient items noted during the site inspections will be included in the site operating record.
- Landfill personnel will be trained to perform inspections, install and maintain temporary erosion control structures.

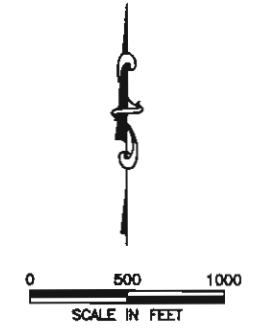




BENCH AND BERM/SWALE SPACING		
SLOPE (%)	MAXIMUM SURFACE FLOW LENGTH (FT)	MAXIMUM DRAINAGE AREA (ACRES)
10	600	11.7
25	200	10.4

**NOTE:**

- EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
- THIS PLAN REPRESENTS GENERAL CONDITIONS FOR INTERMEDIATE COVER EROSION CONTROLS AND MAY NOT REFLECT THE EXACT CONFIGURATION OF THE LANDFILL OR LOCATION OF TEMPORARY CONTROLS.
- THE TEMPORARY RUN-OFF STORMWATER CONTROL SYSTEM WILL CONSIST OF CONTAINMENT AND DIVERSION BERMS LOCATED AT THE ACTIVE FACE, SWALES, LETDOWNS, DIVERSION CHANNELS AND SEDIMENT TRAPS.
- ADDITIONAL EROSION CONTROL STRUCTURES (I.E. SEDIMENT TRAPS, CHECK DAMS, HAY BALES) WILL BE CONSTRUCTED AT THE LETDOWN DISCHARGE POINT.
- THE BENCH AND BERM/SWALE SPACING TABLE PROVIDES MAXIMUM SPACING AND DRAINAGE AREAS FOR TYPICAL BENCH AND BERM/SWALE CONFIGURATION AT THE FACILITY. THE DESIGN CALCULATIONS ARE PRESENTED IN APPENDIX C1-G.
- THE TEMPORARY INTERMEDIATE COVER EROSION CONTROL FEATURES ARE SHOWN AS EXAMPLES. ACTUAL EROSION CONTROL FEATURES WILL VARY BASED ON LANDFILL DEVELOPMENT AND ABILITY OF FACILITY TO ESTABLISH STABILIZED INTERMEDIATE SLOPES WITH VEGETATION.



**LEGEND**

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- ~ 80 ~ EXISTING CONTOUR
- ~ 100 ~ PROPOSED CONTOUR
- N 6753000 STATE PLAN GRID
- 1 PHASE DESIGNATION
- ▨ FINAL COVER IN-PLACE



**INTERMEDIATE COVER EROSION CONTROL FEATURES**  
**WASTE MANAGEMENT OF TEXAS, INC.**  
**ATASCOCITA RECYCLING AND DISPOSAL FACILITY**  
**MAJOR PERMIT AMENDMENT**

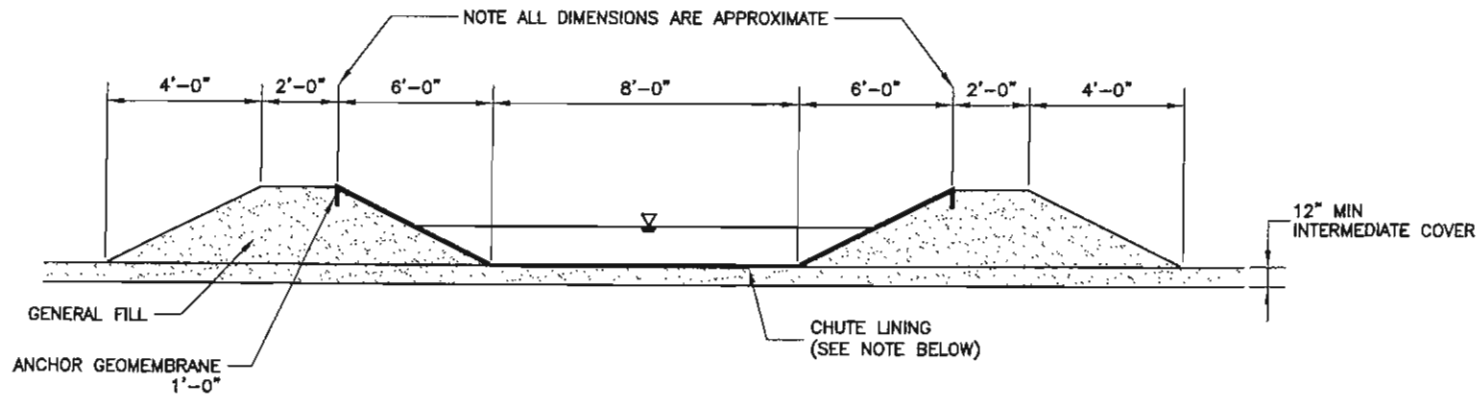


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C1-F-7

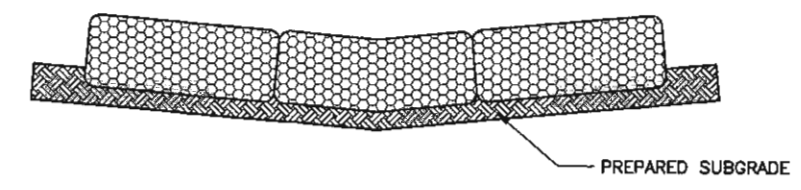
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REVISIONS						TBPE FIRM NO. F-256		TBPG FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	DSN. KJW	DATE : 09/10	DRAWING
							DWN. SRC	SCALE : GRAPHIC	C1-F-1
							CHK. KJW	DWG : C1_F_1.dwg	



**TEMPORARY CHUTE LETDOWN** (TD12)  
NTS C1-F-4

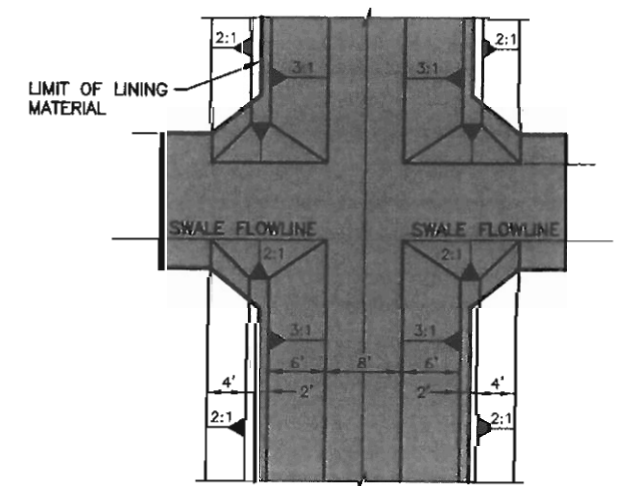
NOTE: CHUTE LINING WILL CONSIST OF ONE OF THE FOLLOWING: TURF REINFORCEMENT, SACRIFICIAL GEOMEMBRANE, GABIONS, ROCK RIPRAP, CONCRETE, CRUSHED CONCRETE, OR STONE.



**CHECK DAM** (TD14)  
NTS C1-F-4

**CHECK DAM NOTES:**

1. MAY BE CONSTRUCTED USING GRAVEL, ROCK, GABIONS, COMPOST SOCKS, OR SAND BAGS.
2. PLACED ON PREPARED SUBGRADE OR BEDDING MATERIAL ALONG THE CONTOUR AT 0% GRADE OR AS NEAR AS POSSIBLE.
3. TOP WIDTH OF TWO FEET MINIMUM.
4. SIDESLOPES 2H:1V OR FLATTER.
5. MAY BE USED WHEN CONTRIBUTING DRAINAGE AREAS ARE LESS THAN 10 ACRES. MULTIPLE CHECK DAMS MAY BE INSTALLED IF DRAINAGE AREAS ARE GREATER THAN 10 ACRES.
6. CHECK DAMS SHOULD BE USED WHEN THE VOLUME OF RUNOFF IS TOO GREAT FOR OTHER EROSION CONTROL FEATURES (i.e. SILT FENCES, HAY BALES).



**SWALE/CHUTE CONFLUENCE** (TD13)  
NTS C1-F-4

TEMPORARY EROSION CONTROL STRUCTURES	
1.	TEMPORARY EROSION CONTROL STRUCTURE DETAILS DEPICT VARIOUS TYPES OF EROSION CONTROL FEATURES FOR CURRENT AND FUTURE DEVELOPMENT.
2.	ALL TEMPORARY EROSION CONTROL STRUCTURES SHOWN MAY NOT BE CONSTRUCTED DEPENDING ON SITE CONDITIONS.
3.	LANDFILL WILL SELECT EROSION CONTROL DETAILS TO BE USED FOR SITE SPECIFIC CONDITIONS.
4.	ACTUAL DIMENSIONS OF TEMPORARY EROSION CONTROL STRUCTURES MAY VARY BASED ON SITE CONDITIONS.



**TEMPORARY EROSION CONTROL STRUCTURES**  
WASTE MANAGEMENT OF TEXAS, INC.  
ATASCOCITA RECYCLING AND DISPOSAL FACILITY  
MAJOR PERMIT AMENDMENT



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C1-F-10

REVISIONS				TBPB FIRM NO. F-256		TBPB FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
				DSN. KJW	DATE : 09/10	ATTACHMENT	
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