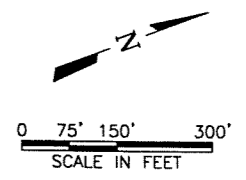
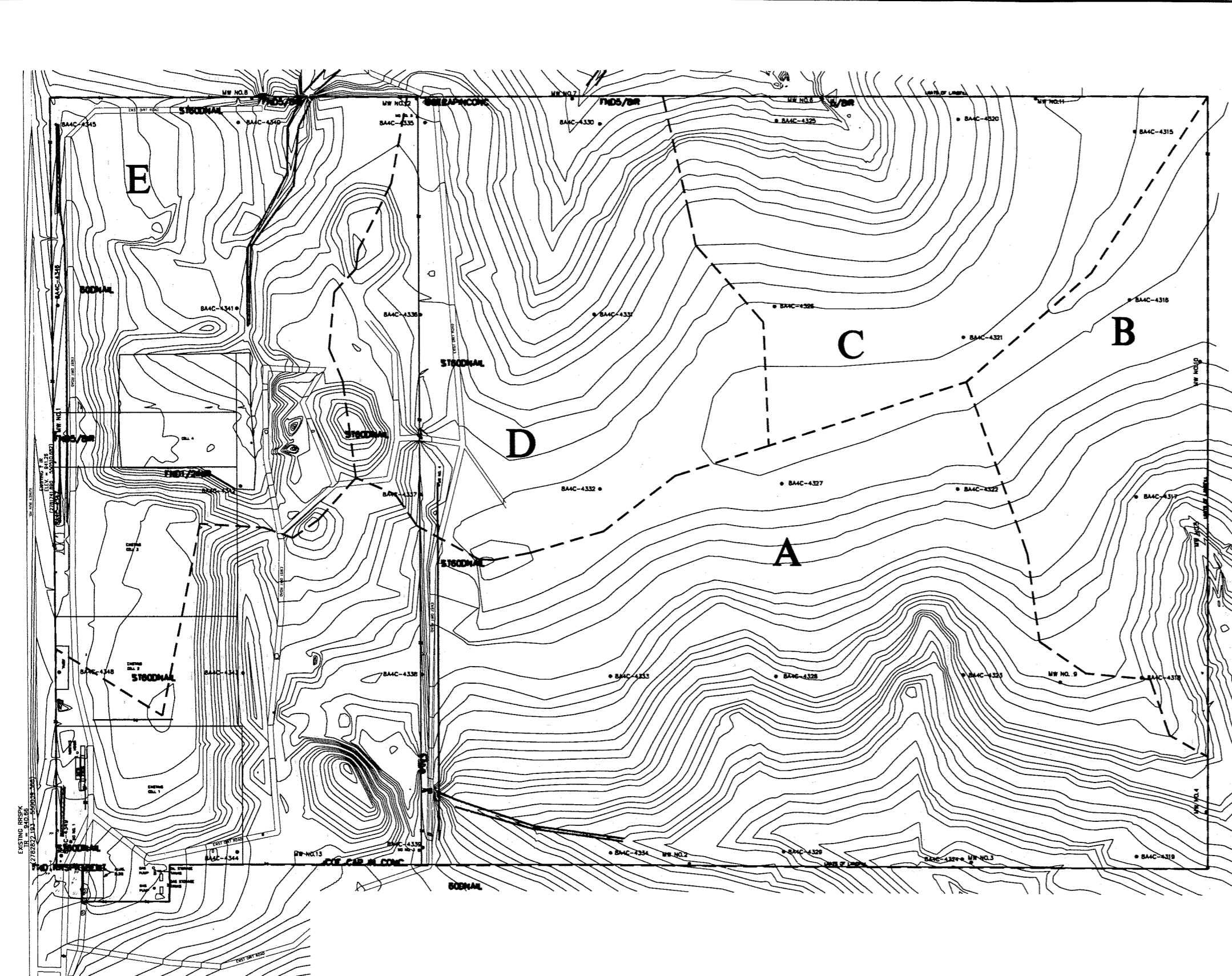


C:\Users\james.l... \Public\Registration-Permit\CV-SLW-PL-EXCOND.DWG LAYOUT: Layout1
 1. P.M. L.S.: 1.00 P.S.I.S.: 1.00
 2. REFERENCE: 11



LEGEND

- PERMIT BOUNDARY
- BUFFER AREA
- CLOSED AREA WITH FINAL COVER
- EXISTING DRAINAGE AREA BOUNDARY
- A** DRAINAGE AREA

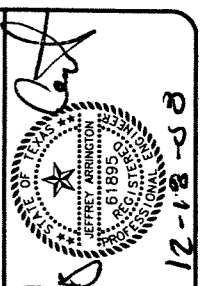
EXISTING DRAINAGE CALCULATIONS

AREA ID	AREA (ACRES)	RUNOFF COEFFICIENT, C _c	T _c	I ₂₅ (in/hr)	Q ₂₅ (cfs)	VOLUME RUNOFF (ac-ft)
A	65.18	0.28	21.50	6.40	114.68	29.19
B	15.37	0.28	29.38	5.34	22.58	6.72
C	20.27	0.28	23.45	6.09	33.97	8.88
D	26.15	0.28	22.65	6.22	44.70	11.55
E	26.04	0.28	49.63	3.83	27.46	11.48

NOTES:

1. DRAINAGE QUANTITIES WERE DETERMINED BASED ON A 25-YEAR STORM EVENT.
2. NO OFFSITE DRAINAGE ENTERS THE PERMITTED AREA.
3. RUN-OFF CALCULATIONS ARE SHOWN IN ATTACHMENT 6 OF THE PERMIT DOCUMENTS.

PERMIT DRAWING
NOT FOR CONSTRUCTION



Freese and Nichols
 4055 International Plaza, Suite 200
 Fort Worth, Texas 76109-4895
 Phone - (817) 735-7300
 Fax - (817) 735-7491

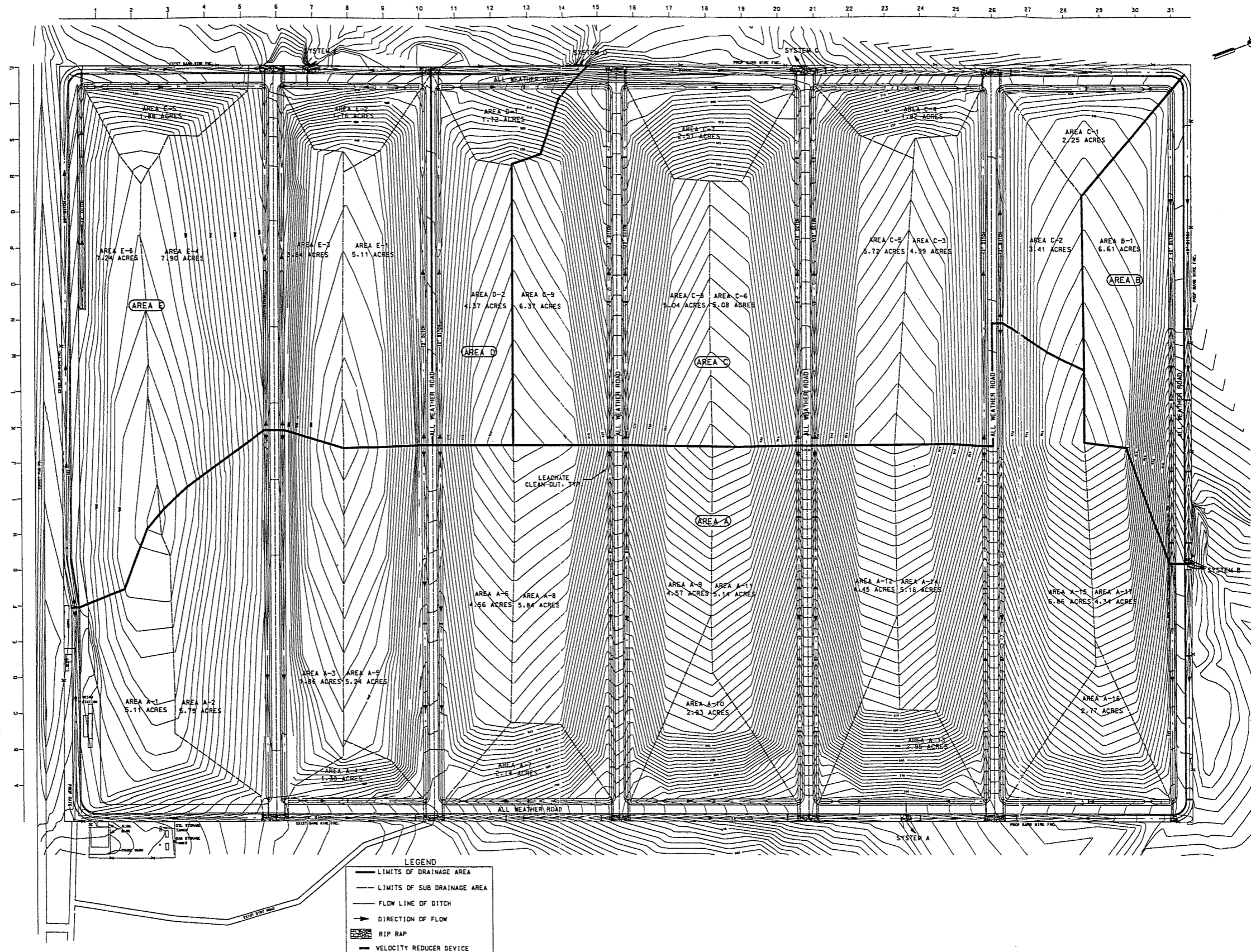
FORT HOOD LANDFILL

CIVIL

EXISTING CONDITIONS

NO. / ISSUE	BY	DATE	PER. JOB NO.	TRN05321
SHEET			DATE	09/10/08
SEQ.			DESIGNED	JRB
			DRAWN	
			CHECKED	JJA
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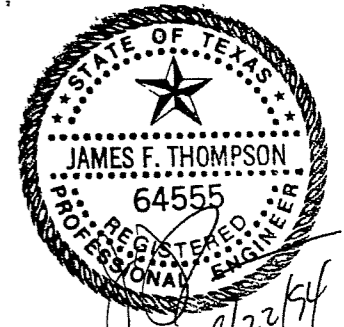
C1



LEGEND

- LIMITS OF DRAINAGE AREA
- LIMITS OF SUB DRAINAGE AREA
- FLOW LINE OF DITCH
- DIRECTION OF FLOW
- ▨ RIP RAP
- VELOCITY REDUCER DEVICE

100 0 100 200
 FEET
 SCALE: 1" = 300'



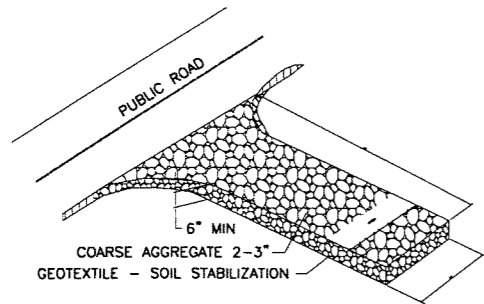
THOMPSON ENGINEERING
 H. Platt Thompson Engineering Company, Inc.
 Consulting Engineers - Surveyors - Environmental Scientists
 2209 Longfield Rd. - Houston, Texas 77060 - (713) 462-8286

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
 CORPS OF ENGINEERS
 FORT WORTH, TEXAS

FORT HOOD
 CORYELL COUNTY, TEXAS
 PERMIT NO. 1866

DRAINAGE AREA MAP

DESIGNED BY: SSA	SYN. D.O. NO.	ACTION	DATE	DESCRIPTION OF REVISION
DRAWN BY: RLN/SSA	SUBMITTED BY:	FORT HOOD		
REVIEWED BY: JFT	CONTR. NO.	DRAWING NUMBER		
	DATED: 09-23-94	SEQUENCE NO.		



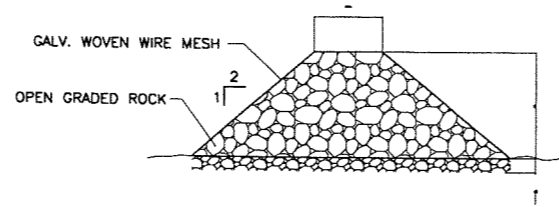
**APPLICABLE AT ALL POINTS OF INGRESS & EGRESS UNTIL SITE IS STABILIZED, FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.

NOTES:

1. GRAVEL PAD TO BE 24'x75' AND 6" THICK MINIMUM.
2. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.
3. ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
4. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
5. ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD MUST BE CLEANED UP IMMEDIATELY.

1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT
NOT TO SCALE

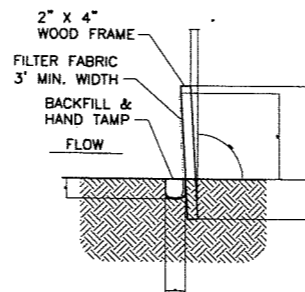
ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVER LAND RUNOFF AND/OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THROUGH RATE OF 60 GPM/FT² OF CROSS SECTIONAL AREA. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.



GENERAL NOTES:

1. THE ROCK FILTER DAM SHALL BE INSPECTED AFTER EACH RAIN EVENT AND SHALL BE RESHAPED OR REPLACED AS NEEDED DURING INSPECTION. REPAIRS SHALL BE MADE FOR WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
2. ADDITIONAL INSPECTION SHALL BE MADE DAILY BY THE CONTRACTOR. WHEN SILT REACHES A DEPTH EQUAL TO 6 INCHES, THE SILT SHALL BE REMOVED AND DISPOSED OF IN A APPROVED SITE AND IN SUCH A MANNER AS TO NOT CREATE A SILTATION PROBLEM.
3. WHEN THE SITE IS COMPLETELY STABILIZED, THE ROCK FILTER DAM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

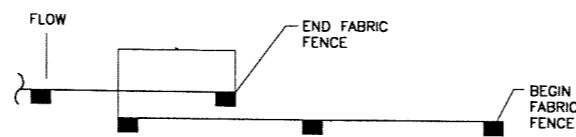
2 ROCK FILTER DAM DETAIL
NOT TO SCALE



SECTION A-A

GENERAL NOTES:

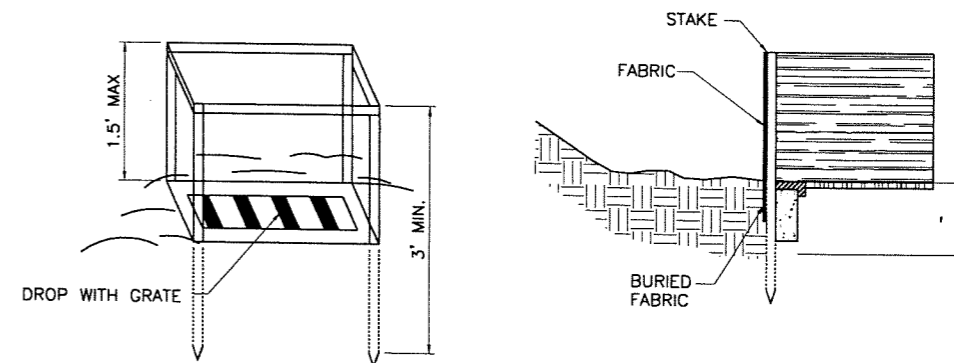
1. THE CONTRACTOR SHALL MAINTAIN THE SILT FENCE UNTIL THE PROJECT IS VEGETATED OR ACCEPTED. FILTER FABRIC SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT IT REDUCES THE EFFECTIVENESS OF THE FABRIC.



TOP VIEW OVERLAP AT FABRIC ENDS
NOT TO SCALE

EROSION CONTROL PLAN

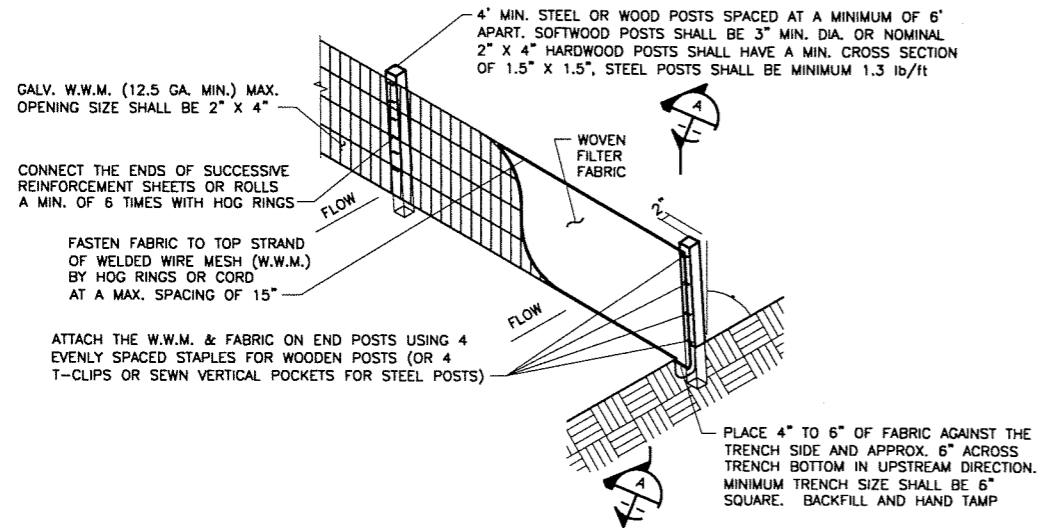
1. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH TCEQ'S TPDES GENERAL PERMIT TXR150000 CONCERNING EROSION AND SEDIMENT CONTROL.
2. THE CONTRACTOR SHALL POST A CONSTRUCTION SITE NOTICE ON SITE IN A LOCATION VISIBLE TO THE PUBLIC 48 HOURS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A COPY OF THE CONSTRUCTION SITE NOTICE.
3. THE INSPECTION AND MAINTENANCE OF THE EROSION PREVENTION MEASURES SHALL BE THE CONTRACTORS RESPONSIBILITY THROUGHOUT ALL PHASES OF CONSTRUCTION.
4. THE EROSION CONTROL MEASURES SHOWN ON THIS SHEET SHALL BE USED BY THE CONTRACTOR AS A GUIDE. THIS PLAN DOES NOT RELIEVE THE CONTRACTOR OF IS RESPONSIBILITIES WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS GOVERNING EROSION AND SEDIMENT CONTROL. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY THE CONTRACTOR IN ORDER TO COMPLY WITH REGULATIONS, AT NO EXTRA.
5. AT COMPLETION OF THE PAVING AND FINAL GRADING, ALL DISTURBED AREAS SHALL BE RE-VEGETATED IN ACCORDANCE WITH THE SPECIFICATIONS AND LANDSCAPING PLANS.
6. SEDIMENT BARRIERS (SILT FENCES, INLET SEDIMENT TRAPS, ETC.) SHALL REMAIN IN PLACE UNTIL RE-VEGETATION HAS BEEN COMPLETED.
7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EROSION CONTROL MEASURES AT NO ADDITIONAL EXPENSE TO THE OWNER.



NOTES:

1. USE 2" X 4" WOOD STAKES (PREFERRED) OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3'.
2. SPACE STAKES EVENLY AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3' APART, AND SECURELY DRIVE THEM INTO THE GROUND, APPROXIMATELY 18" DEEP.
3. FRAME WITH 2"x 4" WOOD STRIPS AROUND THE CREST OF THE OVERFLOW AREA AT A MAXIMUM OF 1.5' ABOVE THE DROP INLET CREST.
4. PLACE THE BOTTOM 12" OF THE FABRIC IN A TRENCH AND BACKFILL THE TRENCH WITH AT LEAST 4" OF CRUSHED STONE OR 12" OF COMPACTED SOIL.
5. FASTEN FABRIC SECURELY TO THE STAKES AND FRAME. JOINTS MUST BE OVERLAPPED TO THE NEXT STAKE.
6. THE TOP OF THE FRAME AND FABRIC MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE FROM THE DROP INLET TO KEEP RUNOFF FROM BYPASSING THE INLET. IT MAY BE NECESSARY TO BUILD A TEMPORARY DIKE ON THE DOWN SLOPE SIDE OF THE STRUCTURE TO PREVENT BYPASS FLOW.
7. INSPECT AFTER EACH RAIN AND MAKE REPAIRS AS NEEDED. REMOVE SEDIMENT AS NEEDED TO PROVIDE ADEQUATE STORAGE VOLUME FOR SUBSEQUENT RAINS.

4 INLET SEDIMENT TRAP
N.T.S.



3 TEMPORARY SEDIMENT CONTROL FENCE SILT-FENCE-TYPE A
N.T.S.

PERMIT DRAWING NOT FOR CONSTRUCTION

STATE OF TEXAS
COMMISSION ON EXERCISES
61895
12-18-08

Freese and Nichols
405 W. North, Texas 76109-4695
Phone - (817) 735-7300
Fax - (817) 735-7491

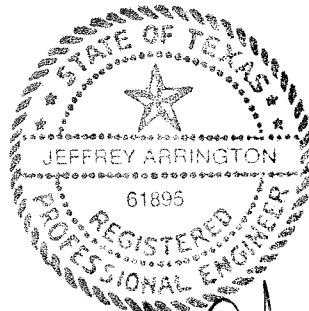
FORT HOOD LANDFILL
CIVIL
EROSION CONTROL DETAILS

NO. ISSUE	DATE	BY	REV. JOB NO.	TRN05321
	09/10/08	JRB	DESIGNED	JRB
			DRAWN	DJT
			CHECKED	JRB
			FILE NAME	CY-SLW-DT-EROSION.dwg
VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.				
SHEET C3.1				
SEQ.				

ACAD: Rev. 17.2a (11/01/07) Tech: User: DJT
 (ENCAD) IN: V\F REGISTRATION-PERMIT\CV-SLW-DT-EROSION.DWG LAYOUT: Layout1
 OCT 30 2008 2:04 PM LJS: 1.00 PSLTS: 0 TWIST: 0.0
 REFERENCE FILE: STANDARD_T&BORDER2

**PART III – SEC 3.2 CALCULATIONS
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Calculation #	Description
3.2-1	Ditch Flow Calculations
3.2-2	Existing Drainage Calculations
3.2-3	Interim Drainage Calculations
3.2-4	Final Drainage Calculations
3.2-5	Soil Loss Calculations for Final Cover
3.2-6	Existing Conditions Volume Calculations
3.2-7	Interim Conditions Volume Calculations
3.2-8	Final Conditions Volume Calculations
3.2-9	Working Face Berm Calculations
3.2-10	Cross Over Calculations



Jeffrey Arrington

12-18-03

Project Title:	Fort Hood Landfill	Date:	10/30/08
Account No:	TRN05321	Designed:	JRB
Subject:	Existing Drainage Calculations	Checked:	JA
Calc. No:	3.2-2	File Name:	drainCals

Coryell County

	e	b	d
25-Year Event	0.774	89	8.5

$$i = \frac{b}{(t_c + d)^e} \quad Q = c c_f i A$$

$c_f = 1.1$

PRE-DEVELOPMENT (Rational Method)

TOTAL DRAINAGE

Watershed	A	B	C	D	E
Runoff Coefficient, c	0.28	0.28	0.28	0.28	0.28
Area, A (acres)	65.18	15.37	20.27	26.15	26.04
Intensity, i	6.40	5.34	6.09	6.22	3.83
Overland Runoff Length (Short Grass) (ft)	200.00	200.00	200.00	200.00	200.00
Elevation Difference (ft)	1.5	1	1	4	2
Average Slope (%)	0.75%	0.50%	0.50%	2.00%	1.00%
Average Velocity (ft/sec)	0.53	0.40	0.40	1.00	0.62
Channelized Runoff Length (ft)	370.00	860.00	300.00	200.00	450.00
Elevation Difference (ft)	10.00	12.5	3	2	3
Average Slope (%)	2.70%	1.45%	1.00%	1.00%	0.67%
Average Velocity (ft/sec)	1.20	0.80	0.62	0.62	0.48
Channelized Runoff Length (ft)	270.00	300.00	550.00	920.00	100.00
Elevation Difference (ft)	18.00	14.00	16.00	20.00	10.00
Average Slope (%)	6.67%	4.67%	2.91%	2.17%	10.00%
Average Velocity (ft/sec)	1.80	1.60	1.30	1.10	2.20
Channelized Runoff Length (ft)	500.00				450.00
Elevation Difference (ft)	11.00				6.00
Average Slope (%)	2.20%				1.33%
Average Velocity (ft/sec)	1.10				0.70
Channelized Runoff Length (ft)					700.00
Elevation Difference (ft)					8.50
Average Slope (%)					1.21%
Average Velocity (ft/sec)					0.68
Time of Concentration (Calculated)	21.50	29.38	23.45	22.65	49.63
Time of Concentration, t_c (Utilized)	21.50	29.38	23.45	22.65	49.63
Q (cfs)	114.68	22.58	33.97	44.70	27.46

**All calculations based on TxDOT Hydraulic Manual*

Project Title:	Fort Hood Landfill	Date:	10/30/08
Account No:	TRN05321	Designed:	JRB
Subject:	Interim Drainage Calculations	Checked:	JA
Calc. No:	3.2-3	File Name:	drainCals

Coryell County

	e	b	d
25-Year Event	0.774	89	8.5

$$i = \frac{b}{(t_c + d)^e} \quad Q = c c_f i A$$

$c_f = 1.1$

PRE-DEVELOPMENT (Rational Method)

TOTAL DRAINAGE

Watershed	A	B	C	D	E
Runoff Coefficient, c	0.28	0.28	0.28	0.31	0.33
Area, A (acres)	68.25	15.37	20.27	22.43	26.70
Intensity, i	4.94	5.34	6.09	7.50	5.26
Overland Runoff Length (Short Grass) (ft)	200.00	200.00	200.00	150.00	200.00
Elevation Difference (ft)	3	1	1	4	3
Average Slope (%)	1.50%	0.50%	0.50%	2.67%	1.50%
Average Velocity (ft/sec)	0.81	0.40	0.40	1.20	0.81
Channelized Runoff Length (ft)	550.00	860.00	300.00	1,040.00	150.00
Elevation Difference (ft)	10.00	12.5	3	12.48	11
Average Slope (%)	1.82%	1.45%	1.00%	1.20%	7.33%
Average Velocity (ft/sec)	0.87	0.80	0.62	1.60	1.80
Channelized Runoff Length (ft)	500.00	300.00	550.00	400.00	1,450.00
Elevation Difference (ft)	17.00	14.00	16.00	8.00	9.00
Average Slope (%)	3.40%	4.67%	2.91%	2.00%	0.62%
Average Velocity (ft/sec)	2.80	1.60	1.30	2.20	1.30
Channelized Runoff Length (ft)	450.00				650.00
Elevation Difference (ft)	14.40				10.00
Average Slope (%)	3.20%				1.54%
Average Velocity (ft/sec)	1.75				1.80
Channelized Runoff Length (ft)	525.00				
Elevation Difference (ft)	18.40				
Average Slope (%)	3.50%				
Average Velocity (ft/sec)	2.80				
Channelized Runoff Length (ft)	700.00				
Elevation Difference (ft)	28.00				
Average Slope (%)	4.00%				
Average Velocity (ft/sec)	1.40				
Time of Concentration (Calculated)	33.37	29.38	23.45	15.95	30.11
Time of Concentration, t_c (Utilized)	33.37	29.38	23.45	15.95	30.11
Q (cfs)	92.78	22.58	33.97	51.79	46.38

*All calculations based on TxDOT Hydraulic Manual

Project Title: Fort Hood Landfill Date: 10/30/08
 Account No: TRN05321 Designed: JRB
 Subject: Proposed Drainage Calculations Checked: JA
 Calc. No: 3.2-4 File Name: drainCals

Coryell County

	e	b	d
25-Year Event	0.774	89	8.5

$$i = \frac{b}{(t_c + d)^c} \quad Q = cc_i A$$

$c_c = 1.1$

PRE-DEVELOPMENT (Rational Method)
TOTAL DRAINAGE

Watershed	A	B	C	D	E
Runoff Coefficient, c	0.28	0.28	0.33	0.33	0.33
Area, A (acres)	65.96	6.61	37.37	6.13	34.07
Intensity, i	5.12	8.67	6.92	7.47	5.26
Overland Runoff Length (Short Grass) (ft)	200.00	200.00	180.00	110.00	200.00
Elevation Difference (ft)	3	3	2	3	3
Average Slope (%)	1.50%	1.50%	1.11%	2.73%	1.50%
Average Velocity (ft/sec)	0.81	0.81	0.65	1.25	0.81
Channelized Runoff Length (ft)	550.00	150.00	85.00	95.00	150.00
Elevation Difference (ft)	10.00	3.5	10	10	11
Average Slope (%)	1.82%	2.33%	11.76%	10.53%	7.33%
Average Velocity (ft/sec)	0.87	1.20	2.20	2.20	1.80
Channelized Runoff Length (ft)	500.00	1,250.00	1,050.00	1,040.00	1,450.00
Elevation Difference (ft)	17.00	72.50	37.80	12.48	9.00
Average Slope (%)	3.40%	5.80%	3.60%	1.20%	0.62%
Average Velocity (ft/sec)	2.80	3.75	1.90	1.60	1.30
Channelized Runoff Length (ft)	450.00		550.00	400.00	650.00
Elevation Difference (ft)	14.40		11.00	8.00	10.00
Average Slope (%)	3.20%		2.00%	2.00%	1.54%
Average Velocity (ft/sec)	1.75		2.20	2.20	1.80
Channelized Runoff Length (ft)	525.00				
Elevation Difference (ft)	28.35				
Average Slope (%)	5.40%				
Average Velocity (ft/sec)	3.80				
Channelized Runoff Length (ft)	525.00				
Elevation Difference (ft)	18.4				
Average Slope (%)	3.5%				
Average Velocity (ft/sec)	2.80				
Channelized Runoff Length (ft)	300.00				
Elevation Difference (ft)	1.50				
Average Slope (%)	0.5%				
Average Velocity (ft/sec)	1.20				
Time of Concentration (Calculated)	31.51	11.75	18.64	16.05	30.11
Time of Concentration, t_c (Utilized)	31.51	11.75	18.64	16.05	30.11
Q (cfs)	92.88	15.76	85.28	15.12	59.18

*All calculations based on TxDOT Hydraulic Manual

Project Title:	<u>Fort Hood Landfill</u>	Date:	<u>10/30/08</u>
Account No:	<u>TRN05321</u>	Designed:	<u>JRB</u>
Subject:	<u>Soil Loss Cals. For Final Cover</u>	Checked:	<u>JA</u>
Calc. No:	<u>3.2-5</u>	File Name:	<u>soil_loss</u>

Calculate Topsoil Loss with the Universal Soil Loss Equation:				
A = (R)(K)(LS)(C)(P)	Slope 2%	Slope 6%	Slope 10%	Slope 20%
Area in acres				
R = rainfall erosion index, erosion index units/year	275	275	275	275
K = erodibility factor	0.2	0.2	0.2	0.2
LS = topographic factor from LS Figure (see note)	0.36	1.58	4.4	5
C = cover and management factor for 85% ground cover	0.013	0.013	0.013	0.013
P = erosion control practice factor	0.5	0.5	0.6	0.6
A = RKLSCP = soil loss in tons/acre/year	0.13	0.56	1.89	2.15

Calculated topsoil loss by TNRCC Universal Soil Loss Equation Procedural Handbook

Note: The slope lengths used to determine the LS factor are 800 feet for the 2% slope, 850 feet for the 6% slope, 950 feet for the 10% slope and 150 feet for the 20% slope.

Project Title:	Fort Hood Landfill	Date:	10/30/2008
Account No:	TRN05321	Designed:	GGJ
Subject:	Existing Conditions Volume Calculations	Checked:	
Calc. No:	3.2-6	File Name:	Existing Site Volumes TRN05321.xls

On-Site Volume
 SCS Runoff Curve Number Method
 TR-55

Eq. 2-3 from TR-55

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}$$

Q = runoff (in)
 P = 25-yr 24-hr rainfall from TP-40 (in)
 S = potential maximum retention after runoff begins (in)

$$V = Q / 12 * A$$

V = volume of runoff (ac-ft)
 Q = runoff (in)
 A = drainage basin area (ac)

Basin	P (in)	S (in)	Q (in)	Area (ac)	Volume (ac-ft)
A	7.65	2.40	5.37	65.18	29.19
B	7.65	2.57	5.25	15.37	6.72
C	7.65	2.56	5.25	20.27	8.88
D	7.65	2.50	5.30	26.15	11.55
E	7.65	2.51	5.29	26.04	11.48

Project Title: Fort Hood Landfill Date: 10/30/2008
 Account No: TRN05321 Designed: GGJ
 Subject: Existing Conditions Volume Calculations Checked:
 Calc. No: 3.2-6 File Name: Existing Site Volumes TRN05321.xls

BY: GABE JOHNSON
 Freese and Nichols, Inc.

CURVE NUMBER CALCULATION

Land Use: Pasture, grassland, or range -- continuous forage for grazing: Fair Condition

CURVE NO	SOIL A	SOIL B	SOIL C	SOIL D	PAVED	LAKE	PERCENT AREA		SOIL CN	OVERALL CN
							SOIL A	SOIL B		
	49	69	79	84	98	100				
BASIN NAME	TOT ACRES	AREA	SOIL C	SOIL D	LAKE					
A	65.18	0	74	26.34				80.3	80.67	A
B	15.37	0	96	4				79.2	79.58	B
C	20.27	0	95	5				79.3	79.63	C
D	26.15	0	86.8	13.2				79.7	80.03	D
E	26.04	0	88.8	11.2				79.6	79.93	E

LAND USE IMPERVIOUSNESS PERCENTAGE CALCULATION

LAND USE	TOT ACRES	% IMPERV.	C LAND USE	% IMPERV.
SINGLE FAMILY 1	1/4 ACRE	38	0.5 COMM. & BUSINESS	85
SINGLE FAMILY 2	1/3 ACRE	30	0.5 INDUSTRIAL	72
SINGLE FAMILY 3	1/2 ACRE	25	0.5 OPEN SPACE	2
SINGLE FAMILY 4	1 ACRE	20	0.35 LAKES ROADS	100
MULTI FAMILY	1/8 ACRE	65	0.75	

BASIN NAME	TOT AREA ACRES	SF1	SF2	PERCENT AREA	SF3	SF4	MF	C&B	IND	ROADS & LAKE	OS	COMB IMPERV	AREA CHECK
A	65.18	0	0	0	0	0	0	0	0	0	100	2.00	100
B	15.37	0	0	0	0	0	0	0	0	0	100	2.00	100
C	20.27	0	0	0	0	0	0	0	0	0	100	2.00	100
D	26.15	0	0	0	0	0	0	0	0	0	100	2.00	100
E	26.04	0	0	0	0	0	0	0	0	0	100	2.00	100

Project Title: Fort Hood Landfill Date: 10/30/2008
 Account No: TRN05321 Designed: GGJ
 Subject: Existing Conditions Volume Calculations Checked:
 Calc. No: 3.2-6 File Name: Existing Site Volumes TRN05321.xls

A	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	80.67066
S =	2.39608056
Li =	0.47921611
Lu =	0.04792161

E	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	79.9288
S =	2.51113491
Li =	0.50222698
Lu =	0.0502227

	CN	S
A	80.67	2.40
B	79.58	2.57
C	79.63	2.56
D	80.03	2.50
E	79.93	2.51
O	1.96	500.20
O	1.96	500.20
O	5.66	166.54

B	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	79.576
S =	2.566603
Li =	0.5133206
Lu =	0.05133206

O	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	1.96
S =	500.204082
Li =	100.040816
Lu =	10.0040816

C	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	79.625
S =	2.5588697
Li =	0.51177394
Lu =	0.05117739

O	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	1.96
S =	500.204082
Li =	100.040816
Lu =	10.0040816

D	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	80.0268
S =	2.4958139
Li =	0.49916278
Lu =	0.04991628

O	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2*S$
4th Step	$Lu = 10\% Li$
CN =	5.66
S =	166.541205
Li =	33.3082409
Lu =	3.33082409

Project Title: Fort Hood Landfill Date: 10/30/2008
 Account No: TRN05321 Designed: GGJ
 Subject: Interim Conditions Volume Calculations Checked: _____
 Calc. No: 3.2-7 File Name: Existing Site Volumes TRN05321.xls

On-Site Volume
 SCS Runoff Curve Number Method
 TR-55

Eq. 2-3 from TR-55

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}$$

Q = runoff (in)
 P = 25-yr 24-hr rainfall from TP-40 (in)
 S = potential maximum retention after runoff begins (in)

$$V = Q / 12 * A$$

V = volume of runoff (ac-ft)
 Q = runoff (in)
 A = drainage basin area (ac)

Basin	P (in)	S (in)	Q (in)	Area (ac)	Volume (ac-ft)
A	7.65	2.41	5.37	68.25	30.53
B	7.65	2.57	5.25	15.37	6.72
C	7.65	2.56	5.25	20.27	8.87
D	7.65	2.48	5.31	22.43	9.93
E	7.65	2.51	5.29	26.70	11.77

Project Title: Fort Hood Landfill Date: 10/30/2008
 Account No: TRN05321 Designed: GGJ
 Subject: Interim Conditions Volume Calculations Checked: _____
 Calc. No: 3.2-7 File Name: Existing Site Volumes TRN05321.xls

A	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	80.61186
S =	2.40512252
Li =	0.4810245
Lu =	0.04810245

E	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	79.91606
S =	2.5131294
Li =	0.50262588
Lu =	0.05026259

	CN	S
A	80.61	2.41
B	79.56	2.57
C	79.61	2.56
D	80.14	2.48
E	79.92	2.51
0	1.96	500.20
0	1.96	500.20
0	5.43	174.31

B	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	79.56228
S =	2.56877003
Li =	0.51375401
Lu =	0.0513754

0	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	1.96
S =	500.204082
Li =	100.040816
Lu =	10.0040816

C	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	79.6103
S =	2.56118869
Li =	0.51223774
Lu =	0.05122377

0	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	1.96
S =	500.204082
Li =	100.040816
Lu =	10.0040816

D	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	80.13558
S =	2.47885147
Li =	0.49577029
Lu =	0.04957703

0	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$Ia = Li$
	$Ia = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	5.43
S =	174.308967
Li =	34.8617933
Lu =	3.48617933

Project Title:	Fort Hood Landfill	Date:	10/30/2008
Account No:	TRN05321	Designed:	GGJ
Subject:	Final Conditions Volume Calculations	Checked:	
Calc. No:	3.2-8	File Name:	Proposed Site Volumes TRN05321.xls

On-Site Volume
 SCS Runoff Curve Number Method
 TR-55

Eq. 2-3 from TR-55

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}$$

Q = runoff (in)
 P = 25-yr 24-hr rainfall from TP-40 (in)
 S = potential maximum retention after runoff begins (in)

$$V = Q / 12 * A$$

V = volume of runoff (ac-ft)
 Q = runoff (in)
 A = drainage basin area (ac)

Basin	P (in)	S (in)	Q (in)	Area (ac)	Volume (ac-ft)
A	7.65	2.42	5.36	65.96	29.45
B	7.65	2.55	5.26	6.61	2.90
C	7.65	2.53	5.28	37.37	16.44
D	7.65	2.48	5.31	6.13	2.71
E	7.65	2.52	5.29	34.07	15.01

Project Title: Fort Hood Landfill
 Account No: TRN05321
 Subject: Final Conditions Volume Calculations
 Calc. No: 3.2-8
 Date: 10/30/2008
 Designed: GGJ
 Checked:
 File Name: Proposed Site Volumes TRN05321.xls

BY: GABE JOHNSON
 Freese and Nichols, Inc.

CURVE NUMBER CALCULATION

Land Use: Open space (lawns, golf courses, cemeteries, etc.): Fair condition (grass cover 50% to 75%)

CURVE NO	PERCENT AREA				LAKE	PAVED	LAKE	SOIL CN	OVERALL CN
	SOIL A	SOIL B	SOIL C	SOIL D					
A	49	69	79	84	98	100	80.2	80.52 A	
B							79.3	79.67 B	
C							79.5	79.83 C	
D							79.7	80.11 D	
E							79.5	79.89 E	

LAND USE IMPERVIOUSNESS PERCENTAGE CALCULATION

LAND USE	% IMPERV.	C LAND USE	% IMPERV.	C
SINGLE FAMILY 1	38	0.5 COMM. & BUSINESS	85	0.8
SINGLE FAMILY 2	30	0.5 INDUSTRIAL	72	0.7
SINGLE FAMILY 3	25	0.5 OPEN SPACE	2	0.3
SINGLE FAMILY 4	20	0.35 LAKES ROADS	100	0.95
MULTI FAMILY	65	0.75		

BASIN NAME	TOT AREA ACRES	PERCENT AREA				IND	OS	ROADS & LAKE	COMB IMPERV	AREA CHECK
		SF1	SF2	SF3	SF4					
A	65.96	0	0	0	0	0	100	2.00	100	
B	6.61	0	0	0	0	0	100	2.00	100	
C	37.37	0	0	0	0	0	100	2.00	100	
D	6.13	0	0	0	0	0	100	2.00	100	
E	34.07	0	0	0	0	0	100	2.00	100	

Project Title: Fort Hood Landfill Date: 10/30/2008
 Account No: TRN05321 Designed: GGJ
 Subject: Final Conditions Volume Calculations Checked:
 Calc. No: 3.2-8 File Name: Proposed Site Volumes TRN05321.xls

A	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	80.51778
S =	2.41961713
Li =	0.48392343
Lu =	0.04839234

	CN	S
A	80.52	2.42
B	79.67	2.55
C	79.83	2.53
D	80.11	2.48
E	79.89	2.52

B	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	79.674
S =	2.55114592
Li =	0.51022918
Lu =	0.05102292

C	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	79.83276
S =	2.52618599
Li =	0.5052372
Lu =	0.05052372

D	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	80.11353
S =	2.48228608
Li =	0.49645722
Lu =	0.04964572

E	
1st Step	Find CN
2nd Step	$S = (1000/CN) - 10$
3rd Step	$la = Li$
	$la = 0.2 * S$
4th Step	$Lu = 10\% Li$
CN =	79.89499
S =	2.51642938
Li =	0.50328588
Lu =	0.05032859

Project Title:	Fort Hood Landfill	Date:	10/30/2008
Account No:	TRN05321	Designed:	GGJ
Subject:	Working Face Berm Calculations	Checked:	
Calc. No:	3.2-9	File Name:	Working Face Berm Calcs.xls

On-Site Volume
SCS Runoff Curve Number Method
TR-55

GGJ
SNY04110

Eq. 2-3 from TR-55

$$Q = \frac{(P - 0.2S)^2}{(P + 0.8S)}$$

Q = runoff (in)
P = 25-yr 24-hr rainfall from TP-40 (in)
S = potential maximum retention after runoff begins (in)

$$V = Q / 12 * A$$

V = volume of runoff (ac-ft)
Q = runoff (in)
A = drainage basin area (ac)

Area	P (in)	S (in)	Q (in)	Area (ac)	Volume (ac-ft)
Working Face	7.65	1.87	5.79	0.70	0.34

* Available storage of 50'x200'x2' bermed area = 0.46 ac-ft