

INTERIM STORMWATER MANAGEMENT PLAN (SWMP) FOR WELL LOCATION 325172 & 312051

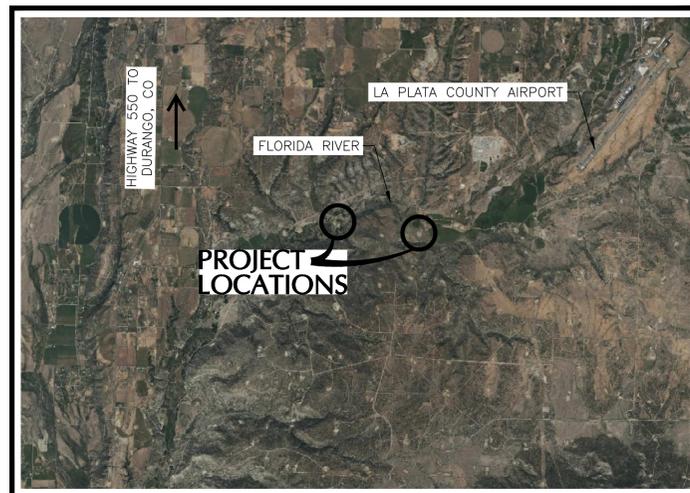
LOGOS RESOURCES, LLC & SIMCOE, LLC

LA PLATA COUNTY, COLORADO

GENERAL NOTES

- PROJECT RESTORATION LIMITS SHOWN ON THESE PLANS ARE APPROXIMATE. BEST MANAGEMENT PRACTICES (BMPs) ARE SHOWN AS GRAPHICAL SYMBOLS AND DO NOT REPRESENT ACTUAL SIZE AND SHAPE OF BMP WHEN APPLICABLE.
- INTERIM SWMP PROJECT RESTORATION LIMITS FOR LOCATION ID 325172 (LOGOS RESOURCES, LLC WELL API #067-05515) ARE SHOWN ON SHEET C3 - INTERIM SWMP FOR WELL LOCATION ID 325172.
- INTERIM SWMP PROJECT RESTORATION LIMITS FOR LOCATION ID 312051 (LOGOS RESOURCES, LLC WELL API #067-08138 & SIMCOE, LLC WELL API #067-08731) ARE SHOWN ON SHEET C4 - INTERIM SWMP FOR WELL LOCATION ID 312051.
- WORK WILL CONSIST OF INSTALLING BMPs AS SHOWN ON THESE PLANS TO PROVIDE INTERIM STABILIZATION OF THE WELL PADS. WORK ASSOCIATED WITH INTERIM SWMP FOR WELL LOCATION ID 325172 INCLUDES THE INSTALLATION OF A LOW-WATER CROSSING, REINSTALLATION OF AN EXISTING STEEL CONTAINMENT RING AND ASSOCIATED APPURTENANCES AROUND PRODUCED WATER STORAGE TANK, DRAINAGE SWALE, AND REVEGETATION. WORK ASSOCIATED WITH INTERIM SWMP FOR WELL LOCATION ID 312051 INCLUDES RIPRAP INSTALLATION ALONG THE PERIMETER OF THE PAD, DRAINAGE SWALES, OVERFLOW CHANNEL IMPROVEMENTS, AND REVEGETATION.
- LOCATION OF STAGING AREAS SHALL BE COORDINATED WITH LOGOS RESOURCES AND THEIR SUBCONTRACTORS. LOCATION MAY BE MODIFIED IN THE FIELD IF WARRANTED AND REDLINED ON THESE PLANS.
- ANY SOIL STOCKPILED ON-SITE SHALL BE IN ACCORDANCE WITH DETAIL MM-2 STOCKPILE MANAGEMENT FROM VOLUME 3, CHAPTER 7 OF THE MILE HIGH FLOOD DISTRICT (MHFD) URBAN STORM DRAINAGE CRITERIA MANUAL (USDCM). CONTRACTOR SHALL REDLINE THE STOCKPILE LOCATION ON THESE PLANS IF USED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR:
 - OBTAINING AND ADHERING TO, AT HIS OWN EXPENSE, ALL PERMITS OR LICENSES WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK, INITIATE PERMIT APPLICATIONS THROUGH THE COUNTY OF LA PLATA.
 - IN CASE OF AN EMERGENCY AFTER WORKING HOURS, CONTACT THE OWNER'S REPRESENTATIVE.
 - PROPER NOTIFICATION OF ALL NECESSARY AGENCIES PRIOR TO THE COMMENCEMENT OF WORK.
 - PROJECT SAFETY
 - JOB SITE CONDITIONS AT ALL TIMES.
 - TRAFFIC CONTROL.
 - PROPER NOTIFICATION OF ALL NECESSARY AGENCIES FOR REQUIRED INSPECTIONS.
 - CONSTRUCTION DEWATERING
- THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO THE START OF WORK. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE OWNER'S REPRESENTATIVE.
- THE CONTRACTOR SHALL CONTACT ALL APPROPRIATE UTILITY COMPANIES AND OWNER'S REPRESENTATIVE PRIOR TO THE BEGINNING OF ANY WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION (INCLUDING DEPTHS) OF ANY EXISTING UTILITIES. ALL EXISTING UTILITIES SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. DAMAGED UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S OWN EXPENSE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL OF SURFACE WATER, STORMWATER, AND GROUNDWATER THROUGHOUT THE DURATION OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE EROSION AND SEDIMENT CONTROL PERMIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE WORK ASSOCIATED WITH ANY PORTION OF THIS PROJECT AND OBTAINING A CONSTRUCTION DEWATERING PERMIT IF APPLICABLE. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED, AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE INSTALLATION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, AND THE DESIGN ENGINEER AT THE TIME OF THEIR OCCURRENCE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL SURFACES AND RELATED STRUCTURES TO ORIGINAL CONDITIONS (OR BETTER) AND GRADES UNLESS DESIGNATED OTHERWISE ON THE DRAWINGS.
- THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE (1) SIGNED COPY OF THE PLANS.
- CONTACT THE ENGINEER PRIOR TO PLAN MODIFICATION WHERE DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS EXIST.
- SURVEY DATA PROVIDED TO WRIGHT WATER ENGINEERS ON FEBRUARY 8, 2022 BY IKAV ENERGY, INC. ORIGINAL SURVEY COMPLETED IN JUNE 2016.

PROJECT LOCATION



MAP SOURCE: © 2022 MICROSOFT CORPORATION © 2022 MAXAR © CNES (2022) DISTRIBUTION AIRBUS DS

CONTACTS

WELL OWNER (API #067-05515 & API #067-08138):
 LOGOS RESOURCES, LLC CONTACT: MARCIA BRUEGGENJOHANN
 2010 AFTON PLACE 505-787-2220 (OFFICE)
 FARMINGTON, NM 87401

WELL OWNER (API #067-08731):
 IKAV ENERGY, INC. CONTACT: JULIE BEST
 1199 MAIN AVE. 970-394-0131 (OFFICE)
 SUITE #101 DURANGO, CO 81301

ENGINEER:
 WRIGHT WATER ENGINEERS, INC. CONTACT: HAYES LENHART, P.E.
 1666 N. MAIN AVE. 970-259-7411 (OFFICE)
 SUITE C DURANGO, CO 81301

SHEET INDEX

SHEET #	SHEET TITLE
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C4	INTERIM SWMP FOR WELL LOCATION ID 312051
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C6	SWMP DETAILS
C7	LOW WATER CROSSING DETAIL

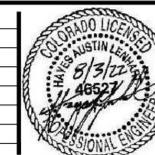
SWMP LEGEND

	EXISTING CONTOURS
	STORMWATER FLOW DIRECTION ARROW
	LIMITS OF INTERIM RECLAMATION
	STABILIZED STAGING AREA
	CHECK DAM
	EROSION CONTROL BLANKET
	SEED AND MULCH
	SEDIMENT CONTROL LOG
	EXISTING STORM PIPE
	DITCH CENTERLINE
	INFILTRATION AREA
	RIPRAP

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WWE WRIGHT WATER ENGINEERS, INC.
 1666 N. MAIN AVE. SUITE C
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 (970)259-7411 FAX(970)259-8758

NO.	BY	DATE	DESCRIPTION	COMMENTS
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INTERIM SWMP FOR WELL LOCATION ID 325172 & 312051
 LOGOS RESOURCES, LLC & SIMCOE, LLC

COVER SHEET

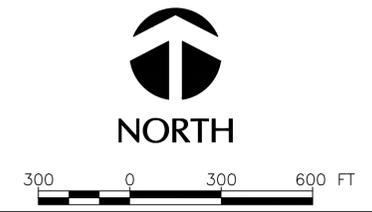
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REVISION NO.	---
SHEET NO.	C1

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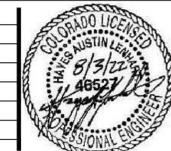
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INTERIM SWMP FOR WELL LOCATION ID 325172 & 312051
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OVERALL PLAN

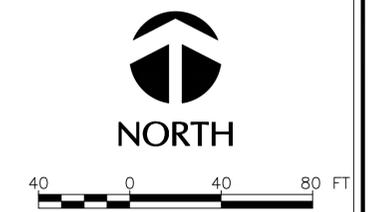
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 SHEET NO. **C2**



NOTES:

1. SEE SHEET C1 FOR GENERAL SWMP NOTES AND SWMP LEGEND.
2. SEE DETAIL SHEETS C5 - C7 FOR BEST MANAGEMENT PRACTICES (BMPs) IDENTIFIED ON THIS PLAN.
3. AREAS THAT ARE TO BE REVEGETATED SHALL HAVE SOIL AMENDMENT APPLIED FIRST. SEE DETAIL SHEETS FOR MORE INFORMATION.
4. GRAVEL FOR STABILIZED STAGING AREA (SSA) TO REMAIN IN PLACE AFTER WORK IS COMPLETE. PERIMETER CONTROLS ASSOCIATED WITH SSA TO BE REMOVED ONCE SSA IS NO LONGER IN USE. SEE DETAIL 2 ON SHEET C5 FOR MORE INFORMATION.
5. BASED ON FIELD CONDITIONS ENCOUNTERED, FINAL LOCATIONS AND/OR LIMITS OF BMPs MAY BE ADJUSTED WITH PRIOR WRITTEN ACCEPTANCE OF DESIGN ENGINEER AND OWNER. CONTRACTOR SHALL KEEP A REDLINED SET OF PLANS TO INDICATE ANY CHANGES TO LOCATIONS AND/OR LIMITS OF BMPs.

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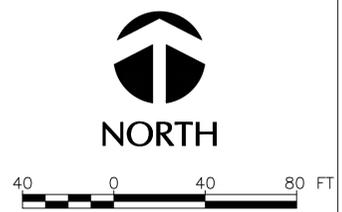
INTERIM SWMP FOR WELL LOCATION ID 325172 & 312051
LOGOS RESOURCES, LLC & SIMCOE, LLC

INTERIM SWMP FOR WELL LOCATION ID 325172

JOB NO. **191-027.030**
 REVISION NO. **---**
 SHEET NO. **C3**



- NOTES:**
- SEE SHEET C1 FOR GENERAL SWMP NOTES AND SWMP LEGEND.
 - SEE DETAIL SHEETS C5 - C7 FOR ALL BEST MANAGEMENT PRACTICES (BMP) IDENTIFIED ON THIS PLAN.
 - AREAS THAT ARE TO BE REVEGETATED SHALL HAVE SOIL AMENDMENT APPLIED FIRST. SEE DETAIL SHEETS FOR MORE INFORMATION.
 - EXISTING OVERFLOW CHANNEL TO BE STABILIZED AS SHOWN ON THIS PLAN. CHANNEL STABILIZATION TO CONSIST OF THE FOLLOWING ITEMS: 1) SOIL AMENDMENT, 2) RESEEDING, 3) EROSION CONTROL BLANKET, AND 4) INSTALLATION OF CHECK DAMS. ALL ITEMS SHALL BE IN ACCORDANCE WITH THEIR RESPECTIVE DETAILS AS INDICATED ON THE PLAN.
 - EROSION CONTROL BLANKET SHOWN ON THESE PLANS SHALL BE ROLLMAX BIONET C700BN OR APPROVED EQUAL AND UTILIZE THE "LOW FLOW CHANNEL" STAKING METHOD. SEE DETAILS ON SHEET C5 AND CHAPTER 7 OF VOLUME 3 OF THE MILE HIGH FLOOD DISTRICT (MHFD) URBAN STORM DRAINAGE CRITERIA MANUAL (USDCM) FOR MORE INFORMATION.
 - GRAVEL FOR STABILIZED STAGING AREA (SSA) TO REMAIN IN PLACE AFTER WORK IS COMPLETE. PERIMETER CONTROLS ASSOCIATED WITH SSA TO BE REMOVED ONCE SSA IS NO LONGER IN USE. SEE DETAIL 2 ON SHEET C5 FOR MORE INFORMATION.
 - BASED ON FIELD CONDITIONS ENCOUNTERED, FINAL LOCATIONS AND/OR LIMITS OF BMPs MAY BE ADJUSTED WITH PRIOR WRITTEN ACCEPTANCE OF DESIGN ENGINEER AND OWNER. CONTRACTOR SHALL KEEP A REDLINED SET OF PLANS TO INDICATE ANY CHANGES TO LOCATIONS AND/OR LIMITS OF BMPs.
 - OFFSITE STORMWATER FLOWS ARE DIVERTED AWAY FROM SITE VIA EXISTING SWALE AND CULVERT.
 - LOCATION WILL BE PROTECTED FROM DEGRADATION BY INSTALLATION AND ONGOING MAINTENANCE OF BMPs SHOWN ON THIS PLAN.



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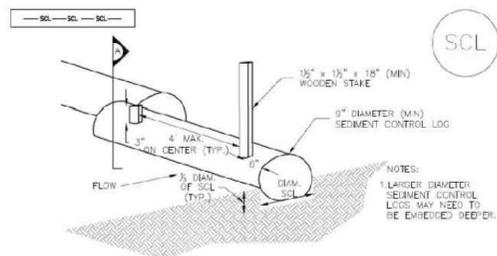
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INTERIM SWMP FOR WELL LOCATION ID 325172 & 312051
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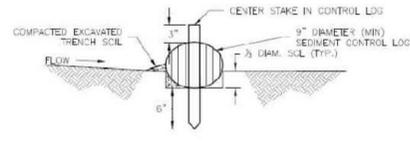
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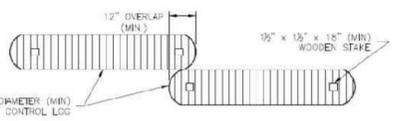
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TRENCHED SEDIMENT CONTROL LOG



SECTION A TRENCHED SEDIMENT CONTROL LOG



LOG JOINTS

SC-1. TRENCHED SEDIMENT CONTROL LOG

SEDIMENT CONTROL LOG INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.
- SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADE/CONSTRUCTION ACTIVITIES.
- SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
- SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.
- IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY 1/2 OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.
- THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL, OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.
- FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

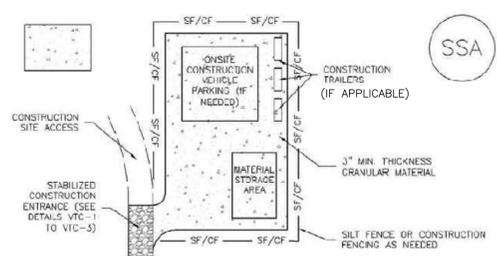
SEDIMENT CONTROL LOG MAINTENANCE NOTES

- MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
- SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

SEDIMENT CONTROL LOGS (SCL)

1 (SCL)
C5 SOURCE: MHFD (CHAPTER 7, VOLUME 3 OF USDCM)



SSA-1. STABILIZED STAGING AREA

- STABILIZED STAGING AREA INSTALLATION NOTES
- SEE PLAN VIEW FOR LOCATION OF STAGING AREA(S). CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
 - STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
 - STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
 - THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
 - UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SEC. #703 AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
 - ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

- MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

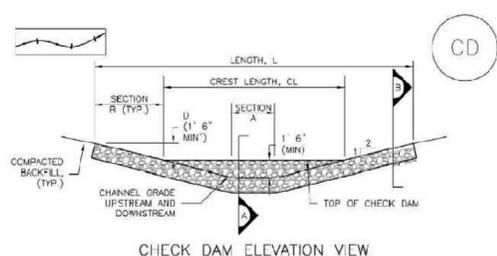
STABILIZED STAGING AREA MAINTENANCE NOTES

- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
 - THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.
- NOTE: SSA IS EXISTING AND MAY OR MAY NOT NEED MAINTENANCE. MAINTAIN AS NECESSARY.

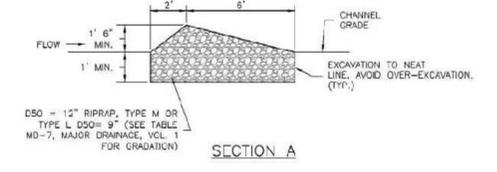
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STABILIZED STAGING AREA (SSA)

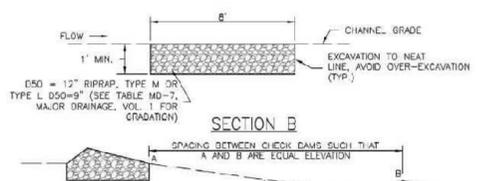
2 (SSA)
C5 SOURCE: MHFD (CHAPTER 7, VOLUME 3 OF USDCM)



CHECK DAM ELEVATION VIEW



SECTION A



SECTION B



CD-1. CHECK DAM

CHECK DAM INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF CHECK DAMS. CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM), LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).
- RIPRAP UTILIZED FOR CHECK DAMS SHOULD BE OF APPROPRIATE SIZE FOR THE APPLICATION. TYPICAL TYPES OF RIPRAP USED FOR CHECK DAMS ARE TYPE M (D50 12") OR TYPE L (D50 9").
- RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'.
- THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1' 6" HIGHER THAN THE CENTER OF THE CHECK DAM.

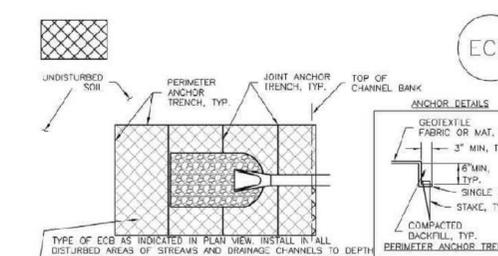
CHECK DAM MAINTENANCE NOTES

- MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF THE CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
- CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED.
- WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH GEOTEXTILE OR OTHERWISE STABILIZED.

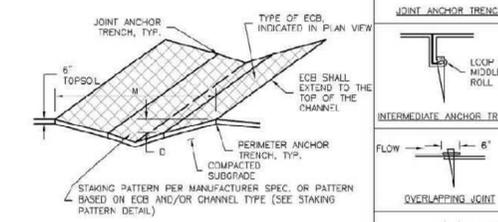
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CHECK DAM (CD)

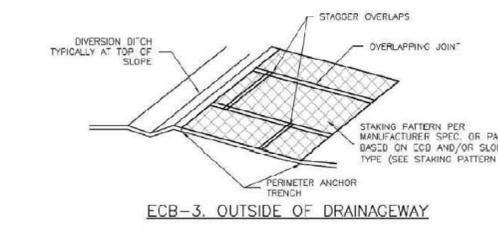
3 (CD)
C5 SOURCE: MHFD (CHAPTER 7, VOLUME 3 OF USDCM)



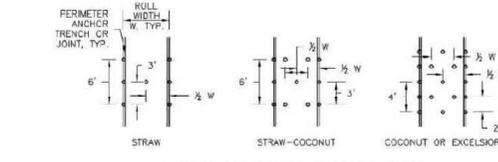
ECB-1. PIPE OUTLET TO DRAINAGEWAY



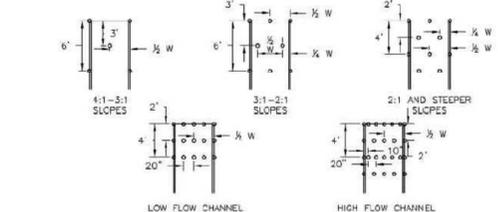
ECB-2. SMALL DITCH OR DRAINAGEWAY



ECB-3. OUTSIDE OF DRAINAGEWAY



STAKING PATTERNS BY ECB TYPE



STAKING PATTERNS BY SLOPE OR CHANNEL TYPE

EROSION CONTROL BLANKET (ECB)

4 (ECB)
C5 SOURCE: MHFD (CHAPTER 7, VOLUME 3 OF USDCM)

EROSION CONTROL BLANKET INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF ECB. TYPE OF ECB (STRAW, STRAW-COCONUT, COCONUT OR EXCELSIOR). AREA A IN SQUARE YARDS OF EACH TYPE OF ECB.
- 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR PERIMS. ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.
- IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERIMETER SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.
- PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.
- JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.
- INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.
- OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.
- MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB-1.
- ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBs SHALL BE RESEEDED AND MULCHED.
- DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB-1. ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED SETTING**
STRAW**	-	100%	-	DOUBLE/NATURAL
STRAW-COCONUT	30% MIN	70% MAX	-	DOUBLE/NATURAL
COCONUT	100%	-	-	DOUBLE/NATURAL
EXCELSIOR	-	-	100%	DOUBLE/NATURAL

**STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNELS. MULCHING SETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS.

EROSION CONTROL BLANKET MAINTENANCE NOTES

- MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.
- ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REINSTALLED. ANY SUBGRADE AREAS BELOW THE GEOTEXTILE THAT HAVE ERODED TO CREATE A VOID UNDER THE BLANKET, OR THAT REMAIN BEYOND OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO AND TOWN OF PARKER COLORADO, NOT AVAILABLE IN AUTOCAD)

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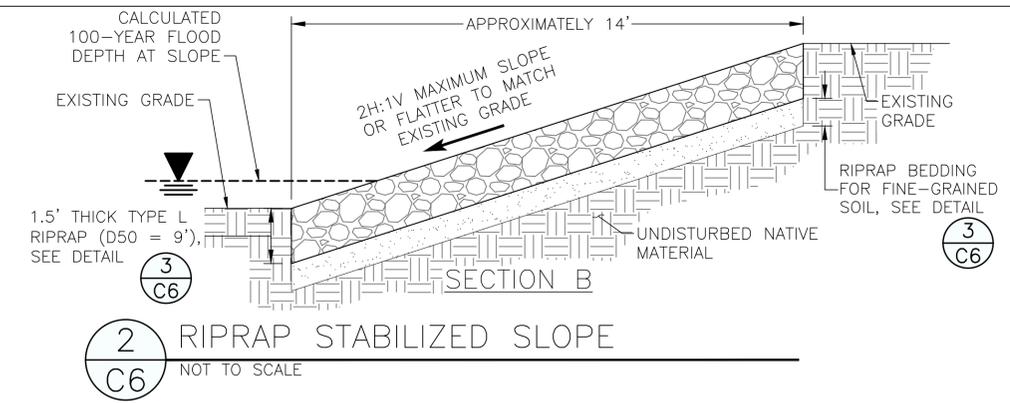
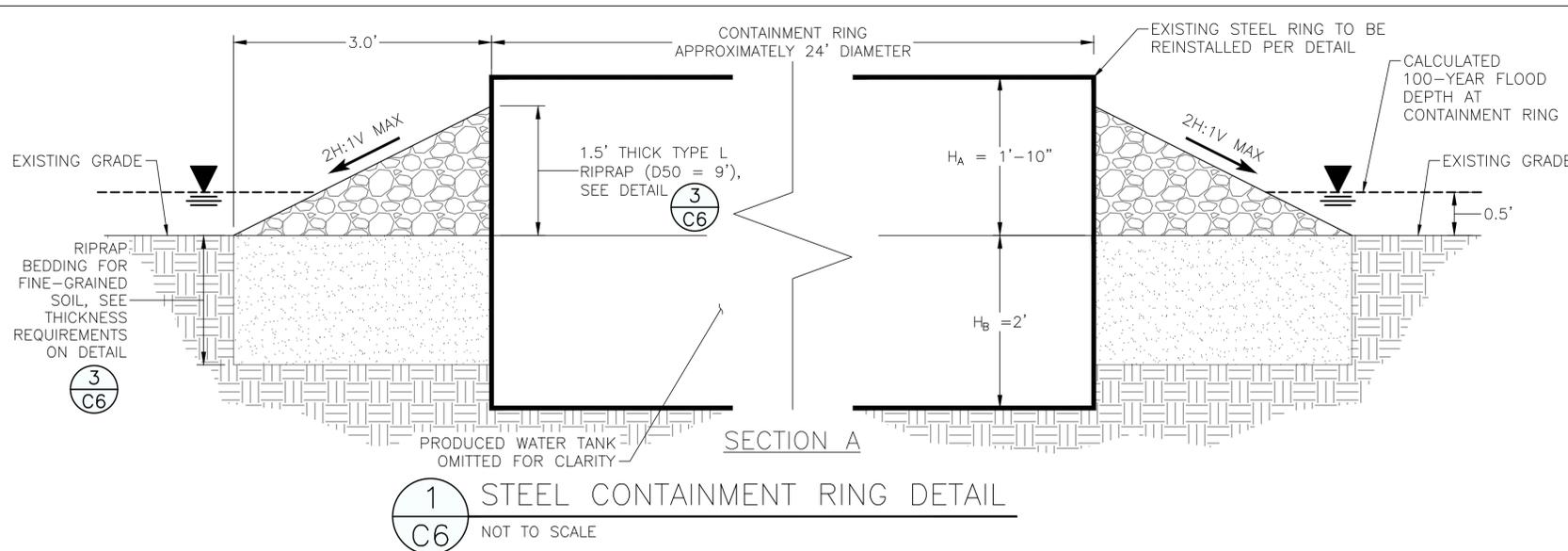
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SCALE	SHOWN
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RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D ₅₀ * (INCHES)
TYPE VL	70 - 100 50 - 70 35 - 50 2 - 10	12 9 6 2	6
TYPE L	70 - 100 50 - 70 35 - 50 2 - 10	15 12 9 3	9
TYPE M	70 - 100 50 - 70 35 - 50 2 - 10	21 18 12 4	12
TYPE H	70 - 100 50 - 70 35 - 50 2 - 10	30 24 18 6	18

U.S. STANDARD SIEVE SIZE	GRADATION FOR GRANULAR BEDDING	
	PERCENT PASSING BY WEIGHT	
3 INCHES	-	90 - 100
1 1/2 INCHES	-	-
3/4 INCHES	-	20 - 90
3/8 INCHES	100	-
#4	95 - 100	0 - 20
#16	45 - 80	-
#50	10 - 30	-
#100	2 - 10	-
#200	0 - 2	0 - 3

RIPRAP DESIGNATION	THICKNESS REQUIREMENTS FOR GRANULAR BEDDING		
	MINIMUM BEDDING THICKNESS (INCHES)		
	TYPE I (LOWER LAYER)	TYPE II (UPPER LAYER)	TYPE II
VL (D ₅₀ = 6 IN)	4	4	6
L (D ₅₀ = 9 IN)	4	4	6
M (D ₅₀ = 12 IN)	4	4	6
H (D ₅₀ = 18 IN)	4	6	8
VH (D ₅₀ = 24 IN)	4	6	8

- RIPRAP SPECIFICATIONS:**
- NEITHER WIDTH NOR THICKNESS OF A SINGLE STONE OF RIPRAP SHALL BE LESS THAN ONE-THIRD (1/3) OF ITS LENGTH.
 - THE SPECIFIC GRAVITY OF THE RIPRAP SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.
 - RIPRAP SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE DRY BASIS, IN ACCORDANCE WITH AASHTO T85.
 - THE BULK DENSITY FOR THE RIPRAP SHALL BE 1.3 TON/CY OR GREATER.
 - THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN FORTY PERCENT (40%) AFTER FIVE HUNDRED (500) REVOLUTIONS WHEN TESTED IN ACCORDANCE WITH AASHTO T96.
 - THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER TWELVE (12) CYCLES OF FREEZING AND THAWING WHEN TESTED IN ACCORDANCE WITH AASHTO T103 FOR LEDGE ROCK, PROCEDURE A.
 - IF SPECIFIED RIPRAP SIZE IS NOT AVAILABLE, CONTRACTOR TO SUBMIT REPLACEMENT PRODUCT TO DESIGN ENGINEER FOR REVIEW AND APPROVAL.

3 RIPRAP AND BEDDING
C6 SOURCE: MHFD (FIGURE 8-34, CHAPTER 8, VOLUME 1 OF USDCM)

- SOIL AMENDMENT NOTES:**
- 2 CUBIC YARDS OF QUALITY COMPOST PER 1000 SQUARE FEET SHALL BE APPLIED TO AREA DESIGNATED FOR SOIL AMENDMENT. SEE CHARACTERISTICS OF MATURE COMPOST SUITABLE FOR SOIL AMENDMENT IN TABLE 7-2.
 - THE COMPOST SHALL BE INCORPORATED AT LEAST 6-INCHES INTO THE SOIL BY TILLING THE SOIL 8 TO 12-INCHES UNTIL NO CLUMPS OR AREAS OF THICK COMPOST REMAIN ON THE SURFACE.
 - IF REQUESTED BY OWNER, CONTRACTOR TO PERFORM SOIL SAMPLING TO CONFIRM NEED FOR SOIL AMENDMENT. SOIL SAMPLES SHALL BE TESTED BY TRITON ENVIRONMENTAL OR ENGINEER APPROVED EQUAL.

Table 7-2. Characteristics of Mature Compost Suitable for Soil Amendment

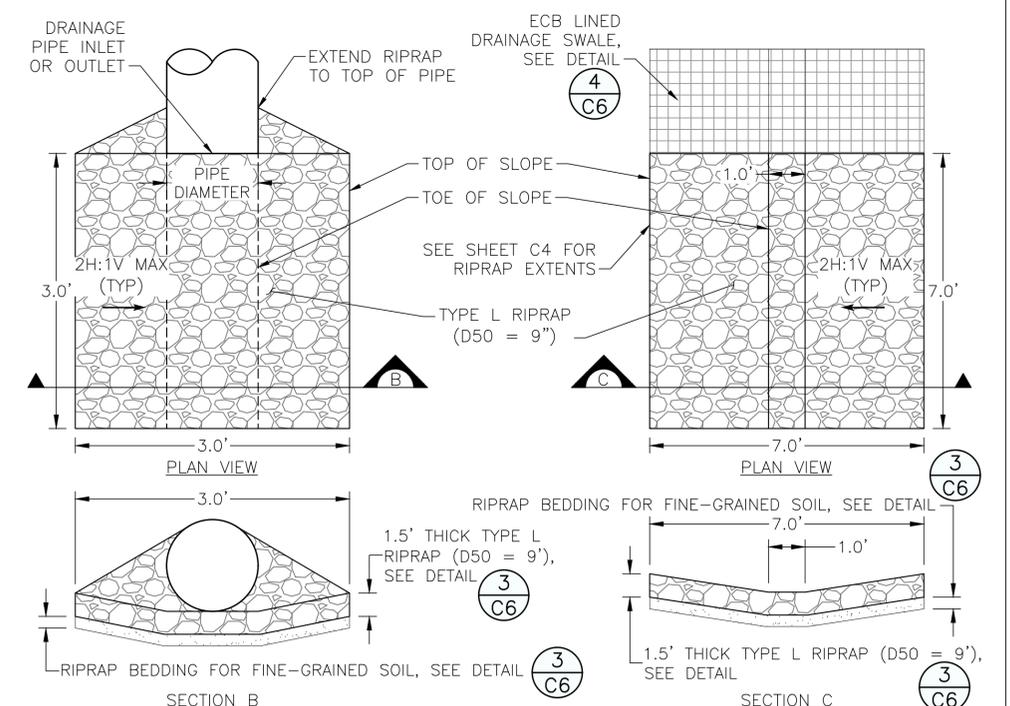
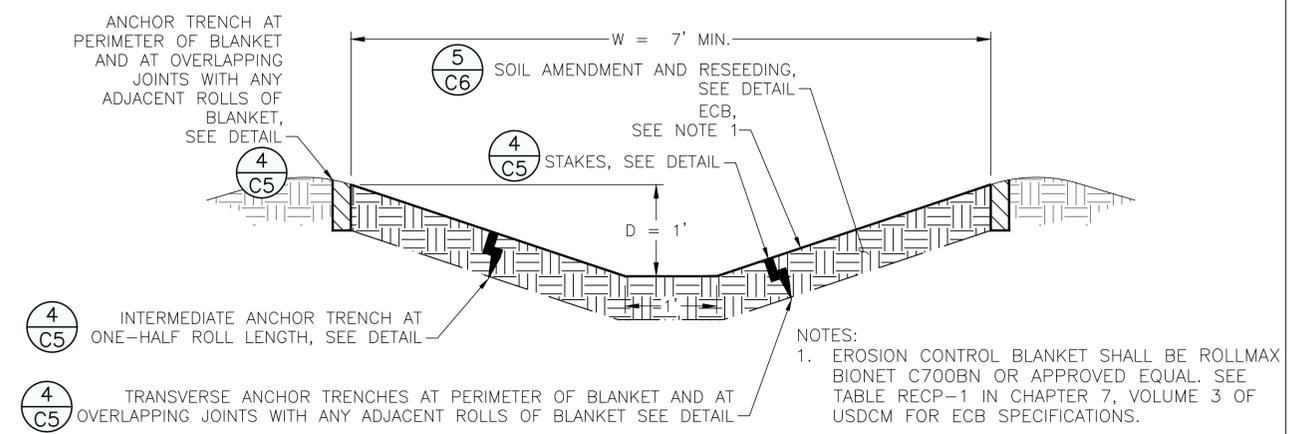
Maturity Indicator	Desired Result
Ammonia N/Nitrate N Ratio	<6
Carbon to Nitrogen Ratio	<18
Percentage of Germination and Vigor	80% or more for both germination and vigor
pH	5.5-8.0
Soluble Salts Concentrations	2.5 dS (mmhos/cm) or less preferred
Particle Size	Pass through 1-inch screen or smaller
Moisture Content	35% - 55%
Maturity/Growth Screening	Demonstrate ability to enhance plant growth
Stability	Stable to highly stable, providing nutrients for plant growth
Organic Matter Content	30% - 70%

- SEEDING NOTES:**
- AFTER SOIL AMENDMENT, CONTRACTOR SHALL APPLY SEED MIX SHOWN IN TABLE 7-3.
 - AMOUNT OF PLS SHOWN IN TABLE 7-3 IS FOR DRILL SEEDING APPLICATION. CONTRACTOR SHALL DOUBLE AMOUNT OF PLS FOR BROADCAST SEEDING.
- **SEED MIX MUST BE APPROVED BY LAND OWNER AND AMENDED AS NECESSARY.**

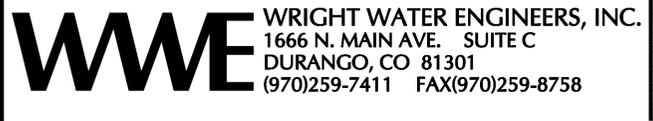
Table 7-3. Reference Restoration Seed Mix

Common Name	Botanical Name	PLS (lbs/acre)
Arriba Western Wheatgrass	Pascopyrum smith 'Arriba'	4
Pubescent Luna Wheatgrass	Thinopyrum intermedium sp. Barulatum	3.5
Indian Ricegrass 'Rimrock'	Achnatherum hymenoides	1.5
Tall Fescue	Festuca arundinacea	1
Garnet Mountain Brome	Bromus marginatus	3.5
Blue Flax	Linum lewisii	1
Lovington Blue Gramma	Bouteloua gracilis 'Lovington'	1
Gulf (Lonestar) Annual Rye	Lolium perenne ssp. Multiflorum	3.5
Antelope Bitter-Purshia	Purshia tridentata	0.125
Saltbrush-Fourwing	Atriplex canescens	0.375
Small Burnet-Delar	Sansquisorba minor	0.75
Blue Wildrye	Elymus glaucus	2.75
Ryegrass, Wild Russian Bozoisky	Psathyrostachys juncea	1.5
Total		24.5

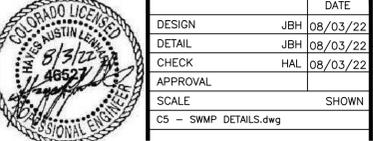
- HYDROMULCH NOTES:**
- HYDROMULCH MUST MEET OR EXCEED THE FOLLOWING REQUIREMENTS:
 - HYDROMULCH IS TO BE FULLY BIODEGRADABLE MATRIX COMPOSED OF 100% RECYCLED AND THERMALLY REFINED WOOD FIBERS, CRIMPED INTERLOCKING BIODEGRADABLE FIBERS, AND NATURALLY DERIVED BIOPOLYMERS.
 - FUNCTIONAL LONGEVITY SHALL BE LESS THAN OR EQUAL TO 12 MONTHS. CURE TIME SHALL BE LESS THAN 2 HOURS.
 - THERMALLY PROCESSED WOOD FIBERS - 77%
 - WETTING AGENTS (CROSS LINKED TACKIFIERS) - 10%
 - CRIMPED, BIODEGRADABLE INTERLOCKING FIBERS - 2.5%



5 SOIL AMENDMENT, SEEDING, AND MULCHING
C6 SOURCES: CITY OF DURANGO STORM DRAINAGE DESIGN CRITERIA MANUAL AND TRITON ENVIRONMENTAL



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2	JBH	08/03/22	DETAIL	
3	HAL	08/03/22	CHECK	
4			APPROVAL	
5			SCALE	SHOWN



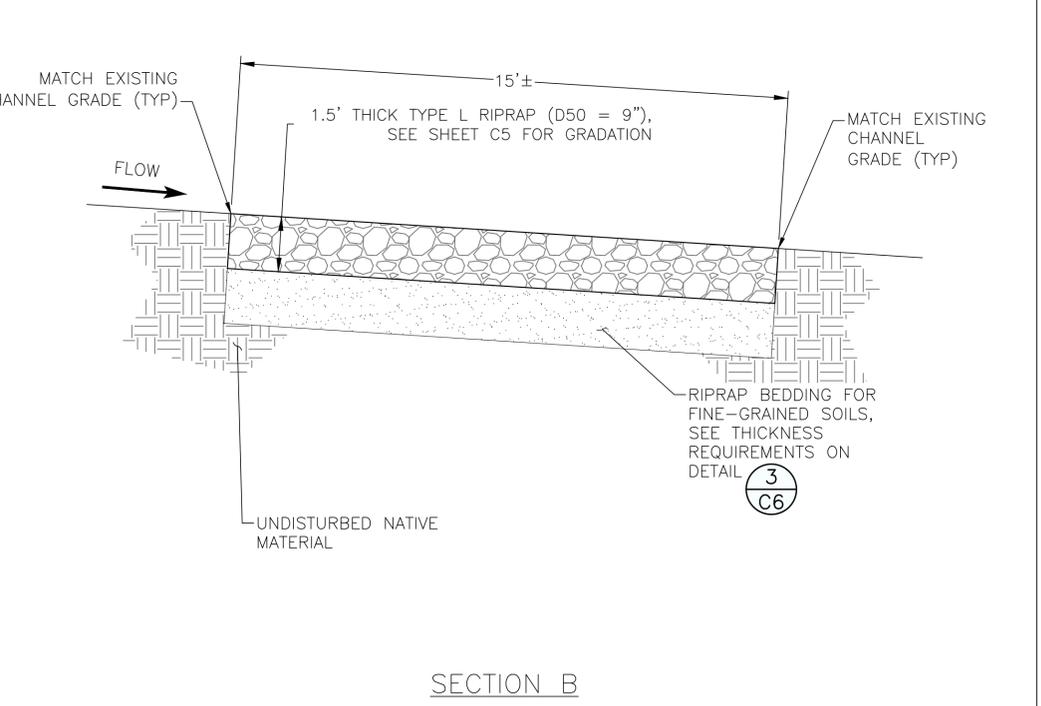
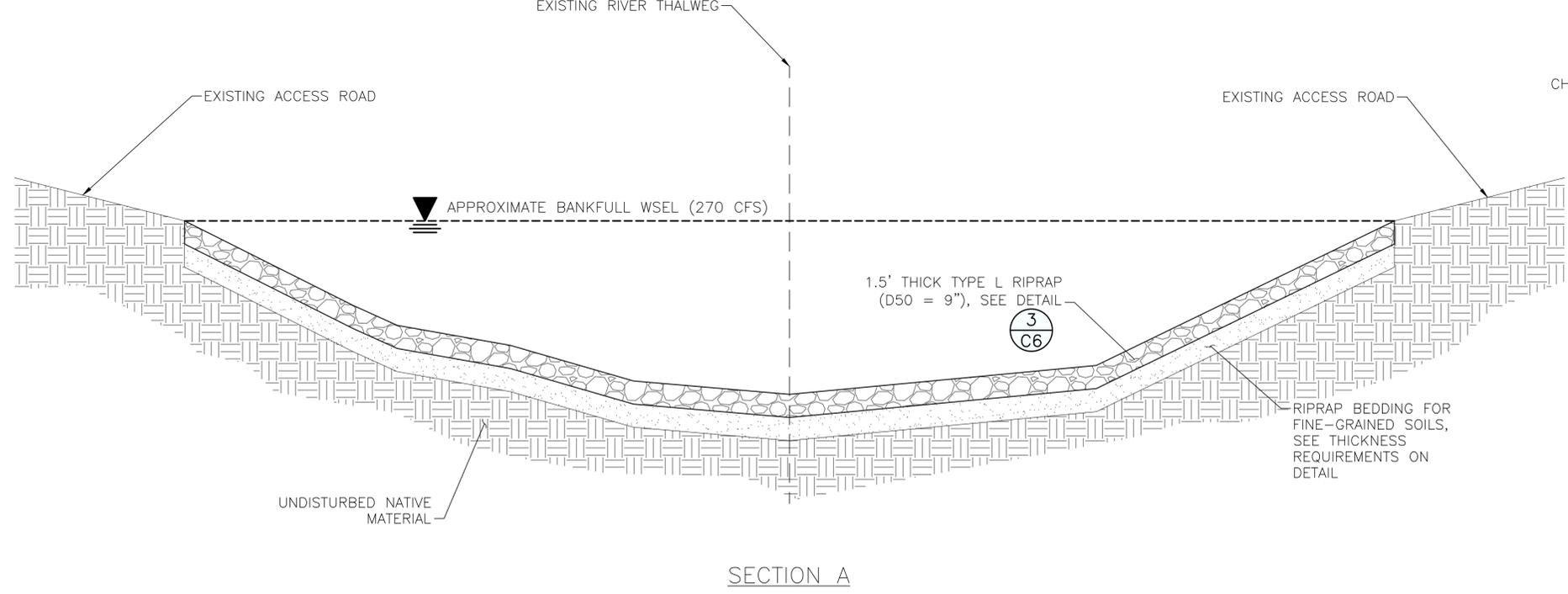
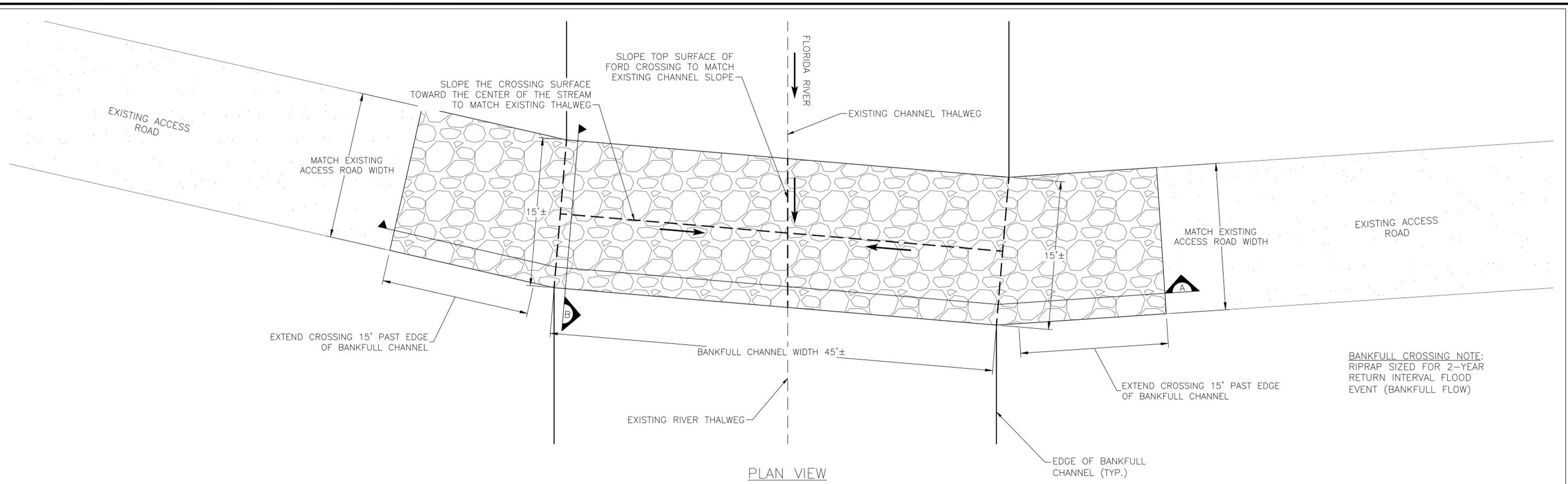
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SWMP DETAILS

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SHEET NO. C6

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1
C7 LOW WATER CROSSING DETAIL
 NOT TO SCALE. SOURCE: DETAIL BASED ON GUIDANCE FROM NATURAL RESOURCES CONSERVATION SERVICE (NRCS) CONSERVATION PRACTICE STANDARD 578

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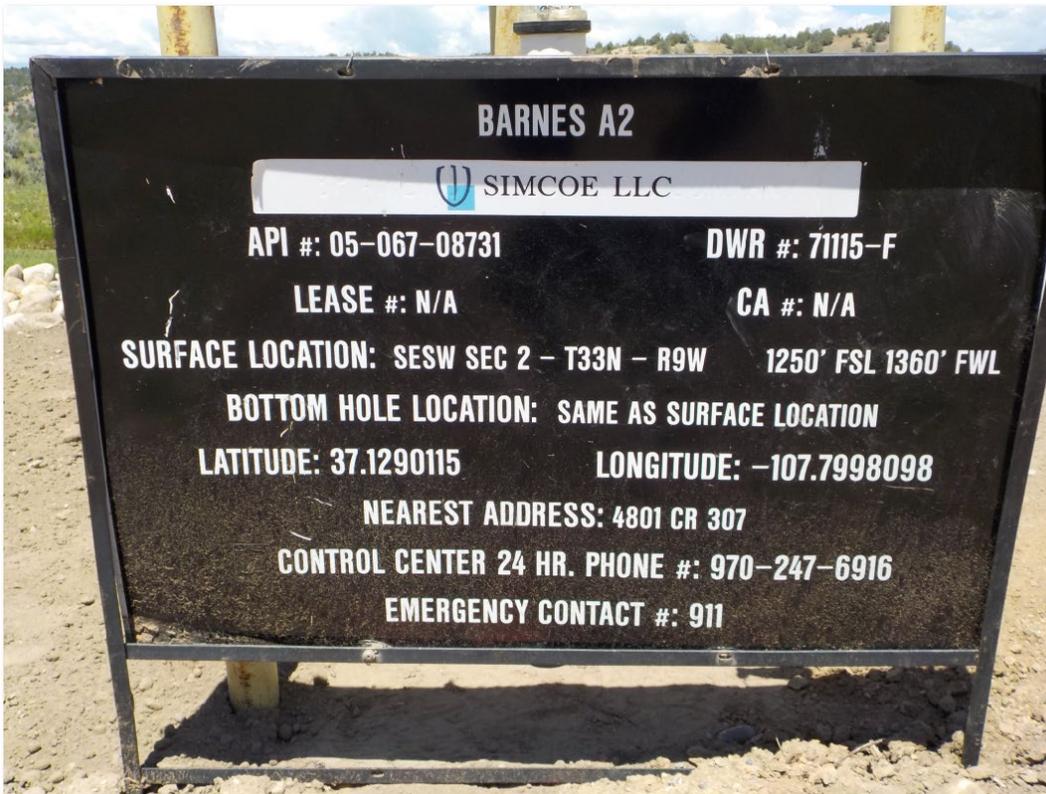
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08/03/22	HAL	CHECK

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LOW WATER CROSSING DETAIL

JOB NO. 191-027.030
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 SHEET NO. C7

PHOTO 1
Well site sign for location verification.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

PHOTO 2

Drainage ditch along the west side of the access road facing north to south.



PHOTO 3

Drainage ditch to west of access road facing south to north.



PHOTO 4 & 5

Hard hat for scale photo of drainage ditch to the west side of the access road.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

PHOTO 6

Fractured rock at inlet and fractured rock check dam. Photo taken from slightly northeast to slightly southwest.



PHOTO 7

Close up photo of fractured rock inlet. Photo taken facing east to west.



PHOTO 8

Fractured rock check dam installed at the west edge of disturbance. Hard hat in place for scale of the feature height.



PHOTO 9

Same check dam as photo 8 photo taken from north to south with hard hat in place for scale



PHOTO 10 & 11

Fractured rock check dam on the left edge of photo and straw wattles and water way on the right edge.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

Photo 12 & 13

Wattle installation. They are dug into the soils, staked through the center throughout and double crossed staked at the ends with ends overlapping.



PHOTO 14, 15 & 16

Wattles installed at the edge of pad along the water way bank.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

PHOTO 17 & 18

Fractured rock and boulders. Truck parked in view for scale of fractured rock feature.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

PHOTO 19
West edge of well pad.



PHOTO 20
Rock installed on west edge of pad from the pad looking west.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

PHOTO 21

View of the fractured rock feature from the well pad facing to the northwest.



PHOTO 22

Close up photo of disturbed area demonstrating the seed has been broadcast prior to hydromulch application.



PHOTO 23

Seed on loosened soils prior to hydromulch application.



PHOTO 24, 25, & 26
Hydromulch applied.



NOAV 403104776 – Barnes A 2
Exhibit 2
Interim Stormwater Management Plan Implementation Photos

PHOTO 27
Erosion Blanket

