CARROLL & LANGE-MANHARD
A MANHARD CONSULTING COMPANY

February 22, 2013

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Division of Reclamation, Mining and Safety
101 South 3rd Street, Suite 301
Grand Junction, CO 81501

INTRODUCTION

This Technical Revision (TR) presents Wildcat Mining Corporation's (Wildcat) approach to restore and stabilize the Little Deadwood Gulch (LDG) to its original configuration.

Wildcat is preparing to operate the May Day Idaho Mine Complex and activated MSHA mine identification (ID) number 05-03674. Upon DRMS approval of this TR, Wildcat will implement the corrective actions described herein.

Historical mining activities in the vicinity of the May Day 2 portal constructed an access road across the LDG drainage channel impairing the historical drainage patterns. In early 2010, a cease and desist order to conduct any mining related activities, including operating equipment without written authorization from the Colorado Division of Reclamation, Mining and Safety (DRMS) was issued to Wildcat. Wildcat has followed the cease and desist order and has been unable to complete any modifications to the LDG since that time.

Wildcat submitted as Exhibit D, Attachment D-3 to its amended Section 112d permit application the May Day 2 Stormwater Control Work Plan (the Original Work Plan). This Original Work Plan generally addressed existing drainage conditions and construction activities required to repair the LDG to its original alignment. This TR provides more detailed construction documentation for the proposed construction to repair the LDG. The proposed work to restore the historical drainage pattern of the LDG is outlined below:

- Installation of erosion and sediment control BMP's at the site.
- Install three 24" corrugated metal pipes (CMP) across the existing access road. The 24" CMP's will convey the 10-year, 24-hour stormwater run-off in the LDG. If stormwater events larger than this occur the drainage will overtop the access road, flow across the roadway and be picked up downstream in the LDG.
- Grading activities to restore the drainage channel.
- Stabilize the drainage way and install BMP's to prevent erosion while vegetation establishes.

WORK PLAN

The following presents a corrective action work plan to remove debris from the LDG and stabilize the drainage channel. Based on the analysis conducted, the following design has been prepared to meet the conditions imposed by DRMS as part of the approved 112d permit. This TR uses current topographic data to further refine the design that was presented in the Original Work Plan and prepare the final construction documents for the LDG and May Day 2.

Scope of Work

Design Analysis:

To repair the LDG back to its original configuration an analysis was completed of the slopes and cross sections of the Gulch upstream and downstream of the disturbed area. Cross sections were cut on a 25-foot interval to determine approximate side slopes of the Gulch in an undisturbed state as well as to determine the approximate longitudinal grade of the LDG in the vicinity of the May Day 2 portal. This provided a typical section for the LDG that could be used to estimate the maximum drainage conveyed by the channel. For the purposes of this analysis, it is assumed that the maximum drainage contained within the LDG is equivalent to the 100-year, 24 hour storm. It is likely that the amount of drainage in the channel is slightly larger than this storm event, but making this assumption will provide a factor of safety in our calculations.

Based on this analysis, it was determined that the LDG could convey approximately 114 cfs of stormwater run-off. DRMS requires that the 10-year, 24 hour storm be conveyed underneath the access road, through a culvert. Based on our analysis, the 10-year storm event would have a flow rate of 51 cfs. This run-off was used to determine the required pipe size to allow the drainage to pass beneath the access road. Calculations show that the 100-year flow could be conveyed in one 42" pipe. Due to vertical constraints it is not possible to install a 42" pipe and that multiple 24" pipes would be used instead of the calculated single 42" CMP. Utilizing CulvertMaster (version 3.3 by Bently) it was determined that three 24" CMP's could convey 54.7 cfs and completely contain the 10-year event. The remaining 59.3 cfs would overtop the channel and flow across the access road. See Appendix A for drainage calculations.

Construction of Improvements:

Construction will begin with installation of necessary runoff and erosion BMP controls as shown on Figure 1 – Initial SWMP in Appendix B. Following installation of these controls, construction will start with the installation of the 24" CMP's. A plan and profile of the pipes was prepared showing the required slopes and length of pipe (see Figure 3 – Culvert Plan & Profile).

All CMP used for this project shall use a typical 2-2/3" x 1/2" corrugation, 16 gage steel (minimum thickness = 0.064") and shall be installed in bedding material meeting the manufacturer's specifications. Typical material used for bedding of CMP is squeegee (3/8" minus sand) due to how easy it is to work with and the squeegee's ability to convey water through the material.

The upstream side of the pipes will be supported by an 18" deep by 6" thick concrete toe wall to prevent undermining of the pipe in high flow situations. It is also recommended that a trash rack be placed over the mouth of each pipe to prevent large debris from entering the pipes.

The downstream side of the pipes will use a multi-inlet CMP flared end section to disperse the water to the greatest extent possible. Additionally, a 14-foot by 15-foot riprap pad will be installed to prevent erosion of the channel as it exits the pipe. The riprap shall have a median rock size of 12" and will be grouted in place, to prevent high velocity flows from dislodging the rock.

After installation of the culverts, grading operations can begin to reshape the LDG and restore it to its original configuration. Figure 2 – Little Deadwood Gulch Grading Plan was prepared to show proposed grading activities.

After completion of grading activities, the channel will need to be stabilized to prevent erosion and degradation of the proposed alignment. Rock Check Dams will be placed along the flow line of the channel to slow the velocity of run-off and prevent scouring. Seeding and mulch will be placed on all disturbed areas. Due to the high probability that water will flow through this area, it is recommended that all slopes disturbed during grading activities be covered with erosion control blankets. Erosion control measures are shown on Figure 4 – Final SWMP.

APPENDIX A

- LITTLE DEADWOOD GULCH DRAINAGE ANALYSIS

Cross Section for Trapezoidal Channel - 1

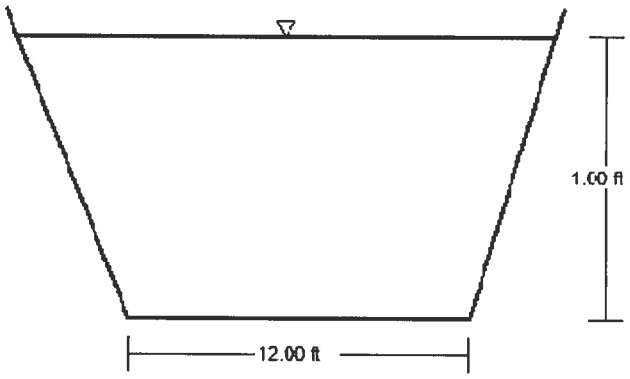
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.045	
Channel Slope	6.60	%
Normal Depth	1.00	ft
Left Side Slope	4.00	H:V
Right Side Slope	3.00	H:V
Bottom Width	12.00	ft
Discharge	113.66	ft³/s

Cross Section Image



V: 10
H: 1

Culvert Calculator Report
May Day 2 Culverts

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	8,807.00	ft	Headwater Depth/Height	1.50	
Computed Headwater Eleva	8,807.00	ft	Discharge	54.73	cfs
Inlet Control HW Elev.	8,806.89	ft	Tailwater Elevation	8,802.00	ft
Outlet Control HW Elev.	8,807.00	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	8,804.00	ft	Downstream Invert	8,801.90	ft
Length	36.00	ft	Constructed Slope	0.058333	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.14	ft
Slope Type	Steep		Normal Depth	1.14	ft
Flow Regime	Supercritical		Critical Depth	1.54	ft
Velocity Downstream	9.88	ft/s	Critical Slope	0.025185	ft/ft

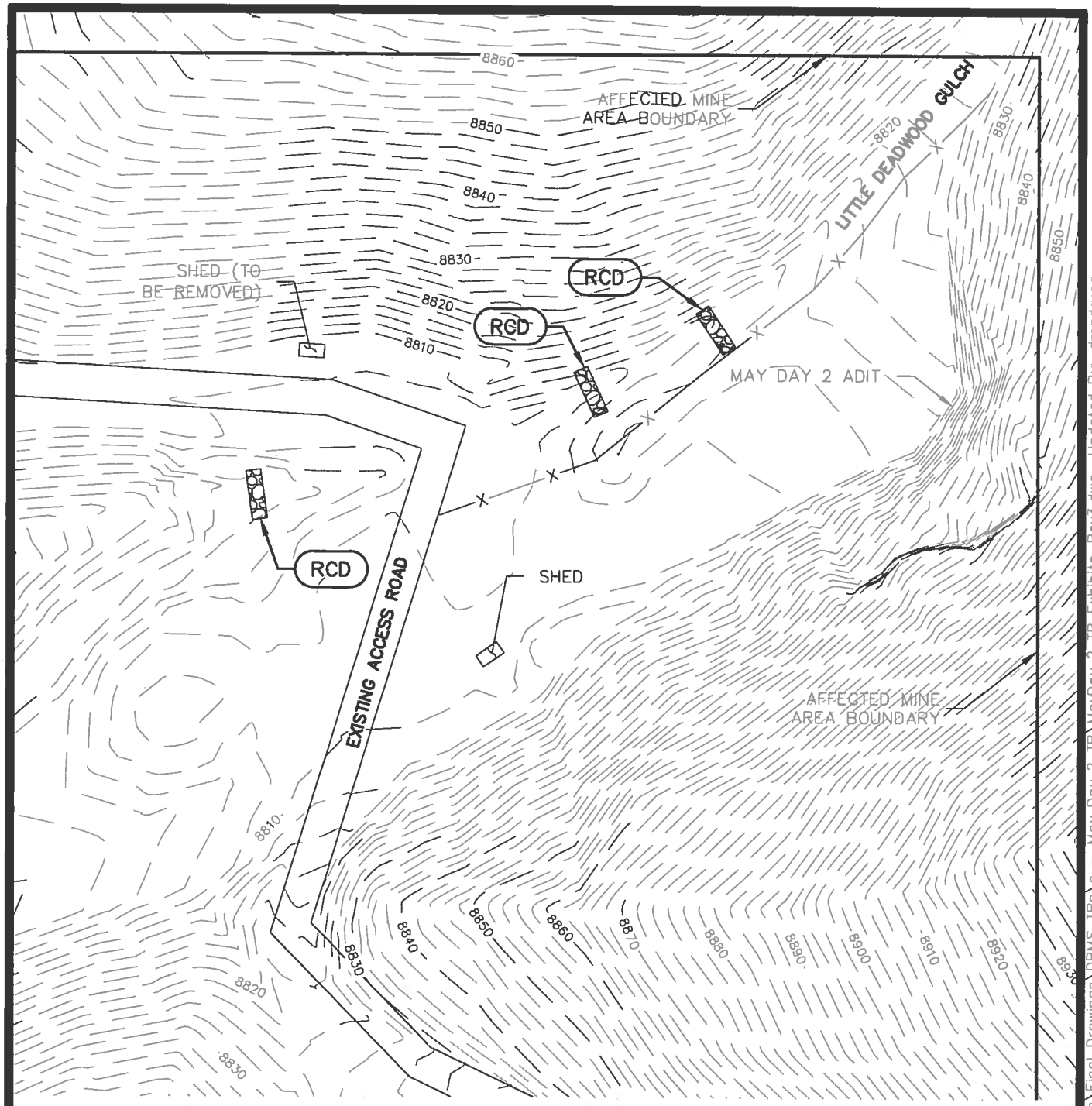
Section					
Section Shape	Circular		Mannings Coefficient	0.024	
Section Material	CMP		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	8,807.00	ft	Upstream Velocity Head	0.77	ft
Ke	0.90		Entrance Loss	0.69	ft

Inlet Control Properties					
Inlet Control HW Elev.	8,806.89	ft	Flow Control	Submerged	
Inlet Type	Projecting		Area Full	9.4	ft²
K	0.03400		HDS 5 Chart	2	
M	1.50000		HDS 5 Scale	3	
C	0.05530		Equation Form	1	
Y	0.54000				

APPENDIX B – PHASE 1 CONSTRUCTION FIGURES

- FIGURE 1 – INITIAL SWMP
- FIGURE 2 – LITTLE DEADWOOD GULCH GRADING PLAN
- FIGURE 3 – CULVERT PLAN & PROFILE
- FIGURE 4 – FINAL SWMP



LEGEND

- 8715 — EXISTING MAJOR CONTOUR
- 8717 — EXISTING MINOR CONTOUR
- X — EROSION CONTROL WADDLE
- RCD — ROCK CHECK DAM

NORTH

0 20 40
SCALE: 1" = 40'

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WILDCAT MINING CORPORATION
LA PLATA COUNTY, CO
MAY DAY 2 - INITIAL SWMP

PROJ. MGR.:	DJM
DRAWN BY:	TLR
DATE:	02/22/13
SCALE:	1"=40'

SHEET 1 OF 4

WMCDUC 120574

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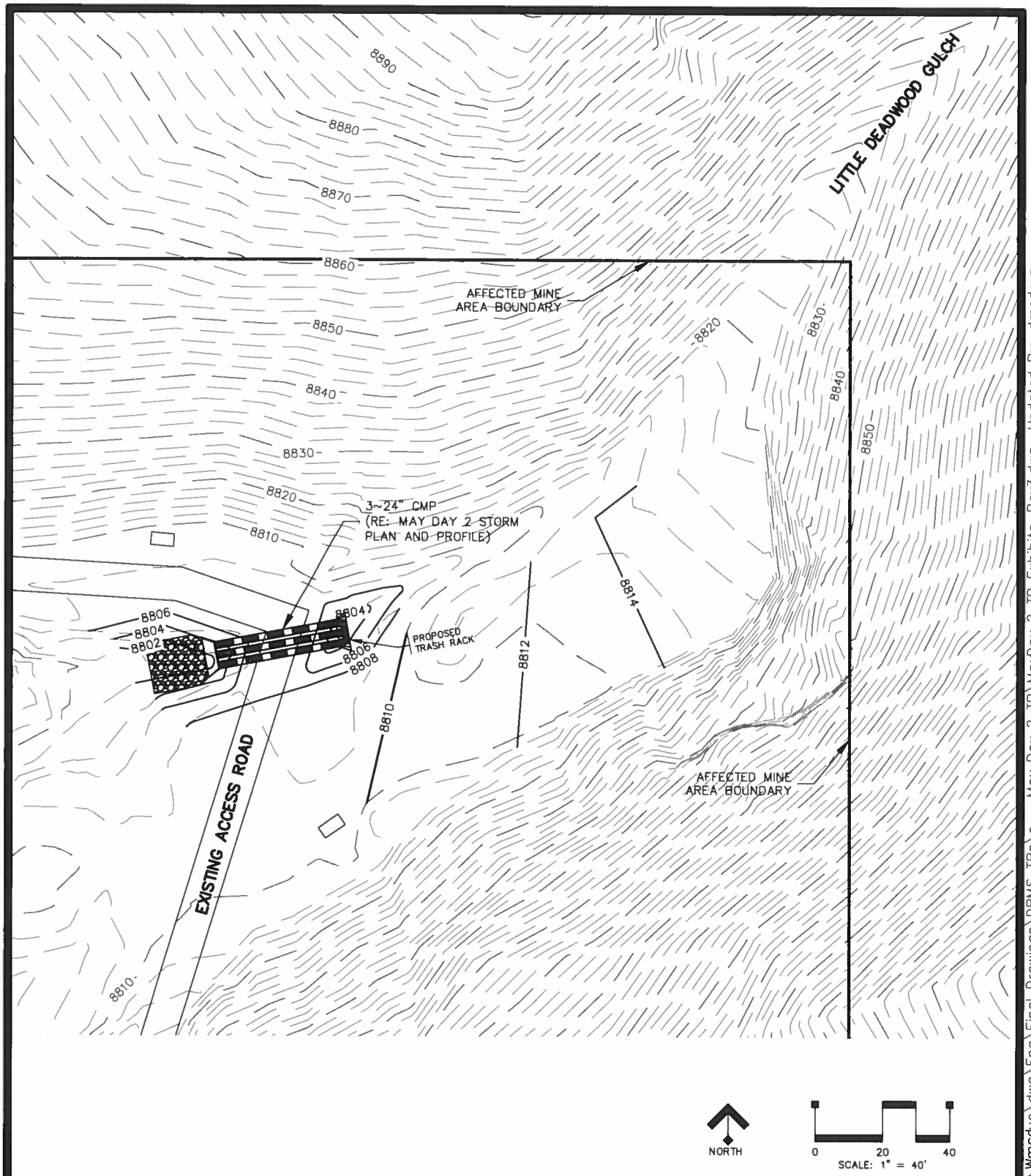

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MAY DAY 2 - GRADING PLAN

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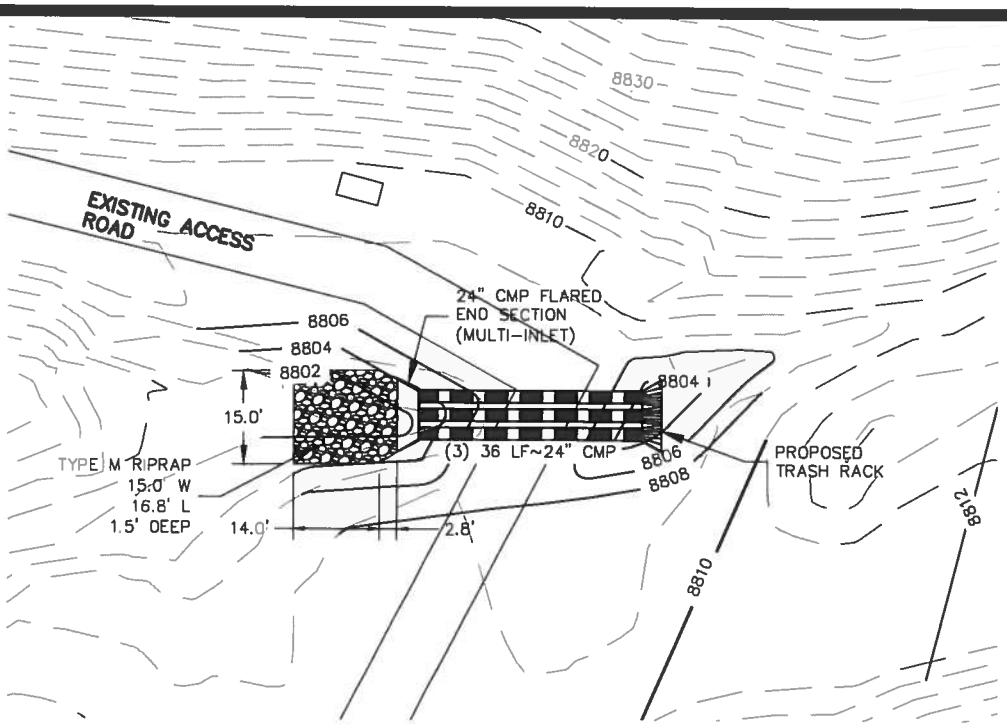
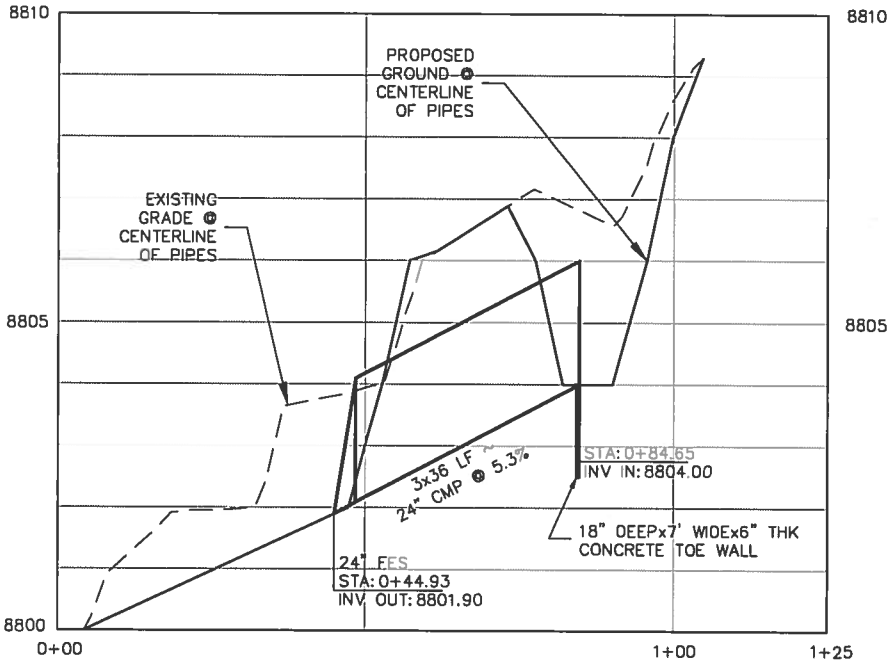
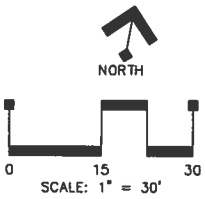
DATE:	02/22/13
SCALE:	1"=40'

SHEET 2 OF 4
WMCDUC 120574





STORM CROSS-SECTION
H 1:1 - V 1:10



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MAY DAY 2 - STORM PLAN AND PROFILE

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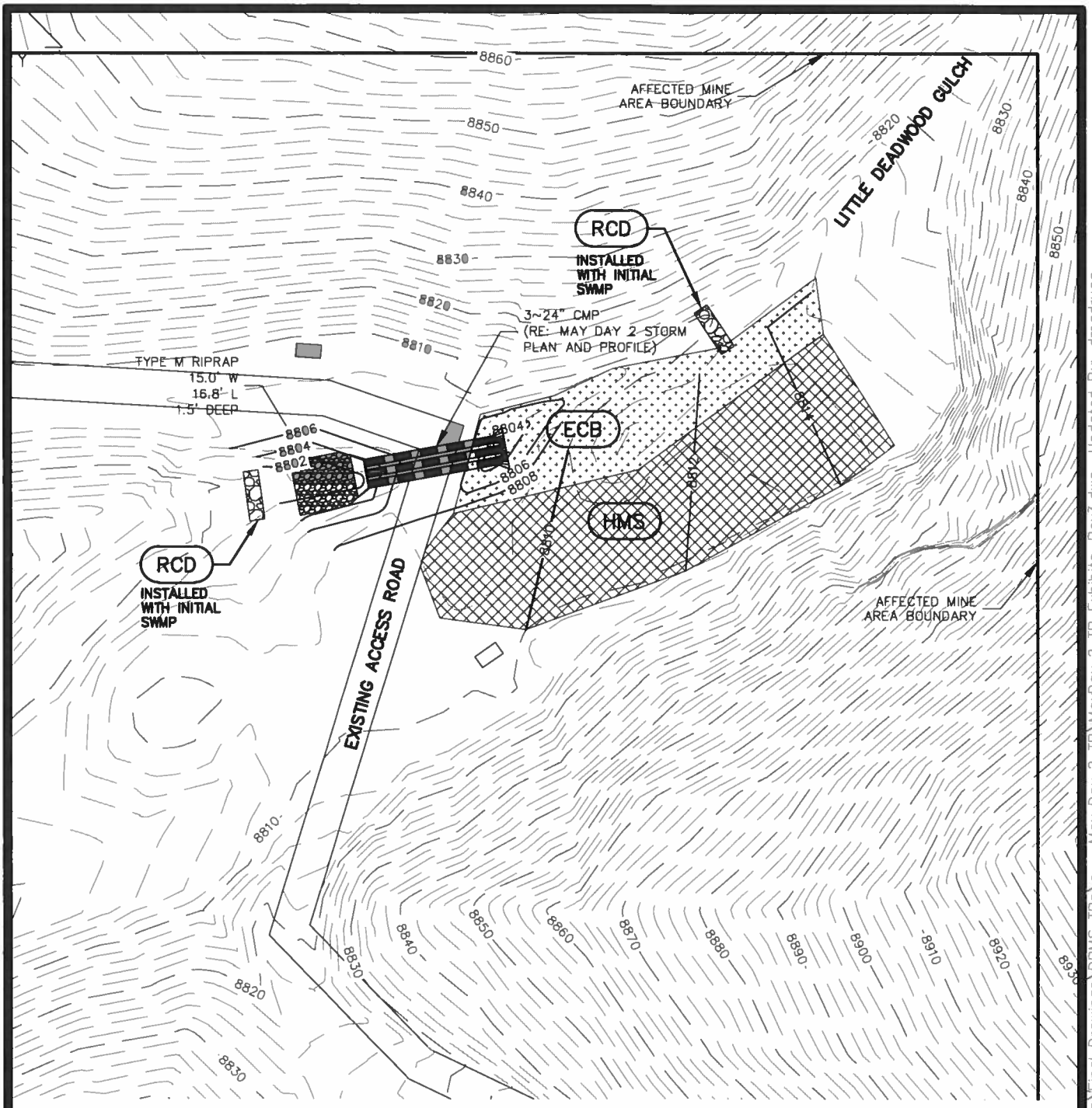
SHEET 3 OF 4
WMCDUC 120574



LEGEND

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8715	PROPOSED MAJOR CONTOUR
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HMS	HYDROMULCH / SEEDING
RCD	ROCK CHECK DAM
	RIPRAP

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FINAL SWMP

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