

## OGMCOAL - Fwd: Solve 3 Chemical Trial

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**From:** Kevin Lundmark  
**To:** OGMCOAL  
**Date:** 5/18/2011 8:29 AM  
**Subject:** Fwd: Solve 3 Chemical Trial  
**CC:** Steve Christensen  
**Attachments:** SOLVE 3 CHEMICAL TRIAL.docx

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C0150032  
5/16/2011 email from Dana Marrelli re: Solve 3 Chemical Trial

>>> "Marrelli, Dana" <dmarrelli@coalsource.com> 5/16/2011 8:17 AM >>>

Please see the attachment for the Solve 3 chemical trial.

Let me know if you have any questions.

Thank you,

*Dana Marrelli*

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## SOLVE 3 CHEMICAL TRIAL

### Monday – May 2, 2011

Mine Flow: 9:00 400  
3:00 390

Randy Wilcox from WaterSolve was on site along with Scott Dimick and Dana Marrelli from Crandall Canyon Mine.

Because of the corrosive nature of this chemical, all parts that come into to contact with the Solve 3 chemical must be plastic. The day was spent plumbing up the new chemical.

### Tuesday – May 3, 2011

Mine Flow: 9:00 370  
3:00 395

Randy Wilcox- WaterSolve

Scott Dimick, Dana Marrelli – Crandall Canyon Mine

Kevin Lundmark - DOGM

A field sample was taken at the outlet of the iron treatment pond before we began testing the new chemical.

9:30 am	Field total Iron .082	pH 7.6
11:00 am	Begin new chemical at same dosage rate as previous 8187 chemical	Approx 40 ppm
11:30 am	Jar Test – Flock looks good, flock is a darker color	
1:30 pm	Change coagulant dosage rate	30 ppm
	Flocculent dosage rate	3.5 ppm
2:00 pm	Jar Test – Flock looks good	
3:00 pm	Take sample to the lab	pH 7.6

**Wednesday – May 4, 2011**

Mine Flow: 9:00 425  
3:00 419

Randy Wilcox- WaterSolve

Scott Dimick, Dana Marrelli – Crandall Canyon Mine

8:00 am Recirculation is dark orange – flocking and falling out in first cell, pond looks good

9:00 am Field total Iron .158 pH 7.6  
Coagulant 30 ppm  
Flocculent 3.0 ppm

10:00 am Change coagulant dosage rate to 25 ppm  
Flocculent 3.0 ppm

2:00 pm Jar Test – Flock look good

3:00 pm Take sample to the lab pH 7.6

**Thursday – May 5, 2011**

Mine Flow: 9:00 402  
3:00 402

Randy Wilcox- WaterSolve

Scott Dimick, Dana Marrelli – Crandall Canyon Mine

8:00 am Very orange, almost red

8:30 am Field total Iron .242 pH 7.6

11:00 am Test Solve 151 Flocculent

12:00 Cloudy – didn't appear to be dropping everything out. I didn't feel that this was a good time to test the new WaterSolve flocculent. I would like to test this chemical after we run the coagulant for a continuous period of time.

1:00 pm Switch back to 7763

2:45 pm Change coagulant dosage rate to 20 ppm  
Flocculent 3.0 ppm

3:00 pm Take sample to the lab pH 7.6

**Friday – May 6, 2011**

Mine Flow: 9:00 446

3:00 456

Randy Wilcox- WaterSolve

Scott Dimick, Dana Marrelli – Crandall Canyon Mine

8:00 am Recirculation is very orange, red – pond looks good

9:00 am Field total Iron .402 pH 7.6

Change coagulant dosage rate to 15 ppm

Flocculent 3.0 ppm

10:00 am Jar Test – Floccing good but not dropping out as fast

11:00 am Changed back to coagulant dosage rate of 20 ppm

12:00 Randy leaves

1:00 pm Jar Test – Floccing good

2:00 pm Take sample to the lab pH 7.6

**Conclusion:**

The new Solve 3 chemical trial proved to be very successful. We feel that the new chemical is the best option for the Crandall Canyon treatment of mine water. We would like to recommend switching to the new chemical for the following reasons.

1. The field testing at the outlet of the iron treatment pond (002) did show an increase in total iron as testing continued throughout the week. This is a result of using an iron-based coagulant and also lowering the dosage rate of the chemical. Even at the chemical dosage rate of 20 ppm, the total iron at (002) remained in compliance. We have decreased the amount of chemical by half.

Field Test Results				
Date:	pH:	Total Iron:	Solve 3 ppm:	Notes:
Tuesday, May 3 <sup>rd</sup>	7.6	.082	40 – 30	Started at 40 ppm
Wednesday, May 4 <sup>th</sup>	7.6	.158	25	
Thursday, May 5 <sup>th</sup>	7.6	.242	20	
Friday, May 6 <sup>th</sup>	7.6	.402	15 - 20	Ended at 20 ppm

2. Solve 3 is an iron based coagulant versus an aluminum based coagulant. This change will reduce the addition of aluminum to the receiving waters.