To: Leidy, Robert[Leidy.Robert@epa.gov]
From: Goldmann, Elizabeth
Sent: Tue 4/11/2017 5:39:33 PM
Subject: FW: question on estimates stormwater runoff from Rosemont Mine site

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From: Chris Garrett [mailto:cgarrett@swca.com]
Sent: Tuesday, September 15, 2015 10:16 AM
To: Leidy, Robert <Leidy.Robert@epa.gov>
Cc: Goldmann, Elizabeth <Goldmann.Elizabeth@epa.gov>; Vogel, Mindy S -FS <msvogel@fs.fed.us>
Subject: RE: question on estimates stormwater runoff from Rosemont Mine site

Hi Rob –

After thinking about it on the plane yesterday, I was pretty sure I knew the answer to your question. After getting back to my desk and looking into it I reached the same conclusions.

1) I do not believe an estimate or calculation was made in the FEIS, or any of the backup documentation, that specifically is for the stormwater losses at the Davidson/Cienega confluence, during the active mining phase.

2) But it's not that hard to do (see below).

3) The pertinent documents on this topic are ones you probably already have pulled and looked at, but I'll list them here for good measure in order to put them in context. All of these were used as FEIS references, so if you need them the easiest thing is to pull them from the rosemonteis.us website.
   a. SWCA 2013f. The stormwater modeling conducted by Rosemont for the action alternatives was done only for post-closure stormwater losses. However, we knew that the greatest "removal" of land from the watershed, and thus the greatest stormwater loss, would actually be during active mining before concurrent reclamation was completed. Therefore we needed to explore the phasing of stormwater losses, and this tech memo is how we estimated that phasing, based on acreage.
   b. The post-closure stormwater losses are contained in a series of tech memos, the results of which are summarized in Tables 92-96 in the FEIS. These are:
      i. Krizek 2010c (Proposed Action)
      ii. Krizek 2010a (Phased Tailings)
      iii. Zeller 2012 (Barrel). [You might notice that on both p. 429 and 435 of the FEIS, Krizek 2010b is listed as a citation, not Zeller 2012. This is a recognized error that we identified in the latest Errata that will soon be published. It should be Zeller 2012]
      iv. Chee 2010 (Barrel Trail)
      v. Krizek 2010d (Scholefield-McCleary)
   c. Zeller 2011a. All of the post-closure stormwater losses in the above memos were estimated only for Barrel Canyon, with the specific measurement point at the Barrel Canyon streamgage. Zeller 2011a is the tech memo that extrapolates those stormwater losses to numerous other points downstream.
   d. SWCA 2012d. Zeller 2011a is only for the post-closure Proposed Action, which left us with the need to calculate the same downstream changes for the other action alternatives. Those calculations are the purpose of this memo.

Anyway, as you can see from those various references, none of them calculate the active mining losses at locations downstream from Barrel Canyon. If I were to do so now, I would do so using the same methodology shown in SWCA2012d. Something like this:

- Row C = 30 to 40% (active phase reductions, estimated based on acreage losses in SWCA 2013f, stated on p. 434. Pertinent to Barrel Canyon only)
- Row G = 25.44% (based on Zeller 2011a downstream estimates for the Proposed Action)
- Row H = Row G x Row C = 7.6 to 10.2% = These would be the estimated active phase stormwater flow reductions at Davidson/Cienega confluence.

One further pertinent piece of analysis in the FEIS that is related to this calculation that shouldn't be overlooked is on page 554, top paragraph. This is in the "Seeps, Springs & Riparian Areas" section and is specifically the analysis of potential impacts to

Outstanding Arizona Waters in Davidson Canyon and Lower Cienega Creek. This paragraph assesses the potential likelihood that reductions in stormwater flow ranging from 4.3 to 11.5 percent would have on riparian vegetation, water quality, recharge to the shallow alluvial aquifer, and subflow from Davidson Canyon to Cienega Creek.

Hope that helps

- C

From: Leidy, Robert [mailto:Leidy.Robert@epa.gov]
Sent: Monday, September 14, 2015 12:27 PM
To: Chris Garrett
Cc: Goldmann, Elizabeth
Subject: RE: question on estimates stormwater runoff from Rosemont Mine site

Chris,

No problem. Much appreciated.

Best,

Rob

Robert A. Leidy, Ph.D.
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San Francisco, CA 94105
(415) 972-3463

From: Chris Garrett [mailto:cgarrett@swca.com]
Sent: Monday, September 14, 2015 12:16 PM
To: Leidy, Robert
Cc: Goldmann, Elizabeth
Subject: Re: question on estimates stormwater runoff from Rosemont Mine site

Hi Rob -

Apologies for the delay. I've been out of the country since about an hour before you sent this...I'm still traveling but should be catching up tomorrow and Wednesday and can look into this.

- C

Sent from my iPhone
On Sep 3, 2015, at 1:05 PM, Leidy, Robert <Leidy.Robert@epa.gov> wrote:

> Hello Chris,
>
> Hope you are doing well. I am hoping that you can help us answer a question regarding stormwater runoff estimates from the proposed Rosemont Mine site as you are most familiar with all of the technical studies.
>
> According to the FEIS (p. 434), the maximum loss of stormwater runoff to the watershed would occur during the first 10 years of active mining, with a reduction in annual average runoff of about 30 to 40%, compared with undeveloped

baseline conditions. Can you please provide us with the estimated percent reduction in flow at the Cienega/Davidson confluence during the active life of the mine? We can only find the estimates for post mine reduction in stormwater flow. Also, we would appreciate knowing if there are any documents that you are aware of that address this issue specifically.

Thanks much,

Rob

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