

From: Mosher, Bob
To: [Williams, Deborah](#)
Cc: [Cox, Brian](#)
Subject: RE: Briefings on Dynegy/Vermillion, Coal Ash Issues
Date: Tuesday, January 29, 2013 8:14:00 AM
Attachments: [Midforkvermdownstream.docx](#)
[MidForkVermillionseeps.docx](#)

My source for water quality data on ash pond seepage comes from a 2008 study by Bill Ettinger of the Springfield RO. Bill apparently had no problem collecting seepage at the base of the berm, which is right on the river bank to my understanding. Water quality analysis confirmed that this was ash seepage (i.e., leachate, i.e., groundwater entering surface water). I put together a summary of Bill's data along with data from our downstream ambient monitoring station on the Middle Fork. These data tables recently were sent to Marcia and she excerpted some of this for her memo that you attached. My first attachment is the downstream ambient monitoring station data (summer and fall conditions) and the second is seepage water data and 'after mixing' data from Bill's special study. You may want to contact Bill for other details of his study. He may have photographs.

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From: Williams, Deborah
Sent: Monday, January 28, 2013 4:59 PM
To: Mosher, Bob
Cc: Cox, Brian
Subject: FW: Briefings on Dynegy/Vermillion, Coal Ash Issues

Hi Bob,

Stefanie had forwarded this to me because I had worked on some Dynegy Vermillion NPDES issues in the past.

I was not involved with the groundwater issues directly, but when I was consulted on the NPDES issues, I understood our position to be there was no evidence of a surface water discharge connection to the impoundments. The end of this memo seems to assume there is a surface water discharge from the impoundments. Am I misunderstanding the memo or have we determined there is a discharge via groundwater to surface water? The terminology that got my attention is "ash pond seepage". I thought Amy had said we sampled the groundwater seepage, but I didn't think there was any documentation that the sampled seepages were coming directly from leaks from the ashponds.

Do we need to our decisions on what discharges need to be included in the NPDES permit based on new facts?

Thanks,
Debbie

From: Diers, Stefanie
Sent: Tuesday, January 22, 2013 7:21 AM
To: Williams, Deborah
Subject: FW: Briefings on Dynegy/Vermillion, Coal Ash Issues

I think this might be yours.

From: Willhite, Marcia
Sent: Friday, January 18, 2013 2:58 PM
To: Kim, John J.; Bonnett, Lisa; Armitage, Julie; Cobb, Rick; Buscher, Bill; Sofat, Sanjay; Crislip, Larry; Mosher, Bob; Diers, Stefanie; Tonsor, Connie L.; Kruse, Chad; Phillips, Scott; Nightingale, Steve
Cc: McMillan, Dave; Elzinga, Sherrie
Subject: Briefings on Dynegy/Vermillion, Coal Ash Issues

In preparation for upcoming meetings on Dynegy/Vermillion, please find attached a briefing memo. Also attached is an update on Agency response to other issues on coal ash raised by environmental groups last year.

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Table 3. Water Quality Data for Selected Parameters at Intensive Basin Station BPK-PP-B2, Middle Fork Vermilion River Seeps Near the Power Plant Ash Pond, for June, 2008.

| Parameter Metals in ug/L | # of Samples | # of Detections | Mean of Detected Results | Highest Result | Water Quality Standard |
|--------------------------|--------------|-----------------|--------------------------|----------------|------------------------|
| Arsenic | 2 | 1 | 5.5 | 5.5 | 190 |
| Boron | 2 | 2 | 25,450 | 26,500 | 7,600 |
| Cadmium | 2 | 2 | 3.9 | 5.7 | 8.3 |
| Copper | 2 | 2 | 5.7 | 6.0 | 128 |
| Lead | 2 | 0 | - | - | 281 |
| Nickel | 2 | 2 | 7.3 | 9.9 | 55.1 |
| Zinc | 2 | 2 | 11.2 | 17.4 | 347 |
| Chloride mg/L | 0 | - | - | - | 500 |
| Sulfate mg/L | 0 | - | - | - | 1,992 |
| Hardness mg/L | 2 | 2 | 1710 | 1730 | - |
| Conductivity umho/cm | 0 | - | - | - | - |

Notes: This data was collected from two seeps below the lower ash pond.

Conclusions: Boron is present at about 3 times the chronic water quality standard, but did not exceed the acute standard.

Table 4. Water Quality Data for Selected Parameters at Intensive Basin Station BPK-09 Middle Fork Vermilion River Just Downstream of the Power Plant Ash Pond, 2 Miles ENE Newtown for June, 2008.

| Parameter Metals in ug/L | # of Samples | # of Detections | Highest Result | Water Quality Standard |
|--------------------------|--------------|-----------------|----------------|------------------------|
| Arsenic | 1 | 1 | 5.4 | 190 |
| Boron | 1 | 1 | 221 | 7,600 |
| Cadmium | 1 | 1 | 1.4 | 2.2 |
| Copper | 1 | 1 | 3.7 | 27.7 |
| Lead | 1 | 1 | 3.1 | 48.5 |
| Nickel | 1 | 1 | 2.6 | 12.1 |
| Zinc | 1 | 1 | 5.1 | 75.7 |
| Chloride mg/L | 0 | - | - | 500 |
| Sulfate mg/L | 0 | - | - | 1,992 |
| Hardness mg/L | 1 | 2 | 284 | - |
| Conductivity umho/cm | 0 | - | - | - |

Table 1. Water Quality Data for Selected Parameters at AWQMN Station BPK-07, Middle Fork Vermilion River, at Kickapoo State Park Just Upstream from I-74, Collected during the Months of June through October, 1999-2011.

| Parameter | # of Samples | # of Detections | Mean of Detected Results | Highest Result | Water Quality Standard |
|----------------------|--------------|-----------------|--------------------------|----------------|------------------------|
| Metals in ug/L | | | | | |
| Arsenic | 16 | 11 | 3.3 | 6.9 | 190 |
| Boron | 47 | 47 | 277 | 950 | 7,600 |
| Cadmium | 47 | 5 | 0.9 | 1.3 | 2.4 |
| Copper | 47 | 13 | 4.1 | 6.2 | 30.1 |
| Lead | 47 | 15 | 1.6 | 12.2 | 53.6 |
| Nickel | 47 | 13 | 1.1 | 2.4 | 13.1 |
| Zinc | 47 | 23 | 6.5 | 29 | 82.2 |
| Chloride mg/L | 53 | 53 | 22.4 | 72 | 500 |
| Sulfate mg/L | 54 | 53 | 52.0 | 136 | 1,929 |
| Hardness mg/L | 47 | 47 | 313 | 365 | - |
| Conductivity umho/cm | 39 | 39 | 610.6 | 719 | - |

Notes: This sampling station is sampled approx. 9 times per year. The summer and early fall months were chosen because low flows tend to occur in these months and ash pond water would be more prevalent in the stream. The station is located approximately 3 miles downstream of the lower ash pond.

All metals results are dissolved metal.

Taking the average of only the detected samples biases the mean on the high side, however, there is no acceptable way to average in the undetected results, especially given that several laboratory detection levels were used during this date range.

Three dissolved cadmium results were detected whereas the total cadmium result for the samples was non-detect. These results were counted as non-detect.

One chloride result was approximately ten times higher than the average. The laboratory reported trouble with the chloride test at the time the sample was analyzed. This outlier value was not used.

Metals water quality standards are the chronic standard calculated where applicable from the average hardness (313 mg/L). Sulfate water quality standard is calculated using the average hardness and chloride (22.4 mg/L).

Conclusions: This sampling station exhibits excellent water quality. All water quality standards are met all the time. Boron is the only parameter that shows slight elevation over what would be expected in a stream with no point sources.