Harbin, Danielle

From: Johnson, Rachel M <Rachel.JOHNSON2@GAPAC.com>
Sent: Wednesday, July 14, 2021 4:38 PM
To: Harbin, Danielle
Cc: Ross, Sarah M
Subject: RE: GP Crossett Paper Operations - NPDES Permit #AR0001210
Attachments: Revised BOD Bench Sheet.pdf; Revised Attachment 3.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Danielle,
To follow-up the call this morning related to data quality comments reported by GP in the letter dated June 30, 2020, we will continue with corrective actions. Please note:

1. Compliance Sample Seeding: There was some discussion regarding the seeding criteria and potential need to seed our compliance samples. As we discussed, we believe that we can achieve results that meet the minimum depletion criteria by adjusting dilutions. However, we are evaluating the proper dilutions for analysis on a daily basis. If circumstances change, we can further evaluate seeding the compliance sample.
2. Split Samples: Georgia-Pacific will send a split BOD sample to a 3rd party contract lab once per week for 8 weeks beginning next week. The results will be averaged on the monthly DMR and full back-up information attached for both sets of analyses.
3. Revised Bench Sheet: A newly updated lab bench sheet is attached. This new form was used for recording June 2021 data and will be attached to the June DMRs due July 25, 2021.
4. Data Quality reviews including an update to June 30, 2020 letter, Attachment 3: We realized that Table 4 did not include 11 dates associated with SMS 002. Table 4 has been revised and a column was added to show the sample location.
5. SOPs: We are in the process of updating our SOPs to match the Standard Methods our lab technicians are using and will submit them once complete.

Please let me know if you have any questions.

Thanks,
Rachel M. Johnson
Environmental Engineer
Crossett Paper Operations
(870) 500-3772

From: Harbin, Danielle <Danielle.Harbin@adeq.state.ar.us>
Sent: Tuesday, July 13, 2021 8:38 AM
To: Johnson, Rachel M <Rachel.JOHNSON2@GAPAC.com>
Cc: Ross, Sarah M <Sarah.Ross@GAPAC.com>
Subject: RE: GP Crossett Paper Operations - NPDES Permit #AR0001210

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ATTACHMENT 3

BOD QA/QC Issues – 5-year summary

Issue 1 – The glucose/glutamic acid (GGA) laboratory control standard was not run daily with each set of samples. Instead, the standard was run one day per week. The laboratory only set up one bottle of GGA standard.

Issue 2 - The BOD glucose/glutamic acid (GGA) laboratory control standard recovered outside the acceptable range of 198 mg/L +/- 30.5 for the samples associated with the following dates:

Table 3 – Summary of Out of Range GGA Checks[1]

Date	mg/L	Date	mg/L	Date	mg/L	Date	mg/L
12/9/2015	231	3/16/2016	240	8/23/2017	359	2/13/2019	163
12/16/2015	240	5/25/2016	236.5	10/25/2017	167	10/9/2019	159
12/23/2015	245	6/1/2016	250	11/1/2017	148	11/13/2019	165
12/30/2015	240	2/8/2017	152	11/8/2017	167	1/8/2020	154
1/6/2016	241	3/1/2017	162	11/15/2017	162	3/18/2020	163
1/13/2016	235	3/8/2017	158	1/24/2018	236	5/20/2020	166
1/20/2016	247	3/15/2017	164	2/28/2018	165	11/18/2020	240
1/27/2016	245	3/22/2017	164	8/22/2018	237	12/2/2020	237
2/3/2016	263	3/29/2017	147	12/5/2018	160	12/9/2020	245
2/24/2016	231	4/26/2017	247	1/16/2019	131	12/16/2020	230
3/2/2016	238	8/9/2017	167	1/23/2019	158	12/23/2020	242
3/9/2016	245	8/16/2017	165	1/30/2019	159		

Issue 2 – The analytical method specifies a minimum dissolved oxygen (DO) depletion criteria of 2 mg/L and a minimum residual DO criteria of at least 1.0 mg/L. Beginning with the April 21, 2020 sample, the laboratory analyst inadvertently flipped these criteria and began using a minimum depletion of 1.0 mg/L for calculating sample results. This had minimal impact on the results, however there were several instances where a result was reported that should have been a non-detect, or less than value, because none of the dilutions met the actual minimum depletion criteria of 2.0 mg/L. In several other instances, dilutions that did not meet the actual minimum depletion criteria were used in calculating sample results. This had minimal impact on the results as well, with the maximum difference between what was reported and what should

[1] The yellow highlighted cells indicate an above range recovery and the pink highlighted cells indicate a below range recovery.

have been reported being 1.1 mg/L in one instance. Other results were either unchanged or varied by only a few tenths. Here again, to put these minor corrections in context, even the highest corrected value from the table below is well below the monthly BOD concentration (23%) and loading (7%) permit limits.

Table 4 – Summary of BOD Corrections Based on 2.0 mg/L Criteria

Sample Date	Depletion Readings			Depletion Readings Used in Average			BOD Reported (mg/L)	Corrected BOD (mg/L)	Sample Location
4/21/2020	1.0	0.8	0.5	1.0[2]			4.3	ND	Outfall 001
4/22/2020	1.0	0.7	0.5	1.0			4.3	ND	Outfall 001
4/23/2020	1.0	0.7	0.5	1.0			4.3	ND	Outfall 001
4/28/2020	1.1	0.8	0.6	1.1			3.1	ND	Outfall 001
4/29/2020	1.0	0.7	0.4	1.0			2.9	ND	Outfall 001
4/30/2020	1.1	0.9	0.7	1.1			3.1	ND	Outfall 001
5/5/2020	1.4	1.1	1.0	1.4	1.1	1.0	3.0	ND	Outfall 001
5/6/2020	1.7	1.4	1.1	1.7	1.4	1.1	3.6	ND	Outfall 001
5/7/2020	1.8	1.5	1.3	1.8	1.5	1.3	3.9	ND	Outfall 001
5/12/2020	1.9	1.7	1.8	1.9	1.7	1.8	3.6	ND	Outfall 001
5/13/2020	2.0	1.8	1.7	2.0	1.8	1.7	3.7	3.8	Outfall 001
5/19/2020	1.3	1.2	1.1	1.3	1.2	1.1	2.2	ND	Outfall 001
7/21/2020	3.6	2.7	1.9	3.6	2.7	1.9	13.5	14.0	Outfall 001
7/22/2020	3.6	2.7	1.9	3.6	2.7	1.9	13.5	14.0	Outfall 001
7/23/2020	3.0	2.3	1.5	3.0	2.3	1.5	11.0	11.6	Outfall 001
7/28/2020	2.1	1.6	0.9	2.1	1.6		7.4	7.6	Outfall 001
7/29/2020	1.8	1.3	0.9	1.8	1.9		6.2	ND	Outfall 001
7/30/2020	1.9	1.3	0.9	1.9	1.0		6.2	ND	Outfall 001
8/4/2020	5.5	3.6	1.7	5.5	3.6	1.7	8.6	9.1	SMS 002
8/5/2020	1.7	1.1	0.7	1.7	1.1		5.9	ND	Outfall 001
8/5/2020	4.5	3.0	1.3	4.5	3.0	1.3	7.2	7.5	SMS 002
8/6/2020	1.8	1.3	0.7	1.8	1.3		6.4	ND	Outfall 001
8/11/2020	2.0	1.4	0.8	2.0	1.4		6.5	7.1	Outfall 001
8/12/2020	2.0	1.6	1.1	2.0	1.6	1.1	6.6	7.1	Outfall 001
8/13/2020	2.1	1.7	1.3	2.1	1.7	1.3	7.2	7.3	Outfall 001
8/18/2020	1.8	1.4	1.2	1.8	1.4	1.2	5.9	ND	Outfall 001
8/19/2020	1.6	1.3	1.0	1.6	1.3	1.0	5.2	ND	Outfall 001
8/20/2020	1.3	1.0	0.7	1.3	1.0		4.1	ND	Outfall 001
8/25/2020	2.0	1.5	1.1	2.0	1.5	1.1	4.8	5.3	Outfall 001

[2] Highlighted cells indicate depletion reading less than 2.0 mg/L used in calculation for reported BOD. Corrected BOD values were calculated using only depletion readings that met the 2.0 mg/L minimum depletion criteria.

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Response to June 3, 2021 Additional Information Request

Sample Date	Depletion Readings			Depletion Readings Used in Average			BOD Reported (mg/L)	Corrected BOD (mg/L)	Sample Location
8/26/2020	1.7	1.5	0.9	1.7	1.5			ND	Outfall 001
8/27/2020	1.7	1.4	0.9	1.7	1.4			ND	Outfall 001
8/27/2020	2.4	1.9	1.3	2.4	1.9	1.3	5.7	6.0	SMS 002
9/1/2020	2.5	2.1	1.5	2.5	2.1	1.5	5.5	5.8	Outfall 001
9/2/2020	2.3	1.9	1.7	2.3	1.9	1.7	5.4	5.4	Outfall 001
9/3/2020	1.9	1.6	1.1	1.9	1.6	1.1	4.1	ND	Outfall 001
9/8/2020	2.6	2.2	1.7	2.6	2.2	1.7	5.4	5.7	Outfall 001
9/9/2020	2.0	1.7	1.4	2.0	1.7	1.4	4.2	ND	Outfall 001
9/10/2020	2.0	1.8	1.5	2.0	1.8	1.5	4.4	4.4	Outfall 001
9/15/2020	2.0	1.8	1.4	2.0	1.8	1.4	3.9	4.2	Outfall 001
9/16/2020	2.0	1.6	1.4	2.0	1.6	1.4	3.8	4.2	Outfall 001
9/17/2020	1.8	1.5	1.3	1.8	1.5	1.3	3.5	ND	Outfall 001
9/22/2020	1.8	1.6	1.2	1.8	1.6	1.2	3.3	ND	Outfall 001
9/23/2020	1.7	1.5	1.3	1.7	1.5	1.3	3.3	ND	Outfall 001
9/24/2020	1.7	1.5	1.2	1.7	1.5	1.2	3.2	ND	Outfall 001
9/29/2020	2.2	1.9	1.5	2.2	1.9	1.5	3.9	4.2	Outfall 001
9/30/2020	2.4	2.1	1.8	2.4	2.1	1.8	4.4	4.5	Outfall 001
10/1/2020	1.8	1.5	1.3	1.8	1.5	1.3	3.2	ND	Outfall 001
10/6/2020	2.5	2.3	1.9	2.5	2.3	1.9	4.4	4.6	Outfall 001
10/7/2020	2.2	2.0	1.7	2.2	2.0	1.7	3.9	4.0	Outfall 001
10/8/2020	1.8	1.7	1.4	1.8	1.7	1.4	3.3	ND	Outfall 001
10/20/2020	2.1	1.8	1.5	2.1	1.8	1.5	3.6	3.8	Outfall 001
10/21/2020	2.1	1.9	1.8	2.1	1.9	1.8	3.9	3.8	Outfall 001
10/22/2020	1.8	1.6	1.4	1.8	1.6	1.4	3.2	ND	Outfall 001
10/27/2020	2.1	2.0	1.7	2.1	2.0	1.7	3.6	3.7	Outfall 001
10/28/2020	1.8	1.7	1.5	1.8	1.7	1.5	3.1	ND	Outfall 001
10/29/2020	1.9	1.7	1.5	1.9	1.7	1.5	3.2	ND	Outfall 001
11/3/2020	2.2	2.1	1.8	2.2	2.1	1.8	3.7	3.8	Outfall 001
11/4/2020	1.8	1.7	1.5	1.8	1.7	1.5	3.0	ND	Outfall 001
11/5/2020	2.4	2.1	1.8	2.4	2.1	1.8	3.8	3.9	Outfall 001
11/11/2020	1.4	1.3	1.2	1.4	1.3	1.2	2.4	ND	Outfall 001
11/12/2020	1.6	1.5	1.3	1.6	1.5	1.6	2.6	ND	Outfall 001
11/17/2020	2.0	1.9	1.3	2.0	1.9	1.3	2.9	3.1	Outfall 001
11/18/2020	2.0	1.9	1.7	2.0	1.9	1.7	3.2	3.2	Outfall 001
11/18/2020	2.4	2.1	1.8	2.4	2.1	1.8	4.7	4.8	SMS 002
11/19/2020	1.9	2.4	1.5	1.9	2.4	1.5	3.0	4.0	Outfall 001
11/25/2020	2.4	2.2	1.9	2.4	2.2	1.9	4.8	4.9	SMS 002
12/2/2020	2.2	1.7	1.5	2.2	1.7	1.5	3.7	4.2	SMS 002
12/3/2020	2.3	1.9	1.7	2.3	1.9	1.7	4.1	4.3	SMS 002
12/9/2020	2.5	2.0	1.7	2.5	2.0	1.7	4.1	4.3	SMS 002
12/10/2020	2.7	2.2	1.9	2.7	2.2	1.9	4.5	4.7	SMS 002

Sample Date	Depletion Readings			Depletion Readings Used in Average			BOD Reported (mg/L)	Corrected BOD (mg/L)	Sample Location
12/16/2020	2.1	1.7	1.6	2.1	1.7	1.6	3.5	3.7	SMS 002
12/17/2020	2.3	2.0	1.7	2.3	2.0	1.7	3.8	3.9	SMS 002

Prior to 4/21/20, there were 21 instances where all the dilutions under depleted. In these cases, the technician reacted correctly to the event and collected an additional sample as soon as possible on the next non-routine sampling date. The dates of these events are as follows:

Table 5 – Under Depletions Prior to April 21, 2020

5/26/2015	6/6/2018	10/2/2018	11/5/2019
9/28/2016	6/7/2018	10/3/2018	12/17/2019
9/29/2016	8/8/2018	10/4/2018	12/18/2019
11/8/2016	9/25/2018	10/9/2018	
5/29/2018	9/26/2018	5/15/2019	
6/5/2018	9/27/2018	5/16/2019	

Issue 4 - There were three days in December 2020 (sample collection dates of 12/7, 12/8/ and 12/9) where all dilutions over depleted, not meeting the minimum residual DO of 1.0 mg/L. Results were still calculated and reported using these dilutions rather than reporting a "greater than" value from the lowest sample concentration dilution. The maximum difference between the reported concentration and what should have been the "greater than" value was 1.9 mg/L. Over the recent 5-year history, there has only been one other sample (sample collection date 3/26/20) where all dilutions over depleted. In this case this was recognized as an issue and an additional sample was collected for the week the sample analysis was completed.

Issue 5 - QA/QC issues were not noted on the DMRs.

NPDES Permit #AR0001210 - BOD Log Sheet

Sample Collection

Outfall 001 Sample Date:_____

Date/Time Collected _____/_____a.m. Flow: _____MGD

Grab pH/Time: _____/_____a.m. Refrigerator Temp: _____°C Grab Temp: _____°C

Duplicate Grab pH/Time: _____/_____a.m. pH of Composite sample: _____

Sample Collected by:_____ Relinquished by:_____ Received by:_____ Time:_____

SMS 002

Date/Time Collected _____/_____a.m. Flow: _____MGD

Grab pH/Time: _____/_____a.m. Sample Temp: _____°C Grab Temp: _____°C

Duplicate Grab pH/Time: _____/_____a.m. pH of Composite sample: _____

Sample Collected by:_____ Relinquished by:_____ Received by:_____ Time:_____

Lab Calibration

D.O. Meter Calibration (YSI 58 Method): Time: _____ Initials: _____

Temp.: On_____°C Off_____°C Calibration: On_____mg/L Off_____mg/L

Field pH Meter Buffered 4 7 10 Comments:_____

_____ _____ _____ Actual pH of Buffer:_____ Slope:_____% _____

Biological Oxygen Demand (BOD)

BOD Setup: Date: _____ Tester: _____ Initial Incubator Temp: _____°C

BOD Completed: Date: _____ Tester: _____ End Incubator Temp: _____°C

Source	Bottle No.	mL of Sample	Initial DO mg/L	Final DO mg/L (Should be >1)	Oxygen Demand mg/L (Depletion >2)	Seed Correction Factor	Corr. Oxygen Demand	BOD mg/L	Average mg/L
Dilution Water Blank Time On: _____a.m. Temp:_____ Time Off: _____a.m.		0							
		0				Depletion should be <0.2			
Seed Control Time On: _____ a.m. Time Off: _____a.m.		3 /300							
		5 /300							
		8 /300							
Glucose/ Glutamic Acid (GGA) Time On: _____a.m. Time Off: _____a.m. GGA Std. CAT#:_____ Lot#:_____ Range: 167.5-228.5		6 /300							
		6 /300							
		6 /300							
Outfall 001 Time On: _____a.m. Time Off: _____a.m. Adjusted Temp:_____°C Adjusted pH:_____		/1000				-			
		/1000				-			
		/1000				-			
		/1000				-			
Outfall 001 BOD = _____mg/L X 8.34 X _____MGD = _____lbs/day									
Monthly Test No.____ Previous MTD Total: _____lbs. MTD Total:_____lbs. MTD Avg:_____lbs.									
SMS 002 Time On: _____ a.m. Time Off: _____a.m. Adjusted Temp:_____°C Adjusted pH:_____		/1000							
		/1000							
		/1000							
		/1000							
SMS 002 BOD = _____mg/L X 8.34 X _____MGD = _____lbs/day									
Monthly Test No.____ Previous MTD Total: _____lbs. MTD Total:_____lbs. MTD Avg:_____lbs.									

*Methodology follows Standard Methods for the Examination of Water and Wastewater: 4500H+ B-2011 for pH and 5210B-2011 for BOD_5.

** 3mL of Seed used only in GGA samples.