

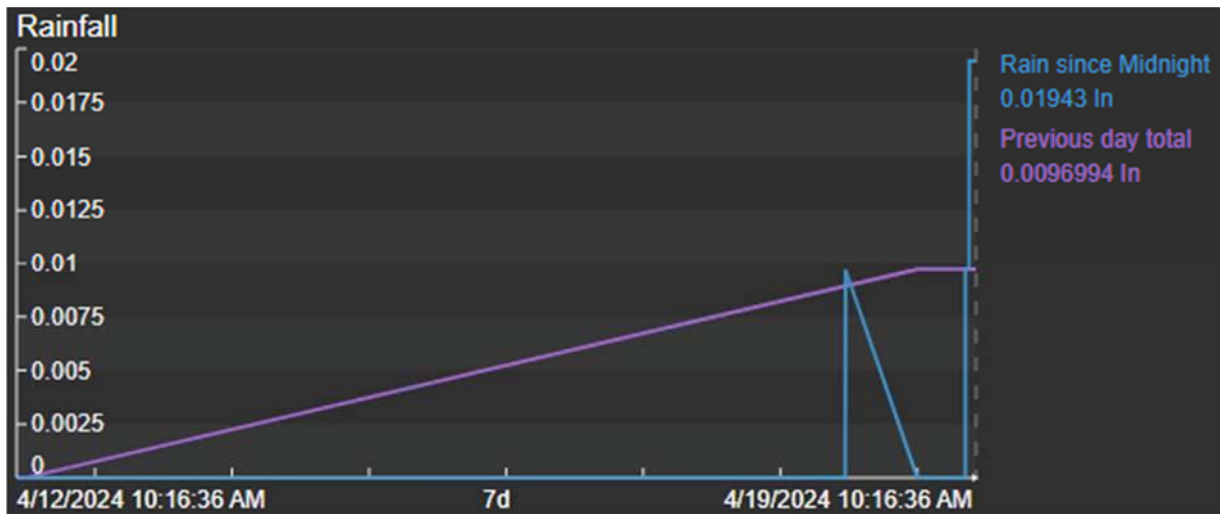
## Weekly Report Required by Interim Measures Letter dated 8/4/2023

LSB Chemical Company, NPDES Permit Number: AR0000752, AFIN: 70-00040

Weekly Report Date: 14 April 2023, Updated portions are underlined.

### Discharges and Implementation of Emergency Action Plan

Over the last week, the facility received a trace of rain. Lake Kildeer is currently at 16.45 feet. We have been discharging up to 2.0 MGD through Outfall 010 in anticipation of incoming rainfall and to maintain levels in Lake Kildeer. On the 17<sup>th</sup> we closed Outfall 001. Current weather forecast indicated 2.63 inches of rain over the next 10 days. LSB is attempting to keep the levels of Kildeer below 17.00 feet. In the event of additional rain, LSB will manage the discharge from Kildeer as necessary to ensure water does not overtop the emergency spillway in accordance with the August 4, 2023 Interim Measures letter.



### Conduct Daily Sampling of Lake Lee, Lake Killdeer, and Pond 004

LSB commenced this required sampling on August 5, 2023.

## Provide Copies of Sampling of Lake Lee, Lake Killdeer, and Pond 004 Since January 1, 2023

Please see the LSB Interim Measures response dated August 9, 2023.

### Corrective Action Plan Activities [updates from the previous week are underlined]

During our August 17<sup>th</sup> conference call we discussed that these proposed activities may trigger a communication to the ADEQ and possible permit changes. We will continue to communicate plans and improvements to obtain ADEQ's guidance on proper permitting.

#### Minimize Wastewater Contaminant Loading

##### Water Reuse:

LSB has evaluated its processes to assess locations where water can be reutilized in processes. Currently we are reusing as much wastewater as possible, that would otherwise flow into Pond 004, and are reusing some water from Pond 004 when the opportunity arises.

#### Minimize Wastewater Inflow

The stormwater diversion project has been completed. LSB met with ADEQ on the 19<sup>th</sup> to discuss permit applicability. Based on the discussions this action will not require a construction permit. Physical work on the project has been completed and we can now divert a total of 30% of the stormwater flow from 004. This is currently a manual process, to automate additional work will be required.

Additionally, we have started an engineering study to divert additional water away from the Ammonia Nitrate facility. This project will focus on paving in and around the Ammonia Nitrate area and is upstream of any waste/process water connections and will not require a construction permit. LSB has utilized seven frac tanks to increase the storage capacity of Ammonia Nitrate water to reduce the overflow into Pond 004 from rain events.

#### Maximize Treatment Efficiency and Capacity

##### Lake Lee Ammonia Stripper

LSB continues to operate the ammonia stripper with an approximate 20% efficiency.

##### Treatment of Pond 004

LSB met with Black & Veatch, a wastewater consulting firm, to determine the best treatment possibilities for Pond 004. Based on these initial conversations a biological system seems to be the best path forward. The B&V report was attached in the 13 Oct 2023 report.

Based on review of the Black and Veatch data, LSB is proceeding with biological treatment of 004, but we are still assessing how to address treatment barriers such as predilution, carbon addition, and sludge generation. The design basis is complete. The design basis and preliminary layout is complete.. We are currently working on the P&ID's, finalizing all calculations, and developing the plot plan.

HGA has been selected to oversee the construction and civil engineering for the facility. We have selected a location and general layout. Once the design basis and P&IDs are finalized, project will be handed off to HGA.

The units are currently on site and are in a staging area. The design basis is completed and the preliminary layout is complete. We are in the process of preparing the permit application for these units. A construction permit will be submitted as soon as P&IDs are prepared.

Black and Veatch is developing the processes to operate the plants and develop a written plan to use these package plants in the setup they are proposing. Once the plans are developed, we can propose permit modification to facilitate this. We are currently developing a list of longer lead time items (i.e. Transformers) to try to find alternative sources of procurement to prevent unforeseen delays. It was expected the transformer would be a potential long lead time element, with the design bases completed. The transformer has been purchased and is being stored offsite until needed. Ancillary equipment for these units is undergoing inspection and repair as needed.

Additionally, we are evaluating possibilities of reuse of the process wastewater as an input into a product.

#### Increased Efficiency in Lake Killdeer Biological Activity

Based upon discussion with supplier of nitrification/denitrification bacteria, LSB will begin dosing Lake Killdeer with calcium carbonate or magnesium carbonate to increase the available of carbon and alkalinity in Lake Killdeer. Increasing available carbon should promote additional biological activity to reduce the amount of ammonia in Lake Killdeer and the effluent discharge. LSB has also ordered one ton of lime and will begin dosing Lake Lee with the lime in efforts to increase alkalinity in Lake Lee which flows into Lake Killdeer. Before any dosing begins a construction permit will be submitted.

#### Baffles in Lake Killdeer

LSB selected a vendor to install baffles in Lake Killdeer. As discussed in our August 17th conference call, this should promote longer residence time and further increase biological activity to reduce the amount of ammonia in Lake Killdeer and the effluent discharge. Baffles have arrived onsite. Construction drawings and design basis have been submitted to apply for the construction permit. The permit application was submitted on the 24<sup>th</sup> of January. The installation is expected to be completed in the first quarter of 2024 or as soon as approval is received from the ADEQ. ADEQ submitted the public notice on the 28<sup>th</sup> of February. The 10 day comment period is closed and LSB has submitted proof of publication and payment.

## Water Quality Sampling Results

Water quality sampling required by the Interim Measures letter is included in the attached 2023 spreadsheet.

## Water Column Profile Measurements

LSB has contracted with Alliance Technology Group (formerly GBMc) to complete the profile and sampling of Pond 004, Lake Lee, and Lake Killdeer. The field work was completed on September 28<sup>th</sup>.

## KT French Drain

KT French Drain is located southwest of the KT plant on the west edge of the facility. Water is collected in a wet well then pumped back into the facility, much like a municipality utilized lift stations. During the previous inspection the pump was not operating and the wet well was overflowing. LSB has implemented daily inspections to ensure that the pump remains operational.

As requested, LSB collected samples from KT Wier. Samples collected on December 8<sup>th</sup> were collected based on the December 7, 2023 conversation with ADEQ and before we received the official request thus all requested in-situ parameters were not collected. Data is presented below:

Date	Temp	pH	D.O.	Cond.	Ammonia mg/l	Nitrate mg/l	Nitrite mg/l	Total – N mg/l	Nitrate + Nitrite
12-8-2023	NA	4.35	NA	79,150	6,600	10,351	0.43	16,951.4	10,351.4
12-12-2023	16	4.40	5.63	79,250	6,500	10,633	0.41	16,833.4	10,633.4
12-14-2023	18	4.37	5.16	77,440	6,350	10,669	0.46	17,019.46	10,669.46
12-19-2023	16	4.35	6.16	78630	12080	11,477	ND	23,557	11,477
12-21-2023	18	4.35	5.43	77,750	9200	11,108	ND	20,308	11,108

## Other Actions

In this call LSB was informed we need to obtain a wastewater operator’s license as quickly as possible. Charles McDowell passed the advanced industrial wastewater certification on March 26<sup>th</sup> thru the 28<sup>th</sup>. LSB currently has three certified operators. Second, ADEQ advised that LSB should coordinate with other Joint Pipeline members regarding discharges and volumes. We have initiated this communication.

LSB has contracted Alliance Technology to conduct a bathometric survey of 004. The results of the study indicate that Pond 004 contains approximately 1.5 Million Gallons of water.

Date	Lake Killdeer (KD)				Lake Lab				Pond D04																
	KD Grab Sample Time of Grab	KD Composite Lab Temp °C	KD Composite Lab pH	KD Composite Lab DO, ppm	KD Composite Lab Conductivity	KD Composite Lab NH <sub>3</sub> , ppm	KD Composite Lab NO <sub>3</sub> , ppm	KD Composite Lab P, ppm	KD Composite Lab SO <sub>4</sub> , ppm	LEE Grab Sample Time of Grab	LEE Grab Sample Temp °C	LEE Composite Lab pH	LEE Grab Sample DO, ppm	LEE Composite Lab NH <sub>3</sub> , ppm	LEE Composite Lab NO <sub>3</sub> , ppm	LEE Composite Lab Phosphorus, ppm	LEE Composite Lab SO <sub>4</sub> , ppm	004 Grab Temp °C	004 Grab DO, ppm	004 Grab pH	004 Grab Conductivity	004 Grab NH <sub>3</sub> , ppm	004 Grab NO <sub>3</sub> , ppm	004 Grab SO <sub>4</sub> , ppm	
1/17/2023																									
1/20/2023			5.69	1073	1073	54	70	0.10	107			3.92		341	301		216								
1/22/2023			6.69	1095	1095	62	71	0.10	107			3.10		263	236	0.36	265								
1/23/2023			7.10	1114	1114	63	75		103			7.60		195	197		121								
1/24/2023			7.21	1127	1127	64	76	0.65	100			7.90		173	82		86								
1/25/2023			7.10	1154	1154	71	81		102			7.34		92	103	0.76	73								
1/26/2023			7.11	1182	1182	70	84		100			8.05		88	82		110								
1/27/2023			7.18	1185	1185	60	89	0.04	97			8.34		65	72		96								
1/28/2023			7.25	1183	1183	70	90		98			8.41		62	62	2.31	73								
1/29/2023			7.15	1202	1202	81	89		94			8.36		104	93		107								
1/30/2023			7.27	1245	1245	89	90	2.28	92			8.45		225	173		106								
1/31/2023			7.49	1246	1246	82	90		82			8.51		234	197		122								
1/32/2023			7.81	1250	1250	89	87		80			8.81		342	128	5.17	117								
1/33/2023			7.83	1286	1286	77	97	2.59	81			8.95		252	158		88								
1/34/2023			7.83	1300	1300	94	97		76			9.10		312	182		100								
1/35/2023			7.78	1320	1320	89	99		76			9.20		161	143		107								
1/36/2023			7.78	1342	1342	99	100		76			7.78		142	134		107								
1/37/2023			7.60	1416	1416	67	112	0.04	73			7.18		154	167	2.93	79								
1/38/2023			7.52	1424	1424	98	100		75			7.45		158	171		79								
1/39/2023			7.35	1440	1440	118	116		82			7.80		158	158	2.08	109								
1/40/2023			7.43	1464	1464	123	119	0.02	83			7.75		207	159		82								
1/41/2023			7.46	1483	1483	101	94		81			7.60		255	161		84								
1/42/2023			7.30	1540	1540	110	106		82			7.88		181	160		141								
1/43/2023			7.26	1542	1542	106	107		82			7.88		217	160		141								
1/44/2023			7.39	1440	1440	118	116		82			8.53		147	100		109								
1/45/2023			7.50	1446	1446	117	119	0.03	85			8.00		132	97		101								
1/46/2023			7.48	1458	1458	135	115		82			7.96		128	122	1.47	81								
1/47/2023			7.47	1440	1440	118	116		82			7.70		115	113		83								
1/48/2023			7.33	1464	1464	123	119	0.02	83			7.21		114	104		128								
1/49/2023			7.35	1483	1483	101	94		81			7.23		131	126		121								
1/50/2023			7.28	1464	1464	123	119	0.02	83			7.36		117	152		114								
1/51/2023			7.33	1480	1480	130	116		82			7.16		122	153	1.30	182								
1/52/2023			7.28	1483	1483	101	94		81			6.85		105	135		145								
1/53/2023			7.33	1464	1464	123	119	0.02	83			7.17		80	107		151								
1/54/2023			7.28	1483	1483	101	94		81			6.68		80	107		125								
1/55/2023			7.33	1464	1464	123	119	0.02	83			6.67		105	111		127								
1/56/2023			7.28	1483	1483	101	94		81			6.97		188	156		103								
1/57/2023			7.33	1464	1464	123	119	0.02	83			8.55		188	156	3.04	100								
1/58/2023			7.23	1483	1483	101	94		81			7.24		173	151		100								
1/59/2023			7.21	1483	1483	101	94		81			6.96		109	107		101								
1/60/2023			7.21	1483	1483	101	94		81			7.08		138	148		131								
1/61/2023			7.36	1483	1483	101	94		81			6.84		122	149		129								
1/62/2023			7.36	1483	1483	101	94		81			6.92		118	144		96								
1/63/2023			7.36	1483	1483	101	94		81			7.35		225	165	0.14	67								
1/64/2023			7.36	1483	1483	101	94		81			7.62		144	160		100								
1/65/2023			7.38	1483	1483	101	94		81			7.31		154	137		111								
1/66/2023			7.38	1483	1483	101	94		81			6.96		133	149		129								
1/67/2023			7.56	1608	1608	135	136	3.07	80			7.33		130	144	0.21	103								
1/68/2023			7.24	1589	1589	131	136		80			7.27		118	116		100								
1/69/2023			7.22	1595	1595	129	134		82			7.30		102	108		104								
1/70/2023			7.06	1593	1593	129	133	1.25	83			6.67		66	72		207								
1/71/2023			7.06	1593	1593	129	133	1.25	83			7.14		155	161		155								
1/72/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/73/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/74/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/75/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/76/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/77/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/78/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/79/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/80/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/81/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/82/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/83/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/84/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/85/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/86/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/87/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/88/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/89/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/90/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/91/2023			7.06	1593	1593	129	133	1.25	83			7.04		143	146	1.64	173								
1/92/2023			7.06	1593																					



Date	Lake Killdeer (KD)				Lake Lee				Pond D04															
	KD Grab Sample Time of Grab	KD Composite LAB pH	KD Composite EDOCC LAB DO, ppm	KD Composite EDOCC LAB Conductivity	KD Composite EDOCC LAB NH <sub>3</sub> , ppm	KD Composite EDOCC LAB NO <sub>3</sub> , ppm	KD Composite EDOCC LAB P, ppm	KD Composite EDOCC LAB SO <sub>4</sub> , ppm	LEE Grab Sample Time of Grab	LEE Grab Sample Temp °C	LEE Composite EDOCC LAB pH	LEE Grab Sample DO, ppm	LEE Grab Sample DO, ppm	LEE Composite EDOCC LAB Phosphorus, ppm	LEE Composite EDOCC LAB SO <sub>4</sub> , ppm	004 Grab DATE/TIME	004 Grab Temp °C	004 Grab DO, ppm	004 Grab pH	004 Grab Conductivity	004 Grab NH <sub>3</sub> , ppm	004 Grab NO <sub>3</sub> , ppm	004 Grab SO <sub>4</sub> , ppm	
6/27/2023		6.60		1688	115	131		138			7.31	141	153	201										
6/28/2023					115	133		141			7.17	101	116	262										
6/24/2023		6.68		1705	115	133		141			6.84	78	94	200										
6/25/2023		6.69		1690	119	130	1.32	143			7.14	55	69	199										
6/26/2023		6.75		1672	122	127		142			6.72	49	54	184										
6/29/2023		6.64		1720	119	133		141			7.82	132	128	143										
7/1/2023					120	137		144			7.59	108	126	167										
7/5/2023		6.77		1724	125	133		142			7.03	72	86	172										
7/6/2023		6.74		1720	116	132		140			7.86	51	67	158										
7/9/2023		6.75		1780	130	136	5.24	140			8.52	102	116	152										
7/11/2023		6.64		1782	102	113		139			6.96	188	209	172										
7/14/2023		7.50		2240	179	69		34			7.88	209	231	155										
7/15/2023		6.98		1890	151	153	6.08	112			8.44	157	198	125										
7/18/2023		6.95		1820	143	143		104			8.22	281	119	36										
7/20/2023		6.91		1804	140	141		108			8.29	279	323	109										
7/22/2023		6.90		1763	125	136	2.03	110			8.50	231	270	110										
7/25/2023		6.85		1764	126	134		110			8.35	167	248	124										
7/27/2023		6.84		1753	120	132		110			7.92	133	143	110										
7/30/2023		6.83		1745	128	129	1.96	110			8.05	120	129	123										
8/1/2023		6.77		1726	114	128		111			7.22	59	72	125										
8/5/2023		6.79		1710	119	126		111			7.43	53	57	101										
8/4/2023		6.79	7:55	1703	114	125		111			8.27	16	30	107										
8/5/2023		6.77	8:27	1676	105	123		113			6.89	10	24	121										
8/6/2023		6.84	6:13	1678	114	124	1.75	113			7.19	13	20	119										
8/6/2023		6.84	6:13	1678	114	124		128			6.92	54	75	126										
8/9/2023		7.11	7:34	1584	114	120		128			8.10	16	32	113										
8/10/2023		7.11	7:34	1584	114	120		128			8.10	16	32	113										
8/11/2023		6.79	8:55AM	1710	119	126		111			7.44	9	22	143										
8/12/2023		6.79	9:57AM	1676	105	123		113			6.60	6	17	147										
8/13/2023		6.84	8:45AM	1678	114	124		113			6.45	9	15	125										
8/14/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/15/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/16/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/17/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/18/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/19/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/20/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/21/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/22/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/23/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/24/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/25/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/26/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/27/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/28/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/29/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/30/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
8/31/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/1/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/2/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/3/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/4/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/5/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/6/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/7/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/8/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/9/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/10/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/11/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/12/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/13/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/14/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/15/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/16/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/17/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/18/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/19/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/20/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/21/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/22/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/23/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/24/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/25/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/26/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/27/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										
9/28/2023		6.84	8:45AM	1678	114	124		113			6.81	6.08	10	18										