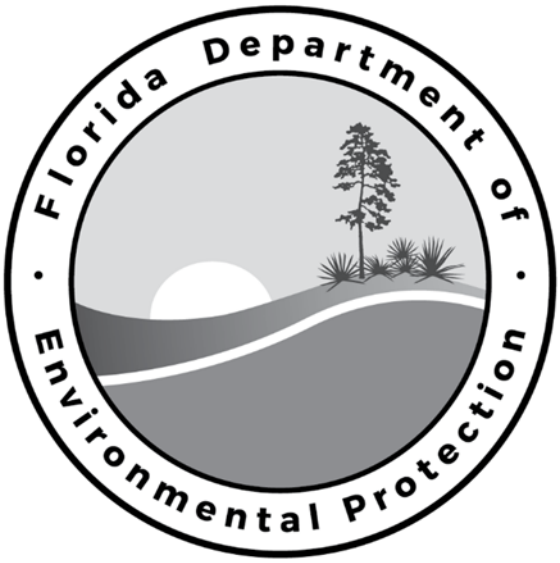


Effluent Quality Assessment of

Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant

Polk County

NPDES # FL0036421

Sampled September 25, 27, and 29, 2017

February 2018

Biology Program

DEP Laboratory

Division of Environmental Assessment and Restoration

DEP Laboratory Quality Manual

NELAC Certification No. E31780

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Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant, 3095 State Road 640 W., Mulberry, Polk County, Florida, 33860. NPDES #FL0036421.

Facility Overview

Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant is a chemical and fertilizer manufacturing facility which uses a non-discharge cooling pond and holding pond system to treat and recycle wastewater produced during manufacturing. The ponds also receive domestic wastewater from a package treatment plant and wastewater from locomotive and vehicle wash stations. After extreme rainfall events, water may be discharged after liming, settling, and pH adjustment. See Appendix A for a description of the facility, summary of permit limits, Administrative Order (AO) and Discharge Monitoring Report (DMR) information.

Methods

Effluent timed-composite samples for toxicity testing were collected on September 25, 27, and 29, 2017. Effluent grab samples for biological and chemical analyses for this facility were collected on September 25, 2017. All samples were collected from the EFF-06 NPDES sampling point for Outfall D-006 by Amaury Betancourt and Edgar GuerronOrejuela (DEP Phosphate Management, Tampa).

All field and laboratory methods followed DEP Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix B. References to Rule 62-302.530, F.A.C., are to the current applicable surface water quality criteria table with an effective date of 02/17/16 and a notice identification number of 18212543. The table includes new criteria for *Escherichia coli (E. coli)*, enterococci, and ammonia (total ammonia nitrogen) that were approved by EPA in July 2017.

> Please note that the human health-based water quality criteria (HHC) that were approved for adoption by the Environmental Regulation Commission (ERC) on July 26, 2016 are not yet in effect even though they are included in the version of Chapter 62-302 on the Department of State website. The rule revisions for the HHC have not been submitted to EPA due to an ongoing rule challenge. These rule revisions cannot be used for Clean Water Act purposes until they have been approved by EPA.

Results

Chemistry Results (See Table 1, Table 2, Table 3 and Appendix C)

- Receiving Waters for this facility fall within the West Central Nutrient Watershed Region for Numeric Nutrient Criteria (NNC). The effluent's total phosphorous in the grab sample (1.4 mg/L) was greater than the NNC of 0.49 mg/L for this nutrient region. The effluent's total nitrogen in the grab sample (1.6 mg/L) was less than the NNC of 1.65 mg/L for this nutrient region. This FYI event can only provide single sample results; therefore, compliance should be determined with additional sampling events.
  http://ca.dep.state.fl.us/mapdirect/?focus=nutrientcriteria
- Total residual chlorine (TRC) was measured in the bioassay samples at 0.04 mg/L for Sample 1 and ≤0.03 mg/L for Samples 2 and 3. The TRC noted in the first sample was likely due to interfering substances within the sample as the facility does not use chlorine in the treatment process. Total ammonia was not detected in the bioassay samples in the laboratory. The total ammonia concentration in the grab sample collected and preserved for chemical analysis was 0.006 mg N/L. Based on the pH, salinity, and temperature of the effluent as collected, the calculated un-ionized ammonia concentration was < 0.02 mg/L.
- Alkalinity, alpha (total), ammonium (un-ionized), arsenic, fluoride, nickel, radium 226 and 228, and turbidity were detected in the effluent at levels that comply with Class III Freshwater Quality Criteria (62-302.530, F.A.C.). Iron and selenium were detected between the laboratory method detection limits (MDL) and practical quantitation limits (PQL).

Algal Growth Potential (See Table 4 and Appendix C)

- The effluent Algal Growth Potential (AGP) was 4.70 A mg dry wt/L of the unicellular green alga, *Pseudokirchneriella subcapitata*, formerly known as *Selenastrum capricornutum.* The analytical chemistry suggests that the effluent is nitrogen-limited (Miller et al. 1978).

Toxicity Test Results (See Appendix C)

- Tests were performed September 26 through October 3, 2017.
- Chronic bioassay results are reported as the 25% Inhibition Concentration (IC25) and the No Observed Effect Concentration (NOEC)*
- *Ceriodaphnia dubia* 7-day chronic definitive bioassay – IC25: 23.9%
  No Observed Effect Concentration (NOEC) is 100%
- *Pimephales promelas* 7-day chronic definitive bioassay – IC25: > 100%
  No Observed Effect Concentration (NOEC) is 100%

  * NOTE: A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.200(5), 62-302.530(108) and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(108) and/or facility permit limits.

- The bioassay samples were chronically toxic to the Ceriodaphnia dubia test organisms, producing an IC25 of 23.9% which exceeds the permitted limits. The bioassay samples were not chronically toxic to the *Pimephales promelas* test organisms.

Conclusion

The effluent samples collected from the EFF-06 NPDES sampling point for this facility on September 25, 27, and 29, were not chronically toxic to the *P. promelas* test organisms; but, were chronically toxic to the *C. dubia* test organisms, producing an IC25 of 23.9% effluent. The AGP result is less than the 6.10 to 20.0 mg/L range suggested to be representative of high productivity for freshwater (Miller et al. 1978). Nutrient chemistry suggests that the effluent is nitrogen-limited. The effluent grab samples collected on September 25, 2017, did not exceed any applicable water quality criteria or any permit conditions.

For additional information concerning this sampling event, including bioassay bench sheets and SRT data, please contact Amelia.Rankin@dep.state.fl.us and/or Joseph.Faircloth@dep.state.fl.us.

Literature Cited

Miller, W. E., T. E. Maloney, and J. C. Greene. 1978. The *Selenastrum capricornutum* Printz algal assay bottle test. EPA-600/9-78-018. U. S. EPA, Cincinnati, Ohio. 126 p.

Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.

USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. 4th edition. EPA-821-R-02-013.

Table 1. Effluent limits, Class III Freshwater Criteria and field parameters.

Mosaic Fertilizer New Wales Facility	Units	Class III Criteria	Effluent Permit Limits	Mosaic Fertilizer Composite	Mosaic Fertilizer Grab
Sample Depth	m	-	-	1	0.2
Temperature	C	-	-	28.0	28.0
pH	SU	6.0 - 8.5	≥ 6.0	7.68	7.68
Specific Conductance	µmhos/cm	≤ 1,275	-	703	703
Salinity	ppt	-	-	0.3 c	0.3 c
Dissolved Oxygen	mg/L	-	≥ 5.0	6.94	6.94
Dissolved Oxygen	%Sat	≥ 38%	-	88.7	88.7

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated

Table 2. Effluent limits, Class III Freshwater Criteria and analytical water chemistry data.

Mosaic Fertilizer New Wales Facility	Units	Class III Criteria	Effluent Permit Limits	Mosaic Fertilizer Composite	Mosaic Fertilizer Grab
Ortho-phosphate	mg P/L	-	Report	-	1.3
Total Phosphorus	mg P/L	-	Report	-	1.4
Total Ammonia	mg N/L	≤ 1.74	Report	-	0.006
Un-ionized Ammonia (calculated salinity)	mg NH_3/L	≤ 0.02 s	Report	-	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	-	0.004 U
Total Kjeldahl Nitrogen	mg N/L	-	-	-	1.6
Organic Nitrogen	mg N/L	-	-	-	1.6 c
Total Nitrogen	mg N/L	-	Report	-	1.6 c
Total Organic Carbon	mg C/L	-	-	-	12
Chlorophyll *a*-Corrected	µg/L	-	Report	-	82
Phaeophytin	µg/L	-	-	-	11
Chlorophyll *a*-Uncorrected	µg/L	-	-	-	92
CBOD, 5 day, N - inhibited	mg/L	-	-	6.3 A	-
Total Residual Chlorine	mg/L	≤ 0.01	-	0.04[1]	-
Total Suspended Solids	mg/L	-	60	-	9.6 IA
Total Dissolved Solids	mg/L	-	-	-	454 A
Turbidity	NTU	< 29 t	-	-	8.5
Color (true)	PCU	-	-	-	38
Alkalinity	mg CaCo3/L	≥ 20	-	180[1]	157
Chloride	mg Cl/L	-	-	-	14
Fluoride	mg F/L	≤ 10.0	≤ 10.0	-	3.1
Sulfate	mg SO4/L	-	Report	-	180
Alpha, Total	pCi/L	≤ 15	≤ 15	-	2.70 U
Alpha-Counting Error	pCi/L	-	-	-	1.78
Radium 226	pCi/L	-	-	-	0.414
Radium 226-Counting Error	pCi/L	-	-	-	0.139

Radium 228	pCi/L	-	-	-	0.620 U
Radium 228-Counting Error	pCi/L	-	-	-	0.351
Radium 226 + 228	pCi/L	≤ 5	≤ 5	-	0.414 c
Microbiology					
Fecal Coliforms[2]	cfu/100 mL	-	-	-	7 BQ
Toxicity (IC25, Chronic Definitive, % effluent)					
Bioassay - Water flea *(Ceriodaphnia dubia)*	% effluent	≥ 100	≥ 100	23.9	-
Bioassay - Fish *(Pimephales promelas)*	% effluent	≥ 100	≥ 100 %	> 100	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

c - Value is calculated

s - Single sample

t - Shall not exceed 29 NTUs above background

A - Value reported is the mean of two or more determinations

B - Results based on colony counts outside the acceptance range

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

Q - Sample held beyond normal holding time

U - Material analyzed for but not detected; value reported is the method detection limit

1 - Measurement taken in the DEP Toxicology laboratory. Result is likely due to an interfering substance within the sample.

2 - Class III Freshwater criteria is now for *E. coli*; however, fecal coliforms were tested.

Note: The former Class III Freshwater single sample criteria for fecal coliforms is ≤ 400 cfu/100 mL.

Table 3. Effluent limits, Class III Freshwater Criteria and analytical metals data.

Mosaic Fertilizer New Wales Facility	Units	Class III Criteria	Effluent Permit Limits	Mosaic Fertilizer Composite	Mosaic Fertilizer Grab
Hardness	$mgCaCo_3/L$	-	-	-	293 c
Aluminum	µg/L	-	-	-	78
Arsenic	µg/L	≤ 50	-	-	1.36
Cadmium	µg/L	≤ 0.601 b	-	-	0.020 U
Calcium	mg/L	-	-	-	65.9
Chromium, Total [3]	µg/L	≤ 208 b	-	-	0.40 U
Copper	µg/L	≤ 23.4 b	-	-	0.20 U
Iron	µg/L	≤ 1,000	-	-	41 I
Lead	µg/L	≤ 12.5 b	-	-	0.050 U
Magnesium	mg/L	-	-	-	31.3
Nickel	µg/L	≤ 130 b	-	-	1.16
Selenium	µg/L	≤ 5.0	-	-	0.20 I
Silver	µg/L	≤ 0.07	-	-	0.010 U
Sodium	mg/L	-	-	-	39.5
Zinc	µg/L	≤ 298 b	-	-	5.0 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.

b - Value is calculated based on hardness, (62-302.530)

c - Value is calculated

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

U - Material analyzed for but not detected; value reported is the method detection limit

3 - Class III Freshwater Quality Criterion (62-302.530(43)(a), F.A.C.) is for chromium-III

Table 4. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), ortho-phosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation and ratios of nitrogen to phosphorus.

Mosaic Fertilizer New Wales Facility								
Location	**Test Species**	**AGP (measured)**	**Predicted AGP (TSIN) ± 20%**	**Predicted AGP (OP) ± 20%**	**Predicted AGP (TN) ± 20%**	**Predicted AGP (TP) ± 20%**	**Inorganic N:P ratio**	**Total N:P ratio**
Mosaic Fertilizer, Grab	*Pseudokirchneriella subcapitata*	4.70 A	0.228 ± (0.046)	559 ± 111.8	60.8 ± (12.2)	602 ± 120.4	0.005[4]	1.14[4]

A - Value reported is the mean of two or more determinations

4 - Calculated manually based on Chemistry results.

Appendix A

Facility Summary

State of Florida
Department of Environmental Protection
Facility Introduction & Summary

PART I: Information gathered prior to sampling event	
Prepared By: Edgar Guerron Orejuela	Contact Number: 813-470-5749
Facility Name (as it appears on permit): Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant	Former Names: N/A
NPDES Permit Number: FL0036421	Permit Expiration Date: June 23, 2018
Physical Address: 3095 State Road 640 W. Mulberry, FL 33860 Polk County	
District: DWRM-Phosphate Management (Tampa)	County: Polk
Function of Facility: Mosaic Fertilizer, L.L.C.'s (Mosaic) New Wales Concentrates Plant manufactures ammoniated phosphate fertilizers (MAP and DAP) and animal feed ingredients. The New Wales Plant produces phosphoric acid and sulfuric acid as part of the manufacturing process, but consumes most of the acid internally during the manufacture of the fertilizer and animal feed ingredients products. Phosphogypsum is produced as a by-product of the phosphoric acid production and is disposed of by stacking the phosphogypsum in a lined 704-acre phosphogypsum stack storage area located immediate south of the main cooling pond.	
Facility Type: Phosphate fertilizer manufacturing plant	Permitted Capacity (MGD): N/A
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): D-006 from July 2016 to June 2017 (there was no discharge recorded during April 2017) → 10.42 MGD	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): N/A	
Description of type of Discharge: ☐ Continuous ☒ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify:	
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s): EFF-006	

Description of Permitted Outfall(s):

D-006 discharges treated process wastewater, treated contaminated non-process wastewater, stormwater runoff, directly to the South Prong, a tributary of the Alafia River (Class III Fresh Waters). The D-006 outfall consists of three spillway structures, each with fourteen 27-inch bays with steel rectangular weir plates. The weir invert is 114.90 ft. MSL and the receiving water depth is about 105 feet MSL. The point of discharge is located at latitude 27° 45' 53.2806" N, longitude 82° 00' 11.5581" W. A component of the discharge also includes treated groundwater introduced at locations several miles upstream of Outfall D-006. The treated groundwater is from the site's recovery well system, being pumped to maintain a zone of capture in accordance with the requirements of Consent Order OGC Case No. 16-1356.

Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

The wastewater used in the chemical and fertilizer manufacturing process is cooled as it is circulated in the unlined Cooling Pond System with an average ponded surface area on the order of 280 acres. The Phase I and Phase II 60-acre lined perimeter water return ditch system is connected to the cooling pond system via the east and west flume structures, located south of the main cooling pond.

The unlined cooling pond system includes a 247-acre main cooling pond located south east of the chemical plant and a 33-acre cooling channel that encircles the base of the existing unlined North Phosphogypsum Stack located immediately to the east of the chemical plant.

Operation of this system is described as follows: hot process water from the plant operations is discharged into the west channel and flows south into the main cooling pond. Process water contained in the gypsum slurry is transported to the lined South Phosphogypsum Stack (Phases I and II), located south of the cooling pond and returned into the cooling pond via the east and west flumes, located on the south wall of the cooling pond. The combined flow is then directed into the east-cooling channel and is returned to the plant to be reused in the process.

In addition to the 280-acre cooling area, the cooling pond system also includes a 94-acre below-grade unlined Auxiliary Holding Pond (AHP) located at the west end of the main cooling pond. The AHP provides additional storage and is capable of containing a rainfall event exceeding the 100-year, 24-hour storm.

The process water cooling pond recirculation system also receives treated effluent from a 25,000 GPD domestic waste package treatment plant and wastewater generated from a locomotive wash and vehicle wash stations, and wastes from a railroad car wash station. The wash stations are used to clean vehicles prior to routine maintenance. The railroad car wash station is used to wash railcars prior to these cars being loaded with bulk fertilizer materials. All wastewater contained within the process water cooling pond recirculation system shall be considered Industrial Wastewater under this permit. The New Wales process water cooling pond system is designed for zero discharge and in the event of extreme rainfall events may discharge after treatment to the D-006 discharge system. Treatment of process water consists of liming, settling and pH adjustment.

Outfall D-006 receives flows from the New Wales facility by means of using two separate clay settling areas (CSA), A-11 and K-4, which are separated by several miles of ditch systems. The clay settling areas and flow path allow for additional settling of solids and nutrient uptake before reaching the outfall. Specific discharges from the New Wales facility flow into CSA A-11, where the water decants from a spillway located on the southwest embankment of A-11, the water then flows through a series of ditches over an approximate 15,000 feet length, prior to flowing into the northern area of CSA K-4. CSA K-4 eventually discharges through a spillway system located on the east side of K-4 that then flows through a series of ditches over an approximate length of 10,000 feet into a lake that discharges through Outfall D-006.

Outfall D-006 is authorized to use an auxiliary portable pH adjustment system as needed to control pH at the outfall. Operation and reporting requirements for this treatment system are referenced in Condition V.A.5. of this permit.

PART I: Continued

List current Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under

(Leave cell blank if not applicable; note: all condition references, such as I.A.5., are from current NPDES permit)

PARAMETERS (UNITS)	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	Daily Minimum	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	N/A	Report	Report	Continuous	Recorder	EFF-006
pH (standard units)	6.0	Report	8.5	1/Week	Grab	EFF-006
	See I.A.2.					
Turbidity (NTUs)	N/A	Report	See I.A.15.	1/Week	Grab	EFF-006
Nitrogen, Total (as N) (mg/L)	N/A	Report	Report	1/Week	Grab	EFF-006
Nitrogen, Total (as N) (lbs/day)	N/A	Report	Report	1/Week	Calculated	EFF-006
		See I.A.5. & 6.				
Phosphate, Ortho (as P) (mg/L)	N/A	Report	Report	1/Week	Grab	EFF-006
Phosphorus, Total (as P) (mg/L)	N/A	3.0**	5.0**	1/Week	Grab	EFF-006
Phosphorus, Total (as P) (lbs/day)	N/A	Report	Report	1/Week	Calculated	EFF-006
		See I.A.5. & 7.				
Ammonia Nitrogen, Total (as N) (mg/L)	N/A	Report	Report	1/Week	Grab	EFF-006
		See I.A.2.				
Ammonia, Unionized (as NH_3) (mg/L)	N/A	Report	0.02 See I.A.2.	1/Week	Calculation	EFF-006
Chlorophyll a (µg/L)	N/A	N/A	Report	1/Month	Grab	EFF-006
Fluoride, Total (as F) (mg/L)	N/A	N/A	10.0	1/Month	Grab	EFF-006

PARAMETERS (UNITS)	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	Daily Minimum	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type	Sample Point
Oxygen, Dissolved (DO) (mg/L)	5.0 See I.A.9.	N/A	N/A	1/Month	Grab	EFF-006
Solids, Total Suspended (TSS) (mg/L)	N/A	30	60	1/Month	Grab	EFF-006
Solids, Fixed (FS) (mg/L)	N/A	12*	25*	1/Month	Grab	EFF-006
Specific Conductance (µmhos/cm)	N/A	N/A	See I.A.3.	1/Month	Grab	EFF-006
Sulfate, Total (as SO_4) (mg/L)	N/A	N/A	Report	1/Month	Grab	EFF-006
Temperature (ºC)	N/A	Report	Report See I.A.2.	1/Month	Grab	EFF-006
Alpha Particle Activity, Gross (pCi/L)	N/A	N/A	15 See I.A.16.	1/Month	Grab	EFF-006
$Radium^{226}$ + $Radium^{228}$, Combined (pCi/L)	N/A	N/A	5 See I.A.16.	1/Month	Grab	EFF-006
Chronic Whole Effluent Toxicity, IC25 (Ceriodaphnia dubia)	100%	See Condition I.A.4.			24 hour composite	EFF-006
Chronic Whole Effluent Toxicity, IC25 (Pimephales promelas)	100%	See Condition I.A.4.			24 hour composite	EFF-006

* Fixed Solids shall be limited in accordance with the requirements of Rule 62-671.300(1), F.A.C. To correct for losses during the testing and analysis, the analytic results from the above specified tests for non-filterable, non-volatile residue (fixed solids) shall be multiplied by a factor of 1.1 to be reported as total non-volatile, non-filterable residue as defined in Rule 62-671.300(2), F.A.C.

** Total phosphorus shall be for monitoring and reporting only, except: if monitoring data shows total phosphorus levels exceed 3.0 mg/L monthly average for more than one 30-day period per calendar year, the permittee, upon written notification by the Department, shall prepare and file within 120 days (unless the time is extended by the Department) a study consisting of the following:

(1) a chronology of at least one year's discharge data;

(2) an assessment of the cause and origin of the phosphorus constituent of the discharge;

(3) description of the discharger's current maintenance operation and management practices directly related to the control of phosphorus;

(4) an evaluation of the environmental significance of the phosphorus levels; and

(5) an identity of reasonable methods to abate, to the extent practicable, the influx of phosphorus into the discharge.

Upon receipt of the report, the Department shall require the applicant to publish a public notice in a newspaper of general circulation in the affected area, which states that the report was received and where it is available for public inspection. The Department shall evaluate the report and may amend the discharger's permit to reflect additional requirements (subject to administrative and judicial review), including the implementation of cost-effective management practices or technological advances which reduce or eliminate the phosphorus in the discharge to the maximum extent practicable. *[Rule 62-671.300(1), F.A.C.]*

PART I: Continued	
Receiving Waters: South Prong Alafia WBID 1698A	Classification (indicate whether fresh or marine): Class III

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

Semi-annual chronic toxicity tests. The permitee shall conduct a daphnid, Ceriodaphnia dubia, Survival and Reproduction Test and a fathead minnow, Pimephales promelas, Larval Survival and growth Test, concurrently.

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

Consent Order, OGC No. 16-1356 executed on Oct. 24, 2016. The Order requires actions to protect underground sources of drinking water following the unauthorized discharge of process water from fertilizer manufacturing facilities at the New Wales site via a sinkhole formation. The Order requires

Mosaic to complete remedial activities to seal the sinkhole opening, recover process water constituents, and to provide onsite and offsite monitoring, and related follow-up activities to address the unauthorized discharge of process water, thereby protecting underground sources of drinking water. This Order also requires that Mosaic conduct additional hydrogeological and geotechnical site investigations at its New Wales site and its other active phosphogypsum stack systems in Florida.

Facility Mixing Zone Details (if applicable):

N/A

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
06/30/2017	IC25 STATRE 7DAY CHR CERIODAPHNIA	100	19.4
08/28/2017	Water loss incident caused by sinkhole	N/A	N/A

Describe previous FYI and WQBEL study:

During the previous FYI (sampled in April 2011), the whole effluent toxicity test was performed April 5 through April 7, 2011. Due to a failure of the sampling equipment, the second sample required for the renewal was not collected; therefore, chronic toxicity test was not performed. LC50 was greater than 100% effluent for both C. dubia and P. promelas, during the 48 Hr. Acute Definitive bioassays. Dissolved oxygen for the Control Site (2.1 mg/L) did not comply with the Class III Water Quality Criterion (62-302.530(30) F.A.C.). There was no analysis run for fixed suspended solids (FSS; mg/L), but due to the high level of total dissolved solids (787 mg/L) a follow-up analysis of FSS should be performed to ensure compliance with the permit limits. The AGP values for the effluent, Control Site, and Test Site were all similar and were four times greater than the "problem" threshold. Nutrient values were higher for the Control Site than the effluent and the Test Site, but the chlorophyll *a* value for the effluent was significantly higher than the Control and the Test Sites. The Test Site exhibits lower nutrient values and a higher chlorophyll *a* concentration in comparison to the Control Site. The dominant taxon in the effluent phytoplankton community, the bloom forming and potential toxin producing *Cylindrospermopsis raciborskii*, was absent at the Control Site and was co-dominant at the Test Site. This changing community composition exhibits the influence from the discharge and the contribution of a bloom species could increase the possibility of a bloom in the downstream waters. There were no detectable differences in the macroinvertebrate communities at either site. Overall, the effluent did not appear to be adversely affecting the Test Site.

Describe previous or current Enforcement Actions (including WLs):

N/A

Describe any violations or problems noted in previous inspection:

The facility has presented exceedances in its compliance well MWC-8 for the past three consecutive quarters. The parameters in exceedance are: Gross Alpha, Radium 226+ and Radium 228.

Discuss whether DMR trends within previous five years are improving or declining:

N/A

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

N/A

PART II: Sampling Event Information	
Date(s) sample collected:	Sampler(s):
Temperature (Deg C):	pH (SU):
Dissolved Oxygen (mg/L):	Conductivity (µmhos/cm):
Total Residual Chlorine (mg/L):	Total Residual Chlorine - after Disinfection (mg/L):
Method of Chlorination:	Method of De-chlorination:
Flow During Sample Collection for each outfall(MGD):	
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day):	
Describe Discharge during Sampling Event: ☐ Continuous ☐ Intermittent ☐ Seasonal ☐ Rainfall Dependent ☐ Other, please specify:	
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:	

Appendix B

Explanation of Measurements

(1) Quality Assurance and Quality Control

DEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (DEP SOPs). Methods for all analyses are on file at the DEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.dep.state.fl.us/labs/library/lab_sops.htm and/or http://www.dep.state.fl.us/water/sas/sop/sops.htm.

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following DEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62.302.200(1), F.A.C., and 62-302.500(1)a, F.A.C., and/or facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.200(5), F.A.C., and 62-302.530(108), F.A.C., and/or facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(108), F.A.C., and/or facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of facility permit limits. Class III Water Quality Criteria are based on *Eschericia coli* and enterococci levels (F.A.C. 62-302.530(11)(c) and (d)).

(5) Chlorophyll *a* Content

Chlorophyll *a* content is an estimate algal biomass. High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may constitute exceedances of 62-302.530(89), F.A.C. 62-302.530(90)(a), F.A.C., and/or 62-302.530(90)(b), F.A.C..

(6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. The AGP range of 6.10 to 20.0 mg dry wt/L is suggested to be representative of high productivity for freshwater (Miler et al. 1978). High AGP values may constitute exceedances of 62-302.530(89), F.A.C., 62-302.530(90)(a), F.A.C. and/or 62-302.530(90)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP in a low salinity sample under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of $\pm$ 20%. When the ratio of nitrogen to phosphorus (N:P) is less than 10:1, nitrogen limitation of algal production is likely. When the N:P ratio is 20:1 or greater, phosphorus limitation is likely (EPA-822-B-00-002). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(108) F.A.C. Expected AGP is not calculated for marine samples incubated with *Dunaliella*.

(7) Definition of Qualifiers

A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptable range.

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate
Z - Colonies were too numerous to count (TNTC)

Appendix C

Chemical analysis of effluent

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Mosaic Fertilizer, LLC Comp	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	6.3 A	mg/L	0.2	2
9/25/2017	Mosaic Fertilizer, LLC Comp	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
9/25/2017	Mosaic Fertilizer, LLC Comp	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	NOEC		
9/25/2017	Mosaic Fertilizer, LLC Comp	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	23.9	IC25		
9/25/2017	Mosaic Fertilizer, LLC Comp	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
9/25/2017	Mosaic Fertilizer, LLC Comp	Nutrients	Sample Depth	1	m		
9/25/2017	Mosaic Fertilizer, LLC Comp	Nutrients	Specific Conductance	703	µmhos/cm		
9/25/2017	Mosaic Fertilizer, LLC Comp	Nutrients	Dissolved Oxygen	88.7	%Sat		
9/25/2017	Mosaic Fertilizer, LLC Comp	Nutrients	Temperature	28.0	C		
9/25/2017	Mosaic Fertilizer, LLC Comp	Nutrients	pH	7.68			
9/25/2017	Mosaic Fertilizer, LLC Grab	AGP/LN	Algal Growth Potential	4.70 A	mg DryWt/L	0.3	0.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	82	µg/L	1.1	3.4
9/25/2017	Mosaic Fertilizer, LLC Grab	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Uncorrected	92	µg/L	0.8	2.4
9/25/2017	Mosaic Fertilizer, LLC Grab	Chlorophyll/Grain Size/BOD	Phaeophytin-a	11	µg/L	0.8	2.4
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Silver	0.010 U	µg/L	0.01	0.04
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Calcium	65.9	mg/L	0.075	0.3
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Sodium	39.5	mg/L	0.5	2
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Cadmium	0.020 U	µg/L	0.02	0.08
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Selenium	0.20 I	µg/L	0.2	0.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Arsenic	1.36	µg/L	0.05	0.2
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Copper	0.20 U	µg/L	0.2	0.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Nickel	1.16	µg/L	0.2	0.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Lead	0.050 U	µg/L	0.05	0.2
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Aluminum	78	µg/L	3	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Magnesium	31.3	mg/L	0.04	0.16
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Iron	41 I	µg/L	30	120
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Zinc	5.0 U	µg/L	5	20
9/25/2017	Mosaic Fertilizer, LLC Grab	Metals	Chromium	0.40 U	µg/L	0.4	1.6
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Chloride	14	mg Cl/L	0.4	1
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Total-P	1.4	mg P/L	0.025	0.25
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Total Alkalinity	157	mg CaCO3/L	0.65	2.5
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Kjeldahl Nitrogen	1.6	mg N/L	0.08	0.2

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Organic Carbon	12	mg C/L	0.5	1
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Turbidity	8.5	NTU	0.1	0.12
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	O-Phosphate-P	1.3	mg P/L	0.032	0.08
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	TDS	454 A	mg/L	15	25
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	TSS	9.6 IA	mg/L	2	10
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Fluoride	3.1	mg F/L	0.035	0.1
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Ammonia-N	0.006	mg N/L	0.002	0.005
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Color (true)	38	PCU	2.5	6
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Sulfate	180	mg SO4/L	2	5
9/25/2017	Mosaic Fertilizer, LLC Grab	Overflow	Radium 226-Counting Error	0.139	pCi/L	0.122	
9/25/2017	Mosaic Fertilizer, LLC Grab	Overflow	Radium 228	0.620 U	pCi/L	0.62	
9/25/2017	Mosaic Fertilizer, LLC Grab	Overflow	Alpha, Total	2.70 U	pCi/L	2.7	
9/25/2017	Mosaic Fertilizer, LLC Grab	Overflow	Alpha-Counting Error	1.78	pCi/L	2.7	
9/25/2017	Mosaic Fertilizer, LLC Grab	Overflow	Radium 226	0.414	pCi/L	0.122	
9/25/2017	Mosaic Fertilizer, LLC Grab	Overflow	Radium 228-Counting Error	0.351	pCi/L	0.62	
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Cylindrospermopsin	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Disulfoton	0.0048 UJ	µg/L	0.0048	0.019
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Hexazinone	0.029 UJ	µg/L	0.029	0.12
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Norflurazon	0.029 UJ	µg/L	0.029	0.12
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Butylate	0.019 UJ	µg/L	0.019	0.077
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Demeton	0.023 UJ	µg/L	0.023	0.093
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Metolachlor	0.058 UJ	µg/L	0.058	0.23
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Prometryn	0.019 UJ	µg/L	0.019	0.077
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Microcystin LF	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Microcystin RR	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Diazinon	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Mevinphos	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Parathion Ethyl	0.019 UJ	µg/L	0.019	0.077
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Anatoxin-a	1.0 UJ	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Microcystin LY	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Microcystin YR	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Ethoprop	0.0048 UJ	µg/L	0.0048	0.019
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Prometon	0.019 UJ	µg/L	0.019	0.077
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Simazine	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Atrazine	0.0097 UJ	µg/L	0.0097	0.039

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Atrazine Desethyl	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Chlorpyrifos Ethyl	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Ethion	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Naled	0.039 UJ	µg/L	0.039	0.15
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Alachlor	0.058 UJ	µg/L	0.058	0.23
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Ametryn	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Atrazine Desisopropyl	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Chlorpyrifos Methyl	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Malathion	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Azinphos Methyl	0.019 UJ	µg/L	0.019	0.077
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Fenamiphos	0.029 UJ	µg/L	0.029	0.12
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Metribuzin	0.019 UJ	µg/L	0.019	0.077
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Microcystin LA	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Microcystin LR	1.0 U	µg/L	1	4
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Bromacil	0.039 UJ	µg/L	0.039	0.15
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Fonofos	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Metalaxyl	0.039 UJ	µg/L	0.039	0.15
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Parathion Methyl	0.0097 UJ	µg/L	0.0097	0.039
9/25/2017	Mosaic Fertilizer, LLC Grab	Pesticides	Phorate	0.0048 UJ	µg/L	0.0048	0.019
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.02	0.08
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Pyrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2-Nitrophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39 U	µg/L	39	160
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	4-Nitrophenol	15 U	µg/L	15	58
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Anthracene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Di-n-octyl phthalate	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Dimethyl phthalate	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Fluoranthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	µg/L	2.9	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	µg/L	2.9	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Phenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Acenaphthylene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Benzidine	97 U	µg/L	97	390

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Isophorone	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Phenanthrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2-Chlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Butyl benzyl phthalate	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2-Chloronaphthalene	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	µg/L	2.9	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Chrysene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Hexachlorobenzene	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Pentachlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Fluorene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	µg/L	2.9	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Hexachloroethane	2.9 U	µg/L	2.9	12
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Nitrobenzene	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2,4-Dichlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	µg/L	15	58
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Acenaphthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Naphthalene	0.19 U	µg/L	0.19	0.78
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97 U	µg/L	0.97	3.9
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	µg/L	1.9	7.8
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	µg/L	0.19	0.78

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Mosaic Fertilizer, LLC Grab	Priority Organic Pollutants	2,4-Dimethylphenol	9.7 U	µg/L	9.7	39
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Temperature	28.0	C		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Sample Depth	0.2	m		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Specific Conductance	703	µmhos/cm		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Dissolved Oxygen	88.7	%Sat		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	pH	7.68			
9/25/2017	Mosaic Fertilizer, LLC Grab	Microbiology	Fecal Coliforms-Membrane Filter	7 BQ	cfu/100 mL	2	2
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Dissolved Oxygen	88.7	%Sat		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	pH	7.68			
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Sample Depth	0.2	m		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Specific Conductance	703	µmhos/cm		
9/25/2017	Mosaic Fertilizer, LLC Grab	Nutrients	Temperature	28.0	C		
9/25/2017	Field Blank	Metals	Copper	0.20 U	µg/L	0.2	0.8
9/25/2017	Field Blank	Metals	Chromium	0.40 U	µg/L	0.4	1.6
9/25/2017	Field Blank	Metals	Iron	30 U	µg/L	30	120
9/25/2017	Field Blank	Metals	Cadmium	0.020 U	µg/L	0.02	0.08
9/25/2017	Field Blank	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
9/25/2017	Field Blank	Metals	Arsenic	0.050 U	µg/L	0.05	0.2
9/25/2017	Field Blank	Metals	Lead	0.050 U	µg/L	0.05	0.2
9/25/2017	Field Blank	Metals	Calcium	0.075 U	mg/L	0.075	0.3
9/25/2017	Field Blank	Metals	Silver	0.010 U	µg/L	0.01	0.04
9/25/2017	Field Blank	Metals	Aluminum	3.0 U	µg/L	3	12
9/25/2017	Field Blank	Metals	Nickel	0.20 U	µg/L	0.2	0.8
9/25/2017	Field Blank	Metals	Zinc	5.0 U	µg/L	5	20
9/25/2017	Field Blank	Metals	Selenium	0.20 U	µg/L	0.2	0.8
9/25/2017	Field Blank	Metals	Sodium	0.50 U	mg/L	0.5	2
9/25/2017	Field Blank	Nutrients	Turbidity	0.10 U	NTU	0.1	0.12
9/25/2017	Field Blank	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
9/25/2017	Field Blank	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
9/25/2017	Field Blank	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
9/25/2017	Field Blank	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2
9/25/2017	Field Blank	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
9/25/2017	Field Blank	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
9/25/2017	Field Blank	Nutrients	Color (true)	2.5 U	PCU	2.5	6
9/25/2017	Field Blank	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
9/25/2017	Field Blank	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Field Blank	Nutrients	Total Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
9/25/2017	Field Blank	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
9/25/2017	Field Blank	Overflow	Radium 228-Counting Error	0.277	pCi/L	0.451	
9/25/2017	Field Blank	Overflow	Radium 226-Counting Error	0.0334	pCi/L	0.0847	
9/25/2017	Field Blank	Overflow	Radium 228	0.451 U	pCi/L	0.451	
9/25/2017	Field Blank	Overflow	Alpha-Counting Error	0.615	pCi/L	0.974	
9/25/2017	Field Blank	Overflow	Radium 226	0.0847 U	pCi/L	0.0847	
9/25/2017	Field Blank	Overflow	Alpha, Total	0.974 U	pCi/L	0.974	
9/25/2017	Field Blank	Pesticides	Prometryn	0.020 U	µg/L	0.02	0.079
9/25/2017	Field Blank	Pesticides	Malathion	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Chlorpyrifos Ethyl	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Azinphos Methyl	0.020 U	µg/L	0.02	0.079
9/25/2017	Field Blank	Pesticides	Norflurazon	0.030 UJ	µg/L	0.03	0.12
9/25/2017	Field Blank	Pesticides	Metolachlor	0.059 U	µg/L	0.059	0.24
9/25/2017	Field Blank	Pesticides	Chlorpyrifos Methyl	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Atrazine Desethyl	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Alachlor	0.059 U	µg/L	0.059	0.24
9/25/2017	Field Blank	Pesticides	Parathion Ethyl	0.020 U	µg/L	0.02	0.079
9/25/2017	Field Blank	Pesticides	Demeton	0.024 U	µg/L	0.024	0.094
9/25/2017	Field Blank	Pesticides	Butylate	0.020 U	µg/L	0.02	0.079
9/25/2017	Field Blank	Pesticides	Atrazine	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Fenamiphos	0.030 U	µg/L	0.03	0.12
9/25/2017	Field Blank	Pesticides	Ethoprop	0.0049 U	µg/L	0.0049	0.02
9/25/2017	Field Blank	Pesticides	Ethion	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Atrazine Desisopropyl	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Prometon	0.020 U	µg/L	0.02	0.079
9/25/2017	Field Blank	Pesticides	Naled	0.039 U	µg/L	0.039	0.16
9/25/2017	Field Blank	Pesticides	Disulfoton	0.0049 U	µg/L	0.0049	0.02
9/25/2017	Field Blank	Pesticides	Parathion Methyl	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Fonofos	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Ametryn	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Simazine	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Phorate	0.0049 U	µg/L	0.0049	0.02
9/25/2017	Field Blank	Pesticides	Mevinphos	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Metribuzin	0.020 U	µg/L	0.02	0.079
9/25/2017	Field Blank	Pesticides	Hexazinone	0.030 UJ	µg/L	0.03	0.12

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Field Blank	Pesticides	Diazinon	0.0098 U	µg/L	0.0098	0.039
9/25/2017	Field Blank	Pesticides	Bromacil	0.039 U	µg/L	0.039	0.16
9/25/2017	Field Blank	Pesticides	Metalaxyl	0.039 UJ	µg/L	0.039	0.16
9/25/2017	Field Blank	Priority Organic Pollutants	Fluorene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Fluoranthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Diethyl phthalate	1.9 U	µg/L	1.9	7.8
9/25/2017	Field Blank	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Benzo(a)anthracene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	1.9 U	µg/L	1.9	7.8
9/25/2017	Field Blank	Priority Organic Pollutants	2-Chloronaphthalene	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	2,4-Dinitrophenol	15 U	µg/L	15	58
9/25/2017	Field Blank	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Phenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	µg/L	2.9	12
9/25/2017	Field Blank	Priority Organic Pollutants	Dimethyl phthalate	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	1.9 U	µg/L	1.9	7.8
9/25/2017	Field Blank	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Benzidine	97 U	µg/L	97	390
9/25/2017	Field Blank	Priority Organic Pollutants	2,4-Dinitrotoluene	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	1.9 U	µg/L	1.9	7.8
9/25/2017	Field Blank	Priority Organic Pollutants	Di-n-octyl phthalate	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	2,4-Dimethylphenol	9.7 U	µg/L	9.7	39
9/25/2017	Field Blank	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Chrysene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Butyl benzyl phthalate	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39 U	µg/L	39	160
9/25/2017	Field Blank	Priority Organic Pollutants	2,4-Dichlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	µg/L	2.9	12
9/25/2017	Field Blank	Priority Organic Pollutants	Di-n-butyl phthalate	1.9 U	µg/L	1.9	7.8
9/25/2017	Field Blank	Priority Organic Pollutants	Benzo(b)fluoranthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	2-Nitrophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	2-Chlorophenol	0.97 U	µg/L	0.97	3.9

Date Sampled	Site ID	Analysis Group	Component	Result	Units	MDL	PQL
9/25/2017	Field Blank	Priority Organic Pollutants	1,4-Dioxane	0.020 U	µg/L	0.02	0.08
9/25/2017	Field Blank	Priority Organic Pollutants	Hexachlorobenzene	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	µg/L	2.9	12
9/25/2017	Field Blank	Priority Organic Pollutants	Anthracene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Acenaphthylene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Acenaphthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	µg/L	2.9	12
9/25/2017	Field Blank	Priority Organic Pollutants	Pyrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Phenanthrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Pentachlorophenol	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Isophorone	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Hexachloroethane	2.9 U	µg/L	2.9	12
9/25/2017	Field Blank	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	µg/L	2.9	12
9/25/2017	Field Blank	Priority Organic Pollutants	Benzo(k)fluoranthene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	Benzo(a)pyrene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	4-Nitrophenol	15 U	µg/L	15	58
9/25/2017	Field Blank	Priority Organic Pollutants	2,6-Dinitrotoluene	0.97 U	µg/L	0.97	3.9
9/25/2017	Field Blank	Priority Organic Pollutants	Nitrobenzene	1.9 U	µg/L	1.9	7.8
9/25/2017	Field Blank	Priority Organic Pollutants	Naphthalene	0.19 U	µg/L	0.19	0.78
9/25/2017	Field Blank	Priority Organic Pollutants	N-Nitrosodimethylamine	1.9 U	µg/L	1.9	7.8

EPA End Sheet

The Bioassay of Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant effluent sampled on September 25, 27, and 29, 2017. NPDES #FL0036421.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 6 4 2 1	11 12 1 7 0 9 2 5	18 **B**	19 **S**	20 2

Remarks

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The Priority Pollutants Analysis of Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant effluent sampled on September 25, 27, and 29, 2017. NPDES #FL0036421.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 6 4 2 1	11 12 1 7 0 9 2 5	18 **X**	19 **S**	20 2

Remarks

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Biological Analyses of Mosaic Fertilizer, L.L.C. New Wales Concentrates Plant effluent sampled on September 25, 27, and 29, 2017. NPDES #FL0036421.

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5	3 F L 0 0 3 6 4 2 1	11 12 1 7 0 9 2 5	18 **S**	19 **S**	20 2

Remarks

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