



Santino Provenzano      Tel (813) 500-6631  
Environmental Advisor      Fax (813) 571-6913  
Phosphates      E-mail:  
**Mosaic Fertilizer, LLC**      [santino.provenzano@mosaicco.com](mailto:santino.provenzano@mosaicco.com)  
13830 Circa Crossing Drive      www.mosaicco.com  
Lithia, FL 33547

October 31, 2013

**ELECTRONIC TRANSMITTAL**

Mr. Samuel Stone  
Peace River/Manasota Regional Water Supply Authority  
C/O Peace River Regional Water Supply Facility  
Land and Environmental Services Manager  
8998 SW County Road 769  
Arcadia, Florida 34269

**RE:      Horse Creek Stewardship Program  
         CSA Monitoring Requirements  
         Proposed Modifications to Monitoring Methodology**

Dear Mr. Stone:

As you know, the Mosaic Company (Mosaic) and the Peace River Manasota Regional Water Supply Authority (PRMRWSA) are parties to the 2003 settlement agreement that was developed to help ensure that mining activities conducted by Mosaic in eastern Manatee and western Hardee Counties, Florida would not have negative impacts on Horse Creek, a major tributary of the Peace River. Section 4, Part C, of the settlement agreement establishes a requirement to provide "Real-time Monitoring" of fluid levels in clay settling areas operated by Mosaic that are "identified by the Authority as being of concern". To satisfy this requirement, Mosaic installed telemetered fluid level monitoring equipment on the FM-1 clay settling area, which was the first new CSA constructed in the Horse Creek basin following execution of the settlement agreement between the two parties.

Significant resources have been expended by both Mosaic and the PRMRWSA to install, operate and maintain this continuous "on-line" monitoring equipment. Despite our combined efforts, this type of monitoring has proven unsuccessful. Communication between the monitored sites and the Authority has been difficult to establish and field equipment has proven to be unreliable due to advanced corrosion and biofouling. In addition, the systems generate many "false alarms" which are triggered when communication is lost, the field equipment line of site to the water level is interrupted by obstructions, or when the equipment fails. The high rate of false alarms are of special concern if they cause staff to ignore and / or disable monitoring equipment, creating the possibility for a lag in detecting, reporting and responding to changing site conditions.

For the reasons described above, Mosaic has evaluated whether the existing telemetry monitoring system should be discontinued given the risk a potential Dam Breach in northern Hardee County might present to operations at PRMRWSA's facility. Mosaic retained Florida Engineering and Design ("FED") in 2013 to evaluate the pathway and transport time for a catastrophic dam release from the southernmost existing CSA (FM-2) to reach the Authority's intake on the Peace River (see attached report). The timing calculations were determined and modeled for a duration of 20 days, utilizing the latest version of the

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ICPR software, and leveraged the most recent topography information available, relying primarily on 1 ft LiDar mapping to develop Horse Creek Cross sections. Where LiDar data was lacking, cross-sections relied on USGS Quad maps. Attached is a copy of the July 17, 2013 letter report from FED which documents their methodologies, engineering analyses and findings.

The analyses completed by FED demonstrated that the time of initial flow from the catastrophic Dam Breach to the Authority's intake would be 77.0 hours (3.2 days). This analysis again, assumes a catastrophic dam failure, which discounts the mitigating effects of any immediate response actions that might be undertaken, and contemplates a type of CSA dam failure that has not occurred since the advent of FDEP regulations regarding the design, construction, operation and inspection of modern CSA's. Based on this analysis, Mosaic suggests that the current and near-future clay settling areas in Hardee County do not present an immediate risk to the Authority's operations such that they would be considered "of concern", and thus require the "real-time" fluid level monitoring contemplated in the settlement agreement.

Although FED's analyses supports a decision to discontinue the telemetry monitoring, the existing inspection, notification and response action protocols would remain in place. Due to the long transport time from the southernmost CSA to the Authority's intake associated with an absolute worst case dam failure, Mosaic recommends that the Horse Creek Stewardship Program rely on already existing inspection and notification protocols contained in the NPDES permits and FDEP rule criteria as described below:

### **Inspection Schedules and Protocols**

#### Twice daily Inspections

As part of their normal work related duties which take them to the settling areas, Utility Operators at Mosaic (commonly referred to as WSO's at Mosaic facilities) drive around the active dams at least once a shift to inspect the dam structures. Upon discovery of any suspect condition, an immediate report is filed verbally with facility management and follow-up inspection is performed during the same work day by qualified engineering support staff.

#### Weekly inspections

Dam inspectors perform thorough inspection of the active dams on a weekly basis. All of the dam inspectors have been promoted to the position of dam inspector from within the company after having worked for Mosaic long enough to have demonstrated that they are conscientious and dependable employees. Most have worked for Mosaic for many years. On an annual basis the dam inspectors and engineers receive refresher training by a third-party engineering firm (Ardaman & Associates, an engineering firm that is familiar with the design, construction and maintenance of earthen dams) on the procedures for conducting inspections and on routine maintenance of the clay settling area dams. The training includes photographs of typical warning signs of potential dam failure modes such as crest settlement, bulging on the downstream slope, cracks, boils, erosion,

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sloughing, and concentrated seepage, etc. Training also includes recommendations for dam maintenance to facilitate inspections and allow identification of potential problems, as well as instructions on where to look for problems that might not be obvious to the untrained eye.

#### Monthly Inspections

Registered Professional Engineers in Mosaic's Geotech Department perform a monthly inspection of the active dams. Inspection reports for the weekly and monthly inspections are distributed to and reviewed by facility managers, superintendents, superintendents, and other mine personnel, as well as to the Geotech engineering staff. Copies of these inspection reports are also kept on file, and are routinely reviewed by FDEP when they perform their dam inspections.

#### Annual Inspections

In addition to the in-house inspections, the settling area dams are also inspected on an annual basis by a third-party engineering firm that is familiar with the design, construction and maintenance of the settling area dams.

### **Notification and Response Protocols**

#### NPDES Permit Requirements

NPDES permits for all facilities, regardless of the basin they are located in, contain permit conditions requiring notice to potentially affected parties in the event of a dam failure. For example (Excerpt from Four Corners NPDES Permit):

*8. The permittee shall notify... (PRMRWSA) ... immediately upon discovery of an event such as a spill, or dam release, which creates a potential threat to the water quality of the Peace River upstream of an intake structure for a drinking water plant or reservoir.*

In the case of all permits for facilities in the Horse Creek or Peace River Basins, the Authority is recognized as one of the parties Mosaic must contact in the event of a significant spill or release.

#### Dam Contingency Plans

Contingency plans are required for all active and unreclaimed inactive CSA's with the ability to impound water above grade. All contingency plans require Mosaic to evaluate the potential flow pathways, affected parties/resources, and have a protocol in place for notifications and response to any potential CSA failure. These plans are reviewed by FDEP and in some cases, the local County permitting authority and are reviewed and updated annually by Mosaic's Geotechnical Department.

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Given the results of the dam breach analysis completed by FED, and the comprehensive, existing operation, inspection and reporting protocols already in place, Mosaic seeks approval from the Horse Creek Technical Advisory Group to proceed with the proposed alternative monitoring approach for the clay settling areas and discontinue the telemetered monitoring currently in place. Mosaic acknowledges that as new clay settling areas are constructed within the basin closer to the Authority's intake, additional analysis and re-assessment of the proposed alternative monitoring should be revisited. Therefore, Mosaic recommends that the risk analysis completed by FED be reviewed, and updated as necessary, as an element of the Horse Creek Stewardship Program Reports when additional CSA's are constructed in the basin.

If you have any questions regarding the proposed alternative monitoring please contact me at 813-781-1185 or by email at [santino.provenzano@mosaicco.com](mailto:santino.provenzano@mosaicco.com).

Sincerely,



Santino A. Provenzano  
Environmental Advisor  
Phosphates

cc: Jon Faletto, Mosaic  
Larry Odom, Mosaic  
Kristan Robbins, Cardno  
Sheri Huelster, Cardno

**Attachment A**

**Breach Discharge Analysis**

**Clay Settling Area FM-2**



July 17, 2013  
Project Number: 13-1385

Mr. Larry Odom  
**Mosaic Fertilizer, LLC**  
13830 Circa Crossing Dr.  
Lithia, FL 33547

**Reference: Breach Discharge Analysis  
Clay Settling Area FM-2  
Ft. Green Mine, Manatee County**

Dear Mr. Odom:

Pursuant to your request, Florida Engineering and Design, Inc. (FEDINC) has completed the engineering services required to calculate the time it would take for a catastrophic dam failure of Clay Settling Area FM-2 (located in Section 12, Township 34 South – Range 22 East, Manatee County, Florida) to reach 900 feet south of the SR 761 bridge across the Peace River (located in Section 15, Township 39 South - Range 23 East, DeSoto County, Florida). FEDINC had performed a similar study on the FGH-4 Clay Settling Area in 2004, which provided a calibrated model of flow in Horse Creek and the Peace River, and was utilized for the basis of the study of FM-2.

The timing calculations were determined and modeled for a duration of 480 Hours (20 Days) using the latest version of the Interconnected Pond Routing (ICPR) Hydrologic Modeling Software. As required for modeling, additional cross sectional elevation information was imported into ICPR to connect the dam breach flow into the calibrated Horse Creek model. Cross sections were calculated at approximate 3,000 foot intervals along the impacted portions of Horse Creek and the Peace River using 1-foot LiDar mapping, obtained from the Southwest Florida Water Management District (SWFWMD). Where SWFWMD data was lacking, cross sectional data was determined using United States Geological Survey Quadrangle mapping.

The results of the simulated breach event in Table 1 indicates that the time of initial flow at the plant site from a dam failure would be 77.0 hours (3.2 Days) from the time of initial breach at FM-2.

Please do not hesitate to call should you have any questions or if we can be of further assistance.

Respectfully submitted,

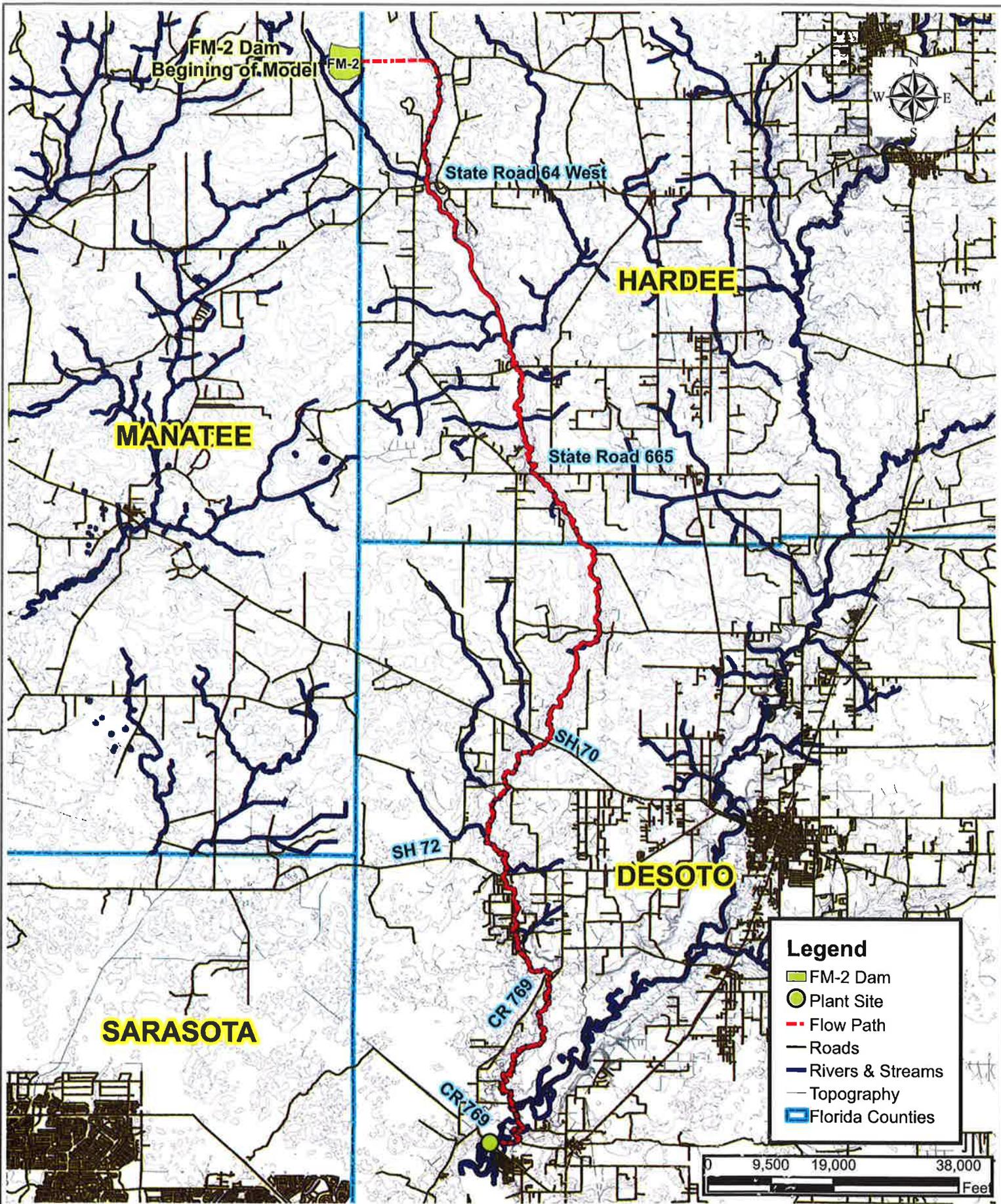
**FLORIDA ENGINEERING AND DESIGN, INC.**

A handwritten signature in black ink, appearing to read "Craig A. McKenzie", is written over a horizontal line.

Craig A. McKenzie, P.E.  
Florida License No. 70796

CAM/co  
Enclosures: Figure 1 – FM-2 Dam Breach Map; Table 1 – Time to Initial Flow at Plant Site; Hydrograph – FM-2 Simulation  
Y:\Year-2013\13-1385\Reports\FM-2 Breach Discharge Analysis.doc





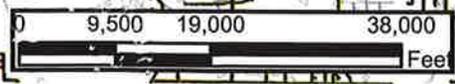
Prepared For:



Mark	Revision	By	Date	Appr. By	Title	PE Number
A					FM-2 Dam Breach	Engineer
B					Section 12	
C					Township 34S, Range 22E	70796
D					Manatee County, Florida	7/18/13
E						

**Legend**

- FM-2 Dam
- Plant Site
- Flow Path
- Roads
- Rivers & Streams
- Topography
- Florida Counties



Scale:	1" = 1000'	Job No.	13-1385
Designed By:	COO	File:	FM-2 Jiona-Creek
Drawn By:	COO	Date:	02/01/2013
Checked by:	CAM	Fig. No.	
Checked by:			
Approved By:	CAM	1	1

**Table 1**  
**Fort Green Mine / Horse Creek Analysis**  
**FM-2 Dam Breach**  
**Time to Initial Flow at Plant Site**

Rivers or Branches and Road Names (Section/Township/Range)	Cross Section Upstream	Downstream Distance (ft)	Flow Conditions	Time to Initial flow (hrs)	Time to Max. Time Stage (hrs)	Max. Stage (ft)	Max. Flow (cfs)
<b>FM-2 Flooding Analysis</b>							
Horse Creek and CR 769 (S15 T39 R23) Plant Site	999	259,605	Regular CS	77.0	105.7	2.4	643.8

