



February 28, 2005

Regular Mail

Mr. Samuel S. Stone  
Environmental Affairs Coordinator  
Peace River Facility  
8998 S.W. County Road 769  
Arcadia, FL 31269

**RE: Horse Creek Stewardship Program  
Goose Pond Road Fatty Acid Concentration – November 2004**

Dear Mr. Stone:

Attached is an impact assessment performed in response to a detection of total fatty acids above the Program trigger level at Goose Pond Road in November 2004. If you have any other questions or need any further information, please contact me at (813) 634-3922, extension 3655 at your convenience.

Sincerely,

Ross Franklin

## Fatty Acid Concentrations - Horse Creek at Goose Pond Road Impact Assessment

As part of the Horse Creek Stewardship Program, IMC Phosphates samples four locations once per month on Horse Creek in Hardee and Desoto Counties for a number of chemical and physical parameters. One of these parameters is total fatty acids (please see Attachment A). A "trigger level" of 0.5 mg/l was set for total fatty acids concentrations at Goose Pond Road in the Program. To date, twenty two months of sampling have been completed and total fatty acid concentrations recorded. The data is tabulated in Table 1. In twenty one of the twenty two months, no total fatty acids were detected above the method detection limit of 0.5 mg/l. On November 18, 2004, total fatty acids were found at a concentration of 1.1 mg/l.

### Specific Sampling

A special sampling program was carried out on January 13, 2005. Total fatty acids concentrations were measured at Horse Creek at State Road 64, at Goose Pond Road, on Brushy Creek at State Road 64, and at Horse Creek at County Road 665. The samples taken from Horse Creek at State Road 64 and at County Road 665 to bracket the Goose Pond Road station. The Brushy Creek (the largest tributary to Horse Creek between State Road 64 and Goose Pond Road) sample was taken downstream of any potential source of phosphate mining influence in that basin by any party.

Horse Creek at State Road 64	Not detected at 0.5 mg/l
Horse Creek at Goose Pond Road	1.3 mg/l
Horse Creek at County Road 665	Not detected at 0.5 mg/l
Brushy Creek at State Road 64	Not detected at 0.5 mg/l

### Discussion

We do not believe that the two detections of total fatty acids are related to our mining activities. Total fatty acids have never been detected above the method detection limit at any sampling station other than the Goose Pond Road. At the Goose Pond Road station, it was only detected in November 2004 and during the round of fatty acid sampling on January 13<sup>th</sup> 2005. If the fatty acids detected were coming from Mosaic's phosphate mining operations, it would follow that they would be in an even greater concentration at State Road 64 (four miles closer to the mining activities and subject to less dilution). Total fatty acids have never been detected there at any time. Also as mining and the concomitant release of wastewater were essentially constant activities over this period of time, appearances of fatty acid sporadically miles further downstream than at State Road 64 are perplexing.

It is also interesting that these instances were at Goose Pond Road. The Goose Pond Road sampling location is downstream of the Horse Creek Prairie. Aside from the Prairie, the main stem of Horse Creek is a generally a canopied stream with tannic water. As such, the organic matter in the stream usually comes from outside the stream channel itself (washed in by runoff, leaf fall, etc). The flowing nature of the stream and the lack of light really limits primary production and helps to prevent any "standing crop" of microplants in the water column. The Prairie is over a thousand acres of low-energy, relatively open herbaceous wetland. Just as the canopied flowing nature of the majority of Horse Creek impacts water quality, so does the low energy herbaceous nature of the Prairie. Those differences (low dissolved oxygen, more organic matter) Whether that has any relevance to this particular issue is not clear, but Goose Pond Road continues to be an outlier for a number of parameters.

Table 1  
Goose Pond Road Total Fatty Acid Monitoring  
2003 - 2005

Date	Total Fatty Acids mg/l	
4/30/2003	0.5	U
5/27/2003	0.5	U
6/19/2003	0.5	U
7/14/2003	0.5	U
8/28/2003	0.5	U
9/25/2003	0.5	U
10/29/2003	0.2	U
11/20/2003	0.2	U
12/16/2003	0.5	U
1/29/2004	0.5	U
2/24/2004	0.5	U
3/16/2004	0.5	U
4/14/2004	0.5	U
5/26/2004	0.5	U
6/29/2004	0.5	U
7/27/2004	0.1	U
8/30/2004	0.5	U
9/29/2004	0.5	U
10/27/2004	0.5	U
11/18/2004	1.1	
12/15/2004	0.5	U
1/26/2005	0.5	U

The "U" qualifier indicates that total fatty acids were not found at the method detection limit of 0.5 mg/l.

Table 2  
Goose Pond Road Total Fatty Acid Monitoring  
January 13, 2005

Station	Total Fatty Acids mg/l	
Horse Creek at State Road 64	0.5	U
Horse Creek at Goose Pond Road	1.3	
Horse Creek at County Road 665	0.5	U
Brushy Creek at State Road 64	0.5	U

The "U" qualifier indicates that total fatty acids were not found at the method detection limit of 0.5 mg/l.

## Attachment A

In the broadest sense, a fatty acid is a long chain organic acid that is derived from a fat. In the phosphate mining industry, the fatty acids used come from the paper industry. The fatty acids are derived from tall oil, a byproduct of the paper industry. The fatty acids are largely oleic and linoleic acids (the same heart friendly acids promoted for good health). They are used as a collector for phosphate particles in flotation processing. The attached information provides a good background on fatty acids.

Information on tall oil fatty acids from:

“Industrial Fatty Acids and Their Applications”

Edited by E. Scott Pattinson

Published last by the Soap and Detergent Association  
in 1968.

Library of Congress Call Number TP247.2.P3

Although many of the uses of fatty acids described in this book have been superseded by other products, the information on the characteristics and production of tall oil fatty acids is still relevant.

Information on tall oil fatty acids (both the carboxylic acids and tall oil sections) from:

“Kirk Othmer Encyclopedia of Chemical Technology”

John Wiley and Sons

Constantly Updated

Library of Congress Call Number TP9.E685

As with virtually everything chemical, Kirk Othmer is a concise and very good source of basic information on fatty acids and tall oil fatty acids.