

Project Status Report

Project: Horse Creek Stewardship Program

Date: February 2, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

The following information is a brief summary of recent activities occurring with the Horse Creek Stewardship Program (HCSP).

Technical Advisory Group (TAG).

The TAG last met in August 4, 2010 to review and discuss the draft *Horse Creek Stewardship Program 2008 Annual Report*. The TAG is expected to meet again in a few weeks to review the draft 2009 annual report.

Monthly Water Quality Monitoring.

This sampling effort by Mosaic has continued without any interruption of collected data. Mosaic has transmitted data to the Authority covering the period April 2003 – Nov 2010. December 2010 monthly data is expected shortly. Mosaic continues to voluntarily sample and report data from Brushy Creek.

Macroinvertebrate and Fish Sampling.

These biological samples were collected on schedule April 20, 2010, September 28, 2010 and on November 4th and 11th 2010.

Clay Settling Ponds Real Time Monitoring.

Mosaic has completed modifications to the telemetry equipment and confirmed that data is being transmitted to the Peace River Facility as of June 29, 2010. Mosaic volunteered to add a newly constructed clay settling pond located in the Horse Creek watershed to the monitoring system for a total of three ponds.

Reports.

The draft *Horse Creek Stewardship Program 2009 Annual Report* is now under review by the TAG, Authority staff and Earth Balance, the Authority's consultant for this project.

Recent Impact Assessments.

February 2010 data showed an exceedance of the trigger level for chlorophyll at Station 1 and an impact assessment was requested. The results of that assessment found that mining activities did not cause the high levels of chlorophyll at Station 1.

Project Historical Briefing

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Date: February 2, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

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The HCSP consists of multiple tasks occurring on different schedules. Below is a list of the major tasks, a brief description of the tasks and historical progress on those tasks.

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The TAG as required by the HCSP consists of one representative from each member government. The TAG is to review the progress and findings of the program and provide technical input to the Authority. Members of the TAG consist of the following people. William Byle (Charlotte County), Jason Green (DeSoto County), Robert Brown (Manatee County) and John Ryan (Sarasota County). The TAG last met on August 4, 2010 to review the draft *Horse Creek Stewardship Program 2008 Annual Report*.

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summer of 2010 Mosaic added real time monitoring to an additional (third) clay settling pond.

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Flow and stage data is collected and monitored at the four fixed water quality sample stations. Stations 1 & 4 have existing USGS stations with data available on the USGS web site. Stations 2 & 3 required the installation of stage level gages and monitoring / reporting by Mosaic.

Water Quality Continuous Recorder.

The continuous water quality monitoring equipment became operational in July 2003 and is located at the fixed water quality station number 1, closest to mining operations. Monthly this data is down loaded in the field, and placed into a data base. This monitoring effort is on going. This data is supplied as part of the Annual Report and summarized monthly along with other routine water quality data

Reports.

The QA/QC project report describes the field methods, lab methods, standards and procedures used by Mosaic when implementing the monitoring program. The QA/QC plan will ensure that the HCSP methods used are the standard methods accepted by scientific and regulatory communities, as well as ensure that the results are reliable, reproducible and consistent with other programs.

The Historical Report is an accumulation of existing historical data on Horse Creek. This data was analyzed to determine historical back ground conditions of Horse Creek, determine if any trends are evident and be the basis for comparing with current data collected as part of the HCSP.

The Annual Reports provide all the data collected as part of the HCSP and compares these results with the historical data. The intent is to determine if current water quality is different from the past and if a trend can be determined. Below is Summary Table I showing the progress of the various reports required by the stewardship program.

Impact Assessments.

As required by the HCSP, if a water quality parameter exceeds a specified trigger value or a significant trend in the data is found, then Mosaic will initiate an impact assessment for the cause of the exceedance. The assessment can consist of further monitoring, and evaluations within the basin and may result in scientific assistance from Mosaic (if not at fault) or corrective mining actions (if at fault). If the assessment finds Mosaic at fault for the trigger exceedance or trend then the impact assessment is followed by corrective actions evaluation and implementation. Below is Summary Table II showing the frequency of exceeded trigger levels for the stewardship program.

All previous impact assessments have shown that the trigger levels were exceeded due to other causes not related to mining activities. The most recent event was in February 2010 where station 1 was found to have high chlorophyll levels. The impact assessment for this event has been received. The results of that assessment found that the parameter's concentration was not correlated to mining discharge volume or concentration.

**Summary Table I
Project Reports**

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**Summary Table II
Exceeded Trigger Levels**

Project Period	Station Number	Chemical Parameter	Frequency of Exceeded Trigger Levels (months)
Apr 2003 – Nov 2010 (92 months)	1	Dissolved Oxygen	3/92
	1	Color	1/92
	1	pH	1/92
	1	Alkalinity	4/92
	1	Fatty Acid	1/92
	1	Chlorophyll	1/92
	2	Dissolved Oxygen	76/92
	2	pH	2/92
	2	Chlorophyll	15/92
	2	Total Nitrogen	1/92
	2	Radium 226 + 228	1/92
	2	Iron	2/92
	2	Total Ammonia	1/92
	2	Fatty Acid	9/92
	3	Dissolved Oxygen	33/92
	3	Total Nitrogen	2/92
	3	Color	2/92
	3	Total Dissolved Solids	10/92
	3	Dissolved Calcium	5/92
	3	Chlorophyll	1/92
	3	Fatty Acid	1/92
	3	pH	1/92
	3	Total Ammonia	1/92
	3	Sulfate	9/92
	4	pH	1/92
	4	Iron	37/92
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Project Status Report

Project: Horse Creek Stewardship Program

Date: April 6, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

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	1	pH	2/94
	1	Alkalinity	4/94
	1	Fatty Acid	1/94
	1	Chlorophyll	1/94
	2	Dissolved Oxygen	77/94
	2	pH	2/94
	2	Chlorophyll	15/94
	2	Total Nitrogen	1/94
	2	Radium 226 + 228	1/94
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	2	Total Ammonia	1/94
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	4	Total Alkalinity	2/94
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Macroinvertebrate and Fish Sampling.

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Mosaic has completed modifications to the telemetry equipment and confirmed that data is being transmitted to the Peace River Facility as of June 29, 2010. Mosaic volunteered to add a newly constructed clay settling pond located in the Horse Creek watershed to the monitoring system for a total of three ponds. The Authority is currently having the Facility SCADA system modified to accept this new third clay pond data.

Reports.

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Recent Impact Assessments.

January 2011 data showed that the trigger level for pH was exceeded at station 1 and an impact assessment has been requested. The draft assessment is expected in a few days.

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2007 Annual Report	2/03/09	2/03/09	3/12/09	11/23/09
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2009 Annual Report	1/13/11	N/A	3/1/11	

**Summary Table II
Exceeded Trigger Levels**

Project Period	Station Number	Chemical Parameter	Frequency of Exceeded Trigger Levels (months)
Apr 2003 – Feb 2011 (95 months)	1	Dissolved Oxygen	3/95
	1	Color	1/95
	1	pH	2/95
	1	Alkalinity	4/95
	1	Fatty Acid	1/95
	1	Chlorophyll	1/95
	2	Dissolved Oxygen	78/95
	2	pH	2/95
	2	Chlorophyll	15/95
	2	Total Nitrogen	1/95
	2	Radium 226 + 228	1/95
	2	Iron	2/95
	2	Total Ammonia	1/95
	2	Fatty Acid	9/95
	3	Dissolved Oxygen	33/95
	3	Total Nitrogen	2/95
	3	Color	2/95
	3	Total Dissolved Solids	11/95
	3	Dissolved Calcium	5/95
	3	Chlorophyll	1/95
3	Fatty Acid	1/95	
3	pH	1/95	
3	Total Ammonia	1/95	
3	Sulfate	9/95	
4	pH	1/95	
4	Iron	37/95	
4	Dissolved Oxygen	13/95	
4	Sulfate	14/95	
4	Total Dissolved Solids	16/95	
4	Conductivity	1/95	
4	Dissolved Calcium	8/95	
4	Total Alkalinity	2/95	
4	Total Ammonia	1/95	
4	Fluoride	5/95	
4	Fatty Acid	1/95	

Project Status Report

Project: Horse Creek Stewardship Program

Date: June 1, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

The following information is a brief summary of recent activities occurring with the Horse Creek Stewardship Program (HCSP).

Technical Advisory Group (TAG).

The TAG met March 1, 2011 to review and discuss the draft *Horse Creek Stewardship Program 2009 Annual Report*.

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2010 Annual Report				

**Summary Table II
Exceeded Trigger Levels**

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	1	pH	2/96
	1	Alkalinity	4/96
	1	Fatty Acid	1/96
	1	Chlorophyll	1/96
	2	Dissolved Oxygen	79/96
	2	pH	2/96
	2	Chlorophyll	15/96
	2	Total Nitrogen	1/96
	2	Radium 226 + 228	1/96
	2	Iron	2/96
	2	Total Ammonia	1/96
	2	Fatty Acid	9/96
	3	Dissolved Oxygen	33/96
	3	Total Nitrogen	2/96
	3	Color	2/96
	3	Total Dissolved Solids	11/96
	3	Dissolved Calcium	5/96
	3	Chlorophyll	1/96
	3	Fatty Acid	1/96
	3	pH	1/96
	3	Total Ammonia	1/96
	3	Sulfate	9/96
	4	pH	1/96
	4	Iron	37/96
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	4	Conductivity	1/96
	4	Dissolved Calcium	8/96
	4	Total Alkalinity	2/96
	4	Total Ammonia	1/96
	4	Fluoride	5/96
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Project Status Report

Project: Horse Creek Stewardship Program

Date: July 28, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

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All previous impact assessments have shown that the trigger levels were exceeded due to other causes not related to mining activities. The most recent event was in January 2011 where station 1 was found to have low pH levels. The impact assessment for this event has been received. The results of that assessment found that the low pH was due to equipment malfunction and was not correlated to mining discharges since mining did not discharge water to Horse Creek during January 2011.

**Summary Table I
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2009 Annual Report	1/13/11	N/A	3/1/11	6/4/11
2010 Annual Report				

**Summary Table II
Exceeded Trigger Levels**

Project Period	Station Number	Chemical Parameter	Frequency of Exceeded Trigger Levels (months)
Apr 2003 – Apr 2011 (97 months)	1	Dissolved Oxygen	3/97
	1	Color	1/97
	1	pH	2/97
	1	Alkalinity	4/97
	1	Fatty Acid	1/97
	1	Chlorophyll	1/97
	2	Dissolved Oxygen	80/97
	2	pH	2/97
	2	Chlorophyll	15/97
	2	Total Nitrogen	1/97
	2	Radium 226 + 228	1/97
	2	Iron	2/97
	2	Total Ammonia	1/97
	2	Fatty Acid	9/97
	3	Dissolved Oxygen	33/97
	3	Total Nitrogen	2/97
	3	Color	2/97
	3	Total Dissolved Solids	11/97
	3	Dissolved Calcium	5/97
	3	Chlorophyll	1/97
	3	Fatty Acid	1/97
	3	pH	1/97
	3	Total Ammonia	1/97
	3	Sulfate	9/97
	4	pH	1/97
	4	Iron	37/97
	4	Dissolved Oxygen	14/97
	4	Sulfate	14/97
	4	Total Dissolved Solids	16/97
	4	Conductivity	1/97
	4	Dissolved Calcium	8/97
	4	Total Alkalinity	2/97
	4	Total Ammonia	1/97
	4	Fluoride	5/97
	4	Fatty Acid	1/97

Project Status Report

Project: Horse Creek Stewardship Program

Date: September 7, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

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May 2011 data showed that the trigger level for ammonia was exceeded at station 4 and an impact assessment has been requested. Mosaic and their consultant CardnoEntrix are evaluating data and plan on splitting samples between Mosaic and the WMD to help in evaluating the cause for exceeding the trigger level.

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The QA/QC project report describes the field methods, lab methods, standards and procedures used by Mosaic when implementing the monitoring program. The QA/QC plan will ensure that the HCSP methods used are the standard methods accepted by scientific and regulatory communities, as well as ensure that the results are reliable, reproducible and consistent with other programs.

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All previous impact assessments have shown that the trigger levels were exceeded due to other causes not related to mining activities. The most recent event was in January 2011 where station 1 was found to have low pH levels. The impact assessment for this event has been received. The results of that assessment found that the low pH was due to equipment malfunction and was not correlated to mining discharges since mining did not discharge water to Horse Creek during January 2011.

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Project Reports**

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2008 Annual Report	6/4/10	N/A	8/4/10	9/29/10
2009 Annual Report	1/13/11	N/A	3/1/11	
2010 Annual Report	11/1/11			

**Summary Table II
Exceeded Trigger Levels**

Project Period	Station Number	Chemical Parameter	Frequency of Exceeded Trigger Levels (months)
Apr 2003 – July 2011 (100 months)	1	Dissolved Oxygen	3/100
	1	Color	1/100
	1	pH	2/100
	1	Alkalinity	4/100
	1	Fatty Acid	1/100
	1	Chlorophyll	1/100
	2	Dissolved Oxygen	83/100
	2	pH	2/100
	2	Chlorophyll	16/100
	2	Total Nitrogen	1/100
	2	Radium 226 + 228	1/100
	2	Iron	2/100
	2	Total Ammonia	1/100
	2	Fatty Acid	9/100
	3	Dissolved Oxygen	33/100
	3	Total Nitrogen	2/100
	3	Color	2/100
	3	Total Dissolved Solids	11/100
	3	Dissolved Calcium	5/100
	3	Chlorophyll	1/100
	3	Fatty Acid	1/100
	3	pH	1/100
	3	Total Ammonia	2/100
	3	Sulfate	9/100
	4	pH	1/100
	4	Iron	35/100
	4	Dissolved Oxygen	14/100
	4	Sulfate	15/100
	4	Total Dissolved Solids	17/100
	4	Conductivity	1/100
	4	Dissolved Calcium	8/100
	4	Total Alkalinity	3/100
	4	Total Ammonia	1/100
	4	Fluoride	5/100
	4	Fatty Acid	1/100

Project Status Report

Project: Horse Creek Stewardship Program

Date: November 2, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

The following information is a brief summary of recent activities occurring with the Horse Creek Stewardship Program (HCSP).

Technical Advisory Group (TAG).

The TAG met March 1, 2011 to review and discuss the draft *Horse Creek Stewardship Program 2009 Annual Report*. In mid October 2011 the TAG reviewed and agreed to the final changes to the 2009 report.

Monthly Water Quality Monitoring.

This sampling effort by Mosaic has continued without any interruption of collected data. Mosaic has transmitted data to the Authority covering the period April 2003 – Aug 2011. Mosaic continues to voluntarily sample and report data from Brushy Creek.

Macroinvertebrate and Fish Sampling.

These biological samples were collected on schedule during 2010. Samples were collected during the Spring 2011 time frame on April 18, 2011. Due to stream flow conditions the summer wet season samples were partially collected in Aug 2011. Fall samples are scheduled for October 26.

Clay Settling Ponds Real Time Monitoring.

Mosaic has completed modifications to the telemetry equipment and confirmed that data is being transmitted to the Peace River Facility as of June 29, 2010. Mosaic volunteered to add a newly constructed clay settling pond located in the Horse Creek watershed to the monitoring system for a total of three ponds. The Authority has completed the Facility SCADA system modifications to accept this new third clay pond data. Final calibrations and set up of the system is ongoing.

Reports.

The draft *Horse Creek Stewardship Program 2009 Annual Report* was finalized by Mosaic and their consultant CardnoEntrix 6/4/11. The Authority staff then requested additional changes to the report which has been completed and accepted by staff and the TAG in mid October 2011.

Recent Impact Assessments.

May 2011 data showed that the trigger level for ammonia was exceeded at station 4 and an impact assessment has been requested. Mosaic and their consultant CardnoEntrix are evaluating data and plan on splitting samples between Mosaic and the WMD to help in evaluating the cause for exceeding the trigger level.

Project Historical Briefing

Project: Horse Creek Stewardship Program

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The HCSP consists of multiple tasks occurring on different schedules. Below is a list of the major tasks, a brief description of the tasks and historical progress on those tasks.

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The TAG as required by the HCSP consists of one representative from each member government. The TAG is to review the progress and findings of the program and provide technical input to the Authority. Members of the TAG consist of the following people. William Byle (Charlotte County), DeSoto County currently has no representative, Robert Brown (Manatee County) and John Ryan (Sarasota County). The TAG last met on March 1, 2011 to review the draft *Horse Creek Stewardship Program 2009 Annual Report*.

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	1	pH	2/101
	1	Alkalinity	4/101
	1	Fatty Acid	1/101
	1	Chlorophyll	1/101
	2	Dissolved Oxygen	84/101
	2	pH	2/101
	2	Chlorophyll	16/101
	2	Total Nitrogen	1/101
	2	Radium 226 + 228	1/101
	2	Iron	2/101
	2	Total Ammonia	1/101
	2	Fatty Acid	9/101
	3	Dissolved Oxygen	34/101
	3	Total Nitrogen	2/101
	3	Color	2/101
	3	Total Dissolved Solids	11/101
	3	Dissolved Calcium	5/101
	3	Chlorophyll	1/101
	3	Fatty Acid	1/101
	3	pH	1/101
	3	Total Ammonia	2/101
	3	Sulfate	9/101
	4	pH	1/101
	4	Iron	36/101
	4	Dissolved Oxygen	14/101
	4	Sulfate	15/101
	4	Total Dissolved Solids	17/101
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	4	Dissolved Calcium	8/101
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	4	Fluoride	5/101
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Project Status Report

Project: Horse Creek Stewardship Program

Date: December 21, 2011

Prepared by: Samuel Stone, Environmental Affairs Coordinator

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	1	Alkalinity	4/102
	1	Fatty Acid	1/102
	1	Chlorophyll	1/102
	2	Dissolved Oxygen	85/102
	2	pH	2/102
	2	Chlorophyll	16/102
	2	Total Nitrogen	1/102
	2	Radium 226 + 228	1/102
	2	Iron	2/102
	2	Total Ammonia	1/102
	2	Fatty Acid	9/102
	3	Dissolved Oxygen	35/102
	3	Total Nitrogen	2/102
	3	Color	2/102
	3	Total Dissolved Solids	11/102
	3	Dissolved Calcium	5/102
	3	Chlorophyll	1/102
	3	Fatty Acid	1/102
	3	pH	1/102
	3	Total Ammonia	2/102
	3	Sulfate	9/102
	4	pH	1/102
	4	Iron	37/102
	4	Dissolved Oxygen	15/102
	4	Sulfate	15/102
	4	Total Dissolved Solids	17/102
	4	Conductivity	1/102
	4	Dissolved Calcium	8/102
	4	Total Alkalinity	3/102
	4	Total Ammonia	1/102
	4	Fluoride	5/102
	4	Fatty Acid	1/102