

2004 Data Summary Report

April 2005



Grasse River Study Area
Massena, New York



ALCOA

Alcoa Inc.
Massena, New York

Table of Contents

SECTION 1 INTRODUCTION.....	1-1
SECTION 2 CONTINUATION OF THE 2003 PHASE II FIELD ACTIVITIES	2-1
2.1 UPSTREAM RIVER AND FLOODPLAIN CROSS SECTIONS	2-1
2.1.1 Collection Summary	2-1
2.1.2 Results.....	2-2
SECTION 3 RIVER ICE MONITORING.....	3-1
3.1 COLLECTION SUMMARY	3-1
3.2 RESULTS.....	3-2
3.2.1 Climatological Conditions	3-2
3.2.2 River Stage Monitoring.....	3-3
3.2.3 Monitoring of River Ice Formation and Extent	3-3
3.2.4 Ice Thickness Measurement.....	3-4
3.2.5 Monitoring of River Ice Breakup.....	3-4
3.2.5.1 Climatological Observations.....	3-5
3.2.5.2 Ice Cover Observations.....	3-5
3.3 SUMMARY	3-7
SECTION 4 2004 SRS PROGRAM.....	4-1
4.1 ROUTINE WATER COLUMN MONITORING	4-1
4.1.1 Collection Summary	4-1
4.1.2 Results.....	4-3
4.1.2.1 River Flow and Precipitation	4-3
4.1.2.2 Water Quality.....	4-4
4.1.2.3 PCBs	4-5
4.1.2.4 Comparison to Historic Trends.....	4-6
4.2 TREND MONITORING SURVEY	4-7
4.2.1 Collection Summary	4-7
4.2.2 Results.....	4-9
4.2.2.1 PCB (Aroclor) Results	4-9
4.2.2.2 PCB (Congener) Results.....	4-10
4.2.2.3 Comparison to Historic Data	4-11
SECTION 5 2004 FOCUSED STUDIES	5-1
5.1 SEDIMENT SAMPLING	5-1
5.1.1 Spring Sampling.....	5-1
5.1.1.1 Collection Summary	5-1
5.1.1.2 Results.....	5-2
5.1.1.1.2 T35-N Core	5-3
5.1.1.1.2 T37-N Cores.....	5-4
5.1.1.1.2 T46-M Cores.....	5-6
5.1.1.1.2 T71-N Cores.....	5-7
5.1.1.1.2 Summary.....	5-7
5.1.2 Near Shore High Resolution Cores.....	5-8
5.1.2.1 Collection Summary	5-8
5.1.2.2 Results.....	5-9
5.2 COARSE AREA SEDIMENT PROBING.....	5-10
5.2.1 Collection Summary	5-10

5.2.2	Results.....	5-11
5.3	TSS MONITORING DURING SPRING HIGH FLOW/ICE BREAKUP.....	5-11
5.3.1	Collection Summary.....	5-11
5.3.2	Results.....	5-13
5.3.2.1	Stage Height and Flow Data.....	5-13
5.3.2.2	Monitoring Results.....	5-13
5.3.2.3	Comparison to Historic Data.....	5-14
SECTION 6 QUALITY ASSURANCE/QUALITY CONTROL		6-1
6.1	INTRODUCTION.....	6-1
6.2	QA/QC PROCEDURES.....	6-1
6.3	RESULTS OF QA/QC ANALYSES.....	6-3
6.3.1	Sediment.....	6-4
6.3.1.1	PCBs (Aroclor).....	6-4
6.3.1.2	Total Organic Carbon.....	6-5
6.3.1.3	Grain Size.....	6-6
6.3.2	Water Column.....	6-7
6.3.3	Resident Fish.....	6-8
6.4	SUMMARY.....	6-9
SECTION 7 REFERENCES.....		7-1

Tables

- Table 1-1. 2004 data collection summary.
- Table 3-1. Distance from bridge railing to water/ice surface.
- Table 3-2. Ice and frazil slush thickness measurements in January and February 2004.
- Table 4-1. 2004 SRS Program - PCB results.
- Table 4-2. 2004 SRS Program – Total suspended solids results.
- Table 4-3. Number of samples collected/number of samples targeted.
- Table 4-4. Adult resident fish collection field and laboratory data - smallmouth bass and brown bullhead.
- Table 4-5. Resident fish collection field and laboratory data - young-of-year spottail shiner.
- Table 5-1. Spring 2004 sediment data summary.
- Table 5-2. Sediment data summary - near shore areas; High-resolution cores collected in September 2004.
- Table 5-3. Sediment elevation and probing data summary.
- Table 5-4. Total suspended solids concentrations measured in the water column from the Main Street and Alcoa Bridges in March 2004.
- Table 6-1. Individual samples not meeting QA/QC guidelines.

Figures

- Figure 1-1. Grasse Rive study area – location map.
- Figure 2-1. Upstream cross section locations – US1 through US3.
- Figure 2-2. Upstream cross section locations – US4 through US13.
- Figure 2-3. Cross sectional profiles of the Grasse River and its floodplain between Louisville and Massena.

- Figure 3-1. 2003/2004 river ice monitoring locations.
- Figure 3-2. Daily air temperatures for November 2003 through March 2004.
- Figure 3-3. Daily precipitation from January through March 2004.
- Figure 3-4. Stage height at Outfall 001 from January to April 2004.
- Figure 3-5. Stage height at Outfall 001 during March 2004.
- Figure 3-6. Gage height at USGS gaging station at Chase Mills, NY during March 2004.
- Figure 3-7. Relative water/ice surface elevation at Main St and Alcoa Bridges during December through March 2004.
-
- Figure 4-1. 2004 SRS program – Water column monitoring locations.
- Figure 4-2. Grasse River flow and precipitation information from 2004.
- Figure 4-3. Comparison of three methods of measuring/estimating Grasse River flows in 2004.
- Figure 4-4. Temperature and specific conductivity measurements during water column routine monitoring in 2004.
- Figure 4-5. Spatial distribution of TSS concentrations measured during the 2004 SRS Program.
- Figure 4-6. Monthly average PCB concentrations at water column sampling locations in 2004.
- Figure 4-7. Monthly average PCB mass fluxes at water column sampling locations in 2004.
- Figure 4-8. Spatial distribution of total PCBs in water samples collected during the 2004 SRS program.
- Figure 4-9. Measurements of total PCBs at WC001/WCMSB, WCT11, WC007, WC131, WC011, WC012, and WC013.
- Figure 4-10. Average homolog distributions in water samples collected in 2004.
- Figure 4-11. Seasonal average water column PCB concentrations measured during non-stratified periods.
- Figure 4-12. Seasonal average water column PCB mass fluxes measured during non-stratified periods.
- Figure 4-13. Adult smallmouth bass sample collection locations.

- Figure 4-14. Adult brown bullhead sample collection locations.
- Figure 4-15. Young-of-year spottail shiner sample collection locations.
- Figure 4-16. Average Aroclor-based PCB concentrations in fish collected in Fall 2004.
- Figure 4-17. Average Aroclor-based PCB levels in smallmouth bass (1991-2004).
- Figure 4-18. Average Aroclor-based PCB levels in smallmouth bass from the Power Canal.
- Figure 4-19. Average Aroclor-based PCB levels in brown bullhead (1991-2004).
- Figure 4-20. Average Aroclor-based PCB levels in young-of-year spottail shiner (1998-2004).
-
- Figure 5-1. 2004 Focused Studies spring sediment sampling locations – T35 and T37.
- Figure 5-2. 2004 Focused Studies spring sediment sampling locations – T46.
- Figure 5-3. 2004 Focused Studies spring sediment sampling locations – T71.
- Figure 5-4. Near shore high-resolution core locations T1-T26.
- Figure 5-5. Near shore high-resolution core locations T27-T53.
- Figure 5-6. Near shore high-resolution core locations T54-T72.
- Figure 5-7. 2004 Focused Studies coarse area sediment probing results – T9 to T19.
- Figure 5-8. 2004 Focused Studies coarse area sediment probing results – T20 to T32.
- Figure 5-9. 2004 Focused Studies coarse area sediment probing results – T33 to T42.
- Figure 5-10. 2004 Focused Studies coarse area sediment probing results – T43 to T52.
- Figure 5-11. 2004 Focused Studies coarse area sediment probing results – T53 to T59.
- Figure 5-12. Comparison of coarse area sediment depths upstream and downstream of T32.
- Figure 5-13. Water column sampling locations in March 2004 (TSS Sampling).
- Figure 5-14. Stage height, flow, and total suspended solids during March 25 - 31, 2004.
- Figure 5-15. Water column TSS concentrations versus stage height (March 25 - 31, 2004).
- Figure 5-16. Solids concentrations measured at the Main Street Bridge/WC001 as a function of river flow.

Appendices

- Appendix A. Grasse River Geographic Information Systems (GIS) Project Database.
- Appendix B. Photographs from 2003/2004 Ice Monitoring.

- Appendix C. Sediment Core Photo Log – Focused Studies.
- Appendix D. Sediment Core Profiles – Focused Studies.
- Appendix E. Graphic Logs – May/June 2004 Focused Studies.