Appendix 2B-7: STA-2 Mercury Special Studies Interim Report

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SUMMARY

Stormwater Treatment Area 2 (STA-2) Cell 2 and Cell 3 met their permit-mandated mercury start-up criteria in September and November 2000, respectively, while Cell 1 experienced anomalous mercury events in fall 2000 and 2001 and summer 2002. The recurrence of first-flush mercury anomalies of increasing magnitude after each dryout and rewetting event has become problematic. The permit issued to the South Florida Water Management District (SFWMD or District) for the operation of STA-2 provides for an adaptive response to such problems.

The form of mercury of concern is methylmercury (MeHg), a highly toxic compound that magnifies its concentration with each step in the aquatic food chain. It is produced inadvertently from the inorganic mercury in runoff, rain, and soils by naturally occurring sulfate-reducing bacteria in sediments substantially devoid of oxygen. MeHg biomagnification in the Everglades aquatic food chain has impaired the sport fishery and may threaten some highly exposed fish-eating wildlife species foraging in the most contaminated areas. Similar concerns were raised for fish-eating wildlife foraging preferentially in STA-2 Cell 1.

To better understand the cause of these Cell 1 MeHg anomalies, the District began a series of Mercury Special Studies (MSS) in STA-2. The MSS for STA-2 was initiated in August 2002 and is currently scheduled to be completed in January 2004. The objectives of these studies were to characterize the total mercury (THg) and MeHg concentration trajectories in water, soil, vegetation, and mosquitofish over time, to quantify THg and MeHg mass budgets for each cell, and to evaluate the physical, chemical, and biological factors that influence the magnitude of MeHg export and bioaccumulation. To offset some of the costs of this more extensive and intensive monitoring effort, funds from the Section 319 Grant from the U.S. Environmental Protection Agency were redirected from evaluating the mercury removal efficiencies of Advanced Treatment Technologies in the Everglades Nutrient Removal Project test cells to this study (C-11900-A03). The requirement to conduct this study was also subsequently codified in a Memorandum of Agreement (MOA) approved by the District's governing board in February 2003 (C-13812). The modified permit, the Section 319 Grant, and the MOA all require annual reports of study progress. This interim report is intended to fulfill those requirements.

The third anomalous mercury event in STA-2 Cell 1, which was detected by this study and occurred on August 22, 2002, began to dissipate from the interior water column almost immediately, and this trend continued through the end of the second quarter of the study. The concentration of filtered MeHg declined at the interior site CC in STA-2 Cell 1 (C1CC) from 20 nanograms per liter (ng/L) filtered MeHg to less than 2 ng/L in December 2002, then flattened out in January 2003, began to increase in February 2003, and peaked at about twice the January 2003 concentrations of THg and MeHg in March 2003. The April 2003 concentrations of THg

and MeHg declined to January 2003 levels, probably in response to increased water depths and flows and decreased rainfall. The unfiltered MeHg concentrations at G-330A, the Cell 1 outflow, followed a similar trajectory to site C1CC, albeit at higher concentrations, suggesting that turbidity in the declining water levels may have been a factor.

The buildup and decline of excess MeHg in water paralleled that in surficial soils in Cell 1, but not with the same spatial pattern. The rapid changes in soil chemistry that occurred following the Cell 1 reflooding appear to be slowing and stabilizing, with the inverse correlation between acid volatile sulfide (AVS) as a surrogate for porewater sulfide switching from weakly positive prior to reflooding to moderately negative in the last soil sampling campaign in April 2003. Mosquitofish THg concentrations tracked the water column and soil MeHg concentrations. These encouraging trends are depicted in **Figures 9**, **16**, and **33** for water, mosquitofish, and soil, respectively.

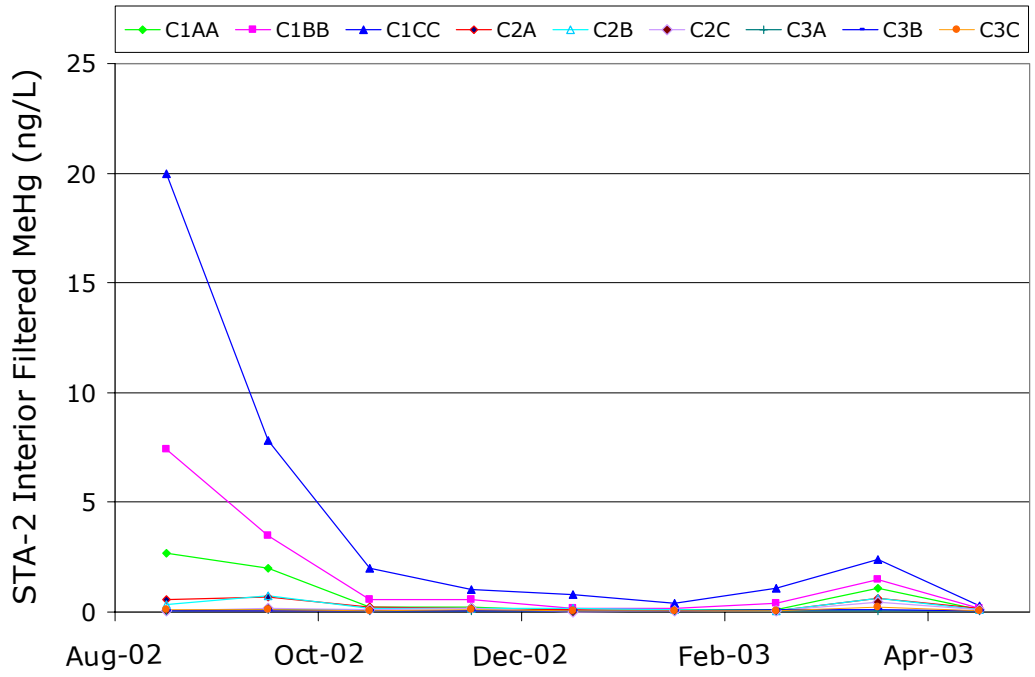

Figure 9. Filtered MeHg in samples collected from the each of the interior sampling sites in Cells 1, 2, and 3 for the period August 2002 through April 2003.

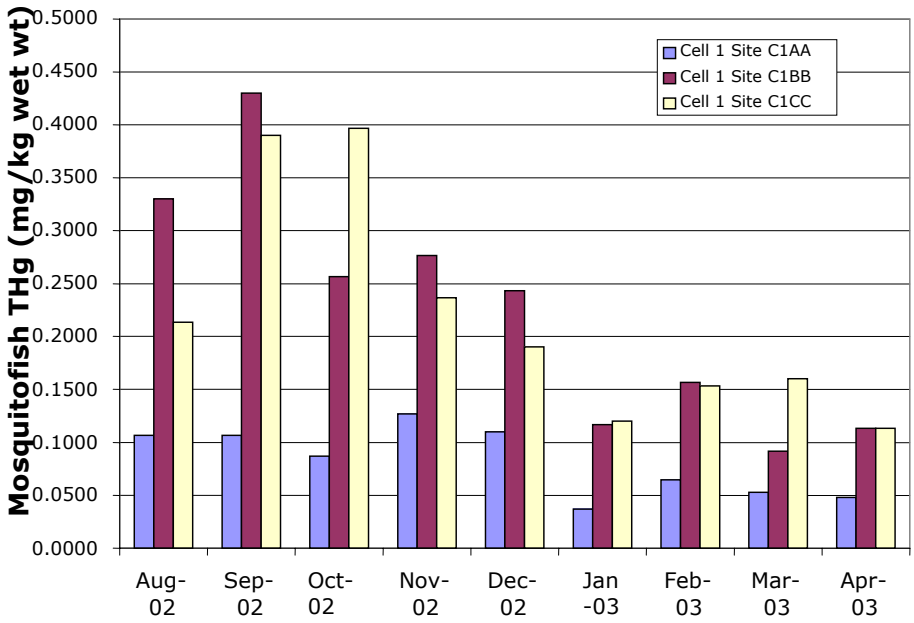

Figure 16. Mosquitofish (*Gambusia holbrooki*) THg in samples collected every four weeks from each of the interior sampling sites in Cell 1 for the period August 2002 through April 2003.

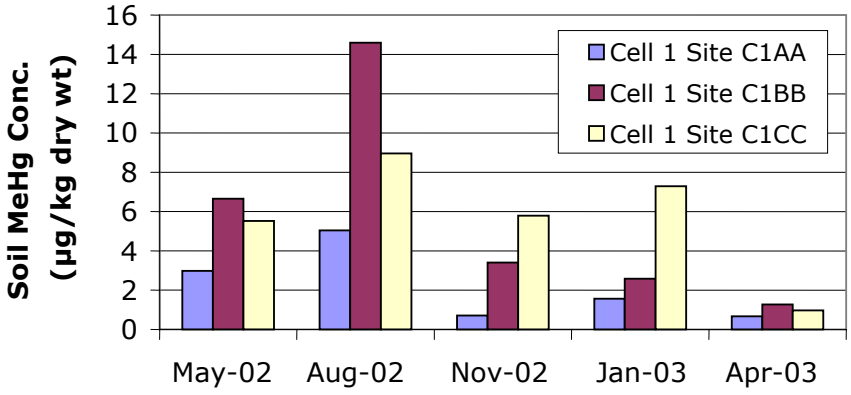

Figure 30. Results of soil MeHg monitoring at interior sites in Cell 1 for the period May 2002 through April 2003.

KEY PRELIMINARY FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

STA-2 very likely retained THg but was a substantial exporter of MeHg during the study period. Cell 1 exported substantial quantities of both THg and MeHg, while Cell 2 exported only a negligible quantity of MeHg but retained THg, and Cell 3 retained substantial quantities of both THg and MeHg.

Stage appeared to have had little influence on the concentration of MeHg in water discharged from STA-2 Cells 1, 2, or 3, suggesting that efforts to maintain minimum flows and levels in each treatment cell are working. This should be contrasted with the behavior of STA-6, which did exhibit a strong correlation between outflow MeHg and antecedent stage. However, while the District has control of the inflow rates and interior water levels in STA-2, those for STA-6 are determined by the release schedule of the U.S. Sugar Corporation.

Among the water THg, MeHg, and percent methylmercury (%MeHg) concentrations, the water MeHg concentration was probably the strongest consistent predictor of mosquitofish THg concentration for all cells combined and for individual cells.

Treatment cell outflow THg concentration was the strongest predictor of the corresponding MeHg concentration for all cells combined and for individual cells at Lag-0 weeks, followed by soil MeHg concentration at Lag-2 weeks.

Treatment cell outflow THg concentrations were only weakly influenced by rainfall THg concentrations and loads but moderately influenced by soil THg concentrations.

Among the soil constituents, soil MeHg concentration was the strongest consistent predictor of mosquitofish THg concentration and soil THg concentration was the strongest, consistent predictor of soil MeHg concentration for all treatment cells combined and for individual cells across all lag times.

The differences in the patterns of intra-correlations and inter-correlations and lag-correlations between soil constituents and mosquitofish THg, bioconcentration factor, and soil bioconcentration factor among treatment cells suggest very different soil biogeochemistries and influences on the wetlands mercury cycle. These could be permanent features of the system or reflect different biogeochemical starting conditions and different degrees of wetlands maturation toward the same biogeochemical endpoint under the influence of the same inflow water chemistry.

The reader is reminded that this interim report is based on data sets only from May 2002 through April 2003, while the study will continue through January 2004. Some of these preliminary findings may change when all the data are analyzed together.

The addition of soil porewater monitoring to the MSS program should aid in more precisely resolving these biogeochemical differences between cells.

> Based on the apparent trend toward stabilization of Cell 1 soil chemistry and a steady decline in the concentration of water, fish, and soil MeHg concentrations during the dry season, Cell 1 should continue to operate in flow-through mode during the wet season to facilitate the buildup of porewater sulfide to inhibitory levels.

The compliance significance of these data for the modified permit for the operation of STA-2 Cell 1 is reported in Appendix 4A-7 of the *2004 Everglades Consolidated Report*.

INTRODUCTION

Stormwater Treatment Area 2 (STA-2) Cell 1 experienced progressively worsening mercury anomalies in fall 2000 and 2001 and summer 2002 following flooding after extended periods of dryout. The form of mercury of concern in STA-2 and the Everglades – as well as worldwide – is methylmercury (MeHg). It is a highly toxic compound that increases in concentration as it moves up the aquatic food chain – a process referred to as biomagnification. MeHg is produced inadvertently from the inorganic mercury in runoff, rain, and sediments or flooded soils by naturally occurring sulfate-reducing bacteria (SRB) under conditions that are substantially devoid of oxygen but otherwise able to sustain anaerobic microbial activity. Each pulse of excess MeHg was probably produced in response to the release from the re-flooded soil of an excess of the factor(s) limiting the metabolic rate of the SRB or the rate at which inorganic mercury is absorbed by the SRB. This is the so-called "first-flush" effect. However, rainfall may have supplied some or most of the inorganic mercury the soil bacteria used to make the excess MeHg under these optimum conditions.

MeHg biomagnification in the Everglades aquatic food chain has impaired the sport fishery and may threaten some highly exposed fish-eating wildlife species foraging preferentially in the most contaminated areas. Similar concerns were raised for fish-eating wildlife foraging preferentially in STA-2 Cell 1 following each of the MeHg anomalies. A series of increasingly intensive and extensive Mercury Special Studies (MSS) in and downstream of STA-2 was instituted by the South Florida Water Management District (SFWMD or District) in consultation with the Florida Department of Environmental Protection (FDEP) to better understand the causes and effects of each of these STA-2 Cell 1 MeHg anomalies, as well as potential mitigation options, should such become necessary. The most recent set of these special studies began in August 2002 and are currently anticipated to be completed in January 2004. This interim report discusses relevant background, methods, and early results of the MSS ongoing in STA-2, as well as the implications of the early results for adaptive management decision making.

BACKGROUND

SITE DESCRIPTION

STA-2 is located in western Palm Beach County and includes portions of the former Browns Farm and Browns Farm Wildlife Management Area. STA-2 was developed to provide a total effective treatment area of 6,430 acres (Cell 1 is 1,990 acres, and Cell 2 and Cell 3 are 2,220 acres per cell; for additional details, see SFWMD, 1999a). Portions of STA-2 were still being farmed immediately prior to construction. Cell 3 had about 30 percent in sugarcane and 45 percent in sod production. Cell 2 had about 10 percent in sod production (in the northwest corner). Construction activities for STA-2 were initiated in January 1998 and were completed in

December 1999. The only site preparation occurred in Cell 3, where a portion of the cell was disked to remove remnant sugarcane (N. Larson, personal communication).

STA-2 is designed to treat discharges from the S-6/S-2 basin, the G-328 basin, the East Shore Water Control District, 715 farms, portions of the S-5A basin, and Lake Okeechobee via the S-6 pump station. S-6 and G-328 serve as the primary inflow pumping stations (see **Figure 1**[1]). G-328 serves approximately 9,980 acres of adjacent agricultural lands. Inflows from S-6 and G-328 enter the supply canal and are conveyed southward to the inflow canal, which extends across the northern perimeter of STA-2. A series of inflow culverts conveys flows from the inflow canal to the respective treatment cells (G-329A through G-329D into Cell 1, G-331A through G-331G into Cell 2, and G333A through G333E into Cell 3). Flows travel southward through the treatment cells and eventually release into the discharge canal via culverts or gated spillways (culverts G-330A through G-330E from Cell 1, gated spillway G-332 from Cell 2, and gated spillway G-334 from Cell 3). Flows then travel eastward in the discharge canal to the STA-2 outflow pump station, G-335, which in turn conveys water to a short stub canal leading to the L-6 borrow canal.

Water in the L-6 borrow canal travels north and then east into WCA-2A through six box culverts (each with a capacity of 300 cubic feet per second [cfs], and an invert of 12 feet (ft) NGVD [National Geodetic Vertical Datum]) that are located south of G-339 between 0.5 and 3 miles (mi) south of S-6. The area to receive discharge was previously identified as a nutrient-impacted area. Under high-flow conditions, when stage in the L-6 borrow canal exceeds 14.25 ft, treated discharges in the L-6 borrow canal will spill into five 72-inch culverts and travel south toward S-7. Approximately 0.75 mi north of S-7, the eastern levee have been degraded to ground elevation (approximately 12 ft) that will allow water to sheetflow into WCA-2A.

OPERATIONAL HISTORY OF STA-2

The treatment cells received differing amounts of water during construction and up to the present time. Dewatering was required for construction and installation of spillways and culverts. Cell 1 received most of the water from dewatering operations, except for a short period during the Cell 1 construction, at which time Cell 2 received dewatering volumes. Construction of the interior works was completed in June 1999. At that time, the inflow gates to Cell 1 and Cell 2 were opened for a brief period and then closed because the primary operational objective was to raise water depths in Cell 3 to approximately 1 meter to prevent growth of emergent vegetation. Cell 3 inflow gates remained open for several months, which included the timeframe of Hurricane Irene (October 15, 1999). The inflow gates to Cells 1 and 2 were reopened briefly from December 1999 to January 2000. However, the cells may have partially dried out during the 1999-2000 dry season. The final operational testing of the outflow pump station, G-335, was completed in October 2000, and a small amount of water was discharged at that time. In addition to rainfall, source water for the treatment cells through early 2001 originated from G-328 and G-337, i.e., the seepage pump. During the severe drought in 2000-2001, STA-2 Cell 1 went dry in April 2001 and Cell 2 went dry about May 10, 2001. Supplemental water deliveries were made during April and May 2001 to Cell 3 to prevent dry-out of the submerged aquatic vegetation (SAV). Following local rains, Cell 2 was reflooded about June 1, 2001.

[1] All figures for this appendix are located on pages App. 2B-7-41 through App. 2B-7-97.

Mercury Requirements in Everglades Forever Act Permits

The Everglades Forever Act of 1994 (EFA) (Section 373.4592, Florida Statutes [F.S.]) mandated that the South Florida Water Management District construct and operate the Everglades Construction Project (ECP). To comply with this mandate, the District applied for and received an Everglades Forever Act and a National Pollution Discharge Elimination System permit for STA-2 on September 29, 2000. Exhibit D of the EFA permit describes the mercury monitoring required for STA-2. These monitoring requirements included (1) establishing a soil baseline for mercury, (2) avoiding first-flush discharges, (3) operational monitoring, (4) receiving waters monitoring, (5) annual mercury monitoring reporting, (6) adaptive management, and (7) a monitoring and quality assurance plan. During start-up, biweekly monitoring of unfiltered water samples at the inflow and at a representative interior site was required to detect and respond appropriately to a first-flush phenomenon, including the reporting of anomalously high MeHg concentrations. When the interior site is not statistically significantly greater than the inflow for both unfiltered total mercury (THg) and MeHg (one-tailed t test, $p<0.05$), the start-up mercury criteria were met. If the phosphorus start-up criterion had also been met, then discharge under routine operation could commence, available water permitting.

THE STA-2 MERCURY PROBLEM

Exhibit D of the EFA permit for the operation of STA-2 prohibits the start of flow-through operation of an individual treatment cell until biweekly monitoring demonstrates that THg and MeHg concentrations in the interior of the treatment cell are not significantly greater than the corresponding inflow concentrations. When those start-up criteria are met and flow-through operation begins, Exhibit D permit conditions require (1) quarterly sampling of inflow and outflow water for unfiltered THg and MeHg analysis, (2) semiannual sampling of mosquitofish for THg analysis from inflow, one representative interior site in each treatment cell, and outflow, (3) annual sampling of sunfish and largemouth bass at those same sites for THg analysis, and (4) soil sampling for THg and MeHg every three years.

Cell 2 and Cell 3 met the mercury start-up criteria for the initiation of flow-through operation during fall 2000, while Cell 1 experienced a then unprecedented MeHg anomaly. Unfiltered MeHg was detected at 4.8 ng/L in the interior of Cell 1 on September 26, 2000, which was considerably higher than either the inflow (G-328B) concentration on September 20, 2001 (0.19 ng/L) or the combined average (0.24 ± 0.08 ng/L; mean ± 95% confidence interval [C.I.]) inflow concentration from the S-6 and G-328B structures from June 2000 through September 2001. At the request of the FDEP, the District initiated a short-term expanded monitoring program to better define the magnitude and duration of the anomalous MeHg event, identify the cause, if possible, and evaluate potential mitigative measures by the simultaneously monitoring of Cell 2, which did not experience an anomalous MeHg event. The results are summarized below.

ADAPTIVE MANAGEMENT RESPONSE TO THE FIRST METHYLMERCURY ANOMALY

Beginning in late October 2000, the start-up mercury monitoring program was expanded to include three sites in Cell 1 and Cell 2 for the monthly sampling of filtered water and mosquitofish and the one-time sampling of sediment. The expanded water sampling ended 90 days later in late January 2001, while monthly mosquitofish monitoring in Cell 1 continued until March 2001, when low water levels precluded further sampling. The follow-up study locations, media, and frequencies are depicted in **Figure 2**. Splitting samples between contract

analytical laboratories confirmed the high MeHg results. The simultaneous collection of filtered and unfiltered samples demonstrated that the high MeHg concentrations could not be attributed solely to high suspended solids concentrations in the water. Significant fluctuations in unfiltered and filtered MeHg concentrations within and between Cell 1 and Cell 2 were observed during the follow-up study. These spatial and temporal fluctuations may be a result of differences in soil chemistry or vegetation coverage, the internal recirculation of water via the seepage canal, rapid uptake and release by microscopic plants and animals, or analytical artifacts. By the end of the study, unfiltered MeHg concentrations in Cell 1 surface water had declined to about 5 percent of the September 26, 2000 peak of 4.8 ng/L but still exceeded the inflow concentration, while those in Cell 2 had declined to about 3 percent of the August 3, 2000 peak of 1.9 ng/L. However, following a significant rainfall event in March 2001, concentrations of both THg and MeHg increased dramatically to near peak levels. These relationships are summarized in **Figure 3**.

As anticipated, the average concentration of THg in mosquitofish increased rapidly from October through December 2000, reaching about the same average concentration as at WCA-3A-15, the mercury "hot spot." From December 2000 through February 2001, the THg concentrations appeared to have nearly plateaued, but subsequently increased again in March 2001. The time course of THg concentrations in STA-2 mosquitofish is depicted in **Figure 4**. Anomalously high MeHg concentrations can also be inferred to have been building up in fish species at higher levels in the food chain. Such species include sunfish, which are typically consumed by fish-eating wildlife. The District concluded that the magnitude of the anticipated bioaccumulation of MeHg in STA-2 Cell 1 sunfish was likely to represent an unacceptable risk of toxic effects to highly exposed, highly sensitive members of fish-eating wildlife populations foraging preferentially in this area (Rumbold, 2000). Populations at risk included wading birds roosting or nesting in the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge) but foraging over a range that includes STA-2.

During initial flooding of Cell 1, water levels were maintained at the STA-2 operational plan target elevation of 1 ft. The 2001 drought necessitated operational changes to STA-2. The Cell 1 ground elevation made inflow to Cell 1 impossible, and the cell dried out in mid-April 2001. A concerted effort was made during the drought to use all available water to keep a minimum of 0.5 ft in Cell 3, which was being maintained to support submerged aquatic vegetation (SAV). Cell 1 dried out in mid-April 2001 in response to an extended drought.

PERMIT MODIFICATION FOR FLOW-THROUGH OPERATION

In July 2001, the District petitioned for a permit modification that would allow initiation of flow-through operation of Cell 1; the FDEP granted permission in August 2001. The proposed modified permit requires 12 months of expanded monitoring to better define the mercury status of Cell 1 over time, after which an ecological risk assessment of the MeHg exposures to fish-eating wading birds is required. However, immediate notification and an early risk assessment are required if the THg concentrations in both mosquitofish and sunfish collected from the Cell 1 interior or downstream exceed two standard deviations of the Everglades average mosquitofish and sunfish THg concentrations for the period of record (POR). The modified Cell 1 operations for the 2001 wet season included (1) flowing as much water through Cell 1 as possible, (2) maintaining a target minimum and average depth of 0.5 and 1 ft, respectively, in Cell 1, subject to rainfall and other operational constraints, (3) blending discharges from Cell 1 with other cells in order to minimize mercury export from STA-2, and (4) moving water from Cell 1 to other cells as an option to meet these objectives. For purposes of implementing the second operational provision, the average depth in Cell 1 was calculated as the average of depths at the inlet and outlet structures.

In October 2001, as water levels in Cell 1 fell during the dry season, an anomalously high MeHg concentration was detected in STA-2 Cell 1 outflow water (7.4 ng/L unfiltered Hg), but the concentration of THg in Cell 1 mosquitofish collected that same month had not yet reached anomalously high concentrations. In accordance with the adaptive management provision of the permit, the District requested and was granted permission to dry out Cell 1 in November 2001 before the anomalous MeHg pulse propagated up the food chain with the potential to present an unacceptable risk to fish-eating wildlife. Dryout was essentially complete in December 2001, although some below-grade drainage continued into February 2002.

FOLLOW-UP RESEARCH

In February 2002, the District approved a Cooperative Agreement (C-13860) with the FDEP to carry out a scoping-level follow-up study of cause and effect to (1) better understand the cause of the anomalous mercury events in Cell 1, and (2) evaluate the efficacy of various operational alternatives to prevent or minimize the occurrence of another anomalous mercury event in Cell 1 in summer 2002 when it is scheduled to be reflooded again. The study, which was designed and carried out by a team of scientists from the U.S. Geological Survey (USGS) centers in Middleton, WI, Reston, VA, and Boulder, CO and the Academy of Natural Sciences Environmental Research Center in St. Leonard, MD. Soil cores were collected at STA-2 site C1C in February 2003, along with associated soil porewater and surface water for detailed chemical analyses. For purposes of comparison, sample sets of soil cores, soil porewater, and surface water were also collected at WCA-3A-15. WCA-3A-15 is a historical "hot spot" in the Everglades, which rarely dries out (even under drought conditions like those encountered in spring/summer 1999 and 2000). One set of replicate cores was dried out for 40 days prior to rewetting, while a second set of cores was dried for 299 days prior to rewetting. After the canal water was added to the set of dried cores, water and soil samples were collected at progressively longer intervals to track the first-flush response in the most cost-effective manner (exponential sampling frequency). Because the rate of rewetting was much slower than anticipated, the study duration had to be extended for both sets of soil cores.

The results of these laboratory experiments are detailed in Appendix 2B-1. In summary, the scoping study confirmed that rewetting of STA-2 Cell 1 soils after dryout produced a first-flush of excess sulfate, then excess MeHg. The responsiveness of Cell 1 soils was greater than those collected at WCA-3A-15, and the soils dried out for 299 days showed a greater first-flush MeHg response than did the soils that had been dried for 40 days. A second set of more refined dryout-rewetting studies is now planned for the next reporting year.

MEMORANDUM OF AGREEMENT

While the aforementioned study was being carried out, the District and the FDEP were developing a broader plan of action to better understand and, if necessary, ameliorate the cause of the anomalous MeHg behavior of STA-2 Cell 1. The proposed plan included provisions for more extensive and intensive monitoring of surface water, soil, porewater, and vegetation by the District and more process-level research into cause and effect funded by the FDEP. The monitoring and research data would then be integrated and synthesized by a predictive mathematical model of the transport, fate, and bioaccumulation of MeHg. That model, which has been adapted to the Everglades and upgraded for management-relevant application under another Cooperative Agreement between the District and the FDEP (C-9693), is the Everglades Mercury Cycling Model version II or E-MCM(II). The final report detailing the development and application of E-MCM(II) is presented in Appendix 2B-2. The total cost of these studies in Fiscal

Years 2002, 2003, and 2004 (FY2002, FY2003, and FY2004) is not expected to exceed $900K for each agency. Co-funding and in-kind service commitments from the FDEP are expected to be about $200K, including the redirection of about $100K in Section 319 matching grant funds. These commitments were codified in a Memorandum of Agreement (MOA) between the District and the FDEP. The MOA, which was approved by the District's governing board at its February 2003 meeting, is currently in effect.

WETLAND MERCURY BIOGEOCHEMISTRY

Inorganic mercury enters the Everglades in stormwater runoff, rainfall, dustfall, gas transfer from the air to water, or aqueous transfer from soil to water (Fink and Rawlik, 2000; Rumbold et al., 2000). In the Everglades, more than 98 percent of the new inorganic mercury is supplied by atmospheric deposition (Atkeson et al., 2002). It is believed that most of the "old" inorganic mercury in soil is so strongly bound to the inorganic sulfides (Ravichadran et al., 1997; Jay et al., 2000) and sulfhydryl groups in the organic carbon fraction (Haitzer et al., 2002) that it is unavailable for biogeochemical processing. However, some inorganic mercury is complexed with iron oxyhydroxide or iron sulfide species present in the soil (Lockwood and Chen, 1974; Yin et al., 1997), and this soil fraction is likely to be more bioavailable than the inorganic mercury complexed with the sulfhydryl moiety or precipitated with sulfide. Absent in a dryout event, MeHg in the Everglades is likely produced primarily from inorganic mercury present in wet and dry atmospheric deposition and surface flow (Krabbenhoft et al., 2001).

It is likely that the qualities of the water influent to STA-6 Cells 3 and 5 were virtually indistinguishable, as were the quantity and quality of wet and dry atmospheric deposition (USEPA, 1997; Guentzel, 1997; Guentzel et al., 2001). Therefore, the substantial differences in the MeHg concentrations in soil and water between cells must be attributed to some other factor or factors, such as antecedent land use, antecedent stage-duration with and without dryout, differences in the hydraulic loading rates or seepage rates, or intrinsic differences in soil chemistry.

Following soil dryout, it is likely that labile carbon, sulfur, and iron species in surficial soils are oxidized, albeit to different degrees and at different rates (Dmytriw et al., 1995; Yin et al., 1997; Krabbenhoft and Fink, 2001; Fink, 2003a). Reinundation of oxidized soils is usually accompanied by a "first-flush" release of nutrients (Newman and Pietro, 2001) and trace metals, including inorganic mercury (Dmytriw et al., 1995; Yin et al., 1997; Rawlik, 2001b; Rumbold et al., 2001b). It has been hypothesized that the presence of high concentrations of oxidized species in a readily bioavailable form accelerates MeHg production until the pools are reduced by biotic or abiotic processes (Krabbenhoft et al., 2000; Krabbenhoft and Fink, 2001). Following the first-flush release of inorganic mercury, some of it is either converted to dissolved elemental mercury, Hg(0), and then lost to the overlying air via evasion (Vandal et al., 1995; Saouter et al., 1995; Krabbenhoft et al., 1998; Lindberg and Zhang, 2000; Zhang and Lindberg, 2000; Lindberg et al., 2002), precipitated as mercuric sulfide (Ravichadran et al., 1998), complexed with polysulfides (Jay et al., 2000) or complexed by dissolved organic carbon (Fink, 2003b), reabsorbed by suspended solids (Hurley et al., 1998), bacterial films (Hintelmann et al., 1993), algae (Hurley et al., 1998), or plants (SFWMD 1995–1999a,b; Fink and Rawlik, 2000; Fink, 2003b), or converted to MeHg (Gilmour et al., 1998a, 1999). As with inorganic mercury, the MeHg produced from the bioavailable inorganic mercury is then complexed by dissolved organic carbon (Hintelmann et al., 1997), or reabsorbed by bacteria films (Hintelman et al., 1993), algae (Hurley et al., 1998; Miles et al., 2001; Moye et al., 2002) and floating and rooted macrophytes (SFWMD, 1995–1999a,b; Hurley et al., 1998; Fink and Rawlik, 2000), as well as the surficial peat soil (Ambrose and Araujo, 1998). Following its redistribution among dissolved, particulate, and complexed phases,

the MeHg produced from the bioavailable inorganic mercury can be decomposed to inorganic mercury or elemental mercury in water by the action of sunlight (Sellers et al., 1996; Krabbenhoft et al., 1998; D. Krabbenhoft, USGS, personal communication, 2000), or demethylated by carbon-oxidizing or sulfate-reducing bacteria in the surficial sediment under anaerobic conditions (Oremland et al., 1991; Marvin-DiPasquale and Oremland, 1998; Pak and Bartha, 1998; Marvin-DiPasquale et al., 2000; Marvin-DiPasquale et al., 2001). The MeHg that is not sequestered can be transported via diffusive or advective processes into the water column or deeper into the soil profile (King, 2000) or bioaccumulated at each trophic level via the saprotrophic or autotrophic food chains (Cleckner et al., 1998).

If the duration of accelerated MeHg production is short because the soil pools of labile, bioavailable sulfate, carbon, and inorganic mercury are small and rapidly consumed, then the total mass of MeHg produced will be small and the magnitude and duration of subsequent excessive bioaccumulation of MeHg in top-predator fish and their predators will be short-lived. This is known as the "first flush effect." Conversely, if these pools are large or there is an external source of the limiting factor capable of sustaining a high, first-flush MeHg production rate for a long time, then the first-flush mass of MeHg produced will be large. It will then result in excessive bioaccumulation at the top of the food chain, and it will clear only slowly from the ecosystem. This results in the so-called "reservoir effect," first observed in hydroelectric reservoirs created by flooding forested glacial till soils in northern temperate regions (Bodaly et al., 1984; Scruton et al., 1994; Rodgers et al., 1995) but also observed in natural, created, or expanded wetlands (St. Louis et al., 1994; St. Louis et al., 1996; Kelly et al., 1997; Paterson et al., 1998). This has also resulted in the increase in MeHg body burdens in insect-eating birds (Gerrard and St. Louis, 2001) and fish-eating birds and mammals foraging in these water bodies (Wolfe et al., 1994).

However, if labile, bioavailable sulfate is present in substantial excess, surficial sediments remain anaerobic, and no other factor limits microbial metabolism or affects sulfur speciation, then sulfate will first stimulate MeHg production (Compeau and Bartha, 1985; Berman and Bartha, 1986; Gilmour and Henry, 1992; Gilmour et al., 1998a) and then inhibit it via the build-up of excess sulfide (Lamers et al., 1998) or polysulfides (Gun et al., 2000) by a mechanism that has not yet been fully elucidated (Craig and Bartlett, 1978; Gilmour et al., 1998b and 1999; Benoit et al., 1999a,b; Jay et al., 2000; Benoit et al., 2001; Marvin-DiPasquale et al., 2001). It has been hypothesized with moderate confidence (Gilmour et al, 1998b) that sulfide inhibition is causing eutrophic Everglades regions with conditions otherwise deemed ideal for MeHg production (e.g., ENR Project and WCA-2A-F1) to exhibit low MeHg production and correspondingly low concentrations in fish at all trophic levels (Cleckner et al., 1998; Lange et al., 1998, 1999; Loftus et al., 1998; Rumbold et al., 2000; Rawlik, 2001a; Rumbold et al., 2001a). Conversely, unimpacted or virtually pristine areas in the Everglades exhibit much higher MeHg production rates (e.g., WCA-2A-U3 and WCA-3A-15) and correspondingly higher concentrations in fish at all trophic levels. An alternative hypothesis is that sulfate eutrophication and sulfide toxicity (Lamers et al., 1998) has shortened the aquatic food chain in the phosphorus-impacted areas of the Everglades (McCormick et al., 1996, 1998, 1999), resulting in less MeHg bioaccumulation (Q. Stober, USEPA Region 4, personal communication).

Results of a joint USGS-District study of an Everglades dryout and burn that occurred in spring 1999 suggest that the relatively rapid decline from peak MeHg concentrations in porewater and soils was brought about by the rapid depletion of the excess sulfate pool created by the oxidation of inorganic and organic sulfides. However, the alternative hypothesis that this was caused by the relatively rapid onset of sulfide inhibition cannot be ruled out (Krabbenhoft et al., 2000; Krabbenhoft and Fink, 2001; Fink, 2003a). The relatively rapid onset of sulfide-inhibition in sulfur-amended agricultural soils could also explain why STA-1W Cell 5, after exhibiting a

first-flush effect, relaxed back to ENR-like conditions within 180 days of start-up (Rawlik, 2001b).

The interest in the nitrogen cycle species in this context arises, in part, from the ability of some anaerobic denitrifiers (e.g., *Thiobacillus denitrificans* and *Thiomicrospira denitrificans*) to strip sulfur from surficial soil in the presence of an inorganic source of carbon has been quantified with the following stoichiometric relationship (Bezbaruah and Zhang, 2003):

$$55S + 20CO_2 + 50NO_3^- + 38H_20 + 4NH_4^+ \rightarrow 25N_2 + 4C_5H_7O_2N + 55SO_4^{2-} + 64H^+$$

In effect, the anaerobic denitrifiers are having the same effect as soil dryout by oxidizing soil sulfur to sulfate, although at a much slower rate. The production of sulfate from soil sulfur via this process could stimulate MeHg production up to a point if it inhibited the build-up of porewater sulfide or inhibit MeHg production if it fostered the build-up of porewater sulfide.

STUDY DESIGN

As documented in the preceding sections, the recurrence of first-flush MeHg anomalies of increasing magnitude after each dryout and rewetting event had become problematic. To address this problem in a more rigorous way, a series of special studies was initiated in STA-2.

The primary objectives of these special studies were as follows:

1. Quantify the Hg and sulfur biogeochemical trajectories and Hg bioaccumulation trajectories of each treatment cell over time and evaluate the influences of the various external conditions and internal factors on those trajectories and their interrelationships within and between cells
2. Compare the biogeochemical trajectories of Cell 1 and the post-reflooding trajectories of the soil microcosms in the laboratory wet-dry study for study inter-validation
3. Quantify the dynamics of net import or export of inorganic Hg and MeHg by constructing a mass budget for each cell and evaluate the influences of various external and internal conditions and factors on those mass dynamics within and between cells
4. Calibrate a mathematical model of the biogeochemical dynamics of MeHg production and bioaccumulation developed in other areas to Cell 1 conditions, and evaluate model performance by hindcasting the biogeochemical trajectory of STA-2 Cell 1 during the first anomalous mercury event
5. Quantify the risks of MeHg toxic effects to highly exposed, highly sensitive avian, mammalian, and amphibian indicator species based on the observed MeHg bioaccumulation trajectory in Cell 1 mosquitofish and the corresponding modeled bioaccumulation trajectories in secondary and tertiary predator fish
6. Predict the changes in the risks of MeHg toxic effects to those indicator species in response to various changes to start-up and operating regimens

The secondary objectives of these special studies were as follows:

1. Quantify differences in the absolute and relative contributions of various pathways to the THg and MeHg mass budgets between seasons within a cell and between cells within a season

2. Quantify the influence of various external and internal conditions and factors on the magnitude and duration of the post-reflooding MeHg production and bioaccumulation pulses within a cell between seasons and between cells within a season
3. Quantify the influences of various external and internal factors on the loci and magnitudes of storage
4. Quantify the influences of various external conditions and internal factors on the differences in THg and MeHg mass budgets within a cell between seasons and between cells within a season

The set of special studies began in August 2002 and are anticipated for completion in January 2004. It is unlikely that these secondary objectives will be fulfilled without at least three, and preferably, five years of continuous, intensive monitoring.

To achieve the primary objectives, unfiltered THg and MeHg monitoring of the inflow at G-328B and outflow at G-335 was increased from quarterly to biweekly, and the same constituents and frequencies of outflow monitoring were added for Cells 1, 2, and 3 at sites G-330A, G-332, and G-334, respectively. In addition to the list of constituents routinely monitored at the common inflow at G-328, the list was increased to include chloride (Cl), sulfate (SO_4), total suspended solids (TSS), and dissolved organic carbon (DOC). These same constituents were also added to routine outflow monitoring of Cells 1, 2, and 3 at G-330A, G-332, and G-334, respectively. At three interior sites in each cell, the study also added filtered THg and MeHg in surface water and THg in mosquitofish every 4 weeks; THg, MeHg, and other potentially influential constituents in surficial soils and porewater every 12 weeks; and THg and MeHg in plants semiannually. Also, filtered samples were collected at the common inflow and outflow every 4 weeks, and unfiltered samples were collected at the three interior sites in one of the three treatment cells on a rotating basis, such that each cell interior is collected every 12 weeks.

Prior to initiation of the study, no weekly rainfall samples were collected routinely onsite for ultra-trace THg analysis using the equipment and protocols of the National Atmospheric Deposition Program's (NADP) Mercury Deposition Network (MDN), and the short-term nature of the MSS precluded formally adding an MDN site at STA-2. Instead, the contractor administering the MDN program and conducting the analyses for the NADP agreed to allow the District to install and use the equipment and protocols for the MDN rain collection at STA-2 (FL99) and to analyze the samples collected for THg as if the site was an MDN site. This was intended to ensure comparability with other MDN sites. This precluded the need to approximate the rainfall contribution by extrapolating the values from MDN sites operating at Andytown (FL04 at the junction of U.S. 27 and I-75) and the ENR Project (FL34 at the junction of I-80 and S.R. 84). The rainfall collector was installed atop a concrete shed near the G-335 pump station at a height of about 10 ft (3 m) in August 2002 and came online in September 2003. The expanded monitoring constituent lists for each medium are detailed in **Table 1**[2]**,** and the sites, media, and frequencies are depicted in **Figure 5**.

Unfortunately, at project start-up, the District did not have access to a reliable method of porewater collection that produced a representative, valid sample for both redox-sensitive constituents and ultra-trace THg and MeHg. This resulted in a delay in implementing that element of the MSS. Based on samples collected from 4 cm by the Academy of Natural Sciences Environmental Research Center (ANSERC) primarily from one site in WCA-1, two sites in

[2] All tables for this appendix are located on pages App. 2B-7-98 through App. 2B-7-154.

WCA-2A, one site in WCA-2B, and three sites in WCA-3A from 1995 to 1998 (Gilmour et al., 1999), porewater sulfide correlated strongly with the concentration of MeHg in soil (r = -0.78). However, acid volatile sulfide (AVS) was considered a rough surrogate for porewater sulfide, but its correlations with soil MeHg (r = -0.46) and porewater sulfide (r = 0.47) were weak to moderate. Thus, the development of a porewater sulfide sampling capability for ultra-trace THg and MeHg and sulfide continues.

The rain, surface water, soil, fish, and vegetation data have been used to construct mass budgets, calibrate E-MCM(II) for optimization analysis, and evaluate the magnitude of the influence of various factors on MeHg production and bioaccumulation via principle components analysis, factor analysis, or other appropriate multivariate techniques. However, this more robust approach has been postponed until all of the monitoring data, including the porewater data, have become available after the study is completed in January 2004. Further modifications to E-MCM(II) and its subsequent application to the post-reflooding MeHg anomalies in STA-2 will be paid for by the FDEP within the framework of the MOA between the two agencies.

METHODS AND PROCEDURES

SAMPLE COLLECTION AND ANALYSIS

All rain samples were collected as weekly integrated samples using a modified Aerochemetrics® rainfall collector at the top of a 10-ft concrete blockhouse adjacent to a nexus of treatment cell discharge culverts using the equipment and following the protocols of the National Atmospheric Deposition Program's Mercury Deposition Network (R. Brunette, Frontier Geosciences (FGS), personal communication). This site was registered as FL99. However, because FL99 was associated with a short-term study, it was not considered part of the MDN. The samples were then shipped to FGS of Seattle, WA, for replicate (n = 3) ultra-trace THg analysis using modified methods equivalent to draft U.S. Environmental Protection Agency (USEPA) Method 1631. FL99 became operational the last week in August 2002 and the first weekly sample was submitted for analysis for the week ending September 3, 2002.

All surface water samples for analytes other than THg and MeHg were collected via grab sample, filtered as required, and preserved according to standard methods and procedures. All anions and cations were obtained as filtered samples, while total organic carbon (TOC), total phosphorus (TP), and total Kjeldahl nitrogen (TKN) were obtained as unfiltered samples. Unpreserved, ultra-clean samples of surface water for ultra-trace THg and MeHg analysis were collected using "clean hands-dirty hands" technique in amber glass bottles with pre-cleaned, Teflon-lined caps using a peristaltic pump. The water was drawn through a pre-cleaned, 3-m Teflon tube from a depth of 0.5 m in the canals and half the water depth in the wetlands. When the wetland water depth fell below 10 cm, surface water sampling was suspended. Filtered THg or MeHg samples were collected for this project using Meissner filters that are certified for ultra-trace metals sampling but were not pre-cleaned. Samples were kept on ice for transport to the analytical laboratory. All surface water analyses were conducted by the District's analytical chemistry laboratory using standard methods, with the exception of ultra-trace THg and MeHg, which were analyzed by FGS using cryogenic preconcentration and an ultraviolet (UV) fluorescence detector following well-documented modifications of draft USEPA Methods 1631 and 1630, respectively.

To collect 4-cm soil cores, a 15-to-20-cm clean clear butyrate tube was inserted into the stainless steel corer. The corer was then driven into the sediment to the required depth using the

corer's hammer. The butyrate tube was then capped and extracted from the corer. Water above the sediment layer was carefully decanted off. Large plant debris (e.g., roots, sticks, etc.), both living and dead, was removed from the top of the core using gloved hands. Any excess sediment, representing material deeper than the desired depth, was removed and discarded. The core was then placed into a labeled zip-type storage bag, which was then inserted into a second zip-type bag to avoid cross-contamination. Samples were kept on ice for transport to the processing lab. Before and after each use, all sampling utensils were rinsed a minimum of three times with in situ water. All soil chemical analyses for constituents other than THg and MeHg performed by DB Labs of Gainesville, FL. All soil chemical analyses for THg and MeHg were performed by FGS using modified USEPA Methods 1631 and 1630, respectively.

QUALITY CONTROL

In addition to the standard blanks, replicates, and spikes for validating each analytical laboratory sample run per standard methods or USEPA Methods 1630 and 1631, the QA protocol for ultra-trace THg and MeHg requires the collection of a field kit preparation blank, a field equipment blank prior to sampling, two field replicates every quarter, and a field cleaning equipment blank at the end of the sampling trip. The field kit preparation blank was used as a diagnostic for contamination introduced in the de-ionized (DI) water or bottles unrelated to field sampling but not to fatally flag the results of the samples collected using that field kit. If the THg or MeHg equipment or field cleaning equipment blank exceeded 0.5 or 0.05 ng/L, or the field replicate relative standard deviation (RSD) was greater than 20 percent, then the entire set of samples was fatally flagged. If a MeHg result was greater than 130 percent of a THg result, then that data pair was fatally flagged. In addition, an equipment blank was collected from the rinsate of the butyrate sampling soil coring tube at the end of each sampling trip and the same for the homogenizers used for fish processing on a quarterly basis. However, due to much higher concentrations in solid media relative to ambient water, a contaminated blank did not result in a fatal flag for any solid sample but was used as a diagnostic for evaluating the adequacy of equipment cleaning. In addition, due to the high natural variability in solid media THg and MeHg concentrations, the field replicate results were used for information purposes regarding sample variability but not to flag sampling trip results.

MISSING DATA FOR WATER YEAR 2003

The MSS in STA-2 began in May 2003 with the collection of pre-flood baseline soils at the nine interior sites while Cell 1 was still dried out but both Cell 2 and Cell 3 were wet. With the completion of the raising of the Cell 1 outflow culverts in mid-June 2002 and the onset of wet season rains, Cell 1 began filling with rainfall, and discharge monitoring began on June 27, 2002. Thus, there were no Cell 1 outflow unfiltered THg or MeHg concentration data collected between May 1, 2002 and June 27, 2002. Interior monitoring of Cells 1, 2, and 3 began August 22, 2002. The addition of TSS and DOC to the routine, every 4-week inflow and outflow monitoring began in August 2002. Therefore, TSS and DOC data for May, June, and July 2002 were not collected. Although listed as a constituent of interest, calcium analysis did not begin until February 19, 2003. Rain sampling at Site FL99 did not begin until the last week in August 2002 and the first weekly integrated rain sample was collected the week ending September 3, 2002. Therefore, rain data from May 1, 2002 to August 27, 2002 are not included for the reporting year.

DATA CENSORSHIP, INTERPOLATION, AND REDUCTION

FLAGGED DATA

Fatally flagged data have not been used for purposes of permit compliance reporting. However, for the mass budget calculations and the exploratory data analyses, flagged data were not deleted. Nevertheless, it should be noted that the magnitude (up to 270 percent of unfiltered) and frequency of occurrence (approximately 28 percent above and below the practical quantitation limit (PQL) = 5 x method detection limit (MDL) of 0.02 ng/L) of reversals where filtered MeHg exceeded unfiltered MeHg suggest that the Meissner filters, which are not now acid-precleaned, may be contaminated at ultra-trace concentrations of MeHg. Previously, the District detected MeHg contamination of the plastic caps of the amber glass bottles used for ultra-clean mercury water sample collection. Subsequent acid-precleaning of the caps has resolved the problem. Both FGS (N. Bloom, FGS, personal communication) and the U.S. Geological Survey (USGS) District Office in Middleton, WI (D. Krabbenhoft, USGS-Middleton, personal communication), recommend acid-precleaning of filters for use in ultra-clean sample collection for ultra-trace THg and MeHg analysis. In the interim, both flagged and unflagged filtered MeHg data must be considered suspect.

DATA INTERPOLATION AND EXTRAPOLATION TO FILL MISSING DATA GAPS

For constituents that were only monitored every four weeks (rather than every other week) for the common anions and cations or every week for the nutrients, the missing value was determined by calculating the average of the bracketing measured values from the preceding and succeeding two weeks. If these data were not available, then the average value for the monitoring period was used to fill the gap. This had the effect of reducing the variance of the data sets, which likely increased the accuracy of the mass budget calculations could have reduced the power of the correlation analysis.

Data gaps in the rain data from May 1, 2002 to August 26, 2002 were filled using the average of the results of the nearest MDN sites at the ENR Project (FL34) at the northwest corner of the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge) and Florida Power and Light's (FPL) Andytown substation (FL04) at the junction of I-75 and U.S. 27. The average ratio of the FL99 value paired with either the corresponding FL34 or FL04 value was 0.8 for the overlapping periods of record. To fill the data gaps in the FL99 rainfall data from May 1, 2002 to August 26, 2002, the average of the ENR Project and Andytown site values for each week was multiplied by 0.8. The daily FL99 rain concentrations were then approximated via linear interpolation of the weekly values.

The percent methylmercury (%MeHg) in surface water was calculated by dividing the MeHg concentration by the corresponding THg concentration and multiplying by 100. The %MeHg in soils was calculated by dividing the MeHg concentration by the corresponding THg value and multiplying by 100.

The plant-soil bioconcentration factors (BCFs) were calculated by dividing the dry-weight plant tissue THg or MeHg concentration by the corresponding dry weight THg or MeHg concentration in the top 4 cm in soil collected at the same sampling station. The wet-weight value

was converted to an equivalent dry-weight value by dividing the wet-weight value by 100 (1 - percent moisture/100%). In the cases of both the summer 2002 and winter 2003 plant collections, the soil sampling preceded the plant sampling by about one month. Since soil THg and MeHg concentrations change relatively slowly as compared with the concentration in the overlying water, and since the rooted plants integrate the soil THg and MeHg concentrations over an extended period of time, the pairing of plant concentrations with soil concentrations from the preceding month was probably more appropriate than problematic. For purposes of calculating the plant-water BCFs, the wet-weight THg or MeHg concentration in the plant tissue was divided by the corresponding immediately preceding or succeeding filtered water concentration, whichever was within two weeks of plant sample collection. For the plant samples collected from September 16, 2002 through September 18, 2002, the water sample collected on September 19, 2002 was used. For the plant samples collected from February 22, 2003 through February 24, 2003, the water sample collected on February 6, 2003 was used.

MASS BUDGET ANALYSIS

The procedures followed in this evaluation paralleled those applied to the THg and MeHg mass budgets for the ENR Project (Miles and Fink, 1998; SFWMD, 1999b). The THg and MeHg loads and fluxes were calculated by multiplying the measured concentration for that period by the corresponding water volume or flux. Wet deposition flux of THg was calculated by multiplying the approximated daily rainfall THg concentration by the daily rain depth for the same day. The daily rain depth was obtained from the water budget developed by the District for STA-2 using the Theissen weighted average values for the gauges at the S-6 and S-7 pump stations roughly 6 miles north and south of STA-2. Dry deposition of THg was assumed to be 50 percent (USEPA, 1997; Atkeson et al., 2002) of the average annual wet deposition flux of 22 $\mu g/m^2$-yr (Guentzel et al., 2001). The concentration of MeHg was assumed to be 1 percent of the THg concentration, based on the average of the monthly integrated MeHg concentration values at FL34 and FL04 (FDEP, unpublished data).

Inflow and outflow loads were calculated by multiplying the instantaneous unfiltered THg or MeHg grab sample value for each biweekly period by the total flow volume for that period. The Cell 3 change in surface water storage was calculated in three steps as follows: (1) the averages of the inflow and outflow THg and MeHg concentrations for Cells 3 to approximate the average interior concentration, which was not monitored, (2) the average interior water concentration value was multiplied by the corresponding average cell depth, and (3) the value for time t-1 was subtracted from the value from time t. This procedure was repeated for Cell 5, except that the average of the two outflow culverts (G-354A and G-354C) was used to approximate the outflow concentration of THg and MeHg. Seepage load was calculated by multiplying the seepage volume by the spatially averaged surface water concentration calculated in the same way as for change in storage. The STA-6 annual evasion flux of elemental mercury, Hg(0), was assumed to be approximately the same as that estimated for the ENR Project based on floating chamber measurements conducted by the Oak Ridge National Laboratory from 1996 to 1998 (ORNL) in Oak Ridge, TN (Lindberg et al. 2002; Lindberg and Zhang, 2000; Lindberg et al., 2002). The annual value was then divided by 365 to approximate the average daily evasion flux value. More sophisticated approaches involving the two-layer Whitman model of gas diffusion and the calculation of the layer thicknesses from wind velocity, water and air temperatures, and water depth, while perhaps more intellectually satisfying, proved inaccurate in the ENR Project. This is because the surface water flux was underestimated by about a factor of five for the ENR Project, and, in any case, put a disproportionate effort into quantifying a second-order loss process (SFWMD, 1999b; Lindberg et al., 2002; Lindberg and Zhang, 2000). Change in surficial sediment storage was calculated by multiplying 0.04 m by the measured bulk density and

concentration of THg or MeHg at time t+1 and subtracting from that result the same product at time t.

These same procedures were also followed for the constituents other than THg and MeHg. However, due the absence of a significant wet or dry deposition contribution of these other constituents relative to the inflow load, the contribution of atmospheric deposition was omitted from this analysis. Whether this is appropriate in the context of the burning of sugar cane fields and enhanced ultra-giant particle (ash) deposition must be addressed elsewhere.

CORRELATION ANALYSIS

For the interim report, the exploratory data analysis consisted of univariate linear correlation analysis of the untransformed or natural logarithm (LN)-transformed data. The data were paired at time 0 (i.e., collected concurrently or as nearly as concurrently as the collection times for different media would allow) and various lag times to evaluate the delayed effects of influential conditions on integrative processes (e.g, soil MeHg production; MeHg bioconcentration in plants; MeHg bioaccumulation in mosquitofish). However, most of the data sets were small and/or did not meet the criteria of normality and heteroscedasticity, so the results should be considered to have semi-quantitative rather than quantitative significance and be suggestive rather than definitive at this point. For purposes of characterizing the significance of the correlation in this appendix, a Pearson correlation coefficient of +/-0.45 is considered weak, +/-0.45 to +/-0.7 is considered moderate, +/-0.7 to +/-0.85 is considered strong, and >+/-0.85 is considered very strong. For the final report, a multivariate linear regression analysis will also be conducted.

RESULTS

MONITORING DATA

Table 2 summarizes the surface water concentration data (unfiltered THg and MeHg and other potentially influential factors) from June 2002 through April 2003 collected at the common inflow (G-600) and the outflow to Cell 3 (G-393B) and two of the Cell 5 outflows (G-354A and G-354C). The inflow and outflow surface water THg and MeHg data are plotted in **Figures 6** and **7**, respectively, while the interior filtered THg and MeHg results for each treatment cell are graphed in **Figures 8** and **9**, respectively. **Table 3** contains the onsite weekly rainfall THg concentration data generated by the NADP's Mercury Deposition Network. The relationship among water depth, rainfall, and interior THg and MeHg concentrations in Cells 1, 2, and 3 are depicted in **Figures 10** through **15**. **Tables 4**, **5**, and **6** iterate the soil, vegetation, and mosquitofish data collected for the reporting period. **Figures 16** through **18** display the mosquitofish THg concentrations for interior Cells 1, 2, and 3, respectively. The calculated mosquitofish MeHg bioaccumulation factors for interior Cells 1, 2, and 3 are plotted in **Figures 19** through **21**, respectively, while **Figures 22** through **24** display the corresponding soil MeHg bioaccumulation factors, respectively. The %MeHg in plant tissues in Cells 1, 2, and 3 are graphed in **Figure 25**. The plant/soil BCFs for THg and MeHg are plotted in **Figures 26** and **27**, respectively, and the corresponding values for plant/water BCFs are graphed in **Figures 28** and **29**, respectively.

Figure 30 depicts the soil MeHg concentrations in Cell 1 sites AA, BB, and CC (C1AA, C1BB, and C1CC) for each sampling trip. The change in the ratios of soil concentrations of key influential factors i.e., total sulfur (TS), AVS, total iron (TFe), and total manganese (TMn) for each successive sampling period (November versus August 2002; January 2003 versus November

2002; April 2003 versus January 2003) are displayed in **Figures 31A** through **34A**, while those for THg and MeHg and %MeHg are graphed in **Figures 31B** through **34B**. The Pearson correlation coefficients between soil MeHg or %MeHg and other soil constituents for all cells and sampling trips combined are depicted in **Figures 35** or **36**, respectively. The same correlation analysis was then carried out for all cells but for each sampling campaign (**Figure 37**). Among the most important observations derived from a perusal of these results is that (1) there has been a progressive increase in the concentration of AVS in surficial soils over time and (2) there is a developing inverse correlation between soil AVS and soil MeHg for all cells combined as time progresses.

The compliance significance of these data for the modified permit for the operation of STA-2 Cell 1 is reported in Appendix 4A-7 of the *2004 Everglades Consolidated Report*.

MASS BUDGET ANALYSIS

Water Budget

The annual water budget results for STA-2 Cells 1, 2, and 3 and combined are summarized in **Tables 9A** through **9D**, respectively. It should be noted that at the outset that there appears to be a discrepancy between the sum of the outflows from each of the cells and the amount of water pumped out of the project via the G-335 pump station. This suggests that the contribution of one of the other loss pathways has not been accurately accounted for in the water budget. Evapotranspiration (ET) was calculated to be greater than rainfall for the reporting year, albeit by less than 5 percent, as compared to more typical years when rainfall exceeds ET by 15 percent (W. Abtew, SFWMD, personal communication). However, the discrepancy between the sum of the individual cell outflow volumes and the G-335 pump station flow is between 25 and 35 percent, so the uncertainty in the ET estimate is unlikely to be the source of the discrepancy.

It is more likely that the discrepancy lies with the seepage term in the water budget. Although most of the seepage is assumed to occur under the perimeter levees, direct seepage through the peat soil into the underlying surficial aquifer also cannot be ruled out. Nevertheless, seepage is likely to be at a maximum where the head difference between the treatment cell and the adjacent canals are at a maximum. This occurs with the discharge collection canal, because the operation of the G-335 pumps has the effect of drawing down the discharge collection canal to a greater degree than is typical of other STAs. This would have the effect of increasing the rate of seepage underneath the discharge culverts into the discharge canal. This seepage process has not been accounted for in the water budget. There is also a discrepancy in the chloride budgets for each treatment cell, but the discrepancy appears greatest in Cell 1, where net seepage (water budget residual) was calculated to be negative on an annual basis.

The uncertainties in the water budget are substantial, so the individual treatment cell mass budgets calculated from the individual cell inflow and outflow concentrations based on the uncertain water budget terms must be considered semi-quantitative at best. Those mass budgets are discussed below.

Mercury Species Mass Budgets

The above caveats withstanding, the annual mass budget calculations for THg, MeHg, and inorganic mercury [$Hg(II)^{+2}$] are summarized in **Tables 9A** through **9D**. The mass budget for inorganic mercury was calculated by difference, since THg - MeHg $\approx Hg(II)^{+2}$, because elemental

mercury [Hg(0)] makes up less than 1 percent of the THg concentration in Everglades water (Krabbenhoft et al., 1998). Based on those results, both Cell 2 and Cell 3 appear to have removed THg from the inflow but Cell 2 has exported MeHg, albeit to an extent within the uncertainty tolerances of the analysis. By contrast, Cell 1 exported both THg and MeHg. Based on the water budget, about two and three times as much water flowed through Cells 2 and 3, respectively, as Cell 1, so the THg inputs by the inflow pathway were approximately two and three times higher because all three cells share the same inflow supply canal. The THg input to Cell 1 was dominated by wet and dry atmospheric deposition, with this pathway exceeding that of inflow by almost a factor of four. In Cell 2, these two distinct pathways made roughly equal contributions, while in Cell 3 inflow THg mass input exceeded that of wet and dry atmospheric deposition by a substantial margin. For MeHg, atmospheric deposition makes an insignificant contribution, so inflow is the only significant input of MeHg to all three cells, and outflow and seepage are the only significant outputs. If seepage out of each cell has been underestimated, then the latter pathway will gain in significance as the discrepancy is corrected.

Focusing on Cell 1, the THg mass residual (total inputs – total outputs – change in storage) was approximately 60 g/yr, while that for MeHg was approximately 160 g/yr. The internal source of the excess THg exported from Cell 1 was most likely first-flush release from interior soils following reflooding. However, it is also possible that this is an artifact of the errors or uncertainties in the individual elements of the water budget or the THg sources, sinks, or storage compartments. In support of this caveat, it should be noted that Cell 2 and Cell 3 were calculated to have lost even more THg than Cell 1, yet neither was calculated to be a net exporter of THg. This apparent inconsistency could be explained by assuming that the inorganic mercury lost from soil was leached into the surficial soil below the monitoring horizon of this study (4 cm). The preceding notwithstanding, the quantity of inorganic mercury lost from the surficial soil in Cell 1 was about 70 g. The difference between the calculated loss of inorganic mercury from soils and the net export of THg might be attributable to temporary absorption by sediment floc, undecomposed detritus, and living plant biomass. It is also possible that this discrepancy is an artifact of the uncertainties in the surface water and soil THg mass budget.

The expectation was that excess MeHg exported from Cell 1 was produced from external and internal sources of readily methylatable inorganic mercury, including the first-flush release of inorganic mercury from the surficial soils. The MeHg mass residual exceeded the THg mass residual for Cell 1. This means that a substantial fraction of the external sources of inorganic mercury must also have been converted to MeHg on an annual basis. Further, when one resolves the mass budget inputs, outputs, and change in storage on a 4-week basis, MeHg residual for the first eight weeks of the anomaly (about 90 g) exceeded the total inorganic mercury inputs for the same period by a substantial margin (about 65 g). The 90 g net export during this two-month period represents roughly 55 percent of the net export of MeHg for the year. In addition, roughly 60 g of THg mass was calculated to have been exported by Cell 1 in excess of total inputs during the reporting year. This is approximately equal to the mass of THg calculated to be lost from the top 4 cm of soil in Cell 1 between the pre-flooding baseline sampling event in May 2002 and the last post-flooding sampling event in April 2003 (about 70 g). The sum of the MeHg export from Cells 1, 2, and 3 was calculated to be about 211 g/yr, while the combined export based on the flows and downstream concentrations measured at the G-335 pump was about 216 g/yr. This is excellent agreement between these two independent estimates.

The roughly 220 g of MeHg calculated to be discharged from the G-335 pump during this reporting year has been calculated to be approximately equal to the total of all of the other MeHg sources monitored quarterly by the District during the same period. However, the MeHg anomaly dissipated rapidly from Cell 1, so most of the export occurred during the three months

immediately following the anomaly, but Cell 1 remained a net exporter of MeHg through the end of the reporting year. (In fact, there was a "mini MeHg anomaly" that occurred in February to March 2003, but the event was not confined to Cell 1 and was also observed in Cell 2 and Cell 3. This event is presented in further detail in the "Discussion" section of this appendix.) The downstream consequences of this magnitude of MeHg export from STA-2 Cell 1 cannot be quantified without the use of a mathematical model of the transport, fate, and bioaccumulation of MeHg in the L-6 canal and then the WCA-2A marsh. Such an effort is contemplated under the MOA and will be funded by FDEP.

Other Constituents Mass Budgets

Tables 10A through **10D** summarize annual mass budget calculation results for other pollutants of interest in Cells 1, 2, and 3 and combined. From these results, TP was being removed by all three cells, but even though the inflow and outflow TP concentrations are virtually indistinguishable between cells, their loading rates are different, so their calculated removal efficiencies are different, with Cells 1, 2, and 3 calculated to be achieving 48, 40, and 53 percent, respectively, based on outflow relative to inflow. For factors known or reasonably anticipated to influence MeHg production, sulfate appears to have been taken up at the rate of about 73 mg/m^2-yr in Cell 1. Interestingly, Cell 1 sulfate seepage appears to be negative, that is, seepage is contributing more sulfate than it is removing from Cell 1. In Cell 2, sulfate uptake is about 170 mg/m^2-yr. Most interestingly, Cell 3 appears to be losing sulfate at the rate of 132 mg/m^2-yr. This same pattern is reflected in the changes in the stored total sulfur mass calculated as the difference between the May 2002 pre-flood baseline and the April 2003 post-flood sampling event, but the magnitudes are much greater because sulfate makes up only a small fraction of the total sulfur in the surficial soil. The differences in the sulfate budgets for these cells may be consistent with the differences in their antecedent land uses. Cell 1 was never farmed, Cell 2 was about one-third farmed land and two-thirds wildlife preserve, and Cell 3 was farmed to the extent of about 80 percent. However, the rates of antecedent application of sulfur-containing soil amendments are unknown. Further, it is possible that seepage from the adjacent, actively farmed lands could also be making an as yet unquantified contribution to the Cell 3 sulfate load. Nevertheless, if the net loss of sulfate from Cell 3 is real, then it suggests that the farmed land is losing sulfate until it reequilibrates with the sulfate concentration and/or flux supplied by the inflow canal.

Regarding DOC, Cells 2 and 3 appear to be removing between two-thirds and three-quarters of the input load, while Cell 1 is a net exporter of DOC. DOC is both required for microbial activity and is a product of microbial decomposition of refractory plant biomass. The net export of DOC from Cell 1 suggests that it is still undergoing evolution from flooded uplands to a transitional wetland. Since DOC produced from different plant starting materials and aerobic versus anaerobic decomposition processes has a distinctly different chemical character, it would be interesting to conduct additional studies on the quality as well as the quantity differences in the DOC exported from Cell 1 versus Cells 2 and 3.

The denitrification process is known to consume soil sulfur and convert it to sulfate (Bezberuah and Zhang, 2003), so the nitrate (NO_3) annual mass budgets are also of interest. Unfortunately, due to the high rates of denitrification going on in all three cells, the outflow NO_3 concentration is often below the MDL for all three cells, and substituting one-half the MDL as the outflow default concentration obviously introduces another element of uncertainty into the mass budget. This is less often the case for nitrate+nitrite (NO_x). The NO_x uptake by Cells 1, 2, and 3 are about 4, 11, and 12 mg/m^2-yr, respectively. If anaerobic denitrifcation is stripping soil sulfur from the treatment cells, then the low rate of denitrifcation in Cell 1 relative to Cells 2 and 3 may

be good news, in the sense that sulfur and related organic sulfides may be building up faster in Cell 1 than in Cells 2 and 3, along with an attendant buildup of soil AVS and porewater sulfide. This is supported by the data depicted in **Table 10E**, which shows that Cell 1 AVS has roughly doubled from pre-flooding baseline conditions. However, due to the uncertainties in the relationship between soil sulfur, organic sulfide, AVS, and porewater sulfide, the need for monitoring porewater sulfide directly in all three cells is apparent.

As with the annual THg and MeHg mass budgets for STA-2 treatment cells, the uncertainties in these values are high and should be considered semi-quantitative for purposes of obtaining a sense of proportion and not as absolute values that can be used for adaptive operational decision making or regulatory decision making.

CORRELATION ANALYSIS

This subsection details the results of the following exploratory correlation analyses:

1. Stage versus outflow THg and MeHg concentrations
2. Rain THg concentrations and loads versus outflow THg and MeHg concentrations
3. Outflow other constituent concentrations versus outflow THg and MeHg concentrations
4. Soil constituent intra-correlations and inter-correlations
5. Water constituent correlations with mosquitofish THg, mosquitofish THg/water MeHg water or BCF, and mosquitofish THg/soil MeHg or soil bioaccumulation factor (SBAF)
6. Soil constituent correlations with mosquitofish THg, mosquitofish THg/water MeHg water or BCF, and mosquitofish THg/soil MeHg or SBAF

The correlation analyses between inflow THg and MeHg loads and other constituent loads with THg and MeHg loads have been omitted until the discrepancies in the water budget are resolved.

Stage versus Outflow Constituent Concentrations

Tables 11A, **B**, and **C** display the Pearson correlation coefficients for Cells 1, 2, and 3, respectively, between the average stage for the same day the surface water sample was collected, the average of the same day and the preceding day, and so on up to 14 days, then 21, 28, 56, and 84 days. It should be noted that there were no strong correlations for outflow MeHg or % MeHg for any cell or stage. The strongest inverse correlation for Cells 1, 2, and 3 outflow THg were $r = -0.65$ at Lag-84 days, $r = -0.59$ at Lag-56 days, and $r = -0.41$ at Lag-84 days.

Rainfall versus Outflow Constituent Concentrations

Table 12 iterates the Pearson correlation coefficient for Cell 1 THg outflow concentration versus rain THg with peaks at Lag-7 days ($r = 0.35$), Lag-21 days ($r = 0.55$), Lag-35 days ($r = 0.58$), and Lag-56 days ($r = 0.59$). The correlation between rain THg concentration and Cell 1 outflow MeHg increased monotonically from $r = -24$ at Lag-0 to $r = 0.55$ at Lag-56 days. A similar pattern was exhibited by Cell 2, albeit sinusoidally increasing. Cell 3 did not exhibit the same pattern of correlation relationships between rainfall THg and THg, MeHg, or %MeHg, but all three correlations peaked at Lag-42 days. The correlations with the lag-sum rain THg load and

outflow THg, MeHg, and %MeHg for Cells 1, 2, and 3 show similar patterns (**Tables 13A** through **13C**).

Outflow THg, MeHg, and %MeHg versus Outflow Water Constituent Concentrations

Unfiltered inflow and outflow THg and MeHg was monitored at the common inflow at G-328B and each individual cell outflow for Cell 1 (G-330A), Cell 2 (G-332), and Cell 3 (G-334). Temperature, dissolved oxygen (DO), specific conductance, and pH were monitored biweekly via the Hydrolab, along with TP and TKN. Monitoring of calcium (Ca), chloride (Cl), DOC, and TSS every 4 weeks was added concurrently with ultra-trace mercury monitoring. Unfortunately, initially the ultra-trace mercury sampling and the sampling for other constituents occurred in successive weeks rather than concurrently. Subsequently, the sampling was synchronized, but it then got out of synchronization due to a mercury resampling event, and later returned to concurrent sampling. This complicated the appropriate pairing of outflow water quality data with the corresponding THg, MeHg, and %MeHg concentrations for the correlation analysis and the subsequent lag-correlation analysis. Interpolation between monitored weeks to fill in the missing data was avoided because averaging tends to suppress data variability. However, for purposes of evaluating the influence of these other constituents on mosquitofish bioaccumulation of THg, this was not considered problematic because mosquitofish tend to integrate MeHg over a 14- to 28-day period. In addition, there were only four filtered THg and MeHg data pairs through the end of the reporting period, so these results can have no statistical significance and have been included as placeholders until additional data accumulate.

The above caveats withstanding, the results of this exploratory data analysis for the common inflow at G-328 for constituents other than THg and MeHg and at G-328B just downstream of G-328 for unfiltered THg and MeHg are iterated in **Table 14A**. **Tables 14B** through **14D** set forth the results of the correlation analyses for the Cell 1, 2, and 3 outflows, respectively. In Cell 3, which did not dry out and maintained relatively constant flows during the reporting period, the strongest positive Lag-0 correlation with outflow MeHg concentration was with THg ($r = 0.72$), while the strongest inverse relationship with outflow MeHg was with pH ($r = -0.66$). A weak to moderate inverse relationship with outflow MeHg was also observed with DO ($r = -0.43$). A similar pattern was observed in the Cell 2 outflow, which also did not dry out during the reporting year. A moderate positive correlation was detected between outflow MeHg and THg ($r = 0.68$), but now the highest positive correlation was with temperature ($r = 0.69$), and pH exhibits a very weak positive correlation ($r = 0.24$). The strongest inverse correlation was with NO_x ($r = -0.60$), while DO still exhibited a weak inverse correlation ($r = -0.49$). For Cell 1, which did dry out during the reporting year and was reflooded in July 2002, the strongest positive correlation with outflow MeHg was again with THg ($r = 0.93$), followed by temperature ($r = 0.68$). In this case, a moderate positive correlation was observed with orthophosphate (OPO_4) ($r = 0.59$) and total dissolved phosphorus (TDP) ($r = 0.57$) but not TP ($r = 0.28$). The strongest inverse correlations with outflow MeHg were with DO ($r = -0.68$) and NO_x ($r = -0.59$).

The exploratory data analysis was then repeated by pairing the outflow THg, MeHg, and %MeHg concentrations in the Cell 1 outflow with the other constituent concentrations from the preceding 2 weeks, 4 weeks, 6 weeks, and 8 weeks. Those results are iterated in **Tables 15B** through **15E**. At Lag-2 weeks, a similar pattern of positive and inverse correlations was observed with temperature and DO, but the positive correlation with DOC strengthened somewhat, while those with TKN and TP increased substantially. It should be noted that there were too few data from which to draw even preliminary inferences for OPO_4, TDP, NO_x, ammonia (NH_4), and total dissolved Kjeldahl nitrogen (TDKN). The positive correlation between

outflow MeHg and TP peaked at Lag-6 weeks (r = 0.73), and then decreased at Lag-8 and Lag-12 weeks. Perhaps most interestingly, SO_4^{-2} has switched from near zero at Lag-0 to moderately inverse (r = 0.02 to -0.50) at Lag-2, and this trend continued through Lag-4 weeks (r = -0.56) through Lag-12 weeks (r = -0.62). However, the same patterns and trends are observed with THg, and THg and MeHg are moderately to strongly correlated, so it is not possible to speculate as to potential cause and effect influences on MeHg production, release from temporary storage, or transport from mere association in this set of circumstances. **Figure 38** depicts the strong positive correlation ($r^2 = 0.96$) between filtered THg and MeHg for interior cell surface water for all cells and sampling trips.

Mosquitofish Bioaccumulation versus Water Constituent Concentrations

Filtered samples of surface water were collected and analyzed for THg and MeHg every four weeks at three interior sites in each of the three treatment cells. There were no other constituents monitored in interior surface water. Because of the timing of the interior surface water and mosquitofish sample collections, the mosquitofish data from week t had to be paired with the surface water concentration from week t-1. However, because the mosquitofish are not expected to respond instantaneously to the production and accumulation of MeHg in the aquatic ecosystem, such a lag pairing is likely to increase rather than decrease the strength of these correlations. For the combined treatment cells, there were 90 data pairs. **Tables 16A** through **16D** iterate the Pearson correlation coefficients for interior mosquitofish THg concentrations, BCFs, and their natural logarithmic transformations (LN) versus the inflow surface water constituent concentrations at Lag-0 weeks, 4 weeks, 8 weeks, and 12 weeks, respectively. **Tables 17A through 7D** and **Tables 18A** through **18D** iterate the results for inflow chemistry versus Cell 2 and Cell 3 mosquitofish THg, BCFs, and LN-transformed values, respectively.

In Cell 1, the strongest, albeit weak to moderate positive and inverse correlations were with BCF and LN-BCF, and of those the strongest inverse relationships were with SO_4^{-2} and the nutrient constituents TKN, NO_x, TP, TDP, and OPO_4. However, due to the less frequent monitoring of OPO_4, combined with the frequent occurrence of less than the MDL, the import of the magnitude of the apparent correlations with OPO_4 must be discounted. The inverse relationship with TP peaked at Lag-4 weeks (r = -0.79). The inverse relationship with SO_4^{-2} increased from r = -0.40 at Lag-0 to -0.56 at Lag-4 weeks, stayed roughly constant at Lag-8 weeks, and then decreased to virtually zero at Lag-8 weeks. The inverse correlations with NO_x (r = -0.72) and TKN (r = -0.52) weakened rapidly between Lag-0 and Lag-4 weeks.

As with Cell 1, the inverse relationship with inflow TP peaked at Lag-4 weeks (r = -0.64) in Cell 2. However, unlike Cell 1, there was a weak to moderate positive correlation between inflow SO_4^{-2} and mosquitofish THg at Lag-0 and Lag-4 weeks that weakened to virtually zero at Lag-8 and Lag-12 weeks. There were no other apparent relationships of potential interest. In Cell 3, there were no positive or inverse correlations of note with mosquitofish THg, BCF, or their LN transformations for any constituent or lag period.

Tables 19A through **19D**, **Tables 20A** through **20D**, and **Tables 21A** through **21D** reproduce the exploratory correlation analysis results from pairing the Cell 1, 2, and 3 outflow mosquitofish THg, BCF, and LN-transformed values with the corresponding outflow constituent concentrations at Plus-0 weeks and Plus-2, -4, and -8 weeks.

In Cell 1 and Cell 2, the positive and inverse correlations with mosquitofish MeHg BCF and LN-transformed BCF were generally stronger than those with mosquitofish THg. In Cell 1, the

strongest Plus-0 positive correlations with BCF and LN-BCF were with DO, alkalinity (ALK), SO_4^{-2}, DOC, and NH_4^+, while the strongest inverse relationships were with TP and TDP, DOC, and temperature. The inverse correlation with DOC weakened progressively over the forward correlation period. The inverse correlation with TP peaked at r = -0.72 at Plus-8 weeks. The positive correlation with NO_x peaked at Plus-4 weeks at r = 0.68, then decreased rapidly at Plus-8 weeks, while the inverse relationship with TKN increased progressively to r = -0.80 at Plus-8 weeks.

In Cell 2, there were no moderate or strong correlations with BCF or LN-BCF and only weak to moderate positive correlations between mosquitofish THg and outflow SO_4^{-2} and DOC. The correlations with SO_4^{-2} then weakened systematically over the period of forward correlation, while DOC increased from near zero at Plus-0 weeks, peaked at Plus-2 weeks (r = 0.50) and then decreased to virtually zero again at Plus-8 weeks. Unlike Cell 1, there were no strong relationships with TP, but the inverse correlation with TKN increased from virtually nonexistent at Plus-0 weeks to a peak value of r = -0.52 at Plus-4 weeks. Interestingly, there were no moderate or strong positive or inverse correlations between the Cell 3 interior mosquitofish THg, BCF, or LN-transformed values with any Cell 3 outflow constituent. The weak to moderate positive correlation between interior cell mosquitofish and interior surface water filtered MeHg is graphed in **Figure 39**.

Soil Constituent Intra-Correlations

Prior to analyzing the influences of soil chemistry on MeHg bioaccumulation in mosquitofish collected in the interior treatment cells, the soil constituent intra-correlations were evaluated for Lag-0, -4, and -8 weeks with and then without the pre-flood baseline soils data for all cells combined and then the individual treatment cells. The strong Lag-0 correlation between soil THg and MeHg concentrations across all cells and sampling campaigns is displayed in **Figure 40**. The results for the individual treatment cells without the pre-flood baseline soils data are iterated for Cells 1, 2, and 3 in **Tables 22A** through **22C**, **Tables 23A** through **23C**, and **Tables 24A** through **24C**, respectively.

For Cell 1 Lag-0 weeks, the strongest influences on soil MeHg were TP (r = -0.52) and TS (r = -0.60). These correlations did not change substantially with %MeHg. At Lag-4 weeks, the influences of TP and TS weakened substantially, while the inverse influences of moisture (r = -0.69) and Ca (r = -0.78) increased substantially. The influence of THg on MeHg increased from r = 0.24 to r = 0.72 between Lag-0 and Lag-8 weeks. The inverse correlation with AVS increased from r = -0.17 at Lag-0 to r = -0.33 at Lag-8 weeks.

In Cell 2, the intra-correlation patterns are substantially different. The inverse relationships with TP and AVS increased progressively from r = - 0.24 and -0.07, respectively at Lag-0 weeks to r = -0.52 and -0.53, respectively, at Lag-8 weeks. The positive influence of moisture content increased from r = 0.12 at Lag-0 to r = 0.8 at Lag-8 weeks, while that of ash increased inversely from r = -0.05 to r = -0.86, and the positive effect of Mg increased from r = 0.10 at Lag-0 to r = 0.76 at Lag-8 weeks. In Cell 3, the strongest inverse relationships with soil MeHg occurred at Lag-4 weeks with TP (r = -0.68) and TMn (r = -0.58) and then both decreased at Lag-8 weeks, albeit only moderately.

Mosquitofish Bioaccumulation versus Soil Constituent Concentrations

Because of the timing of the mosquitofish sample collections, the mosquitofish data from week t had to be paired with the soil concentration from week t-2. However, because

mosquitofish are not expected to respond instantaneously to the production and accumulation of MeHg in the aquatic ecosystem, such a lag pairing is likely to increase rather than decrease the strength of these correlations. Because the soils data were collected only every 12 weeks, the number of data pairs for the soils exploratory correlation analysis was 30 data pairs for the combined data sets as compared to the 90 data pairs available for the surface water analysis. An inspection of the correlations between soil constituent concentrations and mosquitofish THg or their LN-transformed values for all cells and sampling trips revealed that the strongest correlations is between soil MeHg and mosquitofish THg. Those relationships are depicted as scatter plots in **Figures 41** and **42,** respectively. There was only a weak inverse relationship between soil TP and soil MeHg concentrations for all cells and trips (**Figure 43**), but there is a moderate positive relationship between the LN-transformed soil TS concentration and LN-transformed soil MeHg concentration (**Figure 44**). Soil TP had no detectable relationship to mosquitofish THg for all cells and sampling trips combined (**Figure 45**).

The influences of the chemistries of the individual cell soils on MeHg bioaccumulation in mosquitofish are more complex. **Tables 25A** through **25D**, **Tables 26A** through **26D**, and **Tables 27A** through **27D** iterate the relationships with Cell 1, 2, and 3 Lag-0, -4, -8, and -12 weeks, respectively. In Cell 1, the moderate to strong inverse correlations with percent ash apparent in the combined cell analysis disappear, while a moderate inverse correlation with TP and TN emerge. The strong inverse correlations with Ca weaken substantially, while the moderate inverse correlations with magnesium (Mg) disappear. A weak to moderate inverse correlations with TS emerges, but the correlations with AVS are nonexistent. Perhaps most importantly, the positive correlations with THg decrease to weak to moderate, while those with MeHg remain strong. For Cell 2, the inverse correlations with soil TS and AVS strengthen from nonexistent to moderate, while the strong positive correlations with THg and MeHg for the combined cells are weak in Cell 2. Very weak inverse correlations with TP and TN are matched by even weaker inverse correlations with Ca and Mg.

For Cell 3, untransformed and LN-transformed Mn emerges as a strong inverse correlate with the untransformed (r = -0.69 and -0.62, respectively) and LN-transformed (r =- 0.83 and -0.73, respectively) mosquitofish THg and mosquitofish BCF, but the positive correlation with iron remains weak, while the positive correlations with soil THg and MeHg weaken substantially, but the inverse correlations with Ca and Mg remain strong and moderate, respectively. The correlations with TS and AVS also remain weak, but a moderate inverse correlation with TP emerges.

The strongest positive correlation between Cell 1 soil constituents and untransformed and LN-transformed mosquitofish THg is with soil MeHg for Lag-0 weeks (r = 0.75 and 0.66, respectively) through Lag-12 weeks (r = 0.75 and 0.76, respectively), with peak correlations at Lag-4 weeks (r = 0.85 and 0.80, respectively). For Cell 1 moisture, the correlations with mosquitofish THg are weak across all lags, but switch from negative to positive, while the weak to moderate positive correlation with the mosquitofish BCF at Lag-0 weeks increases from moderate (r = 0.41 for both untransformed and LN-transformed values) to strong (r = 0.77 for both) for the untransformed BCF to very strong (r = 0.91 for both) for the LN-transformed BCF at Lag-12 weeks. This may be a consequence of Lag-12 weeks bringing in the pre-flooding baseline data in May 2002. When the May 2002 values are deleted, the positive correlations weaken moderately to r = 0.59 for both and r = 0.62 for both, respectively. For Cell 1 nutrients (TP and TN) and the metals related to cation exchange capacity (total calcium, TCa, and total magnesium, TMg), the change in the magnitudes and signs of the correlations are interesting. The correlations between untransformed and LN-transformed mosquitofish THg and untransformed and transformed soil TP remain moderately inverse across all lags, but the positive correlations

with the untransformed and LN-transformed mosquitofish BCF weaken substantially between Lag-0 and Lag-4 weeks and eventually become weakly inverse with Lag-12 weeks.

The moderate inverse correlations between untransformed and transformed mosquitofish THg and untransformed and LN-transformed TN decrease monotonically from Lag-4 to Lag-12 weeks. Conversely, the relationships with the mosquitofish BCF increases from weakly inverse to weakly positive at Lag-8 weeks and then decreases again. The TN correlations with the SBAF increase from virtually nonexistent at Lag-0 weeks to weakly positive at Lag-12 weeks, while the very weak positive correlations with TP decrease to very weakly inverse at Lag-12 weeks. For untransformed and log-transformed Ca, the moderately inverse Lag-0 correlations decrease to a minimum at Lag-8 weeks and then increase again at Lag-12 weeks. However, the weakly positive correlations with the mosquitofish BCF become increasingly negative from Lag-4 to Lag-8 weeks and then weaken somewhat at Lag-12 weeks. The inverse correlations with Mg increase monotonically from weak at Lag-0 to moderately strong at Lag-12 weeks. The inverse correlations between mosquitofish SBAFs and TMg increase from virtually nonexistent at Lag-0 to moderately strong at Lag-12 weeks, while those with TCa increase only slightly.

For Cell 1 sulfur species (TS and AVS) and the redox-sensitive metals (TFe and TMn), the weak to moderate Lag-0 inverse correlations with TS and TFe increase moderately with Lag-4 weeks, but those with AVS switch from weakly inverse to weakly positive. With Lag-8 weeks, the positive correlation with AVS increases moderately, while the negative correlations with the other constituents weaken moderately, while with Lag-12 weeks the positive correlation with AVS weakens somewhat, but the inverse correlation with TFe increase moderately. The influence of Cell 1 soil TMn remains weak across all lags.

As with Cell 1, the strongest positive correlation between untransformed and LN-transformed mosquitofish THg and soil constituents across all lags is with soil MeHg but the magnitude of the correlation is weak to moderate and peaks at Lag-8 weeks at r = 0.62 and 0.59, respectively. The single strongest positive correlation is with soil TN at Lag-8 weeks (r = 0.7 and 0.75, respectively). The Cell 2 relationships between mosquitofish THg and soil moisture decreases from weakly inverse at Lag-0 to very weakly inverse at Lag-4 to weakly positive at Lag-8, and then decrease to weakly to moderately inverse at Lag-12 weeks. The weak to moderate inverse relationships with the BCF at Lag-0 decrease to near zero at Lag-4, peak at moderately to strongly positive at Lag-8, and decrease to very weakly positive at Lag-12 weeks. The inverse correlations with SBAF increase from weakly inverse at Lag-0 to moderately to strongly inverse at Lag-12 weeks. The correlations between untransformed and LN-transformed soil TP and mosquitofish THg, BCF, and SBAF are all very weakly inverse or positive across all lags. The correlation between soil TN and mosquitofish BCF increases from virtually zero at Lag-0 to weakly to moderately positive at Lag-4, moderately to strongly positive at Lag-8, and back to weakly to moderately positive at Lag-12 weeks. The correlations with BCF change from weakly inverse at Lag-0 and Lag-4 weeks to weakly positive at Lag-8 and Lag-12 weeks. The correlations with SBAF are very weakly positive or negative at Lag-0 and Lag-12 weeks. The inverse correlations between soil Ca and mosquitofish THg increase from moderately inverse at Lag-0 to moderately to strongly inverse at Lag-8 and then back to moderately inverse at Lag-12 weeks, while the correlations with BCF are very weak across all lags. The correlations with TMg are weak across all lags for all mosquitofish bioaccumulation parameters, with the exception of the BCF, which peaks at moderately to strongly positive at Lag-4 weeks.

For Cell 2, the influence of TS on mosquitofish THg changes from moderately inverse at Lag-0 to weakly to moderately inverse at Lag-4, weakly to moderately positive at Lag-8, and back to weakly inverse at Lag-12 weeks. The moderate to strong inverse correlation with the SBAF decreases only moderately between Lag-0 and Lag-12 weeks. The very weakly positive

correlation with the BCF decreases to very weakly inverse at Lag-4 weeks but increases from weakly to moderately positive at Lag-8 and then decreases somewhat at Lag-12 weeks. For the other sulfur-related constituent, AVS, the moderate to very strong inverse correlations between the untransformed and LN-transformed AVS and the corresponding mosquitofish THg increase slightly at Lag-4, decreases somewhat relative to Lag-0 at Lag-8 weeks, and then increases again to Lag-4 values at Lag-12 weeks. The weak inverse correlations with SBAF at Lag-0 increase to moderately inverse at Lag-12, while the correlations with BCF change from very weakly inverse at Lag-0 to moderately positive at Lag-4 and decreasingly positive at Lag-8 and Lag-12 weeks.

The very weak positive correlations between TFe and mosquitofish THg increase to moderately positive at Lag-4 weeks then decrease to weakly positive again at Lag-8 and Lag-12 weeks. The weakly inverse relationship between TFe and SBAF decreases to virtually zero correlation at Lag-12 weeks. TMn correlations with mosquitofish THg increase from virtually nonexistent at Lag-0 to moderately to strongly positive at Lag-4, to weakly to moderately positive at Lag-8 and very weakly negative at Lag-12 weeks. When the pre-flooding May 2002 data are removed, the correlations increase somewhat to weakly positive.

In Cell 3, the strongest positive correlation between untransformed and LN-transformed mosquitofish THg and soil constituents is Lag-12 weeks MeHg ($r = 0.95$ and 0.76, respectively). The influence of soil moisture in Cell 3 on mosquitofish THg increases from weakly to moderately inverse at Lag-0 to Lag-4, then decreases to weakly inverse at Lag-8 and virtually zero at Lag-12 weeks. There are no other moderate or strong positive or inverse correlations with soil moisture. For soil TP, there are moderate inverse correlations with the mosquitofish THg and BCF, but while both decrease progressively virtually to zero at Lag-8 weeks, the relationship with BCF increases again to moderately inverse at Lag-12 weeks, while that with mosquitofish THg remains very weakly inverse to near zero. TP correlations with SBAF are extremely weak at Lag-0 and Lag-12 weeks. For TN, the very weak inverse correlation with mosquitofish THg increase to moderately to strongly positive at Lag-4 weeks but decreases to weak to moderate at Lag-8 weeks and moderate at Lag-12 weeks. For the BCF, a weak to very weak inverse relationship at Lag-0 increases to weakly to moderately positive at Lag-4, decreases somewhat at Lag-8 and increases again to moderately positive at Lag-12 weeks. The correlation with SBAF increases from near zero at Lag-0 to weakly inverse at Lag-12 weeks. There is a strong inverse correlation between untransformed and LN-transformed TCa and untransformed and LN-transformed mosquitofish THg and BCF at Lag-0 ($r = -0.80$ to 0.86), they remain about the same for Lag-4, and decrease substantially at Lag-8 weeks but increase to moderate inverse relationships at Lag-12 weeks ($r = 0.4$ to 0.66). TMg follows the same pattern but increases to $r = 0.72$ to 0.74 at Lag-12 weeks. The correlations of TCa and TMg with SBAF are weak across all lags.

For the sulfur species and the redox-sensitive metals, the only strong correlation at Lag-0 is a strong inverse relationship between untransformed and LN-transformed mosquitofish THg and BCF and soil TMn ($r = -0.69$ and -0.83), but these relationships weaken progressively from Lag-4 through Lag-12 weeks. The relationship between TS and mosquitofish THg goes from weakly positive at Lag-0 to moderately inverse at Lag-4 to virtually zero at Lag-8 and moderately to strongly positive at Lag-12 weeks. The correlations with BCF are very weak to weak across all lags. There is no relationship with SBAF at Lag-0 but a moderate to strong inverse relationship at Lag-12 weeks. AVS correlations with mosquitofish THg and BCF range from near zero at Lag-0 to moderately to strongly positive at Lag-4 and Lag-8 but decrease to weakly positive at Lag-12 weeks. The correlations with SBAF are weak at both Lag-0 and Lag-12 weeks. The correlation between soil TFe and mosquitofish THg increases from weakly positive at Lag-0 and Lag-4 to strongly positive at Lag-8 weeks, but decreases to virtually zero at Lag-12 weeks.

DISCUSSION

THE THIRD STA-2 CELL 1 MeHg ANOMALY

The rapid decline in Cell 1 interior surface water MeHg concentrations (**Figure 8**) was paralleled by the concurrent decline in Cell 1 interior mosquitofish THg (**Figure 16**) and Cell 1 interior soils (**Figure 30**). At the same time, the buildup of AVS in soils (**Table 10E**) appears to have been paralleled by an increase in the inverse correlation between %MeHg and soil AVS for all cells combined (**Figure 37**) and, based on lag-correlation analysis, for Cell 1 (**Table 22C**), providing further evidence in support of the hypothesis that Cell 1 is approaching or has reached the onset of sulfide inhibition. Moreover, although outside the reporting period, the Cell 1 outflow THg and MeHg concentrations were less than inflow in June 2003 for the first time, offering additional evidence for the onset of sulfide inhibition.

INTERPRETATION OF THE MASS BUDGET RESULTS

Both the annual THg and MeHg exported in excess of inputs must then have been produced from a source of inorganic mercury not accounted for in the surface water mass budget. Attention should then be turned to first-flush release of inorganic mercury from the surficial soils. Based on the difference in the stored THg mass between the pre-flood soil sampling event in May 2002 and the last post-flood sampling event in April 2003, roughly 70 g of THg was lost from the surficial soil. Unless there was an in-seepage source of inorganic mercury on the same order as the inflow inorganic mercury mass input contributions, the most credible explanation for the discrepancy in the MeHg mass budget is that it is not the result of mass budget error but rather the result of the rapid methylation of the first-flush release of inorganic mercury by Cell 1 soils following reflooding. However, even if all of the first-flush inorganic mercury were converted to MeHg, at least 90 g of the 160 g of MeHg exported in excess of total inputs must then have been produced from sources of inorganic mercury other than the first-flush release of inorganic mercury from surficial soils. Due to the high affinity of MeHg for DOC (D. Krabbenhoft, unpublished USGS data, 1995-1998) and the low MeHg plant BCFs observed in this study, the initial first-flush pulse of anomalously high MeHg in surface water was probably removed from the water column primarily by discharge and seepage and only secondarily by being rapidly absorbed by plant detritus, sediment floc, and algae. Subsequently, this bolus of absorbed excess MeHg has probably been released by the decomposing plant detritus and dying and decomposing algae biomass over the course of the study.

Unfortunately, at the present time there is no way to parse the relative contributions of external and internal sources of inorganic mercury to the internal production of MeHg following the first-flush event in Cell 1 using these data. Also, it is not possible to resolve the influences of short-term and long-term storage depots on the routing and timing of the release of the first-flush pulses of inorganic mercury and MeHg. Only controlled laboratory microcosm and field mesocosm studies can achieve these objectives. Regarding relevant laboratory microcosm studies, the USGS conducted a scoping-level study of the effect of drying and rewetting of STA-2 Cell 1 soils. The purpose of the microcosm study was to quantify the first-flush release of soil constituents limiting MeHg production and the subsequent magnitude and duration of excess MeHg production in response to that release. The results of that study are summarized in Appendix 2B-1. From those results, a substantial contribution of the release of inorganic mercury from soil to MeHg production can be inferred. However, the inorganic mercury mass balance was not verified (i.e., loss to vessel walls, loss by evasion as Hg(0) were not quantified), so the

inference is not definitive. The USGS has proposed a second-generation study of the effect of drying and rewetting of STA-2 Cell 1 soils that will use a combination of dosing with stable isotope tracers and detailed mass balance measurements. It is hoped that this will allow the quantification of the relative contributions of external and internal sources to excess MeHg production and export in STA-2 Cell 1.

AN ATYPICAL MeHg "MINI-ANOMALY"

As noted previously, a significant fraction (55 percent) of the MeHg exported by Cell 1 during the course of the year was produced during the two months of the first-flush anomaly. However, in February and March 2003 there was evidence of another substantial export of MeHg in excess of total inputs (about 40 g in that eight week period or about 25 percent of the MeHg export in excess of inputs). Atypically, this anomaly was not confined to Cell 1 but also occurred simultaneously in Cell 2 and Cell 3, as evidenced by the sudden increase in the interior average concentrations of THg and MeHg (see **Figures 46** through **49**). While the flow rates did decrease in all three cells during this period (R. Miereau, SFWMD, personal communication), the mass budget calculations supported the conclusion that this was not the product of a reduction in the dilution of a constant MeHg production flux but an absolute increase in the water column MeHg mass and thus an absolute increase in the MeHg production flux.

This suggests that an atypical event common to all three cells was the driver of this atypical MeHg production anomaly. There is no evidence of dryout in any of the cells, although there was a downturn in the depths of all three cells at that time, probably associated with the reduction in the flow rates into all three cells (see **Figures 50** through **52**.) There are only two other primary drivers of MeHg production common to all three cells. One is atmospheric deposition and the other is the inflow quality delivered by a common supply canal. Seepage into and out of a constructed wetland can also have an effect on the rate of MeHg production and the magnitude and direction of its flux (King, 2000). However, while there is evidence of seepage from adjacent canals and farms into Cells 1, 2, and 3, due to the substantial differences in their elevation, it is unlikely that seepage would have virtually same magnitude and direction of influence on THg release and MeHg production simultaneously in all three cells.

Regarding rainfall input, there was an atypical rainfall pattern that occurred about that time, but an evaluation of the 4-week mass budgets for both THg and MeHg indicates that more MeHg mass was produced and exported during this period than the contribution of inorganic mercury in rainfall and dryfall (**Figures 53** and **54**). However, this presupposes that there were no atypical short-term increases in inorganic mercury inputs. For example, a short-term increase in dry deposition from ash associated with sugar cane burning during this period cannot be ruled out.

Focusing now on atypical water quality conditions, plots of several different inflow (G-328) water constituent concentrations over time (**Figures 55** through **57**) indicate that there was a substantial change in water quality in January and February 2003 just prior to the onset of the atypical MeHg mini-anomaly in all three cells in February and March 2003. Most interestingly, TDS, ALK, Cl, and TKN concentrations all showed a dip in their inflow concentrations and DO increased to near-saturation concentrations just prior to the mini-anomaly and then returned to more typical values. Whether this apparent abrupt change in water quality was the cause of the mini-anomaly or in response to changes in environmental conditions that caused the mini-anomaly cannot be determined with the available data. However, it should be noted that the performance of STA-1W phosphorus removal also exhibited anomalous behavior during this period. One hypothesis put forth to explain this phenomenon was the seasonal release of Lake Okeechobee makeup water, the physical, chemical, and microbiological characteristics of which

are quite different from those of stormwater runoff from the Everglades Agricultural Area (M. Nungesser, SFWMD, personal communication).

INTERPRETATION OF THE CORRELATION ANALYSIS RESULTS

In the context of the discussion of the aquatic mercury cycle in the Background section of this report, one might expect that the strongest influences on MeHg production should be meteorological (i.e., rain), hydrological (i.e., flow, stage, dryout), and biogeochemical (i.e., surficial soil chemistry and microbiology). However, because of the timing and location of the dryout in STA-2 Cell 1 in August 2002, Cell 1 was on a different biogeochemical trajectory than Cells 2 and 3 in the first six months of the MSS, so rather than increase the power of the correlation analysis to discriminate the influential factors just iterated, combining the data from all three cells likely decreased that power. Conversely, disaggregating the data by cell factors out these inter-cell differences in biogeochemical trajectory at the expense of reducing the number of data pairs for the correlation analysis by a factor of three.

More importantly, precisely because Cell 1 biogeochemical conditions were changing dramatically over time, the intra- and inter-relationships among the soil, water, and mosquitofish chemistry data collected in the first six months of the study are likely to be quite different than the inter-relationships in the last twelve months of the study. The emergence of a MeHg mini-anomaly in all three cells simultaneously in March-April 2003 further complicates the picture. Moreover, the absence of pore water chemistry data in general and pore water sulfate and sulfide chemistry data in particular is problematic, given the importance of sulfur cycle and redox influences on the mercury cycle. Therefore, it would be appear to be premature to attempt to speculate as to the causes of the differences between the mercury biogeochemical trajectories of Cells 1, 2, and 3 until more of the data collected in the second half of the study are available, beyond noting that the intra- and inter-relationships are complex and change in different ways with lag-correlation in each cell. However, it is also possible that additional data collection will not generate greater insight into these intra- or inter-relationships due to the natural variability of environmental data within and between seasons.

The above caveats withstanding, if pressed to sum up the findings to date, one could nevertheless conclude with some confidence that the strongest predictor of MeHg bioaccumulation in mosquitofish is the surficial soil MeHg concentration, that the strongest predictor of the soil MeHg concentration is the THg concentration, that the strongest predictor of the soil THg concentration is the soil TFe concentration. Further, there is an increasingly strong inverse correlation between soil MeHg and soil AVS over time when the data from all three cells are combined, but this relationship is strengthened in Cell 2 while being weakened in Cell 1 and inverted in Cell 3 when the data are evaluated on an individual cell basis. The differences in the patterns of the strengths of the lag-correlations between soil AVS and soil MeHg in the individual cells underscore the importance of collecting additional data to factor out the influences of dryout dynamics and seasonality on MeHg production and bioaccumulation from the influences of surface water and soil chemistries to the extent permitted by the data. This must await the preparation of the final report.

SUMMARY OF KEY FINDINGS

STA-2 was very likely a net exporter of substantial quantities of MeHg, predominantly from STA-2 Cell 1.

Stage appeared to have had little influence on the concentration of MeHg in water discharged from STA-2 Cells 1, 2, or 3, suggesting that efforts to maintain minimum flows and levels in each treatment cell are working. This should be contrasted with the behavior of STA-6, which did exhibit a strong correlation between outflow MeHg and antecedent stage. However, while the District has control of the inflow rates and interior water levels in STA-2, those for STA-6 are determined by the release schedule of the U.S. Sugar Corporation.

Among the water THg, MeHg, and %MeHg concentrations, water MeHg concentration was the strongest, consistent predictor of mosquitofish THg concentration for all cells combined and for individual cells across all lag times.

Among water constituents, the concentration of THg was the strongest predictor of the concentration of MeHg in surface water.

Among the soil constituents, soil MeHg concentration was the strongest, consistent predictor of MeHg bioaccumulation in mosquitofish.

It is likely that the soil MeHg concentration was also the strongest, consistent predictor of MeHg bioaccumulation across all media.

Soil THg concentration was likely the strongest, consistent predictor of soil MeHg concentration for all treatment cells combined and for individual cells across all lag times.

The Cell 1 concentration of soil AVS and the inverse correlation between soil MeHg and soil AVS in Cell 1 appear to be increasing progressively over time.

Treatment cell outflow THg concentration was likely to have been the strongest predictor of the corresponding MeHg concentration for all cells combined and for individual cells at Lag-0, followed by soil MeHg concentration at Lag-2 weeks.

Treatment cell outflow THg concentrations were only weakly influenced by rainfall THg concentrations and loads but moderately influenced by antecedent soil THg concentrations.

For all cells and sampling trips combined, soil AVS and soil TP concentrations were weakly inversely correlated with soil MeHg concentration and mosquitofish THg concentration, and the strength of these correlations increased when the soil MeHg concentrations or mosquitofish THg concentrations were paired with the corresponding soil concentrations from the two preceding soil sampling events.

CONCLUSIONS

The differences in the patterns of intra-correlations and inter-correlations and lag-correlations between soil constituents and mosquitofish THg, BCF, and SBAF among treatment cells suggest very different soil biogeochemistries and influences on the wetlands mercury cycle. These patterns of intra-correlations and inter-correlations could be permanent features of the system or reflect

different biogeochemical starting conditions and different degrees of wetlands maturation toward the same biogeochemical endpoint under the influence of the same inflow water chemistry over time.

Only well-designed laboratory microcosm and field mesocosm studies with controlled manipulation of environmental variables will make it possible to discriminate causation from association in the observed intra-correlations and inter-correlations between and within media and constituents.

RECOMMENDATIONS

The addition of soil porewater monitoring should aid in more precisely resolving these biogeochemical differences between cells.

An assessment of the risk of MeHg toxicity to fish-eating wildlife foraging exclusively in STA-2 Cell 1, the discharge canal, and the impacted downstream areas in response to the third MeHg anomaly in STA-2 Cell 1 should await the fall 2003 collection of mosquitofish, sunfish, and largemouth bass.

Based on the apparent trend toward stabilization of Cell 1 soil chemistry and a steady decline in the concentration of water, fish, and soil MeHg concentrations during the dry season, Cell 1 should continue to operate in flow-through mode during the wet season to facilitate the buildup of porewater sulfide to inhibitory levels while diluting any excess MeHg production.

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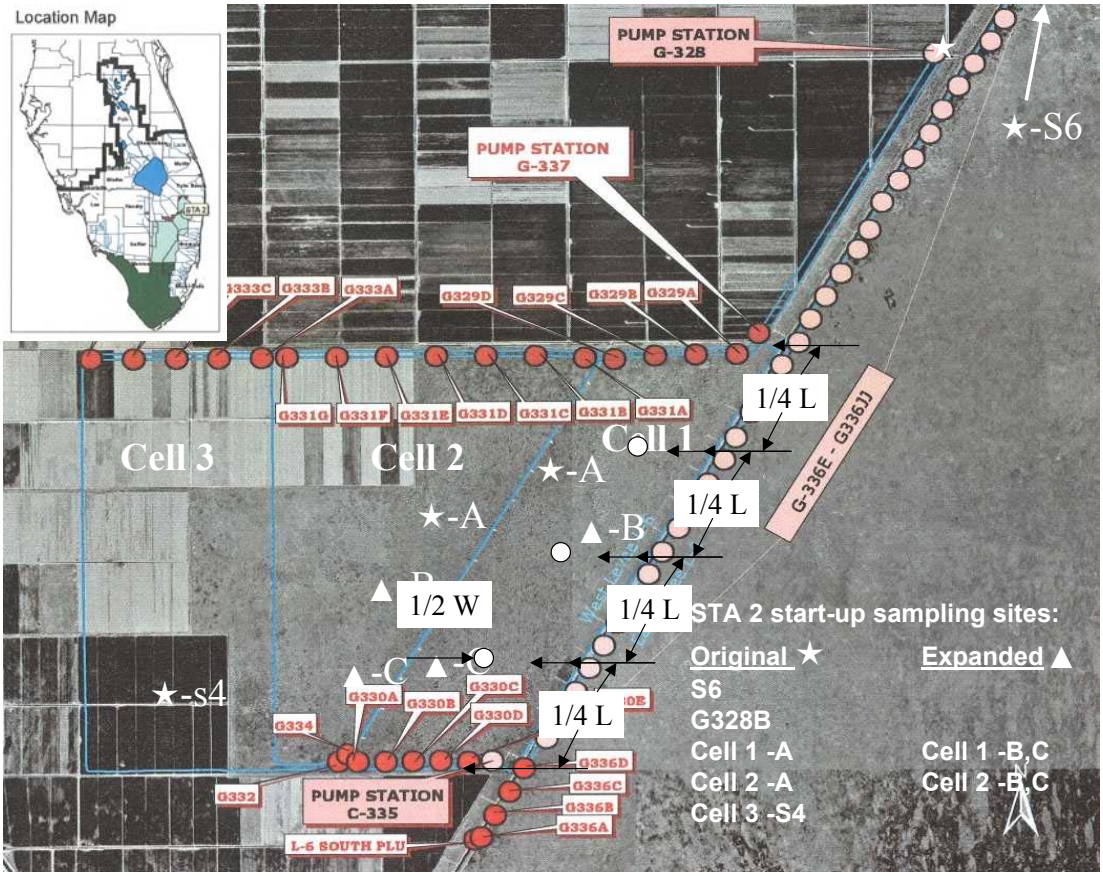

Figure 1. Geographic location and boundaries of STA-2.

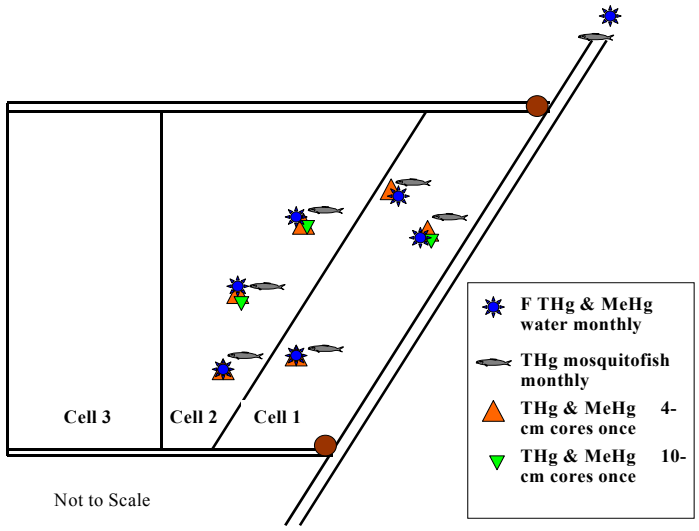

Figure 2. Sampling sites for the expanded mercury monitoring in STA-2.

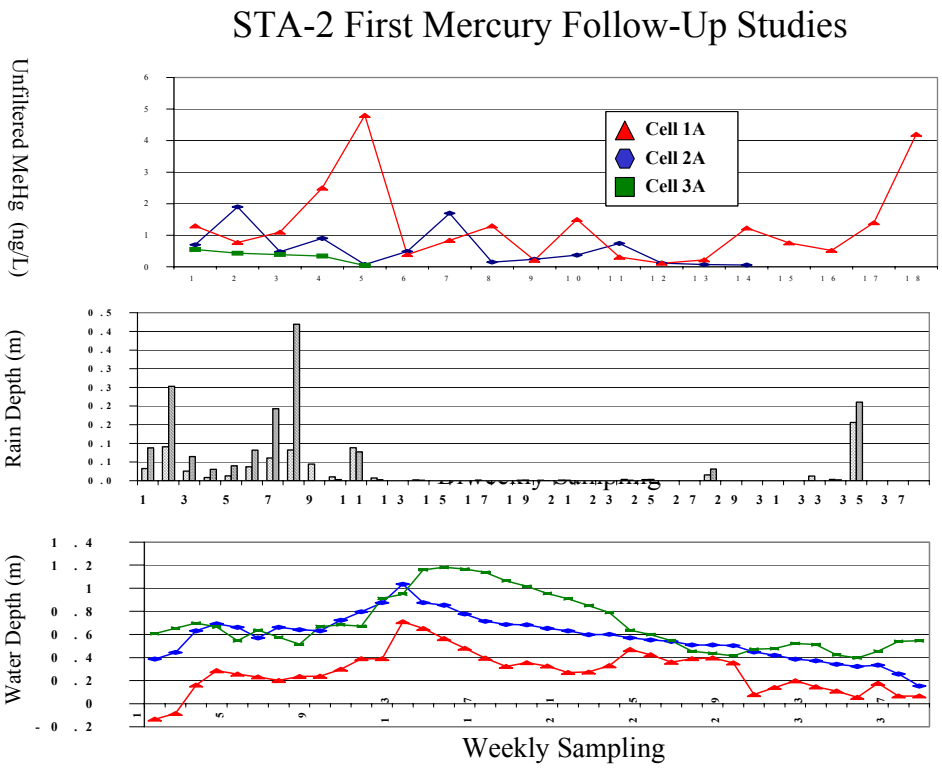

Figure 3. Results of follow-up expanded mercury monitoring after first methylmercury (MeHg) anomaly in September 2000.

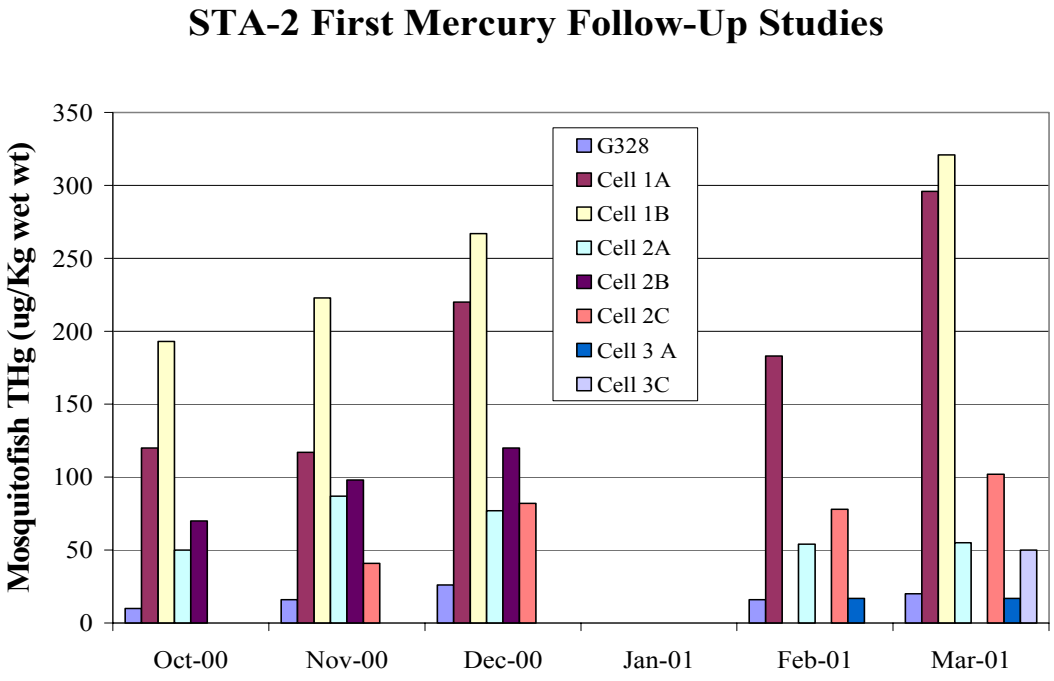

Figure 4. The results of mosquitofish THg monitoring following the first MeHg anomaly in STA-2.

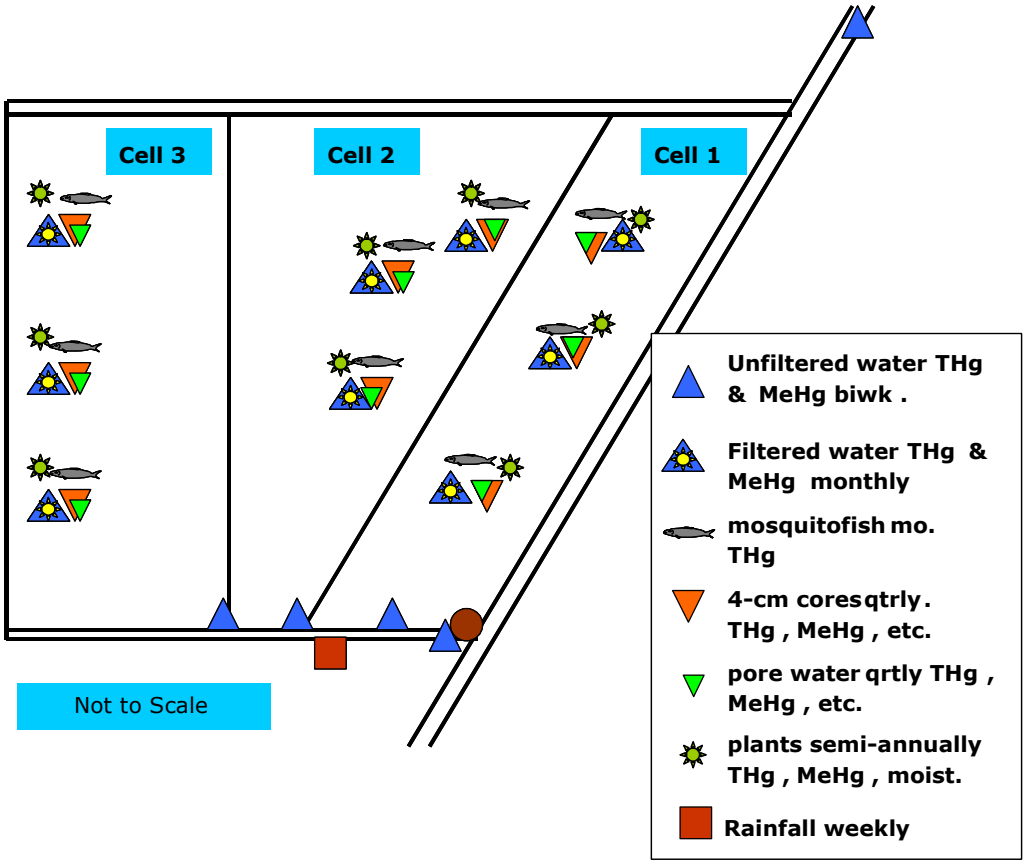

Figure 5. STA-2 Mercury Special Studies monitoring sites.

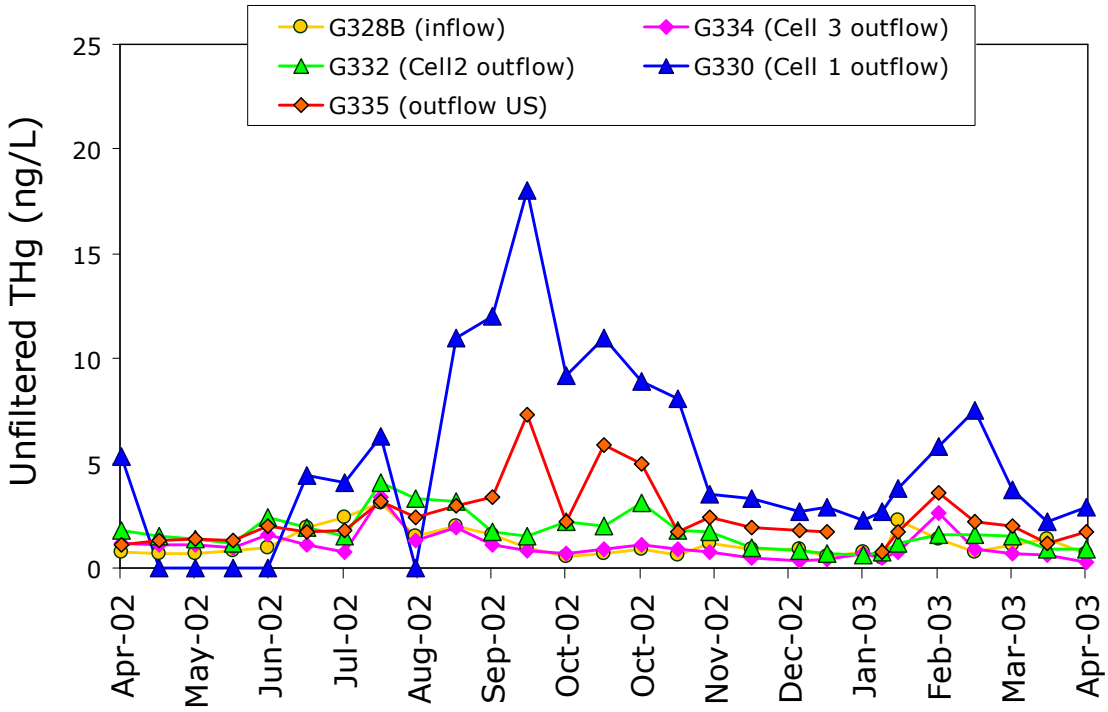

Figure 6. Unfiltered THg in samples collected from the common inflow at G-328B and from the individual treatment cell outflows at G-330A (Cell 1), G-332 (Cell 2), and G-334 (Cell 3).

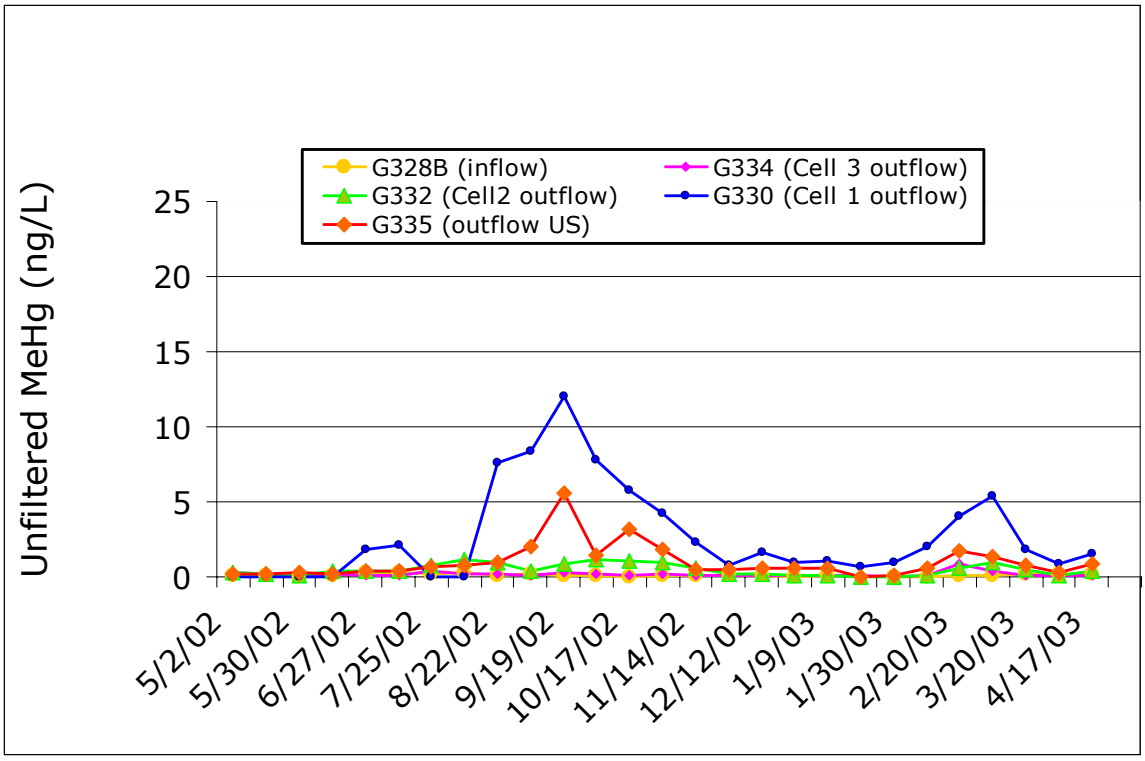

Figure 7. Unfiltered MeHg in samples collected from the common inflow at G-328B and from the individual treatment cell outflows at G-330A (Cell 1), G-332 (Cell 2), and G-334 (Cell 3).

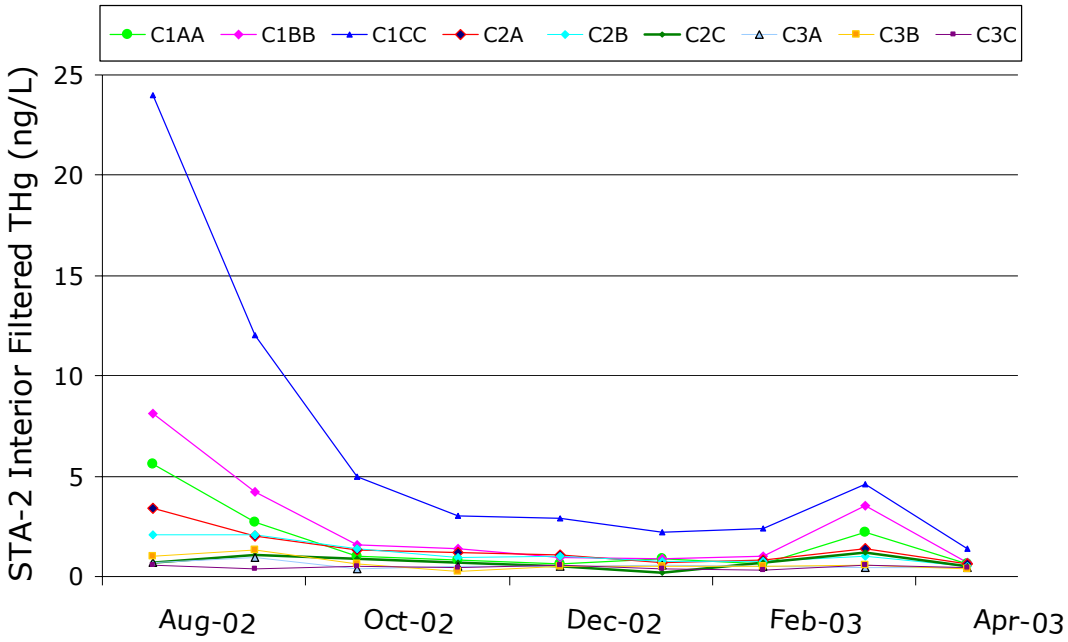

Figure 8. Filtered THg in samples collected from the each of interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC), Cell 2 (C2A, C2B, and C2C), and Cell 3 (C3A, C3B, and C3C).

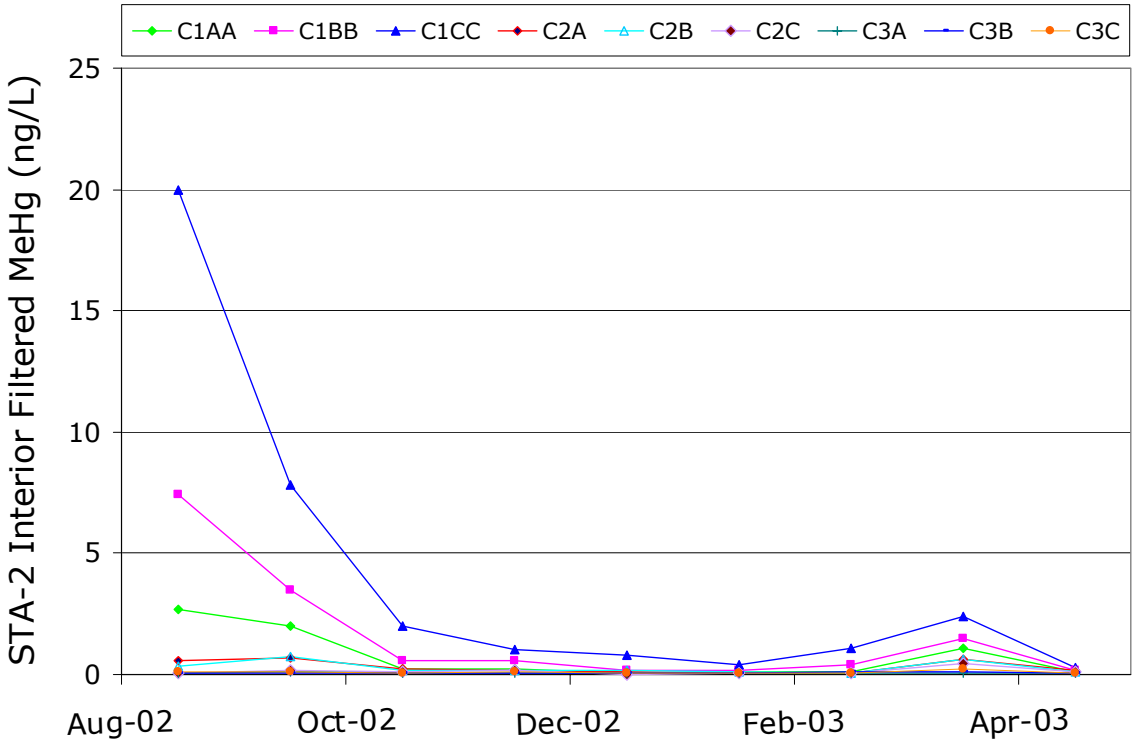

Figure 9. Filtered MeHg in samples collected from the each of interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC), Cell 2 (C2A, C2B, and C2C), and Cell 3 (C3A, C3B, and C3C).

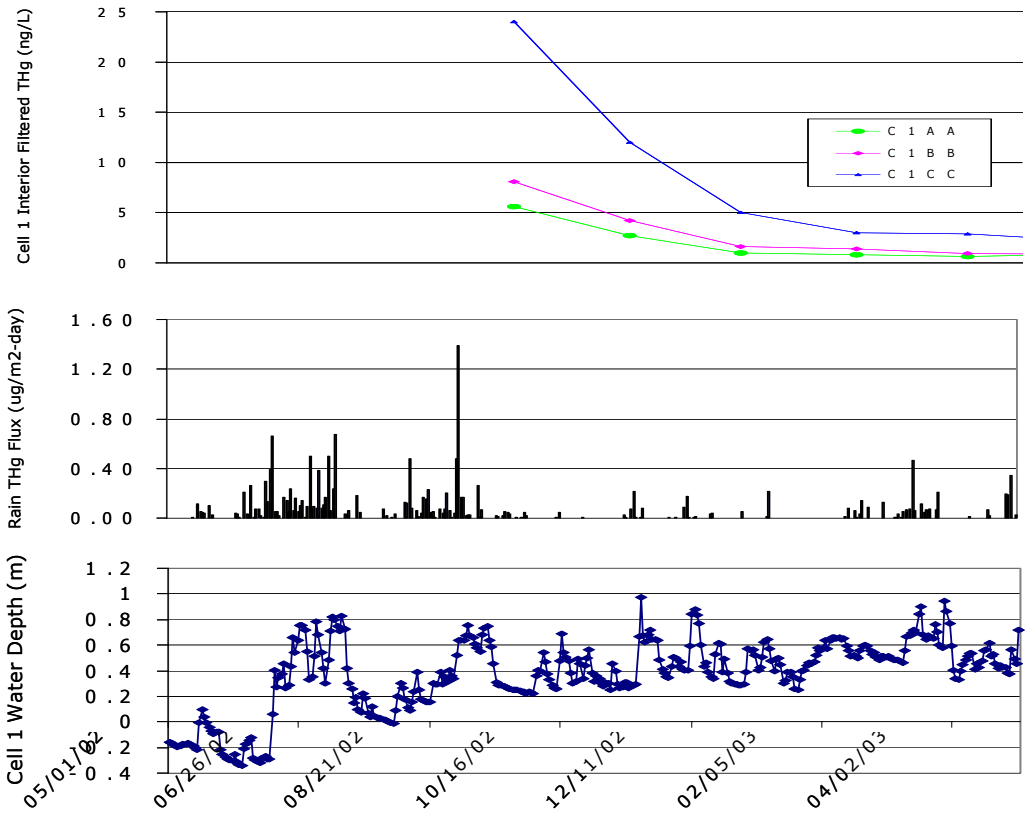

Figure 10. *Top:* Filtered THg in samples collected from the each of the interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC) as a function of time. *Middle:* Rainfall THg flux (µg/m2-day) as a function of time. *Bottom:* Cell 1 depth as a function of time.

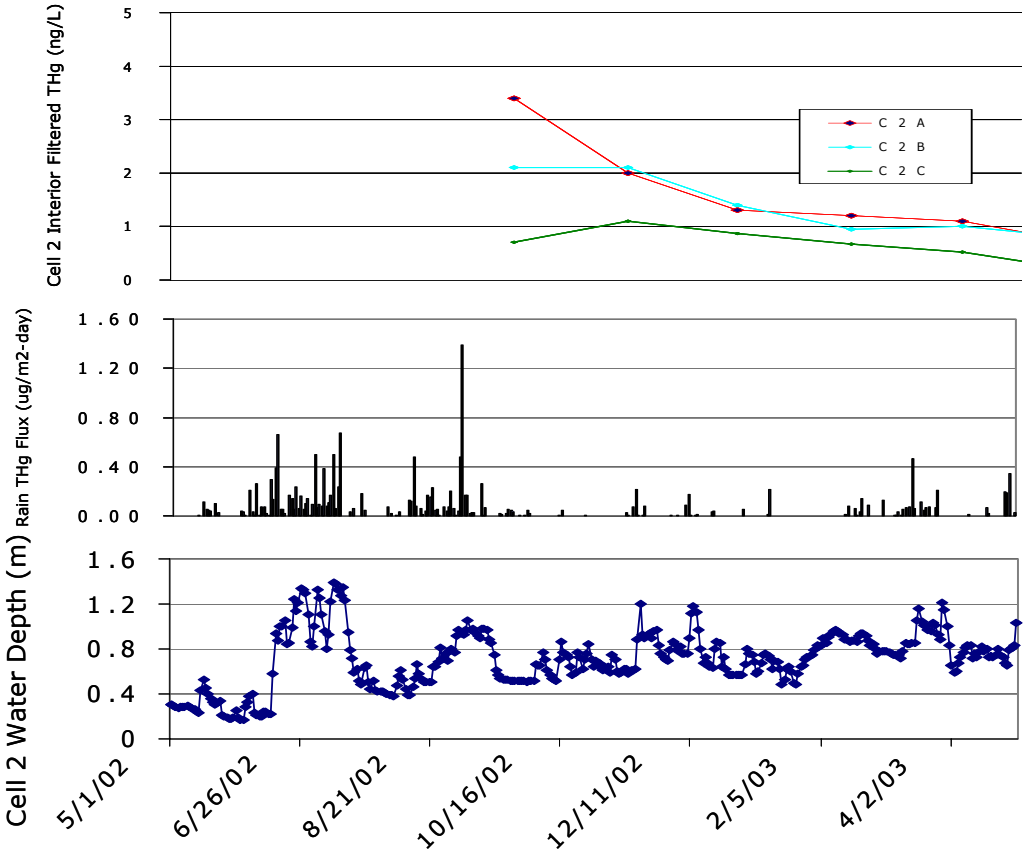

Figure 11. *Top:* Filtered THg in samples collected from the each of the interior sampling sites in Cell 2 (C2A, C2B, and C2C) as a function of time. *Middle:* Rainfall THg flux (µg/m2-day) as a function of time. *Bottom:* Cell 2 depth as a function of time.

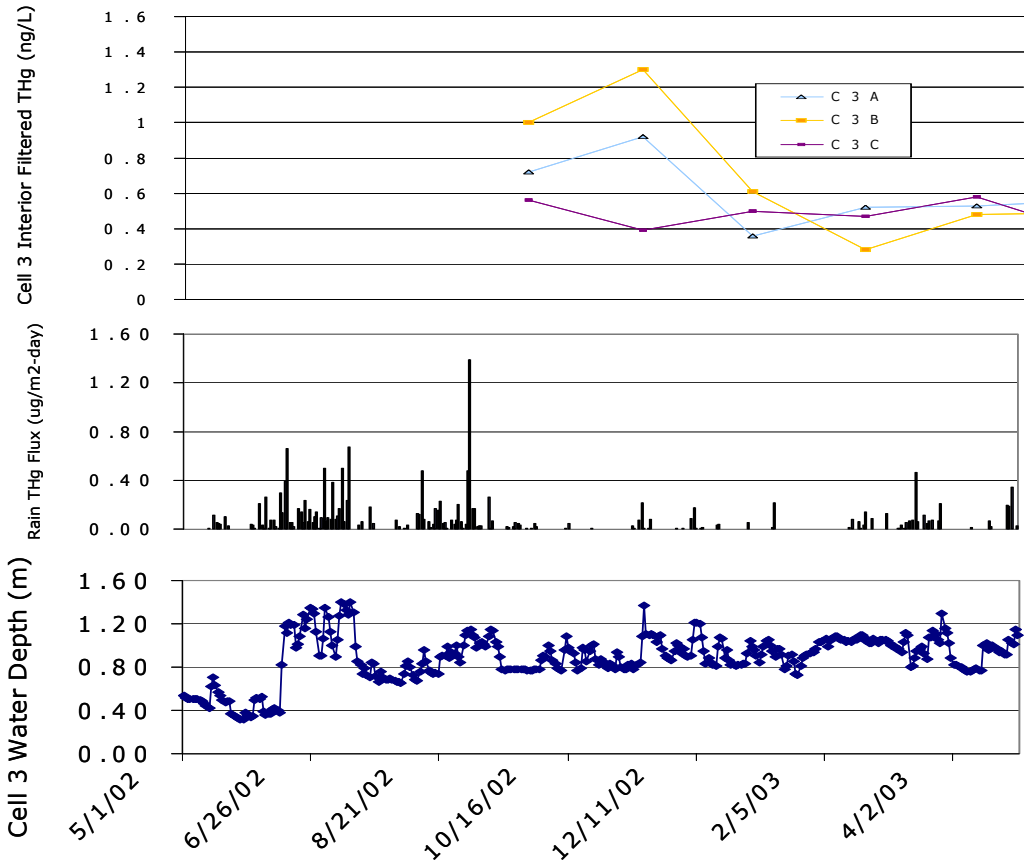

Figure 12. *Top:* Filtered THg in samples collected from each of the interior sampling sites in Cell 3 (C3A, C3B, and C3C) as a function of time. *Middle:* Rainfall THg flux (µg/m2-day) as a function of time. *Bottom:* Cell 3 depth as a function of time.

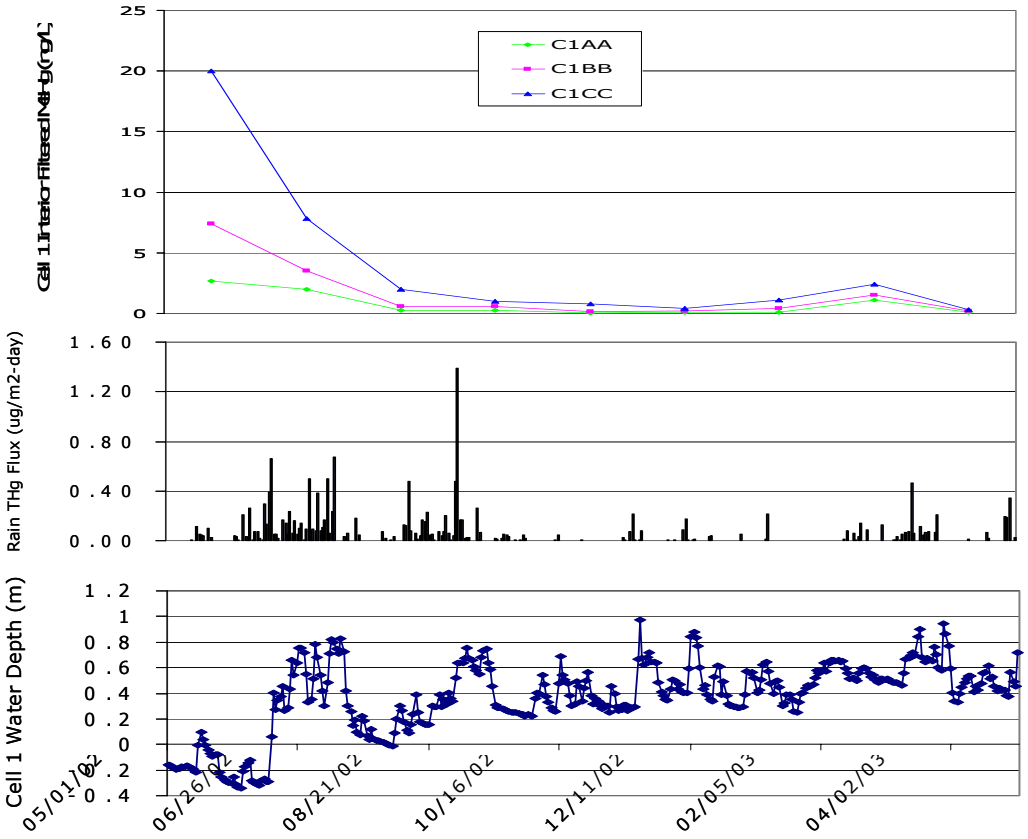

Figure 13. *Top:* Filtered MeHg in samples collected from the each of interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC) as a function of time. *Middle:* Rainfall THg flux (µg/m2-day) as a function of time. *Bottom:* Cell 1 depth as a function of time.

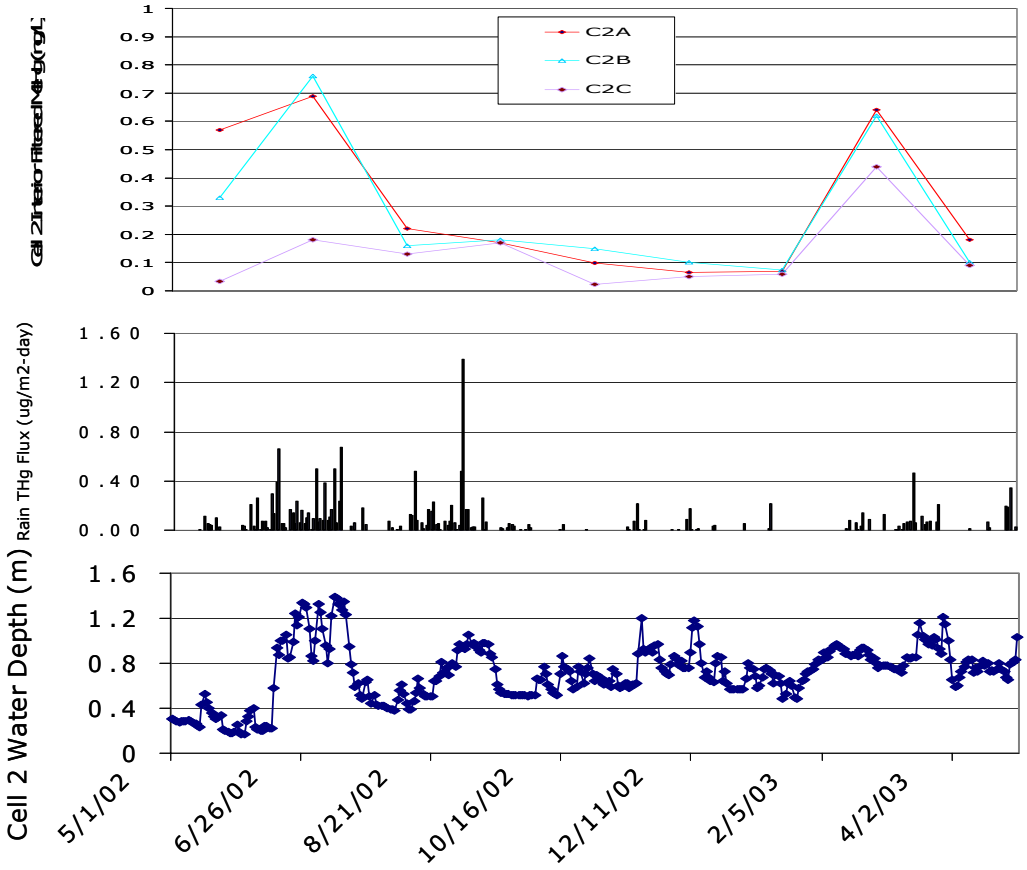

Figure 14. *Top:* Filtered MeHg in samples collected from each of the interior sampling sites in Cell 2 (C2A, C2B, and C2C) as a function of time. *Middle:* Rainfall THg flux (µg/m2-day) as a function of time. *Middle:* Cell 2 depth as a function of time.

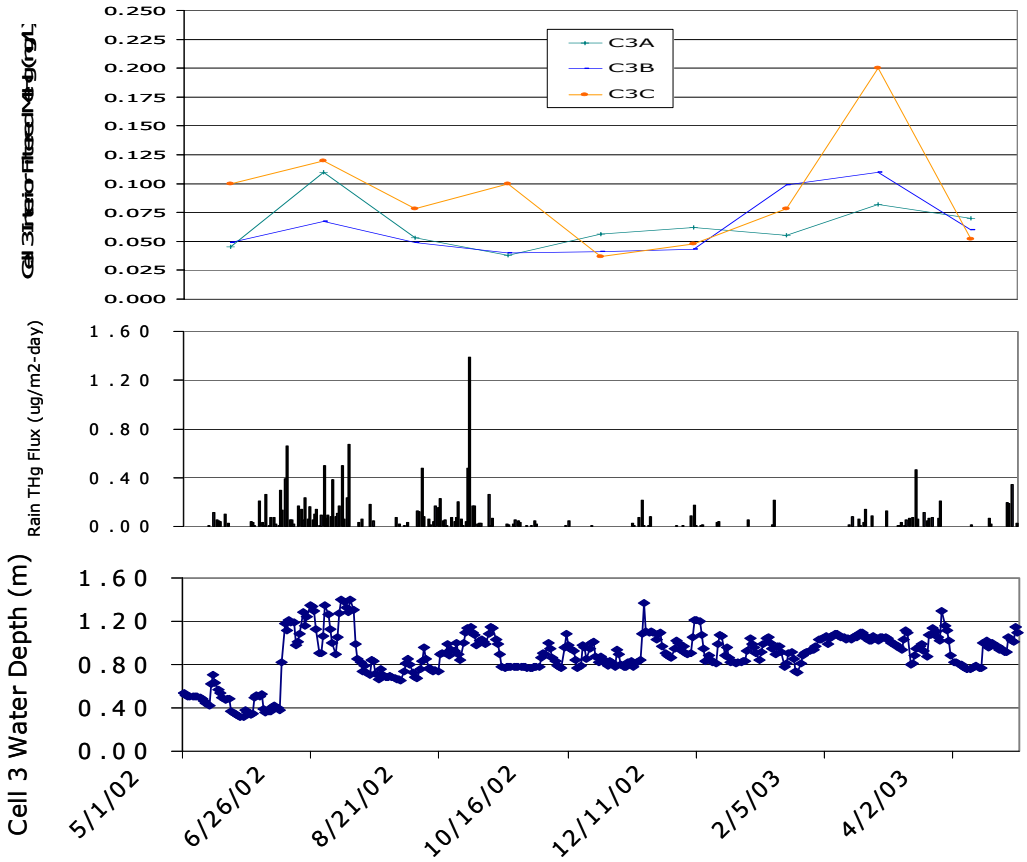

Figure 15. *Top:* Filtered MeHg in samples collected from each of the interior sampling sites in Cell 3 (C3A, C3B, and C3C) as a function of time. *Middle:* Rainfall THg flux (µg/m2-day) as a function of time. *Bottom:* Cell 1 depth as a function of time.

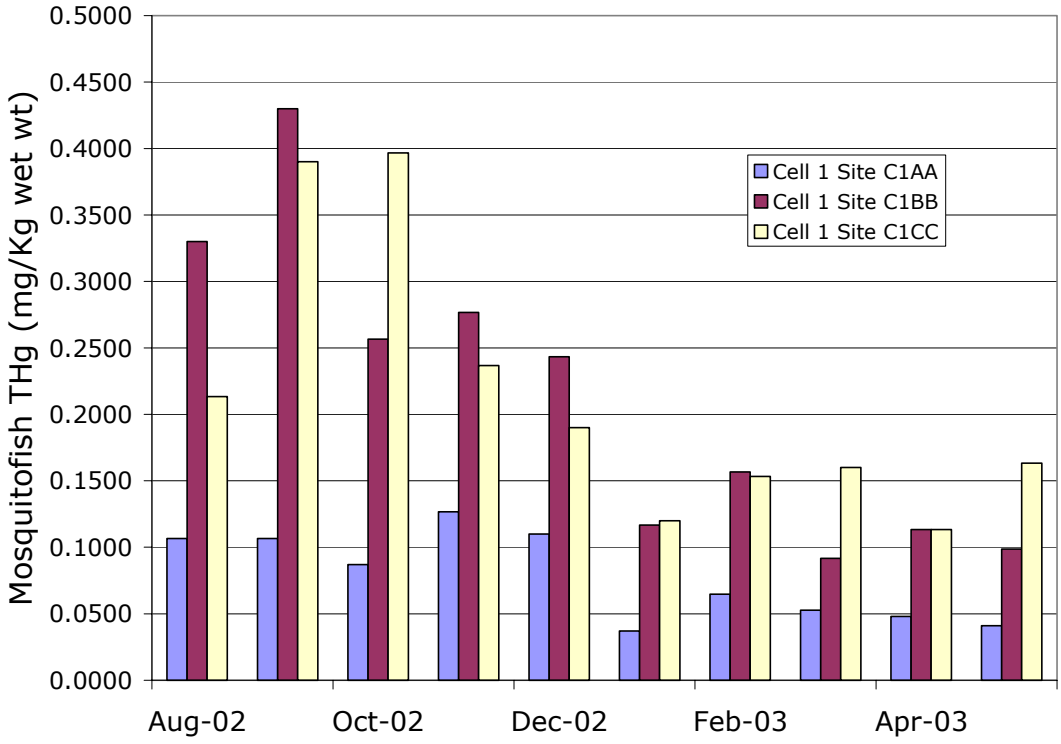

Figure 16. Mosquitofish THg in samples collected every four weeks from each of the interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC) as a function of time.

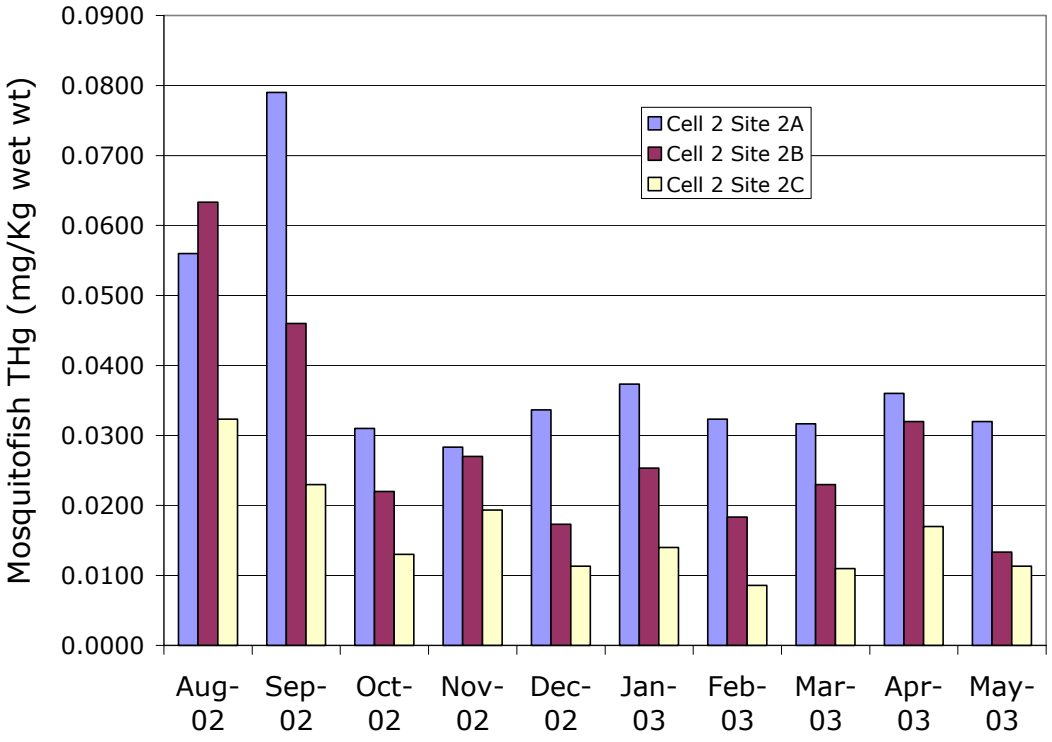

Figure 17. Mosquitofish THg in samples collected every four weeks from each of the interior sampling sites in Cell 2 (C2A, C2B, and C2C) as a function of time.

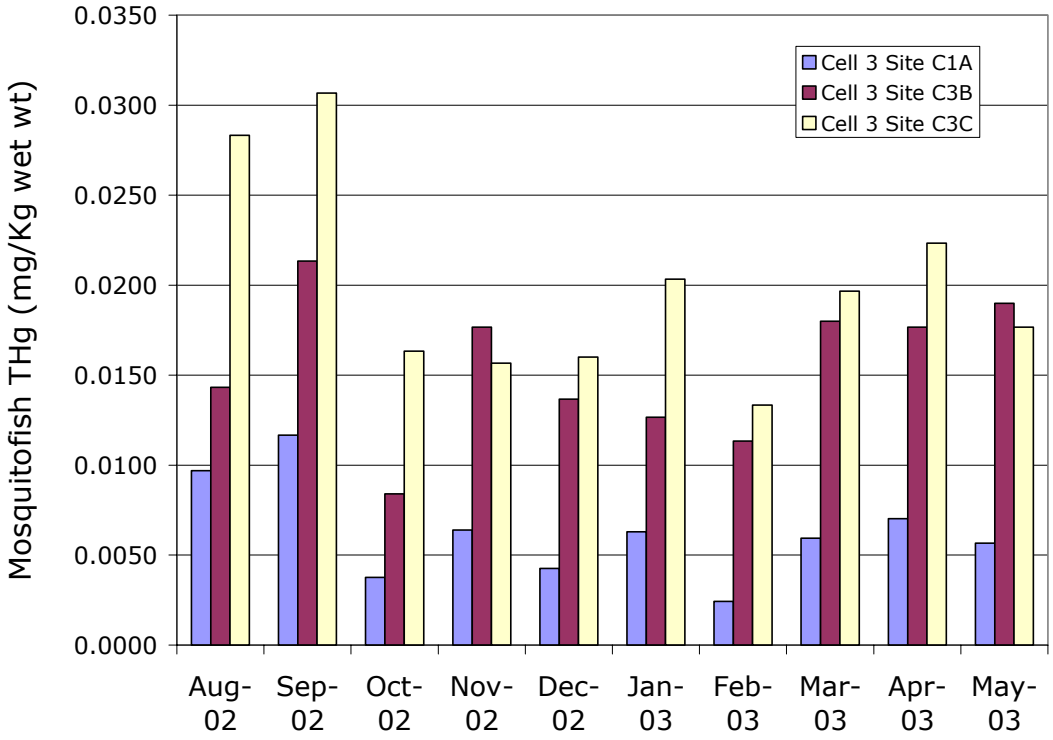

Figure 18. Mosquitofish THg in samples collected every four weeks from the each of interior sampling sites in Cell 3 (C3A, C3B, and C3C) as a function of time.

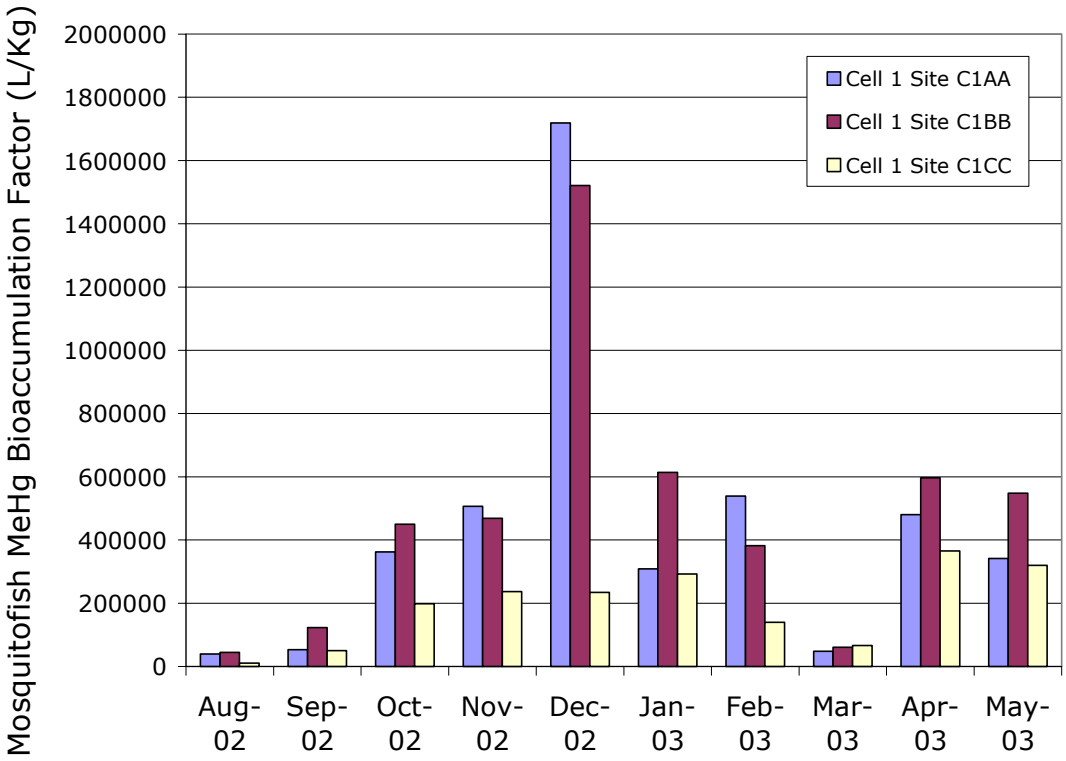

Figure 19. Mosquitofish MeHg bioaccumulation factor (Mosquitofish THg/filtered water MeHg) based on mosquitofish and water samples collected every four weeks from each of the interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC) as a function of time.

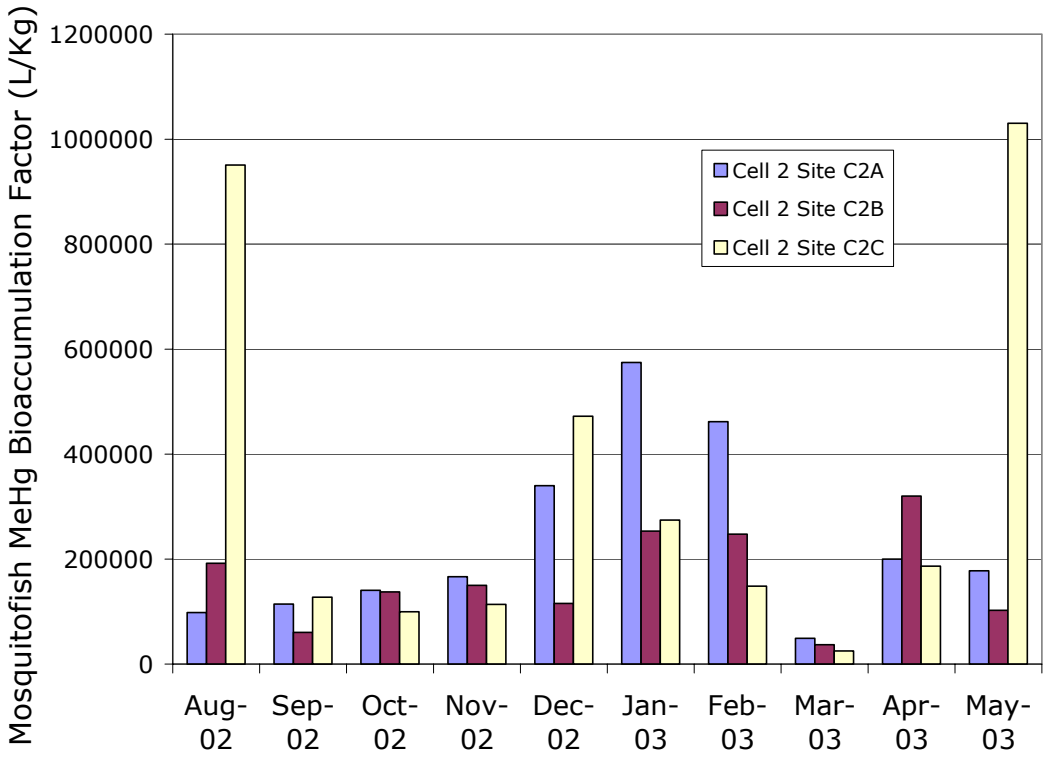

Figure 20. Mosquitofish MeHg bioaccumulation factor (Mosquitofish THg/filtered water MeHg) based on mosquitofish and water samples collected every four weeks from the each of interior sampling sites in Cell 2 (C2A, C2B, and C2C) as a function of time.

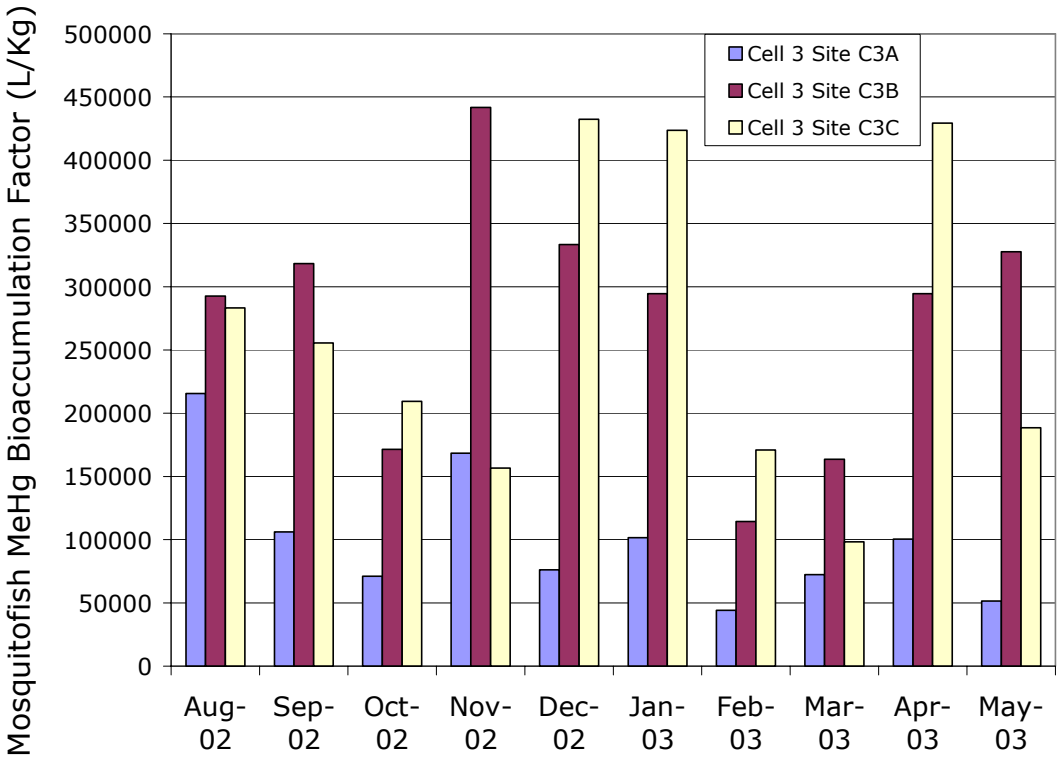

Figure 21. Mosquitofish MeHg bioaccumulation factor (Mosquitofish THg/filtered water MeHg) based on mosquitofish and water samples collected every four weeks from each of the interior sampling sites in Cell 3 (C3A, C3B, and C3C) as a function of time.

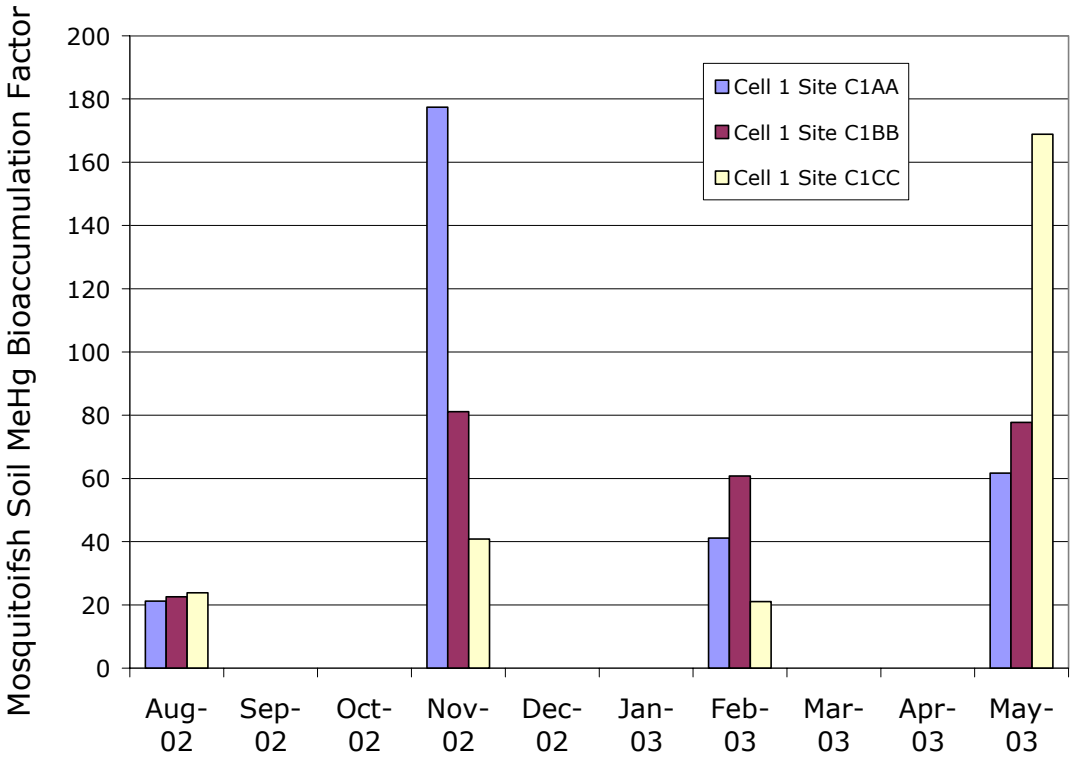

Figure 22. Mosquitofish soil MeHg bioaccumulation factor (Mosquitofish THg/soil MeHg) based on mosquitofish samples collected every 4 weeks and on soil samples collected every 12 weeks, from each of the interior sampling sites in Cell 1 (C1AA, C1BB, and C1CC) as a function of time.

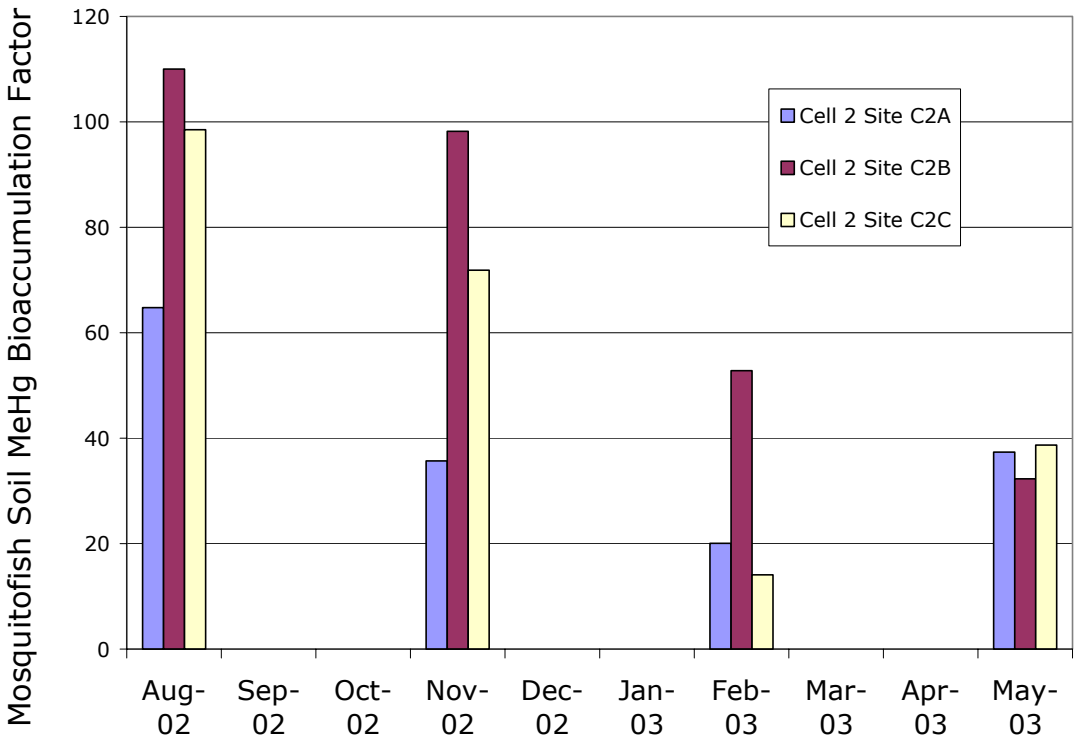

Figure 23. Mosquitofish soil MeHg bioaccumulation factor (Mosquitofish THg/soil MeHg) based on mosquitofish samples collected every four weeks and soil samples collected every 12 weeks from each of the interior sampling sites in Cell 2 (C2A, C2B, and C2C) as a function of time.

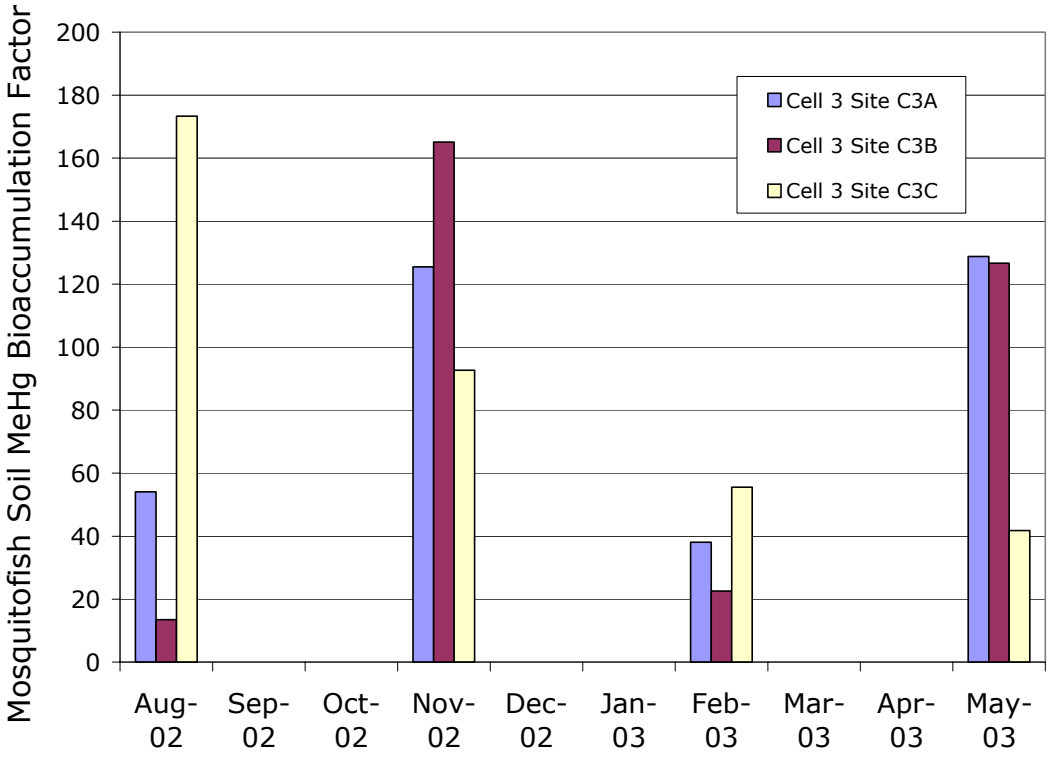

Figure 24. Mosquitofish soil MeHg bioaccumulation factor (Mosquitofish THg/soil MeHg) based on mosquitofish samples collected every four weeks and on soil samples collected every 12 weeks from each of the interior sampling sites in Cell 3 (C3A, C3B, and C3C) as a function of time.

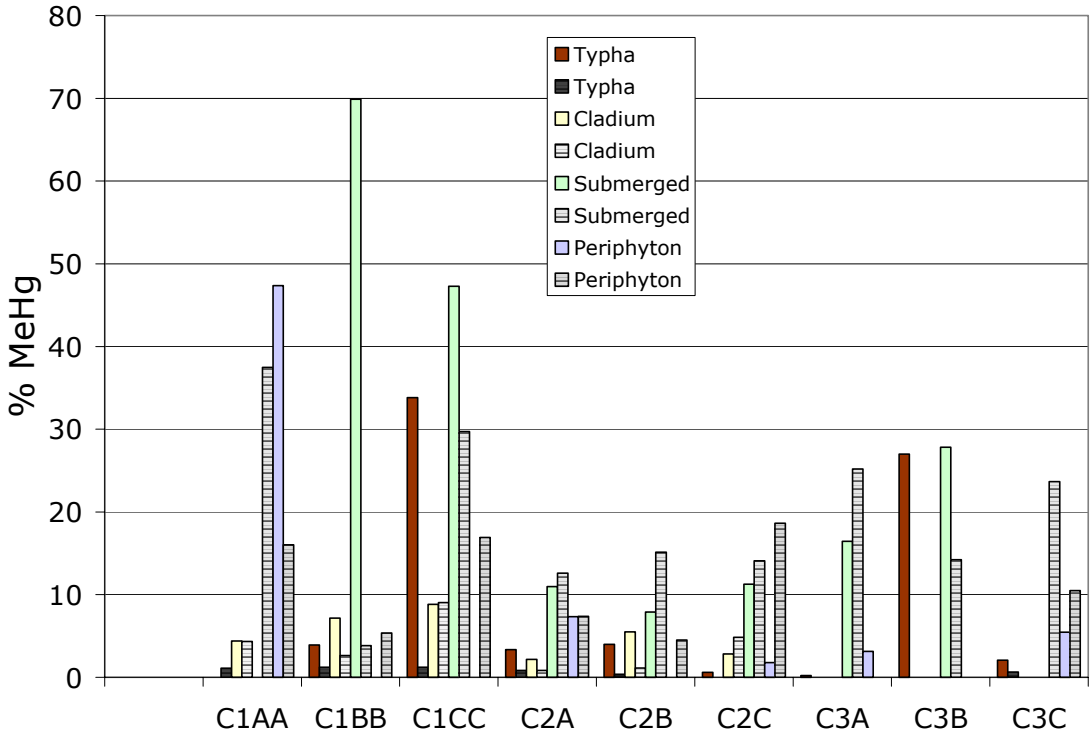

Figure 25. Percent MeHg in plant tissue samples collected semi-annually from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

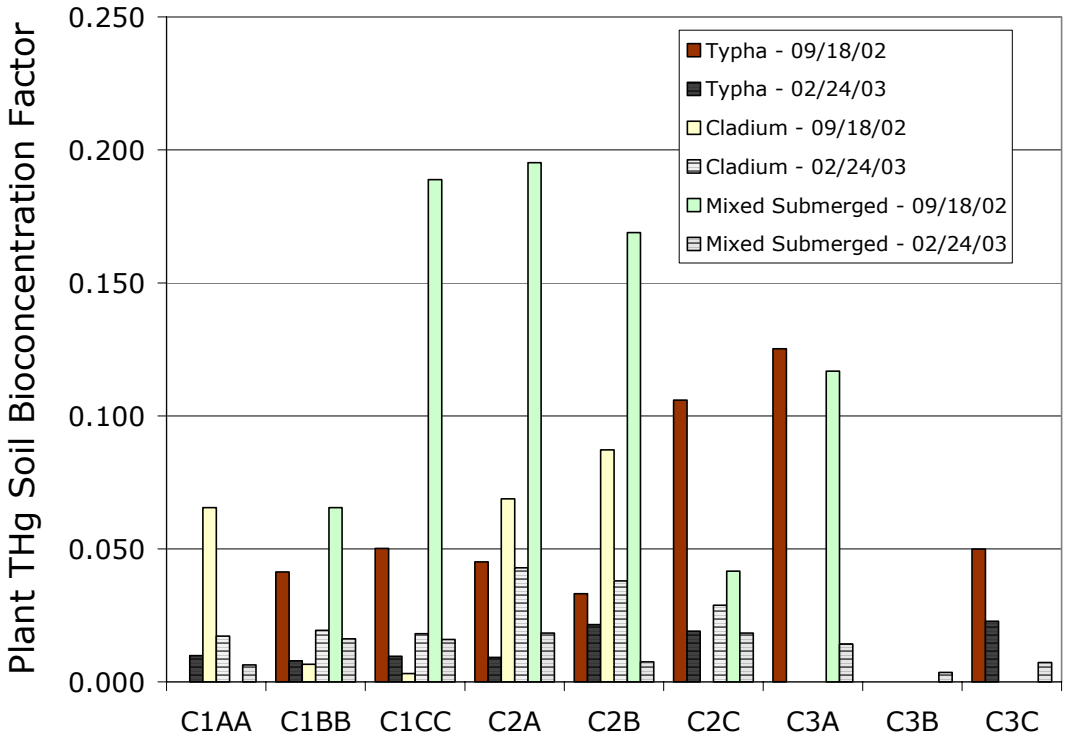

Figure 26. Plant soil THg bioaccumulation factor (Plant THg/soil THg) based on plant samples collected semi-annually and on soil samples collected every 12 weeks from each of the interior sampling sites in all three sampling sites as a function of time.

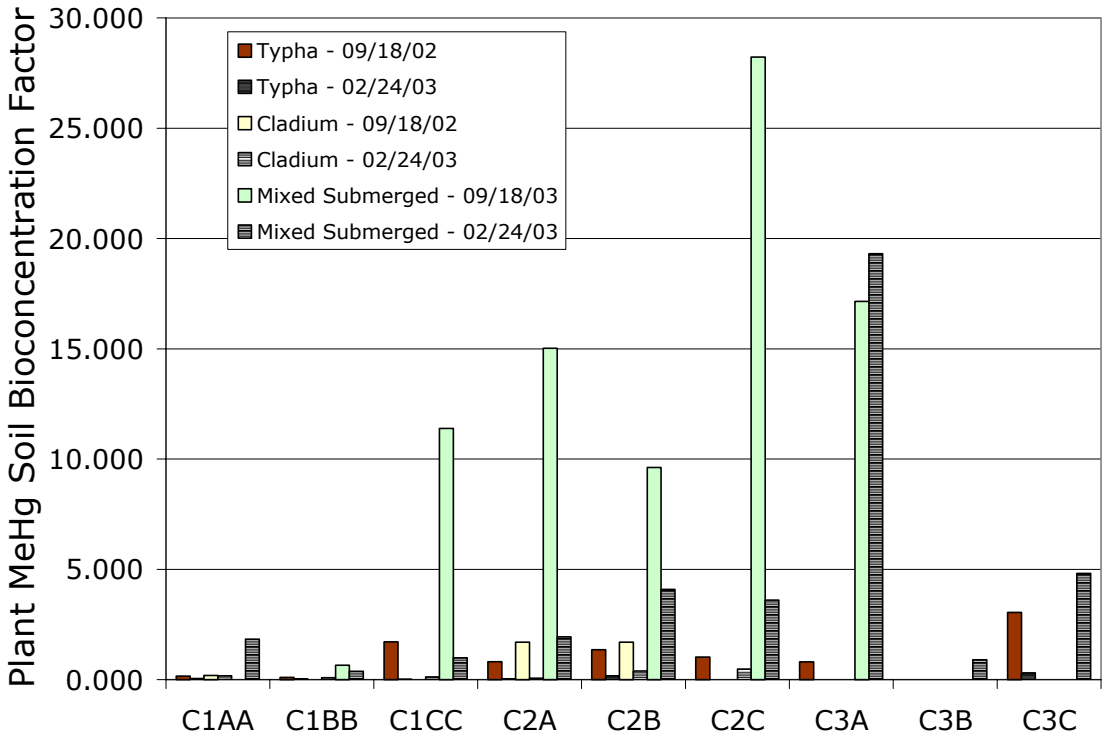

Figure 27. Plant soil MeHg bioaccumulation factor (Plant MeHg/soil MeHg) based on plant samples collected semi-annually and on soil samples collected every 12 weeks from each of the interior sampling sites in all three cells as a function of time.

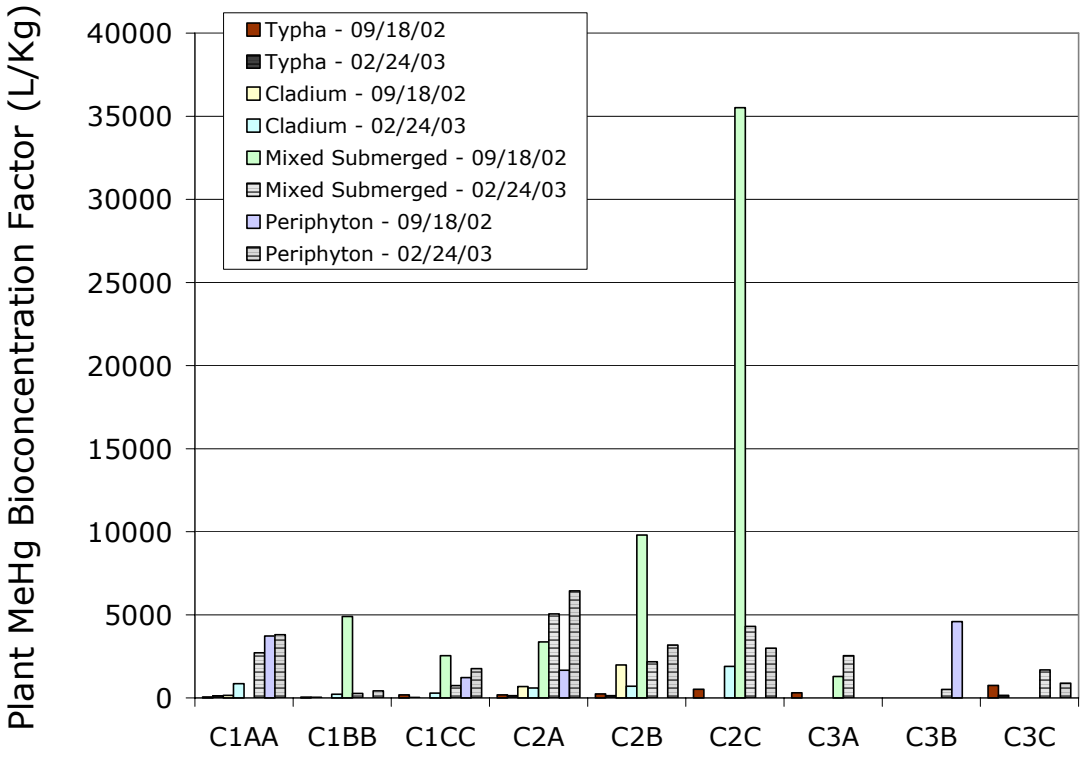

Figure 28. Plant water THg bioconcentration factor (Plant THg/filtered water THg) based on plant samples collected semi-annually and on water samples collected every 4 weeks from each of the interior sampling sites in each cell as a function of time.

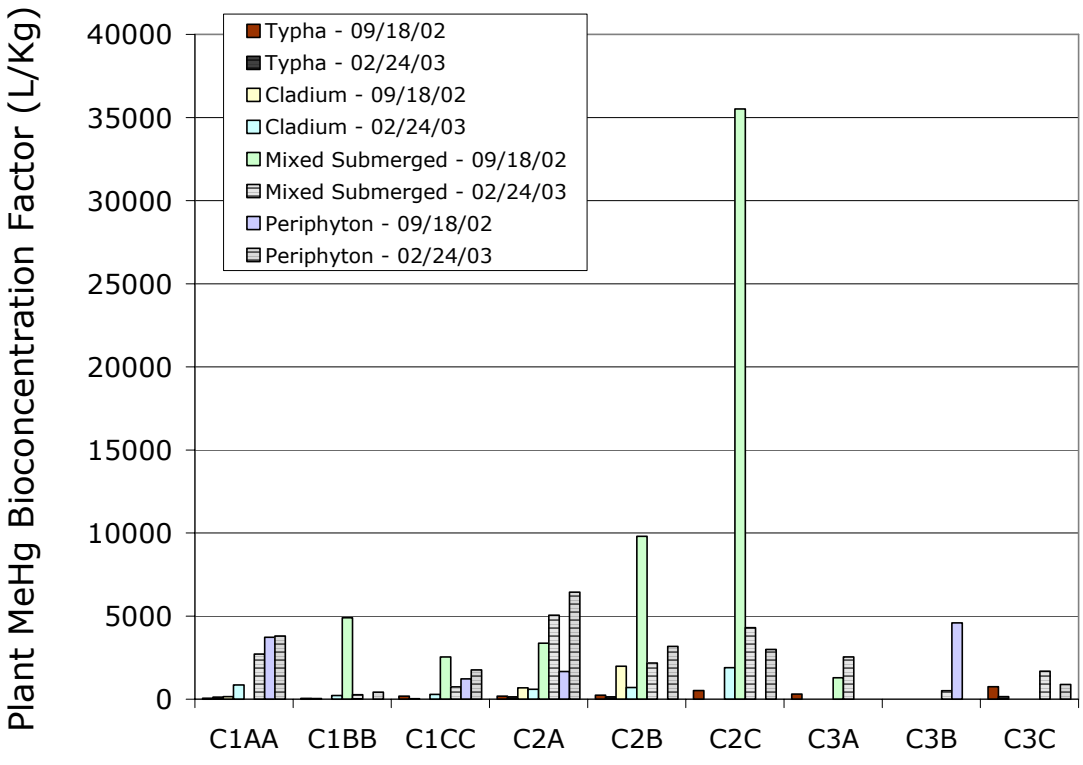

Figure 29. Plant water MeHg bioconcentration factor (Plant MeHg/filtered water MeHg) based on plant samples collected semi-annually and on water samples collected every 4 weeks from each of the interior sampling sites in each cell as a function of time.

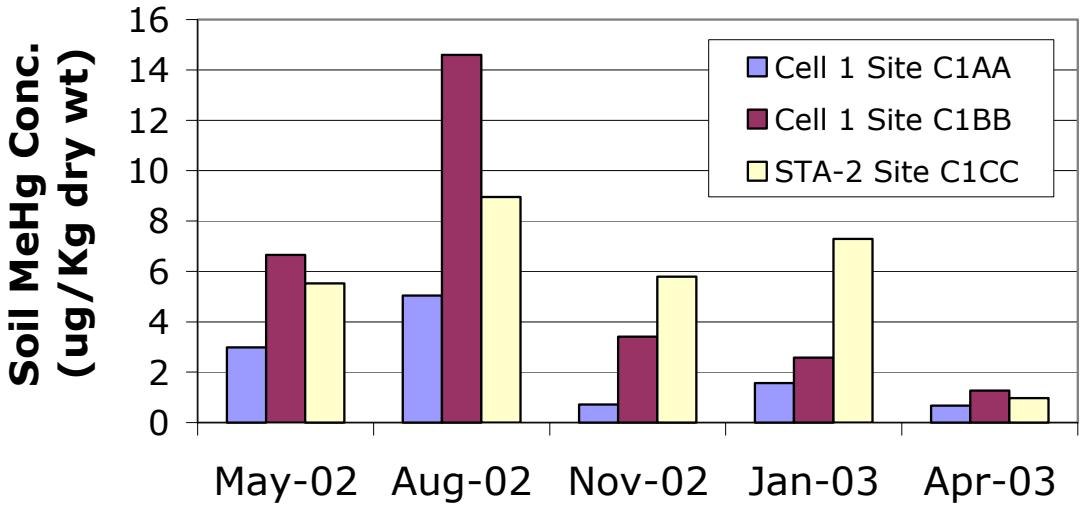

Figure 30. Soil MeHg concentration for surficial soil samples (0-4 cm) collected every 12 weeks from each of the interior sampling sites in Cell 1 as a function of time.

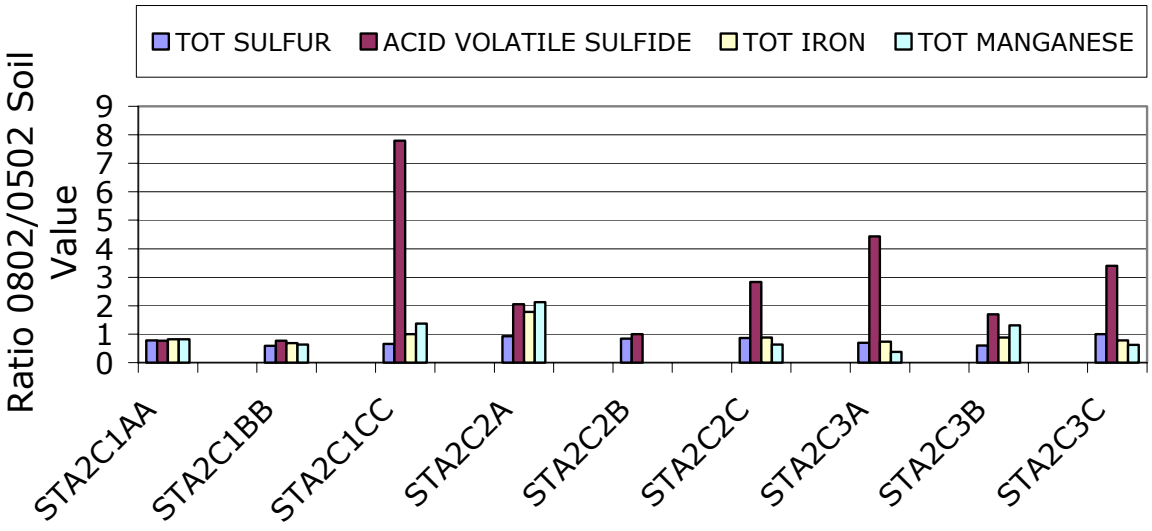

Figure 31A. Ratio of soil concentration between August 2002 (post-flooding) and May 2002 (pre-flooding) from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

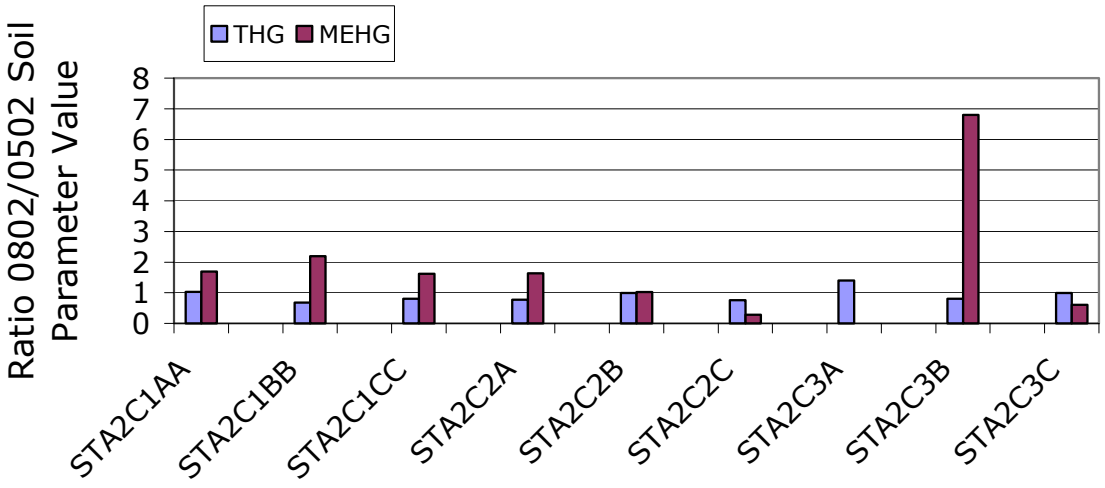

Figure 31B. Ratio of soil concentration between August 2002 (post-flooding) and May 2002 (pre-flooding) from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

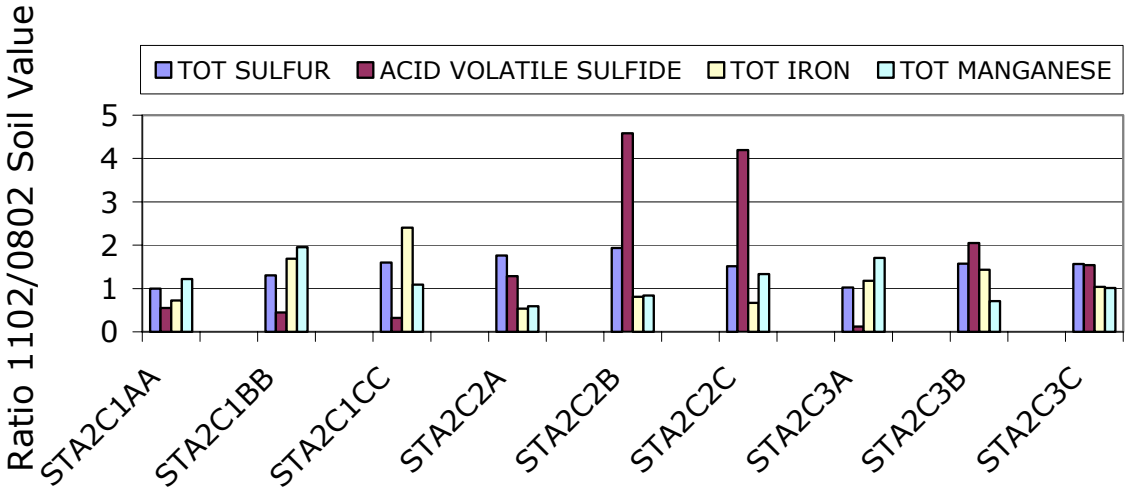

Figure 32A. Ratio of soil concentration between November 2002 and August 2002 from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

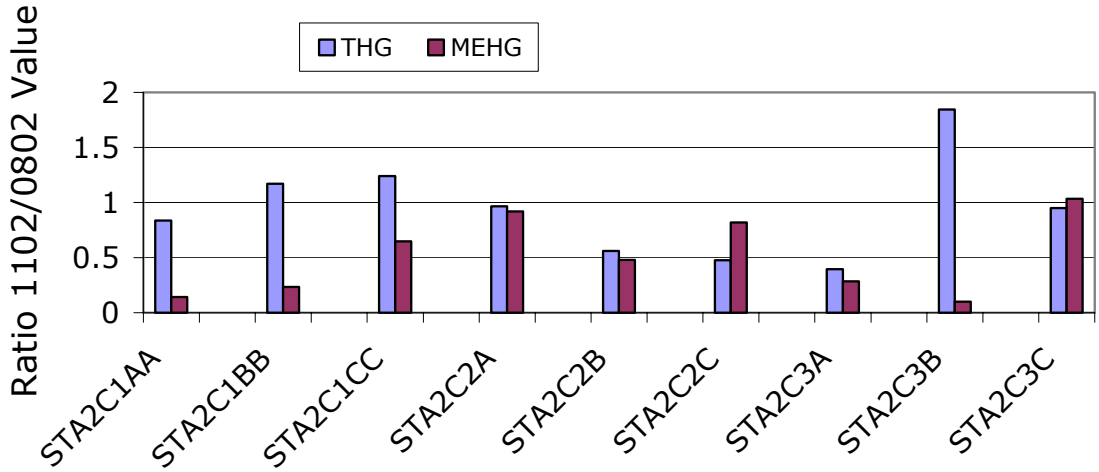

Figure 32B. Ratio of soil concentration between November 2002 and August 2002 from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

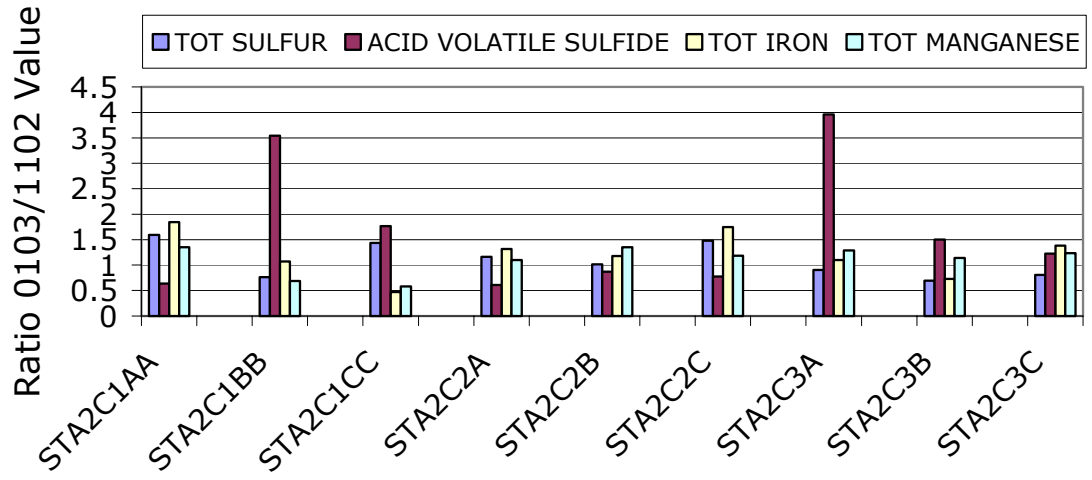

Figure 33A. Ratio of soil concentration between January 2003 and November 2002 from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

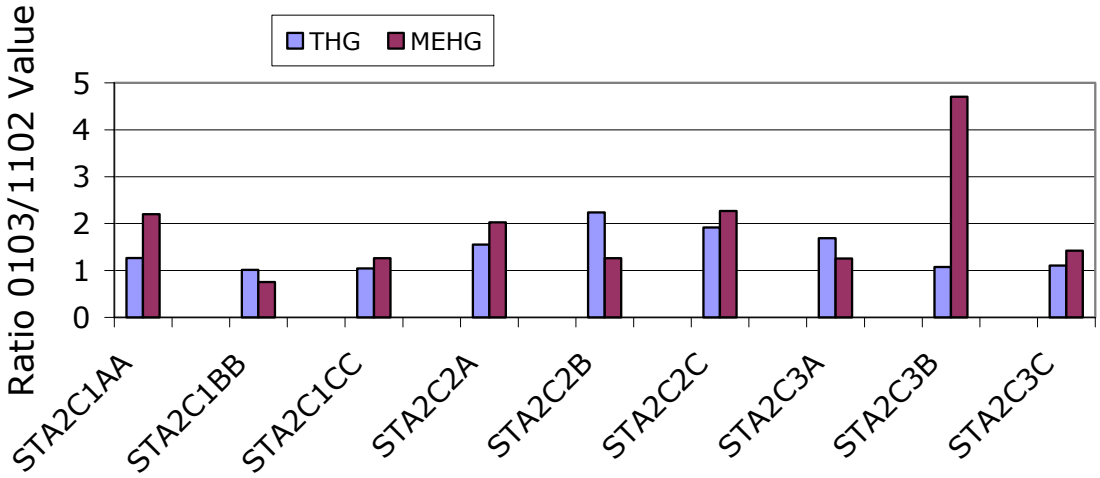

Figure 33B. Ratio of soil concentration between January 2003 and November 2002 from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

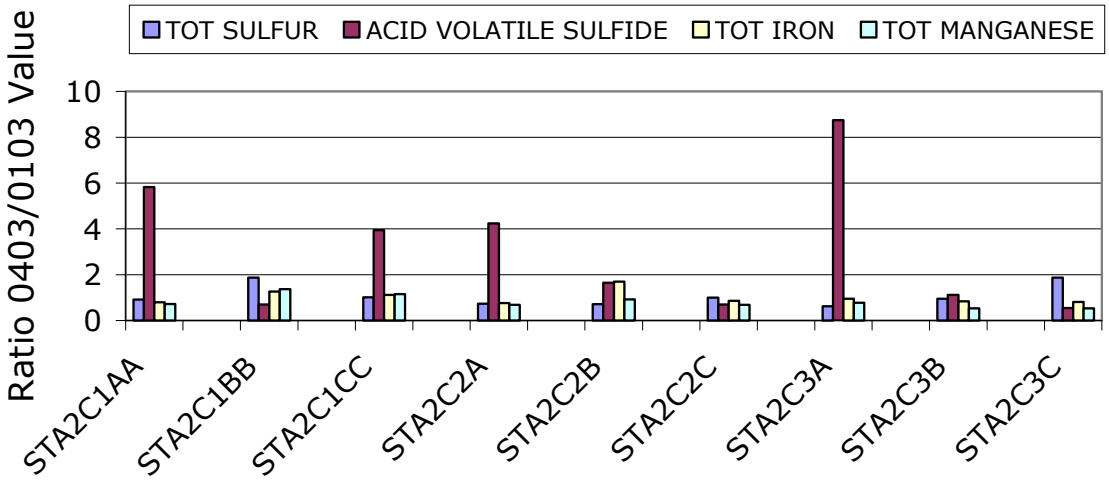

Figure 34A. Ratio of soil concentration between April 2003 and January 2003 from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

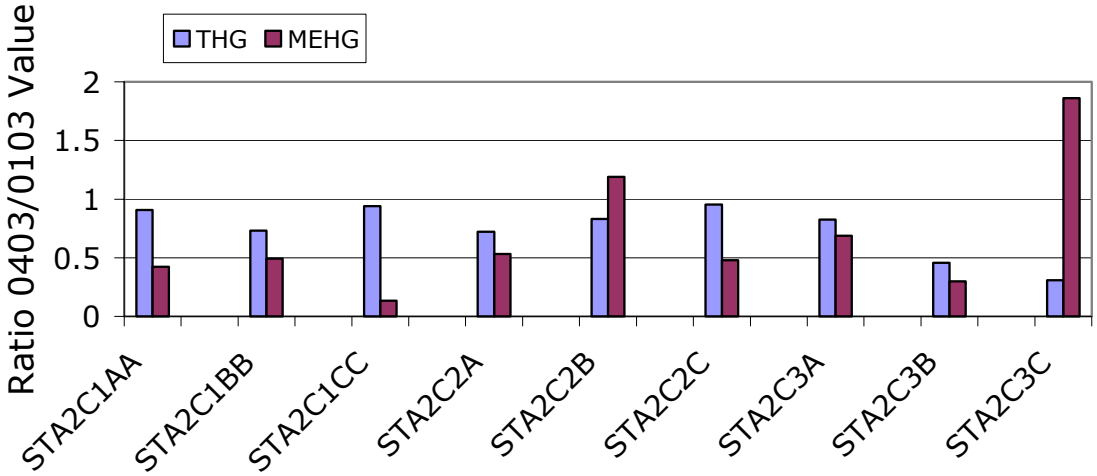

Figure 34B. Ratio of soil concentration between April 2003 and January 2003 from each of the interior sampling sites in Cell 1, Cell 2, and Cell 3 as a function of time.

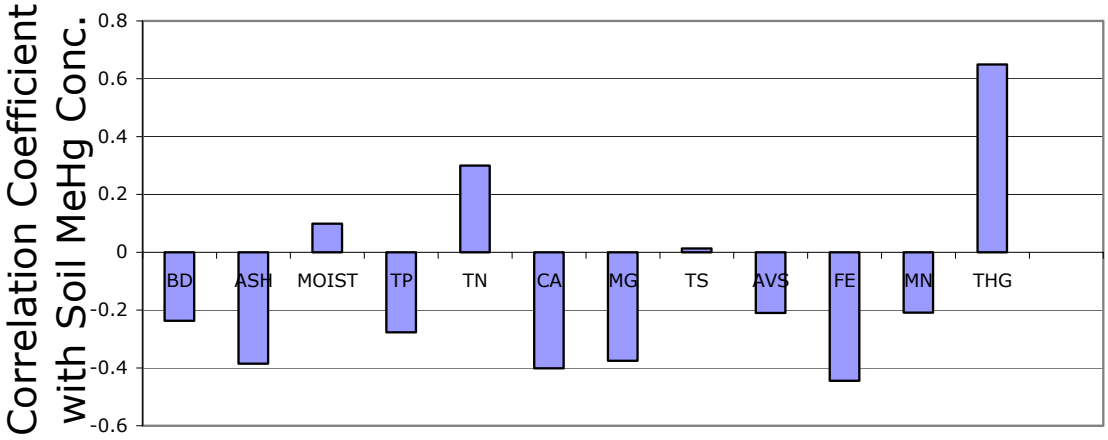

Figure 35. Pearson correlation coefficient between soil MeHg concentration and all soil constituents for all cells and all five sampling trips.

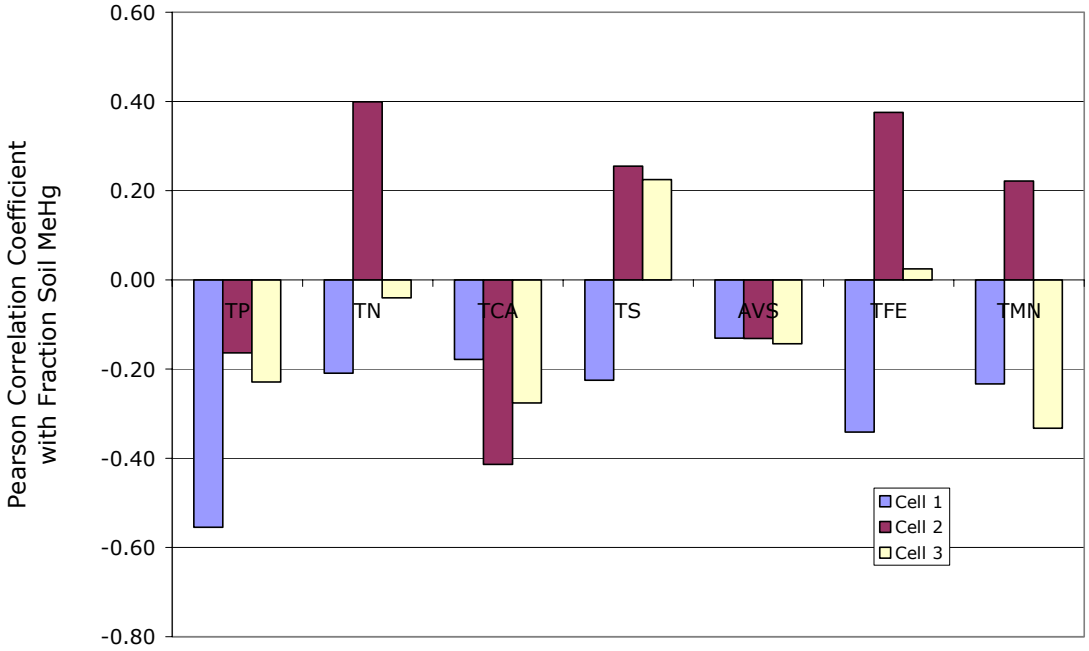

Figure 36. Pearson correlation coefficients between percent MeHg and soil constituent concentrations in all cells combined for all sampling trips.

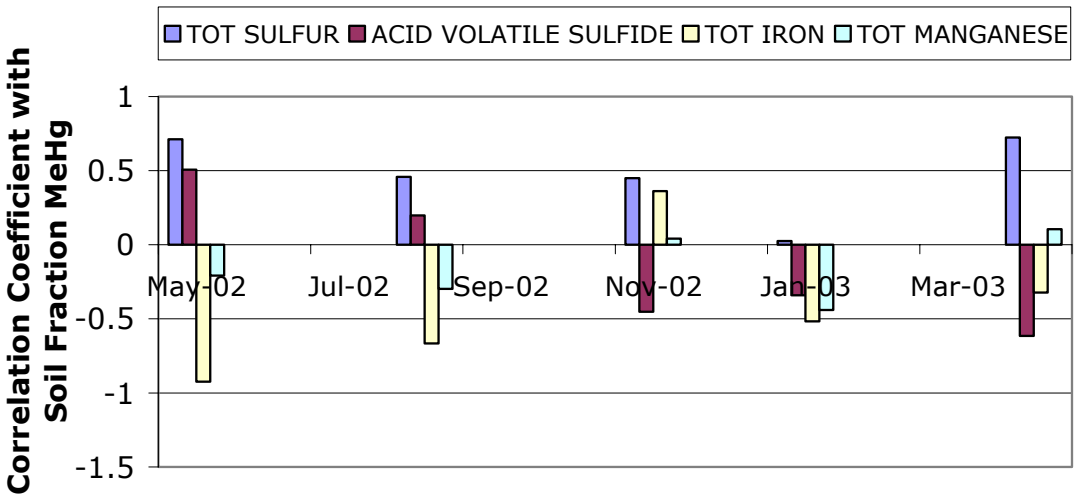

Figure 37. Pearson correlation coefficients between percent MeHg and other soil constituent concentrations for all cells combined for each sampling trip.

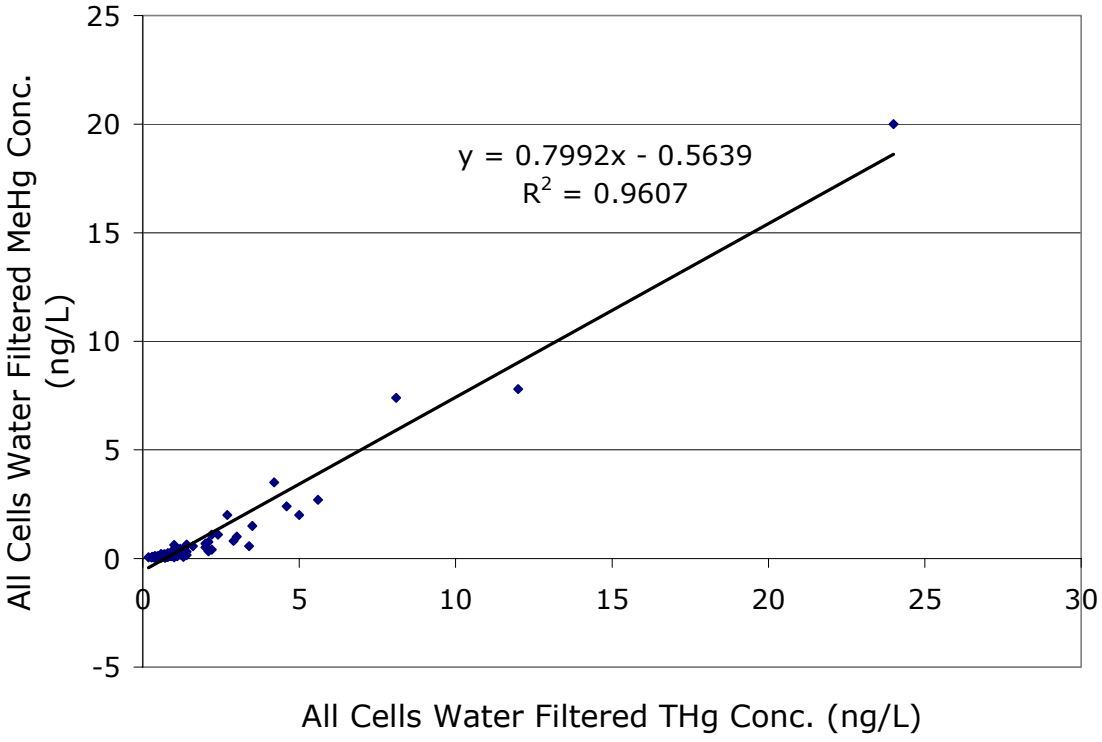

Figure 38. Filtered MeHg concentration versus filtered THg concentration in surface water for all cells combined for all sampling trips.

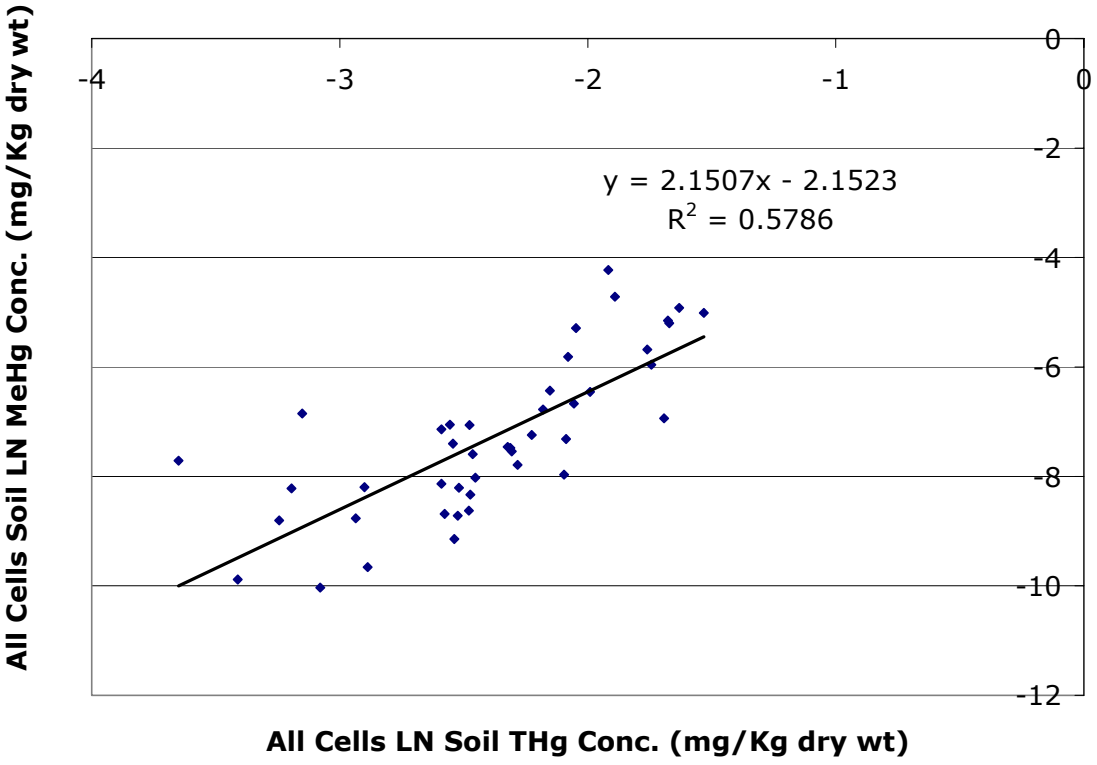

Figure 39. Natural logarithm transformation of soil MeHg concentration versus soil THg concentration for all cells combined for all sampling trips.

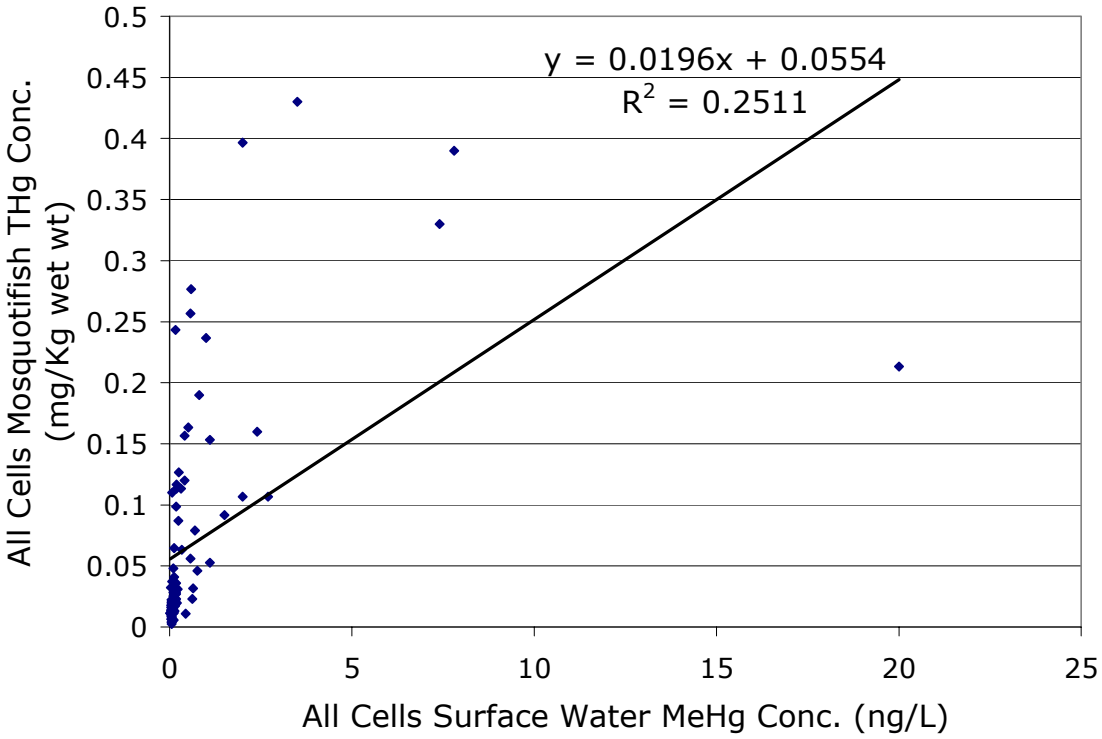

Figure 40. Mosquitofish THg concentration versus surface water filtered MeHg concentration for all cells combined for all sampling trips.

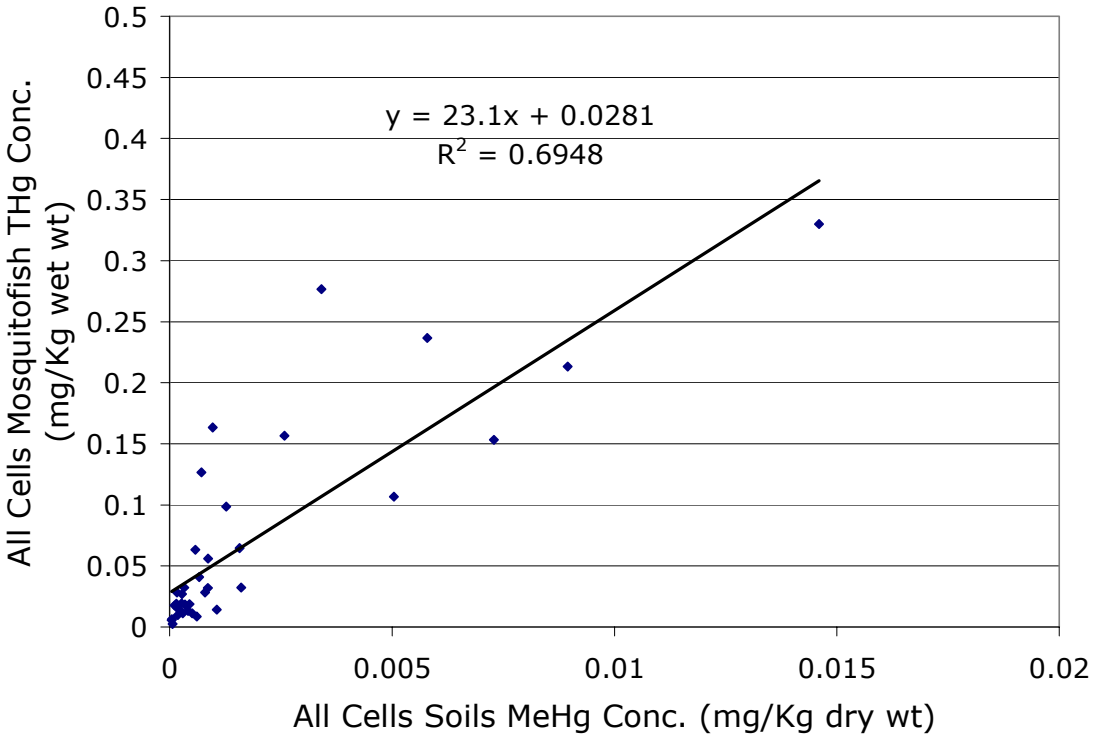

Figure 41. Mosquitofish THg concentration versus soil MeHg concentration for all cells combined for all sampling trips.

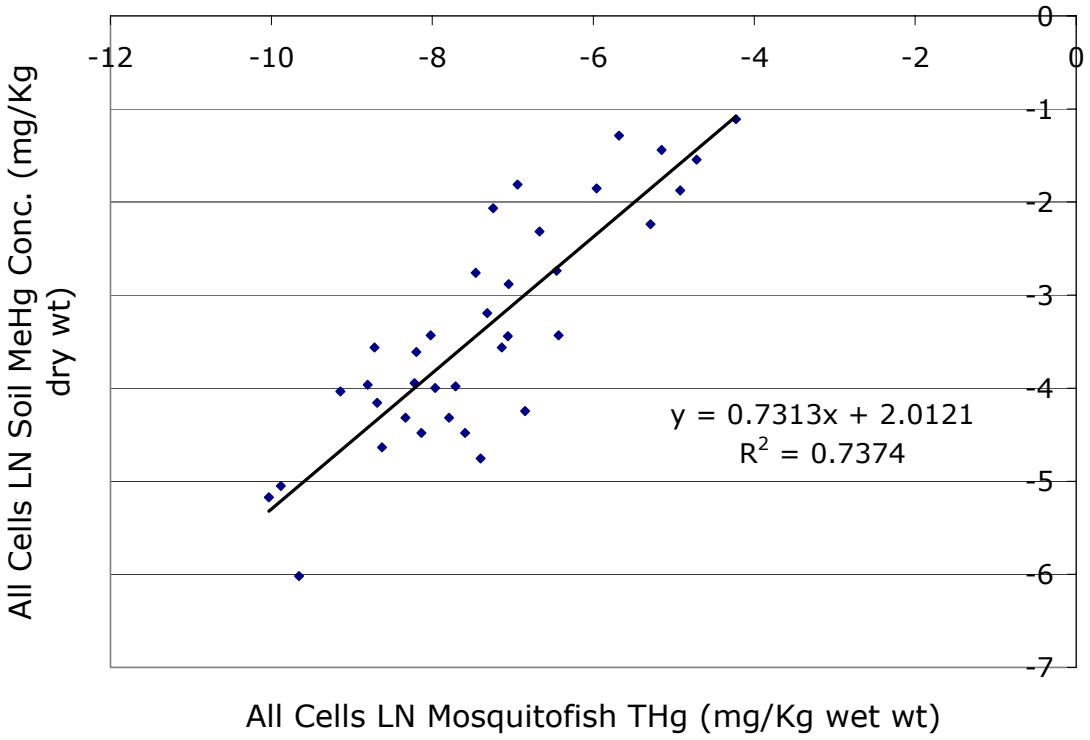

Figure 42. Natural logarithm transformation (LN) of mosquitofish THg concentration versus LN soil MeHg concentration for all cells combined for all sampling trips.

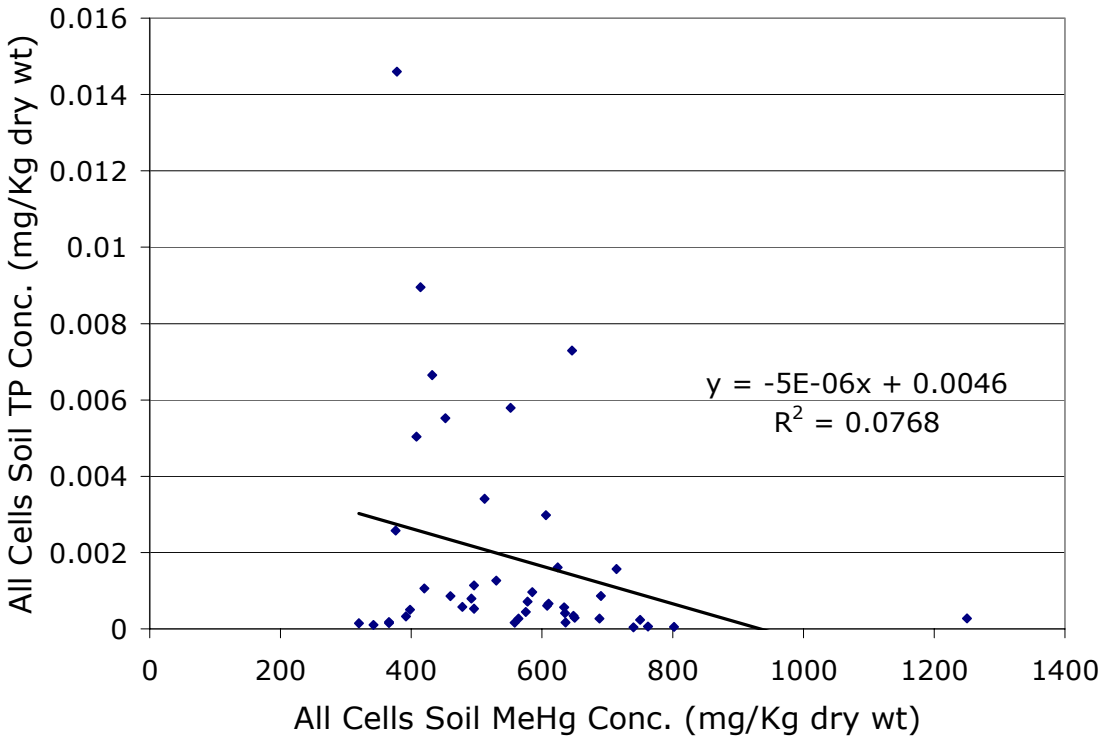

Figure 43. Soil MeHg concentration versus soil TP concentration for all cells combined for all sampling trips.

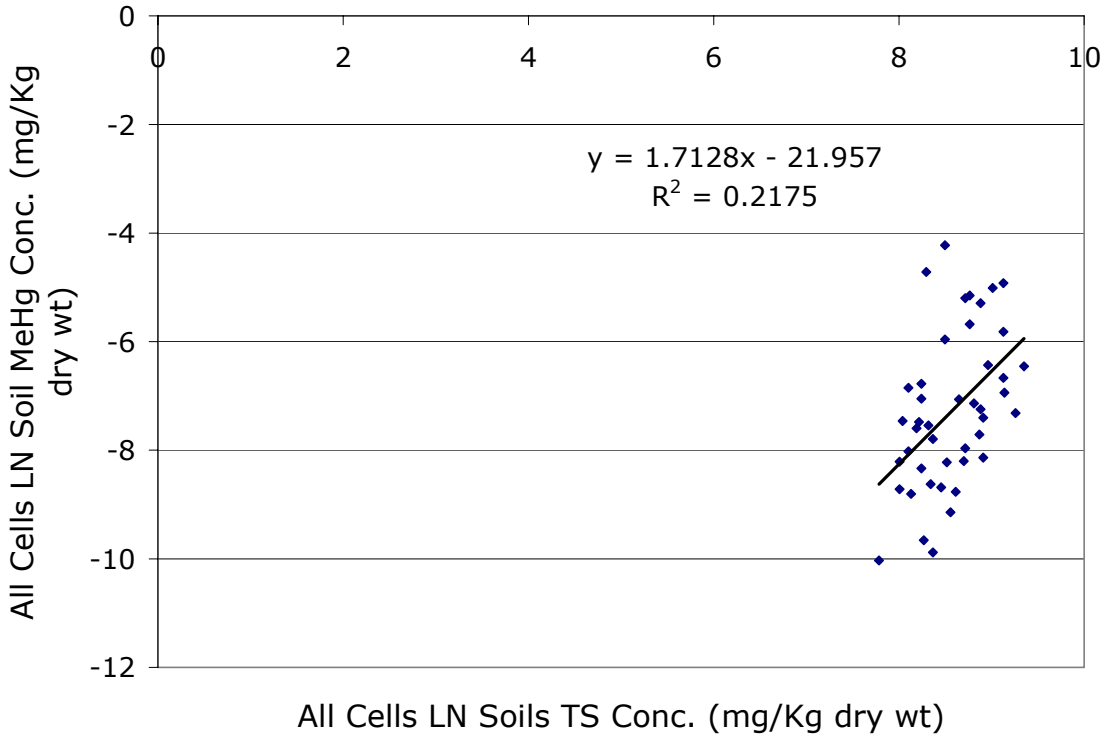

Figure 44. Natural logarithm transformation (LN) of soil MeHg concentration versus LN soil total sulfur (TS) concentration for all cells combined for all sampling trips.

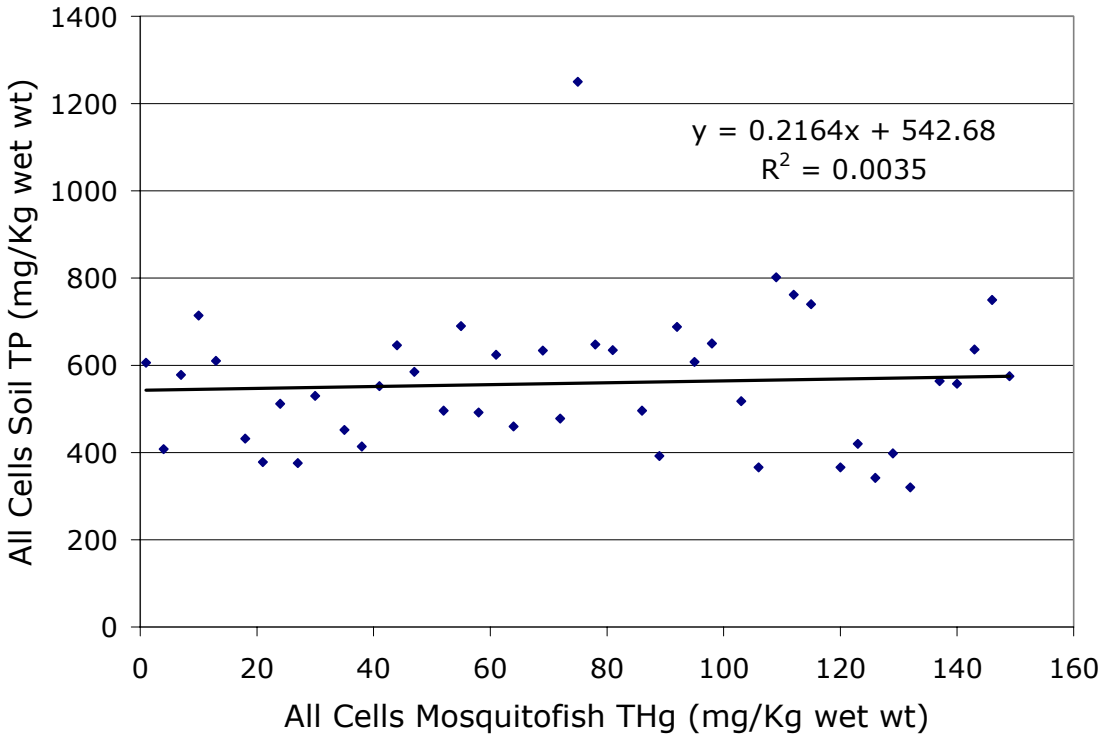

Figure 45. Mosquitofish THg concentration versus soil TP concentration for all cells combined for all sampling trips.

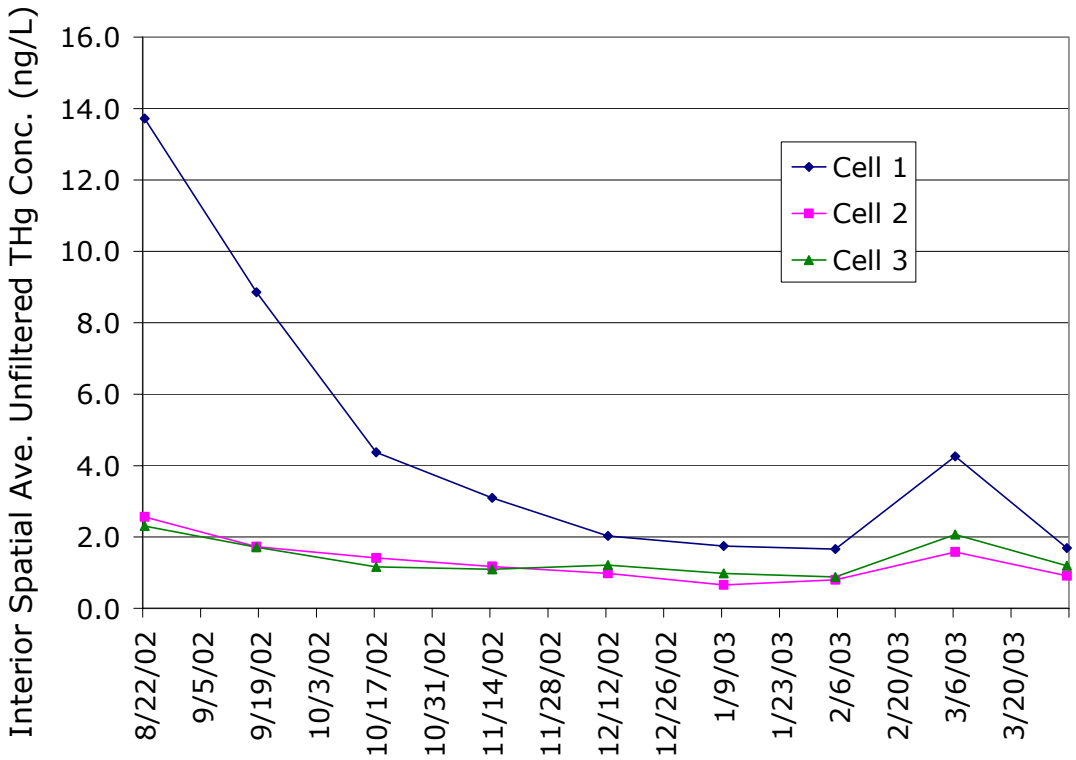

Figure 46. Interior spatial average THg concentration in interior Cell 1, Cell 2, and Cell 3 calculated as the average of the common inflow (G-328), the individual cells' three interior sites, and the individual cell outflow.

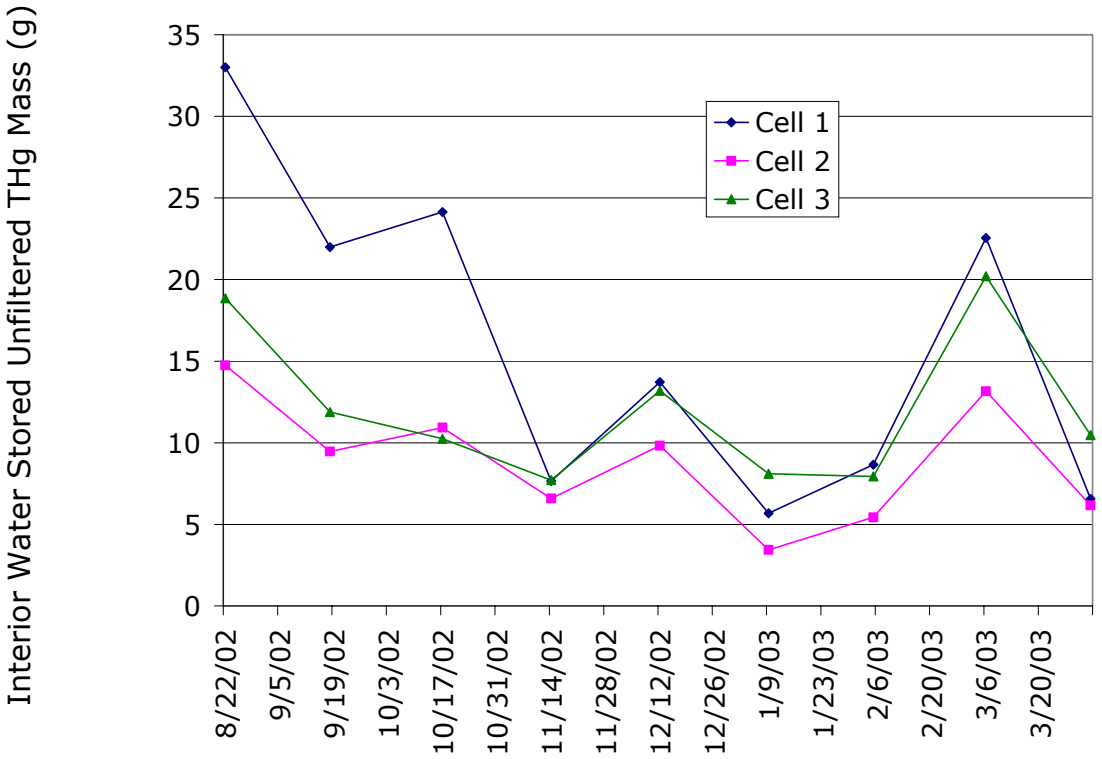

Figure 47. Interior THg stored in interior surface water in interior Cell 1, Cell 2, and Cell 3 based on observed cell depth and on the concentrations depicted in Figure 46.

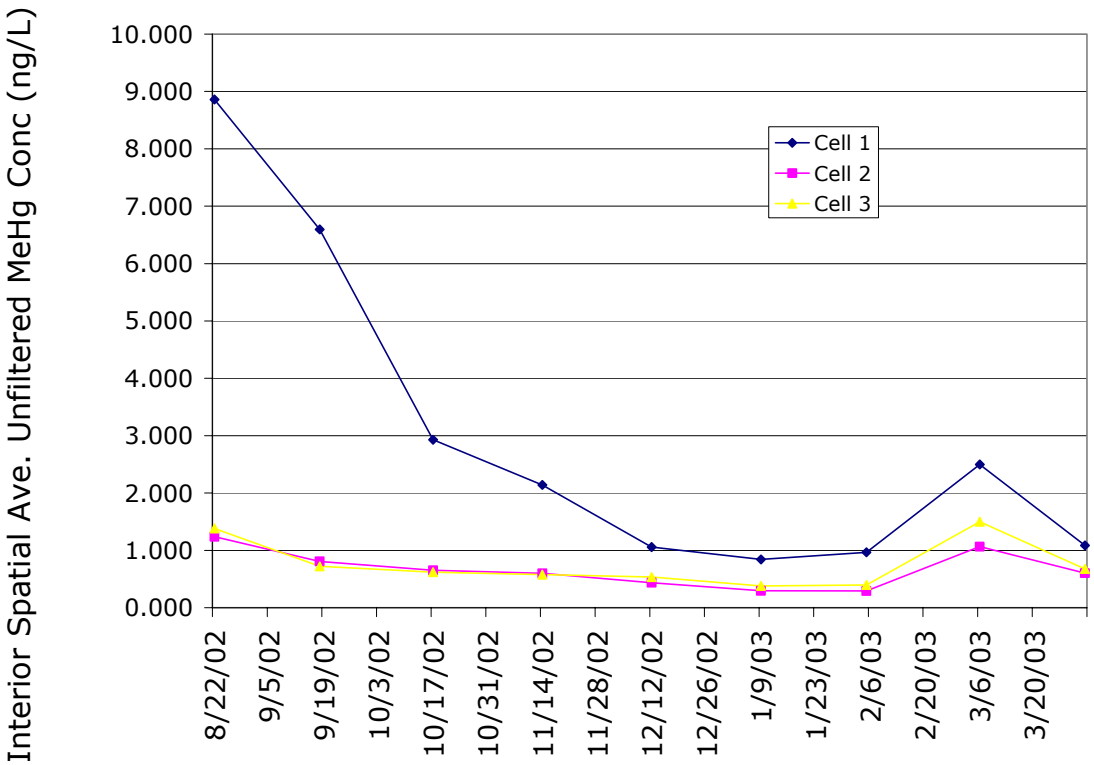

Figure 48. Interior spatial average MeHg concentration in interior Cell 1, Cell 2, and Cell 3 calculated as the average of the common inflow (G-328), the individual cells' three interior sites, and the individual cell outflow.

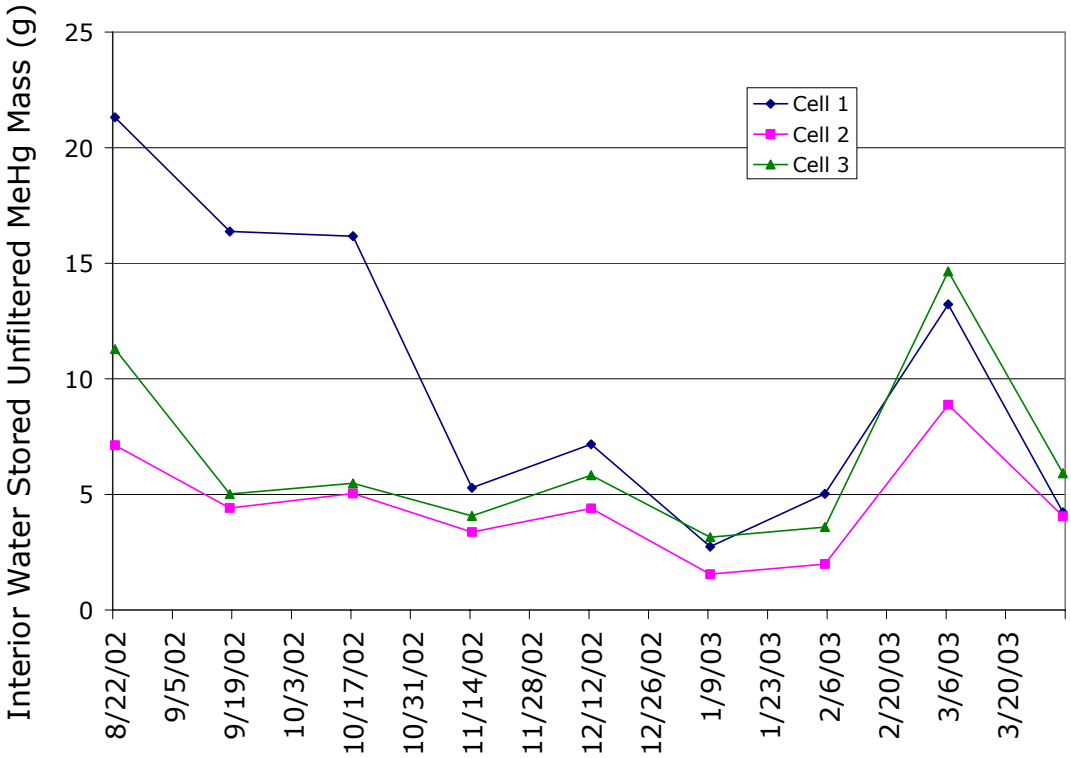

Figure 49. Interior MeHg stored in interior surface water in interior Cell 1, Cell 2, and Cell 3 based on the observed cell depth and the concentrations depicted in Figure 48.

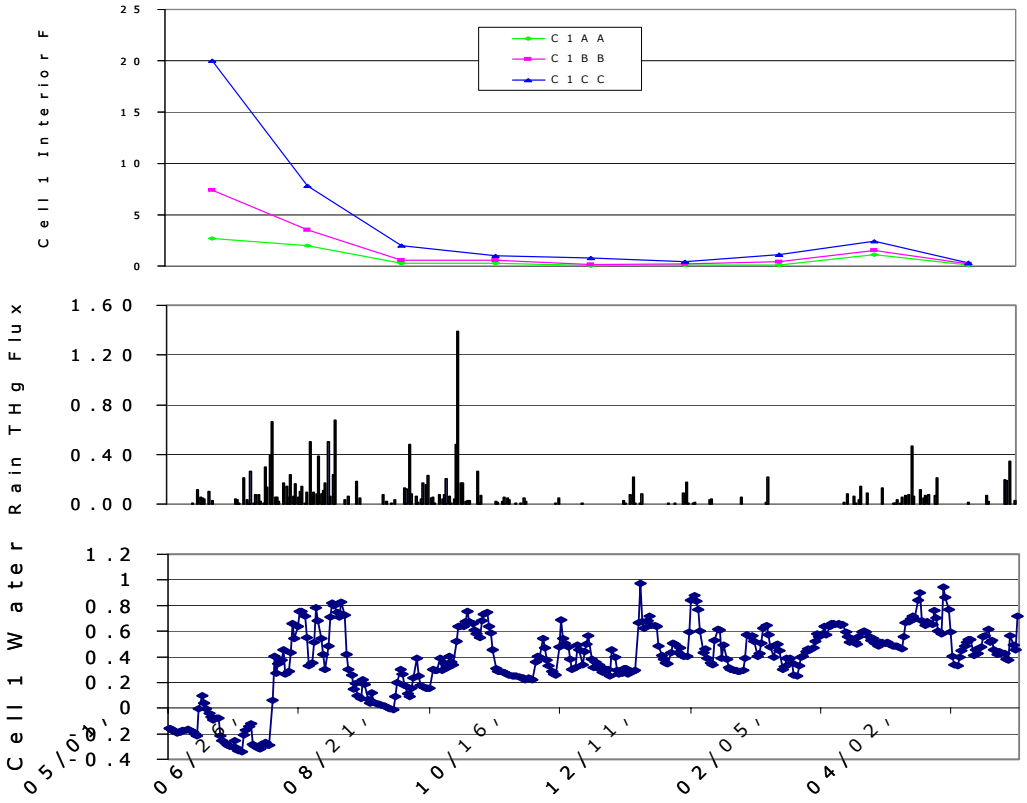

Figure 50. Interior average MeHg in interior Cell 1 versus rainfall flux (µg/m2-day) and Cell 1 water depth.

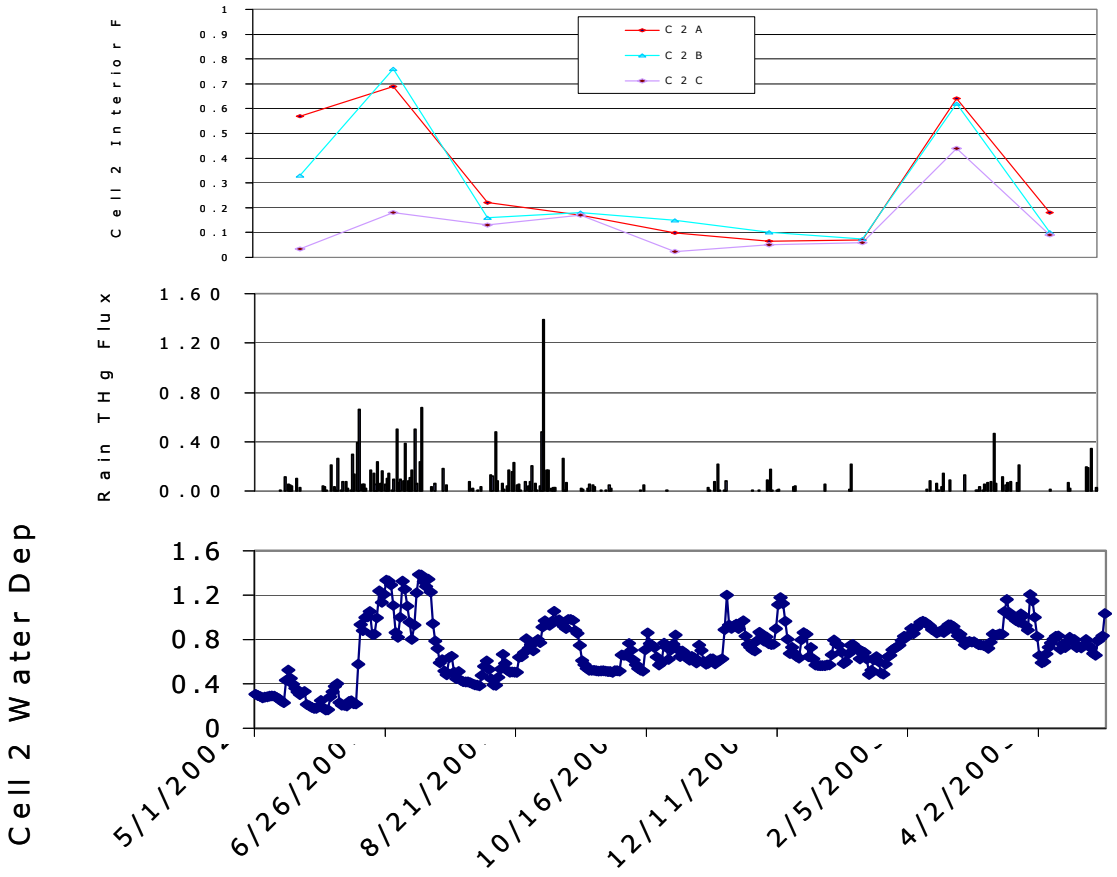

Figure 51. Interior average MeHg in interior Cell 2 versus rainfall flux (µg/m2-day) and Cell 2 water depth.

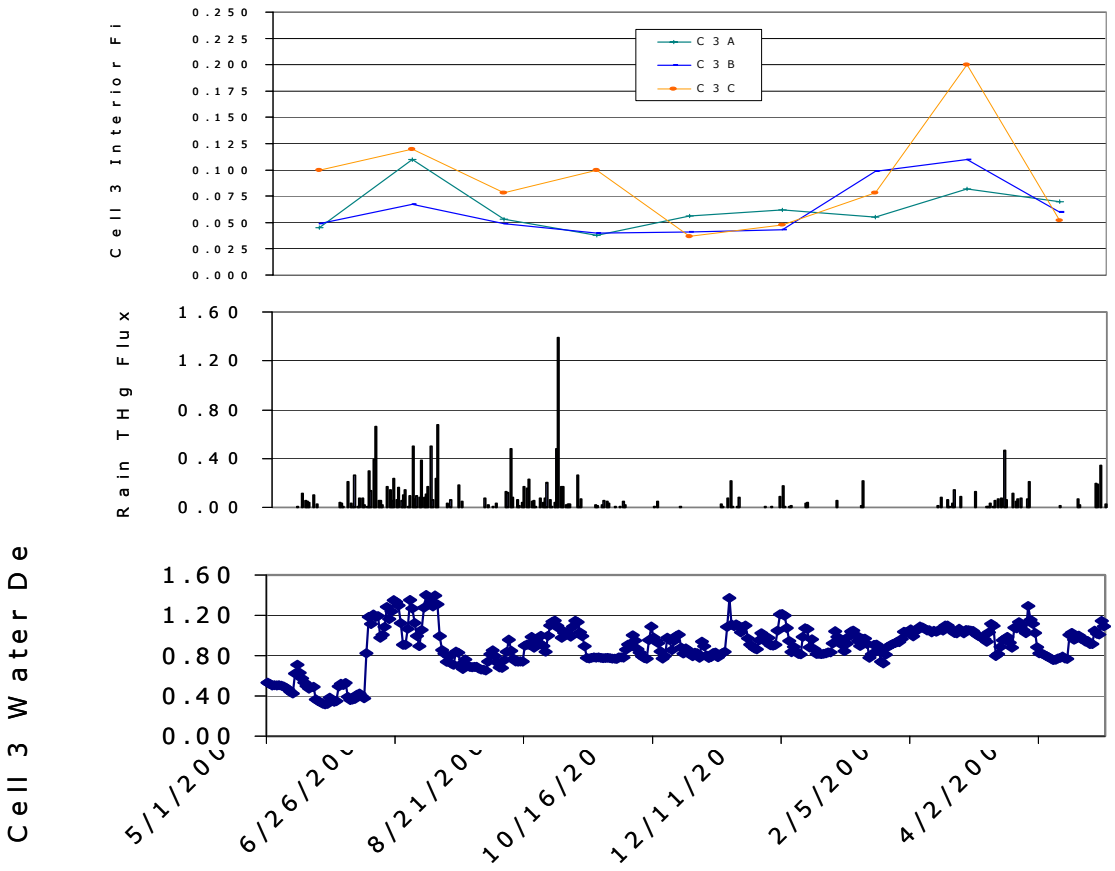

Figure 52. Interior average MeHg in interior Cell 3 versus rainfall flux (µg/m2-day) and Cell 3 water depth.

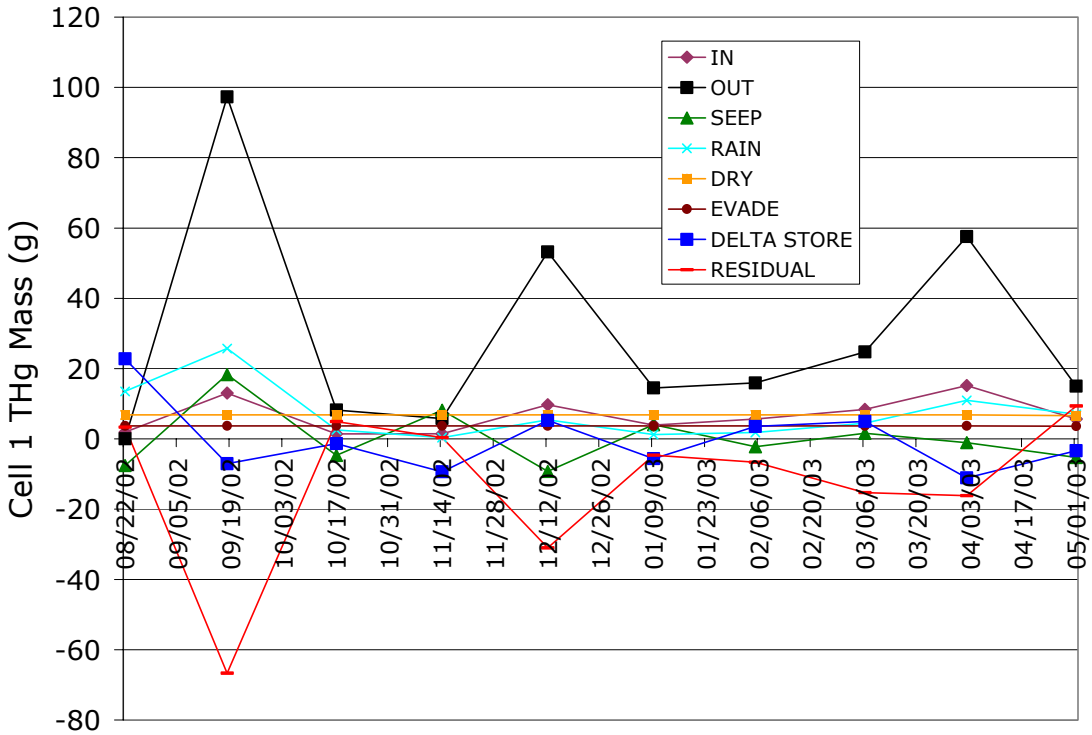

Figure 53. THg inputs, storages, and outputs for Cell 1 THg mass budget.

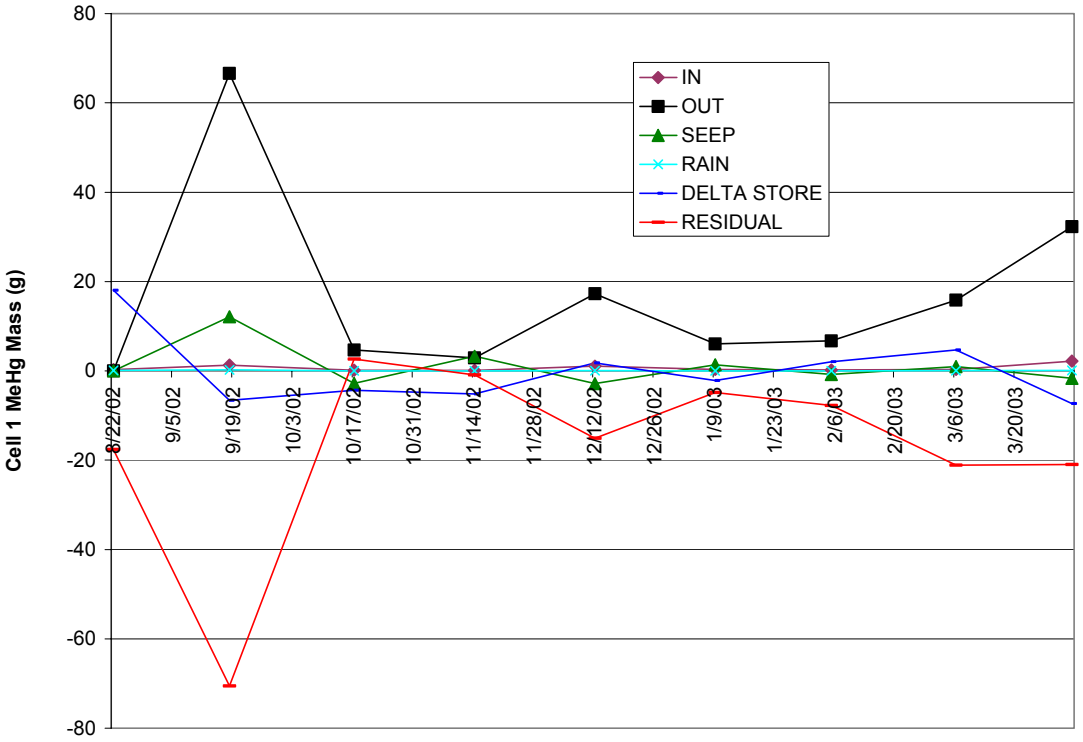

Figure 54. MeHg inputs, storages, and outputs for Cell 1 THg mass budget.

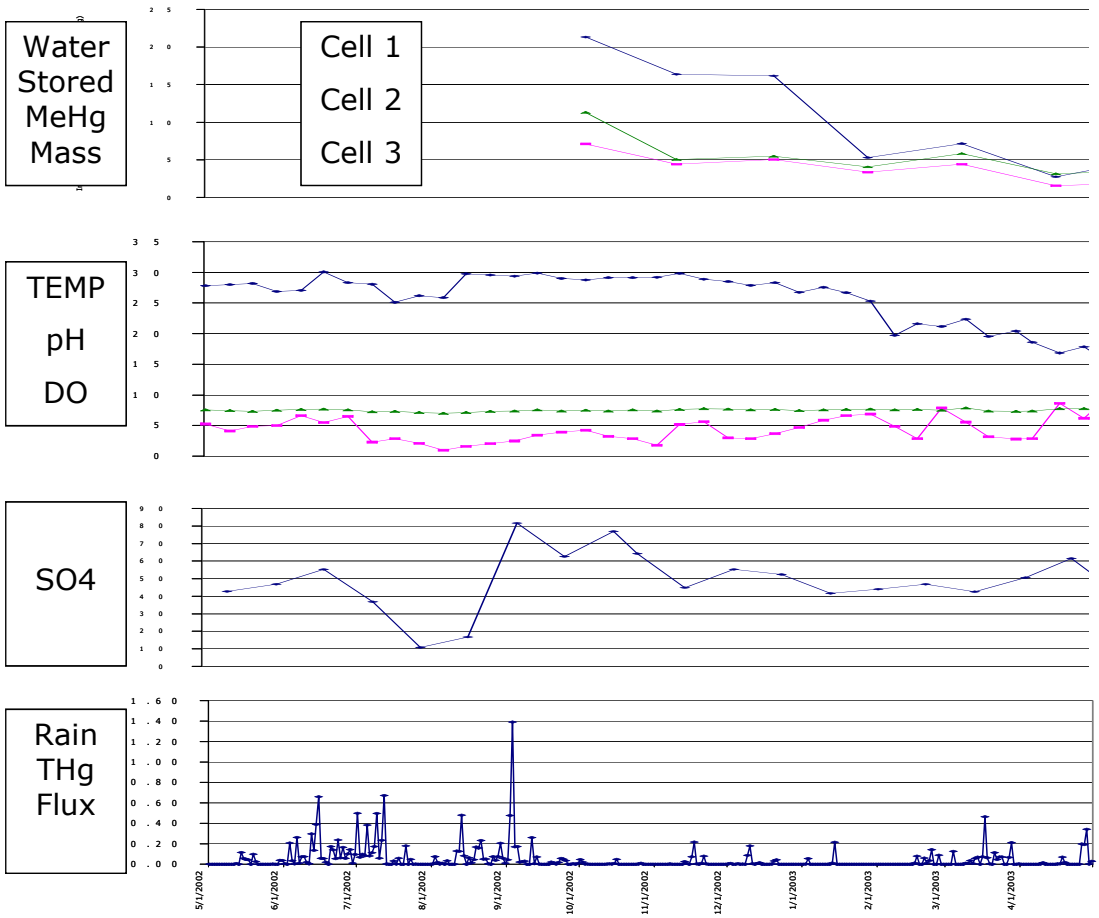

Figure 55. Cell 1 MeHg interior water mass storage versus inflow (G-328) water quality parameters and THg rain flux.

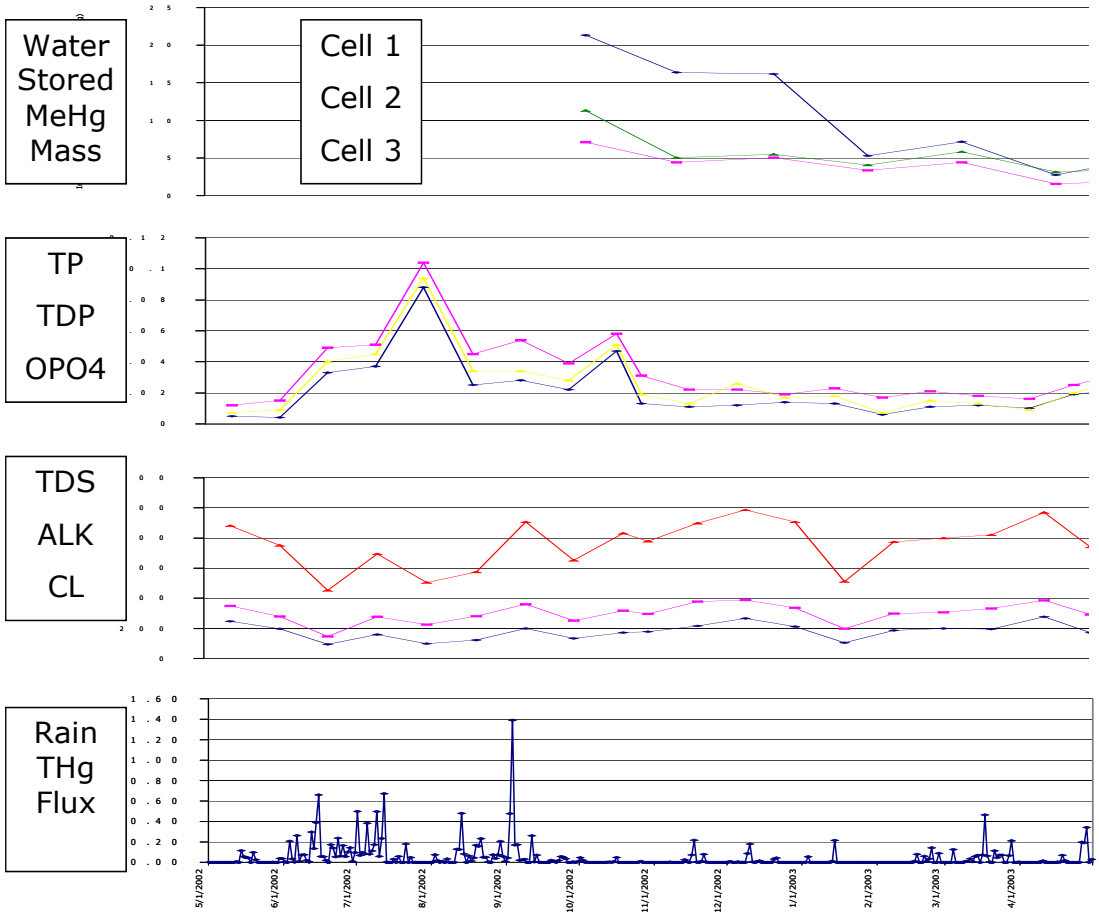

Figure 56. Cell 1 MeHg interior water mass storage versus inflow (G-328) water quality parameters and THg rain flux.

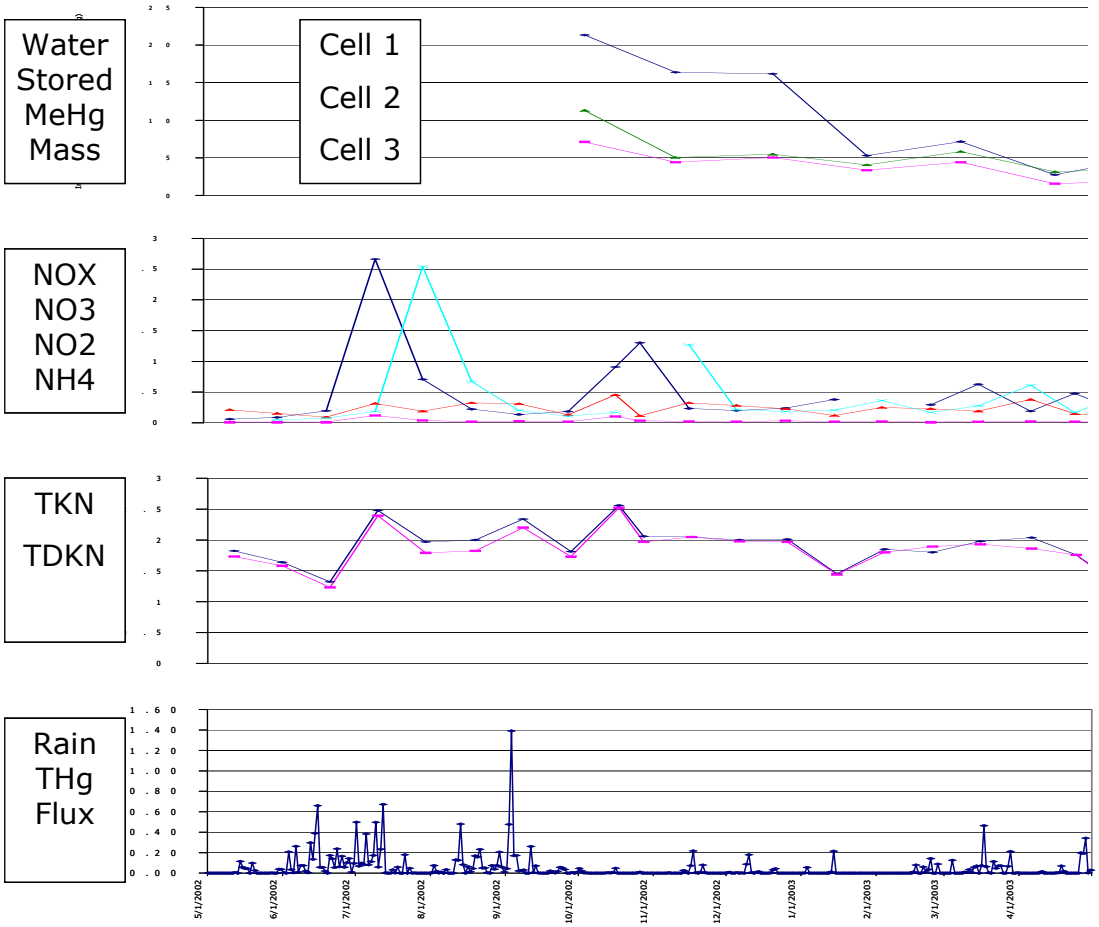

Figure 57. Cell 1 MeHg interior water mass storage versus inflow (G-328) water quality parameters and THg rain flux.

Table 1. Plan for the expanded monitoring in STA-2.

Matrix	Sites	Frequency	Types	Reps	QC	Analytes
Rain	1	52	1	1	0	U-THg
STA-2 Inflow STA-2 Inflow Cell Outflow Cell Outflow	1 1 3 3	26 26 26 26	1 1 1 1	1 1 1 1	3 0[1] 0 0[1]	U-THg, U-MeHg[2], TSS, DOC U-THg, U-MeHg[2] TSS, DOC, U-$SO_4^{=}$, Hydrolab
STA-2 Inflow Cell Outflow - Special	1 1	13 13	1 1	1 1	1 0	F-THg, F-MeHg[2] F-THg, F-MeHg[2]
Interior Water - Routine	9	13	1	1	3	F-THg, F-MeHg[2] TSS, DOC, F-$SO_4^{=}$, F-Cl, F-Fe, F-Mn, F-Ca, F-Mg, Alk., Hydrolab
Interior Water - Special	3	13	1	1	0[1]	U-THg, U-MeHg[2]
Pore Water - Tier 1	1	5 (7, 14, 28, 56, and 112 days)	1	1 (1 stratum)	1[1]	F-THg, F-MeHg[3], DOC, F-$SO_4^{=}$, F-Cl, F-$S^{=}$, F-TFe, Fe^{+2}, F-TMn, Mn^{+2}, F-TCa, F-TMg, Alk., pH, Redox, Conductivity, Prep.
Pore Water - Tier 2	1	6 (pre-flood baseline; at start-up; and quarterly thereafter)	1	3 (1 stratum)	1[1]	See Tier 1 Pore Water
Soils - Tier 1	1	5 (see Tier 1 pore water)	1	3 (1 stratum)	0	THg, MeHg[3], TS, TFe, TMn, TCa, TMg, AVS, Ash, Bulk Density, Moisture, Prep.
Soils - Tier 2	9	6	1	1 (1 stratum)	0	See Tier 1 Soils
Plants	9	2	3	1	0	THg, MeHg[3], Ash, Moisture, Prep.
Mosquitofish	9	13	1	3	0	THg[2], Moisture

Notes:
[1] QC sample requirements were completed through other sampling.
[2] Shipped to the FDEP; other analytes to contract labs.
[3] Shipped to FGS; others analytes to DB labs or equivalent.

Table 2A. Unfiltered and filtered total mercury (THg) concentrations (ng/L) in surface water samples collected biweekly at the common inflow station (G-328B) and the Cell 1 (G-330A), Cell 2 (G-332), and Cell 3 (G-334) outflow stations.

THg	Inflow (G328B)	FILTER IN-FLOW (G328B)	C1A	Cell 1 (G330A)	FILTER (G330A)	Cell 2 (G332)	FILTER Cell 2 (G332)	Cell 3 (G334)	FILTER Cell 3 (G334)	Up-Stream Outflow (G335)	FILTER Up-Stream Outflow (G335)	Down-Stream Outflow (G335)
8/7/2002	1.5	-	1.2	-	-	3.3	-	1.3	-	2.4	-	2.2
8/22/2002	2.0	0.62	6.2	11	9.8	3.2	-	1.9	-	3.0	-	2.8
9/5/2002	1.6	-	1.5	12	-	1.7	-	1.1	-	3.4	-	2.9
9/18/2002	0.96	0.5	1.2	18	-	1.5	1	0.82	-	7.3	5.4	4.0
10/3/2002	0.53	-	1.8	9.2	-	2.2	-	0.7	-	2.2	-	2.7
10/17/2002	0.69	0.45	0.92	11	-	2.0	-	0.89	0.6	5.9	-	6.5
10/31/2002	0.92	-	3	8.9	-	3.1	-	1.1	-	5.0	-	4.2
11/14/2002	0.61	0.4	0.74	8.1	6	1.8	-	0.9	-	1.7	-	2.2
11/26/2002	1.2	-	0.81	3.5	-	1.7	-	0.79	-	2.4	-	2.5
12/12/2002	0.92	0.53	0.68	3.3	-	0.99	0.76	0.51	-	1.9	-	1.4
12/30/2002	0.88	-	0.69	2.7	-	0.84	-	0.36	-	1.8	-	1.5
1/9/2003	0.55	0.29	0.74	2.9	-	0.69	-	0.43	0.41	1.7	-	1.6
1/23/2003[1]	0.74	-	14.8	2.3	-	0.61	-	0.66	-	-	-	0.63
1/30/2003	0.45	-	0.42	2.7	-	0.79	-	0.45	-	0.76	-	0.75
2/5/2003	2.3	0.53	0.6	3.8	3.5	1.2	-	0.79	-	1.7	-	2.1
2/20/2003	1.4	-	1.7	5.8	-	1.6	-	2.6	-	3.6	-	1.5
3/6/2003	0.73	0.56	2.7	7.5	-	1.6	1.0	0.91	-	2.2	-	1.1
3/20/2003	1.1	-	1.0	3.7	-	1.5	-	0.72	-	2.0	-	2.0
4/2/2003	1.4	0.58	0.64	2.2	-	0.88	-	0.59	0.31	1.2	-	1.4
4/17/2003	0.7	-	0.7	2.9	-	0.87	-	0.31	-	1.7	-	1.4
5/1/2003	1.7	0.87	0.8	3.7	2.6	0.7	-	0.59	-	1.1	-	0.95

Note:
[1] Resampled

Table 2B. Unfiltered and filtered methylmercury (MeHg) concentrations (ng/L) in surface water samples collected biweekly at the common inflow station (G-328B) and the Cell 1 (G-330A), Cell 2 (G-332), and Cell 3 (G-334) outflow stations.

MeHg	Inflow (G328B)	FILTER IN-FLOW (G328B)	C1A	Cell 1 (G330A)	FILTER (G330A)	G330B	Cell 2 (G332)	FILTER Cell 2 (G332)	Cell 3 (G334)	FILTER Cell 3 (G334)	Up Stream Outflow (G335)	FILTER Up-Stream Outflow (G335)	Down Stream Outflow (G335)
8/7/2002	0.25	-	0.32	-	-	-	1.2	-	0.24	-	0.73	-	0.68
8/22/2002	0.12	0.13	0.82	7.6	7.2	-	1.0	-	0.21	-	1.0	-	0.99
9/5/2002	0.15	-	0.39	8.4	-	-	0.38	-	0.14	-	2.0	-	1.6
9/19/2002	0.13	0.13	1.0	12	-	-	0.87	0.72	0.31	-	5.6	4.2	2.4
10/3/2002	0.092	-	0.75	7.8	-	-	1.2	-	0.15	-	1.4	-	1.7
10/17/2002	0.048	0.042	0.26	5.8	-	-	1.1	-	0.08	0.11	3.2	-	3.3
10/31/2002	0.057	-	0.26	4.2	-	-	1.0	-	0.15	-	1.8	-	1.5
11/14/2002	0.076	0.065	0.17	2.3	2.2	-	0.55	-	0.098	-	0.49	-	0.66
11/26/2002	0.081	-	0.088	0.76	-	-	0.17	-	0.07	-	0.51	-	0.48
12/12/2002	0.12	0.085	0.062	1.6	-	-	0.16	0.11	0.087	-	0.55	-	0.46
12/30/2002	0.023	-	0.14	0.98	-	-	0.14	-	0.077	-	0.58	-	0.43
1/9/2003	0.062	0.064	0.096	1.1	-	-	0.092	-	0.067	0.057	0.54	-	0.53
1/23/2003[1]	-	-	0.05	0.72	-	-	0.048	-	0.05	-	-	-	0.13
1/30/2003	0.032	-	0.068	0.97	-	-	0.035	-	0.041	-	0.081	-	0.072
2/5/2003	0.038	0.034	0.1	2.0	1.7	-	0.11	-	0.11	-	0.55	-	0.74
2/20/2003	0.07	-	0.9	4.0	-	-	0.56	-	0.86	-	1.7	-	0.53
3/6/2003	0.12	0.12	1.3	5.4	-	-	0.92	0.63	0.35	-	1.3	-	0.52
3/20/2003	0.16	-	0.4	1.8	-	-	0.48	-	0.12	-	0.81	-	0.59
4/2/2003	0.18	0.17	0.14	0.82	-	-	0.14	-	0.081	0.064	0.33	-	0.4
4/17/2003	0.15	-	0.14	1.5	-	-	0.36	-	0.1	-	0.88	-	0.62
5/1/2003	0.2	0.16	0.16	1.5	1.2	-	0.14	-	0.096	-	0.28	-	0.16

Note:
[1] Resampled

Table 2C. Unfiltered and filtered THg concentrations (ng/L) in surface water samples collected biweekly at the interior treatment cell stations in Cell 1 (C1AA, C1BB, and C1CC) (*Top*), Cell 2 (C2A, C2B, and C2C) (*Middle*), and Cell 3 (C3A, C3B, and C3C) (*Bottom*).

THg	C1AA	C1AA-F	C1BB	C1BB-F	C1CC	C1CC-F	C1 AVE
8/22/2002	7.6	5.6	16	8.1	32	24	12.57
9/18/2002	-	2.7	-	4.2	-	12	6.30
10/17/2002	-	0.99	-	1.6	-	5.0	2.53
11/14/2002	0.98	0.8	1.8	1.4	4.0	3.0	1.73
12/12/2002	-	0.61	-	0.92	-	2.9	1.48
1/9/2003	-	0.87	-	0.88	-	2.2	1.32
2/5/2003	0.76	0.65	1.5	0.98	2.9	2.4	1.34
3/6/2003	-	2.2	-	3.5	-	4.6	3.43
4/2/2003	-	0.6	-	0.7	-	1.4	0.90
5/1/2003	0.85	0.86	1.1	0.91	2.1	2.0	1.26

THg	C2A	C2A-F	C2B	C2B-F	C2C	C2C-F	C3 AVE
8/22/2002	-	3.4	-	2.1	-	0.71	2.07
9/18/2002	2.6	2	2.1	2.1	1.5	1.1	1.73
10/17/2002	-	1.3	-	1.4	-	0.87	1.19
11/14/2002	-	1.2	-	0.95	-	0.67	0.94
12/12/2002	1.2	1.1	1.2	1.0	0.59	0.52	0.87
1/9/2003	-	0.7	-	0.78	-	0.18	0.55
2/5/2003	-	0.8	-	0.78	-	0.68	0.75
3/6/2003	1.8	1.4	1.8	1.0	1.3	1.2	1.20
4/2/2003	-	0.61	-	0.53	-	0.48	0.54
5/1/2003	-	0.79	-	0.85	-	0.5	0.71

THg	C3A	C3A-F	C3B	C3B-F	C3C	C3C-F	C3 AVE
8/22/2002	-	0.72	-	1.0	-	0.56	0.76
9/18/2002	-	0.92	-	1.3	-	0.39	0.87
10/17/2002	0.47	0.36	0.62	0.61	0.82	0.5	0.49
11/14/2002	-	0.52	-	0.28	-	0.47	0.42
12/12/2002	-	0.53	-	0.48	-	0.58	0.53
1/9/2003	0.6	0.56	0.61	0.49	0.75	0.37	0.47
2/5/2003	-	0.5	-	0.51	-	0.3	0.44
3/6/2003	-	0.43	-	0.59	-	0.58	0.53
4/2/2003	0.69	0.42	0.5	0.39	0.58	0.42	0.41
5/1/2003	-	0.69	-	0.62	-	0.65	0.65

Table 2D. Unfiltered and filtered MeHg concentrations (ng/L) in surface water samples collected biweekly at the interior treatment cell stations in Cell 1 (C1AA, C1BB, and C1CC) (*Top*), Cell 2 (C2A, C2B, and C2C) (*Middle*), and Cell 3 (C3A, C3B, and C3C) (*Bottom*).

MeHg	C1AA	C1AA-F	C1BB	C1BB-F	C1CC	C1CC-F	C1 AVE
8/22/2002	2.6	2.7	8.6	7.4	20	20	10.03
9/18/2002	-	2	-	3.5	-	7.8	4.43
10/17/2002	-	0.24	-	0.57	-	2.0	0.94
11/14/2002	0.26	0.25	0.64	0.59	1.1	1.0	0.61
12/12/2002	-	0.064	-	0.16	-	0.81	0.34
1/9/2003	-	0.12	-	0.19	-	0.41	0.24
2/5/2003	0.12	0.12	0.46	0.41	1.1	1.1	0.54
3/6/2003	-	1.1	-	1.5	-	2.4	1.67
4/2/2003	-	0.1	-	0.19	-	0.31	0.20
5/1/2003	0.14	0.12	0.26	0.18	0.59	0.51	0.27

MeHg	C2A	C2A-F	C2B	C2B-F	C2C	C2C-F	C2 AVE
8/22/2002	-	0.57	-	0.33	-	0.034	0.31
9/18/2002	0.68	0.69	0.7	0.76	0.2	0.18	0.54
10/17/2002	-	0.22	-	0.16	-	0.13	0.17
11/14/2002	-	0.17	-	0.18	-	0.17	0.17
12/12/2002	0.085	0.099	0.17	0.15	0.03	0.024	0.09
1/9/2003	-	0.065	-	0.1	-	0.051	0.07
2/5/2003	-	0.07	-	0.074	-	0.058	0.07
3/6/2003	0.83	0.64	0.86	0.62	0.64	0.44	0.57
4/2/2003	-	0.18	-	0.1	-	0.091	0.12
5/1/2003	-	0.18	-	0.13	-	0.011	0.11

MeHg	C3A	C3A-F	C3B	C3B-F	C3C	C3C-F	C3 AVE
8/22/2002	-	0.045	-	0.049	-	0.100	0.06
9/18/2002	-	0.11	-	0.067	-	0.12	0.10
10/17/2002	0.13	0.053	0.079	0.049	0.052	0.078	0.06
11/14/2002	-	0.038	-	0.04	-	0.1	0.06
12/12/2002	-	0.056	-	0.041	-	0.037	0.04
1/9/2003	0.068	0.062	0.049	0.043	0.043	0.048	0.05
2/5/2003	-	0.055	-	0.099	-	0.078	0.08
3/6/2003	-	0.082	-	0.11	-	0.2	0.13
4/2/2003	0.093	0.07	0.058	0.06	0.058	0.052	0.06
5/1/2003	-	0.11	-	0.058	-	0.099	0.09

Table 3. Filtered THg concentrations (ng/L) (average n=3 replicates) in weekly integrated rain water samples from sites FL04, FL34, and FL99 used in the THg and MeHg mass budget calculations.

DATE	ENR (FL34) THg (ng/L)	ANDYTOWN (FL04) THg (ng/L)	AVE THg (ng/L)
4/30/2002	0.00	0.00	0.00
5/7/2002	0.00	0.00	0.00
5/14/2002	35.11	0.00	14.04
5/21/2002	4.41	7.04	4.58
5/28/2002	0.00	17.44	6.97
6/4/2002	25.57	10.82	14.55
6/11/2002	10.09	30.01	16.04
6/18/2002	14.93	7.20	8.85
6/25/2002	11.79	15.18	10.79
7/2/2002	9.17	20.14	11.72
7/9/2002	16.25	15.41	12.66
7/16/2002	10.45	23.19	13.46
7/23/2002	19.29	27.91	18.88
7/30/2002	0.00	31.00	12.40
8/6/2002	15.39	22.02	14.96
8/13/2002	36.82	33.71	28.21
8/20/2002	14.80	20.78	14.23
8/27/2002	66.81	20.24	34.82
9/3/2002	-	FL99	23.23
9/10/2002	-	FL99	11.64
9/17/2002	-	FL99	11.62
9/24/2002	-	FL99	6.61
10/1/2002	-	FL99	6.60
10/8/2002	-	-	0.00
10/15/2002	-	FL99	6.90
10/22/2002	-	FL99	8.20
10/29/2002	-	FL99	0.00
11/5/2002	-	FL99	0.00
11/12/2002	-	FL99	13.30
11/19/2002	-	FL99	6.40
11/26/2002	-	FL99	2.10
12/3/2002	-	FL99	5.00
12/10/2002	-	FL99	7.10
12/17/2002	-	FL99	6.80
12/23/2002	-	FL99	7.40
12/31/2002	-	FL99	0.00
1/7/2003	-	FL99	19.50
1/14/2003	-	FL99	13.70
1/21/2003	-	FL99	0.00
1/28/2003	-	FL99	0.00
2/4/2003	-	FL99	0.00
2/10/2003	-	FL99	0.20
2/18/2003	-	FL99	17.60
2/25/2003	-	FL99	7.20
3/4/2003	-	FL99	10.60
3/11/2003	-	FL99	12.40
3/18/2003	-	FL99	10.30
3/25/2003	-	FL99	6.50
4/1/2003	-	FL99	18.00
4/8/2003	-	FL99	N/A
4/15/2003	-	FL99	9.20
4/22/2003	-	FL99	16.60
4/29/2003	-	FL99	9.90

Table 4. THg, MeHg, and other constituent concentrations in soils collected from 0 to 4 cm depth at interior treatment cell monitoring sites in STA-2 Cells 1, 2, and 3 every 12 weeks in May, August, and November 2002 and January and April 2003.

STATION ID	Date	BD G/CC	ASH (%)	MOIST (%)	TP (mg/kg)	TN (mg/kg)	TCA (mg/kg)	TMG (mg/kg)	TS (mg/kg)	AVS (mg/kg)	TFE (mg/kg)	TMN (mg/kg)	THG (mg/kg)	MEHG (mg/kg)	MEHG % THG
C1AA	5/16/2002	0.104	11.8	77.66	606	33000	33000	4100	9200	150	2200	89	0.125	0.00298	0.024
C1BB	5/16/2002	0.158	12.2	78.55	432	32500	30000	4100	8200	213	1200	130	0.216	0.00665	0.031
C1CC	5/16/2002	0.157	10.5	69.21	452	32600	30000	4000	6100	19.5	1500	80	0.188	0.00552	0.029
C2A	5/16/2002	0.218	14.2	76.59	496	30500	47000	4100	4100	40.9	2300	160	0.0996	0.00053	0.005
C2B	5/16/2002	0.213	12	75.26	634	31900	-	-	3700	34.1	-	-	0.099	0.000565	0.006
C2C	5/16/2002	0.236	13	77.54	496	30000	37000	4100	3800	37.4	2700	190	0.113	0.00114	0.010
C3A	5/16/2002	0.22	13.2	67.25	518	27800	35000	5800	6000	43.8	2300	220	0.0599	-	-
C3B	5/16/2002	0.215	12	69.86	366	35300	37000	6500	5500	107	2600	55	0.0531	0.000156	0.003
C3C	5/16/2002	0.318	15	67.3	564	27300	43000	4000	3000	54.7	3200	140	0.0805	0.000272	0.003

STATION ID	Date	BD G/CC	ASH (%)	MOIST (%)	TP (mg/kg)	TN (mg/kg)	TCA (mg/kg)	TMG (mg/kg)	TS (mg/kg)	AVS (mg/kg)	TFE (mg/kg)	TMN (mg/kg)	THG (mg/kg)	MEHG (mg/kg)	MEHG % THG
C1AA	8/14/2002	0.16	13.3	81.19	408	35400	30000	3400	7200	115	1800	73	0.129	0.00504	0.039
C1BB	8/14/2002	0.12	10.7	86.21	378	30900	29000	3500	4900	165	830	82	0.147	0.0146	0.099
C1CC	8/14/2002	0.19	12.2	79.52	414	30100	31000	4000	4000	152	1500	110	0.151	0.00895	0.059
C2A	8/14/2002	0.19	20.3	78.51	690	31700	41000	3800	3800	84	4100	340	0.0776	0.000865	0.011
C2B	8/14/2002	0.2	16	78.61	478	29200	42000	3500	3100	34	2100	240	0.098	0.000576	0.006
C2C	8/14/2002	0.14	28.9	74.13	392	23300	49000	3900	3300	106	2400	120	0.086	0.000328	0.004
C3A	8/14/2002	0.17	18.8	74.7	366	27200	49000	6700	4200	194	1700	82	0.0838	0.000179	0.002
C3B	8/14/2002	0.15	18	79.66	420	26400	44000	6200	3300	182	2300	72	0.0428	0.00106	0.025
C3C	8/14/2002	0.26	18.5	68.99	558	26600	36000	6000	3000	186	2500	88	0.0801	0.000163	0.002

Table 4. Continued.

STATION ID	Date	BD G/CC	ASH (%)	MOIST (%)	TP (mg/kg)	TN (mg/kg)	TCA (mg/kg)	TMG (mg/kg)	TS (mg/kg)	AVS (mg/kg)	TFE (mg/kg)	TMN (mg/kg)	THG (mg/kg)	MEHG (mg/kg)	MEHG % THG
C1AA	11/6/2002	0.13	13.2	82.52	578	31000	31000	3600	7200	62.9	1300	89	0.108	0.000714	0.007
C1BB	11/6/2002	0.14	12.4	82.37	512	32000	27000	3500	6400	73.9	1400	160	0.172	0.00341	0.020
C1CC	11/6/2002	0.19	27.2	79.76	552	25900	29000	4300	6400	49.3	3600	120	0.187	0.00579	0.031
C2A	11/6/2002	0.14	16.5	85.25	492	29500	36000	4000	6700	108	2200	200	0.075	0.000794	0.011
C2B	11/6/2002	0.12	18.2	87.15	1250	28200	49000	3900	6000	156	1700	200	0.055	0.000275	0.005
C2C	11/6/2002	0.14	22.4	86.11	688	26900	60000	4600	5000	445	1600	160	0.041	0.000269	0.007
C3A	11/6/2002	0.2	35.9	78.95	802	21200	96000	6600	4300	23.7	2000	140	0.033	0.000051	0.002
C3B	11/6/2002	0.18	29	81.41	342	25300	47000	6500	5200	373	3300	51	0.079	0.000107	0.001
C3C	11/6/2002	0.26	19.9	75.26	636	26100	47000	7200	4700	286	2600	89	0.076	0.000169	0.002

STATION ID	Date	BD G/CC	ASH (%)	MOIST (%)	TP (mg/kg)	TN (mg/kg)	TCA (mg/kg)	TMG (mg/kg)	TS (mg/kg)	AVS (mg/kg)	TFE (mg/kg)	TMN (mg/kg)	THG (mg/kg)	MEHG (mg/kg)	MEHG % THG
C1AA	1/29/2003	0.15	15.7	85.11	714	34200	33000	3700	11500	40.2	2400	120	0.136641	0.00157	0.011
C1BB	1/29/2003	0.15	12.9	84.51	376	31600	30000	4000	4900	262	1500	110	0.17482	0.00258	0.015
C1CC	1/29/2003	0.18	12.4	81.3	646	31700	28000	3800	9200	87.1	1700	70	0.195633	0.00729	0.037
C2A	1/29/2003	0.16	17.7	84.38	624	31300	39000	4200	7800	66	2900	220	0.116197	0.00161	0.014
C2B	1/29/2003	0.16	17.9	83.66	648	30200	46000	3800	6100	136	2000	270	0.122959	0.000347	0.003
C2C	1/29/2003	0.18	18.9	83.4	608	30400	42000	3600	7400	346	2800	190	0.078571	0.00061	0.008
C3A	1/29/2003	0.2	35.1	79.89	762	22800	93000	7500	3900	93.8	2200	180	0.055708	0.000064	0.001
C3B	1/29/2003	0.17	22.6	81.55	398	25400	63000	6600	3600	561	2400	58	0.085093	0.000503	0.006
C3C	1/29/2003	0.29	23.7	74.97	750	26500	63000	6100	3800	351	3600	110	0.084298	0.00024	0.003

Table 4. Continued.

STATION ID	Date	BD G/CC	ASH (%)	MOIST (%)	TP (mg/kg)	TN (mg/kg)	TCA (mg/kg)	TMG (mg/kg)	TS (mg/kg)	AVS (mg/kg)	TFE (mg/kg)	TMN (mg/kg)	THG (mg/kg)	MEHG (mg/kg)	MEHG % THG
C1AA	4/23/2003	0.13	15.3	86.47	610	33600	31000	3900	10500	234	1900	86	0.124	0.000664	0.005
C1BB	4/23/2003	0.13	15.0	84.86	530	31400	29000	3800	9200	182	1900	150	0.128	0.00127	0.010
C1CC	4/23/2003	0.15	12.7	82.78	585	31900	29000	3700	9300	344	1900	81	0.184	0.000967	0.005
C2A	4/23/2003	0.12	16.9	87.16	460	30000	38000	4000	5700	280	2200	150	0.084	0.000857	0.010
C2B	4/23/2003	0.17	19.9	82.48	635	29400	35000	3900	4300	224	3400	250	0.102	0.000413	0.004
C2C	4/23/2003	0.19	18.4	82.19	650	30200	41000	3800	7400	240	2400	130	0.075	0.000293	0.004
C3A	4/23/2003	0.14	44.3	86.36	740	32400	120000	7500	2400	821	2100	140	0.046	0.000044	0.001
C3B	4/23/2003	0.16	17.6	81.43	320	16600	42000	6400	3400	628	2000	31	0.039	0.00015	0.004
C3C	4/23/2003	0.20	25.3	80.41	575	25000	51000	6100	7100	189	2900	58	0.026	0.000447	0.017

Table 5A. Vegetation data from STA-2 interior cells: summer 2002 campaign.

STATION ID	DATE	SAMPLE ID	SAMPLE TYPE	THg (mg/kg)	MeHg (mg/kg)	%MeHg	Hg(II) (mg/kg)
STA2C1AA	9/18/2002	P12820-2	Typha	0.00280	0.00014	5.04	-
STA2C1AA	9/18/2002	P12820-4	Cladium	0.00845	0.00037	4.40	0.00808
STA2C1AA	9/18/2002	P12820-6	periphyton	0.01850	0.00876	47.35	0.00974
STA2C1BB	9/18/2002	P12820-8	Typha	0.00607	0.00024	3.92	0.00583
STA2C1BB	9/18/2002	P12820-10	Cladium	0.00878	0.00063	7.18	0.00815
STA2C1BB	9/18/2002	P12820-12	Ludwigia	0.03820	0.02670	69.90	0.01150
STA2C1CC	9/18/2002	P12820-14	Typha	0.00757	0.00256	33.82	0.00501
STA2C1CC	9/18/2002	P12820-16	Cladium	0.01020	0.00090	8.84	0.00930
STA2C1CC	9/18/2002	P12820-18	Diodia	0.04800	0.02270	47.29	0.02530
STA2C2A	9/18/2002	P12819-2	Typha	0.00350	0.00012	3.34	0.00338
STA2C2A	9/18/2002	P12819-4	Cladium	0.00833	0.00018	2.17	0.00815
STA2C2A	9/18/2002	P12819-6	periphyton	0.01040	0.00076	7.35	0.00964
STA2C2A	9/18/2002	P12819-8	Utricularia	0.01990	0.00218	10.95	0.01772
STA2C2B	9/18/2002	P12819-10	Typha	0.00325	0.00013	4.00	0.00312
STA2C2B	9/18/2002	P12819-12	Cladium	0.00674	0.00037	5.50	0.00637
STA2C2B	9/18/2002	P12819-14	Ludwigia	0.02100	0.00221	10.52	0.01879
STA2C2B	9/18/2002	P12819-16	Panicum	0.02790	0.00147	5.27	0.02643
STA2C2C	9/18/2002	P12819-22	periphyton	0.01000	0.00018	1.79	0.00982
STA2C2C	9/18/2002	P12819-18	Typha	0.00911	0.00006	0.61	0.00905
STA2C2C	9/18/2002	P12819-20	Cladium	0.00750	0.00021	2.83	0.00729
STA2C2C	9/18/2002	P12819-24	Ludwigia	0.01510	0.00170	11.26	0.01340
STA2C3A	9/18/2002	P12817-2	Najas	0.00349	0.00057	16.45	0.00292
STA2C3A	9/18/2002	P12817-8	Sagittaria	0.00730	0.00047	6.48	0.00683
STA2C3A	9/18/2002	P12817-4	blue-green algae	0.00593	0.00019	3.14	0.00574
STA2C3A	9/18/2002	P12817-6	Typha	0.01050	0.00002	0.23	0.01048
STA2C3B	9/18/2002	P12817-10	Najas	0.00500	0.00206	41.20	0.00294
STA2C3B	9/18/2002	P12817-12	Potomogonian	0.00414	0.00060	14.47	0.00354
STA2C3C	9/18/2002	P12817-18	Najas	0.00752	0.00203	26.99	0.00549
STA2C3C	9/18/2002	P12817-14	Typha	0.00400	0.00008	2.08	0.00392
STA2C3C	9/18/2002	P12817-16	periphyton	0.00481	0.00014	2.95	0.00467
STA2C3C	9/18/2002	P12817-20	blue-green algae	0.00698	0.00044	6.25	0.00654
STA2C3C	9/18/2002	P12817-22	green algae	0.00804	0.00057	7.14	0.00747

Table 5B. Vegetation data from STA-2 interior cells: winter 2003 campaign.

STATION ID	DATE	SAMPLE ID	SAMPLE TYPE	THg (mg/kg)	MeHg (mg/kg)	Hg(II) (mg/kg)	%MeHg
STA2C1AA	2/24/2003	P14311-1	Typha	0.00136	0.00002	0.00134	1.1
STA2C1AA	2/24/2003	P14311-2	Typha	-	-	-	-
STA2C1AA	2/24/2003	P14311-3	Cladium	0.00235	0.00010	0.00225	4.3
STA2C1AA	2/24/2003	P14311-4	Cladium	-	-	-	-
STA2C1AA	2/24/2003	P14311-5	Polygonia	0.00087	0.00033	0.00054	37.5
STA2C1AA	2/24/2003	P14311-6	Polygonia	-	-	-	-
STA2C1AA	2/24/2003	P14311-7	periphyton	0.00285	0.00046	0.00239	16.0
STA2C1AA	2/24/2003	P14311-8	periphyton	-	-	-	-
STA2C1BB	2/24/2003	P14311-10	Typha	0.00139	0.00002	0.00137	1.2
STA2C1BB	2/24/2003	P14311-9	Typha	-	-	-	-
STA2C1BB	2/24/2003	P14311-11	Cladium	0.00339	0.00009	0.00330	2.7
STA2C1BB	2/24/2003	P14311-12	Cladium	-	-	-	-
STA2C1BB	2/24/2003	P14311-13	Ludwigia	0.00283	0.00011	0.00272	3.8
STA2C1BB	2/24/2003	P14311-14	Ludwigia	-	-	-	-
STA2C1BB	2/24/2003	P14311-15	periphyton	0.00323	0.00017	0.00306	5.4
STA2C1BB	2/24/2003	P14311-16	periphyton	-	-	-	-
STA2C1CC	2/24/2003	P14311-17	Typha	0.00189	0.00002	0.00187	1.2
STA2C1CC	2/24/2003	P14311-18	Typha	-	-	-	-
STA2C1CC	2/24/2003	P14311-19	Cladium	0.00354	0.00032	0.00322	9.0
STA2C1CC	2/24/2003	P14311-20	Cladium	-	-	-	-
STA2C1CC	2/24/2003	P14311-23	Ludwigia	0.00530	0.00130	0.00400	24.6
STA2C1CC	2/24/2003	P14311-24	Ludwigia	-	-	-	-
STA2C1CC	2/24/2003	P14311-21	Nymphaea	0.00095	0.00033	0.00062	34.8
STA2C1CC	2/24/2003	P14311-22	Nymphaea	-	-	-	-
STA2C1CC	2/24/2003	P14311-25	periphyton	0.01146	0.00194	0.00953	16.9
STA2C1CC	2/24/2003	P14311-26	periphyton	-	-	-	-
STA2C2A	2/24/2003	P14311-27	Typha	0.00107	0.00001	0.00106	0.8
STA2C2A	2/24/2003	P14311-28	Typha	-	-	-	-
STA2C2A	2/24/2003	P14311-29	Cladium	0.00499	0.00004	0.00495	0.8
STA2C2A	2/24/2003	P14311-30	Cladium	-	-	-	-
STA2C2A	2/24/2003	P14311-31	Nymphaea	0.00118	0.00004	0.00114	3.7
STA2C2A	2/24/2003	P14311-32	Nymphaea	-	-	-	-
STA2C2A	2/24/2003	P14311-35	Utricularia	0.00309	0.00066	0.00243	21.5
STA2C2A	2/24/2003	P14311-36	Utricularia	-	-	-	-
STA2C2A	2/24/2003	P14311-33	periphyton	0.00613	0.00045	0.00568	7.4
STA2C2A	2/24/2003	P14311-34	periphyton	-	-	-	-
STA2C2B	2/24/2003	P14311-37	Typha	0.00265	0.00001	0.00264	0.4
STA2C2B	2/24/2003	P14311-38	Typha	-	-	-	-
STA2C2B	2/24/2003	P14311-39	Cladium	0.00467	0.00005	0.00461	1.1
STA2C2B	2/24/2003	P14311-40	Cladium	-	-	-	-
STA2C2B	2/24/2003	P14311-41	Nymphaea	0.00069	0.00005	0.00065	6.5
STA2C2B	2/24/2003	P14311-42	Nymphaea	-	-	-	-
STA2C2B	2/24/2003	P14311-43	Utricularia	0.00117	0.00028	0.00089	23.8
STA2C2B	2/24/2003	P14311-44	Utricularia	-	-	-	-
STA2C2B	2/24/2003	P14311-45	green algae	0.00522	0.00024	0.00499	4.5
STA2C2B	2/24/2003	P14311-46	green algae	-	-	-	-
STA2C2C	2/24/2003	P14311-47	Typha	0.00150	0.00000	0.00150	0.3
STA2C2C	2/24/2003	P14311-48	Typha	-	-	-	-
STA2C2C	2/24/2003	P14311-49	Cladium	0.00227	0.00011	0.00216	4.9
STA2C2C	2/24/2003	P14311-50	Cladium	-	-	-	-
STA2C2C	2/24/2003	P14311-51	Nymphaea	0.00084	0.00005	0.00079	6.3
STA2C2C	2/24/2003	P14311-52	Nymphaea	-	-	-	-
STA2C2C	2/24/2003	P14311-53	Utricularia	0.00203	0.00045	0.00159	21.9

Table 6A. STA-2 special studies mosquitofish data: Cell 1.

Date	C1AA mean (mg/kg wet)	stdev	C1BB mean (mg/kg wet)	stdev	C1CC mean (mg/kg wet)	stdev
8/27/2002	0.1067	0.0058	0.3300	0.0000	0.2133	0.0153
9/26/2002	0.1067	0.0058	0.4300	0.0346	0.3900	0.0300
10/22/2002	0.0870	0.0036	0.2567	0.0208	0.3967	0.0252
11/21/2002	0.1267	0.0058	0.2767	0.0289	0.2367	0.0058
12/18/2002	0.1100	0.0000	0.2433	0.0153	0.1900	0.0100
1/15/2003	0.0370	0.0026	0.1167	0.0153	0.1200	0.0200
2/12/2003	0.0647	0.0058	0.1567	0.0058	0.1533	0.0058
3/12/2003	0.0527	0.0032	0.0917	0.0035	0.1600	0.0173
4/9/2003	0.0480	0.0020	0.1133	0.0058	0.1133	0.0058

Table 6B. STA-2 special studies mosquitofish data: Cell 2.

Date	C2A mean (mg/kg wet)	stdev	C2B mean (mg/kg wet)	stdev	C2C mean (mg/kg wet)	stdev
8/27/2002	0.0560	0.0052	0.0633	0.0029	0.0323	0.0012
9/26/2002	0.0790	0.0036	0.0460	0.0046	0.0230	0.0010
10/22/2002	0.0310	0.0020	0.0220	0.0010	0.0130	0.0000
11/21/2002	0.0283	0.0025	0.0270	0.0030	0.0193	0.0015
12/18/2002	0.0337	0.0015	0.0173	0.0012	0.0113	0.0006
1/15/2003	0.0373	0.0045	0.0253	0.0006	0.0140	0.0010
2/12/2003	0.0323	0.0025	0.0183	0.0006	0.0086	0.0007
3/12/2003	0.0317	0.0023	0.0230	0.0010	0.0110	0.0000
4/9/2003	0.0360	0.0020	0.0320	0.0000	0.0170	0.0000

Table 6C. STA-2 special studies mosquitofish data: Cell 3.

Date	C3A mean (mg/kg wet)	stdev	C3B mean (mg/kg wet)	stdev	C3C mean (mg/kg wet)	stdev
8/27/2002	0.0097	0.0005	0.0143	0.0058	0.0283	0.0006
9/26/2002	0.0117	0.0012	0.0213	0.0006	0.0307	0.0012
10/22/2002	0.0038	0.0002	0.0084	0.0004	0.0163	0.0006
11/21/2002	0.0064	0.0008	0.0177	0.0012	0.0157	0.0021
12/18/2002	0.0043	0.0006	0.0137	0.0006	0.0160	0.0017
1/15/2003	0.0063	0.0005	0.0127	0.0021	0.0203	0.0021
2/12/2003	0.0024	0.0003	0.0113	0.0006	0.0133	0.0006
3/12/2003	0.0059	0.0006	0.0180	0.0010	0.0197	0.0006
4/9/2003	0.0070	0.0003	0.0177	0.0006	0.0223	0.0012

Table 7A. Plant/soil bioconcentration factors (SBCFs) and plant/water bioconcentration factors (BCFs) for summer sampling campaign: September 2002.

STATION ID	DATE	SAMPLE ID	SAMPLE TYPE	SOIL (1) SBCF THg	SOIL (1) SBCF MeHg	WATER (2) BCF THg (L/kg)	WATER (2) BCF MeHg (L/kg)	WATER (2) BCF Hg(II) (L/kg)
STA2C1AA	9/18/2002	P12820-2	Typha	0.000	0.028	-	60	-
STA2C1AA	9/18/2002	P12820-4	Cladium	0.066	0.074	2036	158	4694
STA2C1AA	9/18/2002	P12820-6	periphyton	0.143	1.738	4458	3728	10278
STA2C1BB	9/18/2002	P12820-8	Typha	0.041	0.016	987	44	8671
STA2C1BB	9/18/2002	P12820-10	Cladium	0.060	0.043	1428	116	12543
STA2C1BB	9/18/2002	P12820-12	Ludwigia	0.260	1.829	6211	4899	54571
STA2C1CC	9/18/2002	P12820-14	Typha	0.050	0.286	421	184	1846
STA2C1CC	9/18/2002	P12820-16	Cladium	0.068	0.101	567	65	2488
STA2C1CC	9/18/2002	P12820-18	Diodia	0.318	2.536	2667	1633	11707
STA2C2A	9/18/2002	P12819-2	Typha	0.045	0.135	1296	186	1691
STA2C2A	9/18/2002	P12819-4	Cladium	0.107	0.209	3085	287	4024
STA2C2A	9/18/2002	P12819-6	periphyton	0.134	0.883	3852	1213	5024
STA2C2A	9/18/2002	P12819-8	Utricularia	0.256	2.521	7370	3460	9614
STA2C2B	9/18/2002	P12819-10	Typha	0.033	0.226	1548	239	2090
STA2C2B	9/18/2002	P12819-12	Cladium	0.069	0.645	3210	681	4334
STA2C2B	9/18/2002	P12819-14	Ludwigia	0.214	3.840	10000	4055	13505
STA2C2B	9/18/2002	P12819-16	Panicum	0.285	2.554	13286	2697	17942
STA2C2C	9/18/2002	P12819-22	periphyton	0.116	0.545	11050	1673	12531
STA2C2C	9/18/2002	P12819-18	Typha	0.106	0.171	10066	523	11416
STA2C2C	9/18/2002	P12819-20	Cladium	0.087	0.646	8287	1981	9398
STA2C2C	9/18/2002	P12819-24	Ludwigia	0.176	5.178	16685	15888	18922
STA2C3A	9/18/2002	P12817-2	Najas	0.042	3.198	4256	7406	4700
STA2C3A	9/18/2002	P12817-8	Sagittaria	0.000	2.635	-	6103	-
STA2C3A	9/18/2002	P12817-4	blue-green algae	0.071	1.036	7232	2400	7987
STA2C3A	9/18/2002	P12817-6	Typha	0.125	0.134	12805	310	14141
STA2C3B	9/18/2002	P12817-10	Najas	0.117	1.943	4348	35517	4579
STA2C3B	9/18/2002	P12817-12	Potomogonian	0.097	0.565	3600	10328	3791
STA2C3C	9/18/2002	P12817-18	Typha	0.094	12.419	15832	18455	20603
STA2C3C	9/18/2002	P12817-14	Typha	0.050	0.508	8421	755	10959
STA2C3C	9/18/2002	P12817-16	periphyton	0.060	0.869	10126	1291	13178
STA2C3C	9/18/2002	P12817-20	blue-green algae	0.087	2.667	14695	3964	19123
STA2C3C	9/18/2002	P12817-22	green algae	0.100	3.512	16926	5218	22027

Notes:
(1) Based on the results from the soil sample collected at same site on 8/14/2002.
(2) Based on the results from the water sample collected at same site on 9/19/2002.

Table 7B. Plant/soil bioconcentration factors (SBCFs) and plant/water bioconcentration factors (BCFs) for winter sampling campaign: February 2003.

STATION ID	DATE	SAMPLE ID	SAMPLE TYPE	SOIL (1) SBCF THg	SOIL (1) SBCF MeHg	WATER (2) BCF THg	WATER (2) BCF MeHg	WATER (2) BCF Hg(II)
STA2C1AA	2/24/2003	P14311-1	Typha	0.010	0.010	2085	125	2528
STA2C1AA	2/24/2003	P14311-3	Cladium	0.017	0.065	3618	850	4245
STA2C1AA	2/24/2003	P14311-5	Polygonia	0.006	0.208	1338	2717	1026
STA2C1AA	2/24/2003	P14311-7	periphyton	0.021	0.290	4377	3800	4508
STA2C1BB	2/24/2003	P14311-10	Typha	0.008	0.007	1413	41	2400
STA2C1BB	2/24/2003	P14311-11	Cladium	0.019	0.035	3459	220	5789
STA2C1BB	2/24/2003	P14311-13	Ludwigia	0.016	0.042	2890	266	4777
STA2C1BB	2/24/2003	P14311-15	periphyton	0.018	0.067	3296	422	5363
STA2C1CC	2/24/2003	P14311-17	Typha	0.010	0.003	787	21	1435
STA2C1CC	2/24/2003	P14311-19	Cladium	0.018	0.044	1475	291	2477
STA2C1CC	2/24/2003	P14311-23	Ludwigia	0.027	0.179	2210	1184	3078
STA2C1CC	2/24/2003	P14311-21	Nymphaea	0.005	0.045	395	300	475
STA2C1CC	2/24/2003	P14311-25	periphyton	0.059	0.266	4776	1762	7327
STA2C2A	2/24/2003	P14311-27	Typha	0.009	0.006	1333	129	1448
STA2C2A	2/24/2003	P14311-29	Cladium	0.043	0.026	6238	600	6778
STA2C2A	2/24/2003	P14311-31	Nymphaea	0.010	0.027	1475	629	1556
STA2C2A	2/24/2003	P14311-35	Utricularia	0.027	0.412	3861	9471	3323
STA2C2A	2/24/2003	P14311-33	periphyton	0.053	0.280	7660	6443	7777
STA2C2B	2/24/2003	P14311-37	Typha	0.022	0.029	3399	135	3741
STA2C2B	2/24/2003	P14311-39	Cladium	0.038	0.150	5982	703	6535
STA2C2B	2/24/2003	P14311-41	Nymphaea	0.006	0.130	886	608	915
STA2C2B	2/24/2003	P14311-43	Utricularia	0.009	0.798	1495	3743	1259
STA2C2B	2/24/2003	P14311-45	green algae	0.042	0.677	6697	3176	7067
STA2C2C	2/24/2003	P14311-47	Typha	0.019	0.000	2206	-	2412
STA2C2C	2/24/2003	P14311-49	Cladium	0.029	0.180	3335	1897	3469
STA2C2C	2/24/2003	P14311-51	Nymphaea	0.011	0.087	1240	914	1270
STA2C2C	2/24/2003	P14311-53	Utricularia	0.026	0.731	2991	7690	2553
STA2C2C	2/24/2003	P14311-55	green algae	0.012	0.285	1374	3000	1222
STA2C3A	2/24/2003	P14312-1	Najas	0.020	1.844	2272	2145	2288
STA2C3A	2/24/2003	P14312-3	Potamogoton	0.008	2.531	896	2945	643
STA2C3B	2/24/2003	P14312-5	Najas	0.003	0.064	441	323	470
STA2C3B	2/24/2003	P14312-7	Potamogoton	0.004	0.139	745	707	754
STA2C3C	2/24/2003	P14312-10	periphyton	0.010	0.175	1645	889	1827
STA2C3C	2/24/2003	P14312-11	Potamogoton	0.004	0.450	1220	1385	1162
STA2C3C	2/24/2003	P14312-13	Panicum	0.010	0.642	2877	1974	3194
STA2C3C	2/24/2003	P14312-15	Typha	0.023	0.050	6407	154	8604

Notes:
(1) Based on the results from the soil sample collected at same site on 1/29/2003.
(2) Based on the results from the water sample collected at same site on 2/6/2003.

Table 8A. Mosquitofish water bioaccumulation factors (BAFs) and soil bioaccumulation factors (SBAFs): Cell 1.

	STA-2 CELL 1 STATIONS					
	STA2C1AA		**STA2C1BB**		**STA2C1CC**	
	Mosquitofish Water BAF (1)	**Soil BAF(2)**	**Mosquitofish Water BAF (1)**	**Soil BAF(2)**	**Mosquitofish Water BAF (1)**	**Soil BAF(2)**
Average:	450651	80	473473	55	177174	29
Date						
8/22/2002	39506	21	44595	23	10667	24
9/18/2002	53333	-	122857	-	50000	-
10/17/2002	362500	-	450292	-	198333	-
11/14/2002	506667	177	468927	81	236667	41
12/12/2002	1718750	-	1520833	-	234568	-
1/9/2003	308333	-	614035	-	292683	-
2/5/2003	538889	41	382114	61	139394	21
3/6/2003	47879	-	61111	-	66667	-
4/2/2003	480000	-	596491	-	365591	-

Notes:

(1) Calculated by dividing mosquitofish THg conc. by filtered MeHg conc. from previous week.

(2) Calculated by dividing mosquitofish THg conc. by soil MeHg conc. from previous two weeks.

Table 8B. Mosquitofish water bioaccumulation factors (BAFs) and soil bioaccumulation factors (SBAFs): Cell 2.

	STA-2 CELL 2 STATIONS					
	STA2C2A		**STA2C2B**		**STA2C2C**	
	Mosquitofish Water BAF (1)	**Soil BAF(2)**	**Mosquitofish Water BAF (1)**	**Soil BAF(2)**	**Mosquitofish Water BAF (1)**	**Soil BAF(2)**
Average:	238458	40	168187	87	266589	61
Date						
8/22/2002	98246	65	191919	110	950980	98
9/18/2002	114493	-	60526	-	127778	-
10/17/2002	140909	-	137500	-	100000	-
11/14/2002	166667	36	150000	98	113725	72
12/12/2002	340067	-	115556	-	472222	-
1/9/2003	574359	-	253333	-	274510	-
2/5/2003	461905	20	247748	53	148276	14
3/6/2003	49479	-	37097	-	25000	-
4/2/2003	200000	-	320000	-	186813	-

Notes:
(1) Calculated by dividing mosquitofish THg conc. by filtered MeHg conc. from previous week.
(2) Calculated by dividing mosquitofish THg conc. by soil MeHg conc. from previous two weeks.

Table 8C. Mosquitofish water bioaccumulation factors (BAFs) and soil bioaccumulation factors (SBAFs): Cell 3.

	STA-2 CELL 3 STATIONS					
	STA2C3A		**STA2C3B**		**STA2C3C**	
	Mosquitofish Water BAF (1)	**Soil BAF(2)**	**Mosquitofish Water BAF (1)**	**Soil BAF(2)**	**Mosquitofish Water BAF (1)**	**Soil BAF(2)**
Average:	106221	73	269387	67	273307	107
Date						
8/22/2002	215556	54	292517	14	283333	173
9/18/2002	106061	-	318408	-	255556	-
10/17/2002	71069	-	171429	-	209402	-
11/14/2002	168421	125	441667	165	156667	93
12/12/2002	76190	-	333333	-	432432	-
1/9/2003	101613	-	294574	-	423611	-
2/5/2003	44242	38	114478	23	170940	56
3/6/2003	72358	-	163636	-	98333	-
4/2/2003	100476	-	294444	-	429487	-

Notes:
(1) Calculated by dividing mosquitofish THg conc. by filtered MeHg conc. from previous week.
(2) Calculated by dividing mosquitofish THg conc. by soil MeHg conc. from previous two weeks.

Table 9A. STA-2 mercury mass budget results: Cell 1.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	Dry	ET or Evasion	Change Water Storage
Water	[m^3]	5.83E+07	5.24E+07	-1.32E+06	1.03E+07	0.00E+00	1.04E+07	7.05E+06
THg	[g]	6.63E+01	2.92E+02	2.85E+01	1.32E+02	8.86E+01	4.19E+01	-1.83E+01
MeHg	[g]	6.59E+00	1.59E+02	1.37E+01	1.05E+00	0.00E+00	0.00E+00	-6.01E+00
Hg(II)	[g]	5.97E+01	1.33E+02	1.49E+01	1.30E+02	8.86E+01	4.19E+01	-1.23E+01

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [Dry/ TOT IN]	% [Evasion/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [1-Out/In]	% Removal 1-TOT OUT / TOT IN
Water	[%]	85	85	-2	15	0	17	11	24	10
THg	[%]	23	81	8	46	31	12	-5	-2	-83
MeHg	[%]	86	92	8	14	0	0	-3	-1981	-2160
Hg(II)	[%]	21	70	8	47	32	22	-6	52	0

Table 9B. STA-2 mercury mass budget results: Cell 2.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	Dry	ET or Evasion	Change Water Storage
Water	[m^3]	1.50E+08	1.10E+08	3.37E+07	1.15E+07	0.00E+00	1.17E+07	0.00E+00
THg	[g]	2.44E+02	1.50E+02	3.72E+01	1.47E+02	9.88E+01	4.67E+01	-2.20E+01
MeHg	[g]	2.72E+01	3.74E+01	7.01E+00	1.17E+00	0.00E+00	0.00E+00	-3.89E+00
Hg(II)	[g]	2.17E+02	1.12E+02	3.02E+01	1.46E+02	9.88E+01	4.67E+01	-1.82E+01

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [Dry/ TOT IN]	% [Evasion/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [1-Out/In]	% Removal $\frac{\text{1-TOT OUT}}{\text{TOT IN}}$
Water	[%]	93	71	22	7	0	7	0	32	4
THg	[%]	50	64	16	30	20	20	-9	69	40
MeHg	[%]	96	84	16	4	0	0	-9	-32	-56
Hg(II)	[%]	47	59	16	32	21	25	-10	76	48

Table 9C. STA-2 mercury mass budget results: Cell 3.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	Dry	ET or Evasion	Change Water Storage
Water	[m^3]	2.02E+08	1.25E+08	7.15E+07	1.15E+07	0.00E+00	1.17E+07	0.00E+00
THg	[g]	3.03E+02	1.01E+02	7.02E+01	1.47E+02	9.88E+01	4.67E+01	-1.75E+01
MeHg	[g]	3.22E+01	1.51E+01	8.53E+00	1.17E+00	0.00E+00	0.00E+00	-2.15E+00
Hg(II)	[g]	2.70E+02	8.60E+01	6.17E+01	1.46E+02	7.28E+01	4.67E+01	-1.53E+01

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [Dry/ TOT IN]	% [Evasion/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [1-Out/In]	% Removal 1-TOT OUT / TOT IN
Water	[%]	95	60	34	5	0	6	0	41	2
THg	[%]	55	46	32	27	18	21	-8	82	51
MeHg	[%]	96	64	36	4	0	0	-9	55	29
Hg(II)	[%]	55	44	32	30	15	24	-8	82	53

Table 9D. STA-2 mercury mass budget results: Cells 1, 2, and 3 combined.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	Dry	ET or Evasion	Change Water Storage
Water	[m^3]	4.11E+08	2.88E+08	1.04E+08	3.33E+07	0.00E+00	3.37E+07	7.05E+06
THg	[g]	6.13E+02	5.43E+02	1.36E+02	4.25E+02	2.86E+02	1.35E+02	-5.78E+01
MeHg	[g]	6.60E+01	2.11E+02	2.92E+01	3.40E+00	0.00E+00	0.00E+00	-1.20E+01
Hg(II)	[g]	5.47E+02	3.31E+02	1.07E+02	4.22E+02	2.11E+02	1.35E+02	-4.58E+01

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [Dry/ TOT IN]	% [Evasion/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [1-Out/In]	% Removal 1-TOT OUT / TOT IN
Water	[%]	92	68	24	8	0	8	2	35	4
THg	[%]	46	67	17	32	22	17	-7	59	22
MeHg	[%]	95	88	12	5	0	0	-5	-205	-247
Hg(II)	[%]	46	58	19	36	18	24	-8	72	41

Table 10A. STA-2 other constituent mass budget results: Cell 1.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	ET or Evasion	Change Water Storage	HRT	Ave Stage
Water	[m^3]	5.83E+07	5.24E+07	-1.32E+06	1.03E+07	1.04E+07	7.05E+06	1.87E+01	3.71E-01
CL	[g]	1.21E+10	8.73E+09	-1.24E+08	0.00E+00	0.00E+00	1.18E+09	0.00E+00	0.00E+00
TP	[g]	1.66E+06	7.37E+05	7.98E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NO_X	[g]	2.76E+07	3.89E+05	-4.32E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SO_4	[g]	2.83E+09	2.23E+09	-7.57E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
DOC	[g]	1.74E+09	1.89E+09	-9.05E+07	0.00E+00	2.99E+01	3.61E+01	0.00E+00	0.00E+00

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [ET/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [Out]/[In]	% Removal $\frac{\text{TOT OUT}}{\text{TOT IN}}$	% Residual Residual/ TOT IN
Water	[%]	85	85	-2	15	17	11	0	0	15
CL	[%]	100	101	-1	0	0	14	28	29	19
TP	[%]	100	90	10	0	0	0	56	51	51
NO_X	[%]	100	-10	110	0	0	0	99	114	114
SO_4	[%]	100	104	-4	0	0	0	21	24	24
DOC	[%]	100	105	-5	0	0	0	-9	-3	-3

Table 10B. STA-2 other constituent mass budget results: Cell 2.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	ET or Evasion	Change Water Storage	HRT	Ave Stage
Water	[m^3]	1.50E+08	1.10E+08	3.37E+07	1.15E+07	1.17E+07	0.00E+00	1.38E+01	7.07E-01
CL	[g]	2.37E+10	6.39E+09	6.56E+09	0.00E+00	0.00E+00	1.82E+08	0.00E+00	0.00E+00
TP	[g]	7.70E+06	2.17E+06	2.43E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NO_X	[g]	1.26E+08	1.68E+06	2.23E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SO_4	[g]	5.18E+09	2.28E+09	1.34E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
DOC	[g]	4.46E+09	1.58E+09	1.34E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [ET/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [Out]/[In]	% Removal $\frac{\text{TOT OUT}}{\text{TOT IN}}$	% Residual Residual/ TOT IN
Water	[%]	58	71	22	7	7	0	32	4	11
CL	[%]	79	49	51	0	0	1	73	45	45
TP	[%]	78	47	53	0	0	0	72	40	40
NO_X	[%]	99	7	93	0	0	0	99	81	81
SO_4	[%]	69	63	37	0	0	0	56	30	30
DOC	[%]	74	54	46	0	0	0	65	35	35

Table 10C. STA-2 other constituent mass budget results: Cell 3.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	ET or Evasion	Change Water Storage	HRT	Ave Stage
Water	[m^3]	2.02E+08	1.25E+08	7.15E+07	1.15E+07	1.17E+07	0.00E+00	1.29E+01	8.86E-01
CL	[g]	3.38E+10	1.74E+10	2.53E+10	0.00E+00	0.00E+00	1.19E+09	0.00E+00	0.00E+00
TP	[g]	8.86E+06	1.72E+06	3.50E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NO_X	[g]	1.45E+08	3.16E+06	3.23E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SO_4	[g]	8.10E+09	6.38E+09	7.30E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
DOC	[g]	6.08E+09	3.46E+09	4.37E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [ET/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [Out]/[In]	% Removal TOT OUT / TOT IN	% Residual Residual/ TOT IN
Water	[%]	62	60	34	5	6	0	41	2	8
CL	[%]	66	41	59	0	0	3	49	-26	-30
TP	[%]	84	33	67	0	0	0	81	41	41
NO_X	[%]	98	9	91	0	0	0	98	75	75
SO_4	[%]	56	47	53	0	0	0	21	-69	-69
DOC	[%]	64	44	56	0	0	0	43	-29	-29

Table 10D. STA-2 other constituent mass budget results: Cells 1, 2, and 3 combined.

Parameter	Unit	Inflow	Outflow	Seepage	Rain	ET or Evasion	Change Water Storage
Water (Sum)	[m^3]	4.11E+08	2.88E+08	1.04E+08	3.33E+07	3.37E+07	7.05E+06
Water	[m^3]	4.11E+08	3.80E+08	1.04E+08	3.33E+07	3.37E+07	7.05E+06
CL (Sum)	[g]	6.95E+10	3.25E+10	3.17E+10	0.00E+00	0.00E+00	2.55E+09
CL	[g]	6.95E+10	5.88E+10	1.58E+10	0.00E+00	0.00E+00	2.80E+09

Parameter	Unit	% [Inflow/ TOT IN]	% [Outflow/ TOT OUT]	% [Seep/ TOT OUT]	% [Rain/ TOT IN]	% [ET/ TOT OUT]	% [Chg Store/ TOT OUT]	% Removal [Out]/[In]	% Removal TOT OUT	% Residual Residual/ TOT IN
Water (Sum)	[%]	59	68	24	8	8	2	35	4	10
Water	[%]	52	73	20	8	7	1	14	-17	-11
CL (Sum)	[%]	68	51	49	0	0	4	53	8	4
CL	[%]	54	79	21	0	0	4	15	-7	-11

Table 10E. Change in soil storage in the top 4 cm of soil between the pre-flood sampling on May 26, 2002 and the last post-flood sampling on April 23, 2003.

Cell 1												
	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg
	(%)	(%)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)
mass/m2 in top 4 cm	13.88	44.49	449	-6003	-9760	-1949	9945	712	1668	6	-0.22	-0.024
percent change	22	11	17	-3	-6	-9	23	102	19	1	-21	-82

Cell 2												
	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg
	(%)	(%)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)
mass/m2 in top 4 cm	2.50	-145.73	-981	-82503	-135560	-12361	3231	1230	-5465	-458	-0.37	-0.004
percent change	2	-21	-20	-30	-36	-33	9	369	-24	-29	-40	-55

Cell 3												
	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg
	(%)	(%)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)	(mg)
mass/m2 in top 4 cm	50.99	-133.53	-1363	-135932	58547	-8687	-15420	2709	-11848	-914	-0.43	-0.001
percent change	37	-20	-27	-46	15	-17	-33	406	-43	-65	-64	-34

Table 11A. Correlation between cell stage and cell outflow THg and MeHg: Cell 1.

Cell 1										
Outflow	Average Lag-0	Average Lag-1	Average Lag-2	Average Lag-3	Average Lag-4	Average Lag-5	Average Lag-6	Average Lag-7	Average Lag-8	Average Lag-9
THg	-0.22	-0.14	-0.28	-0.28	-0.28	-0.27	-0.25	-0.24	-0.23	-0.24
MeHg	-0.23	-0.11	-0.20	-0.15	-0.13	-0.11	-0.11	-0.11	-0.12	-0.10
%MeHg	-0.06	0.03	0.01	0.08	0.15	0.21	0.24	0.24	0.24	0.28

Outflow	Average Lag-10	Average Lag-11	Average Lag-12	Average Lag-13	Average Lag-14	Average Lag-21	Average Lag-28	Average Lag-56	Average Lag-84
THg	-0.25	-0.25	-0.24	-0.23	-0.21	-0.31	-0.33	-0.65	-0.39
MeHg	-0.09	-0.09	-0.10	-0.10	-0.11	-0.13	-0.14	-0.32	-0.24
%MeHg	0.31	0.30	0.29	0.28	0.27	0.32	0.30	0.18	0.17

Table 11B. Correlation between cell stage and cell outflow THg and MeHg: Cell 2.

Cell 2										
Outflow	Average Lag-0	Average Lag-1	Average Lag-2	Average Lag-3	Average Lag-4	Average Lag-5	Average Lag-6	Average Lag-7	Average Lag-8	Average Lag-9
THg	-0.21	-0.05	-0.25	-0.27	-0.29	-0.32	-0.33	-0.34	-0.35	-0.34
MeHg	-0.24	-0.19	-0.22	-0.21	-0.20	-0.17	-0.14	-0.12	-0.11	-0.09
%MeHg	-0.15	-0.24	-0.07	-0.05	-0.04	-0.01	0.02	0.03	0.05	0.06

Outflow	Average Lag-10	Average Lag-11	Average Lag-12	Average Lag-13	Average Lag-14	Average Lag-21	Average Lag-28	Average Lag-56	Average Lag-84
THg	-0.34	-0.34	-0.32	-0.29	-0.26	-0.25	-0.17	-0.18	-0.59
MeHg	-0.09	-0.10	-0.10	-0.11	-0.12	-0.08	-0.06	-0.40	0.07
%MeHg	0.06	0.07	0.07	0.06	0.05	0.12	0.15	0.02	0.45

Table 11C. Correlation between cell stage and cell outflow THg and MeHg: Cell 3.

Cell 3										
Outflow	Average Lag-0	Average Lag-1	Average Lag-2	Average Lag-3	Average Lag-4	Average Lag-5	Average Lag-6	Average Lag-7	Average Lag-8	Average Lag-9
THg	-0.16	-0.01	-0.19	-0.19	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19
MeHg	-0.20	-0.07	-0.17	-0.10	-0.05	0.02	0.10	0.10	0.10	0.09
%MeHg	-0.14	-0.06	-0.10	-0.05	-0.03	0.01	0.07	0.07	0.06	0.05

Outflow	Average Lag-10	Average Lag-11	Average Lag-12	Average Lag-13	Average Lag-14	Average Lag-21	Average Lag-28	Average Lag-56	Average Lag-84
THg	-0.18	-0.16	-0.10	-0.04	0.00	0.04	0.02	-0.14	-0.41
MeHg	0.09	0.10	0.11	0.11	0.10	0.02	0.02	0.13	0.28
%MeHg	0.04	0.04	0.05	0.03	0.01	0.03	0.09	0.32	0.41

Table 12. Correlation between outflow THg and MeHg concentrations and rain THg concentration: Cell 1.

	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
	THg			MeHg			%MeHg		
LAG-0	0.26	0.25	0.45	-0.24	-0.07	0.30	-0.34	-0.11	0.14
LAG-7	0.35	0.30	0.21	-0.15	0.07	0.17	-0.30	0.00	-0.01
LAG-14	0.26	0.13	-0.05	-0.18	0.03	0.12	-0.14	0.01	0.12
LAG-21	0.55	0.04	-0.02	-0.22	0.22	0.26	-0.41	0.14	0.11
LAG-28	0.27	0.16	-0.06	0.08	0.12	0.13	-0.13	0.07	0.07
LAG-35	0.58	0.23	0.12	0.27	0.33	0.14	-0.12	0.10	0.08
LAG-42	0.48	0.36	0.45	0.34	0.12	0.43	-0.08	-0.06	0.22
LAG-56	0.59	0.32	0.00	0.46	0.32	-0.08	-0.03	0.06	-0.08
LAG-84	0.21	0.18	-0.15	0.55	0.24	0.28	0.14	-0.05	0.07

Table 13A. Correlation between outflow THg and MeHg concentrations and rain THg load: Cell 1.

Cell 1										
Outflow	SUM Lag-0	SUM Lag-1	SUM Lag-2	SUM Lag-3	SUM Lag-4	SUM Lag-5	SUM Lag-6	SUM Lag-7	SUM Lag-8	SUM Lag-9
THg	0.10	0.11	0.30	0.30	0.26	0.23	0.21	0.17	0.23	0.24
MeHg	-0.29	-0.27	-0.09	-0.13	-0.25	-0.26	-0.25	-0.26	-0.26	-0.27
%MeHg	-0.40	-0.39	-0.32	-0.30	-0.35	-0.35	-0.23	-0.22	-0.22	-0.25

Outflow	SUM Lag-10	SUM Lag-11	SUM Lag-12	SUM Lag-13	SUM Lag-14	SUM Lag-21	SUM Lag-28	SUM Lag-56	SUM Lag-84
THg	0.24	0.22	0.22	0.19	0.20	0.39	0.33	0.62	0.78
MeHg	-0.25	-0.23	-0.24	-0.24	-0.24	-0.25	-0.24	0.16	0.41
%MeHg	-0.22	-0.19	-0.21	-0.18	-0.18	-0.02	0.07	-0.03	0.00

Table 13B. Correlation between outflow THg and MeHg concentrations and rain THg load: Cell 2.

Cell 2										
Outflow	SUM Lag-0	SUM Lag-1	SUM Lag-2	SUM Lag-3	SUM Lag-4	SUM Lag-5	SUM Lag-6	SUM Lag-7	SUM Lag-8	SUM Lag-9
THg	0.07	0.09	0.21	0.09	0.05	0.08	0.05	0.05	0.05	0.06
MeHg	-0.22	-0.22	-0.13	-0.02	-0.05	-0.09	-0.08	-0.12	-0.09	-0.09
%MeHg	-0.27	-0.28	-0.25	-0.11	-0.11	-0.13	-0.10	-0.14	-0.12	-0.13

Outflow	SUM Lag-10	SUM Lag-11	SUM Lag-12	SUM Lag-13	SUM Lag-14	SUM Lag-21	SUM Lag-28	SUM Lag-56	SUM Lag-84
THg	0.09	0.09	0.09	0.09	0.18	0.24	0.29	0.50	0.66
MeHg	-0.09	-0.10	-0.12	-0.14	-0.15	-0.02	-0.04	0.12	0.28
%MeHg	-0.14	-0.16	-0.17	-0.19	-0.22	-0.11	-0.14	-0.10	-0.10

Table 13C. Correlation between outflow THg and MeHg concentrations and rain THg load: Cell 3.

Cell 3										
Outflow	SUM Lag-0	SUM Lag-1	SUM Lag-2	SUM Lag-3	SUM Lag-4	SUM Lag-5	SUM Lag-6	SUM Lag-7	SUM Lag-8	SUM Lag-9
THg	0.12	0.13	0.19	0.08	0.06	0.11	0.09	0.07	0.07	0.08
MeHg	-0.02	-0.01	0.02	0.12	0.09	0.08	0.14	0.13	0.14	0.13
%MeHg	-0.14	-0.14	-0.15	-0.06	-0.08	-0.10	-0.05	-0.05	-0.05	-0.06

Outflow	SUM Lag-10	SUM Lag-11	SUM Lag-12	SUM Lag-13	SUM Lag-14	SUM Lag-21	SUM Lag-28	SUM Lag-56	SUM Lag-84
THg	0.10	0.09	0.09	0.09	0.20	0.28	0.30	0.30	0.38
MeHg	0.12	0.10	0.10	0.13	0.13	0.23	0.19	0.17	0.17
%MeHg	-0.07	-0.07	-0.07	-0.06	-0.08	0.00	-0.02	-0.02	-0.11

Table 14A. Inflow water quality intra-correlations: G-328 and G-328B.

	TEMP	D.O.	SP COND	PH	TSS	NOX	NO2	NH4	TKN	TDKN	OPO4	TP	TDP	CA	CL	SO4	ALK	NO3
TEMP	1.00	-0.30	-0.06	-0.19	0.13	0.14	0.26	0.02	0.22	0.21	0.07	0.13	0.11	-0.33	-0.12	-0.15	0.01	0.13
DO	-0.30	1.00	-0.49	0.78	0.11	-0.08	-0.25	-0.76	-0.73	-0.73	0.09	0.06	0.16	-0.55	-0.55	0.22	-0.64	-0.08
SP CON	-0.06	-0.49	1.00	-0.26	0.04	-0.19	0.01	0.77	0.70	0.70	-0.41	-0.60	-0.52	0.88	0.98	0.06	0.96	-0.19
pH	-0.19	0.78	-0.26	1.00	-0.03	-0.11	-0.34	-0.67	-0.68	-0.65	-0.10	-0.11	-0.02	-0.58	-0.30	0.47	-0.43	-0.11
TSS	0.13	0.11	0.04	-0.03	1.00	0.12	0.21	0.02	0.13	-0.02	0.39	0.59	0.37	0.56	0.10	0.05	-0.07	0.10
NOX	0.14	-0.08	-0.19	-0.11	0.12	1.00	0.83	-0.08	0.23	0.26	0.44	0.39	0.44	0.28	-0.22	-0.03	-0.13	1.00
NO2	0.26	-0.25	0.01	-0.34	0.21	0.83	1.00	0.16	0.49	0.52	0.45	0.39	0.42	0.52	-0.05	-0.02	0.11	0.81
NH4	0.02	-0.76	0.77	-0.67	0.02	-0.08	0.16	1.00	0.82	0.81	-0.20	-0.26	-0.31	0.56	0.77	-0.21	0.79	-0.09
TKN	0.22	-0.73	0.70	-0.68	0.13	0.23	0.49	0.82	1.00	0.97	-0.06	-0.09	-0.16	0.93	0.64	-0.18	0.81	0.22
TDKN	0.21	-0.73	0.70	-0.65	-0.02	0.26	0.52	0.81	0.97	1.00	-0.06	-0.14	-0.16	0.90	0.64	-0.13	0.82	0.25
OPO4	0.07	0.09	-0.41	-0.10	0.39	0.44	0.45	-0.20	-0.06	-0.06	1.00	0.85	0.98	0.40	-0.45	-0.06	-0.40	0.44
TP	0.13	0.06	-0.60	-0.11	0.59	0.39	0.39	-0.26	-0.09	-0.14	0.85	1.00	0.89	0.03	-0.55	-0.07	-0.50	0.39
TDP	0.11	0.16	-0.52	-0.02	0.37	0.44	0.42	-0.31	-0.16	-0.16	0.98	0.89	1.00	0.21	-0.54	-0.05	-0.50	0.44
CA	-0.33	-0.55	0.88	-0.58	0.56	0.28	0.52	0.56	0.93	0.90	0.40	0.03	0.21	1.00	0.86	0.05	0.91	0.26
CL	-0.12	-0.55	0.98	-0.30	0.10	-0.22	-0.05	0.77	0.64	0.64	-0.45	-0.55	-0.54	0.86	1.00	0.01	0.91	-0.23
SO4	-0.15	0.22	0.06	0.47	0.05	-0.03	-0.02	-0.21	-0.18	-0.13	-0.06	-0.07	-0.05	0.05	0.01	1.00	-0.04	-0.03
ALK	0.01	-0.64	0.96	-0.43	-0.07	-0.13	0.11	0.79	0.81	0.82	-0.40	-0.50	-0.50	0.91	0.91	-0.04	1.00	-0.13
NO3	0.13	-0.08	-0.19	-0.11	0.10	1.00	0.81	-0.09	0.22	0.25	0.44	0.39	0.44	0.26	-0.23	-0.03	-0.13	1.00
DOC	0.46	-0.80	0.78	-0.40	-0.18	0.43	0.59	0.65	0.89	0.92	-0.07	-0.39	-0.19	0.76	0.67	0.42	0.84	0.40
TDS	-0.08	-0.57	0.99	-0.30	0.01	-0.17	0.04	0.76	0.71	0.72	-0.43	-0.54	-0.53	0.88	0.97	0.12	0.96	-0.18
THg	0.30	-0.32	-0.16	-0.26	-0.07	0.00	-0.25	-0.13	-0.20	-0.28	-0.06	0.36	0.07	-0.70	-0.14	0.01	-0.28	0.05
F-THg	0.39	-0.51	-0.10	-0.34	-0.51	-0.21	-0.09	0.16	-0.14	-0.18	-0.38	0.19	-0.18	-1.00	0.01	-0.59	-0.19	-0.14
MeHg	0.40	-0.60	0.11	-0.49	0.06	0.17	0.15	0.62	0.58	0.54	0.01	0.35	-0.05	-0.70	0.60	-0.06	0.51	0.19
F-MeHg	0.30	-0.71	0.52	-0.67	-0.39	-0.14	0.01	0.71	0.46	0.47	-0.13	-0.24	-0.30	-0.44	0.60	-0.31	0.45	-0.09
%MeHg	0.41	-0.48	0.65	-0.29	0.17	0.19	0.44	0.71	0.81	0.81	-0.18	-0.34	-0.35	0.42	0.75	0.03	0.83	0.15
F-%MeHg	0.04	-0.46	0.71	-0.57	-0.17	0.02	0.07	0.74	0.65	0.69	0.15	-0.42	-0.21	0.62	0.70	0.09	0.69	0.03

Table 14B. Outflow water quality intra-correlations: Cell 1 (G-330A).

	TEMP	DO	SP CON	PH	NOX	NH4	TKN	OPO4	TP	TDP	CA	CL	SO4	ALK	DOC	THg	F-THg	MeHg	F-MeHg	%MeHg	F-%MeHG
TEMP	1.00	-0.51	-0.16	0.02	-0.59	-0.11	0.42	0.63	0.07	0.59	-0.20	0.15	-0.43	-0.14	0.40	0.65	-0.25	0.64	-0.49	0.33	-0.20
DO	-0.51	1.00	0.24	0.29	0.47	-0.14	-0.60	-0.54	0.01	-0.66	0.11	-0.25	0.50	0.12	-0.59	-0.71	0.60	-0.68	0.79	-0.40	-0.19
SP CON	-0.16	0.24	1.00	0.28	-0.18	0.40	0.48	-0.34	0.03	0.00	0.89	0.86	0.35	0.90	0.38	0.28	0.99	0.09	0.93	-0.14	-0.94
pH	0.02	0.29	0.28	1.00	-0.14	-0.18	-0.31	-0.46	0.26	-0.44	0.33	0.07	0.47	0.50	-0.36	-0.03	0.82	-0.17	0.64	-0.40	-0.99
TSS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NOX	-0.59	0.47	-0.18	-0.14	1.00	0.16	-0.08	-0.04	-0.32	-0.11	-0.03	-0.05	0.17	-0.20	0.05	-0.56	-0.97	-0.59	-0.87	-0.53	0.98
NO2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NH4	-0.11	-0.14	0.40	-0.18	0.16	1.00	0.48	0.23	0.18	0.29	0.34	0.46	-0.03	0.19	0.46	-0.03	0.20	-0.23	-0.06	-0.36	-0.61
TKN	0.42	-0.60	0.48	-0.31	-0.08	0.48	1.00	0.86	0.83	0.86	0.31	0.75	-0.59	0.13	0.99	0.58	0.82	0.32	0.64	-0.11	-0.99
TDKN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OPO4	0.63	-0.54	-0.34	-0.46	-0.04	0.23	0.86	1.00	0.82	0.84	-0.20	0.48	-0.67	-0.43	0.91	0.58	NA	0.59	NA	0.40	NA
TP	0.07	0.01	0.03	0.26	-0.32	0.18	0.83	0.82	1.00	0.90	-0.12	0.42	-0.73	-0.19	0.85	0.43	-0.07	0.28	-0.33	-0.11	-0.37
TDP	0.59	-0.66	0.00	-0.44	-0.11	0.29	0.86	0.84	0.90	1.00	-0.10	0.43	-0.76	-0.24	0.90	0.58	-0.26	0.57	-0.50	0.31	-0.19
CA	-0.20	0.11	0.89	0.33	-0.03	0.34	0.31	-0.20	-0.12	-0.10	1.00	0.71	0.50	0.92	0.21	-0.03	0.95	-0.20	1.00	-0.22	-0.71
CL	0.15	-0.25	0.86	0.07	-0.05	0.46	0.75	0.48	0.42	0.43	0.71	1.00	-0.04	0.65	0.73	0.28	0.99	-0.04	0.99	-0.34	-0.82
SO4	-0.43	0.50	0.35	0.47	0.17	-0.03	-0.59	-0.67	-0.73	-0.76	0.50	-0.04	1.00	0.58	-0.61	0.08	0.18	0.02	0.43	0.00	0.26
ALK	-0.14	0.12	0.90	0.50	-0.20	0.19	0.13	-0.43	-0.19	-0.24	0.92	0.65	0.58	1.00	0.00	0.14	1.00	-0.08	0.98	-0.23	-0.87
NO3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DOC	0.40	-0.59	0.38	-0.36	0.05	0.46	0.99	0.91	0.85	0.90	0.21	0.73	-0.61	0.00	1.00	0.51	NA	0.40	NA	0.02	NA
TDS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
THg	0.65	-0.71	0.28	-0.03	-0.56	-0.03	0.58	0.58	0.43	0.58	-0.03	0.28	0.08	0.14	0.51	1.00	0.98	0.93	0.88	0.52	0.59
F-THg	-0.25	0.60	0.99	0.82	-0.97	0.20	0.82	NA	-0.07	-0.26	0.95	0.99	0.18	1.00	-1.00	0.98	1.00	0.94	0.95	0.56	0.71
MeHg	0.64	-0.68	0.09	-0.17	-0.59	-0.23	0.32	0.59	0.28	0.57	-0.20	-0.04	0.02	-0.08	0.40	0.93	0.94	1.00	1.00	0.77	0.91
F-MeHg	-0.49	0.79	0.93	0.64	-0.87	-0.06	0.64	NA	-0.33	-0.50	1.00	0.99	0.43	0.98	-1.00	0.88	0.95	1.00	1.00	0.77	0.90
%MeHg	0.33	-0.40	-0.14	-0.40	-0.53	-0.36	-0.11	0.40	-0.11	0.31	-0.22	-0.34	0.00	-0.23	0.02	0.52	0.56	0.77	0.77	1.00	0.95
F-%MeHg	-0.20	-0.19	-0.94	-0.99	0.98	-0.61	-0.99	NA	-0.37	-0.19	-0.71	-0.82	0.26	-0.87	-1.00	0.59	0.71	0.91	0.90	0.95	1.00

Table 14C. Outflow water quality intra-correlations: Cell 2 (G-332).

LAG-0	TEMP	DO	SP CON	PH	TSS	NOX	NH4	TKN	OPO4	TP	TDP	CA	CL	SO4	ALK	DOC	THg	F-THg	MeHg	F-MeHg	%MeHg	F-%MeHg
TEMP	1.00	-0.46	-0.38	0.07	-0.99	-0.75	-0.16	0.13	0.42	0.49	0.43	-0.14	0.02	0.36	-0.09	0.21	0.41	0.87	0.69	0.93	0.69	0.93
DO	-0.46	1.00	0.03	0.52	0.34	0.47	0.03	0.19	-0.24	-0.11	-0.43	0.50	0.26	0.18	0.38	0.21	-0.33	-0.76	-0.49	-0.66	-0.46	-0.65
SP CON	-0.38	0.03	1.00	0.29	-0.45	0.02	0.23	0.92	0.03	-0.10	-0.13	0.90	0.80	0.47	0.96	0.86	0.34	-0.24	0.20	-0.10	0.04	-0.09
pH	0.07	0.52	0.29	1.00	-0.63	-0.34	-0.07	0.71	0.07	0.36	0.04	0.57	0.48	0.47	0.61	0.59	0.38	-0.17	0.24	-0.03	0.10	-0.02
TSS	-0.99	0.34	-0.45	-0.63	1.00	0.90	0.53	-0.66	-0.05	-0.77	-0.54	-0.34	0.58	-0.84	-0.33	-0.57	NA	NA	NA	NA	NA	NA
NOX	-0.75	0.47	0.02	-0.34	0.90	1.00	0.19	-0.20	-0.28	-0.61	-0.26	0.06	0.04	-0.06	-0.01	-0.10	-0.57	1.00	-0.60	1.00	-0.60	1.00
NO2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NH4	-0.16	0.03	0.23	-0.07	0.53	0.19	1.00	0.06	-0.02	-0.62	-0.70	0.38	0.19	-0.30	0.39	0.03	0.07	1.00	0.32	1.00	0.34	1.00
TKN	0.13	0.19	0.92	0.71	-0.66	-0.20	0.06	1.00	0.34	-0.15	-0.17	0.76	0.83	0.54	0.87	0.95	0.38	-1.00	0.22	-1.00	0.02	-1.00
TDKN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OPO4	0.42	-0.24	0.03	0.07	-0.05	-0.28	-0.02	0.34	1.00	0.36	0.51	0.13	0.31	0.24	0.13	0.16	-0.03	-0.87	-0.04	-0.79	0.03	-0.78
TP	0.49	-0.11	-0.10	0.36	-0.77	-0.61	-0.62	-0.15	0.36	1.00	0.60	-0.49	-0.24	0.22	-0.45	-0.09	0.33	0.87	0.23	0.93	0.25	0.93
TDP	0.43	-0.43	-0.13	0.04	-0.54	-0.26	-0.70	-0.17	0.51	0.60	1.00	-0.53	-0.40	0.10	-0.51	-0.08	0.05	-0.87	-0.18	-0.79	-0.25	-0.78
CA	-0.14	0.50	0.90	0.57	-0.34	0.06	0.38	0.76	0.13	-0.49	-0.53	1.00	0.63	0.32	0.96	0.78	0.23	-1.00	0.28	-1.00	0.15	-1.00
CL	0.02	0.26	0.80	0.48	0.58	0.04	0.19	0.83	0.31	-0.24	-0.40	0.63	1.00	0.66	0.74	0.78	0.18	-1.00	0.16	-1.00	0.07	-1.00
SO4	0.36	0.18	0.47	0.47	-0.84	-0.06	-0.30	0.54	0.24	0.22	0.10	0.32	0.66	1.00	0.32	0.71	0.00	0.28	0.16	0.41	0.25	0.41
ALK	-0.09	0.38	0.96	0.61	-0.33	-0.01	0.39	0.87	0.13	-0.45	-0.51	0.96	0.74	0.32	1.00	0.84	0.29	-1.00	0.27	-1.00	0.12	-1.00
NO3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DOC	0.21	0.21	0.86	0.59	-0.57	-0.10	0.03	0.95	0.16	-0.09	-0.08	0.78	0.78	0.71	0.84	1.00	0.25	0.10	0.30	0.24	0.22	0.25
TDS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
THg	0.41	-0.33	0.34	0.38	NA	-0.57	0.07	0.38	-0.03	0.33	0.05	0.23	0.18	0.00	0.29	0.25	1.00	NA	0.68	NA	0.22	NA
F-THg	0.87	-0.76	-0.24	-0.17	NA	1.00	1.00	-1.00	-0.87	0.87	-0.87	-1.00	-1.00	0.28	-1.00	0.10	0.99	NA	1.00	NA	1.00	NA
MeHg	0.69	-0.49	0.20	0.24	NA	-0.60	0.32	0.22	-0.04	0.23	-0.18	0.28	0.16	0.16	0.27	0.30	0.68	NA	1.00	NA	0.83	NA
F-MeHg	0.93	-0.66	-0.10	-0.03	NA	1.00	1.00	-1.00	-0.79	0.93	-0.79	-1.00	-1.00	0.41	-1.00	0.24	0.96	NA	0.98	NA	0.99	NA
%MeHg	0.69	-0.46	0.04	0.10	NA	-0.60	0.34	0.02	0.03	0.25	-0.25	0.15	0.07	0.25	0.12	0.22	0.22	NA	0.83	NA	1.00	NA
F-%MeHg	0.93	-0.65	-0.09	-0.02	NA	1.00	1.00	-1.00	-0.78	0.93	-0.78	-1.00	-1.00	0.41	-1.00	0.25	0.96	NA	0.98	NA	0.99	NA

Table 14D. Outflow water quality intra-correlations: Cell 3 (G-334).

	TEMP	D.O.	SP CON	PH	TSS	NOX	NH4	TKN	OPO4	TP	TDP	CA	CL	SO4	ALK	DOC	THg	F-THg	MeHg	F-MeHg	%MeHg
TEMP	1.00	-0.68	-0.16	-0.28	0.80	-0.59	-0.15	0.25	0.37	0.22	0.35	-0.47	-0.20	0.36	-0.51	0.32	0.12	0.85	0.15	1.00	0.36
DO	-0.68	1.00	-0.01	0.65	-0.19	0.42	-0.10	-0.24	-0.28	-0.22	-0.16	0.23	0.27	-0.24	0.35	-0.29	-0.39	-0.98	-0.43	-0.97	-0.39
SP CON	-0.16	-0.01	1.00	0.18	0.79	0.37	0.20	0.79	0.52	0.31	0.53	0.33	0.96	0.65	0.75	0.80	0.07	-0.15	-0.14	-0.58	-0.36
pH	-0.28	0.65	0.18	1.00	-0.99	-0.03	-0.33	0.30	0.13	-0.04	0.15	-0.33	0.61	0.21	0.06	0.15	-0.55	-1.00	-0.66	-0.85	-0.49
TSS	0.80	-0.19	0.79	-0.99	1.00	0.97	0.94	0.92	NA	-0.42	-0.94	0.98	0.69	0.99	0.84	0.80	NA	NA	NA	NA	NA
NOX	-0.59	0.42	0.37	-0.03	0.97	1.00	0.44	0.03	-0.42	-0.39	-0.51	0.81	0.23	0.01	0.67	0.09	-0.35	-0.70	-0.21	-0.95	-0.04
NO2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NH4	-0.15	-0.10	0.20	-0.33	0.94	0.44	1.00	0.14	-0.27	-0.20	0.11	0.48	0.10	-0.04	0.42	0.13	0.16	0.98	0.06	0.80	-0.25
TKN	0.25	-0.24	0.79	0.30	0.92	0.03	0.14	1.00	0.75	0.02	-0.09	-0.05	0.79	0.90	0.29	0.97	-0.14	1.00	-0.37	0.89	-0.39
TDKN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
OPO4	0.37	-0.28	0.52	0.13	NA	-0.42	-0.27	0.75	1.00	0.58	0.69	-0.33	0.25	0.65	-0.20	0.66	0.42	1.00	-0.01	1.00	-0.23
TP	0.22	-0.22	0.31	-0.04	-0.42	-0.39	-0.20	0.02	0.58	1.00	0.89	-0.43	-0.10	-0.19	-0.35	-0.11	0.02	0.34	0.02	-0.12	0.10
TDP	0.35	-0.16	0.53	0.15	-0.94	-0.51	0.11	-0.09	0.69	0.89	1.00	-0.39	-0.21	-0.36	-0.35	-0.28	0.13	0.76	0.08	0.39	0.01
CA	-0.47	0.23	0.33	-0.33	0.98	0.81	0.48	-0.05	-0.33	-0.43	-0.39	1.00	0.12	-0.06	0.81	0.13	0.00	-0.87	0.12	-1.00	0.12
CL	-0.20	0.27	0.96	0.61	0.69	0.23	0.10	0.79	0.25	-0.10	-0.21	0.12	1.00	0.60	0.61	0.78	-0.40	-0.33	-0.59	-0.72	-0.58
SO4	0.36	-0.24	0.65	0.21	0.99	0.01	-0.04	0.90	0.65	-0.19	-0.36	-0.06	0.60	1.00	0.16	0.90	-0.14	0.98	-0.28	0.96	-0.16
ALK	-0.51	0.35	0.75	0.06	0.84	0.67	0.42	0.29	-0.20	-0.35	-0.35	0.81	0.61	0.16	1.00	0.40	-0.15	-0.87	-0.15	-1.00	-0.23
NO3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DOC	0.32	-0.29	0.80	0.15	0.80	0.09	0.13	0.97	0.66	-0.11	-0.28	0.13	0.78	0.90	0.40	1.00	-0.13	0.86	-0.24	1.00	-0.10
TDS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
THg	0.12	-0.39	0.07	-0.55	NA	-0.35	0.16	-0.14	0.42	0.02	0.13	0.00	-0.40	-0.14	-0.15	-0.13	1.00	0.77	0.72	0.97	0.04
F-THg	0.85	-0.98	-0.15	-1.00	NA	-0.70	0.98	1.00	1.00	0.34	0.76	-0.87	-0.33	0.98	-0.87	0.86	0.77	1.00	0.11	0.89	-0.81
MeHg	0.15	-0.43	-0.14	-0.66	NA	-0.21	0.06	-0.37	-0.01	0.02	0.08	0.12	-0.59	-0.28	-0.15	-0.24	0.72	0.11	1.00	0.55	0.62
F-MeHg	1.00	-0.97	-0.58	-0.85	NA	-0.95	0.80	0.89	1.00	-0.12	0.39	-1.00	-0.72	0.96	-1.00	1.00	0.97	0.89	0.55	1.00	-0.99
%MeHg	0.36	-0.39	-0.36	-0.49	NA	-0.04	-0.25	-0.39	-0.23	0.10	0.01	0.12	-0.58	-0.16	-0.23	-0.10	0.04	-0.81	0.62	-0.99	1.00
F-%MeHg	0.37	-0.04	-0.95	0.26	NA	-0.59	-0.34	-0.17	1.00	-0.98	-0.76	-0.34	-0.88	0.03	-0.35	0.36	0.50	-0.17	0.96	0.30	-0.44

Table 15A. Outflow water quality intra-correlations: Cell 1 (G-330A) lag-0 weeks (n=16).

	TEMP	DO	SP CON	PH	TKN	TP	CA	CL	SO4	ALK	DOC
THg	0.65	-0.71	0.28	-0.03	0.58	0.43	-0.03	0.28	0.08	0.14	0.51
F-THg	-0.25	0.60	0.99	0.82	0.82	-0.07	0.95	0.99	0.18	1.00	-1.00
MeHg	0.64	-0.68	0.09	-0.17	0.32	0.28	-0.20	-0.04	0.02	-0.08	0.40
F-MeHg	-0.49	0.79	0.93	0.64	0.64	-0.33	1.00	0.99	0.43	0.98	-1.00
%MeHg	0.33	-0.40	-0.14	-0.40	-0.11	-0.11	-0.22	-0.34	0.00	-0.23	0.02
F-%MeHg	-0.20	-0.19	-0.94	-0.99	-0.99	-0.37	-0.71	-0.82	0.26	-0.87	-1.00

Table 15B. Outflow water quality intra-correlations: Cell 1 (G-330A) lag-2 weeks (n=14).

	TEMP	DO	SP CON	PH	TKN	TP	CA	CL	SO4	ALK	DOC
THg	0.59	-0.66	0.14	-0.26	0.61	0.81	-0.17	0.29	-0.49	-0.09	0.61
F-THg	0.43	-0.78	0.94	-0.89	0.92	0.84	0.52	0.99	0.50	0.63	0.98
MeHg	0.56	-0.54	-0.05	-0.28	0.52	0.66	-0.38	0.13	-0.50	-0.30	0.52
F-MeHg	0.18	-0.59	0.83	-0.98	0.78	0.67	0.28	0.99	0.71	0.41	0.89
%MeHg	0.06	0.02	-0.21	-0.26	0.11	0.03	-0.47	-0.17	-0.04	-0.52	0.07
F-%MeHg	-0.78	0.97	-0.99	0.60	-1.00	-0.99	-0.84	-0.82	-0.07	-0.91	-0.97

Table 15C. Outflow water quality intra-correlations: Cell 1 (G-330A) lag-4 weeks (n=12).

	TEMP	DO	SP CON	PH	TKN	TP	CA	CL	SO4	ALK	DOC
THg	0.49	-0.57	0.30	-0.24	0.82	0.66	0.12	0.53	-0.45	-0.06	0.81
F-THg	0.76	-0.91	0.86	0.97	1.00	0.99	-0.10	0.69	-0.81	0.97	1.00
MeHg	0.43	-0.49	0.12	-0.39	0.76	0.67	-0.04	0.44	-0.56	-0.24	0.81
F-MeHg	0.57	-0.77	0.96	0.87	0.98	0.93	0.16	0.48	-0.63	0.87	0.95
%MeHg	0.02	-0.11	-0.19	-0.50	0.27	0.29	-0.25	0.00	-0.36	-0.41	0.45
F-%MeHg	-0.97	1.00	-0.55	-0.98	-0.86	-0.94	0.52	-0.94	0.99	-0.98	-0.92

Table 15D. Outflow water quality intra-correlations: Cell 1 (G-330A) lag-6 weeks (n=10).

	TEMP	DO	SP CON	PH	TKN	TP	CA	CL	SO4	ALK	DOC
THg	0.48	-0.46	0.17	-0.25	0.77	0.70	0.08	0.43	-0.51	-0.14	0.83
F-THg	0.35	-0.78	0.95	0.57	0.95	0.93	1.00	0.99	0.77	0.99	0.99
MeHg	0.37	-0.35	0.13	-0.34	0.80	0.73	0.08	0.46	-0.55	-0.19	0.85
F-MeHg	0.09	-0.59	1.00	0.34	1.00	0.80	0.97	0.92	0.91	0.99	0.99
%MeHg	-0.08	0.08	-0.11	-0.19	0.39	0.37	-0.07	0.18	-0.39	-0.29	0.42
F-%MeHg	-0.72	0.98	-0.72	-0.87	-0.72	-1.00	-0.89	-0.95	-0.42	-0.83	-0.85

Table 15E. Outflow water quality intra-correlations: Cell 1 (G-330A) lag-8 weeks (n=8).

	TEMP	D.O.	SP CON	PH	TKN	TP	CA	CL	SO4	ALK	DOC
THg	0.53	-0.24	-0.08	0.04	0.70	0.67	-0.05	0.35	-0.48	-0.26	0.65
F-THg	0.79	-0.91	0.99	0.74	NA	0.56	NA	NA	0.95	NA	0.94
MeHg	0.39	-0.13	-0.09	-0.16	0.73	0.58	0.11	0.39	-0.50	-0.18	0.69
F-MeHg	0.60	-0.77	1.00	0.89	NA	0.33	NA	NA	0.84	NA	1.00
%MeHg	-0.09	0.17	-0.19	-0.38	0.38	0.07	0.11	0.12	-0.27	-0.20	0.37
F-%MeHg	-0.98	NA	-0.81	-0.37	NA	-0.87	NA	NA	-0.99	NA	-0.70

Table 15F. Outflow water quality intra-correlations: Cell 1 (G-330A) lag-12 weeks (n=4).

	TEMP	D.O.	SP CON	PH	TKN	TP	CA	CL	SO4	ALK	DOC
THg	0.48	-0.24	-0.62	-0.40	0.61	0.26	-0.73	0.08	-0.93	-0.89	0.72
F-THg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MeHg	0.39	-0.09	-0.77	-0.29	0.09	0.14	-0.85	-0.47	-0.62	-0.83	0.32
F-MeHg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
%MeHg	0.13	0.21	-0.81	0.03	-0.49	-0.16	-0.54	-0.75	-0.15	-0.26	-0.25
F-%MeHg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 16A. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-0 weeks.

Cell 1 In Lag-0	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.37	-0.14	0.11	0.14	0.15	-0.34	-0.08	0.11	0.02	-0.15	0.04	0.06	0.16	0.15	0.28
LN Fish THg	0.32	-0.14	0.10	0.11	0.15	-0.36	-0.07	0.12	0.04	-0.12	0.05	0.05	0.17	0.14	0.30
MeHg BCF	-0.39	0.08	0.00	0.24	-0.34	-0.15	-0.07	-0.18	-0.35	-0.33	-0.42	0.02	-0.29	0.01	-0.11
LN BCF	-0.53	0.30	-0.23	0.43	-0.72	-0.39	-0.23	-0.52	-0.59	-0.40	-0.61	-0.17	-0.56	-0.25	-0.52

Table 16B. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-4 weeks.

Cell 1 In Lag-4	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.50	-0.11	-0.06	0.01	0.30	-0.34	-0.01	0.20	0.38	0.20	0.38	-0.16	0.51	-0.01	0.31
LN Fish THg	0.43	-0.04	-0.13	0.09	0.21	-0.37	-0.09	0.09	0.28	0.13	0.29	-0.20	0.40	-0.08	0.19
MeHg BCF	-0.05	-0.10	0.16	0.14	-0.16	-0.09	0.01	-0.05	-0.44	-0.48	-0.48	0.18	-0.35	0.15	-0.06
LN BCF	-0.04	-0.23	0.39	0.08	-0.19	-0.23	0.15	0.03	-0.67	-0.79	-0.74	0.44	-0.52	0.39	-0.04

Table 16C. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-8 weeks.

Cell 1 In Lag-8	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.50	-0.11	-0.06	0.01	0.33	-0.42	0.30	0.39	0.34	0.14	0.33	0.05	0.49	0.21	0.41
LN Fish THg	0.43	-0.04	-0.13	0.09	0.23	-0.44	0.21	0.30	0.23	0.05	0.22	0.05	0.38	0.19	0.37
MeHg BCF	-0.05	-0.10	0.16	0.14	-0.13	0.04	-0.10	-0.07	-0.16	-0.14	-0.14	-0.05	-0.16	-0.05	-0.01
LN BCF	-0.04	-0.23	0.39	0.08	0.02	0.12	0.13	0.18	-0.13	0.00	-0.08	0.22	-0.14	0.21	0.29

Table 16D. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-12 weeks.

Cell 1 In Lag-12	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.47	-0.46	0.21	-0.45	0.34	-0.14	0.42	0.34	0.17	0.19	0.20	0.16	0.31	0.15	0.49
LN Fish THg	0.43	-0.42	0.25	-0.39	0.33	-0.16	0.41	0.35	0.16	0.15	0.17	0.20	0.30	0.20	0.51
MeHg BCF	0.25	0.02	0.24	0.17	0.08	0.07	-0.01	0.11	0.02	-0.02	0.12	0.22	0.09	0.23	0.17
LN BCF	0.08	0.26	-0.04	0.13	0.16	0.10	-0.09	0.08	0.29	0.21	0.36	-0.11	0.25	0.02	-0.03

Table 17A. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-0 weeks.

Cell 2 In Lag-0	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.33	-0.22	0.22	-0.16	0.31	0.55	0.01	0.39	0.40	0.09	0.32	0.14	0.51	0.26	0.42
LN Fish THg	0.27	-0.23	0.23	-0.18	0.27	0.53	0.08	0.39	0.36	0.01	0.24	0.16	0.46	0.28	0.37
MeHg BCF	-0.11	0.21	-0.30	0.12	-0.03	-0.16	-0.15	-0.11	0.26	0.31	0.27	-0.34	0.29	-0.29	-0.07
LN BCF	-0.32	0.35	-0.41	0.29	-0.32	-0.17	-0.20	-0.26	0.12	0.19	0.16	-0.45	0.26	-0.38	-0.25

Table 17B. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-4 weeks.

Cell 2 In Lag-4	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.33	-0.19	0.01	-0.29	0.52	0.88	-0.14	0.37	0.47	0.40	0.49	-0.05	0.54	0.06	0.33
LN Fish THg	0.34	-0.19	0.03	-0.25	0.48	0.72	-0.13	0.31	0.40	0.32	0.39	-0.01	0.41	0.07	0.32
MeHg BCF	-0.24	-0.19	0.31	-0.11	-0.21	-0.09	0.34	0.14	-0.19	-0.45	-0.45	0.32	-0.21	0.31	-0.20
LN BCF	-0.17	-0.25	0.40	-0.06	-0.04	-0.01	0.39	0.22	-0.12	-0.64	-0.54	0.42	-0.22	0.43	-0.11

Table 17C. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-8 weeks.

Cell 2 In Lag-8	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	-0.04	0.15	-0.15	0.15	-0.18	0.49	-0.07	-0.17	-0.10	0.11	0.05	-0.16	-0.02	-0.17	-0.11
LN Fish THg	-0.01	0.14	-0.15	0.15	-0.17	0.47	-0.15	-0.15	-0.10	0.12	0.08	-0.16	0.01	-0.17	-0.06
MeHg BCF	0.13	-0.30	0.26	-0.24	0.03	-0.07	0.31	0.11	-0.22	-0.17	-0.29	0.31	-0.32	0.22	-0.02
LN BCF	0.34	-0.47	0.33	-0.25	-0.04	0.03	0.27	0.16	-0.30	-0.14	-0.29	0.35	-0.31	0.28	0.10

Table 17D. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-12 weeks.

Cell 2 In Lag-12	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.06	-0.06	-0.17	-0.08	-0.06	0.31	-0.05	-0.13	0.03	-0.04	-0.08	-0.16	-0.04	-0.21	-0.04
LN Fish THg	0.05	-0.05	-0.15	-0.11	0.05	0.37	-0.06	-0.05	0.13	0.00	0.00	-0.16	0.06	-0.16	0.02
MeHg BCF	0.08	0.11	-0.29	0.10	-0.36	-0.05	-0.27	-0.36	-0.26	0.06	-0.08	-0.26	-0.25	-0.35	-0.24
LN BCF	0.18	0.18	-0.38	0.12	-0.32	0.03	-0.36	-0.35	-0.14	0.08	0.02	-0.39	-0.14	-0.42	-0.32

Table 18A. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 lag-0 weeks.

Cell 3 In Lag-0	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.24	-0.22	0.25	-0.12	0.17		0.23	0.28		-0.01	0.07	0.22	0.20	0.25	0.34
LN Fish THg	0.20	-0.22	0.24	-0.13	0.16		0.24	0.27		-0.04	0.03	0.21	0.19	0.25	0.32
MeHg BCF	-0.11	-0.07	0.12	0.04	-0.03		0.19	0.15		-0.20	-0.10	0.08	0.20	0.16	0.19
LN BCF	-0.04	-0.10	0.13	0.01	0.03		0.20	0.20		-0.18	-0.04	0.08	0.26	0.17	0.21

Table 18B. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 lag-4 weeks.

Cell 3 In Lag-4	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.22	-0.24	0.07	-0.38	0.31		0.25	0.33		0.32	0.31	0.04	0.33	0.09	0.35
LN Fish THg	0.21	-0.24	0.09	-0.35	0.25		0.22	0.28		0.25	0.22	0.06	0.23	0.09	0.34
MeHg BCF	0.22	-0.32	0.23	-0.19	0.20		0.18	0.25		-0.17	-0.15	0.23	-0.03	0.25	0.31
LN BCF	0.28	-0.33	0.23	-0.20	0.24		0.17	0.26		-0.12	-0.08	0.22	0.02	0.25	0.36

Table 18C. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 lag-8 weeks.

Cell 3 In Lag-8	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	-0.15	0.20	-0.11	0.09	-0.12		-0.20	-0.21		0.05	-0.03	-0.07	-0.19	-0.16	-0.14
LN Fish THg	-0.11	0.18	-0.10	0.09	-0.12		-0.18	-0.19		0.04	-0.03	-0.07	-0.17	-0.15	-0.11
MeHg BCF	0.21	-0.03	-0.06	0.07	-0.20		-0.19	-0.16		-0.02	-0.09	-0.05	-0.19	-0.10	-0.07
LN BCF	0.22	-0.03	-0.06	0.06	-0.17		-0.16	-0.12		0.02	-0.04	-0.06	-0.13	-0.10	-0.01

Table 18D. Inflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 lag-12 weeks.

Cell 3 In Lag-12	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	-0.10	0.08	-0.20	-0.03	-0.05		-0.11	-0.16		0.07	0.01	-0.18	-0.05	-0.23	-0.01
LN Fish THg	-0.07	0.07	-0.18	-0.05	0.02		-0.08	-0.11		0.10	0.06	-0.17	0.01	-0.19	0.07
MeHg BCF	0.19	0.03	-0.13	-0.06	0.11		-0.02	-0.02		0.11	0.19	-0.16	0.16	-0.13	0.02
LN BCF	0.19	0.01	-0.14	-0.11	0.14		0.00	0.00		0.13	0.20	-0.18	0.18	-0.14	0.08

Table 19A. G-330A outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 plus-0 weeks.

Cell 1 Out Plus-0	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.33	-0.49	0.36	0.16	-0.27		0.06	0.31	0.32	0.35	0.32	0.23	-0.03	0.10	0.28
LN Fish THg	0.27	-0.45	0.28	0.09	-0.22		0.05	0.31	0.26	0.33	0.31	0.22	-0.10	0.04	0.25
MeHg BCF	-0.43	0.33	-0.03	0.12	0.10		0.14	-0.22	-0.41	-0.38	-0.40	-0.10	0.17	0.21	-0.27
LN BCF	-0.55	0.56	0.18	0.41	0.17		0.46	-0.39	-0.56	-0.59	-0.62	0.00	0.46	0.55	-0.50

Table 19B. G-330A outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 plus-2 weeks.

Cell 1 Out Plus-2	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.29	-0.48	0.28	0.23	-0.24		0.05	0.44	0.33	0.41	0.43	0.26	-0.01	0.24	0.36
LN Fish THg	0.23	-0.43	0.19	0.14	-0.18		-0.03	0.34	0.27	0.37	0.39	0.15	-0.03	0.12	0.29
MeHg BCF	-0.60	0.48	0.05	-0.19	0.45		0.27	-0.02	-0.24	-0.38	-0.39	-0.01	0.38	0.12	-0.19
LN BCF	-0.67	0.60	0.04	-0.02	0.51		0.50	0.03	-0.50	-0.46	-0.53	0.07	0.20	0.22	-0.40

Table 19C. G-330A outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 plus-4 weeks.

Cell 1 Out Plus-4	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.06	-0.27	0.44	0.28	0.03		0.15	0.51	0.32	0.29	0.38	0.42	0.09	0.39	0.24
LN Fish THg	0.00	-0.20	0.38	0.25	0.08		0.10	0.40	0.28	0.19	0.29	0.32	0.14	0.31	0.21
MeHg BCF	-0.57	0.58	-0.10	-0.25	0.66		0.27	-0.13	-0.20	-0.43	-0.26	0.01	0.17	-0.03	-0.14
LN BCF	-0.55	0.55	-0.39	-0.45	0.68		0.31	-0.19	-0.47	-0.43	-0.32	-0.08	-0.29	-0.18	-0.39

Table 19D. G-330A outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 1 plus-8 weeks.

Cell 1 Out Plus-8	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	-0.31	0.07	0.29	0.20	0.33		0.34	0.27	-0.10	-0.04	0.05	0.29	0.13	0.22	0.01
LN Fish THg	-0.37	0.13	0.32	0.15	0.32		0.33	0.27	-0.10	-0.05	0.04	0.33	0.25	0.26	0.07
MeHg BCF	-0.36	0.29	-0.47	-0.63	-0.03		-0.18	-0.54	-0.58	-0.33	-0.42	-0.42	0.21	-0.42	-0.22
LN BCF	-0.56	0.57	-0.66	-0.66	0.18		-0.35	-0.80	-0.73	-0.72	-0.77	-0.64	0.27	-0.54	-0.39

Table 20A. G-332 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 plus-0 weeks.

Cell 2 Out Plus-0	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.34	-0.18	0.23	0.34	-0.23		0.19	0.10	-0.23	0.40	0.25	0.13	0.55	-0.07	0.37
LN Fish THg	0.27	-0.13	0.28	0.33	-0.17		0.19	0.18	-0.15	0.33	0.17	0.22	0.53	0.03	0.34
MeHg BCF	-0.11	0.16	-0.08	-0.06	0.14		-0.17	0.00	0.21	0.06	0.11	0.02	0.04	-0.09	-0.01
LN BCF	-0.33	0.43	0.17	0.09	0.29		-0.15	0.18	0.41	-0.15	-0.12	0.18	0.05	0.16	0.09

Table 20B. G-332 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 plus-2 weeks.

Cell 2 Out Plus-2	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.48	-0.34	0.24	0.38	-0.24		0.07	0.04	-0.05	0.14	0.02	0.08	0.49	0.02	0.53
LN Fish THg	0.42	-0.29	0.25	0.38	-0.23		-0.01	0.06	0.04	0.14	0.09	0.08	0.46	0.00	0.50
MeHg BCF	-0.15	0.11	-0.11	-0.26	0.27		-0.18	-0.36	0.06	-0.14	-0.03	-0.33	0.12	-0.37	0.09
LN BCF	-0.25	0.22	-0.07	-0.20	0.22		-0.10	-0.18	0.29	-0.29	-0.19	-0.17	-0.03	-0.23	-0.01

Table 20C. G-332 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 plus-4 weeks.

Cell 2 Out Plus-4	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.45	-0.26	0.29	0.45	-0.37		0.15	0.18	0.05	0.08	-0.14	0.12	0.26	0.20	0.48
LN Fish THg	0.41	-0.22	0.26	0.43	-0.35		0.09	0.15	0.15	0.08	-0.11	0.10	0.23	0.15	0.44
MeHg BCF	0.02	-0.02	-0.27	-0.05	0.01		-0.31	-0.49	-0.15	0.05	0.39	-0.45	0.04	-0.47	-0.01
LN BCF	-0.02	-0.15	-0.45	-0.21	0.03		-0.24	-0.52	-0.09	-0.05	0.55	-0.51	-0.14	-0.56	-0.19

Table 20D. G-332 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 plus-8 weeks.

Cell 2 Out Plus-8	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.22	-0.31	0.41	0.45	-0.28		0.49	0.51	0.45	-0.20	-0.27	0.41	0.04	0.45	0.04
LN Fish THg	0.17	-0.28	0.37	0.37	-0.20		0.50	0.46	0.36	-0.24	-0.25	0.38	0.05	0.40	0.09
MeHg BCF	0.12	-0.21	-0.01	-0.22	-0.15		0.29	-0.07	-0.24	0.13	-0.03	-0.14	-0.30	0.06	0.11
LN BCF	-0.14	-0.05	0.05	-0.37	0.05		0.27	-0.07	-0.40	0.02	-0.08	-0.13	-0.34	0.12	0.07

Table 21A. G334 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 plus-0 weeks.

Cell 3 Out Plus-0	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.22	-0.06	0.06	0.07	-0.08		-0.29	-0.08		0.15	-0.05	-0.07	0.12	-0.07	0.13
LN Fish THg	0.18	0.00	0.07	0.12	-0.04		-0.26	-0.05		0.16	-0.05	-0.02	0.10	-0.04	0.08
MeHg BCF	-0.14	0.26	0.37	0.37	0.27		0.06	0.23		-0.06	-0.28	0.37	0.14	0.36	0.20
LN BCF	-0.06	0.19	0.39	0.38	0.20		0.03	0.27		-0.01	-0.26	0.38	0.21	0.32	0.20

Table 21B. G-334 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 plus-2 weeks.

Cell 3 Out Plus-2	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.27	-0.11	0.08	0.10	-0.12		-0.29	0.00		-0.18	-0.26	-0.04	0.23	-0.11	0.30
LN Fish THg	0.20	-0.02	0.11	0.17	-0.09		-0.26	0.00		-0.17	-0.24	0.02	0.19	-0.06	0.27
MeHg BCF	-0.08	0.16	0.25	0.20	0.14		0.10	0.06		-0.18	-0.23	0.16	0.09	0.17	0.20
LN BCF	0.01	0.12	0.30	0.22	0.06		0.07	0.11		-0.17	-0.23	0.18	0.17	0.12	0.25

Table 21C. G-334 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 plus-4 weeks.

Cell 3 Out Plus-4	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.27	-0.28	0.04	-0.13	-0.12		-0.07	0.11		-0.23	-0.27	-0.07	0.34	-0.20	0.36
LN Fish THg	0.21	-0.23	0.04	-0.13	-0.07		-0.03	0.10		-0.25	-0.28	-0.05	0.29	-0.12	0.35
MeHg BCF	-0.05	-0.06	-0.01	-0.26	0.14		0.24	-0.08		-0.27	-0.11	-0.12	0.01	0.10	0.12
LN BCF	0.02	-0.13	0.05	-0.23	0.09		0.24	-0.01		-0.26	-0.14	-0.08	0.10	0.07	0.20

Table 21D. G-334 outflow other constituent inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 3 plus-8 weeks.

Cell 3 Out Plus-8	TEMP	DO	SP CON	pH	NOX	NO2	NH4	TKN	OPO4	TP	TDP	CL	SO4	ALK	DOC
Fish THg	0.21	-0.10	0.11	0.18	-0.29		-0.14	0.30		0.21	0.16	0.15	0.26	-0.21	-0.07
LN Fish THg	0.19	-0.10	0.05	0.11	-0.25		-0.14	0.22		0.19	0.18	0.09	0.20	-0.20	-0.07
MeHg BCF	-0.06	-0.09	0.05	-0.12	-0.08		0.10	0.08		-0.02	0.24	0.03	0.03	0.05	0.10
LN BCF	-0.02	-0.11	0.11	-0.07	-0.06		0.12	0.17		-0.02	0.21	0.09	0.11	0.06	0.14

Table 22A. Soil intra-correlations without pre-flood sampling campaign: Cell 1 lag-0 weeks (n=12).

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	1.00	0.42	-0.84	0.03	-0.41	-0.04	0.57	-0.22	-0.25	0.53	-0.08	0.56	0.22	0.13
ASH	0.42	1.00	-0.30	0.27	-0.60	0.05	0.68	0.11	-0.33	0.93	0.25	0.20	-0.15	-0.21
MOIST	-0.84	-0.30	1.00	0.10	0.43	0.23	-0.27	0.38	0.35	-0.33	0.02	-0.40	-0.16	-0.10
TP	0.03	0.27	0.10	1.00	0.11	0.23	0.09	0.86	-0.27	0.44	0.01	0.01	-0.52	-0.58
TN	-0.41	-0.60	0.43	0.11	1.00	0.31	-0.68	0.46	0.15	-0.41	-0.24	-0.44	-0.30	-0.21
TCA	-0.04	0.05	0.23	0.23	0.31	1.00	0.11	0.27	-0.07	0.12	-0.18	-0.59	-0.26	-0.18
TMG	0.57	0.68	-0.27	0.09	-0.68	0.11	1.00	-0.11	0.08	0.64	0.18	0.38	-0.07	-0.15
TS	-0.22	0.11	0.38	0.86	0.46	0.27	-0.11	1.00	0.00	0.32	-0.07	-0.18	-0.60	-0.60
AVS	-0.25	-0.33	0.35	-0.27	0.15	-0.07	0.08	0.00	1.00	-0.26	-0.24	0.14	-0.17	-0.14
TFE	0.53	0.93	-0.33	0.44	-0.41	0.12	0.64	0.32	-0.26	1.00	0.20	0.27	-0.28	-0.34
TMN	-0.08	0.25	0.02	0.01	-0.24	-0.18	0.18	-0.07	-0.24	0.20	1.00	0.02	-0.25	-0.26
THg	0.56	0.20	-0.40	0.01	-0.44	-0.59	0.38	-0.18	0.14	0.27	0.02	1.00	0.24	0.10
MeHg	0.22	-0.15	-0.16	-0.52	-0.30	-0.26	-0.07	-0.60	-0.17	-0.28	-0.25	0.24	1.00	0.99
%MeHg	0.13	-0.21	-0.10	-0.58	-0.21	-0.18	-0.15	-0.60	-0.14	-0.34	-0.26	0.10	0.99	1.00

Table 22B. Soil intra-correlations without pre-flood sampling campaign: Cell 1 lag-4 weeks (n=9).

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	0.65	0.39	-0.62	0.20	-0.58	-0.24	0.48	-0.38	0.08	0.42	-0.62	0.43	0.49	0.44
ASH	0.41	-0.22	-0.18	0.40	0.13	-0.17	0.03	-0.07	-0.14	-0.13	-0.60	0.28	0.59	0.57
MOIST	-0.74	-0.37	0.64	-0.20	0.53	-0.06	-0.45	0.01	0.16	-0.42	0.59	-0.42	-0.51	-0.48
TP	-0.03	-0.21	0.46	0.39	0.53	0.40	0.05	0.24	0.53	-0.02	-0.67	0.04	-0.23	-0.28
TN	-0.76	-0.09	0.49	-0.20	0.18	0.49	-0.18	-0.06	0.25	-0.25	0.04	-0.76	-0.86	-0.85
TCA	-0.13	0.45	0.27	0.57	0.05	0.44	0.18	0.28	-0.35	0.42	-0.01	-0.54	-0.17	-0.13
TMG	0.62	0.29	-0.37	0.29	-0.32	-0.41	0.40	-0.17	-0.03	0.41	-0.22	0.48	0.65	0.63
TS	-0.42	-0.37	0.59	0.32	0.61	0.45	-0.18	0.09	0.55	-0.28	-0.64	-0.33	-0.54	-0.59
AVS	-0.20	0.22	-0.15	-0.33	-0.39	-0.40	-0.03	-0.26	-0.15	0.11	0.76	-0.16	-0.07	-0.03
TFE	0.33	-0.16	-0.11	0.39	0.09	-0.08	0.12	-0.20	0.03	-0.10	-0.76	0.17	0.43	0.40
TMN	0.22	0.09	0.23	-0.51	-0.08	-0.01	0.62	-0.21	0.22	0.04	-0.05	0.23	0.30	0.30
THg	0.27	-0.22	-0.28	-0.38	-0.21	-0.67	0.14	-0.61	0.60	-0.15	-0.22	0.62	0.31	0.25
MeHg	0.27	0.09	-0.69	-0.27	-0.43	-0.78	-0.17	-0.44	-0.21	0.00	0.34	0.53	0.41	0.40
%MeHg	0.20	0.12	-0.65	-0.26	-0.42	-0.70	-0.20	-0.39	-0.32	-0.01	0.41	0.41	0.36	0.37

Table 22C. Soil intra-correlations without pre-flood sampling campaign: Cell 1 lag-8 weeks (n=6).

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	0.48	-0.24	-0.52	0.43	0.14	-0.20	-0.24	0.14	-0.34	0.32	-0.12	0.40	0.41	0.36
ASH	-0.16	-0.02	0.04	0.11	0.04	0.00	-0.07	-0.06	0.16	-0.15	-0.05	0.18	-0.21	-0.31
MOIST	-0.19	0.57	0.23	-0.31	-0.34	0.58	0.62	-0.31	0.53	-0.17	0.22	-0.54	-0.46	-0.46
TP	0.40	0.60	-0.34	0.56	-0.30	0.55	0.53	-0.34	0.09	0.41	0.39	-0.56	-0.54	-0.53
TN	0.07	0.51	0.08	0.34	-0.09	0.47	0.41	0.46	-0.08	0.27	0.48	-0.51	-0.24	-0.18
TCA	-0.09	0.45	0.13	0.40	0.00	0.47	0.35	0.04	-0.07	-0.23	0.24	-0.12	0.10	0.00
TMG	0.14	0.09	-0.28	-0.01	-0.13	0.16	0.19	-0.45	0.42	0.00	-0.38	0.10	0.11	0.01
TS	0.32	0.76	-0.24	0.46	-0.45	0.70	0.72	-0.09	0.24	0.45	0.37	-0.80	-0.67	-0.61
AVS	0.02	0.29	-0.02	-0.34	-0.27	0.24	0.40	-0.14	0.40	0.19	-0.49	-0.47	-0.04	0.22
TFE	0.06	0.15	-0.18	0.29	-0.12	0.15	0.12	0.00	0.07	0.09	0.01	-0.03	-0.26	-0.30
TMN	-0.35	-0.19	0.08	-0.43	-0.38	-0.18	-0.02	-0.32	0.10	-0.44	-0.04	0.00	0.00	-0.06
THg	0.54	-0.15	-0.62	-0.05	-0.12	-0.14	-0.02	-0.26	-0.08	0.51	-0.15	0.07	-0.02	0.10
MeHg	0.14	-0.51	-0.11	-0.17	0.34	-0.44	-0.51	0.05	-0.31	-0.23	0.02	0.72	0.59	0.48
%MeHg	0.04	-0.51	0.00	-0.19	0.36	-0.44	-0.53	0.13	-0.33	-0.31	0.03	0.71	0.62	0.51

Table 23A. Soil intra-correlations without pre-flood sampling campaign: Cell 2 lag-0 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	1.00	-0.18	-0.50	-0.24	0.44	-0.29	-0.56	-0.12	-0.23	0.52	0.44	0.33	0.06	-0.07
ASH	-0.18	1.00	-0.59	-0.17	-0.80	0.51	0.25	-0.45	0.13	0.08	-0.33	-0.22	-0.35	-0.32
MOIST	-0.50	-0.59	1.00	0.45	0.38	0.01	0.44	0.64	0.47	-0.41	-0.11	-0.26	0.12	0.25
TP	-0.24	-0.17	0.45	1.00	0.12	0.31	0.10	0.22	0.08	-0.17	0.18	-0.39	-0.24	-0.16
TN	0.44	-0.80	0.38	0.12	1.00	-0.59	-0.24	0.47	-0.11	0.44	0.58	0.33	0.53	0.49
TCA	-0.29	0.51	0.01	0.31	-0.59	1.00	0.47	-0.21	0.41	-0.55	-0.28	-0.54	-0.50	-0.36
TMG	-0.56	0.25	0.44	0.10	-0.24	0.47	1.00	0.15	0.44	-0.27	-0.28	-0.38	0.13	0.27
TS	-0.12	-0.45	0.64	0.22	0.47	-0.21	0.15	1.00	0.24	-0.15	-0.24	0.04	0.33	0.30
AVS	-0.23	0.13	0.47	0.08	-0.11	0.41	0.44	0.24	1.00	-0.26	-0.44	-0.55	-0.37	-0.16
TFE	0.52	0.08	-0.41	-0.17	0.44	-0.55	-0.27	-0.15	-0.26	1.00	0.58	0.31	0.41	0.36
TMN	0.44	-0.33	-0.11	0.18	0.58	-0.28	-0.28	-0.24	-0.44	0.58	1.00	0.38	0.27	0.22
THg	0.33	-0.22	-0.26	-0.39	0.33	-0.54	-0.38	0.04	-0.55	0.31	0.38	1.00	0.41	0.03
MeHg	0.06	-0.35	0.12	-0.24	0.53	-0.50	0.13	0.33	-0.37	0.41	0.27	0.41	1.00	0.90
%MeHg	-0.07	-0.32	0.25	-0.16	0.49	-0.36	0.27	0.30	-0.16	0.36	0.22	0.03	0.90	1.00

Table 23B. Soil intra-correlations without pre-flood sampling campaign: Cell 2 lag-4 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	-0.31	-0.32	0.27	0.41	-0.24	-0.22	-0.13	0.01	-0.23	-0.16	-0.37	-0.50	-0.18	-0.01
ASH	0.05	0.73	0.07	-0.22	-0.60	0.65	0.53	-0.22	0.79	-0.33	-0.34	-0.58	-0.32	-0.06
MOIST	0.50	-0.47	-0.53	-0.33	0.88	-0.59	-0.69	0.37	-0.34	0.59	0.36	0.83	0.32	0.00
TP	0.24	-0.35	-0.36	-0.25	0.40	-0.20	-0.52	0.03	-0.31	0.02	0.59	0.65	-0.18	-0.40
TN	-0.06	-0.83	-0.08	-0.19	0.55	-0.86	-0.46	0.20	-0.68	0.36	0.05	0.40	0.33	0.21
TCA	0.40	0.46	-0.32	-0.02	-0.15	0.31	-0.33	-0.08	0.59	0.05	0.13	-0.14	-0.47	-0.42
TMG	0.17	-0.02	-0.05	-0.53	0.37	-0.14	-0.19	0.23	0.38	0.31	-0.03	0.18	0.35	0.39
TS	0.38	-0.36	-0.40	-0.53	0.73	-0.57	-0.30	0.22	-0.15	0.50	-0.10	0.62	0.35	0.10
AVS	0.82	0.12	-0.68	-0.23	0.38	-0.11	-0.56	0.48	0.35	0.36	-0.23	0.04	-0.17	-0.23
TFE	-0.32	-0.41	0.27	-0.36	-0.08	-0.30	0.24	0.09	-0.20	-0.21	-0.42	-0.28	0.18	0.40
TMN	-0.24	-0.62	0.04	-0.06	0.16	-0.67	-0.26	-0.09	-0.65	0.21	0.31	0.20	0.15	0.15
THg	-0.46	0.07	0.32	0.10	-0.32	-0.19	0.30	-0.68	0.03	0.10	-0.12	-0.15	-0.06	-0.02
MeHg	-0.54	-0.60	0.53	-0.32	0.24	-0.41	0.11	0.09	-0.18	-0.08	-0.43	0.01	0.48	0.58
%MeHg	-0.33	-0.75	0.38	-0.42	0.48	-0.48	-0.02	0.48	-0.32	-0.02	-0.39	0.12	0.67	0.75

Table 23C. Soil intra-correlations without pre-flood sampling campaign: Cell 2 lag-8 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	-0.13	-0.51	0.14	0.26	0.67	0.65	0.32	0.42	-0.77	-0.47	0.46	0.76	0.39	0.20
ASH	0.63	0.36	-0.38	0.24	0.28	0.13	-0.56	0.59	0.52	0.30	-0.34	-0.57	-0.01	0.12
MOIST	-0.16	0.10	-0.02	-0.19	-0.62	-0.61	0.28	-0.59	0.04	0.11	-0.29	-0.22	-0.30	-0.29
TP	0.21	0.67	-0.44	0.31	-0.48	-0.73	0.28	-0.61	-0.19	0.75	0.31	0.17	-0.12	-0.24
TN	-0.54	-0.50	0.40	-0.15	0.30	-0.21	0.92	-0.13	-0.83	-0.11	0.27	0.67	0.57	0.39
TCA	0.89	0.61	-0.84	0.63	-0.21	0.04	-0.51	0.21	0.28	0.23	-0.32	-0.49	-0.55	-0.55
TMG	0.37	0.08	-0.25	-0.01	-0.13	-0.27	-0.12	0.25	0.39	0.03	-0.84	-0.79	-0.24	-0.11
TS	-0.47	-0.05	0.36	-0.61	-0.58	-0.77	0.31	-0.60	0.30	0.15	-0.42	-0.39	-0.08	0.03
AVS	0.54	0.21	-0.48	0.25	-0.17	-0.14	-0.19	0.21	0.24	0.01	-0.67	-0.63	-0.39	-0.34
TFE	-0.20	-0.39	0.32	-0.03	0.88	-0.02	0.64	0.54	-0.59	0.16	0.18	0.45	0.95	0.86
TMN	-0.33	-0.38	0.25	0.09	0.58	-0.08	0.87	0.12	-0.93	0.05	0.44	0.80	0.73	0.52
THg	-0.37	-0.37	0.41	-0.14	0.34	0.58	-0.08	0.12	-0.17	-0.37	0.52	0.51	0.24	0.21
MeHg	-0.76	-0.82	0.80	-0.52	0.58	0.01	0.76	0.19	-0.53	-0.32	0.06	0.45	0.79	0.76
%MeHg	-0.67	-0.78	0.71	-0.53	0.51	-0.27	0.89	0.21	-0.49	-0.22	-0.26	0.20	0.77	0.76

Table 24A. Soil intra-correlations without pre-flood sampling campaign: Cell 3 lag-0 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	1.00	-0.25	-0.74	0.44	0.02	-0.25	-0.26	0.16	-0.38	0.57	0.17	0.43	-0.25	-0.28
ASH	-0.25	1.00	0.59	0.64	0.28	0.93	0.62	-0.10	0.19	-0.08	0.70	-0.34	-0.46	-0.35
MOIST	-0.74	0.59	1.00	-0.04	0.00	0.55	0.43	0.00	0.56	-0.14	0.03	-0.50	0.05	0.14
TP	0.44	0.64	-0.04	1.00	0.21	0.70	0.38	-0.07	-0.22	0.10	0.86	-0.22	-0.37	-0.27
TN	0.02	0.28	0.00	0.21	1.00	0.26	0.22	-0.18	0.22	0.16	0.24	0.33	0.10	0.03
TCA	-0.25	0.93	0.55	0.70	0.26	1.00	0.67	-0.29	0.22	-0.26	0.79	-0.32	-0.39	-0.34
TMG	-0.26	0.62	0.43	0.38	0.22	0.67	1.00	-0.24	0.24	-0.40	0.61	-0.02	-0.44	-0.45
TS	0.16	-0.10	0.00	-0.07	-0.18	-0.29	-0.24	1.00	-0.42	0.39	-0.28	-0.21	0.03	0.26
AVS	-0.38	0.19	0.56	-0.22	0.22	0.22	0.24	-0.42	1.00	-0.01	-0.26	0.07	-0.13	-0.20
TFE	0.57	-0.08	-0.14	0.10	0.16	-0.26	-0.40	0.39	-0.01	1.00	-0.19	0.31	0.06	0.06
TMN	0.17	0.70	0.03	0.86	0.24	0.79	0.61	-0.28	-0.26	-0.19	1.00	-0.10	-0.39	-0.36
THg	0.43	-0.34	-0.50	-0.22	0.33	-0.32	-0.02	-0.21	0.07	0.31	-0.10	1.00	-0.15	-0.45
MeHg	-0.25	-0.46	0.05	-0.37	0.10	-0.39	-0.44	0.03	-0.13	0.06	-0.39	-0.15	1.00	0.92
%MeHg	-0.28	-0.35	0.14	-0.27	0.03	-0.34	-0.45	0.26	-0.20	0.06	-0.36	-0.45	0.92	1.00

Table 24B. Soil intra-correlations without pre-flood sampling campaign: Cell 3 lag-4 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	0.63	-0.25	-0.49	0.38	0.32	-0.19	-0.18	0.47	-0.23	0.41	0.04	-0.06	0.41	0.58
ASH	-0.50	0.54	0.61	0.24	0.32	0.65	0.64	-0.46	0.32	-0.47	0.50	-0.15	-0.05	-0.07
MOIST	-0.75	0.18	0.73	-0.49	-0.14	0.16	0.00	-0.43	0.54	-0.25	-0.17	-0.02	0.03	-0.11
TP	0.15	0.42	0.08	0.56	0.48	0.39	0.39	0.09	-0.07	0.11	0.53	-0.23	-0.12	0.21
TN	0.36	-0.52	-0.46	-0.26	-0.22	-0.59	-0.72	0.51	-0.23	0.39	-0.59	0.05	0.31	0.30
TCA	-0.49	0.65	0.60	0.34	0.17	0.67	0.57	-0.35	0.19	-0.47	0.56	-0.45	-0.34	-0.07
TMG	-0.13	0.56	0.33	0.46	0.37	0.71	0.20	-0.75	0.47	-0.14	0.49	-0.04	-0.34	-0.41
TS	0.01	0.10	0.03	0.19	0.06	0.32	-0.17	-0.32	0.02	-0.01	0.24	0.22	0.43	0.05
AVS	-0.10	-0.75	-0.05	-0.65	-0.55	-0.65	-0.71	0.12	0.30	0.01	-0.81	-0.12	0.54	0.45
TFE	0.05	-0.52	-0.02	-0.41	0.16	-0.51	-0.49	0.49	0.16	0.36	-0.60	0.10	0.95	0.84
TMN	-0.18	0.78	0.41	0.64	0.61	0.75	0.65	-0.21	0.12	-0.20	0.69	-0.33	-0.41	-0.09
THg	0.22	-0.55	-0.32	-0.11	-0.28	-0.37	-0.57	0.18	0.02	-0.07	-0.47	-0.22	0.49	0.45
MeHg	-0.19	-0.22	0.11	-0.68	-0.25	-0.53	-0.37	0.30	0.07	0.39	-0.58	0.16	-0.15	-0.08
%MeHg	-0.18	-0.07	0.14	-0.58	-0.08	-0.41	-0.24	0.28	0.03	0.44	-0.44	0.26	-0.20	-0.16

Table 24C. Soil intra-correlations without pre-flood sampling campaign: Cell 3 lag-8 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	0.63	-0.07	-0.46	0.41	0.26	-0.20	-0.56	0.56	-0.31	0.79	-0.06	-0.21	0.14	0.48
ASH	-0.64	0.48	0.76	-0.02	0.24	0.46	0.43	-0.52	0.78	-0.56	0.03	-0.46	-0.59	-0.34
MOIST	-0.94	-0.02	0.79	-0.70	-0.25	0.00	0.27	-0.29	0.61	-0.87	-0.42	-0.35	-0.01	-0.03
TP	-0.07	0.62	0.38	0.50	0.86	0.53	0.13	0.04	0.33	0.22	0.21	-0.23	-0.08	0.16
TN	0.58	-0.63	-0.79	-0.14	-0.57	-0.61	-0.44	0.47	-0.79	0.40	-0.12	0.32	0.43	0.25
TCA	-0.63	0.83	0.85	0.31	0.63	0.81	0.69	-0.45	0.62	-0.51	0.37	-0.34	-0.52	-0.30
TMG	-0.37	0.24	0.37	0.04	-0.05	0.02	0.11	0.66	-0.34	-0.27	-0.01	-0.89	0.03	0.64
TS	-0.59	0.00	0.48	-0.35	-0.46	-0.14	0.11	0.21	0.09	-0.61	-0.26	-0.92	-0.30	0.25
AVS	0.10	-0.84	-0.39	-0.65	-0.92	-0.90	-0.63	0.49	-0.34	0.01	-0.67	-0.33	0.29	0.44
TFE	0.00	-0.79	-0.17	-0.73	-0.63	-0.81	-0.74	0.18	0.25	0.07	-0.87	-0.26	0.25	0.32
TMN	-0.15	0.88	0.48	0.69	0.92	0.84	0.51	-0.22	0.31	0.02	0.56	-0.11	-0.34	-0.16
THg	0.59	-0.47	-0.73	0.05	-0.67	-0.54	-0.40	0.46	-0.75	0.35	-0.02	-0.18	-0.09	0.18
MeHg	-0.13	-0.33	0.00	-0.47	0.01	-0.21	-0.12	-0.05	0.09	-0.04	-0.32	0.61	0.70	0.10
%MeHg	-0.19	-0.27	0.08	-0.47	0.07	-0.15	-0.08	-0.11	0.18	-0.08	-0.32	0.59	0.67	0.06

Table 24D. Soil intra-correlations without pre-flood sampling campaign: Cell 3 lag-12 weeks.

	BD	ASH	MOIST	TP	TN	TCA	TMG	TS	AVS	TFE	TMN	THg	MeHg	%MeHg
BD	0.88	-0.07	-0.49	0.29	0.21	-0.24	-0.53	0.93	-0.89	1.00	-0.11	-0.87	0.91	0.94
ASH	-0.19	0.93	0.68	1.00	0.99	0.85	0.64	-0.06	0.16	0.24	0.91	0.21	-0.11	-0.02
MOIST	-0.68	-0.24	0.20	-0.57	-0.50	-0.07	0.24	-0.77	0.71	-0.93	-0.20	0.67	-0.74	-0.80
TP	1.00	-0.49	-0.82	-0.15	-0.24	-0.64	-0.84	1.00	-1.00	0.93	-0.53	-1.00	1.00	0.99
TN	-0.58	1.00	0.92	0.92	0.95	0.99	0.90	-0.47	0.55	-0.18	1.00	0.59	-0.51	-0.43
TCA	-1.00	0.59	0.88	0.26	0.35	0.72	0.90	-0.98	1.00	-0.88	0.62	1.00	-0.99	-0.98
TMG	-0.91	0.84	0.99	0.60	0.67	0.93	1.00	-0.85	0.89	-0.65	0.87	0.92	-0.87	-0.83
TS	-0.89	0.86	1.00	0.63	0.69	0.94	1.00	-0.82	0.88	-0.62	0.89	0.90	-0.85	-0.80
AVS	-0.50	1.00	0.88	0.95	0.97	0.97	0.86	-0.38	0.47	-0.09	1.00	0.52	-0.43	-0.35
TFE	0.89	-0.86	-1.00	-0.63	-0.69	-0.94	-1.00	0.82	-0.88	0.62	-0.89	-0.90	0.85	0.80
TMN	0.54	0.41	-0.02	0.71	0.65	0.25	-0.06	0.64	-0.57	0.84	0.37	-0.52	0.60	0.67
THg	0.11	0.78	0.43	0.95	0.92	0.65	0.39	0.24	-0.14	0.52	0.75	-0.09	0.18	0.27
MeHg	-0.20	-0.71	-0.34	-0.91	-0.88	-0.58	-0.30	-0.33	0.23	-0.60	-0.68	0.19	-0.28	-0.36
%MeHg	-0.19	-0.72	-0.35	-0.92	-0.88	-0.59	-0.31	-0.32	0.22	-0.59	-0.69	0.17	-0.27	-0.35

Table 25A. Soil inter-correlations with outflow THg and MeHg, mosquitofish THg, and mosquitofish MeHg BCF: Cell 1 lag-0 weeks.

	BD	LN-BD	ASH		MOIST		TP		TN		TCA		TMG	
MFISH THg	0.10	0.07	-0.04	-0.16	-0.25	-0.26	-0.52	-0.50	-0.56	-0.54	-0.59	-0.59	-0.04	-0.06
LN MFISHTHG	0.24	0.22	-0.04	-0.17	-0.44	-0.44	-0.53	-0.51	-0.59	-0.58	-0.62	-0.62	-0.01	-0.03
MFISH BCF	-0.48	-0.45	0.12	0.20	0.41	0.42	0.52	0.53	0.11	0.12	0.15	0.14	-0.01	0.00
LNMFISH BCF	-0.44	-0.41	0.24	0.31	0.42	0.43	0.58	0.59	0.05	0.05	-0.03	-0.04	0.05	0.06
MFISHBSAF	-0.40	-0.38	-0.11	-0.08	0.08	0.08	0.27	0.31	-0.03	-0.01	-0.01	-0.01	-0.17	-0.16
LNMFISHBSAF	-0.46	-0.44	0.00	0.05	0.20	0.21	0.30	0.34	-0.05	-0.03	-0.01	-0.01	-0.05	-0.04

TS		AVS		TFE		TMN		THG		MEHG		%MEHG	
-0.73	-0.71	-0.11	-0.05	-0.23	-0.42	0.16	0.15	0.47	0.48	0.73	0.71	0.69	0.66
-0.77	-0.73	-0.10	-0.05	-0.19	-0.35	0.14	0.13	0.54	0.55	0.65	0.69	0.60	0.64
0.50	0.51	-0.05	-0.19	0.14	0.22	0.57	0.58	-0.24	-0.26	-0.79	-0.77	-0.78	-0.78
0.57	0.61	0.01	-0.15	0.26	0.31	0.39	0.38	-0.02	-0.05	-0.76	-0.74	-0.79	-0.78
0.20	0.25	0.31	0.17	-0.12	-0.06	0.01	0.02	-0.16	-0.20	-0.61	-0.73	-0.59	-0.75
0.25	0.30	0.32	0.17	-0.02	0.05	0.25	0.26	-0.15	-0.19	-0.74	-0.82	-0.72	-0.84

Table 25B. Soil inter-correlations with outflow mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-4 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	-0.01	-0.06	-0.23	-0.32	-0.05	-0.06	-0.51	-0.49	-0.37	-0.35	-0.32	-0.32	-0.01	-0.01
LN MFISHTHG	0.08	0.03	-0.14	-0.24	-0.23	-0.24	-0.50	-0.47	-0.48	-0.46	-0.53	-0.52	0.05	0.04
MFISH BCF	-0.47	-0.47	-0.11	-0.10	-0.03	-0.02	0.18	0.23	-0.06	-0.04	-0.23	-0.24	-0.34	-0.34
LNMFISH BCF	-0.43	-0.44	0.07	0.05	-0.05	-0.05	0.14	0.21	-0.27	-0.26	-0.37	-0.38	-0.23	-0.23
MFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LNMFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.66	-0.69	0.24	0.38	-0.38	-0.51	0.03	0.03	0.11	0.15	0.86	0.74	0.85	0.78
-0.70	-0.70	0.19	0.36	-0.31	-0.45	0.04	0.02	0.24	0.27	0.80	0.74	0.77	0.76
-0.02	0.06	-0.37	-0.33	-0.25	-0.25	0.38	0.34	-0.32	-0.36	-0.45	-0.58	-0.43	-0.56
-0.10	0.00	-0.40	-0.36	-0.12	-0.18	0.41	0.37	-0.17	-0.22	-0.32	-0.45	-0.32	-0.44
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 25C. Soil inter-correlations with mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-8 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.29	0.25	-0.23	-0.30	-0.22	-0.23	-0.55	-0.55	-0.30	-0.28	-0.05	-0.04	0.22	0.23
LN MFISHTHG	0.32	0.28	-0.16	-0.24	-0.20	-0.21	-0.62	-0.62	-0.34	-0.33	-0.33	-0.32	0.25	0.25
MFISH BCF	-0.56	-0.53	-0.27	-0.26	0.67	0.67	-0.06	-0.09	0.37	0.38	-0.28	-0.29	-0.32	-0.31
LNMFISH BCF	-0.60	-0.57	-0.24	-0.23	0.71	0.71	0.01	-0.02	0.40	0.41	-0.27	-0.29	-0.37	-0.37
MFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LNMFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG
-0.67	-0.76	0.41	0.52	-0.29	-0.35	-0.01	0.02	0.12	0.17	0.74	0.71	0.74
-0.71	-0.76	0.49	0.60	-0.22	-0.30	0.02	0.02	0.39	0.44	0.81	0.87	0.78
0.11	0.13	0.28	0.17	-0.25	-0.23	0.44	0.40	0.21	0.24	-0.25	-0.20	-0.25
0.21	0.24	0.21	0.10	-0.22	-0.21	0.33	0.28	0.18	0.20	-0.24	-0.21	-0.24
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 25D. Soil inter-correlations with mosquitofish THg and mosquitofish MeHg BCF: Cell 1 lag-12 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.20	0.19	-0.24	-0.32	-0.28	-0.28	-0.59	-0.57	-0.19	-0.17	-0.38	-0.37	0.20	0.19
LN MFISHTHG	0.25	0.23	-0.20	-0.29	-0.36	-0.36	-0.64	-0.61	-0.26	-0.24	-0.52	-0.51	0.22	0.21
MFISH BCF	-0.15	-0.11	-0.12	-0.06	0.77	0.76	-0.15	-0.19	0.15	0.16	-0.20	-0.19	-0.72	-0.72
LNMFISH BCF	0.02	0.04	0.08	0.15	0.90	0.90	0.00	-0.04	-0.02	-0.02	-0.22	-0.22	-0.61	-0.62
MFISHBSAF	0.18	0.20	-0.19	-0.15	0.36	0.36	-0.02	-0.05	0.41	0.40	-0.34	-0.34	-0.59	-0.59
LNMFISHBSAF	0.10	0.13	-0.26	-0.21	0.55	0.54	-0.05	-0.10	0.40	0.40	-0.34	-0.34	-0.71	-0.71

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.42	-0.41	0.34	0.29	-0.42	-0.52	0.07	0.05	0.59	0.58	0.78	0.80	0.66	0.74
-0.54	-0.50	0.31	0.28	-0.36	-0.45	0.00	-0.03	0.60	0.61	0.77	0.86	0.66	0.79
-0.20	-0.21	0.17	0.26	-0.32	-0.32	-0.11	-0.13	-0.46	-0.45	-0.08	-0.30	0.04	-0.21
-0.11	-0.15	0.16	0.33	-0.12	-0.14	0.06	0.04	-0.40	-0.38	0.00	-0.20	0.10	-0.12
0.13	0.13	0.04	0.17	-0.16	-0.10	-0.47	-0.53	-0.08	-0.06	0.15	0.18	0.19	0.23
0.04	0.02	0.09	0.21	-0.28	-0.23	-0.34	-0.40	-0.16	-0.14	0.15	0.10	0.21	0.15

Table 26A. Soil inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-0 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.23	0.20	-0.10	-0.14	-0.44	-0.44	-0.17	-0.22	0.06	0.05	-0.09	-0.07	-0.25	-0.26
LN MFISHTHG	-0.03	-0.06	-0.04	-0.08	-0.33	-0.33	-0.13	-0.21	-0.05	-0.06	-0.03	-0.01	-0.04	-0.04
MFISH BCF	0.05	0.06	0.45	0.41	-0.39	-0.40	-0.23	-0.27	-0.39	-0.41	0.04	0.07	-0.08	-0.07
LNMFISH BCF	0.06	0.07	0.33	0.29	-0.39	-0.40	-0.28	-0.33	-0.32	-0.34	0.01	0.05	-0.08	-0.07
MFISHBSAF	-0.07	-0.10	0.31	0.26	-0.39	-0.40	0.20	0.07	-0.59	-0.58	0.54	0.56	-0.11	-0.12
LNMFISHBSAF	-0.14	-0.17	0.33	0.30	-0.36	-0.37	0.19	0.08	-0.56	-0.55	0.53	0.54	-0.01	-0.02

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.60	-0.64	-0.65	-0.79	0.20	0.16	0.44	0.39	0.11	0.15	0.33	0.41	0.35	0.37
-0.56	-0.58	-0.67	-0.77	0.08	0.04	0.35	0.31	0.09	0.11	0.37	0.40	0.39	0.38
0.13	0.07	-0.12	-0.02	-0.06	0.01	-0.55	-0.62	0.08	0.12	-0.13	-0.24	-0.28	-0.35
0.21	0.14	-0.25	-0.17	-0.16	-0.07	-0.57	-0.62	0.25	0.27	0.00	-0.12	-0.21	-0.30
-0.70	-0.71	-0.30	-0.37	-0.36	-0.42	-0.01	-0.05	-0.26	-0.28	-0.46	-0.47	-0.41	-0.35
-0.73	-0.71	-0.29	-0.35	-0.35	-0.42	0.03	-0.03	-0.28	-0.30	-0.50	-0.51	-0.43	-0.39

Table 26B. Soil inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-4 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.59	0.57	-0.17	-0.17	-0.46	-0.45	-0.17	-0.13	0.44	0.42	-0.49	-0.48	-0.31	-0.30
LN MFISHTHG	0.50	0.49	-0.22	-0.25	-0.47	-0.46	-0.24	-0.23	0.38	0.36	-0.59	-0.59	-0.33	-0.32
MFISH BCF	-0.47	-0.47	0.19	0.21	0.33	0.32	-0.04	-0.02	-0.34	-0.32	0.47	0.40	0.75	0.74
LNMFISH BCF	-0.53	-0.53	0.27	0.28	0.16	0.14	0.03	0.00	-0.43	-0.41	0.40	0.34	0.67	0.67
MFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LNMFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.45	-0.47	-0.61	-0.65	0.74	0.70	0.78	0.70	0.20	0.27	0.39	0.51	0.44	0.42
-0.41	-0.44	-0.81	-0.83	0.62	0.60	0.70	0.64	0.38	0.45	0.45	0.56	0.41	0.35
-0.08	-0.01	0.51	0.45	-0.38	-0.45	-0.36	-0.36	-0.69	-0.74	-0.25	-0.29	0.07	0.16
-0.27	-0.20	0.23	0.22	-0.28	-0.36	-0.30	-0.33	-0.69	-0.71	-0.24	-0.27	0.08	0.15
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 26C. Soil inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-8 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.05	0.06	-0.65	-0.66	0.33	0.34	0.09	0.15	0.70	0.70	-0.70	-0.71	-0.04	-0.01
LN MFISHTHG	0.11	0.11	-0.72	-0.72	0.34	0.35	0.16	0.22	0.75	0.75	-0.70	-0.71	-0.12	-0.09
MFISH BCF	-0.43	-0.42	-0.44	-0.44	0.62	0.62	0.03	0.05	0.18	0.20	-0.22	-0.27	0.28	0.29
LNMFISH BCF	-0.44	-0.42	-0.53	-0.52	0.79	0.79	0.21	0.26	0.28	0.31	-0.11	-0.16	0.34	0.35
MFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LNMFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
0.44	0.44	-0.57	-0.45	0.29	0.30	0.60	0.66	0.47	0.47	0.63	0.63	0.56	0.43
0.42	0.42	-0.59	-0.47	0.29	0.29	0.67	0.73	0.46	0.47	0.59	0.61	0.52	0.40
0.48	0.53	0.08	0.19	-0.36	-0.35	-0.04	0.04	-0.13	-0.14	0.00	0.04	0.15	0.14
0.60	0.66	0.21	0.31	-0.42	-0.42	0.01	0.12	-0.14	-0.19	-0.01	-0.01	0.13	0.12
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 26D. Soil inter-correlations with interior mosquitofish THg and mosquitofish MeHg BCF: Cell 2 lag-12 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.62	0.60	-0.64	-0.72	-0.57	-0.57	-0.24	-0.22	0.48	0.46	-0.42	-0.41	0.07	0.10
LN MFISHTHG	0.59	0.57	-0.61	-0.67	-0.58	-0.57	-0.25	-0.27	0.47	0.45	-0.59	-0.58	-0.06	-0.04
MFISH BCF	0.29	0.27	-0.25	-0.24	0.10	0.11	-0.10	-0.09	0.18	0.19	-0.46	-0.48	-0.18	-0.18
LNMFISH BCF	0.19	0.17	-0.29	-0.28	0.20	0.21	0.01	0.01	0.21	0.23	-0.51	-0.54	-0.14	-0.14
MFISHBSAF	0.66	0.63	-0.41	-0.52	-0.74	-0.74	-0.22	-0.29	0.06	0.05	-0.26	-0.23	-0.38	-0.37
LNMFISHBSAF	0.63	0.59	-0.36	-0.45	-0.74	-0.74	-0.16	-0.24	0.08	0.06	-0.32	-0.27	-0.49	-0.48

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.35	-0.35	-0.68	-0.78	0.25	0.30	-0.03	-0.02	0.38	0.43	0.26	0.37	0.11	0.15
-0.35	-0.36	-0.84	-0.88	0.34	0.40	0.09	0.09	0.46	0.53	0.41	0.51	0.24	0.26
0.28	0.27	0.22	0.16	0.19	0.26	-0.14	-0.07	0.03	0.06	0.28	0.36	0.32	0.39
0.33	0.32	0.19	0.15	0.18	0.23	-0.09	-0.01	-0.07	-0.03	0.33	0.41	0.43	0.51
-0.67	-0.70	-0.61	-0.77	0.01	0.09	-0.17	-0.17	0.42	0.46	0.03	0.12	-0.24	-0.17
-0.59	-0.63	-0.68	-0.77	0.13	0.20	-0.10	-0.11	0.50	0.55	0.07	0.15	-0.24	-0.20

Table 27A. Soil inter-correlations with interior mosquitofish THg, mosquitofish MeHg BCF, and soil BCF: Cell 3 lag-0 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.35	0.35	-0.66	-0.66	-0.51	-0.52	-0.45	-0.40	-0.11	-0.11	-0.81	-0.86	-0.71	-0.72
LN MFISHTHG	0.27	0.25	-0.72	-0.71	-0.41	-0.41	-0.55	-0.50	-0.06	-0.06	-0.83	-0.86	-0.76	-0.76
MFISH BCF	-0.06	-0.05	-0.51	-0.50	-0.19	-0.19	-0.69	-0.70	-0.30	-0.30	-0.72	-0.74	-0.62	-0.61
LNMFISH BCF	0.08	0.09	-0.68	-0.66	-0.36	-0.35	-0.66	-0.65	-0.32	-0.30	-0.82	-0.82	-0.77	-0.76
MFISHBSAF	0.12	0.12	0.20	0.17	-0.13	-0.15	0.01	-0.02	-0.06	-0.10	0.00	-0.09	-0.02	-0.02
LNMFISHBSAF	0.22	0.22	0.26	0.24	-0.14	-0.15	0.14	0.10	-0.09	-0.13	0.09	0.01	0.09	0.09

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
0.16	0.13	-0.02	0.25	0.36	0.39	-0.69	-0.62	0.17	0.12	0.17	0.41	0.20	0.33
0.22	0.20	0.08	0.33	0.39	0.40	-0.83	-0.73	0.19	0.13	0.29	0.54	0.28	0.45
0.18	0.22	-0.07	0.11	0.27	0.25	-0.71	-0.70	0.10	0.08	0.17	0.26	0.18	0.21
0.25	0.30	-0.17	0.02	0.26	0.24	-0.78	-0.72	0.11	0.06	0.27	0.42	0.27	0.36
-0.17	-0.19	0.20	0.05	0.05	0.05	-0.06	-0.09	0.05	0.07	-0.63	-0.61	-0.56	-0.60
-0.07	-0.08	0.19	0.04	0.05	0.03	0.04	0.00	0.05	0.06	-0.80	-0.73	-0.70	-0.70

Table 27B. Soil inter-correlations with interior mosquitofish THg, mosquitofish MeHg BCF, and soil BCF: Cell 3 lag-4 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.34	0.29	-0.78	-0.77	-0.58	-0.59	-0.33	-0.26	0.73	0.74	-0.79	-0.80	-0.69	-0.70
LN MFISHTHG	0.27	0.21	-0.86	-0.83	-0.45	-0.46	-0.48	-0.42	0.87	0.87	-0.87	-0.85	-0.61	-0.62
MFISH BCF	0.06	0.04	-0.49	-0.48	-0.07	-0.08	-0.40	-0.36	0.43	0.44	-0.70	-0.71	-0.05	-0.05
LNMFISH BCF	0.01	-0.01	-0.59	-0.57	-0.10	-0.11	-0.53	-0.48	0.53	0.54	-0.80	-0.80	-0.20	-0.20
MFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LNMFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.59	-0.64	0.37	0.56	0.34	0.38	-0.55	-0.47	0.45	0.46	0.41	0.61	0.32	0.44
-0.43	-0.48	0.55	0.76	0.42	0.44	-0.69	-0.62	0.59	0.60	0.46	0.72	0.34	0.50
0.24	0.18	0.26	0.43	0.27	0.33	-0.59	-0.57	0.15	0.18	0.29	0.34	0.30	0.27
0.13	0.06	0.36	0.52	0.29	0.35	-0.71	-0.70	0.23	0.26	0.37	0.45	0.35	0.36
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 27C. Soil inter-correlations with interior mosquitofish THg, mosquitofish MeHg BCF, and soil BCF: Cell 3 lag-8 weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	0.71	0.68	-0.34	-0.28	-0.27	-0.27	0.13	0.17	0.39	0.40	-0.34	-0.29	-0.25	-0.26
LN MFISHTHG	0.63	0.61	-0.27	-0.21	-0.17	-0.18	0.10	0.15	0.30	0.32	-0.33	-0.29	-0.26	-0.27
MFISH BCF	0.61	0.58	-0.30	-0.24	-0.09	-0.09	0.05	0.08	0.40	0.41	-0.35	-0.29	-0.16	-0.16
LNMFISH BCF	0.53	0.50	-0.31	-0.25	-0.05	-0.05	-0.03	0.01	0.38	0.39	-0.40	-0.35	-0.25	-0.26
MFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LNMFISHBSAF	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
-0.06	-0.08	0.65	0.63	0.74	0.77	-0.30	-0.25	0.57	0.56	-0.02	0.26	-0.16	0.06
-0.08	-0.11	0.64	0.60	0.76	0.81	-0.31	-0.28	0.47	0.47	0.04	0.26	-0.08	0.09
0.20	0.19	0.67	0.66	0.80	0.82	-0.37	-0.33	0.53	0.52	0.01	0.26	-0.10	0.07
0.11	0.08	0.70	0.68	0.82	0.86	-0.44	-0.42	0.48	0.48	0.11	0.33	0.00	0.16
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 27D. Soil Inter-Correlations with Interior Mosquitofish THg, Mosquitofish MeHg BCF, and Soil BCF: Cell 3 Lag-12 Weeks.

	BD	LN	ASH	LN	MOIST	LN	TP	LN	TN	LN	TCA	LN	TMG	LN
MFISH THg	-0.41	-0.56	-0.46	-0.52	0.05	0.06	0.05	0.10	0.55	0.55	-0.40	-0.44	-0.72	-0.74
LN MFISHTHG	-0.12	-0.27	-0.68	-0.67	-0.13	-0.13	-0.20	-0.13	0.65	0.68	-0.66	-0.65	-0.72	-0.73
MFISH BCF	-0.12	-0.19	-0.69	-0.65	-0.13	-0.13	-0.56	-0.51	0.51	0.55	-0.56	-0.51	-0.39	-0.36
LNMFISH BCF	0.05	-0.01	-0.84	-0.78	-0.31	-0.31	-0.63	-0.57	0.64	0.70	-0.76	-0.70	-0.45	-0.41
MFISHBSAF	-0.06	-0.14	-0.13	-0.07	0.04	0.04	-0.09	-0.05	-0.22	-0.17	0.00	0.03	-0.33	-0.37
LNMFISHBSAF	-0.02	-0.09	-0.03	0.03	0.06	0.05	0.07	0.12	-0.39	-0.34	0.08	0.11	-0.23	-0.27

TS	LN	AVS	LN	TFE	LN	TMN	LN	THG	LN	MEHG	LN	%MEHG	LN
0.73	0.60	-0.02	0.09	-0.02	0.00	-0.16	-0.10	0.74	0.60	0.95	0.80	0.68	0.69
0.45	0.31	0.22	0.37	0.31	0.34	-0.32	-0.28	0.76	0.72	0.76	0.86	0.62	0.72
-0.21	-0.25	0.21	0.26	0.09	0.13	-0.36	-0.38	0.02	0.05	0.85	0.93	0.76	0.93
-0.11	-0.16	0.30	0.38	0.22	0.25	-0.39	-0.41	0.30	0.33	0.69	0.91	0.57	0.79
-0.73	-0.74	-0.04	0.02	-0.24	-0.24	0.08	0.14	0.12	0.12	0.55	0.53	0.48	0.50
-0.73	-0.74	0.00	0.04	-0.30	-0.31	0.20	0.28	0.18	0.17	0.46	0.45	0.38	0.39