Appendix A
Enhanced Plan Recommendations

SECTION 1

Introduction

This appendix presents Tyco Fire Products LP (Tyco) recommended enhancements to the sediment removal approach presented in the Design Plan and Specification Preliminary Basis of Design (PBOD). Tyco previously submitted this revised approach to the U.S. Environmental Protection Agency (USEPA) in the *Tyco Enhanced Sediment Removal Plan Approach* (ESRP) dated September 9, 2011 (CH2M HILL 2011), following discussions during the meeting between Tyco and USEPA on August 16, 2011, at USEPA Region 5 headquarters in Chicago, Illinois. Tyco submitted the ESRP document to provide additional technical information (CH2M HILL 2011). As emphasized during the Chicago meeting with USEPA, the majority of the ESRP is identical to the USEPA-approved *Sediment Removal Work Plan* (SRWP; CH2M HILL 2010) including:

- All soft sediments with arsenic concentrations greater than or equal to 50 milligrams per kilogram (mg/kg) will be removed.
- Semi-consolidated material (SCM) with arsenic concentrations greater than or equal to 50 mg/kg in the federal navigation channel and along the western and southern portions of the Turning Basin outside the navigation channel will be removed (Figure A1).
- Monitored natural recovery (MNR) will be implemented in the area where sediment has been removed to document anticipated further reductions in sediment arsenic concentrations to achieve USEPA's target concentration of 20 mg/kg.

The enhancements differ from the approach presented in the PBOD for the SRWP (CH2M HILL 2010) in the following areas:

- The engineered chemical isolation layer will be expanded beyond the former 8th Street Slip area (described in the PBOD) and will also be placed in a portion of the southeastern Turning Basin (outside the limits of the authorized navigation channel) and portions of Transition Areas 2 and 3. The proposed chemical isolation layer area is identified on Figure A2.
- Limiting the dry excavation area to the South Channel only. Soft sediment in the Transition Areas with arsenic concentrations greater than or equal to 50 mg/kg will be removed by wet mechanical dredging with an environmental clamshell bucket.

Tyco continues to seek USEPA approval of an optimized risk management approach that is equally or more protective than the SRWP (CH2M HILL 2010), and appropriately balances implementability and incremental risk reduction with the cost of the remedy, while minimizing the potential short-term impacts of remedy implementation, consistent with USEPA's (2005) sediment remediation guidance.

Consistent with paragraph VI.11.f of the Administrative Order on Consent (AOC), Tyco's proposed enhancements protect human health and the environment, are legally

implementable, and achieve an equivalent or higher level of protection to that of the selected remedy. The following paragraphs summarize how the ESRP (CH2M HILL 2011) meets these requirements.

- The chemical isolation layer protects human health and the environment by immediately preventing direct contact with impacted SCM, significantly reducing diffusive flux of the soluble arsenic and eliminating the potential for the resuspension and release of arsenic-impacted sediment generated during dredging.

  The sorption capacity of a chemical isolation layer comprised of 18 inches of native sediment or its equivalent will effectively prevent releases of arsenic from exceeding chronic water quality standards. Not accounting for natural sedimentation and attenuation processes that effectively reduce arsenic concentrations in surface sediment, and also conservatively using highest measured concentrations of total arsenic concentrations at the site, the chemical isolation layer will provide a high degree of protection for approximately 750 years, consistent with USEPA cap design guidance. Accounting for natural sedimentation and attenuation processes, the chemical isolation layer will provide permanent protection at the site, while also minimizing dredging-related releases from these SCM.

- Use of the chemical isolation layer is legally implementable and consistent with both USEPA (2005) sediment guidance and the current state of practice.
  - The ESRP, as amended in an October 6, 2011, correspondence (Attachment 1), does not interfere with or place any restriction on the federal navigation channel.
  - Use of risk management principles to evaluate and select a combination remedy, such as that proposed in the ESRP (CH2M HILL 2011), which includes a site-specific appropriate mix of dredging, containment, and MNR, is consistent with USEPA's (2005) sediment guidance and current best management practices for contaminated sediment sites.

- The level of protection to ecological and human receptors provided by the chemical isolation layer is equivalent to or greater than the removal of SCM described in the SRWP (CH2M HILL 2010), as follows:
  - Protectiveness within the area of the chemical isolation layer of the ESRP will immediately exceed the long-term performance requirement of 20 mg/kg because the material used in the isolation layer will represent sediment background conditions within the Menominee River (Section 4).
  - The exposure barrier provided by the chemical isolation layer will become more effective over time, as natural sedimentation processes are expected to increase the thickness of the sorptive material over the semi-consolidated sediments. This will provide an immediate and increasing level of protection for both human and ecological receptors in the area of the chemical isolation layer.
  - To demonstrate that the chemical isolation layer is protective and functioning as intended, Tyco will develop a monitoring plan consistent with the general approach presented in the PBOD.

The SRWP is technically and economically impracticable because the proposed enhancements are an equally, if not more, protective remedy that is also more cost-effective than the SRWP remedy (CH2M HILL 2010). In accordance with the National Contingency Plan (NCP), the proposed enhancements are more cost-effective because its "costs are proportional to its overall effectiveness" whereas the SRWP's costs ($34,000,000) are significantly greater than the overall plan with proposed enhancements costs ($24,000,000), but its overall effectiveness is not greater. This represents a 40 percent increase in the project cost for no corresponding increase in risk reduction. Moreover, the NCP directs that the "remedial action selected shall be cost-effective." Additionally, an "important risk management function generally is to compare and contrast the costs and benefits of various remedies." Thus, applying the NCP and the risk management principles embodied in the USEPA (2005) guidance, these enhancements should be considered the preferred remedy, and the SRWP is impracticable compared to the proposed approach.

As part of the proposed enhancements, Tyco also proposes that conventional dredging (using floating equipment) be used in the area proposed for expanded dry excavation.

- Dry excavation of the South Channel as originally proposed can be implemented effectively because of the shallow water conditions, easily contained area, shallow nature of the impacts (restricted to soft sediments only), and the extensive debris located in the area. However, expansion of the dry excavation area as proposed by USEPA is significantly more challenging because of the constraints of installing sheet pile within the identified area, shallow water conditions, and additional sheet pile required around the "islands." In addition, a larger dry excavation area presents additional water management issues and cuts off a larger area of the river system during construction. This requirement is estimated to add between $700,000 and $1,500,000 to the cost of the project, and will address only 45,000 cubic yards of material representing 12 percent of all arsenic mass to be removed. Thus, for little environmental benefit in the form of a potential reduction in the resuspension and release of arsenic, the expansion of the dry excavation area would pose significantly greater technical challenges and increase costs.
- Consistent with the performance-based approach outlined in the AOC (which focuses on the results achieved and allows Tyco flexibility in implementation), Tyco has requested the opportunity to propose alternate construction methods as part of the final dredging design that will achieve the same, or a higher level of protectiveness as the work required to expand the dry dredge area.

1.1 Summary of Sediment Removal Plan with Enhanced Approach

Tyco will implement a sediment removal plan consisting of dredging, dry excavation, stabilization, material disposal, installation of a chemical isolation layer, and site restoration activities consistent with the approved SRWP (CH2M HILL 2010) and the enhancements as described in subsequent sections. Under the enhanced approach, the proposed construction phases include:

- Mechanically dredge soft sediment in the Turning Basin
- Mechanically dredge SCM in the Turning Basin

- Mechanically dredge soft sediment outside the Turning Basin
- Place chemical isolation layer over SCM outside Turning Basin
- Dry excavate soft sediment in the South Channel
- Monitored natural recovery

A description of each construction phase is presented below. Phases I and II below are identical to Phases I and II of the PBOD and are proposed for completion in year one (2012). The area and sequence of each phase is illustrated on Figures A1 and A2. Table A1 and Figure A3 provide material removal volumes and arsenic mass to be removed through implementation of the enhanced activities.

1. **Phase I (Mechanical Dredging of Soft Sediment in the Turning Basin)**: Soft sediment containing total arsenic concentrations greater than or equal to 50 mg/kg that is located within the Turning Basin and small portions of the Main Channel and Transition Area 2 will be mechanically dredged using an environmental clamshell bucket and stabilized onsite. The stabilization process will reduce the concentration of leachable arsenic in the sediment such that it passes the toxicity characteristic leaching procedure (TCLP) test with less than 5 milligrams per liter (mg/L) of total arsenic. The stabilized soft sediment will then be transported for disposal at an offsite Resource Conservation and Recovery Act (RCRA) Subtitle D (nonhazardous) landfill.

2. **Phase II (Mechanical Dredging of SCM in the Turning Basin):** The SCM containing total arsenic concentrations greater than or equal to 50 mg/kg that underlies the soft sediment dredged in Phase I will be mechanically dredged using a standard clamshell bucket and, if necessary, stabilized onsite. The stabilized SCM then will be transported for disposal at an offsite RCRA Subtitle D landfill. Some mechanical dredging of SCM also will be performed in the Main Channel. The lateral extent of Phase II will be limited in the southeastern portion of the Turning Basin (outside the authorized navigation channel), so existing SCM is left in place to support temporary sheet piling to be installed as part of Phase III.

3. **Phase III (Mechanical Dredging of Soft Sediments Outside the Turning Basin):** The soft sediment that contains total arsenic concentrations greater than or equal to 50 mg/kg or overlying SCM with arsenic concentrations greater than or equal to 50 mg/kg that is located within Transition Area 2 and 3 and the 6th Street Slip will be mechanically dredged using an environmental clamshell bucket and stabilized onsite. The stabilization process will reduce the concentration of leachable arsenic in the sediment such that it passes the TCLP test with less than 5 mg/L of total arsenic. The stabilized soft sediment then will be transported for disposal at an offsite RCRA Subtitle D (nonhazardous) landfill.

4. **Phase VI (Placement of Chemical Isolation Layer):** A chemical isolation layer consisting of clean sediment, sand, and gravel will be placed over SCM containing total arsenic concentrations greater than or equal to 50 mg/kg in portions of Transition Areas 2 and 3 and the southwestern portion of the Turning Basin outside the federal navigation channel. As presented in the ESRP (CH2M HILL 2011), a chemical isolation layer placed over SCM located outside the federal navigation channel will provide permanent protection under an optimized risk management approach, consistent with USEPA's (2005) sediment remediation guidance.

5. **Phase V (Dry Excavation of South Channel):** Sheet piling will be installed across the western end of the South Channel. Water inside the South Channel will be pumped out. Depending upon water levels in the river, an outfall on the eastern end of the South Channel may also need to be blocked. Conventional equipment (backhoes and articulated loaders) will be used to stabilize the soft soil in situ, excavate it, and transport it back to the facility for further stabilization. The fully stabilized material will be transported for disposal at an offsite RCRA Subtitle D facility.
6. **Phase VI (Monitoring Natural Recovery):** Sediment containing arsenic concentrations between 20 and 50 mg/kg will be left in place. These and other sediment areas at the site will be monitored to verify anticipated natural recovery. Monitoring activities will be described under a separate plan. It is anticipated that sufficient MNR data will be collected to support a USEPA decision within 10 years following implementation of Phases I through V on any final actions to complete site remediation.

Phases I, II, V, and VI are identical to those described in the PBOD. In contrast, Phase III is performed with conventional dredging methods instead of dry excavation, and Phase IV includes an expanded chemical isolation layer beyond the former 8th Street Slip area. These enhancements are described briefly in the following sections, but were described in greater detail in the ESRP (CH2M HILL 2011) submitted to USEPA.

SECTION 2

Reduced Dry Excavation Area for Soft Sediments

2.1 Introduction

Dry excavation of soft sediment in the South Channel was proposed by Tyco and presented in the SRWP (CH2M HILL 2010). USEPA approved the SRWP with modifications in its letter dated June 1, 2011. One of these modifications was to expand the dry excavation area to the west to include Transition Areas 2 and 3. A Tyco-recommended enhancement is to reduce the dry excavation to just the South Channel (as originally proposed in the SRWP [CH2M HILL 2010]) and remove soft sediment in Transition Areas 2 and 3 by dredging, followed by placement of a chemical isolation layer over the remaining SCM.

2.2 Proposed Approach

2.2.1 South Channel

A cofferdam (sheet piling) will be installed at the western end of the South Channel; additional sheet piling may be required on the eastern end of the South Channel, depending on river water levels. Water inside the temporarily contained area will be pumped out to the river. Conventional excavation equipment (backhoes and articulated haulers) will be used to stabilize the soft sediment in situ, excavate it, and transport it back to the facility for treatment and disposal at an offsite RCRA Subtitle D landfill.

2.2.2 Transition Areas 2 and 3 (including 6th Street Slip)

Identical to the USEPA-approved SRWP (CH2M HILL 2010), the Tyco proposed enhancement includes removing all soft sediment within Transition Areas 2 and 3 that contains total arsenic concentrations greater than or equal to 50 mg/kg. However, instead of dry removal within a sheet piled enclosure, the impacted soft sediment will be mechanically dredged using conventional floating equipment and an environmental clamshell bucket. Figure A2 shows the location of soft sediment to be removed. The treatment process for the dredged material will be identical to that described in the PBOD and will reduce the concentration of leachable arsenic in the sediment such that it passes the TCLP test with less than 5 mg/L of total arsenic. The treated soft sediment will be disposed at an offsite RCRA Subtitle D (nonhazardous) landfill.

Following completion of the soft sediment removal phase, an engineered chemical isolation layer will be placed over SCM containing total arsenic concentrations greater than or equal to 50 mg/kg in portions of Transition Areas 2 and 3 and the southwestern portion of the Turning Basin outside the federal navigation channel. This phase is described in Section 3.

SECTION 3

Expanded Chemical Isolation Area

3.1 Introduction

The USEPA-approved SRWP specifies removing all SCM containing arsenic concentrations greater than or equal to 50 mg/kg (CH2M HILL 2010). The AOC allows for the SCM to be addressed in an alternate manner. The PBOD presents the use of a chemical isolation layer over a portion of the SCM with arsenic concentrations exceeding 50 mg/kg in the area adjacent to the former 8th Street Slip to maintain support of the sheet pile wall.

The Tyco proposed enhancements would expand the chemical isolation area to cover SCM within a portion of the Turning Basin outside the federal navigation channel and within Transition Areas 2 and 3 where SCM arsenic concentrations exceed 50 mg/kg. The location of the proposed chemical isolation is shown on Figures A2.

As described in greater detail in the September 2011 ESRP, the chemical isolation layer will consist of material similar in chemical characteristics to non-impacted soft sediment and with sufficient thickness that the layer will provide an environmentally protective barrier between the impacted SCM and benthic organisms (CH2M HILL 2011). The chemical isolation layer will be armored as necessary to provide long-term protection of the layer from bioturbation and erosive forces such as propeller wash, flooding, and seiche events.

3.2 Proposed Approach

As previously stated, all soft sediment with arsenic concentrations greater than or equal to 50 mg/kg or overlying SCM with arsenic concentrations exceeding 50 mg/kg will be removed by dredging or dry excavation. SCM containing arsenic concentrations greater than or equal to 50 mg/kg within the navigation channel of the Turning Basin will be removed by mechanical dredging. As a result, the navigation channel depths will meet or exceed the authorized depth of 21 feet below the low water level (577.5 feet above mean sea level). In addition, SCM along the western and southern portion of the Turning Basin will be removed to meet the AOC requirement for removal of equal to or greater than 50 mg/kg.

The remaining area containing arsenic concentrations greater than or equal to 50 mg/kg, located along the eastern edge of the Turning Basin, within near shore areas adjacent to the former 8th Street Slip, and Transition Areas 2 and 3, will be managed in place with a protective chemical isolation layer. Consistent with USEPA and U.S. Army Corps of Engineers (USACE) guidance (Palermo et al. 1998), the preliminary design of the chemical isolation layer was fully evaluated by Dr. Danny Reible of the University of Texas. Details of this evaluation are provided in the ESRP (CH2M HILL 2011).

SECTION 4

Preliminary Construction Schedule

As described, the ESRP (Phases I and II) would be identical in year one (2012) to the plan proposed in the PBOD. The remaining phases (Phases III through VI) would be completed in year two (2013) to meet the AOC project completion requirements. A preliminary project schedule for sediment removal with the enhancements as presented in this appendix is included in Attachment 2.

SECTION 5

Preliminary Cost Estimate

A preliminary cost estimate for the sediment removal project with the enhancements presented in this appendix is included as Attachment 3. Implementation of sediment removal with these enhancements is estimated to cost $24,000,000. Preliminary cost estimate assumptions are based on the best available information regarding the anticipated scope of work, previous experience, and general site knowledge. Changes in the cost elements are likely to occur as a result of new information and design results. This is an order-of-magnitude cost estimate that is expected to be within plus 50 to minus 30 percent of the actual project costs.

SECTION 6

References

Bailey, S.E., and M.R. Palermo. 2005. Equipment and Placement Techniques for Subaqueous Capping. DOER Technical Notes Collection (ERDC TN-DOER-R9), U.S. Army Corps of Engineers Engineer Research and Development Center, Vicksburg, MS.

CH2M HILL. 2010. Sediment Removal Work Plan. December.

CH2M HILL, 2011. Enhanced Sediment Removal Work Plan, September?

Palermo, M.R., J. Miller, S. Maynord, and D. Reible. 1998. Guidance for In-Situ Subaqueous Capping of Contaminated Sediments. EPA 905-B96--004. U.S. Environmental Protection Agency, Great Lakes National Program Office, Chicago, IL.

Palermo, M.R., J.E. Clausner, M.P. Rollings, G.L. Williams, T.E. Myers, T.J. Fredette, and R.E. Randall. 1998. Guidance for Subaqueous Dredged Material Capping. DOER Technical Report (Technical Report DOER-1), U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

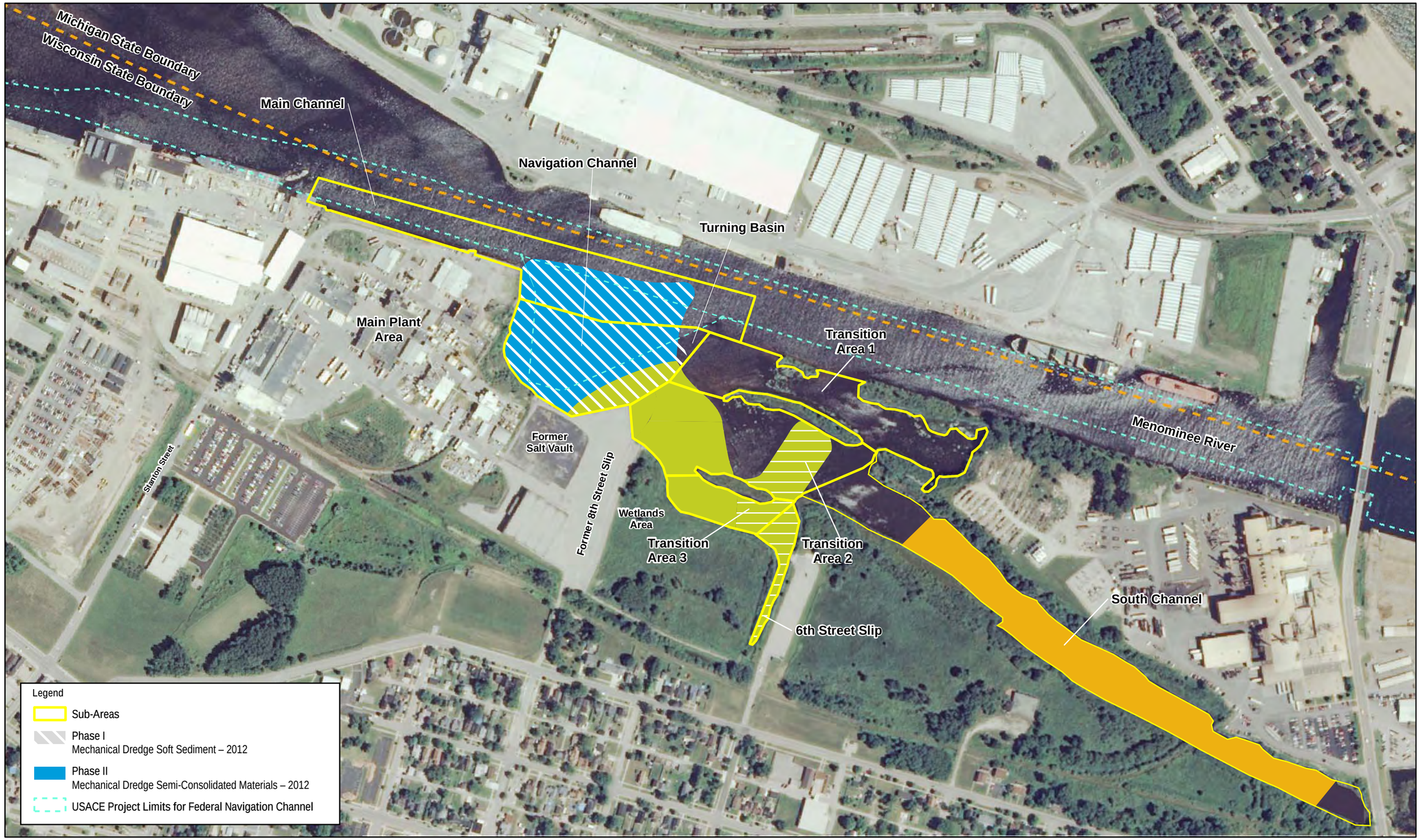
Table

Arsenic Concentrations in Material (mg/kg)	Volume of Soft Sediment (cy)			Volume of Semi-Consolidated Sands and Silts (cy)			Volume of All Materials (cy)		
	To Be Removed		To Remain in Place	To Be Removed		To Remain in Place	To Be Removed		To Remain in Place
	Dredged	Dry Excavation		Dredged	Dry Excavation		Dredged	Dry Excavation	
>20	45,820	7,219	15,400	27,263	0	118,865	73,083	7,219	134,265
>50	37,354	6,835	0	25,047	0	79,979	62,401	6,835	79,979
>500	11,315	0	0	9,060	0	10,528	20,375	0	10,528

Arsenic Concentrations in Material (mg/kg)	Mass of Arsenic in Soft Sediment (lbs.)			Mass of Arsenic in Semi-Consolidated Sands and Silts (lbs.)			Mass of Arsenic in All Materials (lbs.)		
	To Be Removed		To Remain in Place	To Be Removed		To Remain in Place	To Be Removed		To Remain in Place
	Dredged	Dry Excavation		Dredged	Dry Excavation		Dredged	Dry Excavation	
>20	80,601	1,411	1,566	45,112	0	65,995	125,712	1,411	67,562
>50	79,663	1,371	0	44,844	0	62,037	124,507	1,371	62,037
>500	66,324	0	0	35,047	0	24,513	101,371	0	24,513

TABLE A1
Sediment Volume and Arsenic Mass
Enhanced Sediment Removal Plan
Tyco Fire Products Facility

Figures



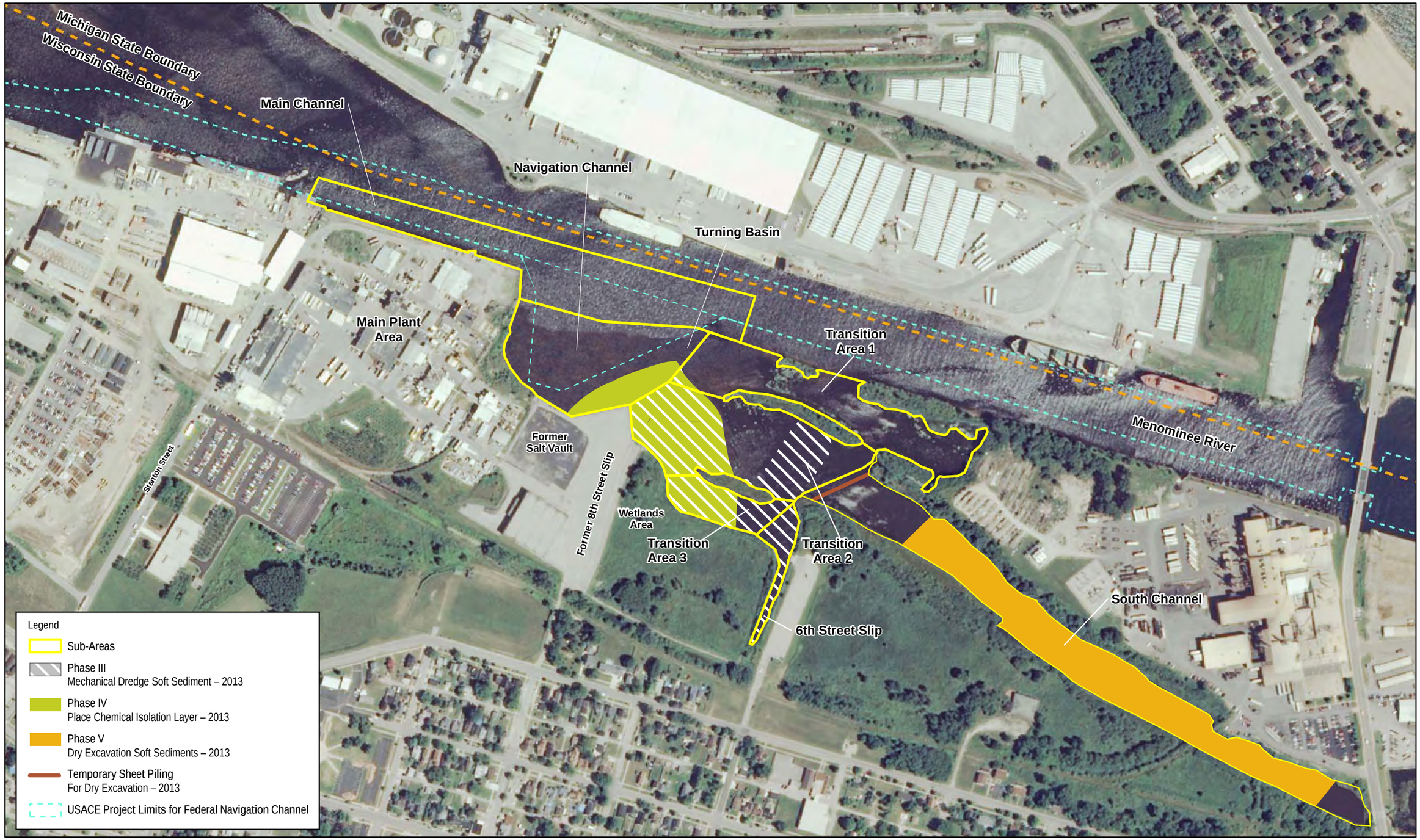
N

0 200 400
Feet

FIGURE A1
Enhanced Remediation Sequence 2012
Preliminary Basis of Design
Tyco Fire Products Facility
Marinette, WI

CH2MHILL.

ES092110023938MKE FigureA1_EnhancedSediment_v4.ai 10.10.11 sls



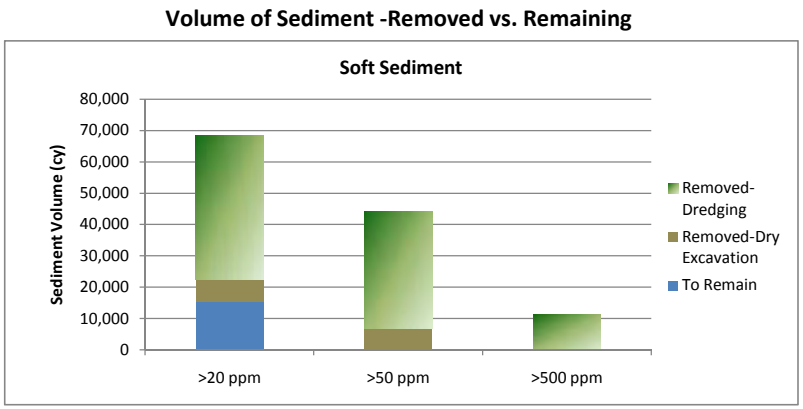
N

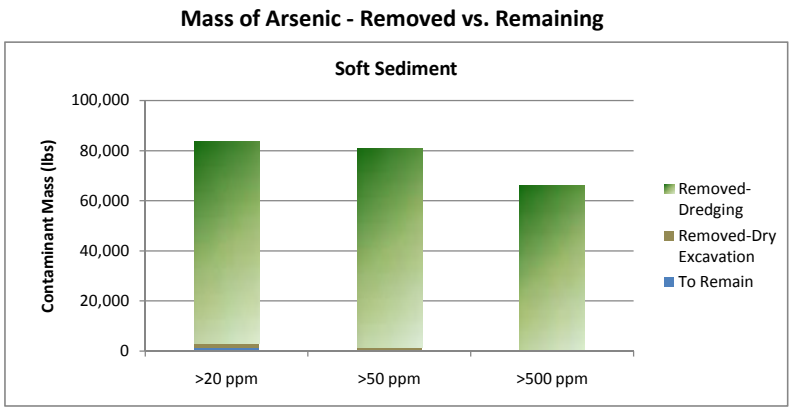
0 200 400
Feet

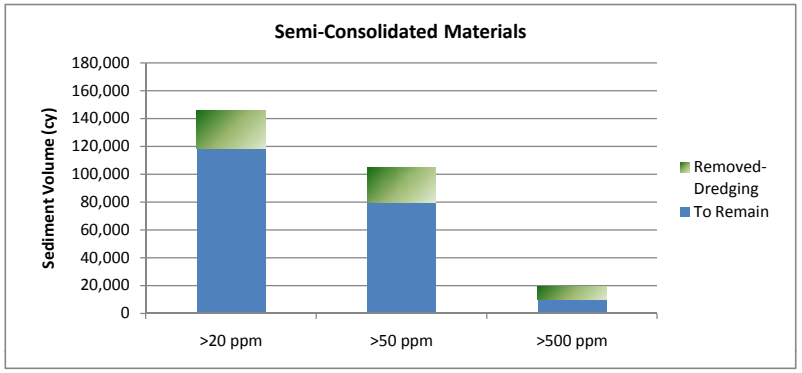
FIGURE A2
Enhanced Remediation Sequence 2013
Preliminary Basis of Design
Tyco Fire Products Facility
Marinette, WI

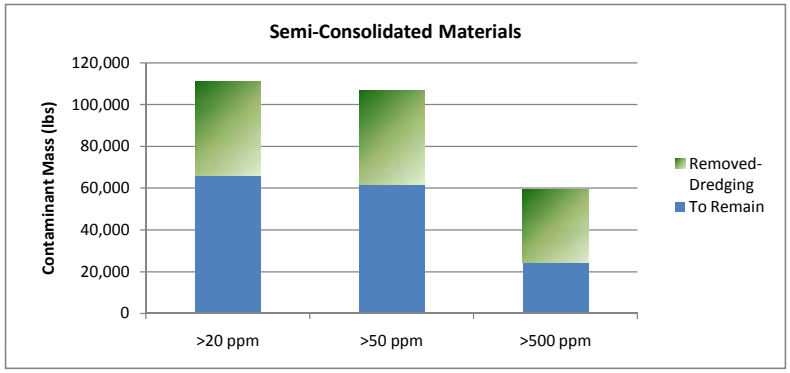
CH2MHILL.

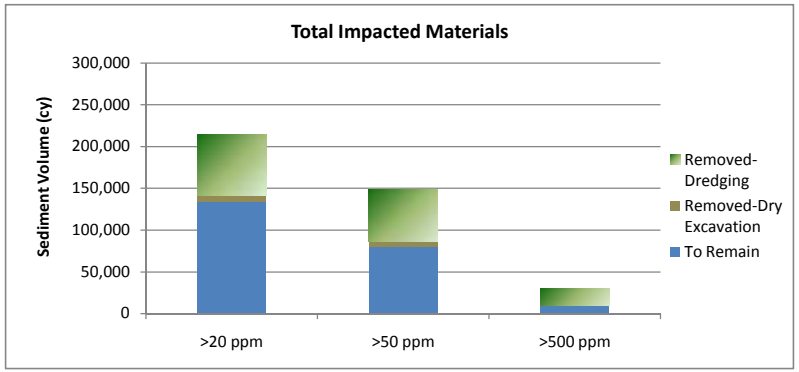
ES092110023938MKE FigureA2_EnhancedSediment_v4.ai 10.10.11 sls











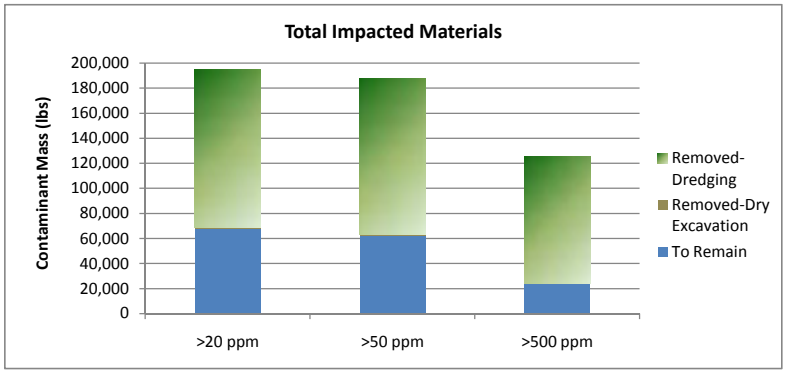


FIGURE A3
Sediment Volume and Arsenic Mass Removal
Enhanced Sediment Removal Plan
Tyco Fire Products Facility

Attachment 1

Enhancements to ESRP Correspondence

John Perkins
Director Environmental,
Health and Safety
Tyco Fire Protection
1501 Yamato Road
Boca Raton, FL. 33431 USA
T: 561-226-3481
Email johnperkins@tycoint.com

October 6, 2011

Gary L. Cygan
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507
MAIL CODE: LU-9J

Re: Two Significant Enhancements To Tyco's ESRP, Tyco Fire Products LP – Stanton Street Facility, Marinette, Wisconsin, WID 006 125 215

Dear Gary:

As you know, Tyco Fire Products LP ("Tyco") has a long-standing commitment to address the legacy conditions at the Stanton Street Facility in Marinette, Wisconsin ("Site"). This commitment includes Tyco's performance and completion of a substantial upland remedy with an investment of over $17 million over the past two years and $45 million lifetime. Tyco has already completed one sediment removal action at the Site. Tyco has met all of its commitments to U.S. EPA as well as all of its prior deadlines. Thus, we have demonstrated our commitment to doing the right and responsible thing throughout the history of this matter and we are committed to continuing to do so.

As part of our effort to continue to appropriately and effectively address the legacy conditions, on September 9, 2011 Tyco submitted an Enhanced Sediment Removal Plan ("ESRP"). The ESRP is an optimized risk management approach that is protective and appropriately balances implementability and incremental risk reduction with the cost of the remedy, while minimizing the potential short-term impacts of remedy implementation. We appreciate the Agency's commitment to technical soundness, and we have taken the Agency's comments to heart and continue to refine the ESRP.

More specifically, as we discussed on Tuesday morning, to narrow the focus of the Agency's review of the ESRP and eliminate navigational concerns, Tyco proposes to revise the ESRP as follows, with the hope and anticipation that EPA will approve the remainder of the ESRP.

During the 2012 construction season, Tyco will dredge all soft and semi-consolidated sediment with concentrations of total arsenic exceeding 50 mg/kg in the entire federally designated navigation channel and in certain adjacent areas, as depicted in Attachment 1. ***Accordingly, Tyco is no longer pursuing the U.S. Army Corp of Engineers ("ACOE") authorization that would be necessary to allow the in situ management – chemical and physical isolation – of contaminated semi-consolidated sediments in the designated navigation channel.*** Therefore, other than during active dredging, the ESRP will not restrict anchoring or navigation in the navigation channel by

users such as Marinette Marine Corporation. At the completion of the 2012 field season, the depths in the ACOE designated navigation channel will be 21 feet or greater. To the west of the navigation channel depths will range from about 6 feet to 21 feet, depending on the depth of the contaminated semi-consolidated sediments. To the east the post-dredging depth will slope upward from the navigation channel (> 21 feet) to the existing sediment surface.

We urge the Agency to approve the ESRP as thus revised as we believe that we are in substantial agreement on the critical components of the final remedy. Specifically, Tyco has agreed to remove all soft sediments with total arsenic concentrations exceeding 50 mg/kg, and has agreed to remove a significant portion of semi-consolidated sediments with total arsenic concentrations exceeding 50 mg/kg.

The only remaining technical issues are:

1. Whether to expand the proposed dry excavation area. (Note: This issue is about the selection of a removal technology that will achieve the goals of the governing performance based AOC, a decision that the AOC appears to leave to Tyco, and does not implicate issues regarding *in situ* vs. removal remediation.)

2. Whether four acres of contaminated semi-consolidated sediments that lie outside of the federally designated navigation channel should be dredged or chemically isolated.

As you know, Tyco engaged world-renowned capping and dredging experts, Dr. Danny Reible and Dr. Michael Palermo, to assist Tyco in addressing the Agency's technical concerns with *in situ* isolation. Dr. Reible has developed a scientifically and technically sound solution that is protective of the environment. Specifically, with the revisions discussed above, the solution is to use a chemical isolation layer to address the approximately four acre area with semi-consolidated sediments containing total arsenic exceeding 50 mg/kg, which is all outside of the federally designated navigation channel. This chemical isolation layer can be composed of natural sediment or of a material with a sorptive capacity similar to natural sediment. This approach is protective, technically sound, and implementable, and its efficacy is founded on substantial testing of site-specific sediment characteristics. It is described in the ESRP.

The ESRP is the appropriate remedy for the Site because it is protective of human health and the environment, is implementable and cost effective, while minimizing the potential short-term impacts of remedy implementation. Moreover, the ESRP is consistent with the risk management principles of the National Contingency Plan and the Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, including the avoidance of chasing more deeply buried impacted sediment which is not bioavailable, and is consistent with state of the science project experience. Additionally, the ESRP is cost effective. The Sediment Removal Work Plan ("SRWP") would cost approximately 45% more ($14.6 million), but would not provide any material incremental risk reduction. That is, there is no additional environmental benefit for the significant increase in cost.

We appreciate the Agency's willingness to fully consider the merits of the revised ESRP and we believe that we have made significant progress in defining the components of the final remedy for the Site. We look forward to further discussions on October 25th and hope that we can efficiently reach complete agreement on the final remedial components to address the contaminated sediments present at the Site.

In the interim, please feel free to call me for any further information regarding the ESRP proposal and the two additional proposed enhancements to it. Again, thank you for your consideration of our proposed enhancements to the remedy.

Sincerely,

John Perkins
Director, Environment, Health & Safety
Tyco Fire Protection

cc: Richard Clarizo – EPA
Doug Clark – Foley Lardner

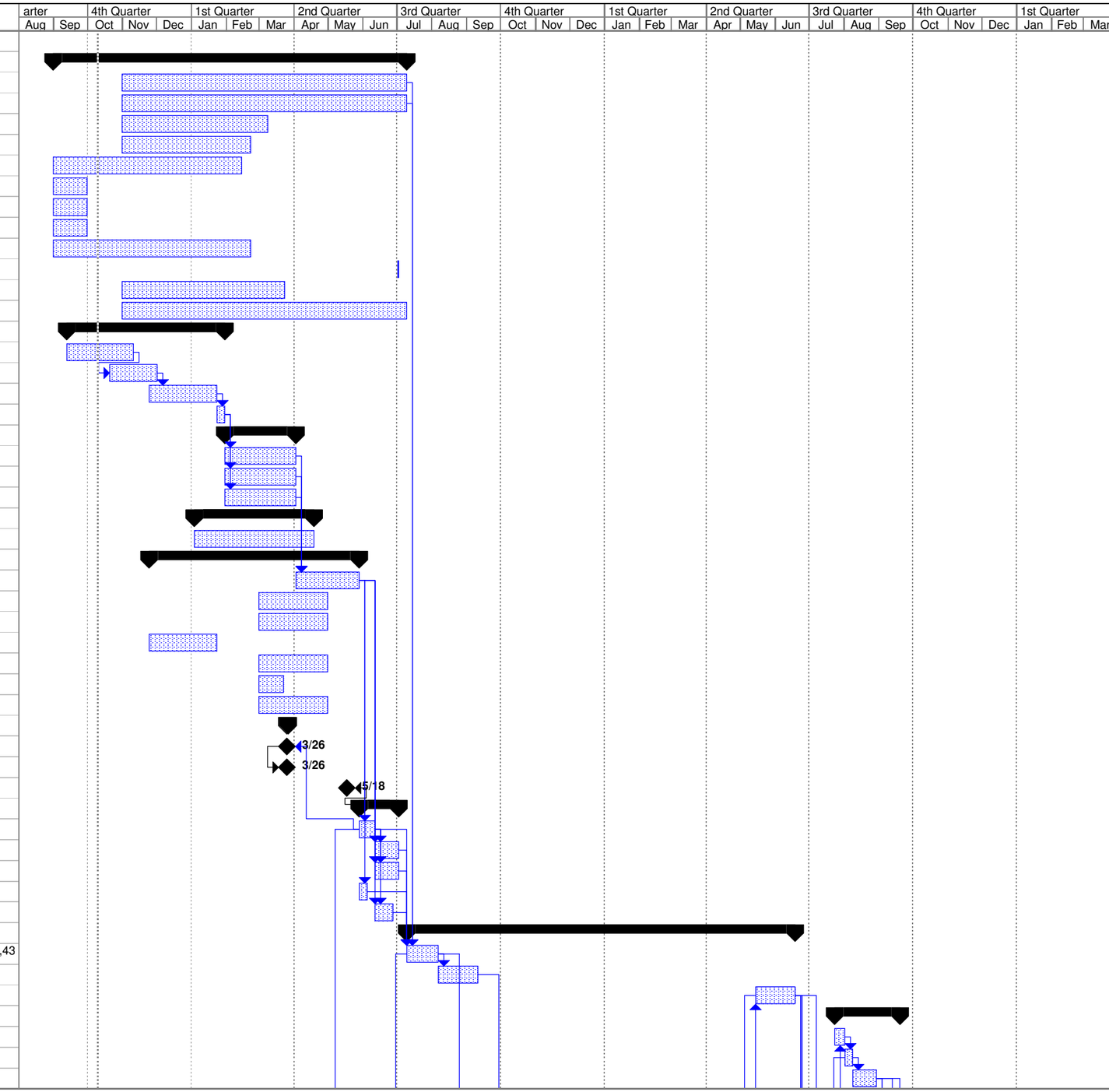
0 200 400
Feet

FIGURE 2C
Remediation Sequence 2012
Preliminary Basis of Design
Tyco Fire Products Facility
Marinette, WI

ES092110023938MKE Figure2C_EnhancedSediment_v3.ai 10.06.11 sls

CH2MHILL.

ID	Task Name	Duration	Start	Finish	Predecessors
1	Submittal of SRWP, AMRSRP, & Schedule	0 days	Wed 12/1/10	Wed 12/1/10	
2	**Permitting**	**223 days**	**Thu 9/1/11**	**Mon 7/9/12**	
3	USACE 404 &10, WDNR 401 & chapter 30	180 days	Tue 11/1/11	Mon 7/9/12	
4	WDNR Waterways Marker Permit	180 days	Tue 11/1/11	Mon 7/9/12	
5	WDNR NR216 Construction Storm water Permit	93 days	Tue 11/1/11	Thu 3/8/12	
6	WDNR NR205 Water from dredging operations	82 days	Tue 11/1/11	Wed 2/22/12	
7	WDNR Water Quality Variance	119 days	Thu 9/1/11	Tue 2/14/12	
8	Section 7 Endangered Species USF&W	22 days	Thu 9/1/11	Fri 9/30/11	
9	WDNR Natural Heritage Inventory Review	22 days	Thu 9/1/11	Fri 9/30/11	
10	Section 106 Cultural Resources Review	22 days	Thu 9/1/11	Fri 9/30/11	
11	Local Permits	125 days	Thu 9/1/11	Wed 2/22/12	
12	Coast Guard Notification	1 day	Mon 7/2/12	Mon 7/2/12	
13	Access Agreements	104 days	Tue 11/1/11	Fri 3/23/12	
14	RCRA Onsite Treatment Variance	180 days	Tue 11/1/11	Mon 7/9/12	
15	**Remedial Design**	**100 days**	**Tue 9/13/11**	**Mon 1/30/12**	
16	Basis of Design	43 days	Tue 9/13/11	Thu 11/10/11	
17	Preliminary Design	30 days	Fri 10/21/11	Thu 12/1/11	16FS-15 days
18	Final Design	42 days	Fri 11/25/11	Mon 1/23/12	17FS-5 days
19	Prepare Bid Package	5 days	Tue 1/24/12	Mon 1/30/12	18
20	**Procurement**	**45 days**	**Tue 1/31/12**	**Mon 4/2/12**	
21	Dredger	45 days	Tue 1/31/12	Mon 4/2/12	19
22	Landside Operation Subcontractor	45 days	Tue 1/31/12	Mon 4/2/12	19
23	Water Treatment System	45 days	Tue 1/31/12	Mon 4/2/12	19
24	**Long Lead Items**	**76 days**	**Wed 1/4/12**	**Wed 4/18/12**	
25	Evaporator	76 days	Wed 1/4/12	Wed 4/18/12	
26	**Prepare Remediation Plans**	**132 days**	**Fri 11/25/11**	**Mon 5/28/12**	
27	Project Manual	40 days	Tue 4/3/12	Mon 5/28/12	21,22,23
28	Confirmation Sampling Plan	43 days	Thu 3/1/12	Mon 4/30/12	
29	Construction Quality Assurance Plan	43 days	Thu 3/1/12	Mon 4/30/12	
30	O & M Plan	42 days	Fri 11/25/11	Mon 1/23/12	
31	Corrective Measures Implementation Plan	43 days	Thu 3/1/12	Mon 4/30/12	
32	H&S Plan	16 days	Thu 3/1/12	Thu 3/22/12	
33	QA/QC Plan	43 days	Thu 3/1/12	Mon 4/30/12	
34	**Prepare Fact Sheet**	**1 day**	**Mon 3/26/12**	**Tue 3/27/12**	
35	Distributed to USEPA	1 day	Mon 3/26/12	Tue 3/27/12	39SF-9 wks
36	Distributed to Public	1 day	Mon 3/26/12	Mon 3/26/12	35SS
37	Pre-construction Inspection Meeting	0 days	Fri 5/18/12	Fri 5/18/12	38SF-7 days
38	**Mobilization**	**25 days**	**Tue 5/29/12**	**Mon 7/2/12**	
39	Set up Solidification Pad	10 days	Tue 5/29/12	Mon 6/11/12	27
40	Mobilize WWT System	15 days	Tue 6/12/12	Mon 7/2/12	27,39
41	Mobilize Solidification Equipment	15 days	Tue 6/12/12	Mon 7/2/12	27,39
42	Place Bin Blocks	5 days	Tue 5/29/12	Mon 6/4/12	27
43	Mobilize Dredge	12 days	Tue 6/12/12	Wed 6/27/12	27,39
44	**Dredging Tasks**	**246 days**	**Tue 7/10/12**	**Tue 6/18/13**	
45	Phase I Dredge Soft Sediment - Turning Basin	4 wks	Tue 7/10/12	Mon 8/6/12	3,4,39,40,41,42,43
46	Phase II Dredge SCM Turning Basin	5 wks	Tue 8/7/12	Mon 9/10/12	45
47	Phase III Dredge Soft Sediments Outside TB	5 wks	Wed 5/15/13	Tue 6/18/13	58
48	**Dry Excavation**	**42 days**	**Wed 7/24/13**	**Thu 9/19/13**	
49	Install Sheet Pile	7 days	Wed 7/24/13	Thu 8/1/13	54
50	Pump Free Water	5 days	Fri 8/2/13	Thu 8/8/13	49
51	Phase V Dry Excavation Soft Sediments	3 wks	Fri 8/9/13	Thu 8/29/13	50



Project: Tyco ESRP Approach
Date: Mon 10/10/11

Task | Progress | Summary | External Tasks | Split
Split | Milestone | Project Summary | External MileTask

ID	Task Name	Duration	Start	Finish	Predecessors
52	Remove Sheet Piles	5 days	Fri 9/13/13	Thu 9/19/13	51,73
53	**Chemical Isolation Layer (Phase IV)**	**25 days**	**Wed 6/19/13**	**Tue 7/23/13**	
54	Install and Test Chemical Isolation Layer	5 wks	Wed 6/19/13	Tue 7/23/13	47
55	**Winter Shutdown**	**135 days**	**Thu 10/11/12**	**Wed 4/17/13**	
56	Winter Demobilization	10 days	Thu 10/11/12	Thu 10/25/12	104SF
104	Winter Shutdown	120 days	Thu 10/25/12	Wed 4/10/13	
58	Spring Remobilization	5 days	Thu 4/11/13	Wed 4/17/13	104
59	**Pre-final Constr. Inspection (at 80% compl.)**	**23 days**	**Tue 5/7/13**	**Fri 6/7/13**	
60	Notification of USEPA (30 days prior)	0 days	Tue 5/7/13	Tue 5/7/13	61FF-23 days
61	Pre-final Inspection	0 days	Fri 6/7/13	Fri 6/7/13	47FF-7 days
62	**Final Construction Inspection (at completion)**	**23 days**	**Tue 8/20/13**	**Thu 9/19/13**	
63	Notification of USEPA (30 days prior)	0 days	Tue 8/20/13	Tue 8/20/13	64SF-23 days
64	Final Construction Inspection	0 days	Thu 9/19/13	Thu 9/19/13	52
65	**Demobilization**	**69 days**	**Wed 6/19/13**	**Mon 9/23/13**	
94		1 day?	Thu 10/7/10	Thu 10/7/10	75,76,78,77
67	Demobilize Dredge	5 days	Wed 6/19/13	Tue 6/25/13	47
68	Demobilize WWT System	7 days	Fri 9/13/13	Mon 9/23/13	89
69	**Site Restoration**	**27 days**	**Fri 8/30/13**	**Mon 10/7/13**	
70	Clean Solidification Area	3 days	Tue 9/24/13	Thu 9/26/13	94,68
71	Resurface Solidification Area	5 days	Fri 9/27/13	Thu 10/3/13	70
72	Demobilize Project Trailer	2 days	Fri 10/4/13	Mon 10/7/13	71
73	Restore South Channel Access	10 days	Fri 8/30/13	Thu 9/12/13	51
74	**Sediment Stabilization**	**303 days**	**Thu 7/12/12**	**Mon 9/9/13**	
75	Soft Sediment 2012	5 wks	Thu 7/12/12	Wed 8/15/12	45FF+7 days
76	Semi-consolidated Material 2012	6 wks	Thu 8/9/12	Wed 9/19/12	46FF+7 days
77	Soft Sediment 2013	4 wks	Tue 8/13/13	Mon 9/9/13	51FF+7 days
78	Semi-consolidated Material 2013	6 wks	Fri 5/17/13	Thu 6/27/13	47FF+7 days
79	**Transportation and Disposal**	**303 days**	**Fri 7/13/12**	**Tue 9/10/13**	
80	Soft Sediment 2012	5 wks	Fri 7/13/12	Thu 8/16/12	75FF+1 day
81	Semi-consolidated Materials 2012	6 wks	Fri 8/10/12	Thu 9/20/12	76FF+1 day
82	Soft Sediment 2013	4 wks	Wed 8/14/13	Tue 9/10/13	77FF+1 day
83	Semi-consolidated Materials 2013	6 wks	Mon 5/20/13	Fri 6/28/13	78FF+1 day
84	**Water Treatment**	**308 days**	**Tue 7/10/12**	**Thu 9/12/13**	
85	**50 GPM Operations**	**246 days**	**Tue 7/10/12**	**Tue 6/18/13**	
86	Dredging 2012	9 wks	Tue 7/10/12	Mon 9/10/12	45SS
87	Dredging 2013	5 wks	Wed 5/15/13	Tue 6/18/13	47SS
88	**150 GPM Operations**	**30 days**	**Fri 8/2/13**	**Thu 9/12/13**	
89	Dry Excavation 2013	6 wks	Fri 8/2/13	Thu 9/12/13	50SS
90	**Project Oversight**	**357 days**	**Fri 5/25/12**	**Mon 10/7/13**	
92	Start	0 days	Fri 5/25/12	Fri 5/25/12	39SS-2 days
97	End	0 days	Mon 10/7/13	Mon 10/7/13	72FF
93	**Project Management**	**816 days**	**Thu 10/7/10**	**Thu 11/21/13**	
95	Start	0 days	Thu 10/7/10	Thu 10/7/10	
98	End	0 days	Thu 11/21/13	Thu 11/21/13	96FF
96	**Final Report**	**60 days**	**Fri 8/30/13**	**Thu 11/21/13**	**51**
102	AOC Deadline for Sediment Removal Completion	0 days	Fri 11/1/13	Fri 11/1/13	
103	**AOC Deadline for Sediment Construction Report**	**0 days**	**Sat 3/1/14**	**Sat 3/1/14**	
99	**MNR Plan**	**60 days**	**Mon 4/1/13**	**Mon 6/24/13**	
100	Development of MNR Plan	60 days	Mon 4/1/13	Mon 6/24/13	101FF
101	Submittal of MNR Plan	0 days	Mon 6/24/13	Mon 6/24/13	64SF-64 days

Project: Tyco ESRP Approach
Date: Mon 10/10/11

Task | Progress | Summary | External Tasks | Split
Split | Milestone | Project Summary | External MileTask

Attachment 2

Preliminary Construction Schedule

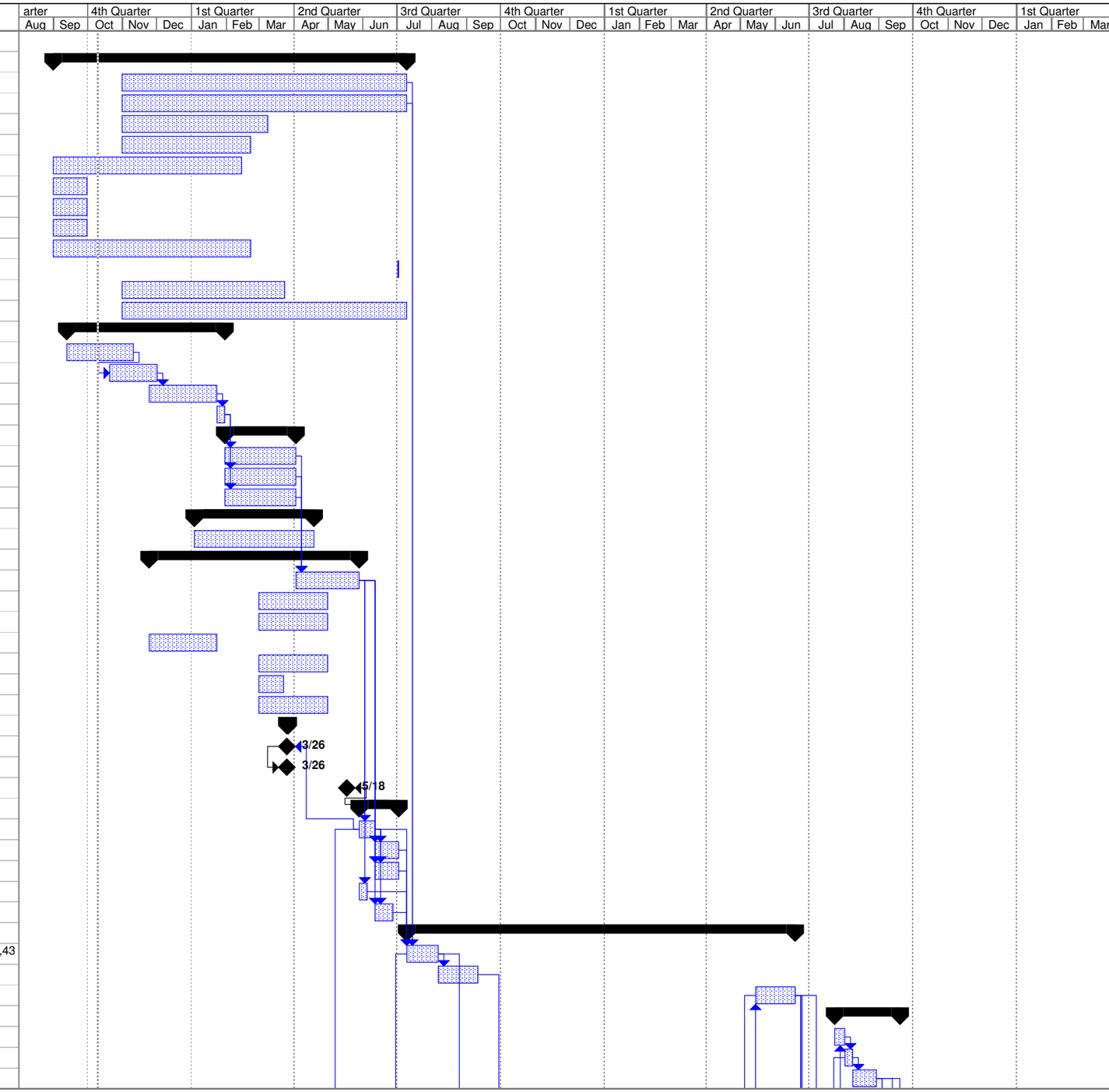
Tyco "Enhanced Scenario" Cost Estimate 2011-10-04
Tyco Fire Products, LP
Marinette, Wisconsin

Item	Task	Estimated Quantity	Unit	Unit Price	Extended Total
A	**Lump Sum Items**				
A.1	Insurance Premiums	1	LS	$ 264,423.01	$ 264,423
A.2	Performance and Payment Bonds	1	LS	$ 264,423.01	$ 264,423
A.3	Mobilization	1	LS	$ 392,353.50	$ 392,354
A.4	Infrastructure Construction	1	LS	$ 235,378.10	$ 235,378
A.5	Site Maintenance (includes pumping wastewater to water treatment system)	1	LS	$ 40,000.00	$ 40,000
A.6	Surveys	1	LS	$ 84,409.72	$ 84,410
A.7	Site Restoration	1	LS	$ 50,000.00	$ 50,000
A.8	Demobilization	1	LS	$ 280,599.50	$ 280,600
A.9	Subcontract Closeout	1	LS	$ 11,000.00	$ 11,000
A.10	Interim Demobilization	1	LS	$ -	$ -
B	**Unit Price Items**				
B.1	Mechanical Dredging of Soft Sediment	77,673	CY	$ 19.23	$ 1,493,942
B.2	Mechanical Dredging of Semi-consolidated Sands and Silts	34,724	CY	$ 21.64	$ 751,593
B.3	Dry Excavation of Soft Sediment	12,028	CY	$ 12.50	$ 150,303
B.4	Phase 2B - Dry Excavation of Semiconsolidated Sand and Silt	0	CY	$ -	$ -
B.5	Supply Fluidized Bed Boiler Ash Reagent	6,776	TON	$ 60.50	$ 409,954
B.6	Supply Portland Cement Reagent	0	TON	$ -	$ -
B.7	Supply Sodium Polyacrylate (SAP) Reagent	0	TON	$ -	$ -
B.8	Supply 60% Ferric Sulfate Solution Reagent	1,129	TON	$ 286.00	$ 322,994
B.9	Supply Calcium Hypochlorite Reagent	847	TON	$ 2,090.00	$ 1,770,256
B.10	Mix Reagents, Stockpile Sediment on Pad	98,382	CY	$ 10.86	$ 1,068,158
B.11	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill	159,550	TON	$ 33.50	$ 5,344,562
B.12	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill	0	TON	$ -	$ -
B.13	Water Treatment	6,073,629	GAL	$ 0.60	$ 3,642,973
B.14	Debris Removal and RCRA Subtitle D Disposal	165	TON	$ 114.85	$ 18,963
B.15	Mechanical Dredge Standby Time	50	HR	$ 1,049.00	$ 52,450
B.16	8th Street Slip Sheet Piling Reinforcement	0	LS	$ 1,417,836	$ -
B.17	CAMU Construction	0	LS	$ 4,508,160	$ -
B.18	Demolition of Building 59	0	LS	$ 1,237,559	$ -
B.19	Cap Placement	22,400	SY	$ 68.98	$ 1,545,233
				Total:	**$ 18,193,968**

TOTAL WITHOUT CONTINGENCY			**$ 18,193,968**
Project Management		**0%**	$ -
Remedial Design		**2%**	$ 363,879
Construction Management		**7%**	$ 1,273,578
Other Contingency		**25%**	$ 4,548,492
Total Estimated COST			**$ 24,379,917**
Estimate Range			
Top estimate range +50%	**50%**		**$ 36,569,875**
Bottom estimate range -30%	**-30%**		**$ 17,065,942**

This estimate is offered as an opinion of cost to perform the work and is not an offer to contract for construction services, procure and/or provide such services

ID	Task Name	Duration	Start	Finish	Predecessors
1	Submittal of SRWP, AMRSRP, & Schedule	0 days	Wed 12/1/10	Wed 12/1/10	
2	**Permitting**	**223 days**	**Thu 9/1/11**	**Mon 7/9/12**	
3	USACE 404 &10, WDNR 401 & chapter 30	180 days	Tue 11/1/11	Mon 7/9/12	
4	WDNR Waterways Marker Permit	180 days	Tue 11/1/11	Mon 7/9/12	
5	WDNR NR216 Construction Storm water Permit	93 days	Tue 11/1/11	Thu 3/8/12	
6	WDNR NR205 Water from dredging operations	82 days	Tue 11/1/11	Wed 2/22/12	
7	WDNR Water Quality Variance	119 days	Thu 9/1/11	Tue 2/14/12	
8	Section 7 Endangered Species USF&W	22 days	Thu 9/1/11	Fri 9/30/11	
9	WDNR Natural Heritage Inventory Review	22 days	Thu 9/1/11	Fri 9/30/11	
10	Section 106 Cultural Resources Review	22 days	Thu 9/1/11	Fri 9/30/11	
11	Local Permits	125 days	Thu 9/1/11	Wed 2/22/12	
12	Coast Guard Notification	1 day	Mon 7/2/12	Mon 7/2/12	
13	Access Agreements	104 days	Tue 11/1/11	Fri 3/23/12	
14	RCRA Onsite Treatment Variance	180 days	Tue 11/1/11	Mon 7/9/12	
15	**Remedial Design**	**100 days**	**Tue 9/13/11**	**Mon 1/30/12**	
16	Basis of Design	43 days	Tue 9/13/11	Thu 11/10/11	
17	Preliminary Design	30 days	Fri 10/21/11	Thu 12/1/11	16FS-15 days
18	Final Design	42 days	Fri 11/25/11	Mon 1/23/12	17FS-5 days
19	Prepare Bid Package	5 days	Tue 1/24/12	Mon 1/30/12	18
20	**Procurement**	**45 days**	**Tue 1/31/12**	**Mon 4/2/12**	
21	Dredger	45 days	Tue 1/31/12	Mon 4/2/12	19
22	Landside Operation Subcontractor	45 days	Tue 1/31/12	Mon 4/2/12	19
23	Water Treatment System	45 days	Tue 1/31/12	Mon 4/2/12	19
24	**Long Lead Items**	**76 days**	**Wed 1/4/12**	**Wed 4/18/12**	
25	Evaporator	76 days	Wed 1/4/12	Wed 4/18/12	
26	**Prepare Remediation Plans**	**132 days**	**Fri 11/25/11**	**Mon 5/28/12**	
27	Project Manual	40 days	Tue 4/3/12	Mon 5/28/12	21,22,23
28	Confirmation Sampling Plan	43 days	Thu 3/1/12	Mon 4/30/12	
29	Construction Quality Assurance Plan	43 days	Thu 3/1/12	Mon 4/30/12	
30	O & M Plan	42 days	Fri 11/25/11	Mon 1/23/12	
31	Corrective Measures Implementation Plan	43 days	Thu 3/1/12	Mon 4/30/12	
32	H&S Plan	16 days	Thu 3/1/12	Thu 3/22/12	
33	QA/QC Plan	43 days	Thu 3/1/12	Mon 4/30/12	
34	**Prepare Fact Sheet**	**1 day**	**Mon 3/26/12**	**Tue 3/27/12**	
35	Distributed to USEPA	1 day	Mon 3/26/12	Tue 3/27/12	39SF-9 wks
36	Distributed to Public	1 day	Mon 3/26/12	Mon 3/26/12	35SS
37	Pre-construction Inspection Meeting	0 days	Fri 5/18/12	Fri 5/18/12	38SF-7 days
38	**Mobilization**	**25 days**	**Tue 5/29/12**	**Mon 7/2/12**	
39	Set up Solidification Pad	10 days	Tue 5/29/12	Mon 6/11/12	27
40	Mobilize WWT System	15 days	Tue 6/12/12	Mon 7/2/12	27,39
41	Mobilize Solidification Equipment	15 days	Tue 6/12/12	Mon 7/2/12	27,39
42	Place Bin Blocks	5 days	Tue 5/29/12	Mon 6/4/12	27
43	Mobilize Dredge	12 days	Tue 6/12/12	Wed 6/27/12	27,39
44	**Dredging Tasks**	**246 days**	**Tue 7/10/12**	**Tue 6/18/13**	
45	Phase I Dredge Soft Sediment - Turning Basin	4 wks	Tue 7/10/12	Mon 8/6/12	3,4,39,40,41,42,43
46	Phase II Dredge SCM Turning Basin	5 wks	Tue 8/7/12	Mon 9/10/12	45
47	Phase III Dredge Soft Sediments Outside TB	5 wks	Wed 5/15/13	Tue 6/18/13	58
48	**Dry Excavation**	**42 days**	**Wed 7/24/13**	**Thu 9/19/13**	
49	Install Sheet Pile	7 days	Wed 7/24/13	Thu 8/1/13	54
50	Pump Free Water	5 days	Fri 8/2/13	Thu 8/8/13	49
51	Phase V Dry Excavation Soft Sediments	3 wks	Fri 8/9/13	Thu 8/29/13	50



Project: Tyco ESRP Approach
Date: Mon 10/10/11

Task | Progress | Summary | External Tasks | Split
Split | Milestone | Project Summary | External MileTask

ID	Task Name	Duration	Start	Finish	Predecessors
52	Remove Sheet Piles	5 days	Fri 9/13/13	Thu 9/19/13	51,73
53	**Chemical Isolation Layer (Phase IV)**	**25 days**	**Wed 6/19/13**	**Tue 7/23/13**	
54	Install and Test Chemical Isolation Layer	5 wks	Wed 6/19/13	Tue 7/23/13	47
55	**Winter Shutdown**	**135 days**	**Thu 10/11/12**	**Wed 4/17/13**	
56	Winter Demobilization	10 days	Thu 10/11/12	Thu 10/25/12	104SF
104	Winter Shutdown	120 days	Thu 10/25/12	Wed 4/10/13	
58	Spring Remobilization	5 days	Thu 4/11/13	Wed 4/17/13	104
59	**Pre-final Constr. Inspection (at 80% compl.)**	**23 days**	**Tue 5/7/13**	**Fri 6/7/13**	
60	Notification of USEPA (30 days prior)	0 days	Tue 5/7/13	Tue 5/7/13	61FF-23 days
61	Pre-final Inspection	0 days	Fri 6/7/13	Fri 6/7/13	47FF-7 days
62	**Final Construction Inspection (at completion)**	**23 days**	**Tue 8/20/13**	**Thu 9/19/13**	
63	Notification of USEPA (30 days prior)	0 days	Tue 8/20/13	Tue 8/20/13	64SF-23 days
64	Final Construction Inspection	0 days	Thu 9/19/13	Thu 9/19/13	52
65	**Demobilization**	**69 days**	**Wed 6/19/13**	**Mon 9/23/13**	
94		1 day?	Thu 10/7/10	Thu 10/7/10	75,76,78,77
67	Demobilize Dredge	5 days	Wed 6/19/13	Tue 6/25/13	47
68	Demobilize WWT System	7 days	Fri 9/13/13	Mon 9/23/13	89
69	**Site Restoration**	**27 days**	**Fri 8/30/13**	**Mon 10/7/13**	
70	Clean Solidification Area	3 days	Tue 9/24/13	Thu 9/26/13	94,68
71	Resurface Solidification Area	5 days	Fri 9/27/13	Thu 10/3/13	70
72	Demobilize Project Trailer	2 days	Fri 10/4/13	Mon 10/7/13	71
73	Restore South Channel Access	10 days	Fri 8/30/13	Thu 9/12/13	51
74	**Sediment Stabilization**	**303 days**	**Thu 7/12/12**	**Mon 9/9/13**	
75	Soft Sediment 2012	5 wks	Thu 7/12/12	Wed 8/15/12	45FF+7 days
76	Semi-consolidated Material 2012	6 wks	Thu 8/9/12	Wed 9/19/12	46FF+7 days
77	Soft Sediment 2013	4 wks	Tue 8/13/13	Mon 9/9/13	51FF+7 days
78	Semi-consolidated Material 2013	6 wks	Fri 5/17/13	Thu 6/27/13	47FF+7 days
79	**Transportation and Disposal**	**303 days**	**Fri 7/13/12**	**Tue 9/10/13**	
80	Soft Sediment 2012	5 wks	Fri 7/13/12	Thu 8/16/12	75FF+1 day
81	Semi-consolidated Materials 2012	6 wks	Fri 8/10/12	Thu 9/20/12	76FF+1 day
82	Soft Sediment 2013	4 wks	Wed 8/14/13	Tue 9/10/13	77FF+1 day
83	Semi-consolidated Materials 2013	6 wks	Mon 5/20/13	Fri 6/28/13	78FF+1 day
84	**Water Treatment**	**308 days**	**Tue 7/10/12**	**Thu 9/12/13**	
85	**50 GPM Operations**	**246 days**	**Tue 7/10/12**	**Tue 6/18/13**	
86	Dredging 2012	9 wks	Tue 7/10/12	Mon 9/10/12	45SS
87	Dredging 2013	5 wks	Wed 5/15/13	Tue 6/18/13	47SS
88	**150 GPM Operations**	**30 days**	**Fri 8/2/13**	**Thu 9/12/13**	
89	Dry Excavation 2013	6 wks	Fri 8/2/13	Thu 9/12/13	50SS
90	**Project Oversight**	**357 days**	**Fri 5/25/12**	**Mon 10/7/13**	
92	Start	0 days	Fri 5/25/12	Fri 5/25/12	39SS-2 days
97	End	0 days	Mon 10/7/13	Mon 10/7/13	72FF
93	**Project Management**	**816 days**	**Thu 10/7/10**	**Thu 11/21/13**	
95	Start	0 days	Thu 10/7/10	Thu 10/7/10	
98	End	0 days	Thu 11/21/13	Thu 11/21/13	96FF
96	**Final Report**	**60 days**	**Fri 8/30/13**	**Thu 11/21/13**	**51**
102	AOC Deadline for Sediment Removal Completion	0 days	Fri 11/1/13	Fri 11/1/13	
103	**AOC Deadline for Sediment Construction Report**	**0 days**	**Sat 3/1/14**	**Sat 3/1/14**	
99	**MNR Plan**	**60 days**	**Mon 4/1/13**	**Mon 6/24/13**	
100	Development of MNR Plan	60 days	Mon 4/1/13	Mon 6/24/13	101FF
101	Submittal of MNR Plan	0 days	Mon 6/24/13	Mon 6/24/13	64SF-64 days

Project: Tyco ESRP Approach
Date: Mon 10/10/11

Task | Progress | Summary | External Tasks | Split
Split | Milestone | Project Summary | External MileTask

Attachment 3

Preliminary Cost Estimate

Tyco "Enhanced Scenario" Cost Estimate 2011-10-04
Tyco Fire Products, LP
Marinette, Wisconsin

Item	Task	Estimated Quantity	Unit	Unit Price	Extended Total
A	**Lump Sum Items**				
A.1	Insurance Premiums	1	LS	$ 264,423.01	$ 264,423
A.2	Performance and Payment Bonds	1	LS	$ 264,423.01	$ 264,423
A.3	Mobilization	1	LS	$ 392,353.50	$ 392,354
A.4	Infrastructure Construction	1	LS	$ 235,378.10	$ 235,378
A.5	Site Maintenance (includes pumping wastewater to water treatment system)	1	LS	$ 40,000.00	$ 40,000
A.6	Surveys	1	LS	$ 84,409.72	$ 84,410
A.7	Site Restoration	1	LS	$ 50,000.00	$ 50,000
A.8	Demobilization	1	LS	$ 280,599.50	$ 280,600
A.9	Subcontract Closeout	1	LS	$ 11,000.00	$ 11,000
A.10	Interim Demobilization	1	LS	$ -	$ -
B	**Unit Price Items**				
B.1	Mechanical Dredging of Soft Sediment	77,673	CY	$ 19.23	$ 1,493,942
B.2	Mechanical Dredging of Semi-consolidated Sands and Silts	34,724	CY	$ 21.64	$ 751,593
B.3	Dry Excavation of Soft Sediment	12,028	CY	$ 12.50	$ 150,303
B.4	Phase 2B - Dry Excavation of Semiconsolidated Sand and Silt	0	CY	$ -	$ -
B.5	Supply Fluidized Bed Boiler Ash Reagent	6,776	TON	$ 60.50	$ 409,954
B.6	Supply Portland Cement Reagent	0	TON	$ -	$ -
B.7	Supply Sodium Polyacrylate (SAP) Reagent	0	TON	$ -	$ -
B.8	Supply 60% Ferric Sulfate Solution Reagent	1,129	TON	$ 286.00	$ 322,994
B.9	Supply Calcium Hypochlorite Reagent	847	TON	$ 2,090.00	$ 1,770,256
B.10	Mix Reagents, Stockpile Sediment on Pad	98,382	CY	$ 10.86	$ 1,068,158
B.11	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill	159,550	TON	$ 33.50	$ 5,344,562
B.12	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill	0	TON	$ -	$ -
B.13	Water Treatment	6,073,629	GAL	$ 0.60	$ 3,642,973
B.14	Debris Removal and RCRA Subtitle D Disposal	165	TON	$ 114.85	$ 18,963
B.15	Mechanical Dredge Standby Time	50	HR	$ 1,049.00	$ 52,450
B.16	8th Street Slip Sheet Piling Reinforcement	0	LS	$ 1,417,836	$ -
B.17	CAMU Construction	0	LS	$ 4,508,160	$ -
B.18	Demolition of Building 59	0	LS	$ 1,237,559	$ -
B.19	Cap Placement	22,400	SY	$ 68.98	$ 1,545,233
				Total:	**$ 18,193,968**

TOTAL WITHOUT CONTINGENCY			**$ 18,193,968**
Project Management		**0%**	$ -
Remedial Design		**2%**	$ 363,879
Construction Management		**7%**	$ 1,273,578
Other Contingency		**25%**	$ 4,548,492
Total Estimated COST			**$ 24,379,917**
Estimate Range			
Top estimate range +50%	**50%**		**$ 36,569,875**
Bottom estimate range -30%	**-30%**		**$ 17,065,942**

This estimate is offered as an opinion of cost to perform the work and is not an offer to contract for construction services, procure and/or provide such services

Appendix B
Analytical Data

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD536	6th_St_Slip	575.6	5/22/2010	0.0	-0.5	211	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-0.5	-1.0	69.7	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-1.0	-1.5	227	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-1.5	-2.0	159	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-2.0	-2.5	99.3	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-2.5	-3.0	88.1	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-3.0	-3.5	133	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-3.5	-4.5	69	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-4.5	-5.0	41.5	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-5.0	-5.5	19.2	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-5.5	-6.0	14.6	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-6.0	-6.5	23.2	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-6.5	-7.0	26.8	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-7.0	-7.5	19.1	soft sediment
SD536	6th_St_Slip	575.6	5/22/2010	-7.5	-8.0	4.9	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	0.0	-0.5	84	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-0.5	-1.0	176	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-1.0	-1.5	150	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-1.5	-2.0	169	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-2.0	-2.5	200	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-2.5	-3.0	176	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-3.0	-3.5	101	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-3.5	-4.0	77.4	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-4.0	-4.5	22.1	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-4.5	-5.0	16.1	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-5.0	-5.5	18.2	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-5.5	-6.0	28	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-6.0	-6.5	43	soft sediment
SD537	6th_St_Slip	576.5	5/24/2010	-6.5	-6.8	39.4	soft sediment
SD538	6th_St_Slip	577.7	5/25/2010	0.0	-0.5	3.5	soft sediment
SD538	6th_St_Slip	577.7	5/25/2010	-0.5	-1.0	16	soft sediment
SD538	6th_St_Slip	577.7	5/25/2010	-1.0	-1.5	50.9	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD538	6th_St_Slip	577.7	5/25/2010	-1.5	-2.0	36.9	soft sediment
SD538	6th_St_Slip	577.7	5/25/2010	-2.0	-2.5	30	soft sediment
SD538	6th_St_Slip	577.7	5/25/2010	-2.5	-3.0	25.7	soft sediment
SD538	6th_St_Slip	577.7	5/25/2010	-3.0	-3.5	19.3	soft sediment
SD502	Menominee_River	553.4	5/20/2010	0.0	-0.5	53.7	soft sediment
SD503	Menominee_River	556.0	5/23/2010	0.0	-0.5	41.3	soft sediment
SD507	Menominee_River	553.3	5/23/2010	0.0	-0.5	35.1	soft sediment
SD508	Menominee_River	553.6	5/23/2010	0.0	-0.5	42.2	soft sediment
SD511	Menominee_River	553.7	5/23/2010	0.0	-0.5	39.9	soft sediment
SD514	Menominee_River	551.8	5/25/2010	0.0	-1.0	852	soft sediment
SD514	Menominee_River	551.8	5/25/2010	-1.0	-2.0	432	soft sediment
SD514	Menominee_River	551.8	5/25/2010	-2.0	-2.3	220	soft sediment
SD517	Menominee_River	557.5	5/19/2010	0.0	-0.5	11.1	soft sediment
SD551	Menominee_River	553.2	5/20/2010	0.0	-0.5	17.6	soft sediment
SD552	Menominee_River	553.9	5/20/2010	0.0	-0.5	7.7	soft sediment
SD553	Menominee_River	554.6	5/21/2010	0.0	-0.5	6.4	soft sediment
SD553	Menominee_River	554.6	5/21/2010	-0.5	-1.0	5.9	soft sediment
SD553	Menominee_River	554.6	5/21/2010	-1.0	-1.5	4.8	soft sediment
SD553	Menominee_River	554.6	5/21/2010	-1.5	-2.0	6.2	soft sediment
SD554	Menominee_River	554.0	5/21/2010	0.0	-0.5	78.7	soft sediment
SD554	Menominee_River	554.0	5/21/2010	-0.5	-1.0	10.5	soft sediment
SD554	Menominee_River	554.0	5/21/2010	-1.0	-1.5	12	soft sediment
SD554	Menominee_River	554.0	5/21/2010	-1.5	-2.0	8.4	soft sediment
SD554	Menominee_River	554.0	5/21/2010	-2.0	-2.5	6.7	soft sediment
SD555	Menominee_River	552.1	5/23/2010	0.0	-0.5	2.2	soft sediment
SD555	Menominee_River	552.1	5/23/2010	-0.5	-1.0	2.1	soft sediment
SD555	Menominee_River	552.1	5/23/2010	-1.0	-1.5	1.8	soft sediment
SD555	Menominee_River	552.1	5/23/2010	-1.5	-2.0	2.2	soft sediment
SD555	Menominee_River	552.1	5/23/2010	-2.0	-2.5	2	soft sediment
SD556	Menominee_River	553.9	5/20/2010	0.0	-0.5	9.3	soft sediment
SD557	Menominee_River	566.0	5/21/2010	0.0	-0.5	11.2	soft sediment
SD557	Menominee_River	566.0	5/21/2010	-0.5	-1.0	8.1	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD557	Menominee_River	566.0	5/21/2010	-1.0	-1.5	7.1	soft sediment
SD564	Menominee_River	552.3	5/18/2010	0.0	-0.5	9.7	soft sediment
SD565	Menominee_River	551.6	5/18/2010	0.0	-0.5	16.1	soft sediment
SD566	Menominee_River	553.4	5/20/2010	0.0	-0.5	12.3	soft sediment
SD502	Menominee_River	553.4	6/9/2010	0.0	-1.0	45.9	semiconsolidated
SD502	Menominee_River	553.4	6/9/2010	-2.0	-3.0	12.1	semiconsolidated
SD502	Menominee_River	553.4	6/9/2010	-4.0	-5.0	20.7	semiconsolidated
SD502	Menominee_River	553.4	6/9/2010	-6.0	-7.0	15.1	semiconsolidated
SD511	Menominee_River	553.7	6/7/2010	0.0	-1.0	4.7	semiconsolidated
SD511	Menominee_River	553.7	6/7/2010	-1.0	-2.0	23.7	semiconsolidated
SD511	Menominee_River	553.7	6/7/2010	-2.0	-3.0	96.9	semiconsolidated
SD511	Menominee_River	553.7	6/7/2010	-3.0	-4.0	36.6	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	0.0	-1.0	2.2	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-2.0	-3.0	2.7	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-3.0	-4.0	2	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-4.0	-5.0	2.1	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-5.0	-6.0	2.2	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-6.0	-7.0	2.5	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-7.0	-8.0	2.1	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-8.0	-9.0	2.4	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-9.0	-10.0	2.8	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-10.0	-11.0	2.6	semiconsolidated
SD517	Menominee_River	557.5	6/6/2010	-11.0	-12.0	3.1	semiconsolidated
SD551	Menominee_River	553.2	6/10/2010	0.0	-1.0	6.2	semiconsolidated
SD551	Menominee_River	553.2	6/10/2010	-2.0	-3.0	3.1	semiconsolidated
SD552	Menominee_River	553.9	6/14/2010	-1.0	-2.0	2.6	semiconsolidated
SD552	Menominee_River	553.9	6/14/2010	-2.0	-3.0	1.9	semiconsolidated
SD552	Menominee_River	553.9	6/14/2010	-4.0	-5.0	1.4	semiconsolidated
SD553	Menominee_River	554.6	6/7/2010	-2.0	-3.0	2	semiconsolidated
SD553	Menominee_River	554.6	6/7/2010	-3.0	-4.0	1.8	semiconsolidated
SD553	Menominee_River	554.6	6/7/2010	-4.0	-5.0	1.9	semiconsolidated
SD554	Menominee_River	554.0	6/5/2010	-3.0	-4.0	3	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD554	Menominee_River	554.0	6/5/2010	-4.0	-5.0	2.8	semiconsolidated
SD554	Menominee_River	554.0	6/5/2010	-5.0	-6.0	2.8	semiconsolidated
SD555	Menominee_River	552.1	6/5/2010	-3.0	-4.0	2.4	semiconsolidated
SD555	Menominee_River	552.1	6/5/2010	-5.0	-6.0	2.2	semiconsolidated
SD555	Menominee_River	552.1	6/5/2010	-6.0	-7.0	2.2	semiconsolidated
SD555	Menominee_River	552.1	6/5/2010	-7.0	-8.0	2.5	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	0.0	-1.0	2.7	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	-1.0	-2.0	2.7	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	-2.0	-3.0	5.4	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	-4.0	-5.0	2.3	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	-5.0	-6.0	2.7	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	-6.0	-7.0	3	semiconsolidated
SD556	Menominee_River	553.9	6/4/2010	-7.0	-8.0	2.4	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-5.0	-6.0	2.2	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-7.0	-8.0	2.7	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-9.0	-10.0	2	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-11.0	-12.0	1.9	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-13.0	-14.0	2.2	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-14.0	-15.0	2.1	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-15.0	-16.0	2	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-17.0	-18.0	2.4	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-18.0	-19.0	2.8	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-19.0	-20.0	3.4	semiconsolidated
SD557	Menominee_River	566.0	6/5/2010	-20.0	-21.0	2.9	semiconsolidated
SD564	Menominee_River	552.3	6/10/2010	0.0	-1.0	6.6	semiconsolidated
SD564	Menominee_River	552.3	6/10/2010	-4.0	-5.0	5.5	semiconsolidated
SD565	Menominee_River	551.6	6/10/2010	0.0	-1.0	3.3	semiconsolidated
SD565	Menominee_River	551.6	6/10/2010	-2.0	-3.0	1.6	semiconsolidated
SD565	Menominee_River	551.6	6/10/2010	-3.0	-4.0	2.1	semiconsolidated
SD565	Menominee_River	551.6	6/10/2010	-4.0	-5.0	1.9	semiconsolidated
SD565	Menominee_River	551.6	6/10/2010	-5.0	-6.0	2.1	semiconsolidated
SD566	Menominee_River	553.4	6/10/2010	0.0	-1.0	4.7	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD566	Menominee_River	553.4	6/10/2010	-1.0	-2.0	2	semiconsolidated
SD566	Menominee_River	553.4	6/10/2010	-2.0	-3.0	2.2	semiconsolidated
SD566	Menominee_River	553.4	6/10/2010	-3.0	-4.0	1.9	semiconsolidated
SD566	Menominee_River	553.4	6/10/2010	-4.0	-5.0	3	semiconsolidated
SD566	Menominee_River	553.4	6/10/2010	-5.0	-6.0	1.7	semiconsolidated
SD511	Menominee_River	553.7	6/7/2010	-4.0	-5.0	2.7	till
SD511	Menominee_River	553.7	6/7/2010	-5.0	-6.0	1.8	till
SD514	Menominee_River	551.8	6/15/2010	-3.0	-4.0	144	till
SD514	Menominee_River	551.8	6/15/2010	-4.0	-5.0	46.4	till
SD514	Menominee_River	551.8	6/15/2010	-5.0	-6.0	43.9	till
SD514	Menominee_River	551.8	6/15/2010	-6.0	-7.0	7.2	till
SD514	Menominee_River	551.8	6/15/2010	-9.0	-10.0	5.9	till
SD517	Menominee_River	557.5	6/6/2010	-12.0	-13.0	2.6	till
SD517	Menominee_River	557.5	6/6/2010	-13.0	-14.0	3	till
SD551	Menominee_River	553.2	6/10/2010	-3.0	-4.0	2.1	till
SD552	Menominee_River	553.9	6/14/2010	-6.0	-7.0	1.6	till
SD553	Menominee_River	554.6	6/7/2010	-5.0	-6.0	1.9	till
SD554	Menominee_River	554.0	6/5/2010	-6.0	-7.0	2.1	till
SD554	Menominee_River	554.0	6/5/2010	-7.0	-8.0	1.9	till
SD554	Menominee_River	554.0	6/5/2010	-8.0	-9.0	2.1	till
SD554	Menominee_River	554.0	6/5/2010	-9.0	-10.0	2.1	till
SD554	Menominee_River	554.0	6/5/2010	-10.0	-11.0	2	till
SD554	Menominee_River	554.0	6/5/2010	-11.0	-12.0	2.7	till
SD555	Menominee_River	552.1	6/5/2010	-10.0	-11.0	2.1	till
SD556	Menominee_River	553.9	6/4/2010	-8.0	-9.0	2.4	till
SD556	Menominee_River	553.9	6/4/2010	-9.0	-10.0	2.7	till
SD556	Menominee_River	553.9	6/4/2010	-10.0	-11.0	2.3	till
SD556	Menominee_River	553.9	6/4/2010	-11.0	-12.0	2.6	till
SD556	Menominee_River	553.9	6/4/2010	-12.0	-13.0	2.3	till
SD556	Menominee_River	553.9	6/4/2010	-13.0	-14.0	2.2	till
SD564	Menominee_River	552.3	6/10/2010	-5.0	-5.7	14.7	till
SD565	Menominee_River	551.6	6/10/2010	-6.0	-7.0	2.2	till

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD565	Menominee_River	551.6	6/10/2010	-7.0	-8.0	2.2	till
SD565	Menominee_River	551.6	6/10/2010	-8.0	-8.8	2.3	till
SD514	Menominee_River	551.8	6/15/2010	-10.0	-11.0	6.8	weathered bedrock
SD541	South_Channel	575.6	5/25/2010	0.0	-0.5	42.5	soft sediment
SD541	South_Channel	575.6	5/25/2010	-0.5	-1.0	20.9	soft sediment
SD541	South_Channel	575.6	5/25/2010	-1.0	-1.5	15.5	soft sediment
SD541	South_Channel	575.6	5/25/2010	-1.5	-2.0	3.9	soft sediment
SD541	South_Channel	575.6	5/25/2010	-2.0	-2.5	3.2	soft sediment
SD541	South_Channel	575.6	5/25/2010	-2.5	-3.0	1.9	soft sediment
SD541	South_Channel	575.6	5/25/2010	-3.0	-3.2	2.7	soft sediment
SD543	South_Channel	575.7	5/24/2010	0.0	-0.5	37.5	soft sediment
SD543	South_Channel	575.7	5/24/2010	-0.5	-1.0	35.9	soft sediment
SD543	South_Channel	575.7	5/24/2010	-1.0	-1.5	22	soft sediment
SD544	South_Channel	576.0	5/23/2010	0.0	-0.5	26.1	soft sediment
SD544	South_Channel	576.0	5/23/2010	-0.5	-1.0	6.2	soft sediment
SD544	South_Channel	576.0	5/23/2010	-1.0	-1.5	3.5	soft sediment
SD544	South_Channel	576.0	5/23/2010	-1.5	-2.0	1.8	soft sediment
SD544	South_Channel	576.0	5/23/2010	-2.0	-2.5	1.7	soft sediment
SD545	South_Channel	576.2	5/26/2010	0.0	-0.5	52.3	soft sediment
SD545	South_Channel	576.2	5/26/2010	-0.5	-1.0	73.2	soft sediment
SD545	South_Channel	576.2	5/26/2010	-1.0	-1.5	53.9	soft sediment
SD545	South_Channel	576.2	5/26/2010	-1.5	-1.9	31.8	soft sediment
SD546	South_Channel	576.0	5/26/2010	0.0	-0.5	69.8	soft sediment
SD546	South_Channel	576.0	5/26/2010	-0.5	-1.0	57.7	soft sediment
SD546	South_Channel	576.0	5/26/2010	-1.0	-1.5	67.2	soft sediment
SD547	South_Channel	576.4	5/24/2010	0.0	-0.5	28.4	soft sediment
SD548	South_Channel	575.7	5/24/2010	0.0	-0.5	95.7	soft sediment
SD548	South_Channel	575.7	5/24/2010	-0.5	-1.0	85.6	soft sediment
SD548	South_Channel	575.7	5/24/2010	-1.0	-1.5	63.9	soft sediment
SD548	South_Channel	575.7	5/24/2010	-1.5	-2.0	25.3	soft sediment
SD548	South_Channel	575.7	5/24/2010	-2.0	-2.2	12.2	soft sediment
SD549	South_Channel	575.7	5/25/2010	0.0	-0.5	94.7	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD549	South_Channel	575.7	5/25/2010	-0.5	-1.0	112	soft sediment
SD549	South_Channel	575.7	5/25/2010	-1.0	-1.5	81.7	soft sediment
SD549	South_Channel	575.7	5/25/2010	-1.5	-2.0	55.1	soft sediment
SD549	South_Channel	575.7	5/25/2010	-2.0	-2.4	11	soft sediment
SD550	South_Channel	576.4	5/26/2010	0.0	-0.5	65	soft sediment
SD550	South_Channel	576.4	5/26/2010	-0.5	-1.0	15.1	soft sediment
SD550	South_Channel	576.4	5/26/2010	-1.0	-1.5	3.6	soft sediment
SD567	South_Channel	576.4	5/26/2010	0.0	-0.5	76.6	soft sediment
SD567	South_Channel	576.4	5/26/2010	-0.5	-1.0	31.4	soft sediment
SD568	South_Channel	577.0	5/24/2010	0.0	-0.5	46.5	soft sediment
SD568	South_Channel	577.0	5/24/2010	-0.5	-1.0	5.5	soft sediment
SD569	South_Channel	576.7	5/24/2010	0.0	-0.5	111	soft sediment
SD569	South_Channel	576.7	5/24/2010	-0.5	-1.0	99.3	soft sediment
SD570	South_Channel	576.8	5/26/2010	0.0	-0.5	94.5	soft sediment
SD570	South_Channel	576.8	5/26/2010	-0.5	-1.0	14.8	soft sediment
SD570	South_Channel	576.8	5/26/2010	-1.0	-1.5	23.5	soft sediment
SD570	South_Channel	576.8	5/26/2010	-1.5	-2.0	4.7	soft sediment
SD571	South_Channel	577.0	5/26/2010	0.0	-0.5	10.5	soft sediment
SD571	South_Channel	577.0	5/26/2010	-0.5	-1.0	15.5	soft sediment
SD571	South_Channel	577.0	5/26/2010	-1.0	-1.4	25.7	soft sediment
SD572	South_Channel	576.4	5/24/2010	0.0	-0.5	7.8	soft sediment
SD572	South_Channel	576.4	5/24/2010	-0.5	-1.0	24.8	soft sediment
SD572	South_Channel	576.4	5/24/2010	-1.0	-1.4	52.1	soft sediment
SD573	South_Channel	577.7	5/26/2010	0.0	-0.5	2.8	soft sediment
SD573	South_Channel	577.7	5/26/2010	-0.5	-1.0	4.5	soft sediment
SD573	South_Channel	577.7	5/26/2010	-1.0	-1.5	4.9	soft sediment
SD573	South_Channel	577.7	5/26/2010	-1.5	-2.0	3.8	soft sediment
SD521	Transition_Area_1	576.1	5/20/2010	0.0	-0.5	6.1	soft sediment
SD521	Transition_Area_1	576.1	5/20/2010	-0.5	-1.0	6.5	soft sediment
SD521	Transition_Area_1	576.1	5/20/2010	-1.0	-1.5	4.2	soft sediment
SD521	Transition_Area_1	576.1	5/20/2010	-1.5	-2.0	2.2	soft sediment
SD521	Transition_Area_1	576.1	5/20/2010	-2.0	-2.5	4.2	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD521	Transition_Area_1	576.1	5/20/2010	-2.5	-3.0	3.3	soft sediment
SD521	Transition_Area_1	576.1	5/20/2010	-3.0	-3.5	7.7	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	0.0	-0.5	7.5	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-0.5	-1.0	4.7	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-1.0	-1.5	4.7	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-1.5	-2.0	5.9	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-2.0	-2.5	7.1	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-2.5	-3.0	7.2	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-3.0	-3.5	4.6	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-3.5	-4.0	5.8	soft sediment
SD522	Transition_Area_1	577.4	5/24/2010	-4.0	-4.4	7.3	soft sediment
SD523VC	Transition_Area_1	577.1	5/21/2010	0.0	-0.5	13.7	soft sediment
SD523VC	Transition_Area_1	577.1	5/21/2010	-0.5	-1.0	11.1	soft sediment
SD523VC	Transition_Area_1	577.1	5/21/2010	-1.0	-1.5	11.3	soft sediment
SD523VC	Transition_Area_1	577.1	5/21/2010	-1.5	-2.0	15.4	soft sediment
SD523VC	Transition_Area_1	577.1	5/21/2010	-2.0	-2.5	10.4	soft sediment
SD523VC	Transition_Area_1	577.1	5/21/2010	-2.5	-3.0	17	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	0.0	-0.5	6.4	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	-0.5	-1.0	5	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	-1.0	-1.5	5.7	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	-1.5	-2.0	6	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	-2.0	-2.5	3.4	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	-2.5	-3.0	6.4	soft sediment
SD524	Transition_Area_1	577.0	5/20/2010	-3.0	-3.5	3.5	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	0.0	-0.5	13.6	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	-0.5	-1.0	16	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	-1.0	-1.5	8.3	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	-1.5	-2.0	0.71	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	-2.0	-2.5	5.3	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	-2.5	-3.0	5	soft sediment
SD532	Transition_Area_1	575.7	5/21/2010	-3.0	-3.5	4.6	soft sediment
SD539	Transition_Area_1	576.3	5/21/2010	0.0	-0.5	20.7	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD539	Transition_Area_1	576.3	5/21/2010	-0.5	-1.0	16	soft sediment
SD539	Transition_Area_1	576.3	5/21/2010	-1.0	-1.5	6.2	soft sediment
SD539	Transition_Area_1	576.3	5/21/2010	-1.5	-2.0	3.1	soft sediment
SD539	Transition_Area_1	576.3	5/21/2010	-2.0	-2.5	1.6	soft sediment
SD539	Transition_Area_1	576.3	5/21/2010	-2.5	-3.0	1.9	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	0.0	-0.5	19.6	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-0.5	-1.0	12.4	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-1.0	-1.5	4	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-1.5	-2.0	2.1	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-2.0	-2.5	1.7	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-2.5	-3.0	1.8	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-3.0	-3.5	5.9	soft sediment
SD542	Transition_Area_1	576.4	5/21/2010	-3.5	-4.0	2.5	soft sediment
SD523HSA	Transition_Area_1	577.4	6/9/2010	-5.0	-6.0	3.6	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-7.0	-8.0	4.3	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-9.0	-10.0	3.6	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-11.0	-12.0	2.6	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-13.0	-14.0	2.8	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-14.0	-15.0	2.8	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-15.0	-16.0	2.7	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-16.0	-17.0	2.7	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-17.0	-18.0	2.6	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-18.0	-19.0	2.8	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-19.0	-20.0	3	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-20.0	-21.0	2.4	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-21.0	-22.0	2.6	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-22.0	-23.0	2.2	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-23.0	-24.0	2.5	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-24.0	-25.0	2.2	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-25.0	-26.0	1.9	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-27.0	-28.0	2.1	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-29.0	-30.0	2	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD523HSA	Transition_Area_1	577.4	6/9/2010	-30.0	-31.0	2	semiconsolidated
SD523HSA	Transition_Area_1	577.4	6/9/2010	-31.0	-32.0	2.6	till
SD520	Transition_Area_2	574.5	5/24/2010	0.0	-0.5	17.7	soft sediment
SD520	Transition_Area_2	574.5	5/24/2010	-0.5	-1.0	17.5	soft sediment
SD520	Transition_Area_2	574.5	5/24/2010	-1.0	-1.5	8.6	soft sediment
SD520	Transition_Area_2	574.5	5/24/2010	-1.5	-2.0	3.9	soft sediment
SD520	Transition_Area_2	574.5	5/24/2010	-2.0	-2.5	2.1	soft sediment
SD520	Transition_Area_2	574.5	5/24/2010	-2.5	-3.0	2.9	soft sediment
SD525	Transition_Area_2	577.7	5/24/2010	0.0	-0.5	12.3	soft sediment
SD525	Transition_Area_2	577.7	5/24/2010	-0.5	-1.0	15.8	soft sediment
SD525	Transition_Area_2	577.7	5/24/2010	-1.0	-1.3	10.9	soft sediment
SD526	Transition_Area_2	577.5	5/25/2010	0.0	-0.5	17	soft sediment
SD526	Transition_Area_2	577.5	5/25/2010	-0.5	-1.0	19.3	soft sediment
SD526	Transition_Area_2	577.5	5/25/2010	-1.0	-1.5	6.6	soft sediment
SD526	Transition_Area_2	577.5	5/25/2010	-1.5	-2.0	5.4	soft sediment
SD526	Transition_Area_2	577.5	5/25/2010	-2.0	-2.5	8.7	soft sediment
SD526	Transition_Area_2	577.5	5/25/2010	-2.5	-3.0	3.3	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	0.0	-0.5	1060	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-0.5	-1.0	1200	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-1.0	-1.5	1100	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-1.5	-2.0	2440	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-2.0	-2.5	4090	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-2.5	-3.0	2270	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-3.0	-3.5	5030	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-3.5	-4.0	3980	soft sediment
SD527	Transition_Area_2	573.3	5/23/2010	-4.0	-4.5	1610	soft sediment
SD528	Transition_Area_2	575.4	5/23/2010	0.0	-0.5	29.1	soft sediment
SD528	Transition_Area_2	575.4	5/23/2010	-0.5	-1.0	14.9	soft sediment
SD528	Transition_Area_2	575.4	5/23/2010	-1.0	-1.5	12	soft sediment
SD528	Transition_Area_2	575.4	5/23/2010	-1.5	-2.0	5.8	soft sediment
SD528	Transition_Area_2	575.4	5/23/2010	-2.0	-2.5	5.5	soft sediment
SD528	Transition_Area_2	575.4	5/23/2010	-2.5	-3.0	8.8	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD528	Transition_Area_2	575.4	5/23/2010	-3.0	-3.2	6.2	soft sediment
SD529	Transition_Area_2	577.7	5/25/2010	0.0	-0.5	2.6	soft sediment
SD529	Transition_Area_2	577.7	5/25/2010	-0.5	-1.0	3.1	soft sediment
SD529	Transition_Area_2	577.7	5/25/2010	-1.0	-1.5	2.5	soft sediment
SD529	Transition_Area_2	577.7	5/25/2010	-1.5	-2.0	2.7	soft sediment
SD529	Transition_Area_2	577.7	5/25/2010	-2.0	-2.3	3.8	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	0.0	-0.5	23	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	-0.5	-1.0	31.2	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	-1.0	-1.5	13.4	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	-1.5	-2.0	9.2	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	-2.0	-2.5	6.8	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	-2.5	-3.0	7.7	soft sediment
SD530	Transition_Area_2	576.8	5/23/2010	-3.0	-3.4	2.8	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	0.0	-0.5	9.4	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	-0.5	-1.0	33.2	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	-1.0	-1.5	24.3	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	-1.5	-2.0	15.1	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	-2.0	-2.5	13.9	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	-2.5	-3.0	16.2	soft sediment
SD531	Transition_Area_2	576.1	5/22/2010	-3.0	-3.4	17.3	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	0.0	-0.5	48.1	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	-0.5	-1.0	55.1	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	-1.0	-1.5	16.9	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	-1.5	-2.0	8.3	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	-2.0	-2.5	5.3	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	-2.5	-3.0	2.5	soft sediment
SD533	Transition_Area_2	575.8	5/22/2010	-3.0	-3.4	1.8	soft sediment
SD534	Transition_Area_2	575.3	5/22/2010	0.0	-0.5	57.6	soft sediment
SD534	Transition_Area_2	575.3	5/22/2010	-0.5	-1.0	61.1	soft sediment
SD534	Transition_Area_2	575.3	5/22/2010	-1.0	-1.5	58	soft sediment
SD534	Transition_Area_2	575.3	5/22/2010	-1.5	-2.0	6.1	soft sediment
SD534	Transition_Area_2	575.3	5/22/2010	-2.0	-2.5	3.4	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD534	Transition_Area_2	575.3	5/22/2010	-2.5	-2.9	3.4	soft sediment
SD535	Transition_Area_2	575.7	5/22/2010	0.0	-0.5	8.3	soft sediment
SD535	Transition_Area_2	575.7	5/22/2010	-0.5	-1.0	8.1	soft sediment
SD535	Transition_Area_2	575.7	5/22/2010	-1.0	-1.5	2.3	soft sediment
SD535	Transition_Area_2	575.7	5/22/2010	-1.5	-2.0	1.5	soft sediment
SD535	Transition_Area_2	575.7	5/22/2010	-2.0	-2.4	1.4	soft sediment
SD540	Transition_Area_2	575.6	5/21/2010	0.0	-0.5	3.2	soft sediment
SD540	Transition_Area_2	575.6	5/21/2010	-0.5	-1.0	2.6	soft sediment
SD540	Transition_Area_2	575.6	5/21/2010	-1.0	-1.5	1.9	soft sediment
SD540	Transition_Area_2	575.6	5/21/2010	-1.5	-2.0	2.2	soft sediment
SD540	Transition_Area_2	575.6	5/21/2010	-2.0	-2.5	2.1	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	0.0	-0.5	33.9	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	-0.5	-1.0	21.9	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	-1.0	-1.5	9.4	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	-1.5	-2.0	6.7	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	-2.0	-2.5	3.9	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	-2.5	-3.0	6.6	soft sediment
SD558	Transition_Area_2	577.4	5/23/2010	-3.0	-3.5	1.9	soft sediment
SD559	Transition_Area_2	576.3	5/23/2010	0.0	-0.5	38.2	soft sediment
SD559	Transition_Area_2	576.3	5/23/2010	-0.5	-1.0	31.4	soft sediment
SD559	Transition_Area_2	576.3	5/23/2010	-1.0	-1.5	10.5	soft sediment
SD559	Transition_Area_2	576.3	5/23/2010	-1.5	-2.0	1.7	soft sediment
SD559	Transition_Area_2	576.3	5/23/2010	-2.0	-2.5	3	soft sediment
SD559	Transition_Area_2	576.3	5/23/2010	-2.5	-3.0	2.3	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	0.0	-0.5	50.2	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	-0.5	-1.0	28.6	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	-1.0	-1.5	10.7	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	-1.5	-2.0	4.1	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	-2.0	-2.5	5.9	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	-2.5	-3.0	13.2	soft sediment
SD560	Transition_Area_2	573.9	5/23/2010	-3.0	-3.5	237	soft sediment
SD560	Transition_Area_2	573.9	6/3/2010	-5.0	-6.0	10.8	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD560	Transition_Area_2	573.9	6/3/2010	-7.0	-8.0	523	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-9.0	-10.0	77.1	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-11.0	-12.0	141	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-12.0	-13.0	305	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-13.0	-14.0	52.7	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-14.0	-15.0	33.3	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-15.0	-16.0	101	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-16.0	-17.0	305	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-17.0	-18.0	230	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-18.0	-19.0	577	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-19.0	-20.0	322	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-20.0	-21.0	418	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-21.0	-22.0	89.5	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-22.0	-23.0	139	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-23.0	-24.0	25.8	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-24.0	-25.0	4	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-25.0	-26.0	19.8	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-26.0	-27.0	1.4	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-27.0	-28.0	8.7	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-28.0	-29.0	1.7	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-29.0	-30.0	3.5	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-5.0	-6.0	13.2	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-7.0	-8.0	62.4	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-9.0	-10.0	61.3	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-10.0	-11.0	108	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-11.0	-12.0	55.7	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-12.0	-13.0	145	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-13.0	-14.0	79.1	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-14.0	-15.0	78.4	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-15.0	-16.0	31.3	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-16.0	-17.0	5.5	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-17.0	-18.0	10.5	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD574	Transition_Area_2	576.7	6/13/2010	-18.0	-19.0	5.1	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-19.0	-20.0	66.3	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-20.0	-21.0	87.2	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-21.0	-22.0	53.8	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-22.0	-23.0	53.2	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-23.0	-24.0	4.5	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-24.0	-25.0	2.8	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-25.0	-26.0	2.4	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-26.0	-27.0	2.1	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-27.0	-28.0	2	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-28.0	-29.0	2.3	semiconsolidated
SD574	Transition_Area_2	576.7	6/13/2010	-29.0	-30.0	3.1	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-5.0	-6.0	3.7	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-7.0	-8.0	2.9	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-8.0	-9.0	3	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-9.0	-10.0	2.4	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-11.0	-12.0	2.1	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-13.0	-14.0	3.1	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-14.0	-15.0	2.2	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-15.0	-16.0	2	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-16.0	-17.0	2.6	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-17.0	-18.0	2.3	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-18.0	-19.0	2.8	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-19.0	-20.0	2.1	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-20.0	-21.0	2.3	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-21.0	-22.0	2.1	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-22.0	-23.0	2.3	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-23.0	-24.0	2.9	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-24.0	-25.0	2.9	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-25.0	-26.0	2.9	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-26.0	-27.0	2.6	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-27.0	-28.0	2.9	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD575	Transition_Area_2	576.5	6/12/2010	-28.0	-29.0	3.1	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-29.0	-30.0	3.5	semiconsolidated
SD575	Transition_Area_2	576.5	6/12/2010	-30.0	-31.0	2.8	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-5.0	-6.0	1.5	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-7.0	-8.0	1.9	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-9.0	-10.0	3.5	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-10.0	-11.0	2.3	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-11.0	-12.0	2.6	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-13.0	-14.0	2.1	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-15.0	-16.0	5.6	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-16.0	-17.0	3.1	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-17.0	-18.0	1.7	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-18.0	-19.0	2.2	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-19.0	-20.0	1.8	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-21.0	-22.0	2.2	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-23.0	-24.0	2.9	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-24.0	-25.0	2.9	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-25.0	-26.0	2.7	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-26.0	-27.0	2.5	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-27.0	-28.0	2.3	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-29.0	-30.0	2.8	semiconsolidated
SD576	Transition_Area_2	575.3	6/13/2010	-30.0	-31.0	3.5	semiconsolidated
SD560	Transition_Area_2	573.9	6/3/2010	-30.0	-31.0	2.9	till
SD574	Transition_Area_2	576.7	6/13/2010	-30.0	-31.0	3.1	till
SD574	Transition_Area_2	576.7	6/13/2010	-31.0	-32.0	2	till
SD574	Transition_Area_2	576.7	6/13/2010	-32.0	-33.0	2.1	till
SD576	Transition_Area_2	575.3	6/13/2010	-31.0	-32.0	3.3	till
SD576	Transition_Area_2	575.3	6/13/2010	-32.0	-33.0	2.9	till
SD561	Transition_Area_3	572.7	5/25/2010	0.0	-0.5	542	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-0.5	-1.0	615	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-1.0	-1.5	370	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-1.5	-2.0	637	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD561	Transition_Area_3	572.7	5/25/2010	-2.0	-2.5	281	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-2.5	-3.0	81.7	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-3.0	-3.5	61.6	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-3.5	-4.0	40.8	soft sediment
SD561	Transition_Area_3	572.7	5/25/2010	-4.0	-4.5	12.8	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	0.0	-0.5	101	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	-0.5	-1.0	97.8	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	-1.0	-1.5	111	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	-1.5	-2.0	71.9	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	-2.0	-2.5	9.7	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	-2.5	-3.0	5.9	soft sediment
SD562	Transition_Area_3	575.1	5/22/2010	-3.0	-3.5	29.8	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	0.0	-0.5	217	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	-0.5	-1.0	245	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	-1.0	-1.5	119	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	-1.5	-2.0	79.2	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	-2.0	-2.5	41.2	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	-2.5	-3.0	3.9	soft sediment
SD563	Transition_Area_3	575.6	5/22/2010	-3.0	-3.5	14.1	soft sediment
SD561	Transition_Area_3	572.7	6/3/2010	-5.0	-6.0	524	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-7.0	-8.0	261	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-9.0	-10.0	896	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-11.0	-12.0	1320	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-12.0	-13.0	408	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-13.0	-14.0	143	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-14.0	-15.0	18.4	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-15.0	-16.0	64.3	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-16.0	-17.0	60	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-17.0	-18.0	4	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-18.0	-19.0	2.4	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-19.0	-20.0	38.2	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-20.0	-21.0	14.2	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD561	Transition_Area_3	572.7	6/3/2010	-21.0	-22.0	3.2	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-22.0	-23.0	2.3	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-23.0	-24.0	3	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-24.0	-25.0	2.1	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-25.0	-26.0	2.2	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-26.0	-27.0	2.4	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-27.0	-28.0	5.9	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-28.0	-29.0	2.5	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-29.0	-30.0	2.6	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-30.0	-31.0	2.9	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-31.0	-32.0	2.1	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-5.0	-6.0	37	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-7.0	-8.0	23.3	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-8.0	-9.0	24.1	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-9.0	-10.0	28.8	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-11.0	-12.0	65.6	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-12.0	-13.0	34.6	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-13.0	-14.0	19.5	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-14.0	-15.0	24.7	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-15.0	-16.0	12.5	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-16.0	-17.0	5.3	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-17.0	-18.0	4.1	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-18.0	-19.0	2.2	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-19.0	-20.0	5.8	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-20.0	-21.0	2.5	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-21.0	-22.0	3.4	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-22.0	-23.0	2.3	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-25.0	-26.0	2	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-26.0	-27.0	1.7	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-27.0	-28.0	1.9	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-28.0	-29.0	2.1	semiconsolidated
SD562	Transition_Area_3	575.1	6/16/2010	-29.0	-30.0	2.4	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD562	Transition_Area_3	575.1	6/16/2010	-30.0	-31.0	1.9	semiconsolidated
SD563	Transition_Area_3	575.6	6/4/2010	-5.0	-6.0	1.1	semiconsolidated
SD563	Transition_Area_3	575.6	6/4/2010	-6.0	-7.0	1.4	semiconsolidated
SD563	Transition_Area_3	575.6	6/4/2010	-7.0	-8.0	1.2	semiconsolidated
SD563	Transition_Area_3	575.6	6/4/2010	-8.0	-9.0	1.4	semiconsolidated
SD563	Transition_Area_3	575.6	6/4/2010	-9.0	-10.0	1.2	semiconsolidated
SD561	Transition_Area_3	572.7	6/3/2010	-32.0	-33.0	2.7	till
SD562	Transition_Area_3	575.1	6/16/2010	-31.0	-32.0	1.6	till
SD500	Turning_Basin	572.3	5/24/2010	0.0	-1.0	111	soft sediment
SD500	Turning_Basin	572.3	5/25/2010	-1.0	-2.0	9.6	soft sediment
SD500	Turning_Basin	572.3	5/25/2010	-2.0	-2.4	4.5	soft sediment
SD501	Turning_Basin	574.6	5/19/2010	0.0	-1.0	1370	soft sediment
SD501	Turning_Basin	574.6	5/19/2010	-1.0	-2.0	379	soft sediment
SD504	Turning_Basin	557.9	5/19/2010	0.0	-1.0	72	soft sediment
SD504	Turning_Basin	557.9	5/19/2010	-1.0	-2.0	543	soft sediment
SD504	Turning_Basin	557.9	5/19/2010	-2.0	-3.0	740	soft sediment
SD505	Turning_Basin	558.7	5/19/2010	0.0	-1.0	11000	soft sediment
SD505	Turning_Basin	558.7	5/19/2010	-1.0	-2.0	14800	soft sediment
SD505	Turning_Basin	558.7	5/19/2010	-2.0	-3.0	12100	soft sediment
SD506VC	Turning_Basin	576.4	5/18/2010	0.0	-0.5	134	soft sediment
SD509	Turning_Basin	557.1	5/20/2010	0.0	-1.0	3650	soft sediment
SD509	Turning_Basin	557.1	5/20/2010	-1.0	-2.0	6760	soft sediment
SD509	Turning_Basin	557.1	5/20/2010	-2.0	-3.0	11900	soft sediment
SD509	Turning_Basin	557.1	5/20/2010	-3.0	-3.8	12000	soft sediment
SD510	Turning_Basin	562.4	5/23/2010	0.0	-1.0	3000	soft sediment
SD510	Turning_Basin	562.4	5/23/2010	-1.0	-2.0	884	soft sediment
SD510	Turning_Basin	562.4	5/23/2010	-2.0	-2.7	554	soft sediment
SD512	Turning_Basin	557.7	5/19/2010	0.0	-1.0	8640	soft sediment
SD512	Turning_Basin	557.7	5/19/2010	-1.0	-2.0	8090	soft sediment
SD512	Turning_Basin	557.7	5/19/2010	-2.0	-3.0	13000	soft sediment
SD512	Turning_Basin	557.7	5/19/2010	-3.0	-3.8	19600	soft sediment
SD513	Turning_Basin	566.6	5/18/2010	0.0	-0.5	4.2	soft sediment

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD515	Turning_Basin	569.9	5/23/2010	0.0	-1.0	6.9	soft sediment
SD515	Turning_Basin	569.9	5/23/2010	-1.0	-2.0	4.6	soft sediment
SD515	Turning_Basin	569.9	5/23/2010	-2.0	-2.4	4.8	soft sediment
SD516	Turning_Basin	576.4	5/23/2010	0.0	-0.5	6.8	soft sediment
SD516	Turning_Basin	576.4	5/23/2010	-0.5	-1.0	5.6	soft sediment
SD516	Turning_Basin	576.4	5/23/2010	-1.0	-1.5	4.3	soft sediment
SD516	Turning_Basin	576.4	5/23/2010	-1.5	-2.0	3.5	soft sediment
SD516	Turning_Basin	576.4	5/23/2010	-2.0	-2.4	5.9	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	0.0	-0.5	11.1	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	-0.5	-1.0	11.1	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	-1.0	-1.5	10.9	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	-1.5	-2.0	14.2	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	-2.0	-2.5	12.6	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	-2.5	-3.0	11.2	soft sediment
SD518	Turning_Basin	572.1	5/20/2010	-3.0	-3.5	8.8	soft sediment
SD519	Turning_Basin	576.6	5/23/2010	0.0	-0.5	8.7	soft sediment
SD519	Turning_Basin	576.6	5/23/2010	-0.5	-1.0	8.5	soft sediment
SD519	Turning_Basin	576.6	5/23/2010	-1.0	-1.5	3.1	soft sediment
SD519	Turning_Basin	576.6	5/23/2010	-1.5	-2.0	2.5	soft sediment
SD519	Turning_Basin	576.6	5/23/2010	-2.0	-2.5	2.3	soft sediment
SD519	Turning_Basin	576.6	5/23/2010	-2.5	-3.0	2.6	soft sediment
SD500	Turning_Basin	572.3	6/7/2010	-3.0	-4.0	367	semiconsolidated
SD500	Turning_Basin	572.3	6/7/2010	-5.0	-6.0	77.1	semiconsolidated
SD500	Turning_Basin	572.3	6/7/2010	-6.0	-7.0	183	semiconsolidated
SD501	Turning_Basin	574.6	6/14/2010	-5.0	-6.0	1550	semiconsolidated
SD501	Turning_Basin	574.6	6/14/2010	-7.0	-8.0	379	semiconsolidated
SD501	Turning_Basin	574.6	6/14/2010	-8.0	-9.0	166	semiconsolidated
SD506HSA	Turning_Basin	572.3	6/6/2010	0.0	-1.0	1710	semiconsolidated
SD506HSA	Turning_Basin	572.3	6/6/2010	-2.0	-3.0	2870	semiconsolidated
SD506HSA	Turning_Basin	572.3	6/6/2010	-4.0	-5.0	189	semiconsolidated
SD506HSA	Turning_Basin	572.3	6/6/2010	-6.0	-7.0	39.8	semiconsolidated
SD506HSA	Turning_Basin	572.3	6/6/2010	-8.0	-9.0	26.2	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD506HSA	Turning_Basin	572.3	6/6/2010	-9.0	-10.0	37.7	semiconsolidated
SD509	Turning_Basin	557.1	6/6/2010	-4.0	-5.0	525	semiconsolidated
SD509	Turning_Basin	557.1	6/6/2010	-5.0	-6.0	182	semiconsolidated
SD509	Turning_Basin	557.1	6/6/2010	-6.0	-7.0	328	semiconsolidated
SD509	Turning_Basin	557.1	6/6/2010	-7.0	-8.0	39.9	semiconsolidated
SD510	Turning_Basin	562.4	6/2/2010	-5.0	-6.0	520	semiconsolidated
SD510	Turning_Basin	562.4	6/2/2010	-6.0	-7.0	612	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-0.5	-1.5	108	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-1.5	-2.5	82.6	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-2.5	-3.5	103	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-3.5	-4.5	83.7	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-4.5	-5.5	52.6	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-5.5	-6.5	24.4	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-6.5	-7.5	44.7	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-7.5	-8.5	106	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-8.5	-9.5	394	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-9.5	-10.5	787	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-10.5	-11.5	1410	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-11.5	-12.5	993	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-12.5	-13.5	694	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-13.5	-14.5	326	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-14.5	-15.5	349	semiconsolidated
SD513	Turning_Basin	566.6	6/2/2010	-15.5	-16.5	45.1	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-4.0	-5.0	3	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-6.0	-7.0	2.5	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-8.0	-9.0	2.5	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-9.0	-10.0	3.2	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-10.0	-11.0	3.8	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-12.0	-13.0	48.8	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-13.0	-14.0	152	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-14.0	-15.0	262	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-15.0	-16.0	522	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD515	Turning_Basin	569.9	6/15/2010	-16.0	-17.0	631	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-17.0	-18.0	692	semiconsolidated
SD515	Turning_Basin	569.9	6/15/2010	-18.0	-19.0	332	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-5.0	-6.0	66.5	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-7.0	-8.0	60.3	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-9.0	-10.0	211	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-10.0	-11.0	297	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-11.0	-12.0	251	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-12.0	-13.0	253	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-13.0	-14.0	210	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-14.0	-15.0	247	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-15.0	-16.0	275	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-16.0	-17.0	414	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-17.0	-18.0	490	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-19.0	-20.0	959	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-20.0	-21.0	1310	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-21.0	-22.0	1000	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-23.0	-24.0	751	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-24.0	-25.0	493	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-25.0	-26.0	513	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-26.0	-27.0	217	semiconsolidated
SD516	Turning_Basin	576.4	6/15/2010	-27.0	-28.0	273	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-5.0	-6.0	4.3	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-7.0	-8.0	4.8	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-9.0	-10.0	61.7	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-10.0	-11.0	133	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-11.0	-12.0	44	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-12.0	-13.0	6.9	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-13.0	-14.0	30.9	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-14.0	-15.0	42.5	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-15.0	-16.0	2.3	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-16.0	-17.0	1.7	semiconsolidated

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD519	Turning_Basin	576.6	6/11/2010	-17.0	-18.0	2.3	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-18.0	-19.0	1.5	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-19.0	-20.0	2.3	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-20.0	-21.0	1.6	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-21.0	-22.0	6	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-22.0	-23.0	1.9	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-23.0	-24.0	6.3	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-24.0	-25.0	1.8	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-25.0	-26.0	2.5	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-26.0	-27.0	2.4	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-27.0	-28.0	2.6	semiconsolidated
SD519	Turning_Basin	576.6	6/11/2010	-28.0	-29.0	3	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-8.0	-9.0	3.3	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-10.0	-11.0	2.8	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-11.0	-12.0	2	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-12.0	-13.0	2.3	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-14.0	-15.0	2.4	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-15.0	-16.0	2	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-16.0	-17.0	2.2	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-18.0	-19.0	2.5	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-19.0	-20.0	1.8	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-20.0	-21.0	3.3	semiconsolidated
SD577	Turning_Basin	576.7	6/15/2010	-21.0	-22.0	2.2	semiconsolidated
SD500	Turning_Basin	572.3	6/7/2010	-7.0	-8.0	28.2	till
SD500	Turning_Basin	572.3	6/7/2010	-9.0	-10.0	12.5	till
SD501	Turning_Basin	574.6	6/14/2010	-9.0	-10.0	139	till
SD501	Turning_Basin	574.6	6/14/2010	-10.0	-11.0	47	till
SD501	Turning_Basin	574.6	6/14/2010	-11.0	-12.0	55.8	till
SD504	Turning_Basin	557.9	6/11/2010	-5.0	-6.0	2.6	till
SD506HSA	Turning_Basin	572.3	6/6/2010	-10.0	-11.0	160	till
SD509	Turning_Basin	557.1	6/6/2010	-8.0	-9.0	4.1	till
SD510	Turning_Basin	562.4	6/2/2010	-7.5	-10.5	111	till

Table B1

Arsenic Concentration Data with Area and Layer Assignments

Tyco Fire Products LP

Sample Location ID	Area Location	Top of Sediment Elevation	Sample Date	Top depth of Sample Interval (ft)	Bottom Depth of Sample Interval (ft)	Arsenic Concentration (mg/kg)	Layer Assignment
SD512	Turning_Basin	557.7	6/9/2010	-5.0	-6.0	310	till
SD512	Turning_Basin	557.7	6/9/2010	-6.0	-7.0	182	till
SD512	Turning_Basin	557.7	6/9/2010	-7.0	-8.0	144	till
SD513	Turning_Basin	566.6	6/2/2010	-16.5	-17.5	95.7	till
SD513	Turning_Basin	566.6	6/2/2010	-17.5	-18.3	4.6	till
SD515	Turning_Basin	569.9	6/15/2010	-19.0	-20.0	94.6	till
SD515	Turning_Basin	569.9	6/15/2010	-20.0	-21.0	246	till
SD515	Turning_Basin	569.9	6/15/2010	-21.0	-22.0	22.1	till
SD515	Turning_Basin	569.9	6/15/2010	-22.0	-23.0	4.3	till
SD515	Turning_Basin	569.9	6/15/2010	-23.0	-24.0	3.3	till
SD515	Turning_Basin	569.9	6/15/2010	-24.0	-25.0	2.7	till
SD516	Turning_Basin	576.4	6/15/2010	-28.0	-29.0	28.6	till
SD519	Turning_Basin	576.6	6/11/2010	-29.0	-30.0	1.8	till
SD519	Turning_Basin	576.6	6/11/2010	-30.0	-31.0	1.6	till
SD519	Turning_Basin	576.6	6/11/2010	-31.0	-32.0	2	till
SD519	Turning_Basin	576.6	6/11/2010	-32.0	-33.0	2.4	till
SD519	Turning_Basin	576.6	6/11/2010	-33.0	-33.8	3.6	till
SD515	Turning_Basin	569.9	6/15/2010	-25.0	-26.0	3.3	weathered bedrock

TABLE B2

2010 Sediment Laboratory Analytical Data - Arsenic Speciation

Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

Field ID	Interval	Sample Date	Arsenate [mg/kg]	Arsenite [mg/kg]	Dimethylarsenic Acid [mg/kg]	Monomethylarsonic Acid [mg/kg]
SD501001.0	0 - 1	5/19/2010	5,320 J	292	126 U	836
SD501002.0	1 - 2	5/19/2010	160 J	24.7	4.54	238
SD501006.0	5 - 6	6/14/2010	53.6	25.1	2.75 J	22.9
SD501008.0	7 - 8	6/14/2010	167 J	75.7 J	7.39	260 J
SD501009.0	8 - 9	6/14/2010	55.1	42	5.09 J	75.5
SD501010.0	9 - 10	6/14/2010	29.8	1.68 J	1.77 J	51.3
SD501010.0/D	9 - 10	6/14/2010	27.6	1.35 J	1.22 J	48.5
SD501011.0	10 - 11	6/14/2010	11.1	0.36 U	0.73 U	16.9
SD505001.0	0 - 1	5/19/2010	517 J	649	306	2,950
SD505002.0	1 - 2	5/19/2010	293 J	329	383	5,520
SD505003.0	2 - 3	5/19/2010	338 J	259	422	5,410
SD509001.0	0 - 1	5/20/2010	48 J	69.7	142	1,310
SD509001.0/D	0 - 1	5/20/2010	52 J	62.9	111	832
SD509002.0	1 - 2	5/20/2010	162 J	184	252	2,530
SD509002.0/D	1 - 2	5/20/2010	172 J	205	297	2,470
SD509003.0	2 - 3	5/20/2010	368 J	4,460	4,590	5,930
SD509003.0/D	2 - 3	5/20/2010	390 J	323	590	7,640
SD509003.8	3 - 3.8	5/20/2010	254 J	4,190	4,480	7,780
SD509003.8/D	3 - 3.8	5/20/2010	238 J	294	618	7,470
SD509005.0	4 - 5	6/6/2010	14.7	1 J	36.7	311 J
SD509006.0	5 - 6	6/6/2010	11.6	0.136 J	29.8	246
SD509007.0	6 - 7	6/6/2010	16.5	5.52	22.3	263
SD509008.0	7 - 8	6/6/2010	3.16	0.145 J	8.61	54.8
SD509009.0	8 - 9	6/6/2010	33.9	4.8 J	53.3	481
SD517001.0	0 - 1	6/6/2010	0.308	0.013 J	0.0037 U	0.113
SD517003.0	2 - 3	6/6/2010	0.351	0.0208 J	0.0098 J	0.157
SD517004.0	3 - 4	6/6/2010	0.195	0.006 J	0.0043 J	0.0392
SD517005.0	4 - 5	6/6/2010	0.386	0.0063 J	0.004 U	0.011 U
SD517006.0	5 - 6	6/6/2010	0.408	0.0045 J	0.004 U	0.011 U
SD517007.0	6 - 7	6/6/2010	0.34	0.005 J	0.005 J	0.102
SD517008.0	7 - 8	6/6/2010	0.441	0.0087 J	0.004 U	0.012 U
SD517009.0	8 - 9	6/6/2010	0.354	0.0032 J	0.004 U	0.016 J
SD517009.0/D	8 - 9	6/6/2010	0.376	0.0051 J	0.004 U	0.033
SD517010.0	9 - 10	6/6/2010	0.52	0.0052 J	0.004 U	0.018 J
SD517011.0	10 - 11	6/6/2010	0.501	0.0123 J	0.004 U	0.02 J
SD517011.0/D	10 - 11	6/6/2010	0.461	0.0086 J	0.004 U	0.012 U
SD517012.0	11 - 12	6/6/2010	0.569	0.0123 J	0.0047 J	0.033
SD517013.0	12 - 13	6/6/2010	0.453	0.012 J	0.004 U	0.013 J
SD517014.0	13 - 14	6/6/2010	0.202	0.0048 J	0.003 U	0.011 U
SD521000.5	0 - 0.5	5/20/2010	8 J	8.45	0.17 U	0.36
SD521001.0	0.5 - 1	5/20/2010	6.3 J	1.3 J	0.0328 J	0.389 J
SD521001.5	1 - 1.5	5/20/2010	4.11 J	0.732	0.0063 J	0.125
SD521002.0	1.5 - 2	5/20/2010	1.73 J	0.825	0.134	0.025 J
SD521002.5	2 - 2.5	5/20/2010	2.73 J	0.603	0.048 U	0.045

TABLE B2

2010 Sediment Laboratory Analytical Data - Arsenic Speciation

Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

Field ID	Interval	Sample Date	Arsenate [mg/kg]	Arsenite [mg/kg]	Dimethylarsenic Acid [mg/kg]	Monomethylarsonic Acid [mg/kg]
SD521003.0	2.5 - 3	5/20/2010	3.13 J	0.28	0.054 U	0.035 J
SD521003.5	3 - 3.5	5/20/2010	4.61 J	1.05	0.083 U	0.032 J
SD526000.5	0 - 0.5	5/25/2010	12.2	1.25	0.034 J	0.064 J
SD526000.5/D	0 - 0.5	5/25/2010	8.4	1.72	0.052 J	0.059 J
SD526001.0	0.5 - 1	5/25/2010	13.3 J	0.211 J	0.038 J	0.145
SD526001.0/D	0.5 - 1	5/25/2010	22.8 J	0.531 J	0.06	0.281
SD526001.5	1 - 1.5	5/25/2010	2.08	0.0375	0.0183 J	0.0309 J
SD526001.5/D	1 - 1.5	5/25/2010	2.23	0.0495	0.019 J	0.0319 J
SD526002.0	1.5 - 2	5/25/2010	2.02	0.234	0.019 J	0.0122 J
SD526002.0/D	1.5 - 2	5/25/2010	1.82	0.129	0.023 J	0.0113 J
SD526002.5	2 - 2.5	5/25/2010	2.89	0.3 J	0.021 J	0.0167 J
SD526002.5/D	2 - 2.5	5/25/2010	4.63	0.61 J	0.03 J	0.0146 J
SD526003.0	2.5 - 3	5/25/2010	7.97 J	1.96	0.12 U	0.12 U
SD526003.0/D	2.5 - 3	5/25/2010	2.93 J	2.82	0.18 U	0.18 U
SD536000.5	0 - 0.5	5/22/2010	68.3 J	3.26 J	0.62 UJ	0.915 J
SD536001.0	0.5 - 1	5/22/2010	8.4	0.652	0.0068 J	0.191
SD536001.5	1 - 1.5	5/22/2010	10.2	1.29	0.0054 J	0.626
SD536002.0	1.5 - 2	5/22/2010	16.7	3.53	0.0166 J	0.808
SD536002.5	2 - 2.5	5/22/2010	11.4	1.38	0.0164 J	1.09
SD536003.0	2.5 - 3	5/22/2010	10.7	1.65	0.0125 J	1.15
SD536003.5	3 - 3.5	5/22/2010	14.8	1.96	0.0129 J	1.33
SD536004.5	3.5 - 4.5	5/22/2010	6.69	0.847	0.0118 J	0.542
SD536005.0	4.5 - 5	5/22/2010	2.73	0.369	0.0075 J	0.128
SD536005.5	5 - 5.5	5/22/2010	1.89	0.226	0.0073 J	0.023 J
SD536006.0	5.5 - 6	5/22/2010	2.3	0.329	0.0116 J	0.0411
SD536006.5	6 - 6.5	5/22/2010	3.67	0.405	0.0122 J	0.0346
SD536007.0	6.5 - 7	5/22/2010	5.37	0.219	0.0107 J	0.0441
SD536007.5	7 - 7.5	5/22/2010	3.21	0.136	0.0094 J	0.0339
SD536008.0	7.5 - 8	5/22/2010	2.57	0.504	0.0158 J	0.0262 J

Qualifier Notes:

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit. Value was detected in the blank sample.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

TABLE B3

2010 Sediment Laboratory Analytical Data - Elutriate* Analytes

Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

Field ID	Interval	Sample Date	Arsenic [ug/L]	Dissolved Arsenic [ug/L]	Dissolved Iron [ug/L]	Ammonia as N [mg/L]	Total Suspended Solids [mg/L]	Material Sampled
EW001		5/23/2010	7.4	5.6	21.6 J	0.05 U	4	river water
SD557001.6C	0 - 1.6	5/21/2010	8.1	5.6	36.4	0.89	7.1	soft sediment
SD503000.5C	0 - 0.5	5/23/2010	32.7	12.2	99.4	4	31	soft sediment
SD510002.7C	0 - 2.7	5/23/2010	82,000 J	68,400	5,960	1.1	54	soft sediment
SD511000.5C	0 - 0.5	5/23/2010	47.6	17	87	1.9	14	soft sediment
SD528003.2C	0 - 3.2	5/23/2010	17.1 J	28.2 J	395	1.9	20	soft sediment
SD520003.0C	0 - 3	5/24/2010	11	6.1	45.4	2.1	7.7	soft sediment
EW002		6/15/2010	2.7	1.9	27.5 J	0.16 U	8.8	river water
SD510011.0C	5 - 11	6/15/2010	4,880	4,780	29 U	0.43	2.9	semi-consol
SD514007.0C	3 - 7	6/15/2010	44,400	40,600	593	0.63	2.9	semi-consol
SD515018.0C	4 - 18	6/15/2010	9,450 J	9,710 J	29 U	0.47	2.9	semi-consol
SD516023.0C	3 - 23	6/15/2010	47,500	45,600	361	0.56	10	semi-consol

Notes:

*Elutriate samples were processed using a 4 to 1 ratio (by volume) of river water with a bulk sediment sample sent to laboratory for processing

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit. Value was detected in the blank sample.

TABLE B4

2010 Sediment Laboratory Analytical Data - Wisconsin NR347 Analytes

Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

Sample ID		**SD500002.4C**	**SD501001.0C**	**SD501002.0C**	**SD501009.0C**	**SD504003.2C**	**SD504003.2C/D**	**SD511000.5C**	**SD512003.8C**	**SD512007.0C**	**SD517014.0C**	**SD517014.0C/D**	**SD520003.0C**	**SD521003.5C**	**SD522004.4C**	**SD529002.3C**	**SD534002.9C**
Interval		**0 - 2.4**	**0 - 1.2**	**1.2 - 2.2**	**5 - 9**	**0 - 3.2**	**0 - 3.2**	**0 - 0.5**	**0 - 3.8**	**5 - 7**	**0 - 14**	**0 - 14**	**0 - 3**	**0 - 3.5**	**0 - 4.4**	**0 - 2.3**	**0 - 2.9**
Sample Date		**5/25/2010**	**5/19/2010**	**5/19/2010**	**6/14/2010**	**5/19/2010**	**5/19/2010**	**5/23/2010**	**5/19/2010**	**6/9/2010**	**6/6/2010**	**6/6/2010**	**5/24/2010**	**5/20/2010**	**5/24/2010**	**5/25/2010**	**5/22/2010**
TOTAL SOLIDS	PERCENT	82.6			80.7	34.8	35.9	39.8	37.2	94.4 J	87.1	84.7		56.4	51.5	76.8	30.9
MOISTURE, PERCENT	PERCENT	25	28	14.1	21	66	65.3	61.3	62.8	6	14.5	13.6	30.2	29.8	43.1	16.1	69.2
RESIDUE, TOTAL	PERCENT	82.6			80.7	34.8	35.9	39.8	37.2	94.4 J	87.1	84.7		56.4	51.5	76.8	30.9
Metals																	
ARSENIC	MG/KG		3,120	110	424			35.7			2.6	2.5	13.7	10.5	7	3.2	
BARIUM	MG/KG		12.1	10	8.2			53.1			29.4	26.3	17.1	16.6	35.5	12.1	
CADMIUM	MG/KG		6.3	0.28 J	0.13 J			0.74 J			0.13 UB	0.11 UB	0.22 J	0.22 UJ	0.24 J	0.051 J	
CHROMIUM, TOTAL	MG/KG		11.8	6.5	6.6			18.4			12.1	11.1	12.3	9.6	19.9	9.3	
COPPER	MG/KG		15	6.2	5.2			23.7			8.7	8.4	9.7	13.5	24.4	4.8	
IRON	MG/KG		4,830	6,480	8,470			14,800			10,400	9,500	8,870	8,820	15,600	6,540	
LEAD	MG/KG		30.2 J	2.3 J	4.9			22.3			3.7	3.5	9.8	8.6	16.4	1.9	
MANGANESE	MG/KG		28.4	219	290 J			840 J			238	230	233 J	200	352 J	120	
NICKEL	MG/KG		48.8	5.4	5			9.7			7	6.6	6.2	5.9	10.5	7.1	
SELENIUM	MG/KG		0.86 J	0.18 U	0.19 U			0.41 U			0.19 U	0.19 U	0.21 U	0.22 U	0.51 J	0.18 U	
ZINC	MG/KG		14.4	7.7	18.1			82.1			11.5	10.8	45	38.9	51.5	18.4	
MERCURY	MG/KG		0.023	0.0028 J	0.035			0.23			0.0041 J	0.0039 J	0.18	0.078	0.17	0.011 J	
CYANIDE	MG/KG		0.3 UJ	0.24 UJ	0.36 U			0.66 U			0.31 UJ	0.22 UJ	0.24 U	0.45 U	0.39 U	0.27 U	
Pesticides																	
2,4'-DDD	UG/KG		16.4 U	0.69 U	0.75 UJ			1.5 J			0.69 U	0.68 U	0.85 U	0.84 U	1 U	0.7 U	
2,4'-DDE	UG/KG		16.5 U	0.69 U	0.75 UJ			1.5 U			0.69 U	0.69 U	0.98 J	0.84 U	1.8 J	0.71 U	
2,4'-DDT	UG/KG		16 U	0.67 U	0.73 UJ			1.5 U			0.67 U	0.67 U	1 J	0.82 U	1 U	0.69 U	
ALDRIN	UG/KG		12.5 UJ	0.52 UJ	0.57 UJ			1.2 U			0.52 U	0.52 U	0.64 U	0.64 U	0.79 U	0.53 U	
CHLORDANE	UG/KG		353 U	14.8 U	16.1 UJ			32.8 U			14.9 U	14.7 U	18.2 U	18.1 U	22.3 U	15.1 U	
DIELDRIN	UG/KG		32.8 U	1.4 U	1.5 UJ			3 U			1.4 U	1.4 U	1.7 U	1.7 U	2.1 U	1.4 U	
ENDRIN	UG/KG		26.9 U	1.1 U	1.2 UJ			2.5 U			1.1 U	1.1 U	1.4 U	1.4 U	1.7 U	1.2 U	
GAMMA BHC (LINDANE)	UG/KG		13 U	0.54 U	0.59 UJ			1.2 U			0.55 U	0.54 U	0.67 U	0.67 U	0.82 U	0.56 U	
HEPTACHLOR	UG/KG		14.8 U	0.62 U	0.67 UJ			1.4 U			0.62 U	0.61 U	0.76 U	0.76 U	0.93 U	0.63 U	
p,p'-DDD	UG/KG		42 U	1.8 U	1.9 UJ			3.9 U			1.8 U	1.7 U	2.2 U	2.2 U	2.7 U	1.8 U	
p,p'-DDE	UG/KG		27.5 U	1.2 U	1.3 UJ			2.6 U			1.2 UJ	1.1 UJ	1.4 U	1.4 U	1.7 U	1.2 UJ	
p,p'-DDT	UG/KG		42.5 U	1.8 U	1.9 UJ			3.9 U			1.8 U	1.8 U	2.2 U	2.2 U	2.7 U	1.8 U	
TOXAPHENE	UG/KG		626 U	26.2 U	28.5 UJ			58.2 U			26.3 U	26.1 U	32.3 U	32.1 U	39.6 U	29 J	
Wet Chemistry																	
OIL & GREASE, TOTAL REC	MG/KG		368	128 J	92.1 U			620 J			73 U	73 U	573	135 J	128 U	86.6 U	
NITROGEN, NITRATE (AS N)	MG/KG		5.7	2.3 J	3.9 J			5.2 U			2.3 J	2.3 U	2.9 U	2.8 U	3.5 U	2.4 U	
NITROGEN, NITRITE	MG/KG		1.7 J	1.2 U	1.3 U			2.6 U			1.2 U	1.2 U	1.4 U	1.4 U	1.8 U	1.2 U	
NITROGEN, AMMONIA (AS N)	MG/KG		6 U	6.6 J	16.6			181			6.1 J	5.8 J	58.2	127	175	77.5	
NITROGEN, KJELDAHL, TOTAL	MG/KG		1,210 J	68.5 UJ	190			3,710			48.3 J	51.3 J	979	682 J	2,050	1,040	
PHOSPHORUS	MG/KG		154	248	164			893			290	223	271	266	398	176	
TOC REPLICATE 1	MG/KG		282,000	1,340	8,730			38,800			824	933	31,600	15,900	37,100	38,700	
TOC REPLICATE 2	MG/KG		183,000	761	13,100			48,200			917	840	12,700	14,300	70,000	43,100	
TOC REPLICATE 3	MG/KG		320,000	892	4,720			36,100			870	879	17,300	12,500	59,300	24,400	
TOC REPLICATE 4	MG/KG		165,000	1,210	9,970			51,000			917	844	12,400	19,500	45,100	44,900	
TOC AVERAGE	MG/KG		238,000 J	1,050 J	9,140 J			43,600			882	874	18,500	15,600 J	52,900	37,800	
TOC RSD%	PERCENT		31.7	25.6	38			16.5			5.1	4.9	48.7	19	27.7	24.6	

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit. Value was detected in the blank sample.

UB = The analyte was reported as not detected at an elevated detection limit due to blank contamination.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

TABLE B4
2010 Sediment Laboratory Analytical Data - Wisconsin I
Sediment Removal Work Plan - Tyco Fire Products LP,

Sample ID	**SD537006.8C**	**SD537006.8C/D**	**SD541001.7C**	**SD541003.2C**	**SD552004.0C**	**SD562003.6C**	**SD566000.5C**	**SD573002.0C**	**SD577010.0C**	**SD577020.0C**
Interval	**0 - 6.8**	**0 - 6.8**	**0 - 1.7**	**1.7 - 3.2**	**0 - 4**	**0 - 3.6**	**0 - 0.5**	**0 - 2.1**	**8 - 10**	**10 - 20**
Sample Date	**5/24/2010**	**5/24/2010**	**5/25/2010**	**5/25/2010**	**6/14/2010**	**5/22/2010**	**5/20/2010**	**5/26/2010**	**6/15/2010**	**6/15/2010**
TOTAL SOLIDS	23.1	18.4	51.3	76.7	85.6	34.6	47.8	65.1	86.1	77.6
MOISTURE, PERCENT	76.6	81.5	52.8	20.1	14.7	67	51.6	33.3	16.7	21
RESIDUE, TOTAL	23.1	18.4	51.3	76.7	85.6	34.6	47.8	65.1	86.1	77.6
Metals										
ARSENIC	138	121	24.3	3.3	4				3.5	2 J
BARIUM	134	121	43.6	8.1	10.8				8.3	10.2
CADMIUM	2.5	2.5	0.67 J	0.03 U	0.11 J				0.035 UB	0.1 UB
CHROMIUM, TOTAL	33.4	29.2	20.1	5.7	5.5				8.3	6.1
COPPER	72.9	65	26.8	3.7	3.4				4.8	5.1
IRON	20,000	17,500	14,800	8,380	7,910				8,640	6,900
LEAD	141	122	32	1.1 J	2.5				1.2	2.4
MANGANESE	475 J	407 J	290	141	189 J				147	213
NICKEL	16.7	13.7	10.8	3.6	5.5				5.6	4.1
SELENIUM	1.4 J	0.61 J	0.34 U	0.19 U	0.22 J				0.4 UB	0.31 UB
ZINC	399	361	100	19.4	23.6				16	6.8
MERCURY	1.8	1.4	0.53	0.0022 U	0.025				0.0021 U	0.0022 U
CYANIDE	0.99 J	0.85 U	0.42 U	0.22 U	0.24 U				0.19 U	0.24 U
Pesticides										
2,4'-DDD	7.7	2.3 U	1.3 U	0.74 U	0.69 U				0.71 U	0.75 U
2,4'-DDE	9.9 J	6.7 J	1.3 U	0.74 U	0.69 U				0.71 U	0.75 U
2,4'-DDT	2.6 U	2.3 U	1.2 U	0.72 U	0.67 U				0.69 U	0.73 U
ALDRIN	2 U	1.8 U	0.95 U	0.56 U	0.52 U				0.54 U	0.57 U
CHLORDANE	151	85.5 J	26.9 U	15.9 U	14.9 U				15.3 U	16.1 U
DIELDRIN	5.2 U	4.7 U	2.5 U	1.5 U	1.4 U				1.4 U	1.5 U
ENDRIN	4.3 U	3.8 U	2.1 U	1.2 U	1.1 U				1.2 U	1.2 U
GAMMA BHC (LINDANE)	2.1 U	1.9 U	0.99 U	0.59 U	0.55 U				0.56 U	0.59 U
HEPTACHLOR	2.4 U	2.1 U	1.1 U	0.66 U	0.62 U				0.64 U	0.67 U
p,p'-DDD	7.7 J	6 U	3.2 U	1.9 U	1.8 U				1.8 U	1.9 U
p,p'-DDE	24.2	8 J	2.1 UJ	1.2 UJ	1.2 U				1.2 U	1.3 U
p,p'-DDT	10.1 J	6.1 U	3.2 U	1.9 U	1.8 U				1.8 U	1.9 U
TOXAPHENE	302 J	256 J	54.6 J	28.2 U	26.4 U				27.1 U	28.5 U
Wet Chemistry										
OIL & GREASE, TOTAL REC	2,220	1,590	154 U	90.7 U	84.9 U				87.1 U	91.7 U
NITROGEN, NITRATE (AS N)	8.9 U	7.9 U	4.2 J	2.5 U	2.3 U				2.4 U	2.7 J
NITROGEN, NITRITE	5.3 J	4 U	2.1 U	1.3 U	1.2 U				1.2 U	1.3 U
NITROGEN, AMMONIA (AS N)	817	695	95.9	5.6 J	8 J				7 J	7.3 U
NITROGEN, KJELDAHL, TOTAL	9,670	76.2 UB	2,690	68.1	151				32.5 J	25.7 J
PHOSPHORUS	3,240	351	695	112	134				114	217
TOC REPLICATE 1	175,000	186,000	48,000	428	2,610				219 J	337
TOC REPLICATE 2	192,000	191,000	94,200	610	3,780				216 J	354
TOC REPLICATE 3	139,000	188,000	58,300	356	3,010				175 J	363
TOC REPLICATE 4	235,000	195,000	42,300	529	3,670				236 J	329
TOC AVERAGE	185,000	190,000	60,700	481	3,270 J				212 J	346
TOC RSD%	21.4	2	38.4	23.2	16.9				12.2	4.5

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for but was not detected above the reported sample quantitation limit. Value was detected in the blank sample.
UB = The analyte was reported as not detected at an elevated detection limit due to blank contamination.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Table B5
2010 Sediment Geotechnical Data
Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

				Grain Size Analysis		Sampled Water	Sampled Water	Atterberg Limits						
Date Sampled	**Sample Number**	**Depth (ft)**	**Layer Assignment**	**%Fines <#200**	**%Clay <.005**	**Content % Wet Basis**	**Content % Dry Basis**	**Liquid Limit**	**Plastic Limit**	**Plasticity Index**	**U.S.C.S.**	**Specific Gravity**	**Dry Density (pcf)**	**Water Content (%)**
6/14/10	SD552007.0C	5.0'-7.0'	mixed										137.9	5.9
6/16/10	SD562032.0C	0.0'-32.0'	mixed	61.0	4.5	15.3	18.0			NP	ML	2.782		
6/7/10	SD500004.0	3.0'-4.0'	semiconsolidated			34.2	52.1							
6/7/10	SD500006.0	5.0'-6.0'	semiconsolidated			20.3	25.4							
6/7/10	SD500006.0/D	5.0'-6.0'	semiconsolidated			29.3	41.5							
6/7/10	SD500007.0	6.0'-7.0'	semiconsolidated			19.1	23.6							
6/7/10	SD500007.0C	3.0'-7.0'	semiconsolidated	69.5	6.0	16.1	19.1	16.3	11.5	4.8	SC-SM	2.852	130.5	7.7
6/6/10	SD517002.0	1.0'-2.0'	semiconsolidated			16.1	19.2							
6/6/10	SD517003.0	2.0'-3.0'	semiconsolidated			11.9	13.5							
6/6/10	SD517004.0	3.0'-4.0'	semiconsolidated			15.6	18.4							
6/6/10	SD517005.0	4.0'-5.0'	semiconsolidated			14.6	17.1							
6/6/10	SD517006.0	5.0'-6.0'	semiconsolidated			14.5	17.0							
6/6/10	SD517007.0	6.0'-7.0'	semiconsolidated			16.1	19.2							
6/6/10	SD517008.0	7.0'-8.0'	semiconsolidated			16.3	19.5							
6/6/10	SD517009.0	8.0'-9.0'	semiconsolidated			15.6	18.5							
6/6/10	SD517010.0	9.0'-10.0'	semiconsolidated			15.9	18.9							
6/6/10	SD517010.0C	0.0'-10.0'	semiconsolidated	80.2	26.0	14.6	17.2			NP	ML	2.740		
6/6/10	SD517012.0C	10.0'-12.0'	semiconsolidated										113.4	15.8
6/14/10	SD552004.0C	0.0'-4.0'	semiconsolidated	5.4	0.0	20.0	24.9			NP	SP-SM	2.727		
6/14/10	SD552006.0	5.0'-6.0'	semiconsolidated			9.1	10.1							
6/16/10	SD562006.0	5.0'-6.0'	semiconsolidated			16.0	19.0							
6/16/10	SD562006.0/D	5.0'-6.0'	semiconsolidated			16.0	19.0							
6/16/10	SD562008.0	7.0'-8.0'	semiconsolidated			16.3	19.4							
6/16/10	SD562009.0	8.0'-9.0'	semiconsolidated			17.6	21.3							
6/16/10	SD562010.0	9.0'-10.0'	semiconsolidated			15.7	18.7							
6/16/10	SD562012.0	11.0'-12.0'	semiconsolidated			16.1	19.1							
6/16/10	SD562013.0	12.0'-13.0'	semiconsolidated			14.1	16.4							
6/16/10	SD562013.0C	11.0'-13.0'	semiconsolidated										107.4	17.7
6/16/10	SD562014.0	13.0'-14.0'	semiconsolidated			11.2	12.6							
6/16/10	SD562015.0	14.0'-15.0'	semiconsolidated			12.8	14.7							
6/16/10	SD562016.0	15.0'-16.0'	semiconsolidated			14.8	17.4							
6/16/10	SD562016.0/D	15.0'-16.0'	semiconsolidated			14.8	17.4							
6/16/10	SD562017.0	16.0'-17.0'	semiconsolidated			14.8	17.3							
6/16/10	SD562018.0	17.0'-18.0'	semiconsolidated			12.8	14.7							
6/16/10	SD562019.0	18.0'-19.0'	semiconsolidated			14.6	17.0							
6/16/10	SD562020.0	19.0'-20.0'	semiconsolidated			12.1	13.8							
6/16/10	SD562021.0	20.0'-21.0'	semiconsolidated			16.7	20.0							
6/16/10	SD562022.0	21.0'-22.0'	semiconsolidated			14.7	17.2							
6/16/10	SD562023.0	22.0'-23.0'	semiconsolidated			13.7	15.9							
6/16/10	SD562026.0	25.0'-26.0'	semiconsolidated			15.3	18.1							
6/16/10	SD562027.0	26.0'-27.0'	semiconsolidated			18.4	22.5							
6/16/10	SD562028.0	27.0'-28.0'	semiconsolidated			14.3	16.7							
6/16/10	SD562029.0	28.0'-29.0'	semiconsolidated			12.7	14.6							
6/16/10	SD562030.0	29.0'-30.0'	semiconsolidated			17.2	20.8							
6/16/10	SD562031.0	30.0'-31.0'	semiconsolidated			15.6	18.5							
6/10/10	SD566001.0	0.0'-1.0'	semiconsolidated			21.6	27.5							

Table B5
2010 Sediment Geotechnical Data
Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

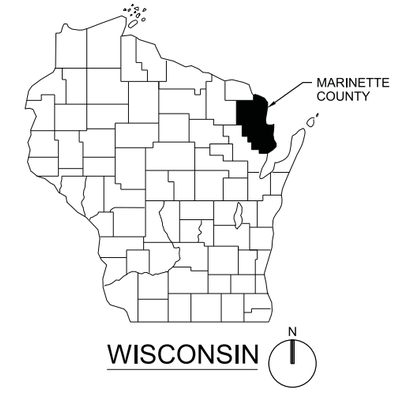
				Grain Size Analysis		Sampled Water	Sampled Water	Atterberg Limits						
Date Sampled	Sample Number	Depth (ft)	Layer Assignment	%Fines <#200	%Clay <.005	Content % Wet Basis	Content % Dry Basis	Liquid Limit	Plastic Limit	Plasticity Index	U.S.C.S.	Specific Gravity	Dry Density (pcf)	Water Content (%)
6/10/10	SD566002.0	1.0'-2.0'	semiconsolidated			9.8	10.9							
6/10/10	SD566002.0C	0.0'-2.0'	semiconsolidated										126.5	9.3
6/10/10	SD566003.0	2.0'-3.0'	semiconsolidated			10.3	11.4							
6/10/10	SD566004.0	3.0'-4.0'	semiconsolidated			9.6	10.6							
6/10/10	SD566004.0C	0.0'-4.0'	semiconsolidated	41.3	16.5	12.0	13.6	16.3	10.8	5.5	SC-SM	2.757		
6/10/10	SD566005.0	4.0'-5.0'	semiconsolidated			9.2	10.2							
6/10/10	SD566006.0	5.0'-6.0'	semiconsolidated			7.8	8.5							
6/10/10	SD566006.0C	5.0'-6.0'	semiconsolidated										122.1	9.7
6/12/10	SD575006.0	5.0'-6.0'	semiconsolidated			17.6	21.3							
6/12/10	SD575008.0	7.0'-8.0'	semiconsolidated			17.9	21.8							
6/12/10	SD575009.0	8.0'-9.0'	semiconsolidated			16.9	20.3							
6/12/10	SD575009.0/D	8.0'-9.0'	semiconsolidated			17.5	21.1							
6/12/10	SD575009.0C	7.0'-9.0'	semiconsolidated										102.4	18.8
6/12/10	SD575010.0	9.0'-10.0'	semiconsolidated			17.8	21.6							
6/12/10	SD575012.0	11.0'-12.0'	semiconsolidated			16.6	19.9							
6/12/10	SD575012.0/D	11.0'-12.0'	semiconsolidated			16.2	19.3							
6/12/10	SD575014.0	13.0'-14.0'	semiconsolidated			14.3	16.7							
6/12/10	SD575014.0C	5.0'-14.0'	semiconsolidated	2.5	0.0	14.8	17.3			NP	SP	2.768		
6/12/10	SD575015.0	14.0'-15.0'	semiconsolidated			16.8	20.3							
6/12/10	SD575016.0	15.0'-16.0'	semiconsolidated			18.1	22.1							
6/12/10	SD575017.0	16.0'-17.0'	semiconsolidated			17.5	21.2							
6/12/10	SD575018.0	17.0'-18.0'	semiconsolidated			15.4	18.3							
6/12/10	SD575019.0	18.0'-19.0'	semiconsolidated			16.3	19.5							
6/12/10	SD575019.0C	17.0'-19.0'	semiconsolidated										103.4	17.9
6/12/10	SD575020.0	19.0'-20.0'	semiconsolidated			15.4	18.2							
6/12/10	SD575021.0	20.0'-21.0'	semiconsolidated			15.4	18.1							
6/12/10	SD575022.0	21.0'-22.0'	semiconsolidated			15.2	17.9							
6/12/10	SD575023.0	22.0'-23.0'	semiconsolidated			14.8	17.3							
6/12/10	SD575024.0	23.0'-24.0'	semiconsolidated			17.6	21.3							
6/12/10	SD575024.0/D	23.0'-24.0'	semiconsolidated			18.2	22.2							
6/12/10	SD575025.0	24.0'-25.0'	semiconsolidated			16.0	19.1							
6/12/10	SD575026.0	25.0'-26.0'	semiconsolidated			16.7	20.1							
6/12/10	SD575027.0	26.0'-27.0'	semiconsolidated			14.9	17.4							
6/12/10	SD575028.0	27.0'-28.0'	semiconsolidated			18.6	22.8							
6/12/10	SD575029.0	28.0'-29.0'	semiconsolidated			20.4	25.7							
6/12/10	SD575029.0C	27.0'-29.0'	semiconsolidated										103.6	17.3
6/12/10	SD575030.0	29.0'-30.0'	semiconsolidated			21.2	27.0							
6/12/10	SD575031.0	30.0'-31.0'	semiconsolidated			17.0	20.5							
6/12/10	SD575031.0C	14.0'-31.0'	semiconsolidated	72.6	17.5	15.7	18.7	17.2	13.6	3.6	ML	2.753		
6/15/10	SD577009.0	8.0'-9.0'	semiconsolidated			14.4	16.9							
6/15/10	SD577010.0C	8.0'-10.0'	semiconsolidated	5.2	0.0	12.5	14.3			NP	SP-SM	2.788		
6/15/10	SD577013.0	12.0'-13.0'	semiconsolidated			19.5	24.2							
6/15/10	SD577013.0/D	12.0'-13.0'	semiconsolidated			17.3	21.0							
6/15/10	SD577015.0	14.0'-15.0'	semiconsolidated			14.5	17.0							
6/15/10	SD577016.0	15.0'-16.0'	semiconsolidated			16.2	19.3							
6/15/10	SD577017.0	16.0'-17.0'	semiconsolidated			15.9	18.9							
6/15/10	SD577019.0	18.0'-19.0'	semiconsolidated			16.1	19.2							

Table B5
2010 Sediment Geotechnical Data
Sediment Removal Work Plan - Tyco Fire Products LP, Marinette, Wisconsin

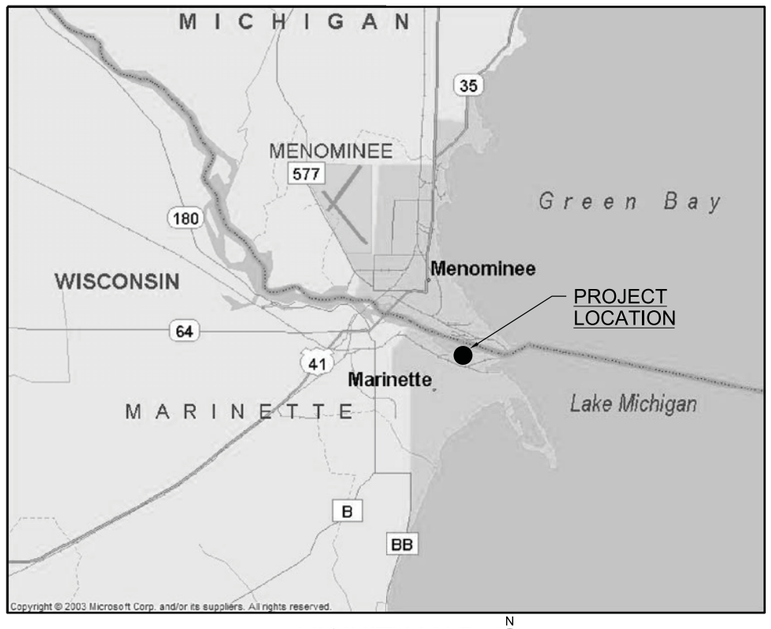
				Grain Size Analysis		Sampled Water	Sampled Water	Atterberg Limits						
Date Sampled	Sample Number	Depth (ft)	Layer Assignment	%Fines <#200	%Clay <.005	Content % Wet Basis	Content % Dry Basis	Liquid Limit	Plastic Limit	Plasticity Index	U.S.C.S.	Specific Gravity	Dry Density (pcf)	Water Content (%)
6/15/10	SD577020.0	19.0'-20.0'	semiconsolidated			18.3	22.3							
6/15/10	SD577020.0C	10.0'-20.0'	semiconsolidated	61.7	5.0	18.9	23.3			NP	ML	2.773		
6/15/10	SD577020.0C	18.0'-20.0'	semiconsolidated										105.3	18.0
6/15/10	SD577021.0	20.0'-21.0'	semiconsolidated			10.6	11.9							
6/15/10	SD577022.0	21.0'-22.0'	semiconsolidated			16.5	19.7							
5/25/10	SD500002.4C	0.0'-2.4'	Soft Sediment	8.7	0.0	25.7	34.6	26.9	24.2	2.7	SP-SM	2.671	82.8	37.8
5/19/10	SD501001.0C	0.0'-1.0'	Soft Sediment	1.2	0.0	35.3	54.5				GW			
5/19/10	SD501002.0C	1.0'-2.0'	Soft Sediment	39.8	0.0	14.0	16.3				SM			
5/23/10	SD503000.5C	0.0'-0.5'	Soft Sediment			60.0	150.0							
5/19/10	SD504003.2C	0.0'-3.2'	Soft Sediment	34.5	6.5	65.6	190.5	130.1	61.0	69.1	SM	2.395	27.2	182.8
5/19/10	SD504003.2C/D	0.0'-3.2'	Soft Sediment	46.4	8.0	63.7	175.7	137.2	61.0	76.2	SM	2.451	30.8	151.3
5/23/10	SD511000.5C	0.0'-0.5'	Soft Sediment	32.1	6.0	62.0	163.4	102.9	49.1	53.8	SM	2.643		
5/19/10	SD512003.8C	0.0'-3.8'	Soft Sediment	37.0	15.5	63.0	170.2	134.7	59.4	75.3	SC	2.521	37.3	106.6
6/6/10	SD517001.0	0.0'-1.0'	Soft Sediment			15.4	18.3							
5/24/10	SD520003.0C	0.0'-3.0'	Soft Sediment			38.4	62.3							
5/20/10	SD521003.5C	0.0'-3.5'	Soft Sediment	14.5	0.0	26.9	36.8			NP	SM	2.632	39.0	112.4
5/24/10	SD522004.4C	0.0'-4.4'	Soft Sediment	30.2	6.5	40.9	69.1	69.9	44.2	25.7	SM	2.551	58.8	62.2
5/25/10	SD529002.3C	0.0'-2.3'	Soft Sediment	3.2	0.0	16.0	19.0				SP			
5/22/10	SD534002.9C	0.0'-2.9'	Soft Sediment	14.3	2.5	39.2	64.4			NP	SM	2.623	106.2	20.0
5/24/10	SD537006.8C	0.0'-6.8'	Soft Sediment	17.2	2.0	79.9	398.0	265.5	76.6	188.9	SM	2.353	13.0	392.7
5/24/10	SD537006.8C/D	0.0'-6.8'	Soft Sediment	29.5	2.0	78.7	369.8	289.8	89.5	200.3	SM	2.347	10.1	533.0
5/25/10	SD541001.7C	0.0'-1.7'	Soft Sediment	35.4	9.0	53.9	116.8	101.5	52.1	49.4	SM	2.454	36.8	130.4
5/25/10	SD541003.2C	1.7'-3.2'	Soft Sediment	1.4	0.0	15.2	17.9			NP	SP	2.719	105.6	19.5
5/26/10	SD546001.6C	0.0'-1.6'	Soft Sediment			68.6	218.6							
6/14/10	SD552001.0	0.0'-1.0'	Soft Sediment			16.5	19.7							
6/14/10	SD552001.0/D	0.0'-1.0'	Soft Sediment			12.8	14.7							
5/22/10	SD562003.6C	0.0'-3.6'	Soft Sediment	38.0	8.0	67.3	206.3	162.5	72.8	89.7	SM	2.376	20.7	250.0
5/20/10	SD566000.5C	0.0'-0.5'	Soft Sediment	13.4	4.0	51.3	105.4	65.8	42.7	23.1	SM	2.674		
5/26/10	SD573002.0C	0.0'-2.0'	Soft Sediment	5.9	1.0	34.7	53.2	40.5	33.4	7.1	SP-SM	2.608	40.2	112.9
6/7/10	SD500010.0	9.0'-10.0'	till			8.5	9.3							
6/7/10	SD500011.0C	9.0'-11.0'	till										130.5	8.1
6/11/10	SD504006.0C	5.0'-6.0'	till										137.3	6.7
6/9/10	SD512007.0C	5.0'-7.0'	till	50.4	22.0	7.2	7.8	16.5	9.6	6.9	CL-ML	2.775		
6/9/10	SD512008.4C	7.0'-8.4'	till										126.1	8.3
6/16/10	SD562032.0	31.0'-32.0'	till			11.3	12.7							
6/16/10	SD562032.0C	30.0'-32.0'	till										115.0	16.3

Appendix C
Sediment Removal Preliminary Design Drawings

TYCO FIRE PRODUCTS LP
MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN

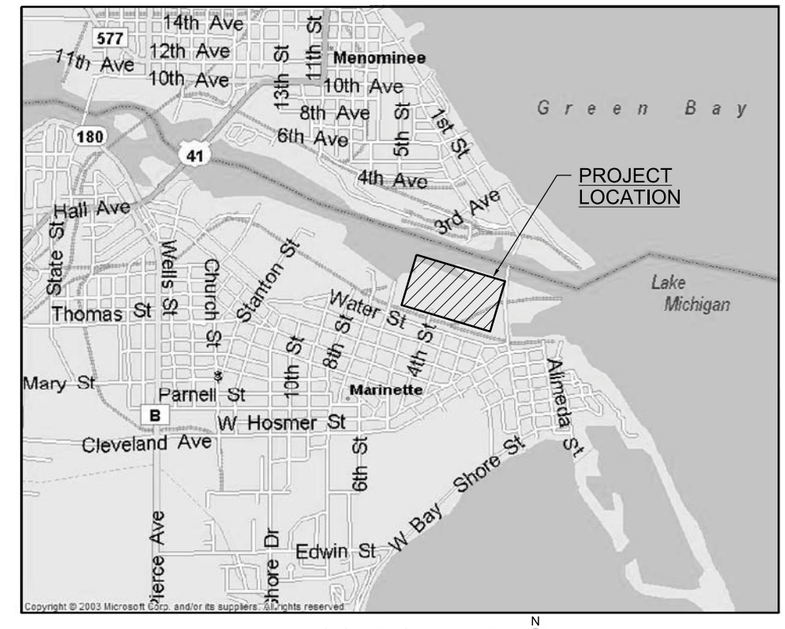


MARINETTE, WISCONSIN
OCTOBER 2011
(BASIS OF DESIGN SUBMITTAL)



VICINITY MAP
NTS
N

AERIAL VIEW



LOCATION MAP
NTS
N

PREPARED FOR

TYCO FIRE PRODUCTS LP
ONE STANTON STREET
MARINETTE, WI 54143-2542

CH2MHILL

FILENAME: 001-G-0001_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 1:17:46 PM

INDEX OF DRAWINGS

SHEET NO.	DWG NO.	DESCRIPTION
GENERAL		
1	G-1	COVER AND VICINITY / LOCATION MAPS
2	G-2	INDEX OF DRAWINGS AND ABBREVIATIONS
3	G-3	CIVIL LEGENDS AND DESIGNATION LEGENDS
4	G-4	PROCESS AND INSTRUMENTATION LEGEND
5	G-5	ELECTRICAL LEGEND
6	G-6	CONCEPTUAL TEMPORARY WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM
INSTRUMENTATION AND CONTROL		
7	N-1	PRE-RO P&ID
8	N-2	CONTROL RO AND POST RO P&ID
CIVIL		
9	C-1	EXISTING SITE PLAN
10	C-2	OVERALL DREDGING / EXCAVATION PLAN
11	C-3	OVERALL TEMPORARY FACILITIES PLAN
12	C-4	TEMPORARY FACILITIES PLAN AND DETAILS
13	C-5	PHASE I - TURNING BASIN SOFT SEDIMENT DREDGING PLAN
14	C-6	PHASE II - TURNING BASIN SEMI-CONSOLIDATED MATERIAL DREDGING PLAN
15	C-7	PHASE III - SOFT SEDIMENT DRY EXCAVATION PLAN
16	C-8	PHASE III - SOFT SEDIMENT DRY EXCAVATION PLAN
17	C-9	PHASE IV - SEMI-CONSOLIDATED MATERIAL DRY EXCAVATION PLAN
18	C-10	PHASE V - SEMI-CONSOLIDATED MATERIAL DRY DREDGING PLAN
19	C-11	PHASE VI - CHEMICAL ISOLATION LAYER
20	C-12	SHEET PILE BARRIER PLAN
21	C-13	SHEET PILE SECTIONS
22	C-14	CHEMICAL ISOLATION LAYER DETAILS
23	C-15	SITE RESTORATION PLAN
24	C-16	SITE RESTORATION DETAILS
25	C-17	TREATMENT AND DISPOSAL FACILITY - SEDIMENTS
26	C-18	TREATMENT AND DISPOSAL FACILITY - SEDIMENTS
PROCESS MECHANICAL		
27	M-1	WATER TREATMENT SYSTEM LAYOUT PLAN
28	M-2	YARD PIPING PLAN
29	M-3	WATER TREATMENT SYSTEM DETAILS
ELECTRICAL		
30	E-1	TREATMENT SYSTEM ONE LINE DIAGRAM
31	E-2	TREATMENT SYSTEM ELECTRICAL DETAILS

NOTE:
1. SCREENED SHEETS NOT INCLUDED IN THIS SUBMITTAL.

ABBREVIATIONS

@	AT
AB	ANCHOR BOLT
ABDN	ABANDONED
ACBD	ACOUSTICAL BOARD
ACCU	AIR-COOLED CONDENSING UNIT
ACST	ACOUSTICAL TILE
ACT	ACOUSTICAL
ACU	AIR CONDITIONING UNIT
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT
AHR	ANCHOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALTN	ALTERNATE
ANOD	ANODIZED
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ARD	ACID RESISTANT DRAIN
ASSY	ASSEMBLY
ASU	AIR SUPPLY UNIT
AVG	AVERAGE
BC	BOOSTER HEATING COIL
BETW	BETWEEN
BF	BOTTOM FACE
BG	LOW WALL GRILLE
BLDG	BUILDING
BM	BEAM
BOD	BOTTOM OF DUCT
BOD_5	BIOCHEMICAL OXYGEN DEMAND (5 DAY TEST)
BOT	BOTTOM
BRG	BEARING
CAB.	CABINET
C/C	CHLORINE CONTACT
CD	CEILING DIFFUSER
CEM PLAS	CEMENT PLASTER
CF	CEILING FAN
CG	CEILING GRILLE
CHEM	CHEMICAL
CHKD	CHECKERED
CFM	CUBIC FEET PER MINUTE
CJ	CONSTRUCTION JOINT
CI	CAST IRON
CISP	CAST IRON SOIL PIPE
CL	CENTER LINE
CL_2	CHLORINE
CLDI	CEMENT LINED DUCTILE IRON
CLG	CEILING
CLP	CLAY PIPE
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNITS
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COR	CORNER
CP	CONCRETE PIPE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CEILING REGISTER
C TO C	CENTER TO CENTER
CTR	CENTER
CTRD	CENTERED
CU FT	CUBIC FEET
C/W	COMPLETE WITH
$\triangle$	CENTRAL ANGLE
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DECHLOR	DECHLORINATION
DEG °	DEGREE
DET	DETAIL
DG	DOOR GRILLE
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DS	DOWNSPOUT
DN	DOWN
DRWR	DRAWER
DWG	DRAWING
DWL	DOWEL
E	EAST
E	EXTERNAL
EA	EACH
ELB	ELBOW
EC	ELECTRIC CONVECTOR
ECC	ECCENTRIC
EDH	ELECTRIC DUCT HEATER
EF	EACH FACE OR EXHAUST FAN
EFL	EFFLUENT
EL	ELEVATION
ELEC	ELECTRICAL
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
EW	EACH WAY
EXA	EXHAUST AIR
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
EXST	EXISTING
FAB	FABRICATION
F FL EL	FINISHED FLOOR ELEVATION
FACIL	FACILITY
FC	FLEXIBLE CONNECTION
FCA	FLANGED COUPLING ADAPTER
FCTY, FACT.	FACTORY
FEXT	FIRE EXTINGUISHER
FD	FLOOR DRAIN OR FIRE DAMPER
FDN	FOUNDATION
FLEX	FLEXIBLE
FLG	FLANGE
FLR	FLOOR
FNSH	FINISH
FTC	FIN TUBE CONVECTOR
G	GAS
GA	GAUGE
GB	GRAB BAR
GBD	GRAVITY BACKDRAFT DAMPER
GAL	GALLON
GALV	GALVANIZED
GALVS	GALVANIZED STEEL
GIV	GRAVITY INTAKE VENTILATOR
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GRV	GRAVITY RELIEF VENTILATOR
GUH	GAS UNIT HEATER
GVL	GRAVEL
GW	GROUNDWATER
GWB	GYPSUM WALLBOARD
GYP PLAS	GYPSUM PLASTER
H.A.S	HEADED ANCHOR STUD
HCR	HIGH CAPACITY REGISTER
HD	HUB DRAIN
HDNR	HARDENER
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HGT	HEIGHT
HORIZ	HORIZONTAL
HM	HOLLOW METAL
HR	HOUR
HTR	HIGH THROW REGISTER
HV	HOSE VALVE
I&C	INSTRUMENTATION AND CONTROL
ID	INSIDE DIAMETER
IF	INSIDE FACE
INDOT	INDIANA DEPARTMENT OF TRANSPORTATION
INFL	INFLUENT
INSTL	INSTALL
INSUL	INSULATION
INVT	INVERT
ITG	INSULATED TEMPERED GLASS
JT	JOINT
L	LENGTH OF CURVE
LB	POUNDS
LB/D	POUNDS PER DAY
LG	LONG
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG	LONGITUDINAL
LR	LONG RADIUS
LT	LIGHT
MATL	MATERIAL
MAU	MAKE UP AIR UNIT
MAX	MAXIMUM
MB	MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MG/L	MILLIGRAMS PER LITER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MON	MONUMENT
MTG	MOUNTING
MTL	METAL
MTRG	METERING
N	NORTH
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NORM	NORMAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER OR OVERFLOW DRAIN
OF	OUTSIDE FACE
O/H	OVERHEAD
O TO O	OUT TO OUT
OPNG	OPENING
OPP	OPPOSITE
PC	POINT OF CURVATURE
PE	POLYETHYLENE
PI	POINT OF INTERSECTION
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PJF	PREMOLDED JOINT FILLER
PL	PLATE
PLAM	PLASTIC LAMINATE
PLYWD	PLYWOOD
POC	POINT ON CURVE
POT	POINT ON TANGENT
PR	PAIR
PRCST	PRECAST
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PTD	PAPER TOWEL DISPENSER
PTD/R	PAPER TOWEL DISPENSER / RECEPTACLE
PVC	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
QDRNT	QUADRANT
R OR RAD	RADIUS OR RISER
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RDCR	REDUCER
REHAB	REHABILITATION/REHABILITATED
REINF	REINFORCE
REQD	REQUIRED
RESIL	RESILIENT
RM	ROOM
RO	ROUGH OPENING
RR	REDUCER
RST	REINFORCING STEEL
S	SOUTH
SA	SUPPLY AIR
SAT	SUSPENDED ACOUSTICAL TILE
SCHED	SCHEDULE
SCM	SEMI-CONSOLIDATED MATERIAL
SD	SOAP DISPENSER OR SLOT DIFFUSER
SECT	SECTION
SG	SAFETY GLASS
SH	SHEET
SHTG	SHEETING
SIM	SIMILAR
SLV	SHORT LEG VERTICAL
S.O.	SHUTOFF
SPECD	SPECIFIED
SPECS	SPECIFICATIONS
SPG	SPACING
SQ	SQUARE
SST, SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIF	STIFFENER
STOR	STORAGE
STR	STRAIGHT
STRUCT	STRUCTURAL
STL	STEEL
SYMM	SYMMETRICAL
T	TREAD OR TANGENT LENGTH
TAR	TRANSFER AIR REGISTER
T&B	TOP AND BOTTOM
TC	TOP OF CONCRETE
TCU	TERMINAL CONTROL UNIT
TEMP	TEMPERED
TF	TOP FACE
TG	TONGUE AND GROOVE
THK	THICK
THRD	THREADED
T.O.	TOP OF
TPD	TONS PER DAY
TPI	TURNOUT POINT OF INTERSECTION
TRANSV	TRANSVERSE
TSS	TOTAL SUSPENDED SOLIDS
TST	TOP OF STEEL
TTD	TOILET TISSUE DISPENSER
TW	TOP OF WALL
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VENT
VAT	VINYL ASBESTOS TILE
VERT	VERTICAL
VCP	VITRIFIED CLAY PIPE
VD	VOLUME DAMPER
VOC	VOLATILE ORGANIC COMPOUND
VTR	VENT THRU ROOF
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
WD	WOOD
WG	WIRE GLASS
WH	WATER HEATER
WK	WEEK
WR GWB	WATER RESISTANT GYPSUM WALLBOARD
WR	WASTE RECEPTACLE
WS	WATER STOP OR WATER SURFACE OR WELDED STEEL
WSG	WALL SUPPLY GRILLE
WSR	WALL SUPPLY REGISTER
WWM	WELDED WIRE MESH
XFMR	TRANSFORMER
YR	YEAR

GENERAL SHEET NOTES

1. THIS IS A STANDARD ABBREVIATION SHEET. SOME ABBREVIATIONS MAY APPEAR ON THIS SHEET, BUT NOT ON THE PLANS.
2. CONTACT THE CONTRACTOR FOR ABBREVIATIONS NOT LISTED.

NO.	DATE	REVISION	BY	APVD

DSGN S RAMAMURTHY | DR DA KIERZEK | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

GENERAL
INDEX OF DRAWINGS AND ABBREVIATIONS

NOT TO SCALE
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	G-2
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

CIVIL LEGEND

EXISTING	THIS CONTRACT	
× 157.7	⊗ 158.5	SPOT ELEVATION
155	155	CONTOUR LINE
	3:1	EMBANKMENT AND SLOPE
		DRAINAGEWAY OR DITCH
	CB OR CB	CATCH BASIN OR INLET
		TRENCH DRAIN
	OR	SIGN
	D OR S	MANHOLE
E	E	ELECTRICAL MANHOLE
H	H	ELECTRIC HANDHOLE
		POST OR GUARD POST
		GUY ANCHOR
		FIRE HYDRANT
		UTILITY POLE
		LIGHT POLE
	BM	BENCH MARK
		SURVEY CONTROL POINT OR POINT OF INTERSECTION
		BRUSH/TREE LINE
		TREE
		PROPERTY LINE
		CENTER LINE, BUILDING, ROAD, ETC.
		STAGING OR WORK AREA LIMITS
	N 1000.00 E 1000.00	STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES
	B-1	BORING LOCATION AND NUMBER
	TP-2	TEST PIT LOCATION AND NUMBER
	P-3	PIEZOMETER LOCATION AND NUMBER
OR	OR	DEMOLITION
OR	OR	STRUCTURE, BUILDING OR FACILITY
		ASPHALT CONCRETE PAVEMENT
		GRAVEL SURFACING
		CONCRETE PAVEMENT
		CURB
		CURB AND GUTTER
		SINGLE SWING GATE
		DOUBLE SWING GATE
		SLIDING GATE
		GUARD RAIL
		CHAIN LINK FENCE
		ARCHITECTURAL FENCE
		WIRE FENCE
		CULVERT

YARD PIPING LEGEND

EXISTING	THIS CONTRACT	
		NOMINAL PIPE DIAMETER
		PIPE USE IDENTIFICATION
8" PE	8" PE	PIPING < 30" DIAMETER
		PIPING ≧ 30" DIAMETER
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		NON-FREEZE HOSE VALVE (V-X) X = NO. IN SPECIFICATIONS
		NON-FREEZE HOSE VALVE WITH HOSE RACK (V-X) X = NO. IN SPECIFICATIONS
		INDICATOR POST VALVE
		GATE VALVE AND VALVE BOX
		BUTTERFLY VALVE AND VALVE BOX
		PLUG VALVE AND VALVE BOX
		FLEXIBLE COUPLING
		90° ELBOW UP
		90° ELBOW DOWN
		BEND < 90° UP
		BEND < 90° DOWN
		CONCENTRIC REDUCER
		CAP OR PLUG
		CLEANOUT
		FIRE HYDRANT

EROSION CONTROL LEGEND

COVER PRACTICES	SYMBOL
TEMPORARY SEEDING	TS
MULCHING AND MATTING	MU
CLEAR PLASTIC COVERING	CPC
BUFFER ZONES	BZ
PERMANENT SEEDING AND PLANTING	PS
CONSTRUCTION ENTRANCE	
INTERCEPTOR DIKE	ID
INTERCEPTOR SWALE	IS
CHECK DAMS	X
OUTLET PROTECTION / RIPRAP	
FILTER FENCE	
STRAW BALE BARRIER (BIOFILTER)	
SEDIMENT TRAP (OR SUMP)	
SEDIMENT POND OR BASIN	

SECTION / DETAIL DESIGNATIONS

ON DRAWING WHERE SECTION OR DETAIL IS TAKEN:

1 / C-1 — SHEET/DRAWING NUMBER WHERE SHOWN

B — SECTION — SCALE — ON DRAWING WHERE SECTION IS SHOWN:

2 — DETAIL — SCALE — ON DRAWING WHERE DETAIL IS SHOWN:

DRAWING TITLE — SCALE — ON DRAWING WHERE ONLY A TITLE IS REQUIRED WITH NO REFERENCE (eg: ELEVATIONS)

B / C-001 — SECTION CALLOUT WHERE SECTION IS ON THE SAME SHEET AND CUT EXTENDS TO A FIXED LIMIT

B / C-001 — B / C-001 — SECTION CALLOUT WHERE SECTION IS ON ANOTHER SHEET AND CUT EXTENDS THROUGHOUT ENTIRE SHEET

1 — KEYED NOTES

DRAWING NUMBER DESIGNATION

S-002

INDICATES DRAWING NUMBER

INDICATES DISCIPLINE(S) OR CATEGORY:

C	CIVIL
E	ELECTRICAL
G	GENERAL
N	INSTRUMENTATION AND CONTROL

GENERAL NOTES:

1. * SYMBOL - ONLY WHERE REQUIRED FOR CLARITY.
2. EXISTING STRUCTURES AND FACILITIES ARE SHOWN AS SCREENED BACKGROUND. NEW STRUCTURES ARE SHOWN IN HEAVY LINE WEIGHTS.
3. EXISTING PIPING AND EQUIPMENT IS SHOWN SCREENED. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.
4. THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.

NO.	DATE	REVISION	BY	APVD

DSGN S RAMAMURTHY | DR DA KIERZEK | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

GENERAL
CIVIL LEGENDS AND DESIGNATION LEGENDS

NOT TO SCALE
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

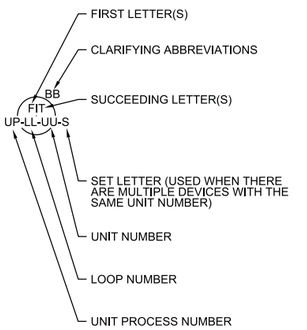
DATE	2012/01/31
PROJ	425171
DWG	G-3
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

INSTRUMENT IDENTIFICATION EXAMPLE SYMBOLS



DIGITAL SYSTEM INTERFACES

- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- △ DISCRETE INPUT
- ▽ DISCRETE OUTPUT

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS

- FIELD MOUNTED INSTRUMENT
- REAR-OF-PANEL MOUNTED INSTRUMENT (OPERATOR INACCESSIBLE)
- PANEL MOUNTED INSTRUMENT
- MOTOR CONTROL CENTER MOUNTED INSTRUMENT
- COMPUTER FUNCTION
- PLC FUNCTION

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

EXAMPLE:

I/P FY — CURRENT TO PNEUMATIC TRANSDUCER (BACK OF

INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER: PROCESS OR INITIATING VARIABLE	FIRST-LETTER: MODIFIER	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: OUTPUT FUNCTION	SUCCEEDING-LETTERS: MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (∗)	USER'S CHOICE (∗)	USER'S CHOICE (∗)
C	USER'S CHOICE (∗)			CONTROL	
D	DENSITY (S.G)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT, SENSOR		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (∗)		GLASS, GAUGE VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE (∗)	USER'S CHOICE (∗)	USER'S CHOICE (∗)
O	USER'S CHOICE (∗)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (+)	X AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TABLE BASED ON THE INSTRUMENTATION, SYSTEMS, AND AUTOMATION SOCIETY (ISA) STANDARD.

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

(∗) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT

SPECIAL CASES

- YL — ON AND OFF EVENT LIGHTS
- HS — ON-OFF HAND SWITCH. MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).
- HS — STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

ACCESSORY DEVICES

EXAMPLE: TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

FT T

A	=	ALARM
C	=	CONTROLLER
I	=	INDICATOR
R	=	RECORDER
S	=	SWITCH
T	=	TRANSMITTER

LINE LEGEND

- PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)
- PROCESS (OPEN CHANNEL)
- ANALOG SIGNAL (4 TO 20 mAdc, ETC.)
- DISCRETE SIGNAL (ON/OFF, ETC.)
- PNEUMATIC SIGNAL
- FILLED SYSTEM SIGNAL
- HYDRAULIC SYSTEM SIGNAL
- G — GENIBUS
- P — POWER
- MSC — MANUFACTURED SUPPLIED CABLE
- M — MODBUS
- E — ETHERNET, CAT 6 UTP
- CX — COAXIAL CABLE
- BUILDING OR FACILITY BOUNDARY
- PACKAGE SYSTEM EQUIPMENT

PARALLELING LINES

(2) (A) 3(2) (B)

(A) TOTAL OF 2 SIGNALS

(B) 3 TYPICAL SETS OF 2 SIGNALS EACH. TOTAL OF 6 SIGNALS.

- CONNECTING LINES
- NON-CONNECTING LINES

INTERFACE SYMBOLS

SA D — SA D

- = PROCESS INTERFACE
- = SIGNAL INTERFACE

A = INTERFACE LETTER
D = DESTINATION DRAWING NO.
S = SOURCE DRAWING NO.

- N — PROCESS OR SIGNAL LINE CONTINUATION N=1,2,3,ETC — N
- INTERFACE TO OR FROM PROCESS EXTERNAL TO PROJECT

MISCELLANEOUS SYMBOLS

- T — TERMINATING RESISTOR
- G I O O — GENIBUS TO MODBUS GATEWAY
- SSX — SURGE SUPPRESSOR TYPE X

PUMP AND COMPRESSOR SYMBOLS

NOTE: XX: AS ADJUSTABLE SPEED
CS CONSTANT SPEED (SINGLE SPEED)
CS-2 CONSTANT SPEED (TWO SPEED)

- CENTRIFUGAL PUMP (DRY PIT)
- CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP
- CHEMICAL FEED PUMP
- DIAPHRAGM PUMP
- GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
- PISTON PUMP
- PERISTALTIC PUMP
- SUBMERSIBLE PUMP
- PROGRESSIVE CAVITY PUMP
- COMPRESSOR (CENTRIFUGAL)
- COMPRESSOR (PISTON)
- BLOWER OR FAN (CENTRIFUGAL)
- EJECTOR
- SAMPLE OR SEAL-LESS MAGNETIC DRIVE PUMP

SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

D-W-X-Y

D:
- ARV = AIR RELEASE VALVE
- AVRV = AIR AND VACUUM RELEASE VALVE
- E = EJECTOR
- G = GATE
- M = MECHANICAL EQUIPMENT
- P = PUMP
- T = TANK

W = UNIT PROCESS NUMBER

X = LOOP NUMBER
Y = UNIT NUMBER

PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORFICE PLATE
- FLOW TUBE
- PITOT-STATIC
- VORTEX METER
- FI — ROTAMETER
- THERMAL MASS FLOWMETER
- ULTRASONIC FLOWMETER
- M — ELECTROMAGNETIC FLOWMETER
- PROPELLER OR TURBINE METER
- DE — DENSITY METER
- XX — GENERIC
- LE — LEVEL (ULTRASONIC)
- LEVEL (BUBBLER TUBE)
- LS — LEVEL (FLOAT)
- LEVEL (SUBMERSIBLE)

GENERAL SHEET NOTES

1. INSTRUMENTATION AND CONTROL COMPONENTS ARE PROVIDED AS PART OF THE TREATMENT SYSTEM PACKAGE.
2. COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (∗) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM.
3. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.
4. REFER TO ELECTRICAL DRAWINGS FOR STANDARD INSTALLATION DETAILS.

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

GENERAL
PROCESS AND INSTRUMENTATION LEGEND

NOT TO SCALE
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	G-4
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

ELECTRICAL SYMBOLS

- CONNECTION POINT TO EQUIPMENT SPECIFIED. RACEWAY, CONDUCTOR,TERMINATION AND CONNECTION IN THIS DIVISION.
- MCC-A — MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.
- PANELBOARD - SURFACE MOUNTED
- LP A — PANELBOARD LETTER; LP - LIGHTING PANEL; DP - DISTRIBUTION PANEL
- PANELBOARD - FLUSH MOUNTED
- TERMINAL JUNCTION BOX
- M — MOTOR, SQUIRREL CAGE INDUCTION
- G — GENERATOR
- LPA-2 — HOME RUN - DESTINATION SHOWN
- or G — EXPOSED CONDUIT AND CONDUCTORS*
- or G — CONCEALED CONDUIT AND CONDUCTORS*

NOTE:
ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO. 12, ONE NO. 12 GROUND CONDUCTORS IN 3/4" CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO. 12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE.

- [A1] — CONDUCTOR AND RACEWAY CALLOUT - FOR CONDUIT AND CONDUCTORS, SEE LEGEND.
- CONDUIT DOWN
- CONDUIT UP
- CONDUIT, STUBBED AND CAPPED AS SHOWN
- CONDUIT TERMINATION AT CABLE TRAY
- EX — EXISTING CONDUIT/ DUCK BANK
- CT — CABLE TRAY - SEE SPECIFICATIONS
- BD — BUS DUCT - SEE SPECIFICATIONS
- DB — DIRECT BURIED CONDUIT
- FO — FIBER OPTIC CONDUIT
- CE — CONCRETE ENCASED DUCT BANK
- J or HH — GENERAL CONTROL OR WIRING DEVICE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.
- CS — CONTROL STATION, SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED.
- 30 — NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE
- 60/40 F — FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 60 = SWITCH RATING: 40 = FUSE RATING) 3 POLE
- 2 — COMBINATION CIRCUIT BREAKER AND INDICATED) MAGNETIC STARTER, NEMA SIZE INDICATED
- T — TRANSFORMER
- 3 POSITION SELECTOR SWITCH MAINTAINED CONTACT
- DELTA GROUNDED WYE

ELECTRICAL SYMBOLS (CONT)

- 400 — CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO
- AS/AF OR AT/AF — CIRCUIT BREAKER, STATIC TRIP UNIT, SENSOR AMP TRIP AND FRAME RATINGS SHOWN, 3 POLE, UNO
- 100/M — CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE, UNO
- 400 225 — FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE, UNO
- 100 — SWITCH - CURRENT RATING INDICATED, 3 POLE, UNO
- 60 (3) — FUSE, RATING AND QUANTITY INDICATED
- 1 — MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED
- AFD — ELECTRONIC STARTER/SPEED CONTROL
  - SS = AC SOLID STATE SOFT STARTER
  - AFD = AC ADJUSTABLE FREQUENCY DRIVE
  - DC = DC ADJUSTABLE SPEED DRIVE
  - RVSS, AFD, or DC
- CABLE OR BUS CONNECTION POINT
- GROUND
- 120/240V 15 KVA 1 PH — TRANSFORMER, SECONDARY VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE
- GROUND ROD
- GROUND ROD IN TEST WELL
- G — GROUNDING CONDUCTOR, SIZE AS INDICATED
- TA — CABLE TO CABLE TEE
- XA — CABLE TO CABLE CROSS
- XJ — CABLE TO REINFORCING STEEL
- GP — CABLE TO PIPE (BOLTED CONNECTION)
- WA — CABLE TO STEEL SURFACE
- GR — CABLE TO TOP OF GROUND ROD
- PIGTAIL FOR CONNECTION TO EQUIPMENT CABINET OR FRAME
- G — EQUIPMENT GROUND BUS
- N — EQUIPMENT NEUTRAL BUS
- LA — CABLE TO LUG
- DUPLEX RECEPTACLE
- 4 or 4 — LUMINAIRE AND POLE, SEE SCHEDULE OR NOTES
- PC — PHOTOCELL

CIRCUIT AND RACEWAY

GENERAL CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION

POWER CIRCUIT CALLOUTS

[P1]	[1/2"FLEX,2#12,#12G]	[P34]	[1 1/4"C,3#4,3#14,1#8G]
[P2]	[3/4"C,2#12,1#12G]	[P35]	[1 1/4"C,3#4,5#14,1#8G]
[P3]	[3/4"C,3#12,1#12G]	[P36]	[1 1/4"C,3#3,1#8G]
[P4]	[3/4"C,4#12,1#12G]	[P37]	[1 1/4"C,2#2,1#2G]
[P5]	[3/4"C,5#12,1#12G]	[P38]	[1 1/4"C,3#2,1#6G]
[P6]	[3/4"C,6#12,1#12G]	[P39]	[1 1/4"C,3#1,1#6G]
[P7]	[3/4"C,7#12,1#12G]	[P39A]	[1 1/2"C,2#1,1#6G]
[P8]	[3/4"C,8#12,1#12G]	[P39B]	[1 1/2"C, 2#1,1#1G]
[P9]	[3/4"C,3#12,2#14,1#12G]	[P40]	[1 1/2"C,2#2/0,1#2/0G]
[P10]	[3/4"C,3#12,3#14,1#12G]	[P41]	[1 1/2"C,3#2/0,1#6G]
[P11]	[3/4"C,3#12,4#14,1#12G]	[P42]	[2"C,3#3/0,1#4G]
[P12]	[3/4"C,3#12,5#14,1#12G]	[P43]	[2"C,3#4/0,1#4G]
[P13]	[3/4"C,3#12,6#14,1#12G]	[P44]	[2"C,4#3/0,1#4G]
[P14]	[3/4"C,3#12,7#14,1#12G]	[P44A]	[2"C,4#3/0]
[P15]	[3/4"C,2#10,1#10G]	[P45]	[2"C,4#2,1#4G]
[P16]	[3/4"C,3#10,1#10G]	[P50]	[4"C,3#600KCM,1#2/0]
[P17]	[3/4"C,3#10,2#14,1#10G]		
[P18]	[3/4"C,3#10,3#14,1#10G]		
[P19]	[3/4"C,3#10,4#14,1#10G]		
[P20]	[3/4"C,3#10,5#14,1#10G]		
[P21]	[1"C,2#8,1#10G]		
[P22]	[1"C,3#8,1#10G]		
[P23]	[1"C,3#8,2#14,1#10G]		
[P24]	[1"C,3#8,3#14,1#10G]		
[P25]	[1"C,3#8,4#14,1#10G]		
[P26]	[1"C,3#8,5#14,1#10G]		
[P27]	[1"C,2#6,1#10G]		
[P28]	[2"C,3#6,#10G]		
[P29]	[1"C,3#6,2#14,1#10G]		
[P30]	[1"C,3#6,3#14,1#10G]		
[P31]	[1"C,3#6,4#14,1#10G]		
[P32]	[1"C,2#4,1#4G]		
[P33]	[1"C,3#4,1#8G]		

POWER CABLE CIRCUIT CALLOUTS

[PC1]	[3/4"C,(3#10) TYPE ANIXTER 2A-1003S]

EMPTY CONDUIT

[CE-1]	[3/4"C,WITH PULL STRING]
[CE-2]	[1"C,WITH PULL STRING]
[CE-3]	[1 1/4"C,WITH PULL STRING]
[CE-4]	[1 1/2"C,WITH PULL STRING]
[CE-5]	[2"C,WITH PULL STRING]
[CE-6]	[3"C,WITH PULL STRING]
[CE-7]	[4"C,WITH PULL STRING]
[CE-8]	[5"C,WITH PULL STRING]

ANALOG CIRCUIT CALLOUTS

[A1]	[3/4"C,1 TYPE 3]
[A2]	[1"C,2 TYPE 3]
[A3]	[1"C,3 TYPE 3]
[A4]	[1"C,4 TYPE 3]
[A5]	[1 1/4"C,5 TYPE 3]
[A6]	[1 1/4"C,6 TYPE 3]
[A7]	[1 1/2"C,7 TYPE 3]
[A8]	[1 1/2"C,8 TYPE 3]
[A9]	[1 1/2"C,9 TYPE 3]
[A10]	[2"C,10 TYPE 3]
[A11]	[2"C,11 TYPE 3]
[A12]	[2"C,12 TYPE 3]
[A13]	[2"C,13 TYPE 3]
[A14]	[2"C,14 TYPE 3]
[A15]	[3/4"C,1 TYPE 4]
[A16]	[3/4"C,2 TYPE 4]
[A17]	[1"C,3 TYPE 4]
[A18]	[1 1/4"C,4 TYPE 4]
[A19]	[1 1/4"C,5 TYPE 4]
[A20]	[1 1/4"C,6 TYPE 4]
[A21]	[1 1/2"C,7 TYPE 4]
[A22]	[1 1/2"C,8 TYPE 4]
[A23]	[2"C,9 TYPE 4]
[A24]	[3/4"C,1-4 pr. TYPE 5]
[A25]	[1"C,2-4 pr. TYPE 5]

CONTROL CIRCUIT CALLOUTS

[C1]	[3/4"C,MSC]
[C2]	[3/4"C,2#14,1#14G]
[C3]	[3/4"C,3#14,1#14G]
[C4]	[3/4"C,4#14,1#14G]
[C5]	[3/4"C,5#14,1#14G]
[C6]	[3/4"C,6#14,1#14G]
[C7]	[3/4"C,7#14,1#14G]
[C8]	[3/4"C,8#14,1#14G]
[C9]	[3/4"C,9#14,1#14G]
[C10]	[3/4"C,10#14,1#14G]
[C11]	[3/4"C,11#14,1#14G]
[C12]	[3/4"C,12#14,1#14G]
[C13]	[3/4"C,13#14,1#14G]
[C14]	[3/4"C,14#14,1#14G]
[C15]	[3/4"C,15#14,1#14G]
[C16]	[3/4"C,16#14,1#14G]
[C17]	[3/4"C,17#14,1#14G]
[C18]	[3/4"C,18#14,1#14G]
[C19]	[3/4"C,19#14,1#14G]
[C20]	[1"C,20#14,1#14G]
[C21]	[1"C,21#14,1#14G]
[C22]	[1"C,22#14,1#14G]
[C23]	[1"C,23#14,1#14G]
[C24]	[1"C,24#14,1#14G]
[C25]	[1"C,25#14,1#14G]
[C40]	[1 1/4"C, 40#14, 1#14G]

MISCELLANEOUS CIRCUIT CALLOUTS

[CAT]	[1"C, CATEGORY 6 CABLE]
[SER]	[1"C, BELDEN 3105A]

NOTES:

1. FOR CABLE TYPES, SEE SPECIFICATIONS.
2. CONDUIT SIZES ARE BASE ON THE AREA OF THW CONDUCTORS.
3. SIZING OF CONDUCTORS #2AWG AND SMALLER BASED ON AMPACITIES AT 60 DEGREES C, SIZING OF CONDUCTORS #1AWG AND LARGER BASED ON AMPACITIES AT 75 DEGREES C.
4. WHERE CIRCUITS ARE UNDERGROUND, DIRECT BURIED OR CONCRETE ENCASED, MINIMUM CONDUIT SIZE SHALL BE 1".
5. FOR METRIC CONDUIT SIZES USE THE FOLLOWING CONVERSION:

1/2" = 16 mm	1/4" = 35 mm
3/4" = 21 mm	1 1/2" = 41 mm
1" = 27 mm	2" = 53 mm

GENERAL SHEET NOTES:

1. THESE ARE STANDARD LEGEND SHEETS. SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.
2. FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS (HVAC, MECHANICAL, AND STRUCTURAL/ARCHITECTURAL) SEE OTHER LEGENDS.
3. REFER TO SECTION 26 05 00, ELECTRICAL FOR ADDITIONAL ELECTRICAL SYSTEM REQUIREMENTS AND SPECIFICATIONS.
4. THE WORK OUTLINED IN THIS CONTRACT DOES NOT STAND ALONE. ALL WORK PROVIDED MUST BE DONE IN CONJUNCTION WITH THE TYCO GROUNDWATER TREATMENT FACILITY PROJECT. THE ELECTRICAL CONTRACTOR FOR THIS CONTRACT SHALL ALSO PROVIDE ALL WORK FOR THE TYCO GROUNDWATER TREATMENT FACILITY PROJECT TO ENSURE PROPER COORDINATION AND CONSTRUCTION SEQUENCING. REFER TO THE CONTRACT DOCUMENTS FOR THE TYCO GROUNDWATER TREATMENT FACILITY FOR REQUIREMENTS.

NO.	DATE	REVISION	BY	APVD
DSGN	DR	CHK		
DJ ALLARD	JM HOLMQUIST			

©CH2M HILL 2011. ALL RIGHTS RESERVED.
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

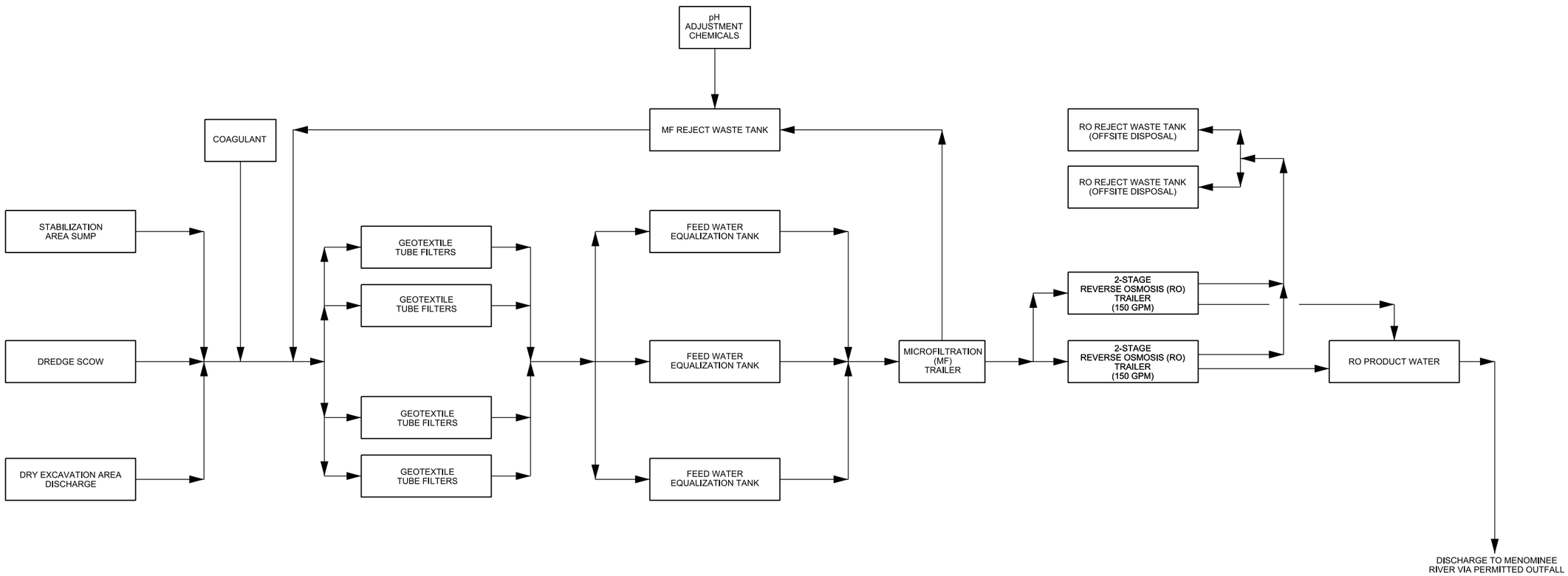
CH2MHILL®

GENERAL
ELECTRICAL LEGEND

NOT TO SCALE
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	G-5
SHEET	of

PRELIMINARY DESIGN



PROCESS FLOW DIAGRAM

NTS

NO.	DATE	REVISION	BY	APVD

DSGN WM ANDRAE | DR MA REICHERT | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

GENERAL
CONCEPTUAL TEMPORARY WATER TREATMENT SYSTEM PROCESS FLOW DIAGRAM

NOT TO SCALE
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	2012/01/31
PROJ	425171
DWG	G-6
SHEET	of

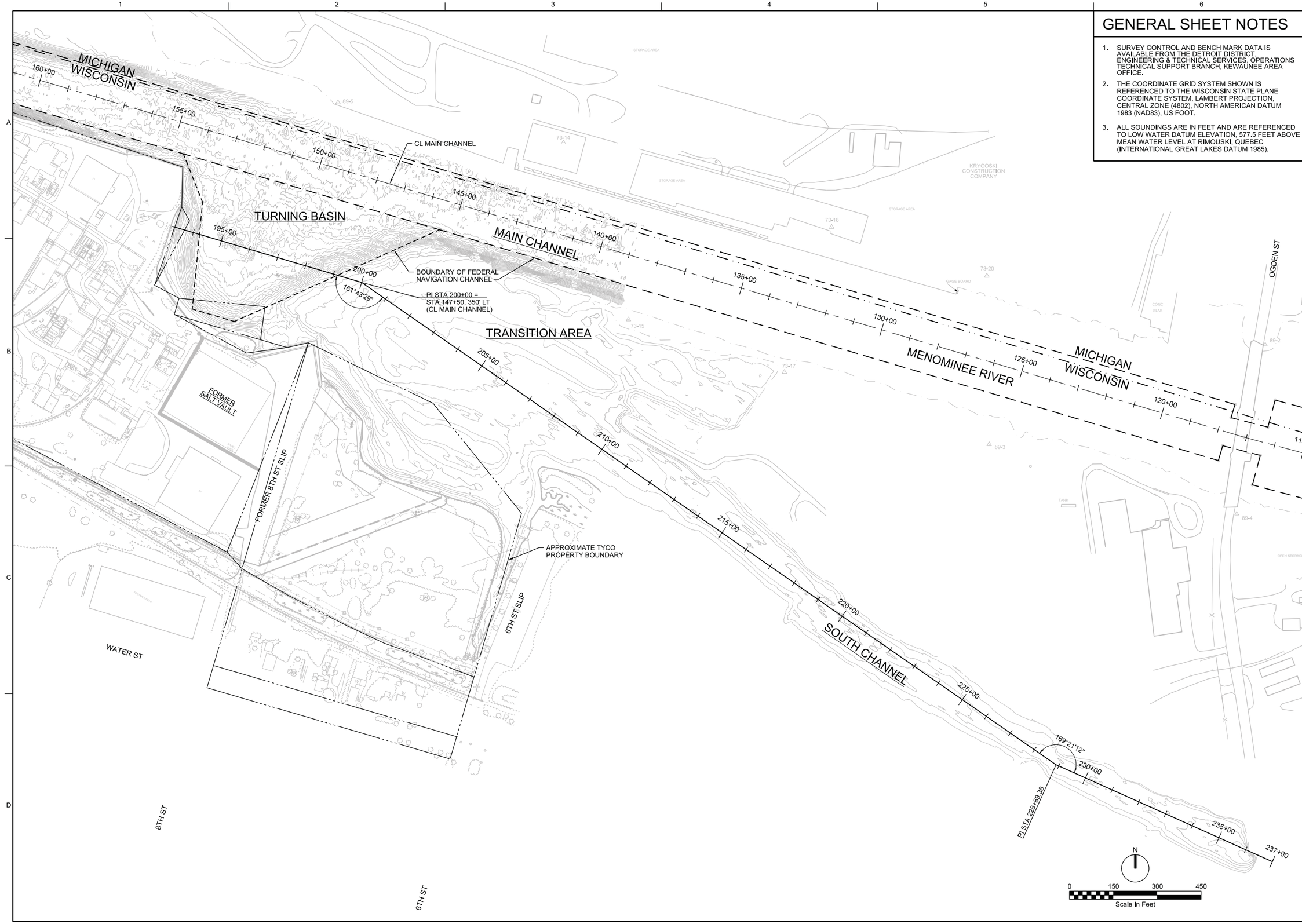
PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.
©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 001-G-0006_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:16:46 PM

GENERAL SHEET NOTES

1. SURVEY CONTROL AND BENCH MARK DATA IS AVAILABLE FROM THE DETROIT DISTRICT, ENGINEERING & TECHNICAL SERVICES, OPERATIONS TECHNICAL SUPPORT BRANCH, KEWAUNEE AREA OFFICE.
2. THE COORDINATE GRID SYSTEM SHOWN IS REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, CENTRAL ZONE (4802), NORTH AMERICAN DATUM 1983 (NAD83), US FOOT.
3. ALL SOUNDINGS ARE IN FEET AND ARE REFERENCED TO LOW WATER DATUM ELEVATION, 577.5 FEET ABOVE MEAN WATER LEVEL AT RIMOUSKI, QUEBEC (INTERNATIONAL GREAT LAKES DATUM 1985).



NO.	DATE	REVISION	CHK	APVD
DSGN	DR	JM HOLMQUIST	BY	APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CIVIL

EXISTING SITE PLAN

CH2MHILL®

1"=150'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

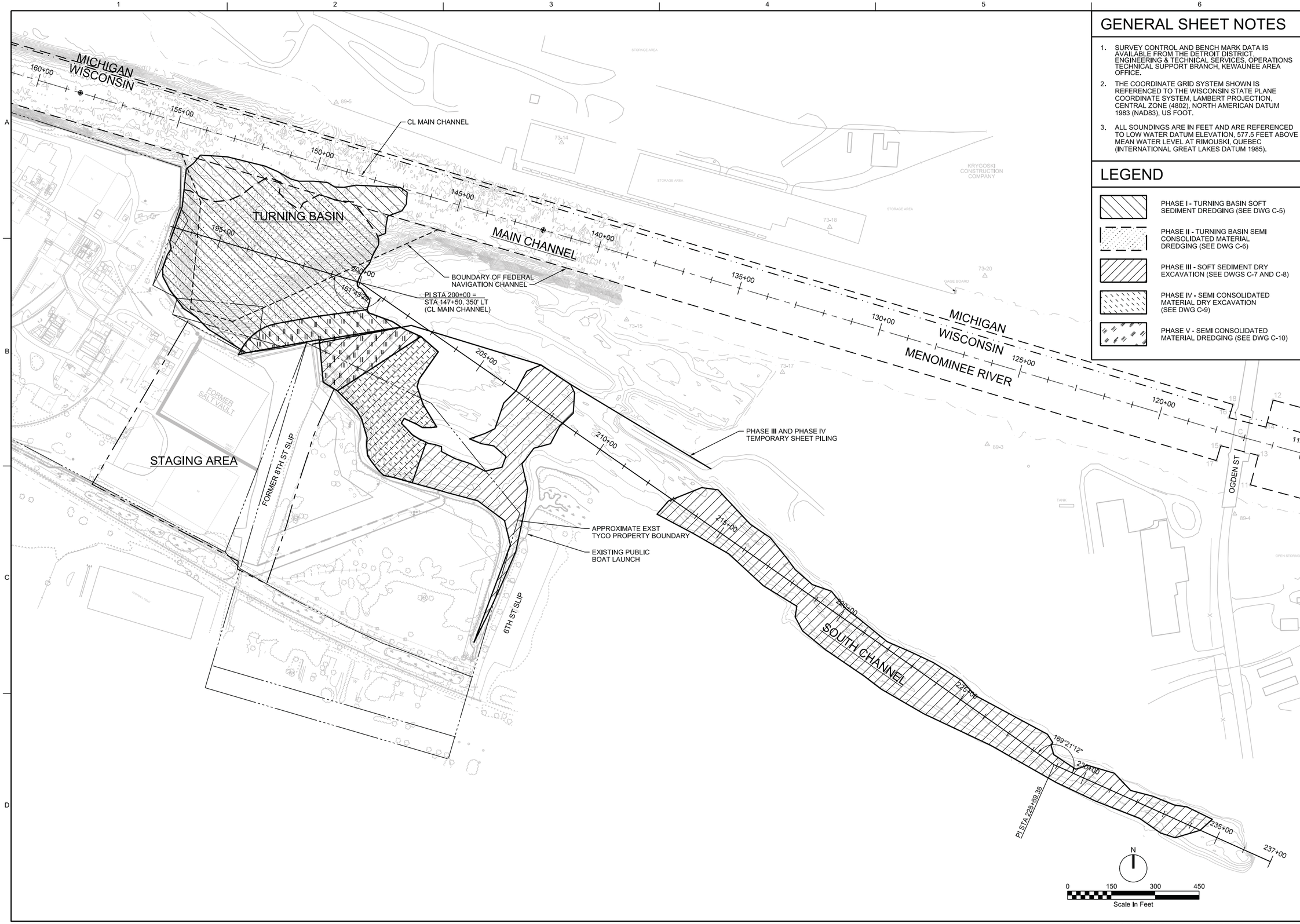
DATE	2012/01/31
PROJ	425171
DWG	C-1
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2101_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:17:04 PM



GENERAL SHEET NOTES

1. SURVEY CONTROL AND BENCH MARK DATA IS AVAILABLE FROM THE DETROIT DISTRICT, ENGINEERING & TECHNICAL SERVICES, OPERATIONS TECHNICAL SUPPORT BRANCH, KEWAUNEE AREA OFFICE.
2. THE COORDINATE GRID SYSTEM SHOWN IS REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, CENTRAL ZONE (4802), NORTH AMERICAN DATUM 1983 (NAD83), US FOOT.
3. ALL SOUNDINGS ARE IN FEET AND ARE REFERENCED TO LOW WATER DATUM ELEVATION, 577.5 FEET ABOVE MEAN WATER LEVEL AT RIMOUSKI, QUEBEC (INTERNATIONAL GREAT LAKES DATUM 1985).

LEGEND

- PHASE I - TURNING BASIN SOFT SEDIMENT DREDGING (SEE DWG C-5)
- PHASE II - TURNING BASIN SEMI CONSOLIDATED MATERIAL DREDGING (SEE DWG C-6)
- PHASE III - SOFT SEDIMENT DRY EXCAVATION (SEE DWGS C-7 AND C-8)
- PHASE IV - SEMI CONSOLIDATED MATERIAL DRY EXCAVATION (SEE DWG C-9)
- PHASE V - SEMI CONSOLIDATED MATERIAL DREDGING (SEE DWG C-10)

NO.	DATE	REVISION	BY	APVD
DSGN		DR	CHK	APVD
		JM HOLMQUIST		

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
OVERALL DREDGING / EXCAVATION PLAN

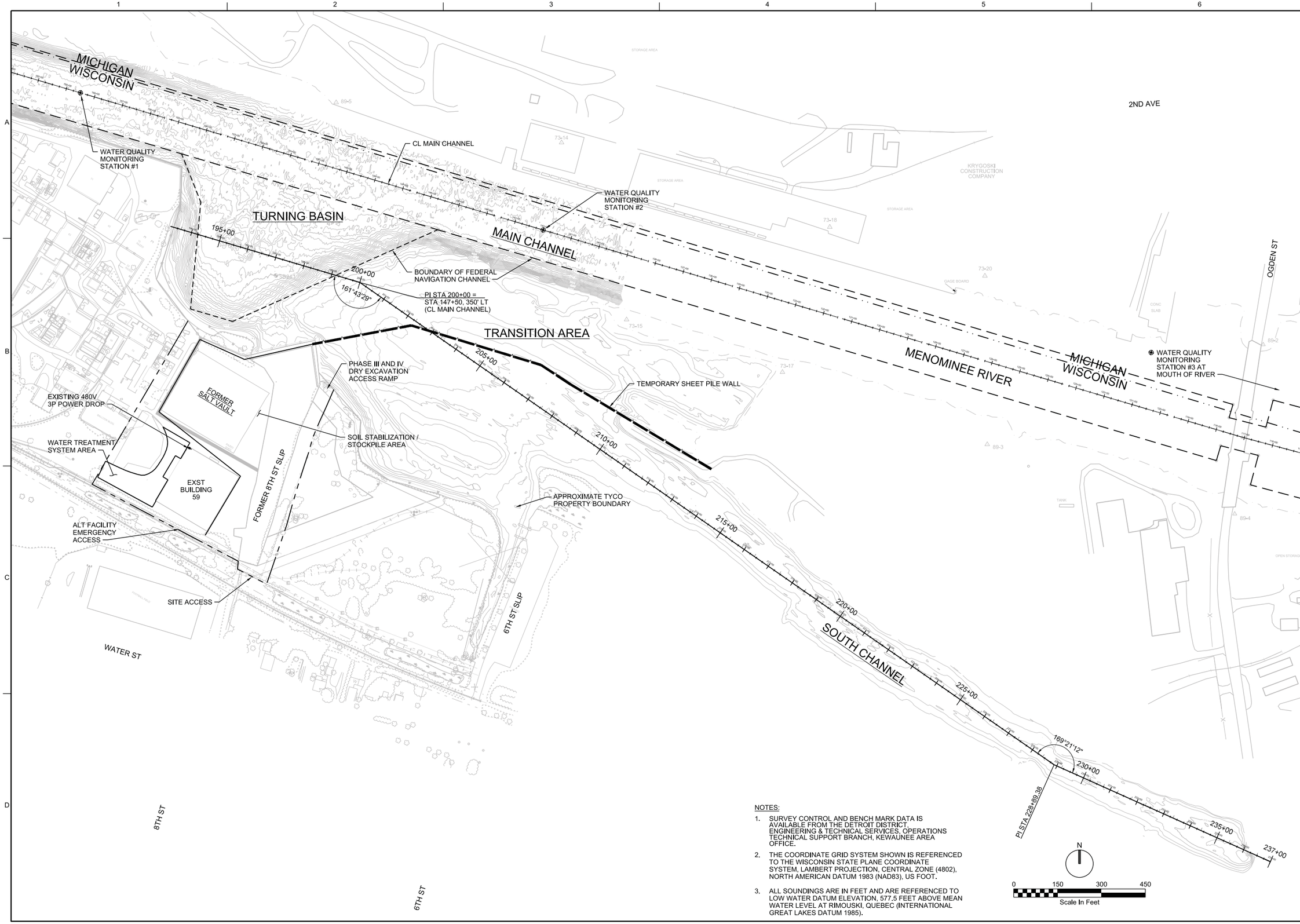
1"=150'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-2
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.
©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2302_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:17:21 PM



NOTES:

1. SURVEY CONTROL AND BENCH MARK DATA IS AVAILABLE FROM THE DETROIT DISTRICT, ENGINEERING & TECHNICAL SERVICES, OPERATIONS TECHNICAL SUPPORT BRANCH, KEWAUNEE AREA OFFICE.
2. THE COORDINATE GRID SYSTEM SHOWN IS REFERENCED TO THE WISCONSIN STATE PLANE COORDINATE SYSTEM, LAMBERT PROJECTION, CENTRAL ZONE (4802), NORTH AMERICAN DATUM 1983 (NAD83), US FOOT.
3. ALL SOUNDINGS ARE IN FEET AND ARE REFERENCED TO LOW WATER DATUM ELEVATION, 577.5 FEET ABOVE MEAN WATER LEVEL AT RIMOUSKI, QUEBEC (INTERNATIONAL GREAT LAKES DATUM 1985).

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
OVERALL TEMPORARY FACILITIES PLAN

1"=150'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-3
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: PLOT DATE: 10/10/2011 PLOT TIME: 12:17:46 PM

GENERAL SHEET NOTES

1.

MICHIGAN
WISCONSIN

MENOMINEE RIVER

157+00 156+00 155+00 154+00 153+00 152+00 151+00 150+00 149+00 148+00 147+00 146+00 145+00 144+00

LIMIT OF PHASE I
SOFT SEDIMENT REMOVAL

TURNING BASIN

194+00 195+00 196+00 197+00 198+00 199+00 200+00 201+00 202+00 203+00 204+00

SCREEN HOUSE

RAZED

0 50 100 150
Scale In Feet

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
PHASE I
TURNING BASIN
SOFT SEDIMENT DREDGING PLAN

1"=50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-5
SHEET	of

PRELIMINARY DESIGN

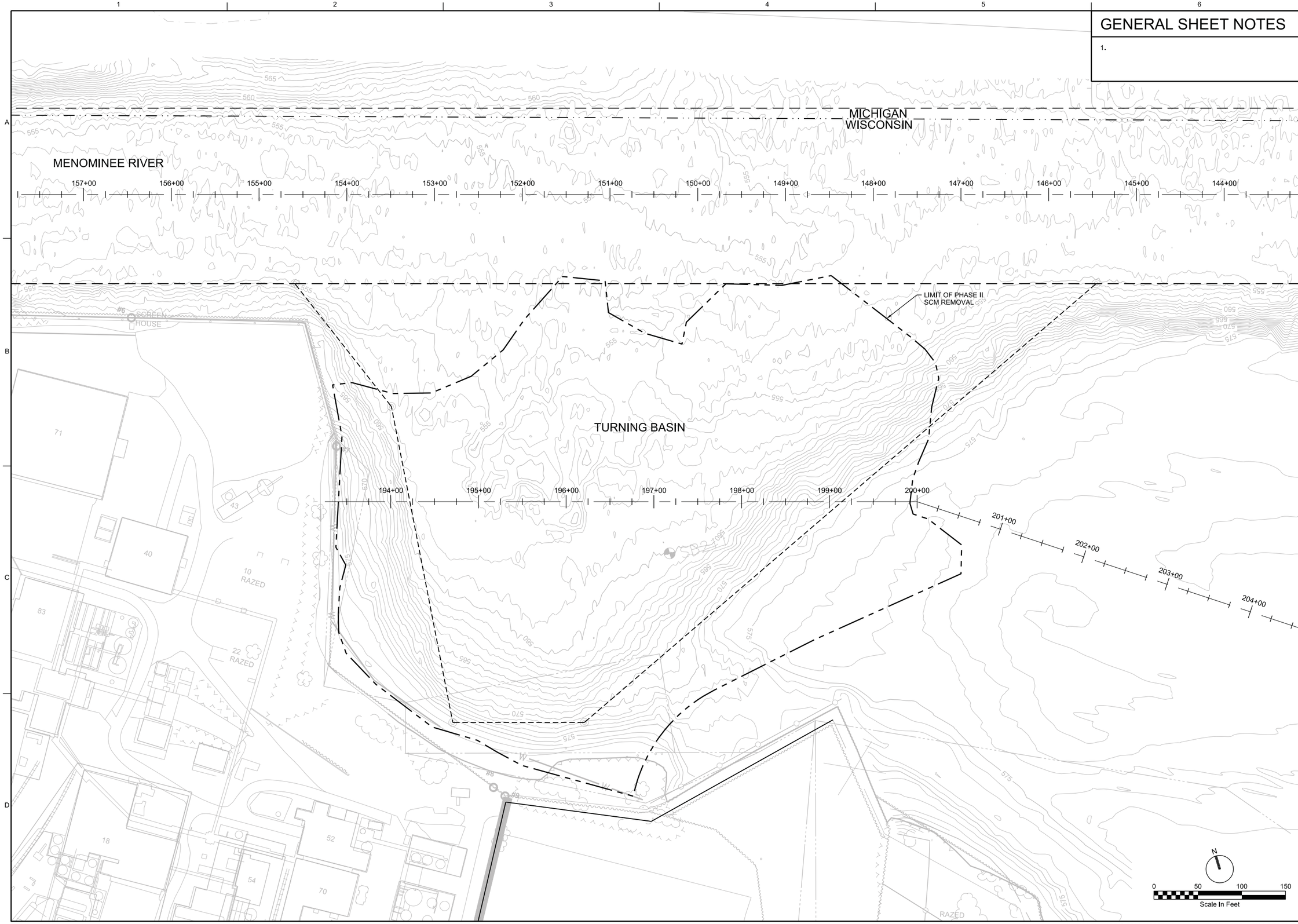
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2305_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:18:08 PM

GENERAL SHEET NOTES

1.



NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

©CH2M HILL 2011. ALL RIGHTS RESERVED.

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
PHASE II
TURNING BASIN SEMI-CONSOLIDATED
MATERIAL DREDGING PLAN

1"=50'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-6
SHEET	of

PRELIMINARY DESIGN

FILENAME: 005-C-2306_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:18:29 PM

TURNING BASIN

TEMPORARY SHEET PILING

198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212

MATCH LINE SEE DWG C-8

LIMIT OF PHASE III SOFT SEDIMENT REMOVAL

STABILIZATION STAGING AREA

RAZED

RAZED SHED

SIXTH STREET SLIP

PARKING

575

Scale In Feet: 0 50 100 150

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
PHASE III
SOFT SEDIMENT DRY
EXCAVATION PLAN

1"=50'

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

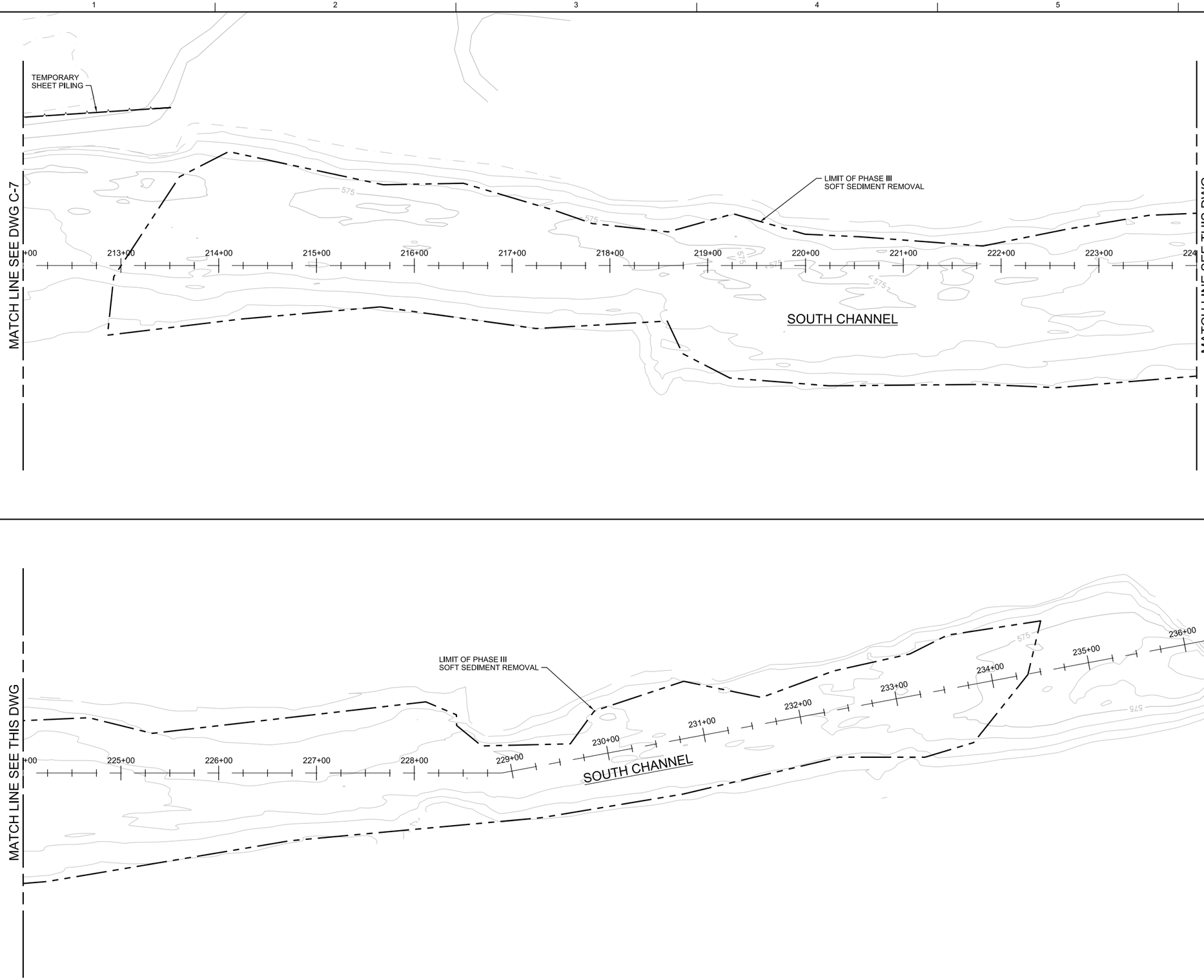
DATE	2012/01/31
PROJ	425171
DWG	C-7
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2307_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:18:45 PM



NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
PHASE III
SOFT SEDIMENT DRY EXCAVATION PLAN

1"=50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-8
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.
©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2308_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:19:12 PM

GENERAL SHEET NOTES

1.

TURNING BASIN

196+00 197+00 198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00

TEMPORARY SHEET PILING

LIMIT OF PHASE IV SCM REMOVAL

SOIL STABILIZATION AREA

RAZED

RAZED SHED

59

565 570 575 580

0 50 100 150
Scale In Feet

N

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
PHASE IV
SEMI-CONSOLIDATED MATERIAL
DRY EXCAVATION PLAN

1"=50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE
PROJ 425171
DWG C-9
SHEET of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2309_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:19:32 PM

GENERAL SHEET NOTES

1.

TURNING BASIN

194+00 195+00 196+00 197+00 198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00

REMOVE TEMPORARY SHEET PILING

LIMIT OF PHASE V SCM REMOVAL

SOIL STABILIZATION AREA

RAZED

RAZED SHED

0 50 100 150
Scale In Feet

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD
DR JM HOLMQUIST
CHK
APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CIVIL
PHASE V
SEMI-CONSOLIDATED MATERIAL
DREDGING PLAN

CH2MHILL®

1"=50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-10
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2310_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:19:51 PM

GENERAL SHEET NOTES

1.

TURNING BASIN

194+00 195+00 196+00 197+00 198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00

SLOPE SCM AT 4:0 OR FLATTER

A C-14

SOIL STABILIZATION AREA

RAZED

RAZED SHED

0 50 100 150
Scale In Feet

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR JM HOLMQUIST | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
PHASE VI
CHEMICAL ISOLATION LAYER
PLAN

1"=50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

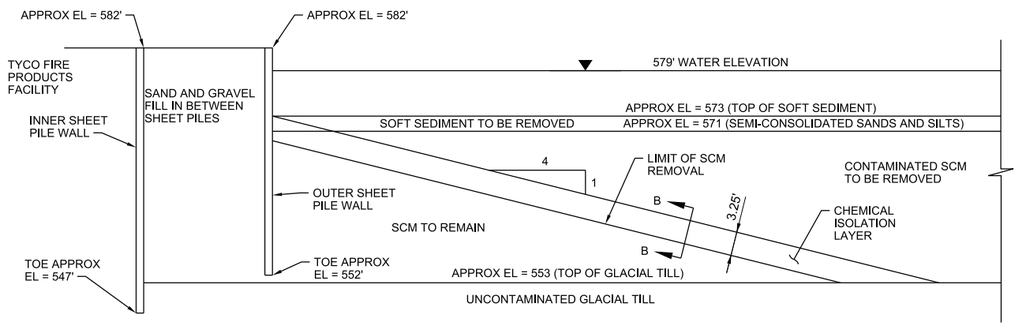
DATE	2012/01/31
PROJ	425171
DWG	C-11
SHEET	of

PRELIMINARY DESIGN

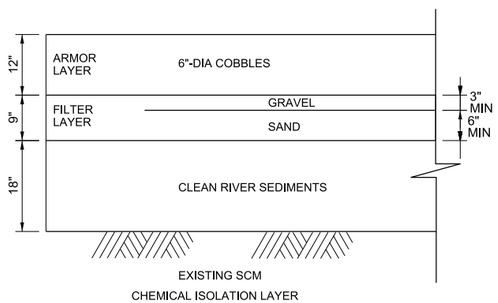
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.

©CH2M HILL 2011. ALL RIGHTS RESERVED.

FILENAME: 005-C-2311_425171.dgn PLOT DATE: 10/10/2011 PLOT TIME: 12:20:11 PM



A SECTION
1" = 10' (HORZ AND VERT)
C-11



B SECTION
NTS

NO.	DATE	REVISION	BY	APVD

DSGN DJ ALLARD | DR BD HAUGHT | CHK | APVD

MENOMINEE RIVER
SEDIMENT REMOVAL DESIGN
TYCO FIRE PRODUCTS LP
MARINETTE, WISCONSIN

CH2MHILL®

CIVIL
CHEMICAL ISOLATION LAYER SECTIONS AND DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	2012/01/31
PROJ	425171
DWG	C-14
SHEET	of

PRELIMINARY DESIGN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2MHILL.
©CH2M HILL 2011. ALL RIGHTS RESERVED.

Appendix D
Initial Stabilization Results

Tyco S/S
2010 Sample Data

Sample 1 - Soft Sediment Composite Sample
Client Sample ID: Tyco Sample 1 Sample ID: K108801
Date Collected: 1/17/2011 (date sent to lab)

VOCs by SW8260 (detects only)

Acetone	218	mg/kg
2-Butanone (MEK)	62.5	mg/kg
Toluene	2.59	mg/kg
Ethylbenzene	4.26	mg/kg
m,p-Xylene	20.3	mg/kg
o-Xylene	56.4	mg/kg
p-Isopropyltoluene	89.8	mg/kg
1,2-Dichlorobenzene	4.73	mg/kg
Naphthalene	2.39	mg/kg

SVOCs by SW8270 (detects only)
None

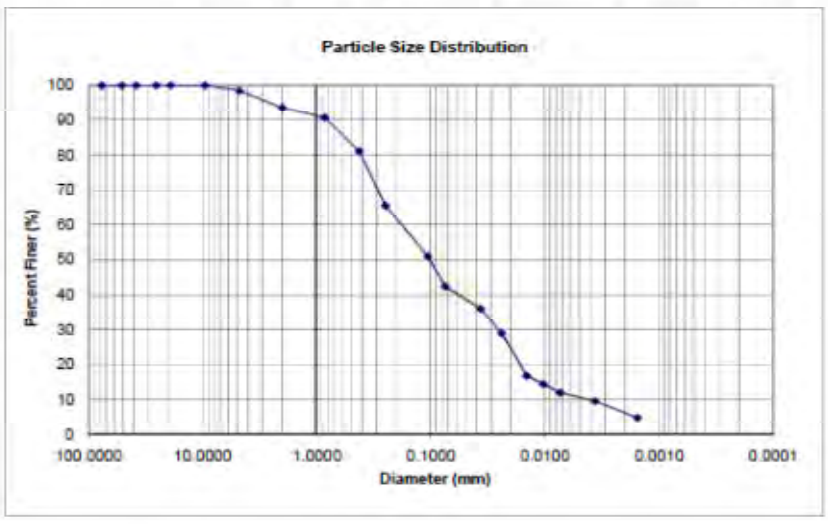
Arsenic by SW6010 2030 mg/kg

Total Organic Carbon by LYDKHN 39700 mg/kg

Particle Size Distribution

Analyst	LM
Date	1/26/2011
SDG	K108801
Client ID	Tyco Sample 1
Sample Mass (g)	99.2

	Sieve	Sieve Size	Weight Retained	Weight Retained	Cumulative Coarser	Cumulative Finer
Sieve Analysis	#	mm	g	%	%	%
	3"	76.20	0.0	0.00	0.00	100.00
	2"	50.80	0.0	0.00	0.00	100.00
	1.5"	38.10	0.0	0.00	0.00	100.00
	1"	25.40	0.0	0.00	0.00	100.00
	3/4"	19.05	0.0	0.00	0.00	100.00
	3/8"	9.525	0.0	0.00	0.00	100.00
	4	4.750	1.5	1.51	1.51	98.49
	10	2.000	4.9	4.94	6.45	93.55
	20	0.850	2.9	2.91	9.36	90.64
	40	0.425	9.5	9.56	18.92	81.08
	60	0.250	15.4	15.52	34.45	65.55
	140	0.106	14.4	14.55	49.00	51.00
	200	0.075	8.5	8.59	57.59	42.41
		Effective Diameter				Cumulative Finer
Hydrometer Analysis		mm				%
		0.037				36.07
		0.024				28.86
		0.014				16.83
		0.010				14.43
		0.007				12.02
		0.004				9.62
		0.002				4.81



Atterberg Limits by ASTM D4318
Liquid Limit: 12 Plastic Limit: 12
Plasticity Index: NP

Moisture Content by SM2540G: 57.8 %

Sample 2 - Semi-consolidated Material Composite Sample
Client Sample ID: Tyco Sample 1 Sample ID: K108801
Date Collected: 1/17/2011 (date sent to lab)

VOCs by SW8260 (detects only)
Acetone 12.2 mg/kg

SVOCs by SW8270 (detects only)
None

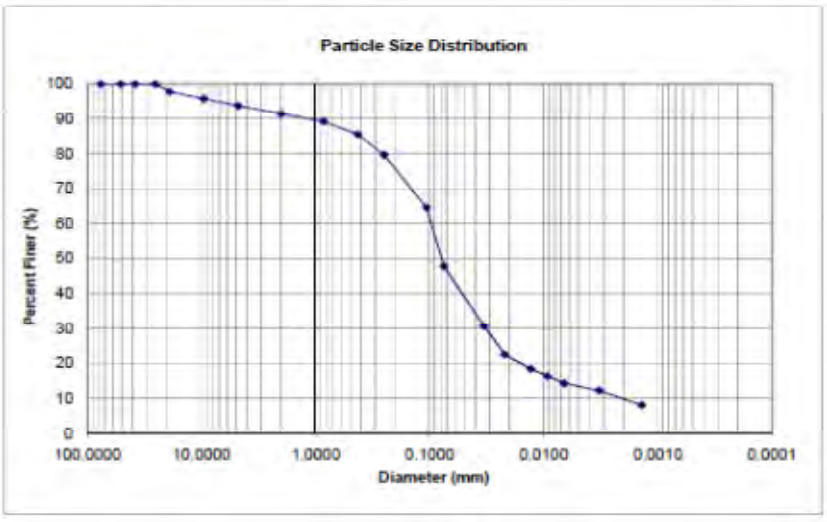
Arsenic by SW6010 167 mg/kg

Total Organic Carbon by LYDKHN 7240 mg/kg

Particle Size Distribution

Analyst	LM
Date	1/26/2011
SDG	K108802
Client ID	Tyco Sample 2
Sample Mass (g)	468.7

	Sieve	Sieve Size	Weight Retained	Weight Retained	Cumulative Coarser	Cumulative Finer
Sieve Analysis	#	mm	g	%	%	%
	3"	76.20	0.0	0.00	0.00	100.00
	2"	50.80	0.0	0.00	0.00	100.00
	1.5"	38.10	0.0	0.00	0.00	100.00
	1"	25.40	0.0	0.00	0.00	100.00
	3/4"	19.05	10.2	2.18	2.18	97.82
	3/8"	9.525	9.4	2.01	4.18	95.82
	4	4.750	9.6	2.05	6.23	93.77
	10	2.000	11.0	2.35	8.58	91.42
	20	0.850	1.8	2.30	10.87	89.13
	40	0.425	2.9	3.70	14.57	85.43
	60	0.250	4.6	5.87	20.44	79.56
	140	0.106	11.8	15.05	35.48	64.52
	200	0.075	78.3	16.70	52.18	47.82
		Effective Diameter				Cumulative Finer
Hydrometer Analysis		mm				%
		0.033				30.58
		0.022				22.42
		0.013				18.35
		0.009				16.31
		0.007				14.27
		0.003				12.23
		0.001				8.15



Atterberg Limits by ASTM D4318
Liquid Limit: 44 Plastic Limit: 26
Plasticity Index: 18

Moisture Content by SM2540G: 15.2 %

Tyco S/S
Setup of 2010 Treatability Tests

Mix Name	Mix Description	Setup Date	Sample Weight g	Amendment 1	Amendment 1 Weight g	Amendment 2	Amendment 2 Weight g
Group 1 - Cement Requirement for Sample 1							
M1	Control	8/17/2010	806.0	--	--	--	--
M2	2.5% PC	8/17/2010	652.0	Portland Cement	16.30	--	--
M3	5.0% PC	8/17/2010	609.0	Portland Cement	30.45	--	--
M4	7.5% PC	8/17/2010	622.0	Portland Cement	46.70	--	--
M4B	10% PC	8/25/2010	600.7	Portland Cement	60.06	--	--
M4C	12.5% PC	8/25/2010	601.0	Portland Cement	75.09	--	--
Group 2 - Alternative Cementicious Reagents for Sample 1							
M5	7% PC, 3% LF FA	8/25/2010	600.2	Portland Cement	42.00	LaFarge Fly Ash	18.03
M6	5% PC, 5% LF FA	8/25/2010	600.6	Portland Cement	30.12	LaFarge Fly Ash	30.02
M7	7% PC, 3% LKD	8/25/2010	600.3	Portland Cement	42.06	Mintek Lime Kiln Dust	18.01
M8	5% PC, 5% LKD	8/25/2010	600.1	Portland Cement	30.07	Mintek Lime Kiln Dust	30.04
M9	7% PC, 3% BA	8/25/2010	600.7	Portland Cement	42.05	Mintek Bed Ash	18.03
M10	5% PC, 5% BA	8/25/2010	600.7	Portland Cement	30.10	Mintek Bed Ash	30.21
M11	7% PC, 3% RFA	8/25/2010	600.8	Portland Cement	42.07	Mintek Reactive Fly Ash	18.06
M12	5% PC, 5% RFA	8/25/2010	600.3	Portland Cement	30.12	Mintek Reactive Fly Ash	30.06

Mix Name	Mix Description	Setup Date	Sample Weight g	Amendment 1	Amendment 1 Weight g	Amendment 2	Amendment 2 Weight g	Amendment 3	Amendment 3 Weight g
Group IIB - Alternative Cementicious Reagents for Sample 1									
M13	10% BA	12/1/2010	1000.6	Mintek Bed Ash	100.16	--	--	--	--
M14	13% BA	12/3/2010	2000.1	Mintek Bed Ash	260.23	--	--	--	--
M15	16% BA	12/1/2010	999.7	Mintek Bed Ash	160.54	--	--	--	--
M16	10% BA, 3% PC	12/1/2010	1000.4	Mintek Bed Ash	100.12	Portland Cement	30.00	--	--
M17	10% RFA	12/1/2010	1000.0	Mintek Fly Ash	100.29	--	--	--	--
M18	13% RFA	12/3/2010	1000.2	Mintek Fly Ash	130.00	--	--	--	--
M19	16% RFA	12/3/2010	1001.3	Mintek Fly Ash	160.52	--	--	--	--
M20	10% RFA, 3% PC	12/3/2010	1000.3	Mintek Fly Ash	100.26	Portland Cement	30.01	--	--
Group III - Reagents Providing Low Leachability for Sample 1									
M21	13% BA, 24 FST, 0.75% HYP	12/6/2010	1001.6	Mintek Bed Ash	130.13	60% Fe2(SO4)3	24 mL	68% Ca(ClO)2	7.48
M22	13% BA, 24 FST, 1.5% HYP	12/6/2010	2001.0	Mintek Bed Ash	260.61	60% Fe2(SO4)3	48 mL	68% Ca(ClO)3	29.92
M23	13% BA, 12 FST, 1.5% HYP	12/6/2010	1000.9	Mintek Bed Ash	130.47	60% Fe2(SO4)3	12 mL	68% Ca(ClO)4	15.13
M24	13% BA, 48 FST, 1.5%HYP	12/6/2010	1000.8	Mintek Bed Ash	130.07	60% Fe2(SO4)3	48 mL	68% Ca(ClO)5	15.11
M25	13% BA, 24 FST, 3% HYP	12/7/2010	1000.2	Mintek Bed Ash	130.21	60% Fe2(SO4)3	24 mL	68% Ca(ClO)6	30.20

*Note: "FST" Denotes 60% Fe2(SO4)3, units are mL/kg soil
"HYP" Denotes 68% Ca(ClO)2

Mix Name	Mix Description	Setup Date	Sample Weight g	Amendment 1	Amendment 1 Added mL	Amendment 2	Amendment 2 Weight g
Group V - Reagent Evaluation for Sample 2							
M29	Untreated	12/8/2010	800.0	60% Fe2(SO4)3	0 mL	Ca(ClO)2	--
M30	8 FST, 1% HYP	12/8/2010	1600.6	60% Fe2(SO4)3	12.8 mL	Ca(ClO)2	8.00
M31	8 FST, 0%HYP	12/8/2010	799.9	60% Fe2(SO4)3	6.4 mL	Ca(ClO)2	--
M32	8 FST, 2% HYP	12/8/2010	800.3	60% Fe2(SO4)3	6.4 mL	Ca(ClO)2	16.03
M33	4 FST, 0% HYP	12/8/2010	800.0	60% Fe2(SO4)3	3.2 mL	Ca(ClO)2	--
M34	16 FST, 0% HYP	12/8/2010	800.4	60% Fe2(SO4)3	12.8 mL	Ca(ClO)2	--

*Note: "FST" Denotes 60% Fe2(SO4)3, units are mL/kg soil
"HYP" Denotes 68% Ca(ClO)2

Tyco S/S

2010 Treatability Testing Results - Group I

Pocket Penetrometer Testing

Mix ID	Mix Description	Pocket Penetrometer (tsf)		
		Day 2	Day 4	Day 7
Group 1				
M1	Control	0	0	0
M2	2.5% PC	0	0	0
M3	5.0% PC	0	0	0.25
M4	7.5% PC	0	0.5	0.5
M4B	10% PC	0.5	0.75	1.0
M4C	12.5% PC	1.5	3.0	3.25
Group 2				
M5	7% PC, 3% LF FA	0	0.25	0.25
M6	5% PC, 5% LF FA	0	0.25	0.25
M7	7% PC, 3% LKD	0	0.25	0.25
M8	5% PC, 5% LKD	0	0	0
M9	7% PC, 3% BA	0.5	1.25	1.75
M10	5% PC, 5% BA	0.5	0.75	0.75
M11	7% PC, 3% RFA	0.75	1.5	1.75
M12	5% PC, 5% RFA	1.0	1.5	1.75

Paint Filter Testing

Mix ID	Mix Description	Paint Filter (Pass/Fail)	
		Day 2	Day 7
Group 1			
M1	Control	F	F
M2	2.5% PC	F	F
M3	5.0% PC	F	F
M4	7.5% PC	F	F
M4B	10% PC	F	F
M4C	12.5% PC	F	F
Group 2			
M5	7% PC, 3% LF FA	F	F
M6	5% PC, 5% LF FA	F	F
M7	7% PC, 3% LKD	F	F
M8	5% PC, 5% LKD	F	F
M9	7% PC, 3% BA	F	F
M10	5% PC, 5% BA	F	F
M11	7% PC, 3% RFA	F	F
M12	5% PC, 5% RFA	F	F

7 Day Cure Testing

Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight	TCLP Extraction Fluid	TCLP-As	pH
		psi	psi	%	lb/ft3	#	mg/L	units
Group 1								
M1	Control	--	0	56.81	--	1	6.8	7.09
M2	2.5% PC	1.4	0	55.06	90.57	1	13.8	11.05
M3	5.0% PC	4.6	3.5	54.13	90.92	1	29.4	12.08
M4	7.5% PC	6.7	6.9	51.85	87.85	1	27.9	12.57
M4B	10% PC	12.3	13.9	49.97	88.92	1	24.1	12.78
M4C	12.5% PC	27.4	45.1	46.84	90.14	2	15.6	12.81
Group 2								
M5	7% PC, 3% LF FA	8.6	3.5	50.74	92.41	2	4.6	12.50
M6	5% PC, 5% LF FA	6.4	3.5	49.49	93.21	1	21.6	12.18
M7	7% PC, 3% LKD	7.8	3.5	50.55	94.00	2	10.3	12.54
M8	5% PC, 5% LKD	6.4	0	50.51	92.44	2	9.0	12.62
M9	7% PC, 3% BA	17.8	24.3	50.34	90.41	1	22.7	12.64
M10	5% PC, 5% BA	12.0	10.4	50.52	88.19	2	7.5	12.63
M11	7% PC, 3% RFA	17.1	24.3	51.04	85.89	1	23.7	12.52
M12	5% PC, 5% RFA	17.1	24.3	50.42	86.99	2	6.5	12.50

Tyco S/S

2010 Treatability Testing Results - Groups II-B and III

Pocket Penetrometer Testing

Mix ID	Mix Description	Pocket Penetrometer (tsf)		
		Day 4	Day 7	Day 11
Group II-B				
M13	10% BA	0.25	0.25	0.5
M14	13% BA	1.0	1.0	1.25
M15	16% BA	0.75	1.5	1.5
M16	10% BA, 3% PC	0.5	0.75	1.25
M17	10% RFA	0.5	0.5	1.0
M18	13% RFA	0.5	1.0	1.0
M19	16% RFA	0.5	0.75	1.25
M20	10% RFA, 3% PC	1.0	1.25	1.5
Group III				
M21	13% BA, 24 FST, 0.75% HYP	1.0	1.0	1.0
M22	13% BA, 24 FST, 1.5% HYP	0.75	1.0	1.25
M23	13% BA, 12 FST, 1.5% HYP	0.75	1.0	0.75
M24	13% BA, 48 FST, 1.5%HYP	0.5	1.0	1.0
M25	13% BA, 24 FST, 3% HYP	0.5	0.75	0.75

Paint Filter Testing

Mix ID	Mix Description	Paint Filter (Pass/Fail)
		Day 7
Group II-B		
M13	10% BA	PASS
M14	13% BA	PASS
M15	16% BA	PASS
M16	10% BA, 3% PC	PASS
M17	10% RFA	PASS
M18	13% RFA	PASS
M19	16% RFA	PASS
M20	10% RFA, 3% PC	PASS
Group III		
M21	13% BA, 24 FST, 0.75% HYP	PASS
M22	13% BA, 24 FST, 1.5% HYP	PASS
M23	13% BA, 12 FST, 1.5% HYP	PASS
M24	13% BA, 48 FST, 1.5%HYP	PASS
M25	13% BA, 24 FST, 3% HYP	PASS

4 Day UCS Testing

Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight
		psi	psi	%	lb/ft3
Group II-B					
M14	13% BA	8.0	13.9	49.08	93.7
Group III					
M22	13% BA, 24 FST, 1.5% HYP	8.0	13.9	49.02	87.9

7 Day Cure Testing

Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight	TCLP Extraction Fluid	TCLP-As	
		psi	psi	%	lb/ft3	#	mg/L	
Group II-B								
M13	10% BA	6.4	3.5	51.38	91.0	2	8.12	
M14	13% BA	8.8	13.9	49.08	89.4	2	6.83	
M15	16% BA	8.0	20.8	48.75	87.7	2	12.7	
M16	10% BA, 3% PC	9.5	10.4	49.44	89.1	2	10.6	
M17	10% RFA	5.1	6.9	52.04	89.9	2	7.28	
M18	13% RFA	8.3	13.9	50.48	94.1	2	6.81	
M19	16% RFA	9.5	10.4	49.11	93.5	2	5.83	
M20	10% RFA, 3% PC	11.1	17.4	49.99	90.8	2	4.69	
Group III								
M21	13% BA, 24 FST, 0.75% HYP	0.0	13.9	49.43	n/a	2	2.10	* Sample crumbled
M22	13% BA, 24 FST, 1.5% HYP	0.0	13.9	48.53	n/a	2	1.97	* Sample crumbled
M23	13% BA, 12 FST, 1.5% HYP	6.4	13.9	47.97	88.2	2	3.30	
M24	13% BA, 48 FST, 1.5%HYP	3.2	13.9	49.10	84.8	2	0.93	
M25	13% BA, 24 FST, 3% HYP	3.2	10.4	50.35	80.8	2	1.73	

11 Day UCS Testing

Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight
		psi	psi	%	lb/ft3
Group II-B					
M14	13% BA	8.0	17.4		87.0
Group III					
M22	13% BA, 24 FST, 1.5% HYP	8.0	17.4		81.3

Tyco S/S

2010 Treatability Testing Results - Group V

Pocket Penetrometer Testing

Mix ID	Mix Description	Pocket Penetrometer (tsf)		
		Day 4	Day 7	Day 11
Group V				
M29	Untreated	2.5	3.0	3.0
M30	8 FST, 1% HYP	0.0	0.75	3.0
M31	8 FST, 0%HYP	1.0	1.5	4.25
M32	8 FST, 2% HYP	0.0	0.0	1.0
M33	4 FST, 0% HYP	0.5	1.5	4.0
M34	16 FST, 0% HYP	0.5	1.0	4.25

Paint Filter Testing

Mix ID	Mix Description	Paint Filter (Pass/Fail)
		Day 7
Group V		
M29	Untreated	PASS
M30	8 FST, 1% HYP	PASS
M31	8 FST, 0%HYP	PASS
M32	8 FST, 2% HYP	PASS
M33	4 FST, 0% HYP	PASS
M34	16 FST, 0% HYP	PASS

4 Day UCS Testing

Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight
		psi	psi	%	lb/ft3
Group V					
M30	8 FST, 1% HYP	0.0	34.7	10.42	129.0

7 Day Cure Testing

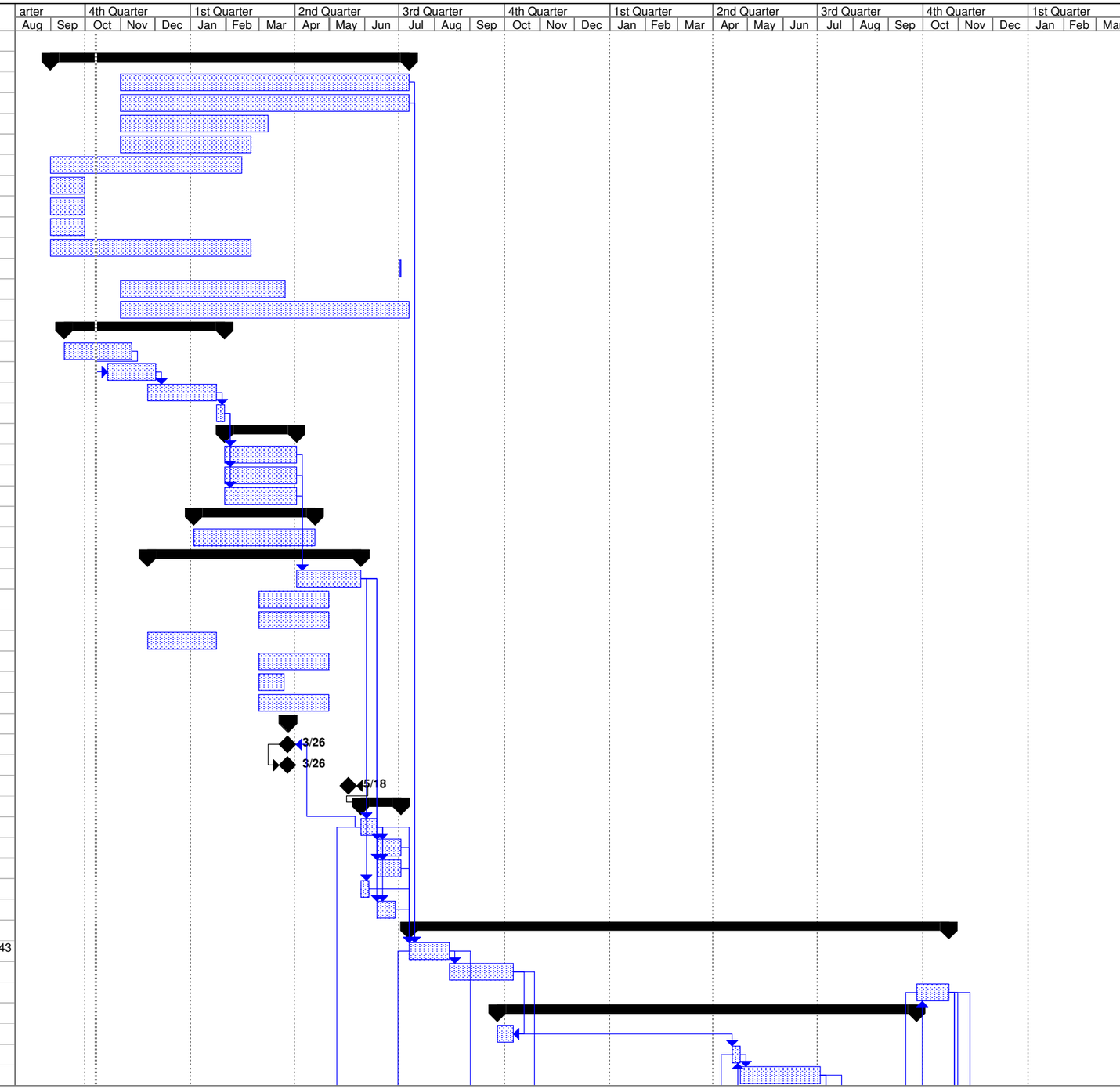
Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight	TCLP Extraction Fluid	TCLP-As
		psi	psi	%	lb/ft3	#	mg/L
Group V							
M29	Untreated	6.4	41.7	15.42	134.3	2	0.34
M30	8 FST, 1% HYP	8.0	10.4	10.91	131.9	2	<0.25
M31	8 FST, 0%HYP	12.7	20.8	11.86	136.4	2	<0.25
M32	8 FST, 2% HYP	3.2	0.0	11.84	119.3	2	<0.25
M33	4 FST, 0% HYP	8.0	20.8	11.38	146.9	2	<0.25
M34	16 FST, 0% HYP	9.5	13.9	12.46	138.2	2	0.28

11 Day UCS Testing

Mix ID	Mix Description	Unconfined Compressive Strength	Pocket Penetrometer	Percent Moisture	Bulk Unit Weight
		psi	psi	%	lb/ft3
Group V					
M30	8 FST, 1% HYP	9.5	41.7		124.2

Appendix E
Remediation Schedule

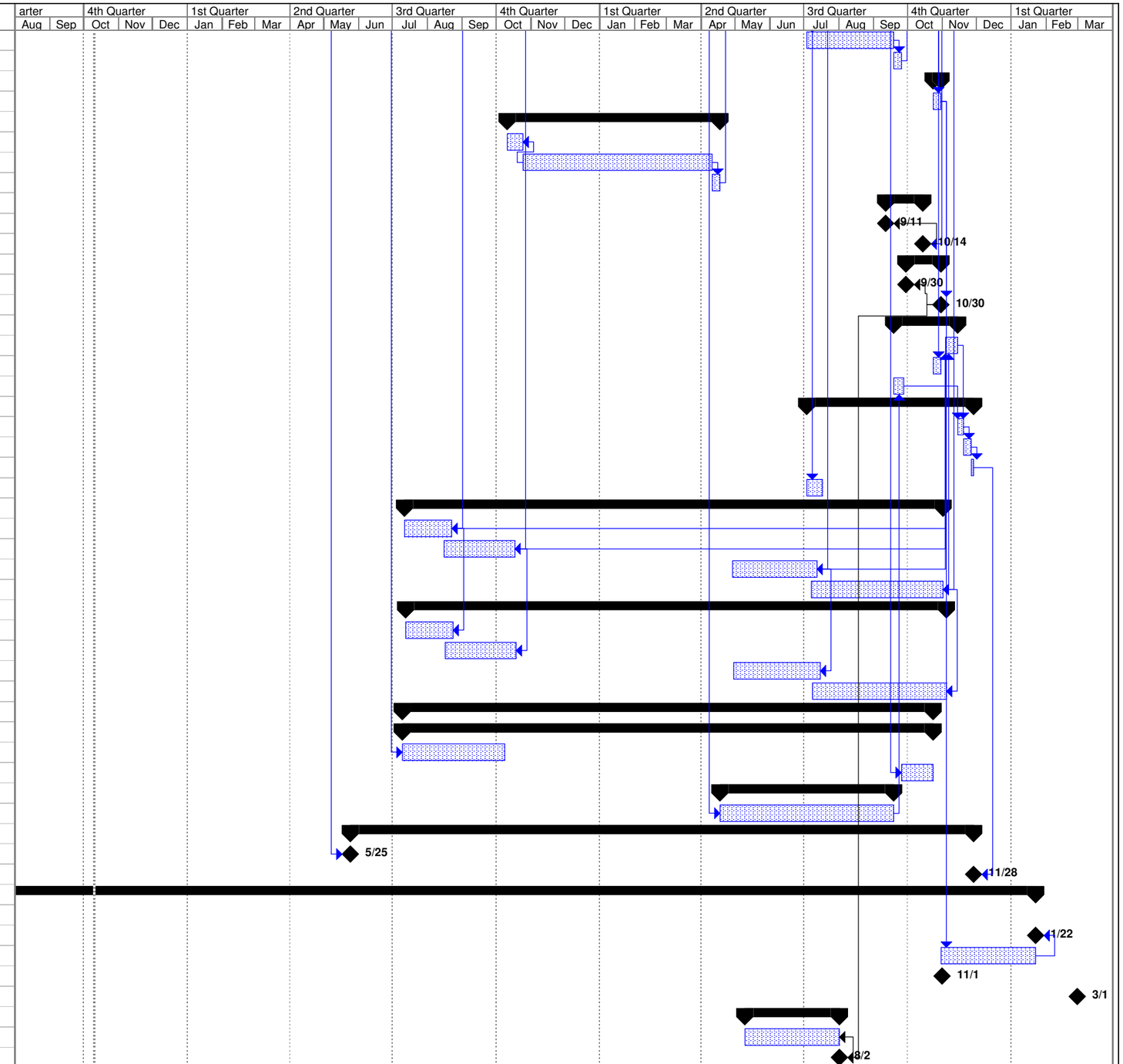
ID	Task Name	Duration	Start	Finish	Predecessors
1	Submittal of SRWP, AMRSRP, & Schedule	0 days	Wed 12/1/10	Wed 12/1/10	
2	**Permitting**	**223 days**	**Thu 9/1/11**	**Mon 7/9/12**	
3	USACE 404 &10, WDNR 401 & chapter 30	180 days	Tue 11/1/11	Mon 7/9/12	
4	WDNR Waterways Marker Permit	180 days	Tue 11/1/11	Mon 7/9/12	
5	WDNR NR216 Construction Storm water Permit	93 days	Tue 11/1/11	Thu 3/8/12	
6	WDNR NR205 Water from dredging operations	82 days	Tue 11/1/11	Wed 2/22/12	
7	WDNR Water Quality Variance	119 days	Thu 9/1/11	Tue 2/14/12	
8	Section 7 Endangered Species USF&W	22 days	Thu 9/1/11	Fri 9/30/11	
9	WDNR Natural Heritage Inventory Review	22 days	Thu 9/1/11	Fri 9/30/11	
10	Section 106 Cultural Resources Review	22 days	Thu 9/1/11	Fri 9/30/11	
11	Local Permits	125 days	Thu 9/1/11	Wed 2/22/12	
12	Coast Guard Notification	1 day	Mon 7/2/12	Mon 7/2/12	
13	Access Agreements	104 days	Tue 11/1/11	Fri 3/23/12	
14	RCRA Onsite Treatment Variance	180 days	Tue 11/1/11	Mon 7/9/12	
15	**Remedial Design**	**100 days**	**Tue 9/13/11**	**Mon 1/30/12**	
16	Basis of Design	43 days	Tue 9/13/11	Thu 11/10/11	
17	Preliminary Design	30 days	Fri 10/21/11	Thu 12/1/11	16FS-15 days
18	Final Design	42 days	Fri 11/25/11	Mon 1/23/12	17FS-5 days
19	Prepare Bid Package	5 days	Tue 1/24/12	Mon 1/30/12	18
20	**Procurement**	**45 days**	**Tue 1/31/12**	**Mon 4/2/12**	
21	Dredger	45 days	Tue 1/31/12	Mon 4/2/12	19
22	Landside Operation Subcontractor	45 days	Tue 1/31/12	Mon 4/2/12	19
23	Water Treatment System	45 days	Tue 1/31/12	Mon 4/2/12	19
24	**Long Lead Items**	**76 days**	**Wed 1/4/12**	**Wed 4/18/12**	
25	Evaporator	76 days	Wed 1/4/12	Wed 4/18/12	
26	**Prepare Remediation Plans**	**132 days**	**Fri 11/25/11**	**Mon 5/28/12**	
27	Project Manual	40 days	Tue 4/3/12	Mon 5/28/12	21,22,23
28	Confirmation Sampling Plan	43 days	Thu 3/1/12	Mon 4/30/12	
29	Construction Quality Assurance Plan	43 days	Thu 3/1/12	Mon 4/30/12	
30	O & M Plan	42 days	Fri 11/25/11	Mon 1/23/12	
31	Corrective Measures Implementation Plan	43 days	Thu 3/1/12	Mon 4/30/12	
32	H&S Plan	16 days	Thu 3/1/12	Thu 3/22/12	
33	QA/QC Plan	43 days	Thu 3/1/12	Mon 4/30/12	
34	**Prepare Fact Sheet**	**1 day**	**Mon 3/26/12**	**Tue 3/27/12**	
35	Distributed to USEPA	1 day	Mon 3/26/12	Tue 3/27/12	39SF-9 wks
36	Distributed to Public	1 day	Mon 3/26/12	Mon 3/26/12	35SS
37	Pre-construction Inspection Meeting	0 days	Fri 5/18/12	Fri 5/18/12	38SF-7 days
38	**Mobilization**	**25 days**	**Tue 5/29/12**	**Mon 7/2/12**	
39	Set up Solidification Pad	10 days	Tue 5/29/12	Mon 6/11/12	27
40	Mobilize WWT System	15 days	Tue 6/12/12	Mon 7/2/12	27,39
41	Mobilize Solidification Equipment	15 days	Tue 6/12/12	Mon 7/2/12	27,39
42	Place Bin Blocks	5 days	Tue 5/29/12	Mon 6/4/12	27
43	Mobilize Dredge	12 days	Tue 6/12/12	Wed 6/27/12	27,39
44	**Dredging Tasks**	**337 days**	**Tue 7/10/12**	**Wed 10/23/13**	
45	Phase I Dredge Soft Sediment - Turning Basin	5 wks	Tue 7/10/12	Mon 8/13/12	3,4,39,40,41,42,43
46	Phase II Dredge SCM Turning Basin	8 wks	Tue 8/14/12	Mon 10/8/12	45
47	Phase V Dredge SCM at Temp Sheet Piles	4 wks	Thu 9/26/13	Wed 10/23/13	53
48	**Dry Excavation**	**262 days**	**Tue 9/25/12**	**Wed 9/25/13**	
49	Install Sheet Pile	10 days	Tue 9/25/12	Mon 10/8/12	46FF
50	Pump Free Water	5 days	Thu 4/18/13	Wed 4/24/13	49,59
51	Phase III Dry Excavation Soft Sediments	10 wks	Thu 4/25/13	Wed 7/3/13	50



Project: Tyco SRWP Approach
Date: Mon 10/10/11

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External MileTask | Split

ID		Task Name	Duration	Start	Finish	Predecessors
52		Phase IV Dry Excavation SCM	11 wks	Thu 7/4/13	Wed 9/18/13	51
53		Remove Sheet Piles	5 days	Thu 9/19/13	Wed 9/25/13	52
54		**Chemical Isolation Layer**	**5 days**	**Thu 10/24/13**	**Wed 10/30/13**	
55		Install and Test Chemical Isolation Layer	1 wk	Thu 10/24/13	Wed 10/30/13	47
56		**Winter Shutdown**	**135 days**	**Thu 10/11/12**	**Wed 4/17/13**	
57		Winter Demobilization	10 days	Thu 10/11/12	Thu 10/25/12	58SF
58		Winter Shutdown	120 days	Thu 10/25/12	Wed 4/10/13	
59		Spring Remobilization	5 days	Thu 4/11/13	Wed 4/17/13	58
60		**Pre-final Constr. Inspection (at 80% compl.)**	**23 days**	**Wed 9/11/13**	**Mon 10/14/13**	
61		Notification of USEPA (30 days prior)	0 days	Wed 9/11/13	Wed 9/11/13	62FF-23 days
62		Pre-final Inspection	0 days	Mon 10/14/13	Mon 10/14/13	47FF-7 days
63		**Final Construction Inspection (at completion)**	**23 days**	**Mon 9/30/13**	**Wed 10/30/13**	
64		Notification of USEPA (30 days prior)	0 days	Mon 9/30/13	Mon 9/30/13	65SF-23 days
65		Final Construction Inspection	0 days	Wed 10/30/13	Wed 10/30/13	55
66		**Demobilization**	**41 days**	**Thu 9/19/13**	**Thu 11/14/13**	
67		Demobilize Solidification Equipment	9 days	Mon 11/4/13	Thu 11/14/13	76,77,79,78
68		Demobilize Dredge	5 days	Thu 10/24/13	Wed 10/30/13	47
69		Demobilize WWT System	7 days	Thu 9/19/13	Fri 9/27/13	90
70		**Site Restoration**	**106 days**	**Thu 7/4/13**	**Thu 11/28/13**	
71		Clean Solidification Area	3 days	Fri 11/15/13	Tue 11/19/13	67,69
72		Resurface Solidification Area	5 days	Wed 11/20/13	Tue 11/26/13	71
73		Demobilization Project Trailer	2 days	Wed 11/27/13	Thu 11/28/13	72
74		Restore South Channel Access	10 days	Thu 7/4/13	Wed 7/17/13	51
75		**Sediment Stabilization**	**342 days**	**Thu 7/12/12**	**Fri 11/1/13**	
76		Soft Sediment 2012	6 wks	Thu 7/12/12	Wed 8/22/12	45FF+7 days
77		Semi-consolidated Material 2012	9 wks	Thu 8/16/12	Wed 10/17/12	46FF+7 days
78		Soft Sediment 2013	11 wks	Mon 4/29/13	Fri 7/12/13	51FF+7 days
79		Semi-consolidated Material 2013	17 wks	Mon 7/8/13	Fri 11/1/13	47FF+7 days
80		**Transportation and Disposal**	**342 days**	**Fri 7/13/12**	**Mon 11/4/13**	
81		Soft Sediment 2012	6 wks	Fri 7/13/12	Thu 8/23/12	76FF+1 day
82		Semi-consolidated Materials 2012	9 wks	Fri 8/17/12	Thu 10/18/12	77FF+1 day
83		Soft Sediment 2013	11 wks	Tue 4/30/13	Mon 7/15/13	78FF+1 day
84		Semi-consolidated Materials 2013	17 wks	Tue 7/9/13	Mon 11/4/13	79FF+1 day
85		**Water Treatment**	**337 days**	**Tue 7/10/12**	**Wed 10/23/13**	
86		**50 GPM Operations**	**337 days**	**Tue 7/10/12**	**Wed 10/23/13**	
87		Dredging 2012	13 wks	Tue 7/10/12	Mon 10/8/12	45SS
88		Dredging 2013	4 wks	Thu 9/26/13	Wed 10/23/13	47SS
89		**150 GPM Operations**	**110 days**	**Thu 4/18/13**	**Wed 9/18/13**	
90		Dry Excavation 2013	22 wks	Thu 4/18/13	Wed 9/18/13	50SS
91		**Project Oversight**	**395 days**	**Fri 5/25/12**	**Thu 11/28/13**	
92		Start	0 days	Fri 5/25/12	Fri 5/25/12	39SS-2 days
93		End	0 days	Thu 11/28/13	Thu 11/28/13	73FF
94		**Project Management**	**860 days**	**Thu 10/7/10**	**Wed 1/22/14**	
95		Start	0 days	Thu 10/7/10	Thu 10/7/10	
96		End	0 days	Wed 1/22/14	Wed 1/22/14	97FF
97		Final Report	60 days	Thu 10/31/13	Wed 1/22/14	55
98		AOC Deadline for Sediment Removal Completion	0 days	Fri 11/1/13	Fri 11/1/13	
99		AOC Deadline for Sediment Construction Report	0 days	Sat 3/1/14	Sat 3/1/14	
100		**MNR Plan**	**60 days**	**Fri 5/10/13**	**Fri 8/2/13**	
101		Development of MNR Plan	60 days	Fri 5/10/13	Fri 8/2/13	102FF
102		Submittal of MNR Plan	0 days	Fri 8/2/13	Fri 8/2/13	65SF-64 days



Project: Tyco SRWP Approach
Date: Mon 10/10/11

Task | Progress | Summary | External Tasks | Split
Split | Milestone | Project Summary | External MileTask

Appendix F
Preliminary Cost Estimate

Tyco "Base EPA" Cost Estimate 2011-10-03
Tyco Fire Products, LP
Marinette, Wisconsin

Item	Task	Estimated Quantity	Unit	Unit Price	Extended Total
A	**Lump Sum Items**				
A.1	Insurance Premiums	1	LS	$ 501,049.78	$ 501,050
A.2	Performance and Payment Bonds	1	LS	$ 501,049.78	$ 501,050
A.3	Mobilization	1	LS	$ 489,683.38	$ 489,683
A.4	Infrastructure Construction	1	LS	$ 724,707.93	$ 724,708
A.5	Site Maintenance (includes pumping wastewater to water treatment system)	1	LS	$ 40,000.00	$ 40,000
A.6	Surveys	1	LS	$ 142,254.07	$ 142,254
A.7	Site Restoration	1	LS	$ 50,000.00	$ 50,000
A.8	Demobilization	1	LS	$ 328,231.25	$ 328,231
A.9	Subcontract Closeout	1	LS	$ 11,000.00	$ 11,000
A.10	Interim Demobilization	1	LS	$ 695,544.88	$ 695,545
B	**Unit Price Items**				
B.1	Mechanical Dredging of Soft Sediment	41,221	CY	$ 23.63	$ 973,920
B.2	Mechanical Dredging of Semi-consolidated Sands and Silts	81,345	CY	$ 27.64	$ 2,248,138
B.3	Dry Excavation of Soft Sediment	48,481	CY	$ 14.77	$ 716,220
B.4	Phase 2B - Dry Excavation of Semiconsolidated Sand and Silt	56,032	CY	$ 14.77	$ 827,773
B.5	Supply Fluidized Bed Boiler Ash Reagent	18,065	TON	$ 60.50	$ 1,092,913
B.6	Supply Portland Cement Reagent	0	TON	$ -	$ -
B.7	Supply Sodium Polyacrylate (SAP) Reagent	0	TON	$ -	$ -
B.8	Supply 60% Ferric Sulfate Solution Reagent	3,011	TON	$ 286.00	$ 861,083
B.9	Supply Calcium Hypochlorite Reagent	1,129	TON	$ 2,090.00	$ 2,359,698
B.10	Mix Reagents, Stockpile Sediment on Pad	124,046	CY	$ 31.54	$ 3,912,990
B.11	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill	308,933	TON	$ 30.83	$ 9,523,924
B.12	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill	0	TON	$ -	$ -
B.13	Water Treatment	21,408,727	GAL	$ 0.25	$ 5,277,954
B.14	Debris Removal and RCRA Subtitle D Disposal	382	TON	$ 94.90	$ 36,228
B.15	Mechanical Dredge Standby Time	50	HR	$ 1,087.80	$ 54,390
B.16	8th Street Slip Sheet Piling Reinforcement	0	LS	$ 1,417,836.00	$ -
B.17	CAMU Construction	0	LS	$ 4,508,160	$ -
B.18	Demolition of Building 59	0	LS	$ 1,237,559	$ -
B.19	Cap Placement	5,000	SY	$ 72.26	$ 361,282
				Total:	**$ 31,730,035**

Total Contingency (Included in Estimate Range)			**$ -**
TOTAL WITH CONTINGENCY			**$ 31,730,035**
Project Management		**0%**	$ -
Remedial Design		**2%**	$ 634,601
Construction Management		**7%**	$ 2,062,452
Total Estimated COST			**$ 34,427,088**
Estimate Range			
Top estimate range +50%	**50%**		**$ 51,640,631**
Bottom estimate range -30%	**-30%**		**$ 24,098,961**

This estimate is offered as an opinion of cost to perform the work and is not an offer to contract for construction services, procure and/or provide such services