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December 14, 2011

SUBMITTED VIA E-MAIL AND REGULAR MAIL

Mr. Gary L. Cygan
U.S. Environmental Protection Agency
77 West Jackson Blvd. DE-9J
Chicago, IL 60604-3590

Subject: Response to USEPA Comments to December 1, 2011 Meeting held in Chicago, IL
Tyco Fire Products LP site
Marinette, WI
EPA #WID 006 125 215

Dear Mr. Cygan:

On behalf of Tyco Fire Products LP (Tyco, formerly known as Ansul Incorporated), this letter is being provided in response to the questions raised during the December 1, 2011 meeting to discuss the Enhanced Sediment Removal Plan and following questions provided by George Hamper on December 2, 2011 via email.

For ease of review, the USEPA information request is presented in italics followed by the Tyco response in plain text. It is important to note that the information provided herein should be considered preliminary information that is subject to change as additional design details are prepared and feedback is provided from the various regulatory entities during design and permitting processes.

USEPA Comments

Questions during USEPA meeting on December 1, 2011

1) What is the volume of material (requiring remediation) that would remain under the cap?

The estimated volume of semi-consolidated material that will remain in place under the cap is approximately 103,000 cubic yards

2) What is the total mass of arsenic that will remain in place, under the cap?

The estimated mass of arsenic remaining in place under the cap is approximately 63,400 pounds.

3) What is the percentage of the total arsenic mass represented by #2 (above)?

Approximately 33% of the total arsenic mass within the project area will remain under the cap.

4) What are the final water depths going to be in the cap area compared to current depths?

Actual water depths within the cap area are expected to generally remain at the current elevation, with an increase in water depths expected in the Turning Basin and the 6th Street Slip, following soft sediment removal and cap placement because in much of the area the soft sediment layer to be removed is similar in thickness to the anticipated thickness of the cap. The anticipated water depth in the area of the cap following remedial actions is shown on the attached Figure 1, using the Lake Michigan low water datum (577.5 ft IGLD85) as the reference. Figure 2 shows the increase in water depth due to the remedial activities.

5) What affects will prop (water jet) thrust have on the chemical isolation layer?

Dr. Danny Reible conducted additional research to confirm his response to this question provided during the December 1, 2011 meeting. The effect of a transient flow or pressure wave over the surface is governed by how far the turbulent perturbations extend into the sediment. No sustained groundwater flow is expected due to the transitory nature of any pressure wave and the sheet pile wall, which limits any groundwater flow in response to these pressure changes. The magnitude of the pressure changes are also not expected to be large enough to change the void volume or density of the sediments. Finally, as indicated by Pokrajac and Manes (2009) (Velocity Measurements of a Free-Surface Turbulent Flow Penetrating a Porous Medium Composed of Uniform-Size Spheres, Transp. Porous Med. (2009) 78:367–383), turbulent perturbations in the overlying flow extend less than 5 grain diameters into the bed, even in a media designed to maximize this effect. The time and vertical extent of any pressure wave on flow in the sediment, therefore, is quite limited. Thus, the primary concern for cap design is armoring to protect the cap from forces associated with these flows.

6) Will the monitoring plan contain the following;

6a) Criteria for determining success/failure of the cap?

To evaluate whether arsenic detections, if any, in the chemical isolation layer are consistent with the model's projections, Tyco proposes vertical coring of the cap with sampling of the sediment in the chemical isolation layer. The model simulations, which are used to evaluate the long-term protectiveness of the proposed cap, project that some arsenic is expected to be detected in the cap material as a result of vertical intermixing during placement and post-placement diffusion over time. Intermixing during placement will be used to evaluate whether the cap meets chemical isolation thickness targets (i.e. after excluding the portion of the isolation layer affected by intermixing). It is essential that only the post-placement movement of arsenic, beyond the movement due to intermixing, should be compared to model predictions.

To evaluate whether potential post-placement migration of arsenic is of concern, the collected coring data should be analyzed to determine if the differences between the measured and model-predicted arsenic concentrations are statistically significant. An elevation within the chemical isolation layer should be chosen to compare observed and predicted concentrations of arsenic. This defined elevation should be selected such that it is above the top of the intermixing zone, with the top of that zone defined based upon the immediate post placement coring data with 95% statistical confidence. At this elevation, the

probability that C(measured)-C(predicted) > 0 (where C = concentration of total arsenic) should be evaluated using the sediment concentrations measured from the defined elevation in the core. C(measured) is not greater than C(predicted) unless the probability of C(measured)-C(predicted) > 0 exceeds some standard statistical requirement such as 95% probability. If C(measured)-C(predicted) > 0 is false (i.e., C(measured) is NOT greater than C(predicted), the cap is functioning as proposed, and it is protective. Note: Because the cap design was based upon the maximum observed subsurface concentration rather than the average concentration, C(predicted) at this elevation is the concentration predicted by the model using this design concentration (i.e., the maximum observed subsurface concentration).

Under the proposed monitoring program, cores would be collected in years 0, 1, 5, 10, 15, 20, 25, 30. Within 90 days of collection, Tyco will submit to EPA and WDNR a report analyzing coring results and, if necessary, proposing a plan and schedule for taking additional contingent action. Tyco would implement the proposed contingent action plan as approved and/or modified by EPA, subject to the dispute resolution provisions of the AOC.

6b) Contingency Plan if the cap is not working as proposed?

If C(measured)-C(predicted) > 0 (i.e., C(measured) is greater than C(predicted)) is found to be statistically valid at the comparison elevation, the model should first be updated to be consistent with the additional information. Although the original model assumed that no natural attenuation processes are occurring, the updated model should include natural attenuation processes, such as deposition of clean sediment on the cap's surface, if there is evidence to support their inclusion. The updated model should then be used to predict future performance to determine if the combination of apparently enhanced migration and observed natural attenuation indicates that the cap would still meet design targets for protectiveness. If not, corrective action should be considered.

Corrective action may vary depending on the scope and extent of the deviations from design protectiveness targets. Therefore, if deviations are identified in only small areas of the cap, corrective actions specific to those areas should be considered. If deviations are identified more broadly across the cap, corrective actions appropriate for a broader scale issue should be evaluated. Thus, the key is to appropriately scale the response to the scope of the potential issue.

A variety of approaches for the corrective action should be considered. These approaches should be evaluated in a logical progression beginning with the least modification and adding modifications as necessary to achieve the protectiveness target. These approaches, in order of evaluation, include:

- placement of additional, or replacement of, cap material or better sealing of the sheet pile wall to control upwelling
- active pumping behind the sheet pile wall or placement of a permeability control layer in the cap to control upwelling
- dredging and removal of cap and underlying sediment that is deemed to contribute to the expected loss of protectiveness.

Thus, there are a variety of potential steps that can be taken to address identified issues with cap performance, and these should be evaluated in the context of the identified concern.

7) *Are you currently on schedule to complete the work in 2013? (NOTE: this includes the interim deliverables, permit processes, etc)*

Yes.

8) *How do the remediation plans/schedules (both the SRWP and ESRP) impact the Turning Basin operations for two seasons? (NOTE: EPA assumed it would only affect 2012)*

The ESRP schedule includes 9 weeks of work that will impact navigation in the Turning Basin in 2012 and 2 weeks of work the will impact navigation in the Turning Basin in 2013.

The SRWP schedule includes 13 weeks of work that will impact navigation in the Turning Basin in 2012 and 5 weeks of work that will impact navigation in the Turning Basin in 2013.

The SRWP work will take considerably longer to complete in the Turning Basin area during 2012 because the SRWP requires removal of significant additional semi-consolidated material (~103,000 cubic yards) as compared to the ESRP. Also, the SRWP requires installation of a temporary sheet pile wall in 2012 to facilitate the SRWP's expanded dry excavation area.

The SRWP impacts the Turning Basin for additional time in 2013, as compared to the ESRP because of the time to remove the 2012 installed temporary sheet pile wall required for the dry excavation under the SRWP and the time to remove semi-consolidated material left in place to provide necessary structural support for the sheet pile wall. While the area to be dredged is outside the Turning Basin, the equipment and operation activities will impact use of the Turning Basin during this time. The removal of the sheet pile and subsequent dredging is expected to take 5 weeks to complete.

9) *Provide a written evaluation of the river piezometer data.*

An evaluation of the river piezometer data is included in the attached technical memorandum.

Questions from George Hamper / Chief, Corrective Action Section 2, Received on December 2, 2011

10) *Please confirm that you will submit a permit application to dredge the Turning Basin in January 2012, and that most of the contaminated sediments in the Turning Basin will be removed during 2012. Also, please confirm that the remedy construction will be completed by November 2013 whether either the SRWP remedy or the ESRP remedy is implemented.*

Tyco intends to submit the necessary permit applications related to the remedial action by the end of January 2012 and is working with the U.S. Army Corps of Engineers and Wisconsin Department of Natural Resources to provide details of the remedial actions and develop processes to expedite permits where necessary.

However, permit applications require specific details of the actual remedial actions to be conducted. Therefore, it is possible that delays in permit submittals may be encountered pending final approval of the ESRP. To expedite the permitting process pending final

approval of the ESRP, Tyco proposes to submit the permit applications for the broadest approach necessary to complete the work under either the ESRP or SRWP approaches. The submitted permit application may be revised when the USEPA's final plan approval is received.

11) *Please update the cost estimate for the ESRP remedy to include (a) the removal of contaminated semi-consolidated sediments in an additional an 2.2 acres of the Turning Basin (the "wedge"), (b) adding 6 more inches of thickness to the cap, and (c) adding the armoring that you described in the December 1 meeting.*

The cost estimates for the SRWP and ESRP approaches are continually refined as the design plan and specifications are developed. As such, updated costs estimates for the SRWP and ESRP approaches have been included in the recently submitted Design Plan and Specification Preliminary Basis of Design document (PBOD - October 2011). It is important to note that the costs presented in the estimates represent engineering estimates, with a +50/-30 level of accuracy. The costs are based on the current understanding of the project scope, cost data obtained from available literature (Means, etc.), similar project experience, and limited price quotes (such as disposal costs). The actual costs will be based on design and specification requirements prepared by Tyco and implemented by engineering contractors.

The cost estimate for the ESRP implementation in PBOD, Appendix A, Attachment 3 already included estimates for the costs of removal of the "wedge" and for the armoring approach as described in the meeting. The estimate did not include the additional 6 inches of cap material. The estimated cost for placement of the additional 6 inches of cap material is $280,000. The attached updated ESRP cost estimate includes the assumed additional cap material. The total cost as described above is $24.7 Million.

12) *Please explain the difference between the September 2011 cost estimate of $37.6 Million for the SRWP remedy and the July 2011 cost estimate of $33.9 Million for financial assurance.*

The July 2011 cost estimate of $33.9 Million provided in the financial assurance document was developed using the SRWP approach presented in Tyco's original December 2010 SRWP submittal. The SRWP costs presented in the September 2011 ESRP document assumed the SRWP implementation as approved by the USEPA. The cost increase includes extra costs due to the additional sheet pile installation required for the expanded dry excavation area, additional dewatering costs due to increased volumes to remove over the larger dry excavation area, and installation of sheet piling reinforcement along the 8th Street Slip area. As presented in comment 12 above, the most recent versions of the cost estimates for the ESRP and SRWP are included in the PBOD and should be used moving forward. These are $24.4 Million for the ESRP and $34.4 Million for the SRWP, a difference of $10 Million.

13) *To compare the cost estimates for the SRWP remedy with the cost estimate for the ESRP remedy, please use the same factor for converting cubic yards to tons. Our consultant indicates that if the 1.25 factor that was used for the ESRP remedy were to be used for the SRWP remedy, it would reduce the cost estimate for the SRWP remedy by about $3 Million.*

It is important to note that the summary spreadsheet of costs for each alternative are developed using a series of detailed spreadsheets that take into consideration labor, equipment use, materials, etc. to complete a task. As such a conversion factor is not applicable for properly estimating project costs, including the conversion of cubic yards to tons.

The estimates are not developed by using one "factor" to arrive at tonnage. The following approach has been consistently used for developing unit prices in both the ESRP and SRWP:

- The estimated volume for each area or "class" of dredging (i.e. Soft Sediment vs. Semi-consolidated material) is multiplied by a density expressed in tons/cy. Typically 1.1 is used for the soft sediment and 1.2 for the Semi-consolidated materials. These densities were arrived at through interpretation of results from sampling event.
- Assumptions for water addition to the mass are made to arrive at the total estimated material to be generated during the dredging. This assumption varies with the type of dredging (mechanical vs. dry).
- Production rate is estimated based on difficulty of dredging and material type and estimated days to complete are calculated.
- The estimated days are applied to a basic "crew" consisting of labor, equipment and materials necessary to complete a particular "type" of dredging and a total estimated cost is arrived at.

The total estimated cost is brought forward to a summary and divided by the original cubic yards estimated. Therefore, the cost differences between the ESRP and SRWP as described in the PBOD are correct because of the differences between the scopes of the two remedies with respect to the nature of the sediment, the impact of contribution of the mass of water in the dredged material, and the production rate differences, among other factors.

The detailed cost estimates generated for the PBOD are attached.

14) *Please use the same unit costs and quantities for line items line items that are common to both the ESRP remedy cost estimate and the SRWP remedy cost estimate (e.g. dredging soft sediments, etc.) or explain the differences.*

See response to question 13 above. The line item costs presented on the summary cost estimate represent a buildup of detailed estimates associated with each task for the remediation project. As an example, water treatment includes the cost for labor, electricity, chemicals, and equipment purchase or rental. The costs for water treatment also make an estimate of the anticipated volume of water to be treated. Because a portion of the costs associated with water treatment are "fixed", in general, the more water treated the less cost per gallon.

Refer to the attached cost estimates for further details of the cost generation.

15) *Please include operation, maintenance and monitoring (OM&M) costs in both cost estimates. The July 2011 cost estimate for financial assurance indicates that the cost for OM&M of the SRWP remedy would be $1.5 Million over a 10-year time frame. The cost estimate for the ESRP remedy should cover OM&M costs in perpetuity.*

The OM&M cost presented in the financial assurance document made a general assumption that costs associated with these activities would be approximately 25% of the costs incurred for the 2010 sediment investigation ($600,000). These costs would be incurred annually for the 10-year duration resulting in a total cost of $1.5 Million for monitoring following the SRWP implementation. Due to the short duration, the costs were not discounted or escalated.

The OM&M costs for the ESRP include mobilization, sampling, laboratory testing, report preparation, and anticipated periodic cap repairs. An estimated capital investment of approximately $845,000, a 5% discount rate, and 2% escalation will cover the costs for OM&M for 1000 years.

16) *We need to see the piezometer data you described which demonstrates that there is no upward gradient in the area to be capped before we make a decision on the ESRP proposal.*

Details of the river peizometer evaluation are presented in the attached technical memorandum.

17) *When we selected the remedy in 2008, we were counting on the mobility of the arsenic when we estimated the time frame for monitored natural recovery to achieve the 20 ppm cleanup standard. Dr. Reible's recent modeling work indicates to us that this issue needs now to be revisited. Please use Dr. Reible's model to provide updated predictions for the time frames for monitored natural recovery to achieve the 20 ppm cleanup standard in each of the areas where capping is not proposed.*

The same conservative assumptions used in modeling the protectiveness of the proposed cap were applied to the uncapped areas ("Monitored Natural Recovery areas"), which were assumed to contain 50 mg/kg total arsenic. The biologically mixed-zone was assumed to be 6 inches in thickness and the concentration in the middle of that layer was simulated.

One of the key conservative assumptions made in the cap evaluation was that <u>no</u> natural attenuation (e.g., deposition) was occurring. Applying this assumption of <u>no deposition</u> to the Monitored Natural Recovery (MNR) areas results in an extended time period for the areas with 50 mg/kg total arsenic to reach the cleanup target of 20 mg/kg total arsenic in the middle of the 6 inch bioactive zone (approximately 70 years). The model, as expected, predicts a slow rate of natural recovery when one of the key natural recovery processes, deposition, is assumed to be absent. The assumption of no deposition is very conservative because deposition is actually occurring throughout the Site and is an inch or more per year in the Turning Basin based upon historical dredging information.

If the highly conservative assumption of no deposition is modified to provide for only 1 cm/year deposition of clean sediment, which itself is very conservative, then the model predicts that it will take approximately 9 years to reach 20 mg/kg total arsenic in the middle of the 6 inch bioactive zone for the MNR areas. Thus, the assumption of no deposition (essentially little natural recovery) is a key assumption, but it is a highly conservative one.

Comparing the MNR scenario to the capping scenario (i.e., 24 inch chemical isolation layer) using the highly conservative assumption of no deposition of clean sediment demonstrates how truly protective the cap is anticipated to be. After approximately 530 years, the total arsenic concentration at the top of the chemical isolation layer of the cap is predicted to be

14 mg/kg, which is less than the cleanup goal of 20 mg/kg, and concentrations near the top of the armoring layer are expected to be substantially less. Moreover, the flux through the cap at any time, even after 1,000 years, is estimated to be about the same as the flux from exposed (uncapped) sediment containing 20 mg/kg arsenic even 5-10 years after exposure of that sediment. Thus, even assuming no deposition of clean sediment, the proposed cap is anticipated to be protective into perpetuity.

18) *Please estimate the cost for implementing a contingent remedy in case the monitored natural recovery component should fail in either the SRWP remedy or the ESRP remedy. Also, please estimate the cost for implementing a contingent remedy in case the capping component of the ESRP remedy should fail.*

A potential contingent remedy for the sediment and semi-consolidated material assuming that monitored natural recovery is not effective for materials left in place with concentrations between 50 and 20 ppm is removal of the material. Based on current estimates approximately 11,000 cubic yards of material is present in the project area that meets this description under the ESRP approach (this assumes the capping component is effective). Removal of the material, estimated in 2012 dollars, is approximately $6.4 Million.

Under the SRWP approach, approximately 47,000 cubic yards of material would require removal. Removal of this material, estimated in 2012 dollars, is approximately $9.2 Million.

Capping has successfully protected human health and ecological receptors from contaminants with various mobility characteristics at numerous sites, and it is expected to be an effective remedy at this site. If, however, there are material cap performance issues, the following contingent remedies should be considered, in order of evaluation:

- placement of additional or replacement cap material
- better sealing of the sheet pile wall to control upwelling
- active pumping behind the sheet pile wall
- placement of a permeability control layer in the cap to control upwelling
- dredging and removal of cap and underlying sediment that is deemed to contribute to the expected loss of protectiveness

Examples of estimated costs for some of these contingent remedies include:

- Placement of additional cap material. The estimated cost for placement of one foot of additional material over a one acre area is $233,000.
- Placement of Aquablok and additional cap material. The estimated cost for placement of a 3 inch layer of Aquablok and 6 inches of clean sediment over a one acres area is $695,000.
- Placement of grout seal in bedrock. The estimated cost for jet grout placement in bedrock is $2,700 per linear foot.

- Although it is highly unlikely that there will be a total cap failure, if the cap material (22,000 cubic yards) and underlying semi-consolidated material (approximately 103,000 cubic yards) were removed, it would cost approximately $17.6 million (2012 dollars).

We trust the information provided herein will meet your expectations. Engineering design details and specifications related to the removal of soft-sediments and the removal and cover placement for semi-consolidated materials will be formally submitted in the design document scheduled for submittal on January 23, 2012 as presented in the Enhanced Sediment Removal Plan.

As always, Tyco remains committed to completion of the remedial actions in the Menominee River by November 1, 2013. Should you have any questions regarding this correspondence, please contact John Perkins at 561-226-3481.

Sincerely,

CH2M HILL, Inc.

Jeffrey Danko
Project Manager

Cc: John Perkins—Tyco Fire Protection
Doug Clark—Foley & Lardner
Steve Nadeau—Honigman Miller Schwartz and Cohn
George Hicks—CH2M HILL
Danny Reible—University of Texas

Attachments

Figures

N

0 200 400 600
Feet

Figure 1
Post Sediment Remedy Water Depths
Enhanced Approach
Tyco Fire Products LP Facility
Marinette, WI

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E:\TYCO\MAPFILES\DECEMBER2011\FIGURE 01 - POST SEDIMENT REMEDY WATER DEPTHS.MXD JHANSEN1 12/8/2011 9:47:47 AM

Figure 2
Change in Water Depths Due to Sediment Remedy
Enhanced Approach
Tyco Fire Products LP Facility
Marinette, WI

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E:\TYCO\MAPFILES\DECEMBER2011\FIGURE 02 - CHANGE IN WATER DEPTHS DUE TO SEDIMENT REMEDYVER2.MXD JHANSEN1 12/9/2011 5:23:46 PM

Attachment

Preliminary Evaluation of Hydraulic Gradients Beneath Menominee River

PREPARED FOR: Tyco Fire Products LP

PREPARED BY: CH2M HILL

DATE: December 14, 2011

PROJECT NUMBER: 425171.01.01

In accordance with the River Groundwater Investigation Work Plan dated August 15, 2011, four nests consisting of two vibrating wire piezometers (VWPs) each were installed within the Menominee River adjacent to the Tyco Fire Products (Tyco) Stanton Street facility in Wisconsin during the week of August 29, 2011. VWP nests were completed within the Turning Basin and Transition Areas 1 and 2 at distances of between 50 and 300 feet from the shoreline to help determine if the hydraulic gradients between the semi-consolidated sediments and the overlying river suggest the potential for groundwater upwelling. This technical memorandum briefly summarizes the VWP installation details, subsequent hydraulic head data acquisition, observed gradients at each of the VWP locations, and a preliminary evaluation of the data obtained.

Vibrating Wire Piezometer Network

Between August 29 and September 2, 2011, four borings (VW-TA01, VW-TA02, VW-TB01, and VW-TB02) were advanced from a barge within the Menominee River using drive-and-wash drilling techniques with continuous split spoon samples. The final depth of each boring ranged from 19.8 to 32.2 feet below the mudline. Locations of each boring are illustrated on Figure 1, and copies of the boring logs associated with each are provided in Attachment 1.

Within each temporarily cased borehole, two Geokon VWPs (rated at 0 to 25 pounds per square inch [psi]) with armored data cabling were placed at discrete depths within the unconsolidated material above bedrock. The VWPs were grouted in place using a Portland cement/attapulgite mix, which was tremied into the bottom of the borehole before removing the drill casing. The VWP signal cables (two per borehole) were anchored along the river bottom using weights and routed to the shoreline where they were connected to a centralized datalogger. In addition, a single VWP was placed in the water column above the mudline to record the Menominee River stage adjacent to the former Eighth Street Slip; this instrument also was connected to the centralized datalogger.

During and following installation, the mudline elevation at each borehole was determined, and a global positioning system survey of the lateral location of each VWP cluster was performed. Details on the installation of each VWP are provided in Table 1.

TABLE 1
2011 River Groundwater Investigation Installation Summary
Preliminary Evaluation of Hydraulic Gradients Beneath Menominee River

Borehole ID	Northing	Easting	Mudline Elevation (feet)	VWP-ID	VWP Installation Elevation (feet)	VWP Install Depth Below Mudline (feet)
VW-TB01	469910.980	2585117.500	575.0	VW-TB01-552	551.7	23.3
				VW-TB01-565	564.2	10.8
VW-TB02	470066.809	2585347.705	560.5	VW-TB02-543	542.3	18.2
				VW-TB02-556	555.3	5.2

TABLE 1
2011 River Groundwater Investigation Installation Summary
Preliminary Evaluation of Hydraulic Gradients Beneath Menominee River

Borehole ID	Northing	Easting	Mudline Elevation (feet)	VWP-ID	VWP Installation Elevation (feet)	VWP Install Depth Below Mudline (feet)
VW-TA01	469725.070	2585534.310	572.4	VW-TA01-545	544.45	28.1
				VW-TA01-560	559.45	13.1
VW-TA02	469479.280	2585710.840	573.5	VW-TA02-545	544.5	29
				VW-TA02-560	559.5	14
VW-SG1	469748.800	2585459.200	573.7	VW-SG1	574.7	-

Hydraulic Head Data Acquisition

Before installation, each VWP was saturated and a baseline reading was taken. Readings immediately before and after installation, plus current water surface elevation readings, were used to establish initial readings and check that each VWP was functioning properly and responding accurately to known head fluctuations in the Menominee River. The raw instrument readings then were converted to a pressure head elevation with the datalogger program, using the linear calibration equation for the VWP supplied by the manufacturer.

During the second week of September 2011, the acquisition of hydraulic head elevation data from each VWP was initiated with readings collected and stored in the onsite datalogger every hour. With the exception of a brief shutdown because of a depleted datalogger battery, which occurred on November 22, 2011 (the battery was replaced on November 23, 2011), continuous hourly measurements of the river stage elevation and the hydraulic heads at each of the buried VWPs have been collected from September 14, 2011, through to the present day.

Evaluation of Gradients Between the Sediment and the River

In order for groundwater to discharge from the semi-consolidated sediments into the shallow pore water and surface water of the Menominee River, an upward vertical component of groundwater flow (that is, an upward hydraulic gradient) must be present between the saturated deposits and the overlying river. Without an upward gradient between the saturated deposits and the overlying river, advective transport of groundwater and soluble contaminants is not possible. Whether an upward gradient between the semi-consolidated sediments and the overlying river is present in areas of the Menominee River where a chemical isolation layer has been proposed was evaluated by comparing groundwater elevation data from each VWP cluster with the river stage data.

Three of the four monitoring clusters (VW-TB01, VW-TB02, and VW–TA01) show head elevations in the river that are consistently higher than both of the underlying VWPs. Of particular interest are the heads in the shallow VWPs, which during the monitoring period (September 14, 2011 and November 30, 2011) were on average 1.2 to 2.8 feet lower than the river stage, suggesting groundwater discharge was not occurring in these areas during that time. At the fourth location (VW-TA02) in Transition Area 2 adjacent to the wetland area, average readings also suggest groundwater upwelling is not occurring between the sediment and the river, as heads in the river are 0.1 and 0.19 foot higher on average than those in the shallow and deep VWPs, respectively. Despite these average conditions, there was a period between September 26 and October 16, 2011, when a decline in the river stage was observed and heads in the shallow VWP were marginally higher than the river stage.

Conclusion

Overall, the relationship between the hydraulic head in the river and the heads in the sediment, as measured by the nested VWPs, indicates that groundwater upwelling between the sediment and the surface water is generally not occurring.

Monitoring efforts are ongoing, and data will continue to be evaluated in order to demonstrate the absence of upward hydraulic gradients between the sediment and the surface water in the river.

Figures

0 150 300
Feet

N

Figure 1
River Groundwater Investigation Locations
Tyco Fire Products LP Facility
Marinette, WI

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Attachment 1

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐ _____

Page 1 of _____

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Tyco Fire Products		VW-TB01

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Tony Last Name: Mallory Firm:	09/01/2011 (m m / d d / y y y y)	09/01/2011 (m m / d d / y y y y)	

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
AA000			_____ Feet MSL	575 Feet MSL	6 inches

Local Grid Origin ☐ (estimated: [x]) or Boring Location [x]
State Plane 469910.98 N, 2585117.5 E N
NE 1/4 of NE 1/4 of Section _____, T _____ N, R _____

Lat ___ ° ___ ' ___ "
Long ___ ° ___ ' ___ "

Local Grid Location
_____ Feet [x] N ☐ S _____ Feet [x] E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	MARINETTE	2	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
SS-1	6	1-WOH	0.0 - 2.0	Poorly Graded Gravel with Sand (GP), dark gray, wet, very loose, very fine gravel	GP									
SS-2	7.2	WOH	2.0 - 4.0	Poorly Graded Sand with Silt (SP-SM), brown, wet, very loose, wood chips, medium to fine sand, 10-15% fines	SP-SM									
SS-3		9	4.0 - 6.0											
SS-4	3.6	9	6.0 - 8.0	Poorly Graded Gravel with Sand (GP), gray-brown, wet, loose	GP									
SS-5	18	13	8.0 - 10.0	Poorly Graded Sand with Silt (SP-SM), tan, wet, loose, fine grained, 5% fines	SP-SM									
SS-6	13.2	13	10.0 - 12.0	Poorly Graded Sand (SP), light tan, wet, medium dense, becoming very dense, fine to very fine grained	SP									Strong odor

Depth in Feet: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm

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Facility/Project Name: Tyco Fire Products
Boring No. : VW-TB01

License/Project/Monitoring No. :
WI Unique Well No. : AA000

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			11											
SS-7	14.4	97	12	12.0 - 14.0										
			13											
SS-8	12	72	14	14.0 - 16.0 Gravelly TILL/light moisture at 15.0', silty sand lense										
			15											
SS-9	12	100/5"	16	16.0 - 17.4 Poorly Graded Gravel with Silt and Sand (SP-GM), fine to coarse, gravel, sand, clay mixed (TILL)	SP-GM									mixed lithology
			17	17.4 - 20.0										
			18											
			19											
SS-10		80	20	20.0 - 22.0 Sandy Silty (ML) to Sandy Lean Clay (CL), tan-brown, wet, hard, 50% fine sand, <10% fine gravel	ML-CL									
			21											
			22	22.0 - 22.01 Bottom of Hole at 22.0' bml										Vibrating wire piezo. installed prior to backfill @ elevs. 552 & 565'

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐ _____

Page 1 of _____

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Tyco Fire Products		VW-TB02

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Tony Last Name: Mallory Firm:	08/31/2011 (m m / d d / y y y y)	08/31/2011 (m m / d d / y y y y)	

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _	_ _ _		_____ Feet MSL	560.5 Feet MSL	6 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 470066.8 N, 2585347.71 E N
N 1/4 of E 1/4 of Section _____, T _____ N, R _____ E

Lat ___ ° ___ ' ___ "
Long ___ ° ___ ' ___ "

Local Grid Location
☒ N ☒ E
_____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	MARINETTE	2	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
SS-1	2.4	WOH	0.0 - 2.0	Silt (ML) to Elastic Silt (MH), black to dark brown, wet, very soft, organic, forous, wood	ML-[illegible]									
SS-2		7	2.0 - 4.0											
SS-3	18	45	4.0 - 6.0	Contact 3.1' with Silty Gravel (GM), tan to red-tan, wet, dense, ~35% fines	GM									Strong odor
SS-4	19.2	57	6.0 - 8.0	Contact 6.2' with Sandy Silt (ML) to Sandy Lean Clay (CL), red-tan, wet to moist, hard, low to medium plasticity, ~25% very fine sand, ~10% medium gravel, subangular, fine grained	ML-[illegible]									
SS-5	21.6	66	8.0 - 10.0											Strong odor
SS-6	22.8	100	10.0 - 12.0	11.5-12.8' - Silty Sand with Gravel (SM), red-tan, wet, very dense with subrounded gravel, ~35% fines	SM									

Depth in Feet: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

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Facility/Project Name: Tyco Fire Products
Boring No. : VW-TB02

License/Project/Monitoring No. :
WI Unique Well No. :

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			11											
SS-7	22.8	84	12	12.0 - 14.0 Below 12.8' is similar to SS-4/SS-5	ML/C									Little to no odor
			13											
SS-8		129	14	14.0 - 16.0										Drilling on rock/cobble at 15.0' bgs, Rock chip (wash (dolomite)
			15											
SS-9		53	16	16.0 - 18.0 Continued reddish-tan, wet, hard, low plastic, ~20-30% very fine sand	ML/C									
			17											
SS-10		8	18	18.0 - 19.8										Contact rock at 19.8' (SPT bouncing)
			19											
				19.8 - 19.9 Bottom of Hole at 19.8' bml										Vibrating wire piezo. installed prior to backfill @ elevs. 543 & 556'

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐ _____

Page 1 of _____

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Tyco Fire Products		VW-TA01

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Tony Last Name: Mallory Firm:	08 / 30 / 2011 (m m / d d / y y y y)	08 / 30 / 2011 (m m / d d / y y y y)	

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _	_ _ _		_____ Feet MSL	572.5 Feet MSL	6 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 469725.07 N, 2585534.31 E N
N 1/4 of E 1/4 of Section _____, T _____ N, R _____ E

Lat ___ ° ___ ' ___ "
Long ___ ° ___ ' ___ "

Local Grid Location
☒ N _____ Feet ☐ S
☒ E _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	MARINETTE	2	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
SS-1			1	0.0 - 2.0 Silt (ML) to Elastic Silt (MH), dark brown to black, wet, very soft, organics and wood chips present	ML-[illegible]									
SS-2	3.6		2, 3	2.0 - 4.0				0.2						0.2 ppm Mini Rae
SS-3			4, 5	4.0 - 6.0				2.6						2.6 ppm at drill exhaust
SS-4	20.4	8	6, 7	6.0 - 8.0 Contact at 6.5' with Poorly Graded Sand (SP), light tan, wet, loose	SP									
SS-5	20.4	72	8, 9	8.0 - 10.0 Very fine grained below ~9.0', very dense, <5% fines, homogeneous, horizontally stratified, slow to rapid dilatacy										Drive casing
SS-6	21.6	89	10, 11, 12	10.0 - 12.0				2.1						WCS-2 bag at 10.0', composite: 2.1 ppm

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Facility/Project Name: Tyco Fire Products
Boring No. : VW-TA01

License/Project/Monitoring No. :
WI Unique Well No. :

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			11											
SS-7	22.8	102	12	12.0 - 14.0 Poorly Graded Sand (SP), light tan, wet, very dense, homogeneous and very fine grained	SP									
			13											
SS-8	22.8	135	14	14.0 - 16.0										
			15											
SS-9	22.8	99	16	16.0 - 18.0										
			17											
SS-10	1.5	56	18	18.0 - 20.0 Poorly Graded Sand (SP), stratified with Silty Sand (SM), brown, wet, very dense, ~20-25% fines, 0.0-1.0' thick layers, tip is gravelly silt (ML)	SP-SM									
			19											
SS-11	15.6	37	20	20.0 - 22.0 Interbedded Silty Sand (SM) and Sandy Silt (ML), brown-tan, wet, dense, 0.6'' of ~15% fines, subangular gravel 21.5-22.0'	SM/M									
			21											
SS-12	21.6	51	22	22.0 - 24.0										
			23											
SS-13	22.8	17	24	24.0 - 26.0 Interbedded Silty Sand (SM) and Sandy Silt (ML), each ~0.3-0.5' gravel, wet, medium dense	SM/M									Driller notes small cobble/large gravel at 24.0'
			25											
SS-14		19	26	26.0 - 28.0										
			27											
SS-15		17	28	28.0 - 30.0										
			29											
			30											

Facility/Project Name: Tyco Fire Products
Boring No. : VW-TA01

License/Project/Monitoring No. :
WI Unique Well No. :

Sample									Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			29											
SS-16		50/3"	30	**30.0 - 30.3 Bottom of Hole at 30.3' bgs**										**Gravel debris, very hard at 30.3' Vibrating wire piezo. installed prior to backfill @ elevs. 545 & 560'**
				30.3 - 30.31										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other ☐ _____

Page 1 of _____

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Tyco Fire Products		VW-TA02

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Tony Last Name: Mallory Firm:	08/30/2011 (m m / d d / y y y y)	08/30/2011 (m m / d d / y y y y)	

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _ _		_____ Feet MSL	573.5 Feet MSL	6 inches

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 469479.28 N, 2585710.84 E N
N 1/4 of E 1/4 of Section _____, T _____ N, R _____ E

Lat ___ ° ___ ' ___ "
Long ___ ° ___ ' ___ "

Local Grid Location
☒ N _____ Feet ☐ S
☒ E _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	MARINETTE	38	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
SS-1	3.6	WOH	0.0 - 2.0	Silt (ML) to Elastic Silt (MH) with Clay, dark brown, wet, very soft, homogeneous	ML-MH									Starting depth to mudline is 5.0' below water surface at 0800 5.2' at 1145 (begin install)
SS-2	3.6	WOH	2.0 - 4.0											
SS-3	3.6	WOH	4.0 - 6.0											
SS-4	4.8	1	6.0 - 8.0	Elastic Silt (MH), brown, wet, very soft, wood chips at tip of shoe	MH									
SS-5	18	11	8.0 - 10.0	Contact at 8.5' with Poorly Graded Sand (SP), gray to light tan, wet, medium dense to dense, varied from coarse to very fine, odor	SP									Wood ~8-8.5', driller drove easily to 10.0' to get past wood
SS-6	19.2	32	10.0 - 12.0											

Depth in Feet: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

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Facility/Project Name: Tyco Fire Products
Boring No. : VW-TA02

License/Project/Monitoring No. :
WI Unique Well No. :

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			11											
SS-7	21.6	54	12	12.0 - 14.0										
			13											
SS-8	18	43	14	14.0 - 16.0 Poorly Graded Sand (SP), light tan, wet, dense to very dense, very fine grained, ~5% fines, odor	SP									
			15											
SS-9	18	48	16	16.0 - 18.0										WCS-1 Drager (no read)
			17											
SS-10	22.8	39	18	18.0 - 20.0 ~19.8-20.0' tip of SS-10 is Lean Clay (CL) to Fat Clay (CH), tan to light brown, wet, firm to stiff	CL									
			19											
SS-11	24	22	20	20.0 - 22.0 Clay (CL), very stiff, high plasticity, homogeneous	CL									
			21											
SS-12	24	48	22	22.0 - 24.0 Well Graded Sand (SW), light tan, wet, dense, coarse to fine grained, loose, fine trace gravel, <5% fines	SW									
			23											
SS-13	24	23	24	24.0 - 26.0 22.0-23.0' - Clay (CL), very stiff, high plasticity, homogeneous, 23.0-24.0' - tip of SS-13 is Sandy Clay, very fine grained, very stiff, moderate plasticity, light tan	CL									
			25											
SS-14	24	71	26	26.0 - 28.0 Poorly Graded Sand (SP), light tan, moist, dense to very dense, very fine grained, < 5% fines	SP									
			27											
SS-15	10.8	85/5"	28	28.0 - 30.0 Poorly Graded Sand (SP), similar to SS-14	SP									
			29											
			30											

Facility/Project Name: Tyco Fire Products
Boring No. : VW-TA02

License/Project/Monitoring No. :
WI Unique Well No. :

Sample: Number and Type	Sample: Length Att. & Recovered (in.)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			29											
SS-16		19	30	30.0 - 32.0 Silty sand (SM), brown tan and red-tan, moist to wet, medium dense, ~20% fines, sand very fine, stratified, <5% gravel, one large	SM									
			31											
SS-17		50/3"	32	32.0 - 32.2 Gravel, fine to coarse (TILL)	GP									Driller notes very hard rock at 32.2' bml, very slow drilling Vibrating wire piezo. installed prior to backfill @ elevs. 545 & 560'
				32.2 - 32.21 Bottom of Hole at 33.2' bml										

Cost Estimates

Tyco "BASE SCENARIO" Cost Estimate 2011-11-24
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	$ 501,050	$ 501,050
A.2	Performance and Payment Bonds	1	LS	$ 501,050	$ 501,050
A.3	Mobilization	1	LS	$ 489,683	$ 489,683
A.4	Infrastructure Construction	1	LS	$ 724,708	$ 724,708
A.5	Site Maintenance (includes pumping wastewater to water treatment system)	1	LS	$ 40,000	$ 40,000
A.6	Surveys	1	LS	$ 142,254	$ 142,254
A.7	Site Restoration	1	LS	$ 50,000	$ 50,000
A.8	Demobilization	1	LS	$ 328,231	$ 328,231
A.9	Subcontract Closeout	1	LS	$ 11,000	$ 11,000
A.10	Interim Demobilization	1	LS	$ 695,545	$ 695,545
B	**Unit Price Items**				
B1	Phase 1 - SOFT Sediment Dredging >50 ppm	41,221	CY	$ 23.63	$ 973,920
B1A	Phase 1A - Remove SOFT 50 ppm to 20 ppm (addl)	0	CY	$ -	
B2A	Phase 2A - Mechanical Dredging - Semiconsolidated > 50 ppm	81,345	CY	$ 27.64	$ 2,248,138
B2A1	Phase 2A1 - Mechanical Dredge Semiconsolidated 50 to 20 ppm (addl)	0	CY	$ -	$ -
B2B	Phase 2B - Dry Excavation of Semiconsolidated > 50 ppm	56,032	CY	$ 14.77	$ 827,773
B2B1	Phase 2B1 - Dry Excavation Semiconsolidated 50 ppm to 20 ppm (addl)	0	CY	$ -	$ -
B3	Phase 3 - Dry Excavation of soft sediment > 50 ppm	48,481	CY	$ 14.77	$ 716,220
B3A	Phase 3A - Dry Excavation of Soft Sediment 50 ppm tp 20 ppm (addl)	0	CY	$ -	$ -
B4A	Phase 4A - Mechanical Dredging Glacial Till > 50 ppm	0	CY	$ -	$ -
B4B	Phase 4B - Dry Excavation Glacial Till > 50 ppm	0	CY	$ -	$ -
B4C	Phase 4C - Mechanical Dredging Glacial Till 50 to 20 ppm	0	CY	$ -	
B4D	Phase 4D - Mechanical Dredging Glacial Till 50 to 20 ppm	0	CY	$ -	$ -
B5	Supply Fluidized Bed Boiler Ash Reagent	18,065	TON	$ 60.50	$ 1,092,913
B6	Supply Portland Cement Reagent	0	TON	$ -	$ -
B7	Supply Sodium Polyacrylate (SAP) Reagent	0	TON	$ -	$ -
B8	Supply 60% Ferric Sulfate Solution Reagent	3,011	TON	$ 286.00	$ 861,083
B9	Supply Calcium Hypochlorite Reagent	1,129	TON	$ 2,090.00	$ 2,359,698
B10	Mix Reagents, Stockpile Sediment on Pad	124,046	CY	$ 31.54	$ 3,912,990
B11	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill	308,933	TON	$ 30.83	$ 9,523,924
B12	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill	0	TON	$ -	$ -
B13	Water Treatment	21,408,727	GAL	$ 0.25	$ 5,277,954
B14	Debris Removal and RCRA Subtitle D Disposal	382	TON	$ 94.90	$ 36,228
B15	Mechanical Dredge Standby Time	50	HR	$ 1,087.80	$ 54,390
B16	8th Street Slip Sheet Piling Reinforcement	0	LF	$ -	$ -
B17	CAMU Construction	0	LS		$ -
B18	Demolition of Building 59	0	LS		$ -
B19	Cap Placement	5,000	SY	$ 72.26	$ 361,282
B.21	MNR Monitoring Cost Estimate	0	YR		$ -
				Total:	**$ 31,730,035**

TOTAL WITHOUT CONTINGENCY			**$ 31,730,035**
Project Management		**0%**	$ -
Remedial Design		**2%**	$ 634,601
Construction Management		**6.5%**	$ 2,062,452
Other Contingency		**0%**	$ -
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

Tyco "BASE SCENARIO" Cost Estimate 2011-11-24
Data and Assumptons
Tyco Fire Products, LP
Marinette, Wisconsin

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class IV Estimate Standards and provided as a Conceptual Design estimate. As such, it is suitable for feasibility studies, selection of alternatives and/or planning only. 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.

General Scope

Mechanical dredging & offsite disposal, with capping.
Dredge all sediment with greater than or equal to 50 ppm arsenic.
Place armored low-permeability cap over a portion of the semi-consolidated sands and silts with greater than or equal to 50 ppm arsenic.
Dredge a portion of the semi-consolidated sands and silts with greater than or equal to 50 ppm arsenic.
Monitored natural recovery for materials greater than or equal to 50 ppm arsenic down to 20 ppm in 10 year period.
Dredge materials exceeding 20 ppm after 10 years if necessary (not included in cost estimate).
Davis Bacon wages do not apply; labor rates have been assumed as Davis Bacon wages without the fringe.

SPECIFIC SCOPE ITEMS AND TAKEOFF INFO

1. Dredging Volumes and Estimated Production Rates

	Dredging Volume		Prod Rate		Days to Complete	
Phase 1 - SOFT Sediment Dredging >50 ppm	41,221	cy	1300	cy/day	32	days
Phase 2A - Mechanical Dredging - Semiconsolidated > 50 ppm	81,345	cy	1000	cy/day	81	days
Phase 2B - Dry Excavation of Semiconsolidated > 50 ppm	56,032	cy	700	cy/day	80	days
Phase 3 - Dry Excavation of soft sediment > 50 ppm	48,481	cy	700	cy/day	69	days
Phase 3A - Dry Excavation of Soft Sediment 50 ppm tp 20 ppm (addl)	-	cy	700	cy/day	-	days
Dredging Totals	**227,079**	**cy**			**262**	**days**
Phase 2C - Capping of Semiconsolidated Sand and Silt	5,000	SY	600	sy/day	8	days
Project Totals					**271**	**days**

Landside Water Control (does not include dewatering from wiithin sheeting)

average of April - October: 3.03 Inches

Processing Pad Rainwater

	L		W	Area	
Estimated Surface Area to Control Water	650		455	295,750	
Rainfall	3	in/mo			
Pad Water volume from rainfall	553,053	gal/mo		2,306	tons/mo
Pad Water volume from rainfall	**18,169**	**gal/day**		**76**	**tons/day**
Pad Water volume from rainfall (All Phases)	5,311,734	gal/job		22,150	ton/job
Pad Water volume from rainfall Phases 1 and 2a)	2,054,024.29	gal/job			

Pressure Washer (for Phases 1 and 2a Only)

Pressure Washer (Assume 4 gpm operating 6 HPD)	1,440	gallons/day	6	tons/day
Pressure Washer (Assume 4 gpm operating 6 HPD)	214,998	gal/job	897	ton/job

Dry Excavation (Phases 2a & 3)

	L	W	Area	D	Vol (gal)	M (tons)	
Free Water in South Channel	2,300	150	345,000	2	5,161,200	21,522	To River
Free Water in Transition Areas 2 & 3	930	430	399,900	3	8,973,756	37,421	To River
Total Free Water					**14,134,956**	**58,943**	**To River**
Interface water in South Channel	2,300	150	345,000	0.5	1,290,300	5,381	to WWT
Interface water in Transition Areas 2 & 3	930	430	399,900	0.5	1,495,626	6,237	to WWT
Total Interface Water					**2,785,926**	**11,617**	**to WWT**
Seep Water - Dry Exc. Area (total for job)	7,600	10	76,000	24.88	14,146,083	58,989	to WWT
Seep Water - Dry Exc. Area (Daily Total)					**94,747**	**395**	**to WWT**
Rainwater in South Channel	2,300	150	345,000	0.008	21,222	88	to WWT
Rainwater in Transition Areas 2 & 3	930	430	399,900	0.008	24,599	103	to WWT
Rainwater (Phases 2b & 3) (total for job)					**6,841,294**	**191**	**to WWT**
Rainwater (Phases 2b & 3) (Daily Total)					**45,821**	**191**	**to WWT**
Pressure Washer (Assume 4 gpm operating 25% of the time - 6 hrs/day)					214,998.17	897	total for Phases 2b & 3 work
Pressure Washer (Assume 4 gpm operating 6 HPD) (Daily Volume)					**1,440**	**6**	**gallons/day for Phase III**
Phases 2b & 3 Total Water Flow to WWT)					**17,171,607**		
Phases 2b & 3 Total (Daily Water Flow to WWT)					**6,937,481**		**gallons/day**

Water Summary For Phases 1 and 2a

1	Pump Free Water from scows	1,570,643	gallons		
2	Collect and Process Rainwater	2,054,024	gallons		
3	Collect Pressure Wash Water	162,797	gallons		
4	WWT backwash water	-	gallons		
5	Total Water (Phases I and II)	3,787,464	gallons	#REF!	gal/min

Water Summary For Phases 2b & c

1	Pump free water from South Channel to river (not treated)	14,134,956	gallons		
2	Pump Interface Water to WWT	1,290,300	gallons		
3	Pump seepage water to WWT	6,562,018.78	gallons		
4	Collect and Process Rainwater	2,712,651.40	gallons		
5	Collect Pressure Wash Water	214,998.17	gallons		
6	Collect and Process Rainwater from Excavation Cell	6,841,294	gallons		
7	WWT backwash water	-	gallons		
8	Total water from Phase III (for treatment only)	17,621,263	gallons	91.07	gal/min

Total Water For Project 21,408,727

	L	W	Area	D	V	M
Phase III Road Stone	900	25	22,500.00	0.5	416.67	625.00

Mass Balance Estimates

BASE EPA 10/03/2011		Phase 1 - SOFT Sediment Dredging >50 ppm		Phase 2A - Mechanical Dredging - SCM > 50 ppm		Phase 2B - Dry Excavation of SCM > 50 ppm		Phase 3 - Dry Excavation of SOFT sediment > 50 ppm	Totals
Dredge Volume	cy	41,221	0	81,345	0	56,032	0	48,481	227,079
Estimated In-Situ Density of Sediment	ton/cy	1.1	1.1	1.2	1.2	1.2	1.2	1.1	
Mass of In-Situ Sediment	tons	45,343	-	97,614	-	67,238	-	53,329	263,525
Solids Content In-Situ	%	38%	38%	43%	43%	50%	50%	48%	
Estimated Dry Solids in Sediment	tons	17,230	-	41,974	-	33,619	-	25,598	118,422
Solids after Mechanical Dredging (In Scows)	%	35%	35%	35%	35%	50%	50%	45%	
Total Mass Delivered to Offload	tons	49,230	-	119,926	-	67,238	-	56,884	293,278
Dredging Production Rate		1300	1300	1000	1000	700	700	700	
Est Days to Complete		32	-	81	-	80	-	69	262
Mass Water Added During Dredging	tons	3,887	-	22,312	-	-	-	3,555	29,754
Volume Water Added During Dredging	gal	932,027	-	5,350,545	-	-	-	852,584	7,135,155
Water Recovery from Scows	%	25%	25%	25%	25%	0%	0%	0%	
Mass Water Recovered From Scows	tons	972	-	5,578	-	-	-	-	6,550
Water Lost to Evaporation	%	20%	20%	20%	20%	0%	0%	0%	
Mass Water Lost to Evaporation	tons	777	-	4,462	-	-	-	-	-
Volume Water Lost to Evaporation	gal	186,405	-	1,070,109	-	-	-	-	-
Volume Water Recovered From Scows	gal/job	233,007	-	1,337,636	-	-	-	-	1,570,643
Rainwater Estimate	gal/job	576,099	-	1,477,926	-	5,122,106	-	4,431,839	11,607,970
Pressure Wash Water	gal	45,660	-	117,137	-	115,266	-	99,732	377,795
Backwash Water from water treatment system	gal/job	-	-	-	-	-	-	-	-
Interface and Seep Water (Phases 2b & 3 only)	gal/job					4,209,822	-	3,642,497	7,852,319
Total Estimated Water to Treat	gal/job	854,766	-	2,932,699	-	9,447,194	-	8,174,069	21,408,727

Water Treatment										
Water Treatment Uptime		90%	90%	90%	90%	90%	90%	90%		
Hours/day		24	24	24	24	24	24	24		
Uptime/Day (WWT System)		21.6	21.6	21.6	21.6	21.6	21.6	21.6		
Process Time	min	41,094	-	105,423	-	103,739	-	89,759	340,016	min
WWT System Capacity Required		20.80	-	27.82	-	91.07	-	91.07		
Stabilization Agents										
Fluidized Bed Boiler Ash		12%	12%	12%	12%	12%	12%	12%		
Fluidized Bed Boiler Ash	tons	5,791	-	3,430	-	2,017	-	6,826	18,065	
Portland Cement		0%	0%	0%	0%	0%	0%	0%		
Portland Cement	tons	-	-	-	-	-	-	-	-	
Sodium Polyacrylate (SAP)		0%	0%	0%	0%	0%	0%	0%		
Sodium Polyacrylate (SAP)	tons	-	-	-	-	-	-	-	-	
60% Ferric Sulfate Solution		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%		
60% Ferric Sulfate Solution	tons	965	-	572	-	336	-	1,138	3,011	
Calcium Hypochlorite		0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%		
Calcium Hypochlorite	tons	362	-	214	-	126	-	427	1,129	
Total Stabilization Agents Required	tons	7,118	-	4,217	-	2,479	-	8,390	22,204	
Disposal Estimates										
Stabilized Sediment	tons	55,376	-	118,564	-	69,718	-	65,275	308,933	
RCRA Subtitle D Waste Disposal	%	100%	100%	100%	100%	100%	100%	100%		
RCRA Subtitle C Waste Disposal	%	0%	0%	0%	0%	0%	0%	0%		
RCRA Subtitle D Waste Disposal (Debris)	%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.50%		
RCRA Subtitle D Waste Disposal		55,376	-	118,564	-	69,718	-	65,275	308,933	
RCRA Subtitle C Waste Disposal		-	-	-	-	-	-	-	-	
RCRA Subtitle D Waste Disposal (Debris)		55	-	-	-	-	-	326	382	
Total Offsite Disposal		55,431	-	118,564	-	69,718	-	65,601	309,315	
				-						

All sediment needs 12% BA, 12 FST, 0.75% HYP
25% of SC material needs 12%BA, 12FST, 0.75% HYP

Vol Sed. Treated	89,702	100%
Vol SCM/GT treated	34,344	25%
TOTAL	124,046	

Note: 12 FST = 12 ml/kg sediment ~2% by weight of sediment

Sheetpile (all rental, not designed)

	L (ft)	
Sheetpile @ North End of Zone 2a	190	Already installed
Sheetpile @ Junction of Zones 1, 2a and 2	500	
Sheetpile @ South End of Zone 3a	290	

SECTION	Width (w) in (mm)	Height (h) in (mm)	THICKNESS Flange (t_f) in (mm)	THICKNESS Web (t_w) in (mm)	Cross Sectional Area in²/ft (cm²/m)	WEIGHT Pile lb/ft (kg/m)	WEIGHT Wall lb/ft² (kg/m²)	SECTION MODULUS Elastic in³/ft (cm³/m)	SECTION MODULUS Plastic in³/ft (cm³/m)	Moment of Inertia in⁴/ft (cm⁴/m)	COATING AREA Both Sides ft²/ft of single (m²/m)	COATING AREA Wall Surface ft²/ft² (m²/m²)
AZ 24-700	27.56 700	18.07 459.0	0.441 11.20	0.441 11.20	8.23 174.1	64.30 95.70	28.00 136.70	45.2 2430	53.5 2867	408.8 55820	6.33 1.93	1.38 1.38
AZ 26-700	27.56 700	18.11 460.0	0.480 12.20	0.480 12.20	8.84 187.2	69.12 102.90	30.10 146.90	48.4 2600	57.1 3070	437.3 59720	6.33 1.93	1.38 1.38
AZ 28-700	27.56 700	18.15 461.0	0.520 13.20	0.520 13.20	9.46 200.2	73.93 110.00	32.19 157.20	51.3 2760	60.9 3273	465.9 63620	6.33 1.93	1.38 1.38

Assume AZ 26
Assume 20 ft sections
Assume 10 ft imbedment

Total Wall Needed	**L (ft)**	**W (ft)**	**Area (sf)**	Tons	Prod Rate	Schedule Days
Sheetpile @ West End Of South Channel	1,150	25	28,750	403	10.5	39.00
Total			28,750			

Tyco "BASE SCENARIO" Cost Estimate 2011-11-24

12/14/2011 17:04

Lump Sum Items
Tyco Fire Products, LP
Marinette, Wisconsin

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class II Estimate Standards and provided as an Engineers Estimate and is based on Pre-final design documents. 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.

TASK	TASK DESCRIPTION	No of Units	Unit	Cost		UR
A.1	Insurance Premiums	1	LS	$ 501,050		$ 501,050
A.2	Performance and Payment Bonds	1	LS	$ 501,050		$ 501,050
A.3	Mobilization	1	LS	$ 489,683		$ 489,683
A.4	Infrastructure Construction	1	LS	$ 724,708		$ 724,708
A.5	Site Maintenance	1	LS	$ 40,000		$ 40,000
A.6	Surveys	1	LS	$ 142,254		$ 142,254
A.7	Site Restoration	1	LS	$ 50,000		$ 50,000
A.8	Demobilization	1	LS	$ 328,231		$ 328,231
A.9	Subcontract Closeout	1	LS	$ 11,000		$ 11,000
A.10	Interim Demobilization	1	LS	$ 695,545		$ 695,545

$ 30,366,653.10

$ 3,483,521

ESTIMATE TASK DETAILS

A.1	Insurance Premiums	2	day							
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
4	SUB: Dredger	Insurance Premiums		$ 30,366,653.10	$ 0.015	ea	1	na	$ 455,499.80	$ 501,049.78
	Subtotal								**$ 455,499.80**	**$ 501,049.78**

Notes

1 This is a plug estimate

2

A.2	Performance and Payment Bonds	2	day							
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
4	SUB: Dredger	P&P Bonds	2% of construction cost	$ 30,366,653	$ 0.015	$.$	1	na	$ 455,499.80	$ 501,049.78
	Subtotal								**$ 455,499.80**	**$ 501,049.78**

Notes

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A.3	Mobilization									
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
MOB MECHANICAL DREDGE		**5**	**Days**							
4	SUB: Dredger	Derdge Preparation		1	$ 30,000.00	ls	1	na	$ 30,000.00	$ 33,000.00
4	SUB: Dredger	Dredge Transportation to Monroe	TOW	1	$ 7,500.00	$/load	1	na	$ 7,500.00	$ 8,250.00
4	SUB: Dredger	Scow Transport to Monroe		3	$ 2,500.00	$/hr	1	na	$ 7,500.00	$ 8,250.00
4	SUB: Dredger	GPS Install	Programming	40	$ 75.00	$/hr	1	na	$ 3,000.00	$ 3,300.00
2	SUB: Dredger	Dredge Rental	During Mob	1	$ 15,000.00	$/day	5	day	$ 75,000.00	$ 93,750.00
1	SUB: Dredger	Dredging PM		8	$ 75.00	$/hr	5	day	$ 3,000.00	$ 3,750.00
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16	$ 51.75	$/hr	5	day	$ 4,140.00	$ 5,175.00
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4	$ 77.63	$/hr	5	day	$ 1,552.50	$ 1,940.63
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16	$ 46.00	$/hr	5	day	$ 3,680.00	$ 4,600.00
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4	$ 69.00	$/hr	5	day	$ 1,380.00	$ 1,725.00

4	SUB: Dredger	Hotel		4	$ 100.00	$/day	5	day	$ 2,000.00	$ 2,200.00
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	5	day	$ 1,000.00	$ 1,100.00
2	SUB: Dredger	Truck		2	$ 75.00	$/day	5	day	$ 750.00	$ 937.50
4	SUB: Dredger	FOGM		0	$ 3.25	$/gal	5	day	$ -	$ -
4	SUB: Dredger	Misc		1	$ 1,000.00	$/day	5	day	$ 5,000.00	$ 5,500.00
Mob Solifification Equipment		**5**	**Days**							
3	SUB: General Contractor	H&S Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,875.00
3	SUB: General Contractor	Work Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,875.00
4	SUB: General Contractor	Mob Rapid Mix		1	$ 10,000.00	$/load	1	na	$ 10,000.00	$ 11,000.00
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4	$ 10,000.00	$/load	1	na	$ 40,000.00	$ 44,000.00
4	SUB: General Contractor	Mob conveyors		4	$ 2,500.00	$/load	1	na	$ 10,000.00	$ 11,000.00
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1	$ 2,500.00	$/load	1	na	$ 2,500.00	$ 2,750.00
4	SUB: General Contractor	Mob Loaders		2	$ 500.00	$/load	1	na	$ 1,000.00	$ 1,100.00
4	SUB: General Contractor	Purchase Bi Blocks		500	$ 75.00	$/block	1	na	$ 37,500.00	$ 41,250.00
4	SUB: General Contractor	Misc Mobilization		3	$ 1,500.00	$/load	1	na	$ 4,500.00	$ 4,950.00
4	SUB: General Contractor	Equipment Rental During Mob		6	$ 400.00	$/day	5	na	$ 12,000.00	$ 13,200.00
4	SUB: General Contractor	Mob Office Trailer		6	$ 500.00	$/load	1	na	$ 3,000.00	$ 3,300.00
2	SUB: General Contractor	Dredge Rental	During Mob	1	$ 6,500.00	$/day	5	day	$ 32,500.00	$ 40,625.00
1	SUB: General Contractor	Dredging PM		32	$ 75.00	$/hr	5	day	$ 12,000.00	$ 15,000.00
1	SUB: General Contractor	Operator (ST)	Mob Labor	48	$ 51.75	$/hr	5	day	$ 12,420.00	$ 15,525.00
1	SUB: General Contractor	Operator (OT)	Mob Labor	32	$ 77.63	$/hr	5	day	$ 12,420.00	$ 15,525.00
1	SUB: General Contractor	Labor (ST)	Mob Labor	32	$ 46.00	$/hr	5	day	$ 7,360.00	$ 9,200.00
1	SUB: General Contractor	Labor (OT)	Mob Labor	16	$ 69.00	$/hr	5	day	$ 5,520.00	$ 6,900.00
4	SUB: General Contractor	Hotel		10	$ 100.00	$/day	5	day	$ 5,000.00	$ 5,500.00
4	SUB: General Contractor	Perdiem		10	$ 50.00	$/day	5	day	$ 2,500.00	$ 2,750.00
2	SUB: General Contractor	Truck		5	$ 75.00	$/day	5	day	$ 1,875.00	$ 2,343.75
4	SUB: General Contractor	FOGM		300	$ 3.25	$/gal	5	day	$ 4,875.00	$ 5,362.50
4	SUB: General Contractor	Misc		1	$ 1,000.00	$/day	5	day	$ 5,000.00	$ 5,500.00
4	SUB: General Contractor	Crane Rental	100 ton	32	$ 120.00	$/hr	1	na	$ 3,840.00	$ 4,224.00
Mob Water Treatment Plant		**3**	**Days**							
3	SUB: General Contractor	H&S Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,875.00
3	SUB: General Contractor	Work Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,875.00
3	SUB: General Contractor	Construction Drawings		1	$ 5,000.00	ea	1	na	$ 5,000.00	$ 5,750.00
3	SUB: General Contractor	Mob/Demob Construction Trailer		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,725.00
	SEE RO UNIT TAB FOR DETAILS									

Mob Sheeting Contractor										
3	SUB: Marine Contractor	H&S Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,875.00
3	SUB: Marine Contractor	Work Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,875.00
3	SUB: Marine Contractor	Construction Drawings		1	$ 5,000.00	ea	1	na	$ 5,000.00	$ 5,750.00
3	SUB: Marine Contractor	General Mobilization of Piledriver		1	$ 15,000.00	ea	1	na	$ 15,000.00	$ 17,250.00
MOB Civil Construction										
3	SUB: Civil Construction Contractor	H&S Plan		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,725.00
3	SUB: Civil Construction Contractor	Work Plan		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,725.00
3	SUB: Civil Construction Contractor	Construction Drawings		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,725.00
3	SUB: Civil Construction Contractor	Excavaator	Yellow Iron	1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,725.00
3	SUB: Civil Construction Contractor	Dozer	Yellow Iron	1	$ 500.00	ea	1	na	$ 500.00	$ 575.00
	Subtotal								**$ 419,312.50**	**$ 489,683.38**

Notes

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A.4	Infrastructure Construction	10	days							
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
Scow Mooring Facilities Setup										
3	SUB: Marine Contractor	Mooring Supplies		1	$ 5,000.00	ea	1	na	$ 5,000.00	$ 5,750.00
3	SUB: Marine Contractor	Purchase Structural Steel		310	$ 8.00	$/lf	1	na	$ 2,480.00	$ 2,852.00
3	SUB: Marine Contractor	Purchase Decking		100	$ 20.00	$/sf	1	na	$ 2,000.00	$ 2,300.00
3	SUB: Marine Contractor	Purchase Manramp	50 x 10	500	$ 7.00	$/sf	1	na	$ 3,500.00	$ 4,025.00
3	SUB: Marine Contractor	Piledriver (Marine)	Crane & Dirver	1	$ 7,500.00	$/day	5	day	$ 37,500.00	$ 43,125.00
1	SUB: Marine Contractor	PM		8	$ 75.00	$/hr	10	day	$ 6,000.00	$ 7,500.00
1	SUB: Marine Contractor	Operator (ST)	Mob Labor	1	$ 51.75	$/hr	5	day	$ 258.75	$ 323.44
1	SUB: Marine Contractor	Operator (OT)	Mob Labor		$ 77.63	$/hr	5	day	$ -	$ -
1	SUB: Marine Contractor	Labor (ST)	Mob Labor	24	$ 46.00	$/hr	5	day	$ 5,520.00	$ 6,900.00
1	SUB: Marine Contractor	Labor (OT)	Mob Labor		$ 69.00	$/hr	5	day	$ -	$ -
1	SUB: Marine Contractor	Welder (ST)	Mob Labor	16	$ 51.75	$/hr	10	day	$ 8,280.00	$ 10,350.00
1	SUB: Marine Contractor	Welder (OT)	Mob Labor		$ 77.63	$/hr	10	day	$ -	$ -
1	SUB: Marine Contractor	Labor (ST)	Mob Labor	32	$ 46.00	$/hr	10	day	$ 14,720.00	$ 18,400.00
1	SUB: Marine Contractor	Labor (OT)	Mob Labor		$ 69.00	$/hr	10	day	$ -	$ -
1	SUB: Marine Contractor	Workboat		1	$ 1,500.00	$/day	2	day	$ 3,000.00	$ 3,750.00
1	SUB: Marine Contractor	Misc		1	$ 200.00	$/day	10	day	$ 2,000.00	$ 2,500.00
Phase III Sheeting Install/Remove		**78.00**	**days**							
3	SUB: Sheeting Contractor	AZ 24 Sheeting	Rental for Bypass (first month)	403	$ 268.00	$/ton	1	mo	$ 107,870.00	$ 124,050.50
3	SUB: Sheeting Contractor	AZ 24 Sheeting	Rental for Bypass (first month)	78	$ 27.00	$/ton	2	mo	$ 4,212.00	$ 4,843.80
3	SUB: Sheeting Contractor	AZ 24 Sheeting	Drive, Extract, Salvage	78	$ 1,080.00	$/ton	1	na	$ 84,240.00	$ 96,876.00
1	SUB: Sheeting Contractor	AZ 24 Sheeting	Drive, Extract, Salvage	4	$ 75.00	$/hr	78	day	$ 23,400.00	$ 29,250.00
1	SUB: Excavation Contractor	Operator (ST)	Drive, Extract, Salvage	16	$ 51.75	$/hr	78	day	$ 64,584.00	$ 80,730.00
1	SUB: Excavation Contractor	Operator (OT)	Drive, Extract, Salvage	4	$ 77.63	$/hr	78	day	$ 24,219.00	$ 30,273.75
1	SUB: Excavation Contractor	Labor (ST)	Drive, Extract, Salvage	16	$ 46.00	$/hr	78	day	$ 57,408.00	$ 71,760.00
1	SUB: Excavation Contractor	Labor (OT)	Drive, Extract, Salvage	4	$ 69.00	$/hr	78	day	$ 21,528.00	$ 26,910.00
4	SUB: Excavation Contractor	Hotel	Drive, Extract, Salvage	4	$ 100.00	$/day	78	day	$ 31,200.00	$ 34,320.00
4	SUB: Excavation Contractor	Perdiem	Drive, Extract, Salvage	4	$ 50.00	$/day	78	day	$ 15,600.00	$ 17,160.00
2	SUB: Excavation Contractor	Contractor Equipment Daily Cost	CAT D-5	1	$ 380.00	$/day	78	day	$ 14,820.00	$ 18,525.00
2	SUB: Excavation Contractor	Truck	Drive, Extract, Salvage	1	$ 75.00	$/day	78	day	$ 2,925.00	$ 3,656.25
4	SUB: Excavation Contractor	FOGM	Drive, Extract, Salvage	10	$ 3.25	$/gal	78	day	$ 2,535.00	$ 2,788.50
4	SUB: Excavation Contractor	Misc	Drive, Extract, Salvage	1	$ 500.00	$/day	78	day	$ 39,000.00	$ 42,900.00
Phase III Road Construction		**3.00**	**days**							
3	SUB: Excavation Contractor	Construct Site Entrance Roads	57 Stone	625	$ 25.00	$/ton	1	na	$ 15,625.00	$ 17,968.75
3	SUB: Excavation Contractor	Construct Site Entrance Roads	Mirifi	22,500	$ 0.06	$/sf	1	na	$ 1,350.00	$ 1,552.50

1	SUB: Excavation Contractor	Labor	Supervisor	10	$ 75.00	$/hr	3	days	$ 2,250.00	$ 2,812.50
1	SUB: Excavation Contractor	Labor	Operator (ST)	8	$ 51.75	$/hr	3	days	$ 1,242.00	$ 1,552.50
1	SUB: Excavation Contractor	Labor	Operator (OT)	2	$ 77.63	$/hr	3	days	$ 465.75	$ 582.19
1	SUB: Excavation Contractor	Labor	Laborer (ST)	8	$ 46.00	$/hr	3	days	$ 1,104.00	$ 1,380.00
1	SUB: Excavation Contractor	Labor	Labor (OT)	2	$ 69.00	$/hr	3	days	$ 414.00	$ 517.50
4	SUB: Excavation Contractor	Labor	Perdiem	2	$ 35.00	$/day	3	days	$ 210.00	$ 231.00
4	SUB: Excavation Contractor	Labor	Hotel	2	$ 80.00	$/day	3	days	$ 480.00	$ 528.00
2	SUB: Excavation Contractor	Equipment Daily Cost	CAT 330	1	$ 677.00	$/day	3	days	$ 2,031.00	$ 2,538.75
2	SUB: Excavation Contractor	Equipment Daily Cost	CAT D-5	1	$ 380.00	$/day	3	days	$ 1,140.00	$ 1,425.00
2	SUB: Excavation Contractor	Equipment Daily Cost	Truck	2	$ 75.00	$/day	3	days	$ 450.00	$ 562.50
4	SUB: Excavation Contractor	Equipment Daily Cost	Fuel	100	$ 3.25	$/gal	3	days	$ 975.00	$ 1,072.50
4	SUB: Excavation Contractor	Misc ODC	Misc	1	$ 50.00	$/day	3	days	$ 150.00	$ 165.00
	Subtotal								**$ 611,686.50**	**$ 724,707.93**

A.5	**Site Maintenance**	**10**	day							

	Subtotal								$ 34,782.61	$ 40,000.00

A.6	Surveys	37	day							
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
BATHYMETRIC SURVEYS										
3	SUB: Bathymetric Surveyor	Data Review	Sr Engineer	16	$ 175.00	$/hr	1	na	$ 2,800.00	$ 3,220.00
3	SUB: Bathymetric Surveyor	Plans	Office Engineer	24	$ 75.00	$/hr	1	na	$ 1,800.00	$ 2,070.00
3	SUB: Bathymetric Surveyor	Survey		1	$ 2,500.00	$/day	37	day	$ 93,699.20	$ 107,754.07
3	SUB: Bathymetric Surveyor	Drawings and Reports	Sr Engineer	40	$ 175.00	$/hr	1	na	$ 7,000.00	$ 8,050.00
3	SUB: Bathymetric Surveyor	Drawings and Reports	CAD	80	$ 50.00	$/hr	1	na	$ 4,000.00	$ 4,600.00
3	SUB: Bathymetric Surveyor	Drawings and Reports	Office Clerical	40	$ 35.00	$/hr	1	na	$ 1,400.00	$ 1,610.00
3	SUB: Bathymetric Surveyor	Drawings and Reports	Office Supply	2	$ 500.00	ls	1	na	$ 1,000.00	$ 1,150.00
GENERAL SITE SURVEY										
3	SUB: GPR/MAG Surveyor	Field Survey	3 man crew	1	$ 1,200.00	$/day	3	na	$ 3,600.00	$ 4,140.00
3	SUB: GPR/MAG Surveyor	Data Review	Sr Engineer	16	$ 175.00	$/hr	3	na	$ 8,400.00	$ 9,660.00
	Subtotal								$ 123,699.20	$ 142,254.07

A.7	Site Restoration									
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
	Subtotal								$ 43,478.26	$ 50,000.00

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A.8	Demobilization	4	days							
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
Demob Mechanical Dredge		**5**	**Days**							
4	SUB: Dredger	Dredge		8.00	2500	$/load	1	na	20000	22000
4	SUB: Dredger	Scow Transport		3.00	2500	$/hr	1	na	7500	8250
1	SUB: Dredger	Dredging PM		8.00	75	$/hr	4	day	2400	3000
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16.00	51.75	$/hr	4	day	3312	4140
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4.00	77.625	$/hr	4	day	1242	1552.5
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16.00	46	$/hr	4	day	2944	3680
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4.00	69	$/hr	4	day	1104	1380
4	SUB: Dredger	Hotel		4.00	100	$/day	4	day	1600	1760
4	SUB: Dredger	Perdiem		4.00	50	$/day	4	day	800	880

2	SUB: Dredger	Truck		2.00	75	$/day	4	day	600	750
4	SUB: Dredger	FOGM		-	3.25	$/gal	4	day	0	0
4	SUB: Dredger	Misc		1.00	1000	$/day	4	day	4000	4400
Demob Solifification Equipment		**4**	**Days**							
4	SUB: General Contractor	Mob Rapid Mix		1.00	3500	$/load	1	na	3500	3850
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4.00	3500	$/load	1	na	14000	15400
4	SUB: General Contractor	Mob conveyors		4.00	2500	$/load	1	na	10000	11000
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1.00	2500	$/load	1	na	2500	2750
4	SUB: General Contractor	Mob Loaders		2.00	500	$/load	1	na	1000	1100
4	SUB: General Contractor	Bin Blocks		500.00	75	$/block	1	na	37500	41250
4	SUB: General Contractor	Misc Mobilization		3.00	1500	$/load	1	na	4500	4950
4	SUB: General Contractor	Equipment Rental During Mob		6.00	400	$/day	4	na	9600	10560
4	SUB: General Contractor	Mob Office Trailer		6.00	500	$/load	1	na	3000	3300
2	SUB: General Contractor	Dredge Rental	During Mob	1.00	6500	$/day	4	day	26000	32500
1	SUB: General Contractor	Dredging PM		32.00	75	$/hr	4	day	9600	12000
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	4	day	9936	12420
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	4	day	9936	12420
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	4	day	5888	7360
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	4	day	4416	5520
4	SUB: General Contractor	Hotel		10.00	100	$/day	4	day	4000	4400
4	SUB: General Contractor	Perdiem		10.00	50	$/day	4	day	2000	2200
2	SUB: General Contractor	Truck		5.00	75	$/day	4	day	1500	1875
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	4	day	3900	4290
4	SUB: General Contractor	Misc		1.00	1000	$/day	4	day	4000	4400
4	SUB: General Contractor	Crane Rental	100 ton	32.00	120	$/hr	1	na	3840	4224
Demob Water Treatment Plant		**3**	**Days**							
3	SUB: General Contractor	Mob/Demob Construction Trailer		1.00	1500	ea	1	na	1500	1725
3	SUB: General Contractor	Mob Mobile RO Unit		1.00	2500	$/trip	1	na	2500	2875
3	SUB: Vendor	Frac Tank Mob	Rain for Rent	1.00	500	ea	1	na	500	575
3	SUB: Vendor	Sand Filter Mob	Rain for Rent	1.00	500	ea	1	na	500	575
3	SUB: Vendor	Lamalla Clarifier Mob	MPS	4.00	1500	ea	1	na	6000	6900
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	3	day	7452	9315
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	3	day	7452	9315
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	3	day	4416	5520
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	3	day	3312	4140

4	SUB: General Contractor	Hotel		10.00	100	$/day	3	day	3000	3300
4	SUB: General Contractor	Perdiem		10.00	50	$/day	3	day	1500	1650
2	SUB: General Contractor	Truck		5.00	75	$/day	3	day	1125	1406.25
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	3	day	2925	3217.5
4	SUB: General Contractor	Misc Piping and Hoses		1.00	10000	$/day	1	na	10000	11000
4	SUB: General Contractor	Crane Rental	100 ton	8.00	120	$/hr	1	na	960	1056
Demob Sheeting Contractor										
3	SUB: Marine Contractor	General Mobilization of Piledriver		1.00	7500	ea	1	na	7500	8625
Demob Civil Construction										
3	SUB: Civil Construction Contractor	H&S Plan		1.00	1500	ea	1	na	1500	1725
3	SUB: Civil Construction Contractor	Work Plan		1.00	1500	ea	1	na	1500	1725
3	SUB: Civil Construction Contractor	Construction Drawings		1.00	1500	ea	1	na	1500	1725
3	SUB: Civil Construction Contractor	Excavaator	Yellow Iron	1.00	1500	ea	1	na	1500	1725
3	SUB: Civil Construction Contractor	Dozer	Yellow Iron	1.00	500	ea	1	na	500	575
	Subtotal								**$ 283,260.00**	**$ 328,231.25**

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A.9	**Subcontract Closeout**									
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/ Contingency**
4	SUB: Dredger	Final Report		1	$ 10,000.00	ls	1	na	$ 10,000.00	$ 11,000.00
	Subtotal								**$ 10,000.00**	**$ 11,000.00**

A.10	**Interim Demobilization**	**4**	**days**							

Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
Demob Mechanical Dredge		4	**Days**							
4	SUB: Dredger	Dredge		8.00	2500	$/load	1	na	20000	22000
4	SUB: Dredger	Scow Transport		3.00	2500	$/hr	1	na	7500	8250
1	SUB: Dredger	Dredging PM		8.00	75	$/hr	4	day	2400	3000
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16.00	51.75	$/hr	4	day	3312	4140
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4.00	77.625	$/hr	4	day	1242	1552.5
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16.00	46	$/hr	4	day	2944	3680
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4.00	69	$/hr	4	day	1104	1380
4	SUB: Dredger	Hotel		4.00	100	$/day	4	day	1600	1760
4	SUB: Dredger	Perdiem		4.00	50	$/day	4	day	800	880
2	SUB: Dredger	Truck		2.00	75	$/day	4	day	600	750
4	SUB: Dredger	FOGM		-	3.25	$/gal	4	day	0	0
4	SUB: Dredger	Misc		1.00	1000	$/day	4	day	4000	4400
Remob Mechanical Dredge		5	**Days**							
4	SUB: Dredger	Derdge Preparation		1.00	30000	ls	1	na	30000	33000
4	SUB: Dredger	Dredge Transportation to Monroe	TOW	1.00	7500	$/load	1	na	7500	8250
4	SUB: Dredger	Scow Transport to Monroe		3.00	2500	$/hr	1	na	7500	8250
4	SUB: Dredger	GPS Install	Programming	40.00	75	$/hr	1	na	3000	3300
2	SUB: Dredger	Dredge Rental	During Mob	1.00	15000	$/day	5	day	75000	93750
1	SUB: Dredger	Dredging PM		8.00	75	$/hr	5	day	3000	3750
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16.00	51.75	$/hr	5	day	4140	5175
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4.00	77.625	$/hr	5	day	1552.5	1940.625
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16.00	46	$/hr	5	day	3680	4600
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4.00	69	$/hr	5	day	1380	1725
4	SUB: Dredger	Hotel		4.00	100	$/day	5	day	2000	2200
4	SUB: Dredger	Perdiem		4.00	50	$/day	5	day	1000	1100
2	SUB: Dredger	Truck		2.00	75	$/day	5	day	750	937.5
4	SUB: Dredger	FOGM		-	3.25	$/gal	5	day	0	0
4	SUB: Dredger	Misc		1.00	1000	$/day	5	day	5000	5500
Demob Solidification Equipment		4	**Days**							
4	SUB: General Contractor	Mob Rapid Mix		1.00	3500	$/load	1	na	3500	3850

4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4.00	3500	$/load	1	na	14000	15400
4	SUB: General Contractor	Mob conveyors		4.00	2500	$/load	1	na	10000	11000
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1.00	2500	$/load	1	na	2500	2750
4	SUB: General Contractor	Mob Loaders		2.00	500	$/load	1	na	1000	1100
4	SUB: General Contractor	Bin Blocks		500.00	75	$/block	1	na	37500	41250
4	SUB: General Contractor	Misc Mobilization		3.00	1500	$/load	1	na	4500	4950
4	SUB: General Contractor	Equipment Rental During Mob		6.00	400	$/day	4	na	9600	10560
4	SUB: General Contractor	Mob Office Trailer		6.00	500	$/load	1	na	3000	3300
2	SUB: General Contractor	Dredge Rental	During Mob	1.00	6500	$/day	4	day	26000	32500
1	SUB: General Contractor	Dredging PM		32.00	75	$/hr	4	day	9600	12000
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	4	day	9936	12420
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	4	day	9936	12420
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	4	day	5888	7360
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	4	day	4416	5520
4	SUB: General Contractor	Hotel		10.00	100	$/day	4	day	4000	4400
4	SUB: General Contractor	Perdiem		10.00	50	$/day	4	day	2000	2200
2	SUB: General Contractor	Truck		5.00	75	$/day	4	day	1500	1875
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	4	day	3900	4290
4	SUB: General Contractor	Misc		1.00	1000	$/day	4	day	4000	4400
4	SUB: General Contractor	Crane Rental	100 ton	32.00	120	$/hr	1	na	3840	4224
ReMob Solidification Equipment		5	**Days**							
3	SUB: General Contractor	H&S Plan		1.00	2500	ea	1	na	2500	2875
3	SUB: General Contractor	Work Plan		1.00	2500	ea	1	na	2500	2875
4	SUB: General Contractor	Mob Rapid Mix		1.00	10000	$/load	1	na	10000	11000
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4.00	10000	$/load	1	na	40000	44000
4	SUB: General Contractor	Mob conveyors		4.00	2500	$/load	1	na	10000	11000
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1.00	2500	$/load	1	na	2500	2750
4	SUB: General Contractor	Mob Loaders		2.00	500	$/load	1	na	1000	1100
4	SUB: General Contractor	Purchase Bi Blocks		500.00	75	$/block	1	na	37500	41250
4	SUB: General Contractor	Misc Mobilization		3.00	1500	$/load	1	na	4500	4950
4	SUB: General Contractor	Equipment Rental During Mob		6.00	400	$/day	5	na	12000	13200
4	SUB: General Contractor	Mob Office Trailer		6.00	500	$/load	1	na	3000	3300
2	SUB: General Contractor	Dredge Rental	During Mob	1.00	6500	$/day	5	day	32500	40625
1	SUB: General Contractor	Dredging PM		32.00	75	$/hr	5	day	12000	15000
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	5	day	12420	15525

1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	5	day	12420	15525
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	5	day	7360	9200
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	5	day	5520	6900
4	SUB: General Contractor	Hotel		10.00	100	$/day	5	day	5000	5500
4	SUB: General Contractor	Perdiem		10.00	50	$/day	5	day	2500	2750
2	SUB: General Contractor	Truck		5.00	75	$/day	5	day	1875	2343.75
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	5	day	4875	5362.5
4	SUB: General Contractor	Misc		1.00	1000	$/day	5	day	5000	5500
4	SUB: General Contractor	Crane Rental	100 ton	32.00	120	$/hr	1	na	3840	4224
Demob Water Treatment Plant		**3**	**Days**							
3	**SEE WATER TREATMENT TAB FOR DETAILS**	Siemens Unit	150 gpm RO (see quote)	1	$ 5,000.00	$/trip	1	na	5000	5750
Mob Water Treatment Plant		**3**	**Days**							
	SEE WATER TREATMENT TAB FOR DETAILS									
	Subtotal								**$ 597,430.50**	**$ 695,544.88**

Tyco "BASE SCENARIO" Cost Estimate 2011-11-24

12/14/2011 17:04

Unit Price Items
Tyco Fire Products, LP
Marinette, Wisconsin

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class II Estimate Standards and provided as an Engineers Estimate and is based on Pre-final design documents. 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.

TASK	TASK DESCRIPTION	No of Units	Unit	Cost		UR
B1	Phase 1 - SOFT Sediment Dredging >50 ppm	41,221	CY	$ 973,920		$ 23.63
B2A	Phase 2A - Mechanical Dredging - Semiconsolidated > 50 ppm	81,345	CY	$ 2,248,138		$ 27.64
B2B	Phase 2B - Dry Excavation of Semiconsolidated > 50 ppm	56,032	CY	$ 827,773		$ 14.77
B2B1	Phase 2B1 - Dry Excavation Semiconsolidated 50 ppm to 20 ppm (addl)	0	CY	$ -		$ -
B3	Phase 3 - Dry Excavation of soft sediment > 50 ppm	48,481	CY	$ 716,220		$ 14.77
B5	Supply Fluidized Bed Boiler Ash Reagent	18,065	TON	$ 1,092,913		$ 60.50
B6	Supply Portland Cement Reagent	0	TON	$ -		$ -
B7	Supply Sodium Polyacrylate (SAP) Reagent	0	TON	$ -		$ -
B8	Supply 60% Ferric Sulfate Solution Reagent	3,011	TON	$ 861,083		$ 286.00
B9	Supply Calcium Hypochlorite Reagent	1,129	TON	$ 2,359,698		$ 2,090.00
B10	Mix Reagents, Stockpile Sediment on Pad	124,046	CY	$ 3,912,990		$ 31.54
B11	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill	308,933	TON	$ 9,523,924		$ 30.83
B12	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill	0	TON	$ -		$ -
B13	Water Treatment	21,408,727	GAL	$ 5,277,954		$ 0.25
B14	Debris Removal and RCRA Subtitle D Disposal	382	TON	$ 36,228		$ 94.90
B15	Mechanical Dredge Standby Time	50	HR	$ 54,390		$ 1,087.80
				$ 27,885,232		

ESTIMATE TASK DETAILS

B1	Phase 1 - SOFT Sediment Dredging >50 ppm	32	day	41,221	cy	1300	cy/day			
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/Contin.
Waterside Operation and Maintenance										
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	32	day	$ 14,268.81	$ 17,836.01
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	32	day	$ 26,254.61	$ 32,818.26
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	32	day	$ 19,690.95	$ 24,613.69
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	32	day	$ 23,337.43	$ 29,171.78
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	32	day	$ 17,503.07	$ 21,878.84
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	32	day	$ 12,683.38	$ 13,951.72
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	32	day	$ 6,341.69	$ 6,975.86
2	SUB: Dredger	Truck		2	$ 75.00	$/day	32	day	$ 4,756.27	$ 5,945.34
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 6 CY Environmental Bucket	1	$ 7,500.00	$/day	32	day	$ 237,813.46	$ 297,266.83
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	32	day	$ 69,758.62	$ 87,198.27
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	32	day	$ 142,688.08	$ 178,360.10
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	32	day	$ 104,637.92	$ 130,797.40
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	32	day	$ 3,170.85	$ 3,963.56
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	32	na	$ 3,170.85	$ 3,963.56
2	SUB: Dredger	Turbidity Curtains	Supply and Install (One Time)	1	$ 50,000.00	ea	1	na	$ 50,000.00	$ 62,500.00
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	32	day	$ 51,526.25	$ 56,678.88
	Subtotal								$ 787,602.23	$ 973,920.09

B1A	Phase 1A - Remove SOFT 50 ppm to 20 ppm (addl)	-	day	0	cy	1300	cy/day			
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/Contin.
Waterside Operation and Maintenance										
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -

1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 6 CY Environmental Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								**$ -**	**$ -**

B2A	**Phase 2A - Mechanical Dredging - Semiconsolidated > 50 ppm**	**81**	**day**	**81,345**	**cy**	1000	**cy/day**			
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
Waterside Operation and Maintenance										
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	81	day	$ 36,605.25	$ 45,756.56
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	81	day	$ 67,353.66	$ 84,192.08
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	81	day	$ 50,515.25	$ 63,144.06
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	81	day	$ 59,869.92	$ 74,837.40
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	81	day	$ 44,902.44	$ 56,128.05
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	81	day	$ 32,538.00	$ 35,791.80
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	81	day	$ 16,269.00	$ 17,895.90
2	SUB: Dredger	Truck		2	$ 75.00	$/day	81	day	$ 12,201.75	$ 15,252.19
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 6 CY Environmental Bucket	1	$ 7,500.00	$/day	81	day	$ 610,087.50	$ 762,609.38
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	81	day	$ 178,959.00	$ 223,698.75
2	SUB: Dredger	Scows	30 x 60, 700 cy	2	$ 1,500.00	$/day	81	day	$ 244,035.00	$ 305,043.75
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	81	day	$ 268,438.50	$ 335,548.13
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	81	day	$ 8,134.50	$ 10,168.13
2	SUB: Dredger	Turbidity Curtains	Supply and Install (One Time)	1	$ 50,000.00	ea	1	na	$ 50,000.00	$ 62,500.00
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	81	na	$ 8,134.50	$ 10,168.13
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	81	day	$ 132,185.63	$ 145,404.19
	Subtotal								**$ 1,820,229.89**	**$ 2,248,138.47**

B2A1	**Phase 2A1 - Mechanical Dredge Semiconsolidated 50 to 20 ppm (add\)**	**-**	**day**	**0**	**cy**	1000	**cy/day**			
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
Waterside Operation and Maintenance										
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 6 CY Environmental Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								**$ -**	**$ -**

B2B	**Phase 2B - Dry Excavation of Semiconsolidated > 50 ppm**	**80**	**day**	**56,032**	**cy**	700	**cy/day**			
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
Waterside Operation and Maintenance										
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	80	day	$ 36,020.57	$ 45,025.71
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	80	day	$ 66,277.85	$ 82,847.31
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	80	day	$ 49,708.39	$ 62,135.49
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	80	day	$ 58,913.65	$ 73,642.06
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	80	day	$ 44,185.23	$ 55,231.54
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	80	day	$ 32,018.29	$ 35,220.11
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	80	day	$ 16,009.14	$ 17,610.06
2	SUB: Dredger	Truck		2	$ 75.00	$/day	80	day	$ 12,006.86	$ 15,008.57

2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 1,250.00	$/day	80	day	$ 100,057.14	$ 125,071.43
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	80	day	$ 24,013.71	$ 30,017.14
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	80	day	$ 8,004.57	$ 10,005.71
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	80	day	$ 132,075.43	$ 165,094.29
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	80	day	$ 20,011.43	$ 25,014.29
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	80	day	$ 78,044.57	$ 85,849.03
	Subtotal								**$ 677,346.83**	**$ 827,772.74**

B2B1	**Phase 2B1 - Dry Excavation Semiconsolidated 50 ppm to 20 ppm (addl)**	**-**	**day**	**0**	**cy**	700	**cy/day**			
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
Waterside Operation and Maintenance										
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								**$ -**	**$ -**

B3	**Phase 3 - Dry Excavation of soft sediment > 50 ppm**	**69**	**day**	**48,481**	**cy**	700	**cy/day**			
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
Waterside Operation and Maintenance										
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	69	day	$ 31,166.36	$ 38,957.95
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	69	day	$ 57,346.10	$ 71,682.62
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	69	day	$ 43,009.57	$ 53,761.97
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	69	day	$ 50,974.31	$ 63,717.89
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	69	day	$ 38,230.73	$ 47,788.41
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	69	day	$ 27,703.43	$ 30,473.77
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	69	day	$ 13,851.71	$ 15,236.89
2	SUB: Dredger	Truck		2	$ 75.00	$/day	69	day	$ 10,388.79	$ 12,985.98
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 1,250.00	$/day	69	day	$ 86,573.21	$ 108,216.52
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	69	day	$ 20,777.57	$ 25,971.96
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	69	day	$ 6,925.86	$ 8,657.32
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	69	day	$ 114,276.64	$ 142,845.80
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	69	day	$ 17,314.64	$ 21,643.30
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	69	day	$ 67,527.11	$ 74,279.82
	Subtotal								**$ 586,066.03**	**$ 716,220.20**

B3A	**Phase 3A - Dry Excavation of Soft Sediment 50 ppm tp 20 ppm (addl)**	**-**	**day**	**0**	**cy**	700	**cy/day**			
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
Waterside Operation and Maintenance										
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	0	day	$ -	$ -

	Subtotal								$ -	$ -

B4A	Phase 4A - Mechanical Dredging Glacial Till > 50 ppm	-	day	0	cy	700	cy/day			
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/Contin.
Waterside Operation and Maintenance										
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	0	na	$ -	$ -
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								$ -	$ -

B4B	Phase 4B - Dry Excavation Glacial Till > 50 ppm	0	day	0	cy	700	cy/day			
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/Contin.
Waterside Operation and Maintenance										
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								$ -	$ -

B4C	Phase 4C - Mechanical Dredging Glacial Till 50 to 20 ppm	0	day	0	cy	700	cy/day			
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/Contin.
Waterside Operation and Maintenance										
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	0	day	$ -	$ -
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	0	na	$ -	$ -
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								$ -	$ -

B4D	Phase 4D - Mechanical Dredging Glacial Till 50 to 20 ppm	0	day	0	cy	700	cy/day			

Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/Contin.
Waterside Operation and Maintenance										
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 345 and 5 CY Standard Bucket	1	$ 7,500.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	0	day	$ -	$ -
	Subtotal								**$ -**	**$ -**

B5	**Supply Fluidized Bed Boiler Ash Reagent**									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
4	SUB: Dredger	Purchase Fluidized Bed Boiler Ash		18065	$ 55.00	$/ton	1	na	$ 993,557.03	$ 1,092,912.73
	Subtotal								**$ 993,557.03**	**$ 1,092,912.73**

B6	**Supply Portland Cement Reagent**									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
4	SUB: Dredger	Purchase Portland Cement		0	$ 125.00	$/ton	1	na	$ -	$ -
	Subtotal								**$ -**	**$ -**

B7	**Supply Sodium Polyacrylate (SAP) Reagent**									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
4	SUB: Dredger	Purchase Sodium Polyacrylate		0	$ 1,600.00	$/ton	1	na	$ -	$ -
	Subtotal								**$ -**	**$ -**

B8	**Supply 60% Ferric Sulfate Solution Reagent**									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
4	SUB: Dredger	Purchase Ferric Sulfate Solution		3011	$ 260.00	$/ton	1	na	$ 782,802.51	$ 861,082.76
	Subtotal								**$ 782,802.51**	**$ 861,082.76**

B9	**Supply Calcium Hypochlorite Reagent**									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Raw Cost**	**Total w/Contin.**
4	SUB: Dredger	Purchase Calcium Hypochlorite		1129	$ 1,900.00	$/ton	1	na	$ 2,145,179.95	$ 2,359,697.95
	Subtotal								**$ 2,145,179.95**	**$ 2,359,697.95**

B10	**Mix Reagents, Stockpile Sediment on Pad**	262	day	22204	ton agent					
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**
Landside Operations and Maintenance										
1	SUB: Dredger	Dredging PM	Landside Labor	6	$ 75.00	$/hr	262	day	$ 118,060.99	$ 147,576.23
1	SUB: Dredger	Operator (ST)	Landside Labor	16	$ 51.75	$/hr	262	day	$ 217,232.21	$ 271,540.27
1	SUB: Dredger	Operator (OT)	Landside Labor	4	$ 77.63	$/hr	262	day	$ 81,462.08	$ 101,827.60
1	SUB: Dredger	Labor (ST)	Landside Labor	16	$ 46.00	$/hr	262	day	$ 193,095.30	$ 241,369.13
1	SUB: Dredger	Labor (OT)	Landside Labor	4	$ 69.00	$/hr	262	day	$ 72,410.74	$ 90,513.42
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	262	day	$ 104,943.10	$ 115,437.41
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	262	day	$ 52,471.55	$ 57,718.70
2	SUB: Dredger	Truck		2	$ 75.00	$/day	262	day	$ 39,353.66	$ 49,192.08
2	SUB: Dredger	CAT 345 Extended Stick Rental		1	$ 1,250.00	$/day	262	day	$ 327,947.18	$ 409,933.98
2	SUB: Dredger	Polycarbonate Metering and Mixing System		1	$ 450.00	$/day	262	day	$ 118,060.99	$ 147,576.23
2	SUB: Dredger	Cement/FlyAsh Metering and Pugmill (Rapid Mix 400)		1	$ 1,467.00	$/day	262	day	$ 384,878.82	$ 481,098.52
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	262	day	$ 70,574.23	$ 88,217.79
2	SUB: Dredger	Radial Stacking Conveyor		1	$ 171.00	$/day	262	day	$ 44,863.17	$ 56,078.97
2	SUB: Dredger	Misc Pumps, Hoses		1	$ 150.00	$/day	262	day	$ 39,353.66	$ 49,192.08
2	SUB: Dredger	100 ton Pig Rental		1	$ 350.00	$/day	262	day	$ 91,825.21	$ 114,781.51
2	SUB: Dredger	Light Plant Rental		4	$ 250.00	$/day	262	day	$ 262,357.75	$ 327,947.18
2	SUB: Dredger	Misc Expenses		1	$ 200.00	$/day	262	day	$ 52,471.55	$ 65,589.44

2	SUB: Dredger	Office Trailer Rentals		2	$ 350.00	$/mo	9	mo	$ 6,121.68	$ 7,652.10
2	SUB: Dredger	Office tTrailer		1	$ 17.00	$/day	262	day	$ 4,460.08	$ 5,575.10
2	SUB: Dredger	Bobcat		1	$ 75.00	$/day	262	day	$ 19,676.83	$ 24,596.04
2	SUB: Dredger	Port a Potty		1	$ 7.00	$/day	262	day	$ 1,836.50	$ 2,295.63
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	262	day	$ 255,798.80	$ 281,378.68
3	SUB: Mobile Lab Supplier	Mob Mobile Laboratory		1	$ 1,750.00	$/trip	1	na	$ 1,750.00	$ 2,012.50
3	SUB: Mobile Lab Supplier	Mobile Laboratory		1	$ 2,565.00	$/day	262	day	$ 672,947.62	$ 773,889.76
	Subtotal								**$ 3,233,953.72**	**$ 3,912,990.37**

Notes Above includes cost for Phases 1 & 3 only. Phases 2a and 2b assumed to require no stabilization reagent.

B11	**Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill**	**308,933**	**tons**	**262**	**days**		**1,178**	**tons/day**					
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**			
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	262	day	$ 70,574.23	$ 88,217.79	42241.96391	$	(45,975.83)
1	SUB: Dredger	Dredging PM		2	$ 75.00	$/hr	262	day	$ 39,353.66	$ 49,192.08	23554.99846	$	(25,637.08)
1	SUB: Dredger	Loader Operator (ST)	Loader Operator	8	$ 51.75	$/hr	262	day	$ 108,616.11	$ 135,770.13	65011.79575	$	(70,758.34)
1	SUB: Dredger	Loader Operator (OT)	Loader Operator	4	$ 77.63	$/hr	262	day	$ 81,462.08	$ 101,827.60	48758.84682	$	(53,068.75)
1	SUB: Dredger	Laborer (ST)	Laborer	8	$ 46.00	$/hr	262	day	$ 96,547.65	$ 120,684.56	57788.26289	$	(62,896.30)
1	SUB: Dredger	Laborer (OT)	Laborer	4	$ 69.00	$/hr	262	day	$ 72,410.74	$ 90,513.42	43341.19717	$	(47,172.23)
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	262	day	$ 104,943.10	$ 115,437.41	57578.88513	$	(57,858.52)
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	262	day	$ 52,471.55	$ 57,718.70	28789.44256	$	(28,929.26)
2	SUB: Dredger	Truck		0	$ 75.00	$/day	262	day	$ -	$ -	0	$	-
5	SUB: Dredger	Sediment Transportation	Truck to landfill, 8 mi RT	0	$ 10.56	$/ton	1	na	$ -	$ -	0	$	-
5	SUB: Dredger	Sediment Transportation	Liner	14,711.10	$ 40.00	$/load	1	na	$ 588,444.02	$ 617,866.22	418818.7518	$	(199,047.47)
5	SUB: Dredger	Nonhaz Sediment Disposal	Subtitle D Landfill	0	$ 19.21	$/ton	1	na	$ -	$ -	0	$	-
4	SUB: Dredger	FOGM (Site equipment)		60	$ 3.25	$/gal	262	day	$ 51,159.76	$ 56,275.74	28069.7065	$	(28,206.03)
3	SUB: Mobile Lab Supplier	Mobile Laboratory		1	$ 1,700.00	$/day	262	day	$ 446,008.17	$ 512,909.40	369224.6009	$	(143,684.79)
												$	-
	Quote - Transportation and Disposal	Waste Management	T&D	308,933	$ 23.36	$/ton	1	na	$ 7,216,677.44	$ 7,577,511.32	4161383.118	$	(3,416,128.20)
	Subtotal								**$ 8,928,668.51**	**$ 9,523,924.37**			

B12	**Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill**	**-**	**tons**	**0**	**days**		**-**	**tons/day**		
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	0	day	$ -	$ -
1	SUB: Dredger	Dredging PM		2	$ 75.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor Labor	8	$ 51.75	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor Labor	4	$ 77.63	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor Labor	8	$ 46.00	$/hr	0	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor Labor	4	$ 69.00	$/hr	0	day	$ -	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	0	day	$ -	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	0	day	$ -	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	0	day	$ -	$ -
5	SUB: Excavation Contractor	Sediment Transportation	Truck Liner	0	$ 73.50	$/ton	1	na	$ -	$ -
5	SUB: Excavation Contractor	Sediment Transportation	Liner	0	$ 50.00	$/load	1	na	$ -	$ -
5	SUB: Excavation Contractor	TSCA Sediment Disposal	Subtitle C Landfill	0	$ 65.00	$/ton	1	na	$ -	$ -
4	SUB: Dredger	FOGM		60	$ 3.25	$/gal	0	day	$ -	$ -
3	SUB: Mobile Lab Supplier	Mobile Laboratory		1	$ 2,565.00	$/day	0	day	$ -	$ -
	Subtotal								**$ -**	**$ -**

B13	**Water Treatment**	**292**	**day**							
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**
1	**SEE WATER TREATMENT TAB for Unit Rate Calculation**			21,408,727	$ 0.20	$/gal	1	na	$ 4,222,363.10	$ 5,277,953.88
	Subtotal								**$ 4,222,363.10**	**$ 5,277,953.88**

B14	**Debris Removal and RCRA Subtitle D Disposal**	**382**	**TON**	20	**tons/day**		**19**	**days**		
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	19	day	$ 5,111.00	$ 6,388.75
1	SUB: Dredger	Dredging PM		1	$ 75.00	$/hr	19	day	$ 1,425.00	$ 1,781.25
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor Labor	2	$ 51.75	$/hr	19	day	$ 1,966.50	$ 2,458.13
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor Labor	0	$ 77.63	$/hr	19	day	$ -	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor Labor	2	$ 46.00	$/hr	19	day	$ 1,748.00	$ 2,185.00
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor Labor	0	$ 69.00	$/hr	19	day	$ -	$ -
4	SUB: Dredger	Hotel		0.5	$ 100.00	$/day	19	day	$ 950.00	$ 1,045.00
4	SUB: Dredger	Perdiem		0.5	$ 50.00	$/day	19	day	$ 475.00	$ 522.50
2	SUB: Dredger	Truck		1	$ 75.00	$/day	19	day	$ 1,425.00	$ 1,781.25
5	SUB: Excavation Contractor	Sediment Transportation		382	$ 5.50	$/ton	1	na	$ 2,099.63	$ 2,204.61
5	SUB: Excavation Contractor	Sediment Transportation	Liner	19	$ 50.00	$/load	1	na	$ 954.38	$ 1,002.09
5	SUB: Excavation Contractor	Disposal	Subtitle D Landfill	382	$ 17.86	$/ton	1	na	$ 6,818.06	$ 7,158.96
2	SUB: Dredger	Visqueen		1	$ 4,500.00	$/lump	1	na	$ 4,500.00	$ 5,625.00

4	SUB: Dredger	FOGM		60	$ 3.25	$/gal	19	day	$ 3,705.00	$ 4,075.50
	Subtotal								**$ 31,177.56**	**$ 36,228.04**

B15	**Mechanical Dredge Standby Time**	**50**	**hr**							
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**
1	SUB: Dredger	Dredging PM		8	$ 75.00	$/hr	2.1	day	$ 1,260.00	$ 1,575.00
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor Labor	32	$ 51.75	$/hr	2.1	day	$ 3,477.60	$ 4,347.00
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor Labor	8	$ 77.63	$/hr	2.1	day	$ 1,304.10	$ 1,630.13
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor Labor	32	$ 46.00	$/hr	2.1	day	$ 3,091.20	$ 3,864.00
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor Labor	8	$ 69.00	$/hr	2.1	day	$ 1,159.20	$ 1,449.00
4	SUB: Dredger	Hotel		9	$ 100.00	$/day	2.1	day	$ 1,890.00	$ 2,079.00
4	SUB: Dredger	Perdiem		9	$ 50.00	$/day	2.1	day	$ 945.00	$ 1,039.50
2	SUB: Dredger	Truck		5	$ 75.00	$/day	2.1	day	$ 787.50	$ 984.38
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barg	1	$ 7,500.00	$/day	2.1	day	$ 15,750.00	$ 19,687.50
2	SUB: Dredger	Tender Tug		1	$ 550.00	$/hr	2.1	day	$ 1,155.00	$ 1,443.75
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	2.1	day	$ 9,450.00	$ 11,812.50
2	SUB: Dredger	Tow Tug		1	$ 550.00	$/hr	2.1	day	$ 1,155.00	$ 1,443.75
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	2.1	day	$ 210.00	$ 262.50
4	SUB: Dredger	Surveyor		1	$ 1,200.00	$/day	2.1	day	$ 2,520.00	$ 2,772.00
	Subtotal								**$ 44,154.60**	**$ 54,390.00**

B16	**8th Street Slip Sheet Piling Reinforcement**	**0**	**LF**							
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/Contin.**
4	Refer to worksheet "Caisson"								#REF!	#REF!
	Subtotal								**#REF!**	**#REF!**

Tyco "BASE SCENARIO" Cost Estimate 2011-11-24
Tyco Water Treatment Estimate
Tyco Fire Products, LP
Marinette, Wisconsin

General Scope

Mechanical Dredging & Offsite Sediment Disposal
Dredge All Sediment and Soil with 50 ppm Arsenic or Higher
Monitored Natural Attenuation of sediment < 50 ppm As for 10 years
Dredge Remaining Sediment and Soil exceeding 20 ppm after 10 years if necessary

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class IV Estimate Standards and provided as a Conceptual Design estimate. As such, it is suitable for feasibility studies, selection of alternatives and/or planning only. 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.

This sheet provided as backup to costs on Summary Page only

Water Treatment Construction and Operation Conceptual Cost Estimate

12/14/2011 17:04

PRELIMINARY TREATMENT SYSTEM CONSTRUCTION	Cost	Unit Costs
Treatment Pad Construction	**$ 40,263**	**$ 40,263**
Treatment System Mobilization	**$ 1,423,588**	**$ 1,553,588**
Water Treatment Operations	**$ 2,708,026**	**$ 1,391,473**
Water Treatment Demobilization	**$ 50,488**	**$ 50,488**
	$ 4,222,363.10	**$ 0.197 Cost per gallon before contingency**

RO WATER TREATMENT ESTIMATE DETAILS (Preliminary)

	Treatment System Pad Construction								
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit**	**Raw Cost**
3	SUB: Mob Civil Subcontractor	Pad Installation Sub		1	$ 5,000.00	ls	1	na	$ 5,000.00
3	SUB: Civil Subcontractor	Pad Installation Sub	Site Grading	1	$ 4,500.00	ls	1	na	$ 4,500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Stone 10,000 sf x .5 ft =	300	$ 15.00	$/ton	1	na	$ 4,500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Asphalt Base 10,000 sf x .25 ft =	150	$ 75.00	$/ton	1	na	$ 11,250.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Asphalt Curb 400 lf x 6 in high	400	$ 10.00	$/lf	1	na	$ 4,000.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Sump	1	$ 1,500.00	LS	1	na	$ 1,500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Spreader	1	$ 250.00	LS	2	day	$ 500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Compactor	1	$ 150.00	LS	2	day	$ 300.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Curber	1	$ 350.00	LS	1	day	$ 350.00
3	SUB: Construction Labor		Operator	8	$ 51.75	$/hr	3	day	$ 1,242.00
3	SUB: Construction Labor		Operator OT	4	$ 77.63	$/hr	3	day	$ 931.50
3	SUB: Construction Labor		Labor	16	$ 46.00	$/hr	3	day	$ 2,208.00
3	SUB: Construction Labor		Labor OT	8	$ 69.00	$/hr	3	day	$ 1,656.00
3	SUB: Construction Labor	PerDiems	Meals, Misc	3	$ 50.00	$/day	3	day	$ 450.00

3	SUB: Construction Labor	Hotel	Hotel	3	$ 100.00	$/day	3	day	$ 900.00
3	SUB: Construction Labor		Fuel	100	$ 3.25	$/day	3	day	$ 975.00
	Total								**$ 40,262.50**

	Treatment System Mobilization								
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit**	**Raw Cost**
3	Bag Filter System Rental	Rain For Rent	100 gpm with 1 um absolute bags	0	$ 5,000.00	$/trip	1	na	$ -
3	RO System Trailer	Siemens Unit	150 gpm RO (see quote)	1	$ 5,000.00	$/trip	1	na	$ 5,000.00
3	RO System Trailer	Siemens Unit	Trailer Prep	1	$ 13,500.00	LS	1	na	$ 13,500.00
3	Microfiltration Trailer	Siemens Unit	150 gpm MF Trailer (based on RO)	1	$ 5,000.00	$/trip	1	na	$ 5,000.00
3	Evaporator Purchase	10 gpm		1	$ 1,275,000	Allowance	1	na	$ 1,275,000.00
3	Plate and Frame Press Purchase			1	$ 75,000	Allowance	1	na	$ 75,000.00
3	Frac Tanks	2 ea 20,000 gal Baker	See Siemens Quote	1	$ 1,500.00	$/trip	1	na	$ 1,500.00
3	Bag Filter Rental Skids	2 ea x 150 gpm		0	$ 1,500.00	$/trip	1	na	$ -
3	Evaporator Mobilization	per Lang Email	10 GPM	1	$ 10,000.00	Allowance	1	na	$ 10,000.00
3	Plate and Frame Press	per Lang Email		1	$ 15,000.00	Allowance	1	na	$ 15,000.00
3	Pad Electrical System Install	Transformer, Distribution System	Labor, Eqpt Matl	1	$ 10,000.00	Allowance	1	na	$ 10,000.00
3	System Piping Materials	Flex Hoses, Hard pipe from CF sump	Matl	1	$ 5,000.00	Allowance	1	na	$ 5,000.00
3	SUB: Construction Labor	Install Equipment	Operator	8	$ 51.75	$/hr	3	day	$ 1,242.00
3	SUB: Construction Labor	Install Equipment	Operator OT	4	$ 77.63	$/hr	3	day	$ 931.50
3	SUB: Construction Labor	Install Equipment	Labor	16	$ 46.00	$/hr	3	day	$ 2,208.00
3	SUB: Construction Labor	Install Equipment	Labor OT	8	$ 69.00	$/hr	3	day	$ 1,656.00
3	SUB: Construction Labor	PerDiems	Meals, Misc	3	$ 50.00	$/day	3	day	$ 450.00
3	SUB: Construction Labor	Hotel	Hotel	3	$ 100.00	$/day	3	day	$ 900.00
3	SUB: Construction Labor	Crane operated		1	$ 1,200.00	$/day	1	day	$ 1,200.00
	Total								**$ 1,423,587.50**

	Treatment System Operation	**24**	**hour shifts**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**		**Raw Cost**
3	RO System Rental	See Siemens Quote	150 gpm unit	1	$ 25,000.00	$/mo	11	mo	$ 268,631.46
3	Microfiltration System Rental	Based on RO Quote	150 gpm unit	1	$ 25,000.00	$/mo	11	mo	$ 268,631.46
3	Frac Tank Rental	Baker 20,000 gal	Eqpt	2	$ 2,000.00	$/mo	11	mo	$ 42,981.03
3	Bag Filter Rentals	Baker 150 gpm skids w 2 ea filters	Eqpt	-	$ 5,000.00	$/mo	11	mo	$ -
3	Plate and Frame Press Rental	Estimate		-	$ 10,000.00	$/mo	11	mo	$ -
3	Water Transfer Pump	4" auto start	Rain for Rent	1	$ 3,500.00	$/mo	11	mo	$ 37,608.40
3	Siemens Technical Rep Trip		Travel	1	$ 3,000.00	$/trip	1	na	$ 3,000.00
3	Siemens Technical Rep Trip		Onsite	8	$ 125.00	$/trip	2	day	$ 2,000.00
3	Misc Pumps and equipment			2	$ 100.00	Allowance	292	day	$ 58,471.55
3	Bag Filters	For Feed Filtration		-	$ 100.00	Allowance	292	day	$ -
3	Generator Rental	600 Kw		-	$ 500	$/day	292	day	$ -
3	SUB: Water Treatment Labor		Operator	16	$ 51.75	$/hr	292	day	$ 242,072.21
3	SUB: Water Treatment Labor		Operator OT	8	$ 77.63	$/hr	292	day	$ 181,554.16
3	SUB: Water Treatment Labor		Labor	16	$ 46.00	$/hr	292	day	$ 215,175.30
3	SUB: Water Treatment Labor		Labor OT	8	$ 69.00	$/hr	292	day	$ 161,381.48
3	SUB: Water Treatment Labor		Trucks	2	$ 75.00	$/day	292	day	$ 43,853.66
3	SUB: Water Treatment Labor	PerDiems	Meals, Misc	4	$ 50.00	$/day	292	day	$ 58,471.55
3	SUB: Water Treatment Labor	Hotel	Hotel	1	$ 100.00	$/day	292	day	$ 29,235.77
3	Chemical usage	Sulfuric Acid (93%)		10	$ 4.64	$/gal	292	day	$ 13,008.12
3	Chemical usage	Sodium Hydroxide (50%)		10	$ 4.35	$/gal	292	day	$ 12,194.92
3	Chemical usage	Antiscalant		1	$ 27.27	$/gal	292	day	$ 5,460.68
3	Chemical usage	Sodium Hyperchlorite(12-15%)		1	$ 2.64	$/gal	292	day	$ 1,055.84

3	Evaporator Energy Usage	S Lang Email		1	$	900.00	$/day	96	day	$ 86,053.85
3	Disposal	Filter Cake	Haz Waste Offsite	0.2	$	220.00	$/ton	292	day	$ 12,863.74
3	Disposal	Reject Water	Haz Waste Offsite	4,100	$	0.80	$/gal	262	day	$ 860,533.41
3	Equipment Maintenance	Oil changes, RO Membranes, etc		1	$	150.00	$/day	292	day	$ 43,853.66
3	PPE Supplies		Tyvek, Respirator, Gloves, etc	2	$	100.00	$/day	292	day	$ 58,471.55
3	WPDES Permit Sampling	Weekly As in Water		0	$	2,500.00	$/sample	42	weeks	$ -
3	Calibration Solutions for probes			1	$	5.00	$/day	292	day	$ 1,461.79
3	Misc		Fuel	-	$	3.25	$/day	292	day	$ -
	Total									**$ 2,708,025.60**

	Treatment System Demobilization									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**		**Units**	**Addl Units**	**Unit**	**Raw Cost**
3	Bag Filter System Rental	Rain For Rent	100 gpm with 1 um absolute bags	0	$	5,000.00	$/trip	1	na	$ -
3	RO System Trailer	Siemens Unit	150 gpm RO (see quote)	1	$	5,000.00	$/trip	1	na	$ 5,000.00
3	Microfiltration Trailer	Siemens Unit	150 gpm MF Trailer (based on RO)	1	$	5,000.00	$/trip	1	na	$ 5,000.00
3	Frac Tanks	2 ea 20,000 gal Baker	See Siemens Quote	1	$	2,500.00	$/trip	1	na	$ 2,500.00
3	Bag Filter Rental Skids	2 ea x 150 gpm		0	$	1,500.00	$/trip	1	na	$ -
3	Evaporator Mobilization	per Lang Email	10 GPM	1	$	10,000.00	Allowance	1	na	$ 10,000.00
3	Plate and Frame Press	per Lang Email		1	$	15,000.00	Allowance	1	na	$ 15,000.00
3	Misc Disposal of Used Eqpt	Flex Hoses, Hard pipe		20	$	220.00	$/ton	1	na	$ 4,400.00
3	SUB: Construction Labor	Install Equipment	Operator	8	$	51.75	$/hr	3	day	$ 1,242.00
3	SUB: Construction Labor	Install Equipment	Operator OT	4	$	77.63	$/hr	3	day	$ 931.50
3	SUB: Construction Labor	Install Equipment	Labor	16	$	46.00	$/hr	3	day	$ 2,208.00
3	SUB: Construction Labor	Install Equipment	Labor OT	8	$	69.00	$/hr	3	day	$ 1,656.00
3	SUB: Construction Labor	PerDiems	Meals, Misc	3	$	50.00	$/day	3	day	$ 450.00
3	SUB: Construction Labor	Hotel	Hotel	3	$	100.00	$/day	3	day	$ 900.00
3	SUB: Construction Labor	Crane operated		1	$	1,200.00	$/day	1	day	$ 1,200.00
	Total									**$ 50,487.50**

Tyco "BASE SCENARIO" Cost Estimate 2011-11-24
Cap Placement Estimate
Tyco Fire Products, LP
Marinette, Wisconsin

Assumptions

1 Refer Below for Reference Drawing
2 Area of capping 45,000 sf 1.03 Ac 5000 sy
3 Use estimated purchase and installation costs from Waukegan Harbor ROM for this exercise

Assume 1/2 of cap has armoring layer, and 1/2 of cap doesn't.
Profile (from Danny Reible) is 18" imported clean soft sediment, 12" of gravel, and (over 1/2 the cap) 12" of 6" dia. riprap.

Summary Totals

Days to Complete		7
Subcontractors	$	361,282
PM Resources		
Total (includes minimal design effort)	$	361,282

Takeoff Values

Production Rate 700 cy/day

Matl	Acres	Depth of Fill (ft)	Area (sf)	Volume Needed (cy)	Density (tons/cy)	Mass (tons)	Days		
Clean Soft Sediment	1.03	1.5	45,000	2,500	1.3	3,250	4		
Aquabloc	1.03	0	45,000	0	1.3	0	0	5,000.00	
Gravel	1.03	1	45,000	1,667	1.5	2,500	2		
6" - 9" Dia Quarry Stone F	1.03	0.5	45,000	833	1.4	1,167	1		
						Totals	7	5,000	-

	CAP TAKEOFF	1.03	acres						
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Raw Cost	Price
3	Clean Soft Sediment		Matl	3,250	$ 10	$/ton	1	$ 32,500.00	$ 46,612.41
3	Clean Soft Sediment	Tow to ANSUL & Place	Labor, Eqpt	3,250	$ 20	$/ton	1	$ 65,000.00	$ 93,224.82
3	Aquabloc 6" Layer	Deliver and Install	Labor, Eqpt, Matl	0	$ 40	$/sy	1	$ -	$ -
3	Gravel			2,500	$ 13	$/ton	1	$ 32,500.00	$ 46,612.41
3	Gravel	Tow to ANSUL & Place	Labor, Eqpt	2,500	$ 22	$/ton	1	$ 55,000.00	$ 78,882.54
3	6" - 9" Dia Quarry Stone Rip-Rap		Matl	1,167	$ 20	$/ton	1	$ 23,333.33	$ 33,465.32
3	6" - 9" Dia Quarry Stone Rip-Rap	Tow to ANSUL & Place	Labor, Eqpt	1,167	$ 25	$/ton	1	$ 29,166.67	$ 41,831.65
3	SUB:Surveyor		3 man crew	1	$ 1,200	$/day	12	$ 14,400.00	$ 20,652.88
	Total Cap Subcontractors							**$ 251,900.00**	**$ 361,282.03**

$ 72.26

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 Semi-consolidated 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		$ -
B.17	CAMU Construction	0	LS		$ -
B.18	Demolition of Building 59	0	LS		$ -
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

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

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class IV Estimate Standards and provided as a Conceptual Design estimate. As such, it is suitable for feasibility studies, selection of alternatives and/or planning only. 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.

SPECIFIC SCOPE ITEMS AND TAKEOFF INFO

1. Dredging Volumes and Estimated Production Rates

	Dredging Volume		Prod Rate		Days to Complete	
Phase 1 - Soft Sediment Dredging - Menominee River	77,673	cy	1500	cy/day	52	days
Phase 2A - Mechanical Dredging - Semiconsolidated sand and silt dredging - Menominee River	34,724	cy	1300	cy/day	27	days
Phase 2B - Dry Excavation of Semiconsolidated Sand and Silt	-	cy	800	cy/day	-	days
Phase 2C - Capping of Semiconsolidated Sand and Silt	22,400	SY	600	sy/day	37	days
Phase 3 - Dry Excavation of sediment	12,028	cy	800	cy/day	15	days
Phase 4 - Monitored Natural Recovery	-	cy				
Totals	146,825	cy			131	days

Water Control

average of April - October: 3.03 Inches

Processing Pad Rainwater

	L		W	Area	
Estimated Surface Area to Control Water	650		455	295,750	
Rainfall	3	in/mo			
Pad Water volume from rainfall	553,053	gal/mo		2,306	tons/mo
Pad Water volume from rainfall	**18,169**	**gal/day**		**76**	**tons/day**
Pad Water volume from rainfall (All Phases)	2,922,623	gal/job		12,187	ton/job
Pad Water volume from rainfall Phases 1 and 2a)	1,426,105	gal/job			

Pressure Washer (for Phases 1 and 2a Only)

Pressure Washer (Assume 4 gpm operating 6 HPD)	1,440	gallons/day	6	tons/day
Pressure Washer (Assume 4 gpm operating 6 HPD)	113,029.59	gal/job	471	ton/job

Dry Excavation (Phases 2a & 3)

	L	W	Area	D	Vol (gal)	M (tons)	
Free Water in South Channel	2,300	150	345,000	2	5,161,200	21,522	To River
Free Water in Transition Areas 2 & 3	930	430	399,900	3	8,973,756	37,421	To River
Total Free Water					**14,134,956**	**58,943**	**To River**
Interface water in South Channel	2,300	150	345,000	0.5	1,290,300	5,381	to WWT
Interface water in Transition Areas 2 & 3	930	430	399,900	0.5	1,495,626	6,237	to WWT
Total Interface Water					**2,785,926**	**11,617**	**to WWT**
Seep Water - Dry Exc. Area (total for job)	7,600	10	76,000	2.51	1,424,516	5,940	to WWT
Seep Water - Dry Exc. Area (Daily Total)					**94,747**	**395**	**to WWT**
Rainwater in South Channel	2,300	150	345,000	0.008	21,222	88	to WWT
Rainwater in Transition Areas 2 & 3	930	430	399,900	0.008	24,599	103	to WWT
Rainwater (Phases 2b & 3) (total for job)					**688,921**	**191**	**to WWT**
Rainwater (Phases 2b & 3) (Daily Total)					**45,821**	**191**	**to WWT**

Pressure Washer (Assume 4 gpm operating 25% of the time - 6 hrs/day)	21,650		90	total for Phases 2b & 3 work
Pressure Washer (Assume 4 gpm operating 6 HPD) (Daily Volume)	**1,440**		**6**	**gallons/day for Phase III**
Phases 2b & 3 Total Water Flow to WWT)	**4,256,692**			
Phases 2b & 3 Total (Daily Water Flow to WWT)	**785,108**			**gallons/day**

Water Summary For Phases 1 and 2a					
1	Pump Free Water from scows	835,942	gallons		
2	Collect and Process Rainwater	1,426,105	gallons		
3	Collect Pressure Wash Water	113,030	gallons		
4	WWT backwash water	-	gallons		
5	Total Water (Phases I and II)	2,375,076	gallons	23	gal/min

Water Summary For Phases 2b & c					
1	Pump free water from South Channel to river (not treated)	14,134,956	gallons		
2	Pump Interface Water to WWT	1,290,300	gallons		
3	Pump seepage water to WWT	1,424,516	gallons		
4	Collect and Process Rainwater	273,165	gallons		
5	Collect Pressure Wash Water	21,650	gallons		
6	Collect and Process Rainwater from Excavation Cell	688,921	gallons		
7	WWT backwash water	-	gallons		
8	Total water from Phase III (for treatment only)	3,698,553	gallons	190	gal/min

Total Water For Project			6,073,629			

	L	W	Area	D	V	M
Phase III Road Stone	900	25	22,500.00	0.5	416.67	625.00

Mass Balance Estimates

		Phase 1	Phase 2A	Phase 2B	Phase 3	Totals
Dredge Volume	cy	77,673	34,724	-	12,028	124,425
Estimated In-Situ Density of Sediment	ton/cy	1.1	1.2	1.2	1.1	
Mass of In-Situ Sediment	tons	85,440	41,669	-	13,231	140,340
Solids Content In-Situ	%	40%	50%	50%	40%	
Estimated Dry Solids in Sediment	tons	34,176	20,834	-	5,292	60,303
Solids after Mechanical Dredging (In Scows)	%	39%	39%	50%	40%	
Total Mass Delivered to Offload	tons	87,631	53,422	-	13,231	154,283
Dredging Production Rate		1500	1300	800	800	
Est Days to Complete		52	27	-	15	94
Mass Water Added During Dredging	tons	2,191	11,753	-	-	13,944
Volume Water Added During Dredging	gal	525,366	2,818,403	-	-	3,343,769
Water Recovery from Scows	%	25%	25%	0%	0%	
Mass Water Recovered From Scows	tons	548	2,938	-	-	3,486
Water Lost to Evaporation	%	20%	20%	0%	0%	
Mass Water Lost to Evaporation	tons	438	2,351	-	-	2,351
Volume Water Lost to Evaporation	gal	105,073	563,681	-	-	563,681
Volume Water Recovered From Scows	gal/job	131,342	704,601	-	-	835,942
Rainwater Estimate	gal/job	940,807	485,298	-	962,086	2,388,191
Pressure Wash Water	gal	74,566	38,464	-	21,650	134,680
Backwash Water from water treatment system	gal/job	-	-	-	-	-
Interface and Seep Water (Phases 2b & 3 only)	gal/job			-	2,714,816	2,714,816
Total Estimated Water to Treat	gal/job	1,146,715	1,228,362	-	3,698,553	6,073,629

Water Treatment						
Water Treatment Uptime		90%	90%	90%	90%	
Hours/day		24	24	24	24	
Uptime/Day (WWT System)		21.6	21.6	21.6	21.6	86
Process Time	min	67,109	34,617	-	19,485	121,212
WWT System Capacity Required		17.09	35.48	#DIV/0!	189.81	
Stabilization Agents						
Fluidized Bed Boiler Ash		6%	6%	6%	6%	
Fluidized Bed Boiler Ash	tons	5,225	757	-	794	6,776
Portland Cement		0%	0%	0%	0%	
Portland Cement	tons	-	-	-	-	-
Sodium Polyacrylate (SAP)		0%	0.00%	0.00%	0%	
Sodium Polyacrylate (SAP)	tons	-	-	-	-	-
60% Ferric Sulfate Solution		1.00%	1.00%	1.00%	1%	
60% Ferric Sulfate Solution	tons	871	126	-	132	1,129
Calcium Hypochlorite		0.75%	0.75%	0.75%	0.75%	
Calcium Hypochlorite	tons	653	95	-	99	847
Total Stabilization Agents Required	tons	6,749	978	-	1,025	8,752
Disposal Estimates						
Stabilized Sediment	tons	93,832	51,461	-	14,256	159,550
RCRA Subtitle D Waste Disposal	%	100%	100%	100%	100%	
RCRA Subtitle C Waste Disposal	%	0%	0%	0%	0%	
RCRA Subtitle D Waste Disposal (Debris)	%	0.10%	0.00%	0.00%	0.50%	
RCRA Subtitle D Waste Disposal		93,832	51,461	-	14,256	159,550
RCRA Subtitle C Waste Disposal		-	-	-	-	-
RCRA Subtitle D Waste Disposal (Debris)		94	-	-	71	165
Total Offsite Disposal		93,926	51,461	-	14,327	159,715
				-		

All sediment needs 12% BA, 12 FST, 0.75% HYP
25% of SC material needs 12%BA, 12FST, 0.75% HYP

Vol Sed. Treated	89,701	100%
Vol SCM treated	8,681	25%
TOTAL	98,382	

Note: 12 FST = 12 ml/kg sediment ~2% by weight of sediment

Subcontractor Markup Assumptions					
Code	**Resource**			**Contingency**	**Sub Contractor Markup/G&A**
1	Labor 1			0.0%	20.0%
2	Owned Equipment			0.0%	20.0%
3	2nd Tier Sub			0.0%	10.0%
4	ODC			0.0%	10.0%
5	Disposal			0.0%	5.0%

Sheetpile (all rental, not designed)

	L (ft)	
Sheetpile @ North End of Zone 2a	190	Already installed
Sheetpile @ Junction of Zones 1, 2a and 2	500	
Sheetpile @ South End of Zone 3a	290	

SECTION	Width (w) in (mm)	Height (h) in (mm)	THICKNESS Flange (t_f) in (mm)	THICKNESS Web (t_w) in (mm)	Cross Sectional Area in^2/ft (cm^2/m)	WEIGHT Pile lb/ft (kg/m)	WEIGHT Wall lb/ft^2 (kg/m^2)	SECTION MODULUS Elastic in^3/ft (cm^3/m)	SECTION MODULUS Plastic in^3/ft (cm^3/m)	Moment of Inertia in^4/ft (cm^4/m)	COATING AREA Both Sides ft^2/ft of single (m^2/m)	COATING AREA Wall Surface ft^2/ft^2 (m^2/m^2)
AZ 24-700	27.56 700	18.07 459.0	0.441 11.20	0.441 11.20	8.23 174.1	64.30 95.70	28.00 136.70	45.2 2430	53.5 2867	408.8 55820	6.33 1.93	1.38 1.38
AZ 26-700	27.56 700	18.11 460.0	0.480 12.20	0.480 12.20	8.84 187.2	69.12 102.90	30.10 146.90	48.4 2600	57.1 3070	437.3 59720	6.33 1.93	1.38 1.38
AZ 28-700	27.56 700	18.15 461.0	0.520 13.20	0.520 13.20	9.46 200.2	73.93 110.00	32.19 157.20	51.3 2760	60.9 3273	465.9 63620	6.33 1.93	1.38 1.38

Assume AZ 26
Assume 20 ft sections
Assume 10 ft imbedment

Total Wall Needed	**L (ft)**	**W (ft)**	**Area (sf)**	Tons	Prod Rate	Schedule Days
Sheetpile @ West End Of South Channel	250	20	5,000	70	10.5	7.00
Total			5,000			

Tyco "Enhanced Scenario" Cost Estimate 2011-10-04

12/14/2011 16:12

Lump Sum Items
Tyco Fire Products, LP
Marinette, Wisconsin

Estimate Disclaimer

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TASK	TASK DESCRIPTION	No of Units	Unit	Cost		UR
A.1	Insurance Premiums	1	LS	$ 264,423		$ 264,423
A.2	Performance and Payment Bonds	1	LS	$ 264,423		$ 264,423
A.3	Mobilization	1	LS	$ 392,354		$ 392,354
A.4	Infrastructure Construction	1	LS	$ 235,378		$ 235,378
A.5	Site Maintenance	1	LS	$ 40,000		$ 40,000
A.6	Surveys	1	LS	$ 84,410		$ 84,410
A.7	Site Restoration	1	LS	$ 50,000		$ 50,000
A.8	Demobilization	1	LS	$ 280,600		$ 280,600
A.9	Subcontract Closeout	1	LS	$ 11,000		$ 11,000
A.10	Interim Demobilization	1	LS	$ -		$ -

$ 16,025,636.80

$ 1,622,587

ESTIMATE TASK DETAILS

A.1	Insurance Premiums	2	day							
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
4	SUB: Dredger	Insurance Premiums		$ 16,025,636.80	$ 0.015	ea	1	na	$ 240,384.55	$ 264,423.01
	Subtotal								**$ 240,384.55**	**$ 264,423.01**

Notes

1 This is a plug estimate
2

A.2	Performance and Payment Bonds	2	day							
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
4	SUB: Dredger	P&P Bonds	2% of construction cost	$ 16,025,637	$ 0.015	$.$	1	na	$ 240,384.55	$ 264,423.01
	Subtotal								**$ 240,384.55**	**$ 264,423.01**

Notes

1
2

A.3	Mobilization									
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
MOB MECHANICAL DREDGE		**5**	**Days**							
4	SUB: Dredger	Derdge Preparation		1	$ 20,000.00	ls	1	na	$ 20,000.00	$ 22,000.00
4	SUB: Dredger	Dredge Transportation to Monroe	TOW	1	$ 7,500.00	$/load	1	na	$ 7,500.00	$ 8,250.00
4	SUB: Dredger	Scow Transport to Monroe		3	$ 2,500.00	$/hr	1	na	$ 7,500.00	$ 8,250.00
4	SUB: Dredger	GPS Install	Programming	40	$ 75.00	$/hr	1	na	$ 3,000.00	$ 3,300.00
2	SUB: Dredger	Dredge Rental	During Mob	1	$ 13,000.00	$/day	5	day	$ 65,000.00	$ 78,000.00
1	SUB: Dredger	Dredging PM		8	$ 75.00	$/hr	5	day	$ 3,000.00	$ 3,600.00
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16	$ 51.75	$/hr	5	day	$ 4,140.00	$ 4,968.00
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4	$ 77.63	$/hr	5	day	$ 1,552.50	$ 1,863.00
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16	$ 46.00	$/hr	5	day	$ 3,680.00	$ 4,416.00
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4	$ 69.00	$/hr	5	day	$ 1,380.00	$ 1,656.00

4	SUB: Dredger	Hotel		4	$ 100.00	$/day	5	day	$ 2,000.00	$ 2,200.00
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	5	day	$ 1,000.00	$ 1,100.00
2	SUB: Dredger	Truck		2	$ 75.00	$/day	5	day	$ 750.00	$ 900.00
4	SUB: Dredger	FOGM		0	$ 3.25	$/gal	5	day	$ -	$ -
4	SUB: Dredger	Misc		1	$ 1,000.00	$/day	5	day	$ 5,000.00	$ 5,500.00
Mob Solifification Equipment		**5**	**Days**							
3	SUB: General Contractor	H&S Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,750.00
3	SUB: General Contractor	Work Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,750.00
4	SUB: General Contractor	Mob Rapid Mix		1	$ 5,000.00	$/load	1	na	$ 5,000.00	$ 5,500.00
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4	$ 5,000.00	$/load	1	na	$ 20,000.00	$ 22,000.00
4	SUB: General Contractor	Mob conveyors		4	$ 1,500.00	$/load	1	na	$ 6,000.00	$ 6,600.00
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1	$ 1,500.00	$/load	1	na	$ 1,500.00	$ 1,650.00
4	SUB: General Contractor	Mob Loaders		2	$ 500.00	$/load	1	na	$ 1,000.00	$ 1,100.00
4	SUB: General Contractor	Purchase Bi Blocks		200	$ 75.00	$/block	1	na	$ 15,000.00	$ 16,500.00
4	SUB: General Contractor	Misc Mobilization		3	$ 1,500.00	$/load	1	na	$ 4,500.00	$ 4,950.00
4	SUB: General Contractor	Equipment Rental During Mob		6	$ 400.00	$/day	5	na	$ 12,000.00	$ 13,200.00
4	SUB: General Contractor	Mob Office Trailer		6	$ 500.00	$/load	1	na	$ 3,000.00	$ 3,300.00
2	SUB: General Contractor	Dredge Rental	During Mob	1	$ 6,500.00	$/day	5	day	$ 32,500.00	$ 39,000.00
1	SUB: General Contractor	Dredging PM		32	$ 75.00	$/hr	5	day	$ 12,000.00	$ 14,400.00
1	SUB: General Contractor	Operator (ST)	Mob Labor	48	$ 51.75	$/hr	5	day	$ 12,420.00	$ 14,904.00
1	SUB: General Contractor	Operator (OT)	Mob Labor	32	$ 77.63	$/hr	5	day	$ 12,420.00	$ 14,904.00
1	SUB: General Contractor	Labor (ST)	Mob Labor	32	$ 46.00	$/hr	5	day	$ 7,360.00	$ 8,832.00
1	SUB: General Contractor	Labor (OT)	Mob Labor	16	$ 69.00	$/hr	5	day	$ 5,520.00	$ 6,624.00
4	SUB: General Contractor	Hotel		10	$ 100.00	$/day	5	day	$ 5,000.00	$ 5,500.00
4	SUB: General Contractor	Perdiem		10	$ 50.00	$/day	5	day	$ 2,500.00	$ 2,750.00
2	SUB: General Contractor	Truck		5	$ 75.00	$/day	5	day	$ 1,875.00	$ 2,250.00
4	SUB: General Contractor	FOGM		300	$ 3.25	$/gal	5	day	$ 4,875.00	$ 5,362.50
4	SUB: General Contractor	Misc		1	$ 1,000.00	$/day	5	day	$ 5,000.00	$ 5,500.00
4	SUB: General Contractor	Crane Rental	100 ton	32	$ 120.00	$/hr	1	na	$ 3,840.00	$ 4,224.00
Mob Water Treatment Plant		**3**	**Days**							
3	SUB: General Contractor	H&S Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,750.00
3	SUB: General Contractor	Work Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,750.00
3	SUB: General Contractor	Construction Drawings		1	$ 5,000.00	ea	1	na	$ 5,000.00	$ 5,500.00
3	SUB: General Contractor	Mob/Demob Construction Trailer		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,650.00
	SEE RO UNIT TAB FOR DETAILS									
Mob Sheeting Contractor										

3	SUB: Marine Contractor	H&S Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,750.00
3	SUB: Marine Contractor	Work Plan		1	$ 2,500.00	ea	1	na	$ 2,500.00	$ 2,750.00
3	SUB: Marine Contractor	Construction Drawings		1	$ 5,000.00	ea	1	na	$ 5,000.00	$ 5,500.00
3	SUB: Marine Contractor	General Mobilization of Piledriver		1	$ 10,000.00	ea	1	na	$ 10,000.00	$ 11,000.00
MOB Civil Construction										
3	SUB: Civil Construction Contractor	H&S Plan		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,650.00
3	SUB: Civil Construction Contractor	Work Plan		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,650.00
3	SUB: Civil Construction Contractor	Construction Drawings		1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,650.00
3	SUB: Civil Construction Contractor	Excavaator	Yellow Iron	1	$ 1,500.00	ea	1	na	$ 1,500.00	$ 1,650.00
3	SUB: Civil Construction Contractor	Dozer	Yellow Iron	1	$ 500.00	ea	1	na	$ 500.00	$ 550.00
	Subtotal								**$ 341,812.50**	**$ 392,353.50**

Notes

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A.4	Infrastructure Construction	10	days							
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit Description	Raw Cost	Total w/ Contingency
Scow Mooring Facilities Setup										
3	SUB: Marine Contractor	Mooring Supplies		1	$ 5,000.00	ea	1	na	$ 5,000.00	$ 5,500.00
3	SUB: Marine Contractor	Purchase Structural Steel		310	$ 8.00	$/lf	1	na	$ 2,480.00	$ 2,728.00
3	SUB: Marine Contractor	Purchase Decking		100	$ 20.00	$/sf	1	na	$ 2,000.00	$ 2,200.00
3	SUB: Marine Contractor	Purchase Manramp	50 x 10	500	$ 7.00	$/sf	1	na	$ 3,500.00	$ 3,850.00
3	SUB: Marine Contractor	Piledriver (Marine)	Crane & Dirver	1	$ 7,500.00	$/day	5	day	$ 37,500.00	$ 41,250.00
1	SUB: Marine Contractor	PM		8	$ 75.00	$/hr	10	day	$ 6,000.00	$ 7,200.00
1	SUB: Marine Contractor	Operator (ST)	Mob Labor	1	$ 51.75	$/hr	5	day	$ 258.75	$ 310.50
1	SUB: Marine Contractor	Operator (OT)	Mob Labor		$ 77.63	$/hr	5	day	$ -	$ -
1	SUB: Marine Contractor	Labor (ST)	Mob Labor	24	$ 46.00	$/hr	5	day	$ 5,520.00	$ 6,624.00
1	SUB: Marine Contractor	Labor (OT)	Mob Labor		$ 69.00	$/hr	5	day	$ -	$ -
1	SUB: Marine Contractor	Welder (ST)	Mob Labor	16	$ 51.75	$/hr	10	day	$ 8,280.00	$ 9,936.00
1	SUB: Marine Contractor	Welder (OT)	Mob Labor		$ 77.63	$/hr	10	day	$ -	$ -
1	SUB: Marine Contractor	Labor (ST)	Mob Labor	32	$ 46.00	$/hr	10	day	$ 14,720.00	$ 17,664.00
1	SUB: Marine Contractor	Labor (OT)	Mob Labor		$ 69.00	$/hr	10	day	$ -	$ -
1	SUB: Marine Contractor	Workboat		1	$ 1,500.00	$/day	2	day	$ 3,000.00	$ 3,600.00
1	SUB: Marine Contractor	Misc		1	$ 200.00	$/day	10	day	$ 2,000.00	$ 2,400.00
Phase III Sheeting Install/Remove		**14.00**	**days**							
3	SUB: Sheeting Contractor	AZ 24 Sheeting	Rental for Bypass (first month)	70	$ 268.00	$/ton	1	mo	$ 18,760.00	$ 20,636.00
3	SUB: Sheeting Contractor	AZ 24 Sheeting	Rental for Bypass (first month)	14	$ 27.00	$/ton	2	mo	$ 756.00	$ 831.60
3	SUB: Sheeting Contractor	AZ 24 Sheeting	Drive, Extract, Salvage	14	$ 1,080.00	$/ton	1	na	$ 15,120.00	$ 16,632.00
1	SUB: Sheeting Contractor	AZ 24 Sheeting	Drive, Extract, Salvage	4	$ 75.00	$/hr	14	day	$ 4,200.00	$ 5,040.00
1	SUB: Excavation Contractor	Operator (ST)	Drive, Extract, Salvage	16	$ 51.75	$/hr	14	day	$ 11,592.00	$ 13,910.40
1	SUB: Excavation Contractor	Operator (OT)	Drive, Extract, Salvage	4	$ 77.63	$/hr	14	day	$ 4,347.00	$ 5,216.40
1	SUB: Excavation Contractor	Labor (ST)	Drive, Extract, Salvage	16	$ 46.00	$/hr	14	day	$ 10,304.00	$ 12,364.80
1	SUB: Excavation Contractor	Labor (OT)	Drive, Extract, Salvage	4	$ 69.00	$/hr	14	day	$ 3,864.00	$ 4,636.80
4	SUB: Excavation Contractor	Hotel	Drive, Extract, Salvage	4	$ 100.00	$/day	14	day	$ 5,600.00	$ 6,160.00
4	SUB: Excavation Contractor	Perdiem	Drive, Extract, Salvage	4	$ 50.00	$/day	14	day	$ 2,800.00	$ 3,080.00
2	SUB: Excavation Contractor	Contractor Equipment Daily Cost	CAT D-5	1	$ 380.00	$/day	14	day	$ 2,660.00	$ 3,192.00
2	SUB: Excavation Contractor	Truck	Drive, Extract, Salvage	1	$ 75.00	$/day	14	day	$ 525.00	$ 630.00
4	SUB: Excavation Contractor	FOGM	Drive, Extract, Salvage	10	$ 3.25	$/gal	14	day	$ 455.00	$ 500.50

4	SUB: Excavation Contractor	Misc	Drive, Extract, Salvage	1	$ 500.00	$/day	14	day	$ 7,000.00	$ 7,700.00
Phase III Road Construction		**3.00**	**days**							
3	SUB: Excavation Contractor	Construct Site Entrance Roads	57 Stone	625	$ 25.00	$/ton	1	na	$ 15,625.00	$ 17,187.50
3	SUB: Excavation Contractor	Construct Site Entrance Roads	Mirifi	22,500	$ 0.06	$/sf	1	na	$ 1,350.00	$ 1,485.00
1	SUB: Excavation Contractor	Labor	Supervisor	10	$ 75.00	$/hr	3	days	$ 2,250.00	$ 2,700.00
1	SUB: Excavation Contractor	Labor	Operator (ST)	8	$ 51.75	$/hr	3	days	$ 1,242.00	$ 1,490.40
1	SUB: Excavation Contractor	Labor	Operator (OT)	2	$ 77.63	$/hr	3	days	$ 465.75	$ 558.90
1	SUB: Excavation Contractor	Labor	Laborer (ST)	8	$ 46.00	$/hr	3	days	$ 1,104.00	$ 1,324.80
1	SUB: Excavation Contractor	Labor	Labor (OT)	2	$ 69.00	$/hr	3	days	$ 414.00	$ 496.80
4	SUB: Excavation Contractor	Labor	Perdiem	2	$ 35.00	$/day	3	days	$ 210.00	$ 231.00
4	SUB: Excavation Contractor	Labor	Hotel	2	$ 80.00	$/day	3	days	$ 480.00	$ 528.00
2	SUB: Excavation Contractor	Equipment Daily Cost	CAT 330	1	$ 677.00	$/day	3	days	$ 2,031.00	$ 2,437.20
2	SUB: Excavation Contractor	Equipment Daily Cost	CAT D-5	1	$ 380.00	$/day	3	days	$ 1,140.00	$ 1,368.00
2	SUB: Excavation Contractor	Equipment Daily Cost	Truck	2	$ 75.00	$/day	3	days	$ 450.00	$ 540.00
4	SUB: Excavation Contractor	Equipment Daily Cost	Fuel	100	$ 3.25	$/gal	3	days	$ 975.00	$ 1,072.50
4	SUB: Excavation Contractor	Misc ODC	Misc	1	$ 50.00	$/day	3	days	$ 150.00	$ 165.00
	Subtotal								**$ 206,128.50**	**$ 235,378.10**

A.5	**Site Maintenance**	**10**	day							

	Subtotal								**$ 34,782.61**	**$ 40,000.00**

A.6	**Surveys**	**19**	**day**							
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Addl Units**	**Unit Description**	**Cost**	**Total w/ Contingency**
BATHYMETRIC SURVEYS										
3	SUB: Bathymetric Surveyor	Data Review	Sr Engineer	16	$ 175.00	$/hr	1	na	$ 2,800.00	$ 3,080.00
3	SUB: Bathymetric Surveyor	Plans	Office Engineer	24	$ 75.00	$/hr	1	na	$ 1,800.00	$ 1,980.00
3	SUB: Bathymetric Surveyor	Survey		1	$ 2,500.00	$/day	19	day	$ 46,736.11	$ 51,409.72
3	SUB: Bathymetric Surveyor	Drawings and Reports	Sr Engineer	40	$ 175.00	$/hr	1	na	$ 7,000.00	$ 7,700.00
3	SUB: Bathymetric Surveyor	Drawings and Reports	CAD	80	$ 50.00	$/hr	1	na	$ 4,000.00	$ 4,400.00
3	SUB: Bathymetric Surveyor	Drawings and Reports	Office Clerical	40	$ 35.00	$/hr	1	na	$ 1,400.00	$ 1,540.00
3	SUB: Bathymetric Surveyor	Drawings and Reports	Office Supply	2	$ 500.00	ls	1	na	$ 1,000.00	$ 1,100.00
GENERAL SITE SURVEY										
3	SUB: GPR/MAG Surveyor	Field Survey	3 man crew	1	$ 1,200.00	$/day	3	na	$ 3,600.00	$ 3,960.00
3	SUB: GPR/MAG Surveyor	Data Review	Sr Engineer	16	$ 175.00	$/hr	3	na	$ 8,400.00	$ 9,240.00
	Subtotal								**$ 76,736.11**	**$ 84,409.72**

A.7	Site Restoration									
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
	Subtotal								$ 43,478.26	$ 50,000.00

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A.8	Demobilization	4	days							
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
Demob Mechanical Dredge		**5**	**Days**							
4	SUB: Dredger	Dredge		8.00	2500	$/load	1	na	20000	22000
4	SUB: Dredger	Scow Transport		3.00	2500	$/hr	1	na	7500	8250
1	SUB: Dredger	Dredging PM		8.00	75	$/hr	4	day	2400	2880
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16.00	51.75	$/hr	4	day	3312	3974.4
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4.00	77.625	$/hr	4	day	1242	1490.4
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16.00	46	$/hr	4	day	2944	3532.8
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4.00	69	$/hr	4	day	1104	1324.8
4	SUB: Dredger	Hotel		4.00	100	$/day	4	day	1600	1760
4	SUB: Dredger	Perdiem		4.00	50	$/day	4	day	800	880

2	SUB: Dredger	Truck		2.00	75	$/day	4	day	600	720
4	SUB: Dredger	FOGM		-	3.25	$/gal	4	day	0	0
4	SUB: Dredger	Misc		1.00	1000	$/day	4	day	4000	4400
Demob Solifification Equipment		**4**	**Days**							
4	SUB: General Contractor	Mob Rapid Mix		1.00	3500	$/load	1	na	3500	3850
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4.00	3500	$/load	1	na	14000	15400
4	SUB: General Contractor	Mob conveyors		4.00	2500	$/load	1	na	10000	11000
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1.00	2500	$/load	1	na	2500	2750
4	SUB: General Contractor	Mob Loaders		2.00	500	$/load	1	na	1000	1100
4	SUB: General Contractor	Bin Blocks		-	75	$/block	1	na	0	0
4	SUB: General Contractor	Misc Mobilization		3.00	1500	$/load	1	na	4500	4950
4	SUB: General Contractor	Equipment Rental During Mob		6.00	400	$/day	4	na	9600	10560
4	SUB: General Contractor	Mob Office Trailer		6.00	500	$/load	1	na	3000	3300
2	SUB: General Contractor	Dredge Rental	During Mob	1.00	6500	$/day	4	day	26000	31200
1	SUB: General Contractor	Dredging PM		32.00	75	$/hr	4	day	9600	11520
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	4	day	9936	11923.2
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	4	day	9936	11923.2
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	4	day	5888	7065.6
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	4	day	4416	5299.2
4	SUB: General Contractor	Hotel		10.00	100	$/day	4	day	4000	4400
4	SUB: General Contractor	Perdiem		10.00	50	$/day	4	day	2000	2200
2	SUB: General Contractor	Truck		5.00	75	$/day	4	day	1500	1800
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	4	day	3900	4290
4	SUB: General Contractor	Misc		1.00	1000	$/day	4	day	4000	4400
4	SUB: General Contractor	Crane Rental	100 ton	32.00	120	$/hr	1	na	3840	4224

Demob Water Treatment Plant		**3**	**Days**							
3	SUB: General Contractor	Mob/Demob Construction Trailer		1.00	1500	ea	1	na	1500	1650
3	SUB: General Contractor	Mob Mobile RO Unit		1.00	2500	$/trip	1	na	2500	2750
3	SUB: Vendor	Frac Tank Mob	Rain for Rent	1.00	500	ea	1	na	500	550
3	SUB: Vendor	Sand Filter Mob	Rain for Rent	1.00	500	ea	1	na	500	550
3	SUB: Vendor	Lamalla Clarifier Mob	MPS	4.00	1500	ea	1	na	6000	6600
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	3	day	7452	8942.4
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	3	day	7452	8942.4
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	3	day	4416	5299.2
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	3	day	3312	3974.4
4	SUB: General Contractor	Hotel		10.00	100	$/day	3	day	3000	3300
4	SUB: General Contractor	Perdiem		10.00	50	$/day	3	day	1500	1650
2	SUB: General Contractor	Truck		5.00	75	$/day	3	day	1125	1350
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	3	day	2925	3217.5
4	SUB: General Contractor	Misc Piping and Hoses		1.00	10000	$/day	1	na	10000	11000
4	SUB: General Contractor	Crane Rental	100 ton	8.00	120	$/hr	1	na	960	1056
Demob Sheeting Contractor										
3	SUB: Marine Contractor	General Mobilization of Piledriver		1.00	7500	ea	1	na	7500	8250
Demob Civil Construction										
3	SUB: Civil Construction Contractor	H&S Plan		1.00	1500	ea	1	na	1500	1650
3	SUB: Civil Construction Contractor	Work Plan		1.00	1500	ea	1	na	1500	1650
3	SUB: Civil Construction Contractor	Construction Drawings		1.00	1500	ea	1	na	1500	1650
3	SUB: Civil Construction Contractor	Excavaator	Yellow Iron	1.00	1500	ea	1	na	1500	1650
3	SUB: Civil Construction Contractor	Dozer	Yellow Iron	1.00	500	ea	1	na	500	550
	Subtotal								**$ 245,760.00**	**$ 280,599.50**

Notes

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A.9	Subcontract Closeout									
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
4	SUB: Dredger	Final Report		1	$ 10,000.00	ls	1	na	$ 10,000.00	$ 11,000.00
	Subtotal								**$ 10,000.00**	**$ 11,000.00**

A.10	Interim Demobilization	4	days							
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Addl Units	Unit Description	Cost	Total w/ Contingency
Demob Mechanical Dredge		0	**Days**							
4	SUB: Dredger	Dredge		8.00	2500	$/load	0	na	0	0
4	SUB: Dredger	Scow Transport		3.00	2500	$/hr	0	na	0	0
1	SUB: Dredger	Dredging PM		8.00	75	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16.00	51.75	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4.00	77.625	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16.00	46	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4.00	69	$/hr	0	day	0	0
4	SUB: Dredger	Hotel		4.00	100	$/day	0	day	0	0
4	SUB: Dredger	Perdiem		4.00	50	$/day	0	day	0	0
2	SUB: Dredger	Truck		2.00	75	$/day	0	day	0	0
4	SUB: Dredger	FOGM		-	3.25	$/gal	0	day	0	0
4	SUB: Dredger	Misc		1.00	1000	$/day	0	day	0	0
Remob Mechanical Dredge		0	**Days**							
4	SUB: Dredger	Derdge Preparation		1.00	30000	ls	0	na	0	0
4	SUB: Dredger	Dredge Transportation to Monroe	TOW	1.00	7500	$/load	0	na	0	0
4	SUB: Dredger	Scow Transport to Monroe		3.00	2500	$/hr	0	na	0	0
4	SUB: Dredger	GPS Install	Programming	40.00	75	$/hr	0	na	0	0
2	SUB: Dredger	Dredge Rental	During Mob	1.00	15000	$/day	0	day	0	0
1	SUB: Dredger	Dredging PM		8.00	75	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Operator (ST)	Mob Labor	16.00	51.75	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Operator (OT)	Mob Labor	4.00	77.625	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Labor (ST)	Mob Labor	16.00	46	$/hr	0	day	0	0
1	SUB: Dredger	Dredge Labor (OT)	Mob Labor	4.00	69	$/hr	0	day	0	0
4	SUB: Dredger	Hotel		4.00	100	$/day	0	day	0	0

4	SUB: Dredger	Perdiem		4.00	50	$/day	0	day	0	0
2	SUB: Dredger	Truck		2.00	75	$/day	0	day	0	0
4	SUB: Dredger	FOGM		-	3.25	$/gal	0	day	0	0
4	SUB: Dredger	Misc		1.00	1000	$/day	0	day	0	0
Demob Solidification Equipment		0	**Days**							
4	SUB: General Contractor	Mob Rapid Mix		1.00	3500	$/load	0	na	0	0
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4.00	3500	$/load	0	na	0	0
4	SUB: General Contractor	Mob conveyors		4.00	2500	$/load	0	na	0	0
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1.00	2500	$/load	0	na	0	0
4	SUB: General Contractor	Mob Loaders		2.00	500	$/load	0	na	0	0
4	SUB: General Contractor	Bin Blocks		-	75	$/block	0	na	0	0
4	SUB: General Contractor	Misc Mobilization		3.00	1500	$/load	0	na	0	0
4	SUB: General Contractor	Equipment Rental During Mob		6.00	400	$/day	0	na	0	0
4	SUB: General Contractor	Mob Office Trailer		6.00	500	$/load	0	na	0	0
2	SUB: General Contractor	Dredge Rental	During Mob	1.00	6500	$/day	0	day	0	0
1	SUB: General Contractor	Dredging PM		32.00	75	$/hr	0	day	0	0
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	0	day	0	0
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	0	day	0	0
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	0	day	0	0
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	0	day	0	0
4	SUB: General Contractor	Hotel		10.00	100	$/day	0	day	0	0
4	SUB: General Contractor	Perdiem		10.00	50	$/day	0	day	0	0
2	SUB: General Contractor	Truck		5.00	75	$/day	0	day	0	0
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	0	day	0	0
4	SUB: General Contractor	Misc		1.00	1000	$/day	0	day	0	0
4	SUB: General Contractor	Crane Rental	100 ton	32.00	120	$/hr	0	na	0	0
ReMob Solidification Equipment		0	**Days**							
3	SUB: General Contractor	H&S Plan		1.00	2500	ea	0	na	0	0
3	SUB: General Contractor	Work Plan		1.00	2500	ea	0	na	0	0
4	SUB: General Contractor	Mob Rapid Mix		1.00	10000	$/load	0	na	0	0
4	SUB: General Contractor	Mob Sodium Polycarbonate Mixing Eqpt		4.00	10000	$/load	0	na	0	0
4	SUB: General Contractor	Mob conveyors		4.00	2500	$/load	0	na	0	0
4	SUB: General Contractor	Mob Excavator and Environmental Bucket		1.00	2500	$/load	0	na	0	0

4	SUB: General Contractor	Mob Loaders		2.00	500	$/load	0	na	0	0
4	SUB: General Contractor	Purchase Bi Blocks		-	75	$/block	0	na	0	0
4	SUB: General Contractor	Misc Mobilization		3.00	1500	$/load	0	na	0	0
4	SUB: General Contractor	Equipment Rental During Mob		6.00	400	$/day	0	na	0	0
4	SUB: General Contractor	Mob Office Trailer		6.00	500	$/load	0	na	0	0
2	SUB: General Contractor	Dredge Rental	During Mob	1.00	6500	$/day	0	day	0	0
1	SUB: General Contractor	Dredging PM		32.00	75	$/hr	0	day	0	0
1	SUB: General Contractor	Operator (ST)	Mob Labor	48.00	51.75	$/hr	0	day	0	0
1	SUB: General Contractor	Operator (OT)	Mob Labor	32.00	77.625	$/hr	0	day	0	0
1	SUB: General Contractor	Labor (ST)	Mob Labor	32.00	46	$/hr	0	day	0	0
1	SUB: General Contractor	Labor (OT)	Mob Labor	16.00	69	$/hr	0	day	0	0
4	SUB: General Contractor	Hotel		10.00	100	$/day	0	day	0	0
4	SUB: General Contractor	Perdiem		10.00	50	$/day	0	day	0	0
2	SUB: General Contractor	Truck		5.00	75	$/day	0	day	0	0
4	SUB: General Contractor	FOGM		300.00	3.25	$/gal	0	day	0	0
4	SUB: General Contractor	Misc		1.00	1000	$/day	0	day	0	0
4	SUB: General Contractor	Crane Rental	100 ton	32.00	120	$/hr	0	na	0	0
Demob Water Treatment Plant		**3**	**Days**							
3	**SEE WATER TREATMENT TAB FOR DETAILS**	Siemens Unit	150 gpm RO (see quote)	1	$ 5,000.00	$/trip	0	na	0	0
Mob Water Treatment Plant		**3**	**Days**							
	SEE WATER TREATMENT TAB FOR DETAILS									
	Subtotal								**$ -**	**$ -**

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

12/14/2011 16:12

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class II Estimate Standards and provided as an Engineers Estimate and is based on Pre-final design documents. 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.

TASK	TASK DESCRIPTION	No of Units	Unit	Cost		UR
B.1	Mechanical Dredging of Soft Sediment	77,673	CY	$ 1,493,942		$ 19.23
B.2	Mechanical Dredging of Semi-consolidated Sands and Silts	34,724	CY	$ 751,593		$ 21.64
B.3	Dry Excavation of Soft Sediment	12,028	CY	$ 150,303		$ 12.50
B.4	Dry Excavation of Semi-consolidated Sands and Silts	0	CY	$ -		$ -
B.5	Supply Fluidized Bed Boiler Ash Reagent	6,776	TON	$ 409,954		$ 60.50
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	$ 322,994		$ 286.00
B.9	Supply Calcium Hypochlorite Reagent	847	TON	$ 1,770,256		$ 2,090.00
B.10	Mix Reagents, Stockpile Sediment on Pad	89,701	CY	$ 973,906		$ 10.86
B.11	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill	159,550	TON	$ 5,344,562		$ 33.50
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	$ 3,642,973		$ 0.60
B.14	Debris Removal and RCRA Subtitle D Disposal	165	TON	$ 18,963		$ 114.85
B.15	Mechanical Dredge Standby Time	50	HR	$ 52,450		$ 1,049.00
B.16	8th Street Slip Sheet Piling Reinforcement	0	LF	#REF!		$ -
				$ 14,931,896		

ESTIMATE TASK DETAILS

B.1	Mechanical Dredging of Soft Sediment	52	day	77,673	cy	1500	
Code		Description	Resource Description	No of Units	Unit Rate	Units	Total w/Contin.
Waterside Operation and Maintenance							
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	$ 27,962.28
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	$ 51,450.60
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	$ 38,587.95
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	$ 45,733.86
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	$ 34,300.40
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ 22,784.08
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ 11,392.04
2	SUB: Dredger	Truck		2	$ 75.00	$/day	$ 9,320.76
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 330 and 6 CY Environmental Bucket	1	$ 7,500.00	$/day	$ 466,038.00
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	$ 136,704.48
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	$ 279,622.80
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	$ 205,056.72
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	$ 6,213.84
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	$ 6,213.84
2	SUB: Dredger	Turbidity Curtains		1	$ 50,000.00	ea	$ 60,000.00

4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	$ 92,560.33
	Subtotal						**$ 1,493,941.97**

B.2	**Mechanical Dredging of Semi-consolidated Sands and Silts**	**27**	**day**	**34724**	**cy**	1300	
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
Waterside Operation and Maintenance							
1	SUB: Dredger	Dredging PM	Dredge Labor	6	$ 75.00	$/hr	$ 14,423.82
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	$ 26,539.82
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	$ 19,904.87
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	$ 23,590.95
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	$ 17,693.21
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ 11,752.74
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ 5,876.37
2	SUB: Dredger	Truck		2	$ 75.00	$/day	$ 4,807.94
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge with CAT 330 and conventional clamshell Bucket	1	$ 7,500.00	$/day	$ 240,396.92
2	SUB: Dredger	Tender Tug		4	$ 550.00	$/hr	$ 70,516.43
2	SUB: Dredger	Scows	30 x 60, 700 cy	2	$ 1,500.00	$/day	$ 96,158.77
2	SUB: Dredger	Tow Tug		6	$ 550.00	$/hr	$ 105,774.65
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	$ 3,205.29
2	SUB: Dredger	Workboat		1	$ 100.00	$/day	$ 3,205.29
2	SUB: Dredger	Turbidity Curtains		1	$ 50,000.00	ea	$ 60,000.00
4	SUB: Dredger	FOGM		500	$ 3.25	$/gal	$ 47,745.50
	Subtotal						**$ 751,592.57**

B.3	**Dry Excavation of Soft Sediment**	**15**	**day**				
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
Waterside Operation and Maintenance							
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	$ 8,118.90
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	$ 14,938.78
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	$ 11,204.08
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	$ 13,278.91
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	$ 9,959.18
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ 6,615.40
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ 3,307.70
2	SUB: Dredger	Truck		2	$ 75.00	$/day	$ 2,706.30
2	SUB: Dredger	Dredge Rental	CAT 345 Long Stick and Environmental Bucket	1	$ 1,250.00	$/day	$ 22,552.50
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	$ 5,412.60
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	$ 1,804.20
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	$ 29,769.30
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	$ 4,510.50
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	$ 16,125.04
	Subtotal						**$ 150,303.39**

B.4	**Dry Excavation of Semi-consolidated Sands and Silts**	**0**	**day**				

Code		Description	Resource Description	No of Units	Unit Rate	Units	Total w/Contin.
Waterside Operation and Maintenance							
1	SUB: Dredger	PM	Dredge Labor	6	$ 75.00	$/hr	$ -
1	SUB: Dredger	Operator (ST)	Dredge Labor	16	$ 51.75	$/hr	$ -
1	SUB: Dredger	Operator (OT)	Dredge Labor	8	$ 77.63	$/hr	$ -
1	SUB: Dredger	Labor (ST)	Dredge Labor	16	$ 46.00	$/hr	$ -
1	SUB: Dredger	Labor (OT)	Dredge Labor	8	$ 69.00	$/hr	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	$ -
2	SUB: Dredger	Dredge Rental	CAT 345 Long Stick and Environmental Bucket	1	$ 1,250.00	$/day	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 300.00	$/day	$ -
2	SUB: Dredger	Dredge Rental	Water Pumps	1	$ 100.00	$/day	$ -
2	SUB: Dredger	Off Road Truck		3	$ 550.00	$/day	$ -
2	SUB: Dredger	Misc Equipment		1	$ 250.00	$/day	$ -
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	$ -
	Subtotal						**$ -**

B.5	**Supply Fluidized Bed Boiler Ash Reagent**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
4	SUB: Dredger	Purchase Fluidized Bed Boiler Ash		6776	$ 55.00	$/ton	$ 409,954.13
	Subtotal						**$ 409,954.13**

B.6	**Supply Portland Cement Reagent**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
4	SUB: Dredger	Purchase Portland Cement		0	$ 125.00	$/ton	$ -
	Subtotal						**$ -**

B.7	**Supply Sodium Polyacrylate (SAP) Reagent**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
4	SUB: Dredger	Purchase Sodium Polyacrylate		0	$ 1,600.00	$/ton	$ -
	Subtotal						**$ -**

B.8	**Supply 60% Ferric Sulfate Solution Reagent**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
4	SUB: Dredger	Purchase Ferric Sulfate Solution		1129	$ 260.00	$/ton	$ 322,994.16
	Subtotal						**$ 322,994.16**

B.9	**Supply Calcium Hypochlorite Reagent**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Total w/Contin.**
4	SUB: Dredger	Purchase Calcium Hypochlorite		847	$ 1,900.00	$/ton	$ 1,770,256.46
	Subtotal						**$ 1,770,256.46**

B.10	**Mix Reagents, Stockpile Sediment on Pad**	67	day	8752	ton agent		

Code		Resource	Resource Description	Quantity	Unit Rate	Units	Total w/Contin.
Landside Operations and Maintenance							
1	SUB: Dredger	Dredging PM	Landside Labor	6	$ 75.00	$/hr	$ 36,081.18
1	SUB: Dredger	Operator (ST)	Landside Labor	16	$ 51.75	$/hr	$ 66,389.37
1	SUB: Dredger	Operator (OT)	Landside Labor	4	$ 77.63	$/hr	$ 24,896.01
1	SUB: Dredger	Labor (ST)	Landside Labor	16	$ 46.00	$/hr	$ 59,012.77
1	SUB: Dredger	Labor (OT)	Landside Labor	4	$ 69.00	$/hr	$ 22,129.79
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ 29,399.48
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ 14,699.74
2	SUB: Dredger	Truck		2	$ 75.00	$/day	$ 12,027.06
2	SUB: Dredger	CAT 345 Extended Stick Rental		1	$ 1,250.00	$/day	$ 100,225.50
2	SUB: Dredger	Polycarbonate Metering and Mixing System		1	$ 450.00	$/day	$ 36,081.18
2	SUB: Dredger	Cement/FlyAsh Metering and Pumill (Rapid Mix 400)		1	$ 1,467.00	$/day	$ 117,624.65
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	$ 21,568.53
2	SUB: Dredger	Radial Stacking Conveyor		1	$ 171.00	$/day	$ 13,710.85
2	SUB: Dredger	Misc Pumps, Hoses		1	$ 150.00	$/day	$ 12,027.06
2	SUB: Dredger	100 ton Pig Rental		1	$ 350.00	$/day	$ 28,063.14
2	SUB: Dredger	Light Plant Rental		4	$ 250.00	$/day	$ 80,180.40
2	SUB: Dredger	Misc Expenses		1	$ 200.00	$/day	$ 16,036.08
2	SUB: Dredger	Office Trailer Rentals		2	$ 350.00	$/mo	$ 56,126.28
2	SUB: Dredger	Office tTrailer		1	$ 17.00	$/day	$ 1,363.07
2	SUB: Dredger	Bobcat		1	$ 75.00	$/day	$ 6,013.53
2	SUB: Dredger	Port a Potty		1	$ 7.00	$/day	$ 561.26
4	SUB: Dredger	FOGM		300	$ 3.25	$/gal	$ 71,661.23
3	SUB: Mobile Lab Supplier	Mob Mobile Laboratory		1	$ 1,750.00	$/trip	$ 1,925.00
3	SUB: Mobile Lab Supplier	Mobile Laboratory		1	$ 2,565.00	$/day	$ 146,102.91
	Subtotal						**$ 973,906.08**

Notes Above includes cost for Phases 1 & 3 only. Phases 2a and 2b assumed to require no stabilization reagent.

B.11	**Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle D Landfill**	**159,550**	**tons**	**131**	**days**		
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Total w/Contin.**
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	$ 42,241.96
1	SUB: Dredger	Dredging PM		2	$ 75.00	$/hr	$ 23,555.00
1	SUB: Dredger	Loader Operator (ST)	Loader Operator	8	$ 51.75	$/hr	$ 65,011.80
1	SUB: Dredger	Loader Operator (OT)	Loader Operator	4	$ 77.63	$/hr	$ 48,758.85
1	SUB: Dredger	Laborer (ST)	Laborer	8	$ 46.00	$/hr	$ 57,788.26
1	SUB: Dredger	Laborer (OT)	Laborer	4	$ 69.00	$/hr	$ 43,341.20
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ 57,578.89
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ 28,789.44
2	SUB: Dredger	Truck		0	$ 75.00	$/day	$ -
5	SUB: Dredger	Sediment Transportation	Truck to landfill, 8 mi RT	0	$ 10.56	$/ton	$ -
5	SUB: Dredger	Sediment Transportation	Liner	7,977.50	$ 50.00	$/load	$ 418,818.75
5	SUB: Dredger	Nonhaz Sediment Disposal	Subtitle D Landfill	0	$ 19.21	$/ton	$ -
4	SUB: Dredger	FOGM (Site equipment)		60	$ 3.25	$/gal	$ 28,069.71
3	SUB: Mobile Lab Supplier	Mobile Laboratory		1	$ 2,565.00	$/day	$ 369,224.60
	Quote - Transportation and Disposal	Waste Management	T&D	159550.0007	$ 24.84	$/ton	$ 4,161,383.12
	Subtotal						**$ 5,344,561.57**

B.12	Load Stabilized Materials into Trucks, Transport and Dispose at RCRA Subtitle C Landfill	-	tons	0	days		
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Total w/Contin.
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	$ -
1	SUB: Dredger	Dredging PM		2	$ 75.00	$/hr	$ -
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor Labor	8	$ 51.75	$/hr	$ -
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor Labor	4	$ 77.63	$/hr	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor Labor	8	$ 46.00	$/hr	$ -
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor Labor	4	$ 69.00	$/hr	$ -
4	SUB: Dredger	Hotel		4	$ 100.00	$/day	$ -
4	SUB: Dredger	Perdiem		4	$ 50.00	$/day	$ -
2	SUB: Dredger	Truck		2	$ 75.00	$/day	$ -
5	SUB: Excavation Contractor	Sediment Transportation	Truck Liner	0	$ 73.50	$/ton	$ -
5	SUB: Excavation Contractor	Sediment Transportation	Liner	0	$ 50.00	$/load	$ -
5	SUB: Excavation Contractor	TSCA Sediment Disposal	Subtitle C Landfill	0	$ 65.00	$/ton	$ -
4	SUB: Dredger	FOGM		60	$ 3.25	$/gal	$ -
3	SUB: Mobile Lab Supplier	Mobile Laboratory		1	$ 2,565.00	$/day	$ -
	Subtotal						**$ -**

B.13	Water Treatment	161	day				
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Total w/Contin.
1	**SEE WATER TREATMENT TAB for Unit Rate Calculation**			6,073,629	$ 0.50	$/gal	$ 3,642,972.69
	Subtotal						**$ 3,642,972.69**

B.14	Debris Removal and RCRA Subtitle D Disposal	165	TON	20	tons/day		
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Total w/Contin.
2	SUB: Dredger	Wheel Loader (Cat IT62H)		1	$ 269.00	$/day	$ 2,582.40
1	SUB: Dredger	Dredging PM		1	$ 75.00	$/hr	$ 720.00
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor Labor	2	$ 51.75	$/hr	$ 993.60
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor Labor	0	$ 77.63	$/hr	$ -
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor Labor	2	$ 46.00	$/hr	$ 883.20
1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor Labor	0	$ 69.00	$/hr	$ -
4	SUB: Dredger	Hotel		0.5	$ 100.00	$/day	$ 440.00
4	SUB: Dredger	Perdiem		0.5	$ 50.00	$/day	$ 220.00
2	SUB: Dredger	Truck		1	$ 75.00	$/day	$ 720.00
5	SUB: Excavation Contractor	Sediment Transportation		165	$ 5.00	$/ton	$ 866.84
5	SUB: Excavation Contractor	Sediment Transportation	Liner	8	$ 50.00	$/load	$ 433.42
5	SUB: Excavation Contractor	Disposal	Subtitle D Landfill	165	$ 23.00	$/ton	$ 3,987.49
2	SUB: Dredger	Visqueen		1	$ 4,500.00	$/lump	$ 5,400.00
4	SUB: Dredger	FOGM		60	$ 3.25	$/gal	$ 1,716.00
	Subtotal						**$ 18,962.95**

B.15	Mechanical Dredge Standby Time	50	hr				
Code		Resource	Resource Description	Quantity	Unit Rate	Units	Total w/Contin.
1	SUB: Dredger	Dredging PM		8	$ 75.00	$/hr	$ 1,512.00
1	SUB: Dredger	Dredge Operator (ST)	Dredge Labor Labor	32	$ 51.75	$/hr	$ 4,173.12
1	SUB: Dredger	Dredge Operator (OT)	Dredge Labor Labor	8	$ 77.63	$/hr	$ 1,564.92
1	SUB: Dredger	Dredge Labor (ST)	Dredge Labor Labor	32	$ 46.00	$/hr	$ 3,709.44

1	SUB: Dredger	Dredge Labor (OT)	Dredge Labor Labor	8	$ 69.00	$/hr	$ 1,391.04
4	SUB: Dredger	Hotel		9	$ 100.00	$/day	$ 2,079.00
4	SUB: Dredger	Perdiem		9	$ 50.00	$/day	$ 1,039.50
2	SUB: Dredger	Truck		5	$ 75.00	$/day	$ 945.00
2	SUB: Dredger	Dredge Rental	40 x 80 Flat Deck Spud Barge	1	$ 7,500.00	$/day	$ 18,900.00
2	SUB: Dredger	Tender Tug		1	$ 550.00	$/hr	$ 1,386.00
2	SUB: Dredger	Scows	30 x 60, 700 cy	3	$ 1,500.00	$/day	$ 11,340.00
2	SUB: Dredger	Tow Tug		1	$ 550.00	$/hr	$ 1,386.00
2	SUB: Dredger	Equipment	Skiff	1	$ 100.00	$/day	$ 252.00
4	SUB: Dredger	Surveyor		1	$ 1,200.00	$/day	$ 2,772.00
	Subtotal						**$ 52,450.02**

B.16	**8th Street Slip Sheet Piling Reinforcement**	**0**	**LF**				
Code		**Resource**	**Resource Description**	**Quantity**	**Unit Rate**	**Units**	**Total w/Contin.**
4	Refer to worksheet "Caisson"						#REF!
	Subtotal						**#REF!**

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

General Scope

Mechanical Dredging & Offsite Sediment Disposal
Dredge All Sediment and Soil with 50 ppm Arsenic or Higher
Monitored Natural Attenuation of sediment < 50 ppm As for 10 years
Dredge Remaining Sediment and Soil exceeding 20 ppm after 10 years if necessary

Estimate Disclaimer

This estimate has been developed in compliance with AACE 18R-97, Class IV Estimate Standards and provided as a Conceptual Design estimate. As such, it is suitable for feasibility studies, selection of alternatives and/or planning only. 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.

This sheet provided as backup to costs on Summary Page only

Water Treatment Construction and Operation Conceptual Cost Estimate

12/14/2011 16:12

PRELIMINARY TREATMENT SYSTEM CONSTRUCTION	Cost
Treatment Pad Construction	**$ 40,263**
Treatment System Mobilization	**$ 1,553,588**
Water Treatment Operations	**$ 1,391,473**
Water Treatment Demobilization	**$ 50,488**

Unit Costs

$ 3,035,810.58 $ 0.500 Cost per gallon before contingency

RO WATER TREATMENT ESTIMATE DETAILS (Preliminary)

	Treatment System Pad Construction								
Code		Description	Resource Description	No of Units	Unit Rate	Units	Addl Units	Unit	Raw Cost
3	SUB: Mob Civil Subcontractor	Pad Installation Sub		1	$ 5,000.00	ls	1	na	$ 5,000.00
3	SUB: Civil Subcontractor	Pad Installation Sub	Site Grading	1	$ 4,500.00	ls	1	na	$ 4,500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Stone 10,000 sf x .5 ft =	300	$ 15.00	$/ton	1	na	$ 4,500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Asphalt Base 10,000 sf x .25 ft =	150	$ 75.00	$/ton	1	na	$ 11,250.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Asphalt Curb 400 lf x 6 in high	400	$ 10.00	$/lf	1	na	$ 4,000.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Sump	1	$ 1,500.00	LS	1	na	$ 1,500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Spreader	1	$ 250.00	LS	2	day	$ 500.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Compactor	1	$ 150.00	LS	2	day	$ 300.00
3	SUB: WWT Pad Installation	Install 100 x 100 Asphalt Pad + Berms	Curber	1	$ 350.00	LS	1	day	$ 350.00
3	SUB: Construction Labor		Operator	8	$ 51.75	$/hr	3	day	$ 1,242.00
3	SUB: Construction Labor		Operator OT	4	$ 77.63	$/hr	3	day	$ 931.50
3	SUB: Construction Labor		Labor	16	$ 46.00	$/hr	3	day	$ 2,208.00
3	SUB: Construction Labor		Labor OT	8	$ 69.00	$/hr	3	day	$ 1,656.00
3	SUB: Construction Labor	PerDiems	Meals, Misc	3	$ 50.00	$/day	3	day	$ 450.00

3	SUB: Construction Labor	Hotel	Hotel	3	$ 100.00	$/day	3	day	$ 900.00
3	SUB: Construction Labor		Fuel	100	$ 3.25	$/day	3	day	$ 975.00
	Total								**$ 40,262.50**

	Treatment System Mobilization								
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Unit**	**Raw Cost**
3	Bag Filter System Rental	Rain For Rent	100 gpm with 1 um absolute bags	0	$ 5,000.00	$/trip	1	na	$ -
3	RO System Trailer	Siemens Unit	150 gpm RO (see quote)	1	$ 5,000.00	$/trip	1	na	$ 5,000.00
3	RO System Trailer	Siemens Unit	Trailer Prep	1	$ 13,500.00	LS	1	na	$ 13,500.00
3	Microfiltration Trailer	Siemens Unit	150 gpm MF Trailer (based on RO)	1	$ 5,000.00	$/trip	1	na	$ 5,000.00
3	Evaporator Purchase	10 gpm		1	$ 1,330,000	Allowance	1	na	$ 1,330,000.00
3	Plate and Frame Press Purchase			1	$ 150,000	Allowance	1	na	$ 150,000.00
3	Frac Tanks	2 ea 20,000 gal Baker	See Siemens Quote	1	$ 1,500.00	$/trip	1	na	$ 1,500.00
3	Bag Filter Rental Skids	2 ea x 150 gpm		0	$ 1,500.00	$/trip	1	na	$ -
3	Evaporator Mobilization	per Lang Email	10 GPM	1	$ 10,000.00	Allowance	1	na	$ 10,000.00
3	Plate and Frame Press	per Lang Email		1	$ 15,000.00	Allowance	1	na	$ 15,000.00
3	Pad Electrical System Install	Transformer, Distribution System	Labor, Eqpt Matl	1	$ 10,000.00	Allowance	1	na	$ 10,000.00
3	System Piping Materials	Flex Hoses, Hard pipe from CF sump	Matl	1	$ 5,000.00	Allowance	1	na	$ 5,000.00
3	SUB: Construction Labor	Install Equipment	Operator	8	$ 51.75	$/hr	3	day	$ 1,242.00
3	SUB: Construction Labor	Install Equipment	Operator OT	4	$ 77.63	$/hr	3	day	$ 931.50
3	SUB: Construction Labor	Install Equipment	Labor	16	$ 46.00	$/hr	3	day	$ 2,208.00
3	SUB: Construction Labor	Install Equipment	Labor OT	8	$ 69.00	$/hr	3	day	$ 1,656.00
3	SUB: Construction Labor	PerDiems	Meals, Misc	3	$ 50.00	$/day	3	day	$ 450.00
3	SUB: Construction Labor	Hotel	Hotel	3	$ 100.00	$/day	3	day	$ 900.00
3	SUB: Construction Labor	Crane operated		1	$ 1,200.00	$/day	1	day	$ 1,200.00
	Total								**$ 1,553,587.50**

	Treatment System Operation	**24**	**hour shifts**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**		**Raw Cost**
3	RO System Rental	See Siemens Quote	150 gpm unit	1	$ 25,000.00	$/mo	6	mo	$ 159,050.92
3	Microfiltration System Rental	Based on RO Quote	150 gpm unit	1	$ 25,000.00	$/mo	6	mo	$ 159,050.92
3	Frac Tank Rental	Baker 20,000 gal	Eqpt	2	$ 2,000.00	$/mo	6	mo	$ 25,448.15
3	Bag Filter Rentals	Baker 150 gpm skids w 2 ea filters	Eqpt	-	$ 5,000.00	$/mo	6	mo	$ -
3	Plate and Frame Press Rental	Estimate		1	$ 10,000.00	$/mo	6	mo	$ 63,620.37
3	Water Transfer Pump	4" auto start	Rain for Rent	1	$ 3,500.00	$/mo	6	mo	$ 22,267.13
3	Siemens Technical Rep Trip		Travel	1	$ 3,000.00	$/trip	1	na	$ 3,000.00
3	Siemens Technical Rep Trip		Onsite	8	$ 125.00	$/trip	2	day	$ 2,000.00
3	Misc Pumps and equipment			2	$ 100.00	Allowance	161	day	$ 32,172.22
3	Bag Filters	For Feed Filtration		-	$ 100.00	Allowance	161	day	$ -
3	Generator Rental	600 Kw		-	$ 500	$/day	161	day	$ -
3	SUB: Water Treatment Labor		Operator	16	$ 51.75	$/hr	161	day	$ 133,192.99
3	SUB: Water Treatment Labor		Operator OT	8	$ 77.63	$/hr	161	day	$ 99,894.74
3	SUB: Water Treatment Labor		Labor	16	$ 46.00	$/hr	161	day	$ 118,393.77
3	SUB: Water Treatment Labor		Labor OT	8	$ 69.00	$/hr	161	day	$ 88,795.33
3	SUB: Water Treatment Labor		Trucks	2	$ 75.00	$/day	161	day	$ 24,129.17
3	SUB: Water Treatment Labor	PerDiems	Meals, Misc	4	$ 50.00	$/day	161	day	$ 32,172.22
3	SUB: Water Treatment Labor	Hotel	Hotel	1	$ 100.00	$/day	161	day	$ 16,086.11
3	Chemical usage	Sulfuric Acid (93%)		10	$ 4.64	$/gal	161	day	$ 7,157.33
3	Chemical usage	Sodium Hydroxide (50%)		10	$ 4.35	$/gal	161	day	$ 6,709.89
3	Chemical usage	Antiscalant		1	$ 27.27	$/gal	161	day	$ 3,004.58
3	Chemical usage	Sodium Hyperchlorite(12-15%)		1	$ 2.64	$/gal	161	day	$ 580.94

3	Evaporator Energy Usage	S Lang Email		1	$	900.00	$/day	96	day	$ 86,053.85
3	Disposal	Filter Cake	Haz Waste Offsite	0.2	$	220.00	$/ton	161	day	$ 7,077.89
3	Disposal	Reject Water	Haz Waste Offsite	1,900	$	0.80	$/gal	161	day	$ 244,508.88
3	Equipment Maintenance	Oil changes, RO Membranes, etc		1	$	150.00	$/day	161	day	$ 24,129.17
3	PPE Supplies		Tyvek, Respirator, Gloves, etc	2	$	100.00	$/day	161	day	$ 32,172.22
3	WPDES Permit Sampling	Weekly As in Water		0	$	2,500.00	$/sample	23	weeks	$ -
3	Calibration Solutions for probes			1	$	5.00	$/day	161	day	$ 804.31
3	Misc		Fuel	-	$	3.25	$/day	161	day	$ -
	Total									**$ 1,391,473.08**

	Treatment System Demobilization									
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**		**Units**	**Addl Units**	**Unit**	**Raw Cost**
3	Bag Filter System Rental	Rain For Rent	100 gpm with 1 um absolute bags	0	$	5,000.00	$/trip	1	na	$ -
3	RO System Trailer	Siemens Unit	150 gpm RO (see quote)	1	$	5,000.00	$/trip	1	na	$ 5,000.00
3	Microfiltration Trailer	Siemens Unit	150 gpm MF Trailer (based on RO)	1	$	5,000.00	$/trip	1	na	$ 5,000.00
3	Frac Tanks	2 ea 20,000 gal Baker	See Siemens Quote	1	$	2,500.00	$/trip	1	na	$ 2,500.00
3	Bag Filter Rental Skids	2 ea x 150 gpm		0	$	1,500.00	$/trip	1	na	$ -
3	Evaporator Mobilization	per Lang Email	10 GPM	1	$	10,000.00	Allowance	1	na	$ 10,000.00
3	Plate and Frame Press	per Lang Email		1	$	15,000.00	Allowance	1	na	$ 15,000.00
3	Misc Disposal of Used Eqpt	Flex Hoses, Hard pipe		20	$	220.00	$/ton	1	na	$ 4,400.00
3	SUB: Construction Labor	Install Equipment	Operator	8	$	51.75	$/hr	3	day	$ 1,242.00
3	SUB: Construction Labor	Install Equipment	Operator OT	4	$	77.63	$/hr	3	day	$ 931.50
3	SUB: Construction Labor	Install Equipment	Labor	16	$	46.00	$/hr	3	day	$ 2,208.00
3	SUB: Construction Labor	Install Equipment	Labor OT	8	$	69.00	$/hr	3	day	$ 1,656.00
3	SUB: Construction Labor	PerDiems	Meals, Misc	3	$	50.00	$/day	3	day	$ 450.00
3	SUB: Construction Labor	Hotel	Hotel	3	$	100.00	$/day	3	day	$ 900.00
3	SUB: Construction Labor	Crane operated		1	$	1,200.00	$/day	1	day	$ 1,200.00
	Total									**$ 50,487.50**

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

Assumptions

1 Refer Below for Reference Drawing
2 Area of capping 201,410 sf 4.62 Ac 22400 sy
3 Use estimated purchase and installation costs from Waukegan Harbor ROM for this exercise

Assume 1/2 of cap has armoring layer, and 1/2 of cap doesn't.
Profile (from Danny Reible) is 18" imported clean soft sediment, 12" of gravel, and (over 1/2 the cap) 12" of 6" dia. riprap.

Summary Totals

Days to Complete		32
Subcontractors	$	1,545,233
PM Resources		
Total (includes minimal design effort)	$	1,545,233

Takeoff Values

Production Rate 700 cy/day

Matl	Acres	Depth of Fill (ft)	Area (sf)	Volume Needed (cy)	Density (tons/cy)	Mass (tons)	Days
Clean Soft Sediment	4.62	1.5	201,410	11,189	1.3	14,546	16
Gravel	4.62	1	201,410	7,460	1.5	11,189	11
6" Dia Quarry Stone Rip-Rap	2.31	1	100,705	3,730	1.4	5,222	5
						Totals	32

	CAP TAKEOFF	**4.62**	**acres**						
Code		**Description**	**Resource Description**	**No of Units**	**Unit Rate**	**Units**	**Addl Units**	**Raw Cost**	**Price**
3	Clean Soft Sediment		Matl	14,546	$ 10	$/ton	1	$ 145,462.78	$ 208,626.79
3	Clean Soft Sediment	Tow to ANSUL & Place	Labor, Eqpt	14,546	$ 20	$/ton	1	$ 290,925.56	$ 417,253.58
3	Gravel			11,189	$ 13	$/ton	1	$ 145,462.78	$ 208,626.79
3	Gravel	Tow to ANSUL & Place	Labor, Eqpt	11,189	$ 22	$/ton	1	$ 246,167.78	$ 353,060.72
3	6" Dia Quarry Stone Rip-Rap		Matl	5,222	$ 20	$/ton	1	$ 104,434.81	$ 149,783.34
3	6" Dia Quarry Stone Rip-Rap	Tow to ANSUL & Place	Labor, Eqpt	5,222	$ 25	$/ton	1	$ 130,543.52	$ 187,229.17
3	SUB:Surveyor		3 man crew	1	$ 1,200	$/day	12	$ 14,400.00	$ 20,652.88
	Total Cap Subcontractors							**$ 1,077,397.22**	**$ 1,545,233.26**

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	$ 78.30	$ 1,753,860
				Total:	**$ 18,402,595**

TOTAL WITHOUT CONTINGENCY			**$ 18,402,595**
Project Management		**0%**	$ -
Remedial Design		**2%**	$ 368,052
Construction Management		**7%**	$ 1,288,182
Other Contingency		**25%**	$ 4,600,649
Total Estimated COST			**$ 24,659,477**
Estimate Range			
Top estimate range +50%	**50%**		**$ 36,989,215**
Bottom estimate range -30%	**-30%**		**$ 17,261,634**

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