Schmenk, Colin R - DNR

From: Neal, Conor <Neal.Conor@epa.gov>
Sent: Thursday, October 5, 2017 12:50 PM
To: DuFresne, Kristin I - DNR; Moen, Trevor J - DNR; Austin, Brian P - DNR
Subject: Tyco Pilot Dye oversight reports and injection permit discussion
Attachments: Ansul _Site_oversight_09182017.pdf; Ansul_ Site_oversight_0920_2017.pdf; Ansul_Site_oversight_09192017.pdf

All,

I am attaching EPA contractor oversight reports for the Pilot Dye Test completed at Tyco on September 18-20, 2017, for your information.

Tyco is expected to provide the Agencies a Pilot Dye Test Report by November 17. I would like to schedule a meeting with WDNR, including management, soon thereafter to discuss Tyco's injection permit for the full scale Dye Test currently scheduled for May, 2018. Can we block off a time in early December, say the afternoon of December 5th, for that meeting? This can be a teleconference.

Conor Neal
Geologist
Land & Chemicals Division
US EPA, Region 5, LU-MC-16J
77 West Jackson Blvd
Chicago, IL
(312) 886-7193

ANSUL/TYCO FACILITY CONTACT FORM

ATT'N: Kristin DuFresne, WDNR	☐ **WATER QUALITY STD. WT/2**	**Date** (MM-DD-YY) 09-18-2017
☒ **NORTHEAST REGION HDQRS.**	☐ **RUNOFF MANAGEMENT WT/2**	**Time** (24-Hour Clock) 19:00
☐ **WW PERMITS & PRETREAT. WT/2**	☒ **GREAT LAKE & WT PLAN. WT/2**	
☐ **PERMIT PROCESS & FAC. MGT. WT/2**	☐ _____	**Contact Method** ☒ In Person ☐ Phone

Facility Name **Tyco Fire Products (formerly Ansul)**	**Location** (Address or ¼ - ¼) 1 Stanton Street, Marinette, WI		**County** Marinette
Facility I.D. WID 006 125 215	**WPDES Permit No.** **WI-**	**Region No.** 4	**EPA/DNR Contact** Connor Neal, EPA
Facility Representative Contacted Ryan Suennen, Jeff Danko Tyco; Bradley Paulson, CH2M		**Title or Position of Representative** Env. Field Projects; Geologist	
Activity Codes		**Representative's Telephone Number** (715) 735-7411	

☒ Check if Additional sheets Attached

Tetra Tech's Craig Wieman arrived at the Tyco Fire Products (Tyco) facility guard shack at 1 Stanton St. at 6:50AM. Mr. Wieman met with Jeff Danko and CH2M personnel at the site at 7:05AM, including Brad Paulson (Team lead), Kyle Winslow, and Ryan Wnuk. The group mobilized to Building B and completed the site safety orientation with Jeff Danko and Tyco's Safety personnel, Scott Stacy, discussed plant safety protocol. Mr. Wnuk provided project and procedure safety, including emergency response measures, Health and Safety Plan expectations and field task review. The weather was mostly sunny, with a slight variable breeze, but mainly from the south – southwest. The temperature was approximately 50 degrees Fahrenheit during the morning hours, warming to the low to mid 70's as the day progressed. Overall, the weather did not hinder the work progress.

At 9:00AM, CH2M unloaded the shipped gear and checked for damage. It was determined that several packages were missing and a FedEx tracking inquiry was conducted to locate the undelivered goods. It was noted that the late arrival of the equipment probably delayed the setup and prep by 1 ½ to 2 hours. After inventory was completed, CH2M personnel left the site to procure additional materials needed to proceed with the prescribed testing. At about 10:30AM the remainder of the materials were shipped to the site and transported to the work area in Building 14 (Bldg-14). A temporary work and lab area was set up to stage mixing equipment, data logging, field instrumentation and personal effects. At 11:00AM, CH2M and Tetra Tech conducted a site reconnaissance, including measuring set up points along the piling wall for future reference (100 to 300 feet (ft) intervals marked on the piling wall cap) while setting out SCUFA loggers and data collection arrays. Data gathering was performed from the piling wall as well as the boat in the work area, collecting water depth measurements and current speed readings in a variety of locations. These locations included GPS locating and archive as well as the distance transect layout that consists of a measuring tape and a range finder. Water depths were taken with a tape that had an affixed sounding weight.

It was noted during the reconnaissance that an oily film was present along the sea wall, which is evidence of an up river oil spill. Information was provided later that a hydraulic oil spill was reported emanating from an upstream dam incident. The set up continued throughout the late morning.

From approximately 1:00PM through the early and later afternoon and evening, CH2M's Mr. Paulson and Mr. Wnuk performed calibration of the SCUFA logging units. CH2M had prepared calibration blanks using deionized (DI) water and river water with prescribed amounts of dye. Keystone KeyAcid Rhodamine WT Liquid was the dye used to prep the blanks and during the field dye testing process.

At 2:25PM, Tetra Tech's Mr. Wieman and CH2M's Mr. Winslow went out into the work area with the boat provided by MJB Construction, with Dalton Kaufman at the Boat Operator. Additional water velocity readings were recorded in the work area, including reconnaissance into the turning basin. Water velocity readings were recorded using a Hach FH 950 portable velocity meter. In general, readings varied as expected with lower velocities (< 1 foot per second (ft/sec)) recorded in the turning basin and 1.2 to 1.5 ft/sec along the piling wall.

Through the mid and later afternoon, CH2M continued with preparing, inflating and staging the rescue boat, prepping floats for the SCUFA array, calibrating the peristaltic pump for dye injection, dye preparation, checking on field fluorescence meters, sampling equipment and much more. Calibration of the SCUFA loggers was very time consuming and continued after Tetra Tech's Mr. Wieman left the site at 5:30PM.

Photo 1
Description: The image displays the CH2M SCUFA data loggers for testing.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 18, 2017

Photo 2
Description: The set up for the pilot dye testing.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 18, 2017

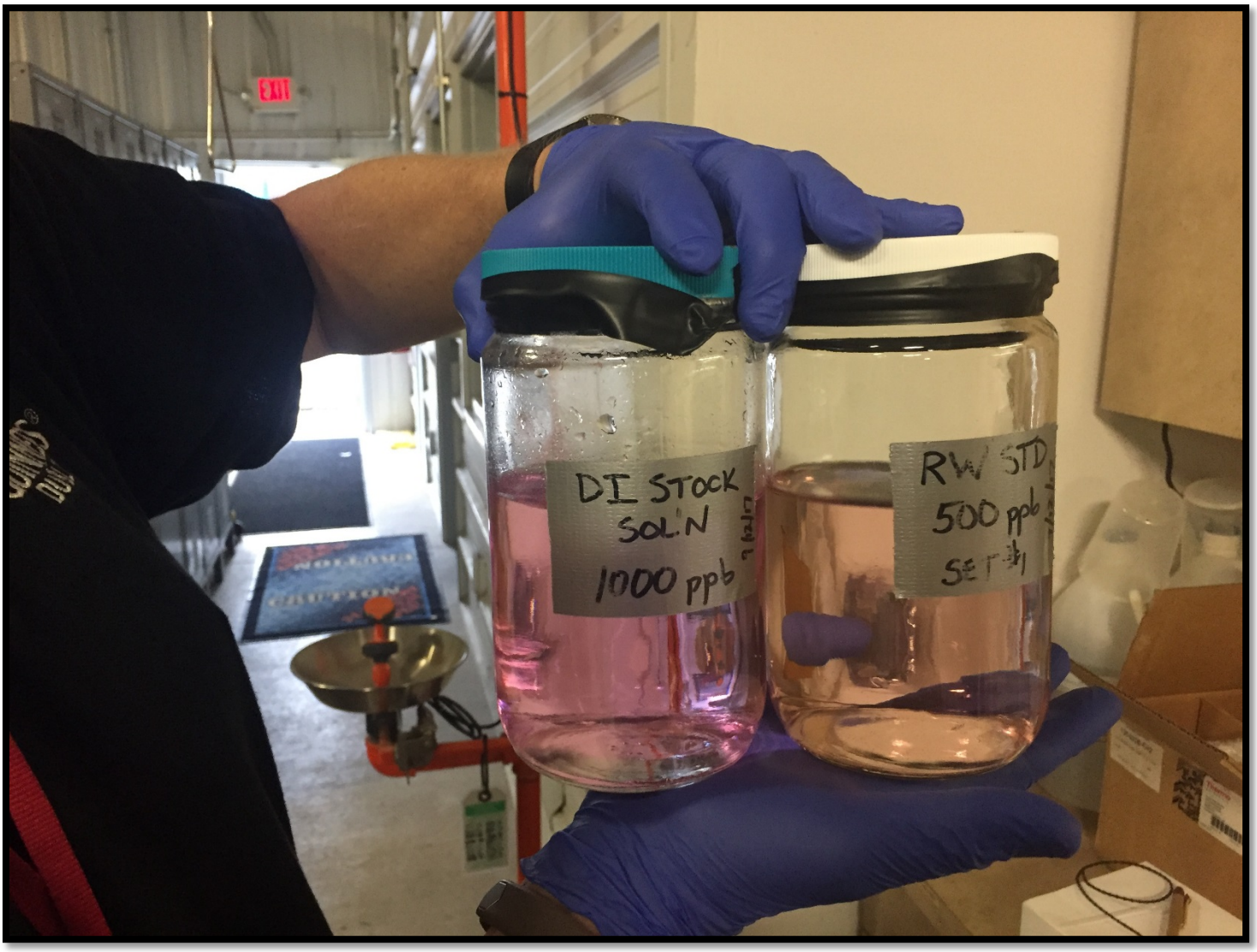

Photo 3
Description: The two glass jars indicate pilot dye testing standards for calibration.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 18, 2017

Photo 4
Description: The support boat was used to obtain pretesting field measurements for the pilot dye testing.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 18, 2017

Photo 5
Description: The peristaltic pump calibration is in progress prior to dye testing pilot.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 18, 2017

Photo 6
Description: The image displays the oily sheen that is evident along the sheet piling wall during the testing set up.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 18, 2017

ANSUL/TYCO FACILITY CONTACT FORM

ATT'N: Kristin DuFresne, WDNR	☐ **WATER QUALITY STD. WT/2**		**Date** (MM-DD-YY) 09-19-2017
☒ **NORTHEAST REGION HDQRS.**	☐ **RUNOFF MANAGEMENT WT/2**		**Time** (24-Hour Clock) 19:00
☐ **WW PERMITS & PRETREAT. WT/2**	☒ **GREAT LAKE & WT PLAN. WT/2**		
☐ **PERMIT PROCESS & FAC. MGT. WT/2**	☐ _____		**Contact Method** ☒ In Person ☐ Phone
Facility Name **Tyco Fire Products (formerly Ansul)**	**Location** (Address or ¼ - ¼) 1 Stanton Street, Marinette, WI		**County** Marinette
Facility I.D. WID 006 125 215	**WPDES Permit No.** **WI-**	**Region No.** 4	**EPA/DNR Contact** Conor Neal, EPA
Facility Representative Contacted Ryan Suennen, Jeff Danko Tyco; Bradley Paulson, CH2M		**Title or Position of Representative** Env. Field Projects Mgr; Sr. Scientist	
Activity Codes		**Representative's Telephone Number** (715) 735-7411	

☒ Check if Additional sheets Attached

Tetra Tech's Craig Wieman arrived at the Tyco Fire Products (Tyco) facility guard shack at 1 Stanton St. at 7:30AM. The CH2M personnel arrived at the site shortly before Mr. Wieman at 7:00AM, including Brad Paulson (Team lead), Kyle Winslow, and Ryan Wnuk. The personnel mobilized to Building B where equipment preparation was in progress. The weather conditions were partly cloudy with ten mile per hour (mph) winds from the south – southwest.

At 8:00AM, the CH2M personnel began preparing and calibrating the equipment including pumps, Self-Contained Underwater Fluorescence Apparatus (SCUFA) loggers and pilot testing dye. The dye referenced, also known as KeyAcid Rhodamine WT, is manufactured by Keystone.

Tetra Tech's Mr. Wieman and CH2M's Mr. Winslow laid out a field measuring reference point along the top of the sheet piling cap. Monitoring well MW-117 M was used as the "zero" mark, the point where the testing dye was injected into the river for tests performed at location "T-3" on the northern most testing location of the specified three test locations. The Boat Operator, Dalton Kaufman, was also on site assisting with the field layout.

Equipment preparation and staging the in-field testing area was performed throughout the mid-morning. SCUFA loggers set out at 10:30AM, setting loggers at four feet (ft) below the water surface.

At 11:25AM, the dye injection began with the CH2M personnel obtaining field sampling equipment. This included employing a four ounce (oz) jar taped to an extendable pole for obtaining samples along the sheet piling wall. Samples were also collected using the support boat, deploying a Van Dorn horizontal water sampler with a calibrated rope to verify depth. Dye concentrations were tested using an Aquaflor Florescence meter.

The first test injected dye at 250 milliliters (mL) per minute at a concentration of 1000 parts per billion (ppb). The dye was injected at four ft below the water surface, the same depth as the data loggers. SCUFA loggers were set up 20 and 100 ft from the point of dye injection, with loggers five and 20 ft from the piling log respectively (Reference the September 19, 2017 Field Figure). Water velocity measurements were taken using a Hach Velocity meter prior to and during the testing process. The readings ranged from 0.08 to 1.4 feet per second (ft/sec) with wide variability.

Field dye sampling did not have detections in excess of one ppb, excluding one reading of ten ppb at approximately 100 ft from the dye injection point. This reading was not substantiated with other field testing.

At 12:25PM, the dye injection was completed, but the SCUFA loggers remained at their locations, allowing there to be plume concentration readings after the dye injection was completed. SCUFA's were retrieved and the data was downloaded beginning at 1:45PM. SCUFA loggers did not detect dye at about 1 ppb.

Equipment recalibration and dye preparation was performed throughout the mid-afternoon. Due to the lack of detection, CH2M prepped dye at 60 parts per million (ppm) and increased the dye injection to approximately 1 liter (L) per minute. Additional preparation and consultation was conducted throughout the afternoon and SCUFA loggers set out for the second test run at 5:00PM. To increase the chance of intercepting the dye plume, the loggers were set up in a smaller array with loggers again set at four ft below the water surface. Loggers were set out ten and 50 ft downstream of the injection point to increase the chance of plume detection

(Reference the Field Figure). The dye injection testing began again at the MW-117M location. Dye was injected between 6:30PM and 7:13PM, again with samples obtained with the dipping apparatus and the Van Dorn horizontal sampler. The sampling only came from the sheet piling wall cap due to the smaller logger array. Around 7:00PM, personnel noticed that the dye injection tube was set at approximately six ft below the water surface rather than the prescribed four ft. The injection was performed until completion with the error noted.

By 6:45PM, the dye injection concluded. The closest SCUFA loggers were removed shortly after the injection completed and the downstream loggers were left in place for an additional fifteen minutes to capture the dye plume. It was noted during the dye injection that the plume was not evident at 1000 ppb and only slightly visible at a depth of four ft at 60 ppm.

CH2M worked on downloading data from the SCUFA loggers through the evening after Tetra Tech personnel left the site at 7:30PM.

The wind speed in the evening was noticeably reduced compared to the intensity between the mid-afternoon and the completion of the dye testing. There were near calm conditions by the end of the work day.

Photo 1
Description: The CH2M SCUFA data logger set up an array in preparation for a test.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

Photo 2
Description: This image displays the pilot dye testing injection point at the monitoring well MW-117M. The injection point calibration is in progress.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

Photo 3
Description: This image displays the pilot dye testing set up for Test Number 1 at 1000 ppb injected at 250 mL/minute.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

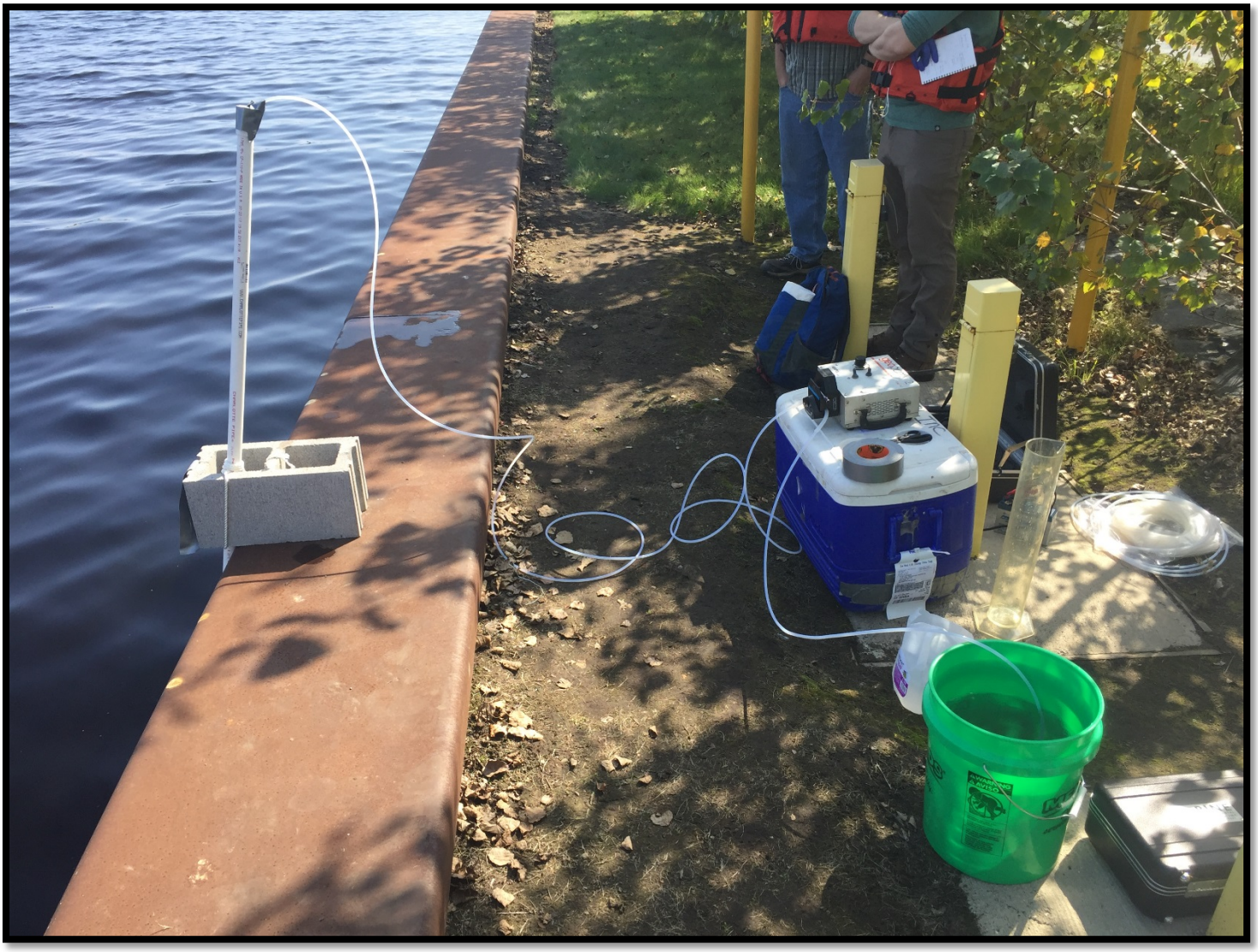

Photo 4
Description: This image displays the pilot dye testing injection in progress with a PVC pipe sheath used to support the injection tubing.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

Photo 5
Description: The pilot dye testing is in progress for Test Number 1. The SCUFA loggers locate themselves relative to the buoy location.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

Photo 6
Description: This image shows a close-up of the pilot dye used at testing injection points. .
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

Photo 7
Description: The dye testing for Test Number 2 is in progress, but with a smaller SCUFA logger array than in Test Number 1.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 19, 2017

ANSUL/TYCO FACILITY CONTACT FORM

ATT'N: Kristin DuFresne, WDNR	☐ **WATER QUALITY STD. WT/2**		**Date** (MM-DD-YY) 09-20-2017
☒ **NORTHEAST REGION HDQRS.**	☐ **RUNOFF MANAGEMENT WT/2**		**Time** (24-Hour Clock) 19:30
☐ **WW PERMITS & PRETREAT. WT/2**	☒ **GREAT LAKE & WT PLAN. WT/2**		
☐ **PERMIT PROCESS & FAC. MGT. WT/2**	☐ _____		**Contact Method** ☒ In Person ☐ Phone
Facility Name **Tyco Fire Products (formerly Ansul)**	**Location** (Address or ¼ - ¼) 1 Stanton Street, Marinette, WI		**County** Marinette
Facility I.D. WID 006 125 215	**WPDES Permit No.** **WI-**	**Region No.** 4	**EPA/DNR Contact** Conor Neal, EPA
Facility Representative Contacted Ryan Suennen, Jeff Danko Tyco; Bradley Paulson, CH2M		**Title or Position of Representative** Env. Field Projects Mgr; Sr. Scientist	
Activity Codes		**Representative's Telephone Number** (715) 735-7411	

☒ Check if Additional sheets Attached

Tetra Tech's Craig Wieman arrived at the Tyco Fire Products (Tyco) facility guard shack at 1 Stanton St. at 7:20AM. The CH2M personnel arrived at the site shortly before Mr. Wieman at 7:00AM, including Brad Paulson (Team lead), Kyle Winslow, and Ryan Wnuk. The personnel mobilized to Building B where equipment preparation was in progress. The weather conditions were overcast, humid and 65 degrees Fahrenheit during the early morning hours with ten mile per hour (mph) winds from the south – southwest.

At 8:00AM, CH2M pulled the Self-Contained Underwater Fluorescence Apparatus (SCUFA) logger that was set up in the mouth of the river branch where the shipping basin begins. The SCUFA logger was set prior to initiating dye testing on September 19, 2017.

CH2M prepped and calibrated equipment throughout the morning. Based on data from the day before, CH2M decided to run a short test with the injection set up at approximately one and a half feet (ft) below the water surface. CH2M performed plume concentration testing only using a dip sample and a Van Dorn sample collection and did not set out the SCUFA loggers. The work completed in the morning was done in preparation for this initial trial.

At 10:00AM, CH2M started the dye test, injecting dye at 60 parts per million (ppm) at one liter (L) per minute at the injection point referenced at monitoring well MW-117M. The top of the sheet piling wall was demarcated in five foot intervals, between 0 – 50 ft, to allow for there to be a reference for sample collection in the dye plume.

The trial test was performed until approximately 10:06AM. During the trial, the dye plume was visible at depth, but was undetectable at the water surface. Although the wind was light and came from the south, it did not evidently affect the downstream plume migration. In general, the field testing results indicated that dilution at 100:1 was detected approximately one foot from the injection point, whereas, at about 10,000:1 the dilution was detected approximately 50 ft from the injection point. Water velocity readings were obtained prior to and during the dye test injection events.

The dye testing trial resulted in the project manager (PM), who is responsible for testing preparation and deployment of the arrays, to set the SCUFA loggers closer to the point of injection.

It was noted to a point of concern that obtaining aqueous dye samples, while using an open dipper, likely resulted in the dilution of the test sample as it was retrieved. This is true especially if retrieving the sample through 4 ft of a water column or more.

The second test was consisted of deploying the SCUFA loggers in an array that included one set at ten ft from the injection point, two ft from the piling wall; two loggers set at 25 ft from the injection point at two ft and five ft from the wall; and, the last loggers set 50 ft from the injection point at two ft and 47 ft from the wall respectively. The second test commenced at 10:50AM with dye injected at 60 ppm at one L per minute at 1.5 ft below the water surface. Once again, the results from the field testing indicated only very low level detections. For instance, one sample was obtained five ft from the injection point at 32 parts per billion (ppb) and downstream detections were less than one ppb. During the second test, dye was visible at depth, but not at the water surface, dissipating rapidly; with it no longer visible at 20 ft. SCUFA loggers were pulled at 11:10AM with the downstream loggers retrieved at 11:20AM.

Throughout the early afternoon, CH2M prepped for the third dye test, calibrating, setting SCUFA depths, data downloading, as well as a variety of other activities.

The third test was initiated at 2:25PM. The dye was again injected at 60 ppm at one L per minute and the dye injection depth was set at 12 ft below the water surface. The SCUFA array estimated the locations for Test Number 2. At 3:15PM, the test finished and SCUFA loggers were pulled from the upstream location. The remote SCUFA's were left in place for an additional 15 minutes. Due to the depth, the dye was not visible at any time during the testing event.

The data started to download at approximately 3:40PM. The results indicated that dye detections varied from 0 – 1.145 ppb from the injection point.

Tetra Tech personnel departed the site at 4:40PM.

Photo 1
Description: The CH2M SCUFA data logger set up an array in preparation for Test Number 2.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 12, 2017

Photo 2
Description: This displays Test Number 2's pilot dye testing injection point at MW-1117M. The dye color appears to be a brownish-red shade.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 20, 2017

Photo 3
Description: Test Number 2's pilot dye testing is set up at 1 ½ feet below the water surface and injected at 60 ppm at 1 liter per minute.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 20, 2017

Photo 4
Description: Test Number 2's pilot dye testing injection is in progress. The SCUFA array was set up prior to commencing testing.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 20, 2017

Photo 5
Description: Test Number 2's pilot dye testing injection is in progress and the dye coloration is a deep brownish-red.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 20, 2017

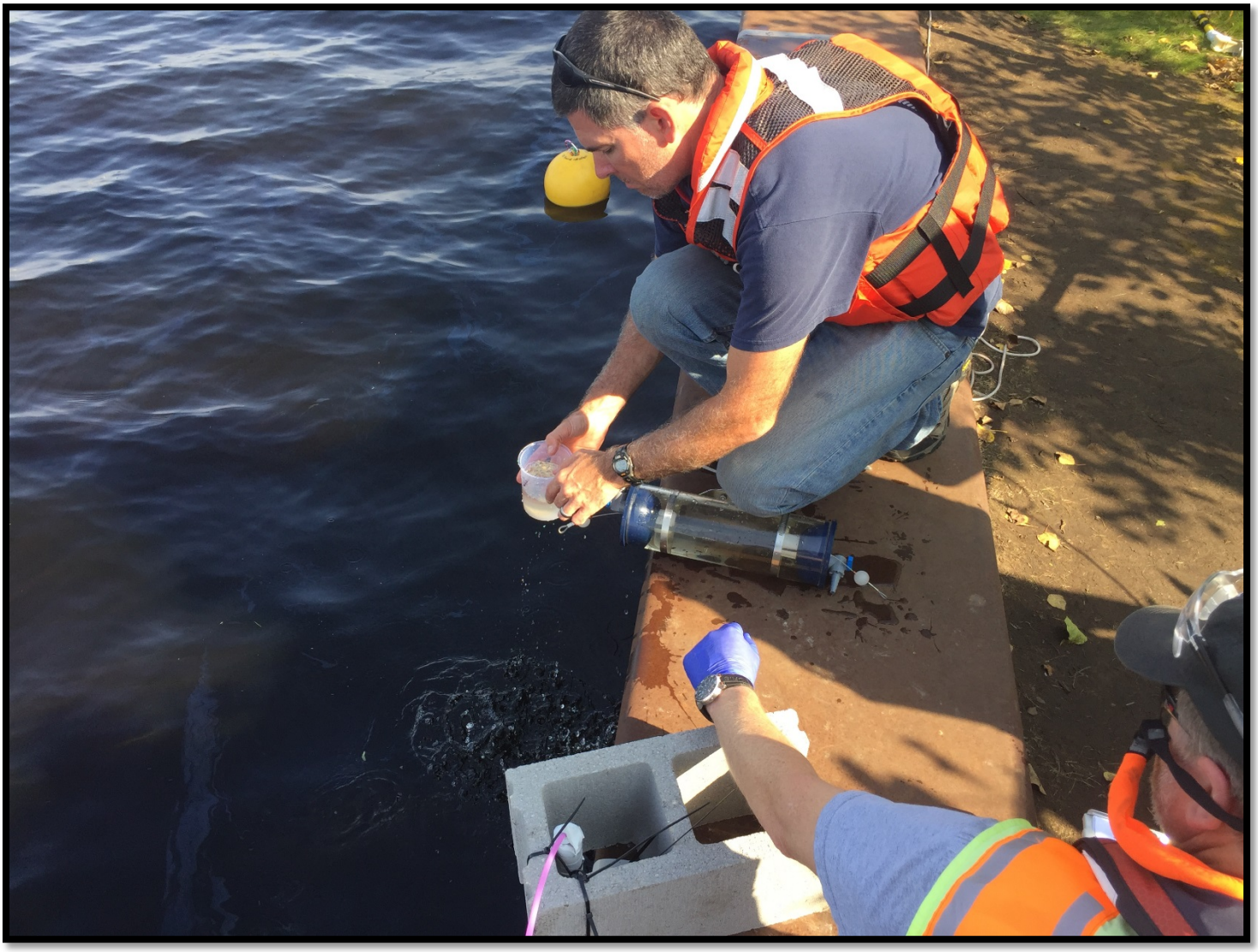

Photo 6
Description: The personnel are using a Van Dorn horizontal water sampler to transfer the sample for fluorescence readings.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 20, 2017

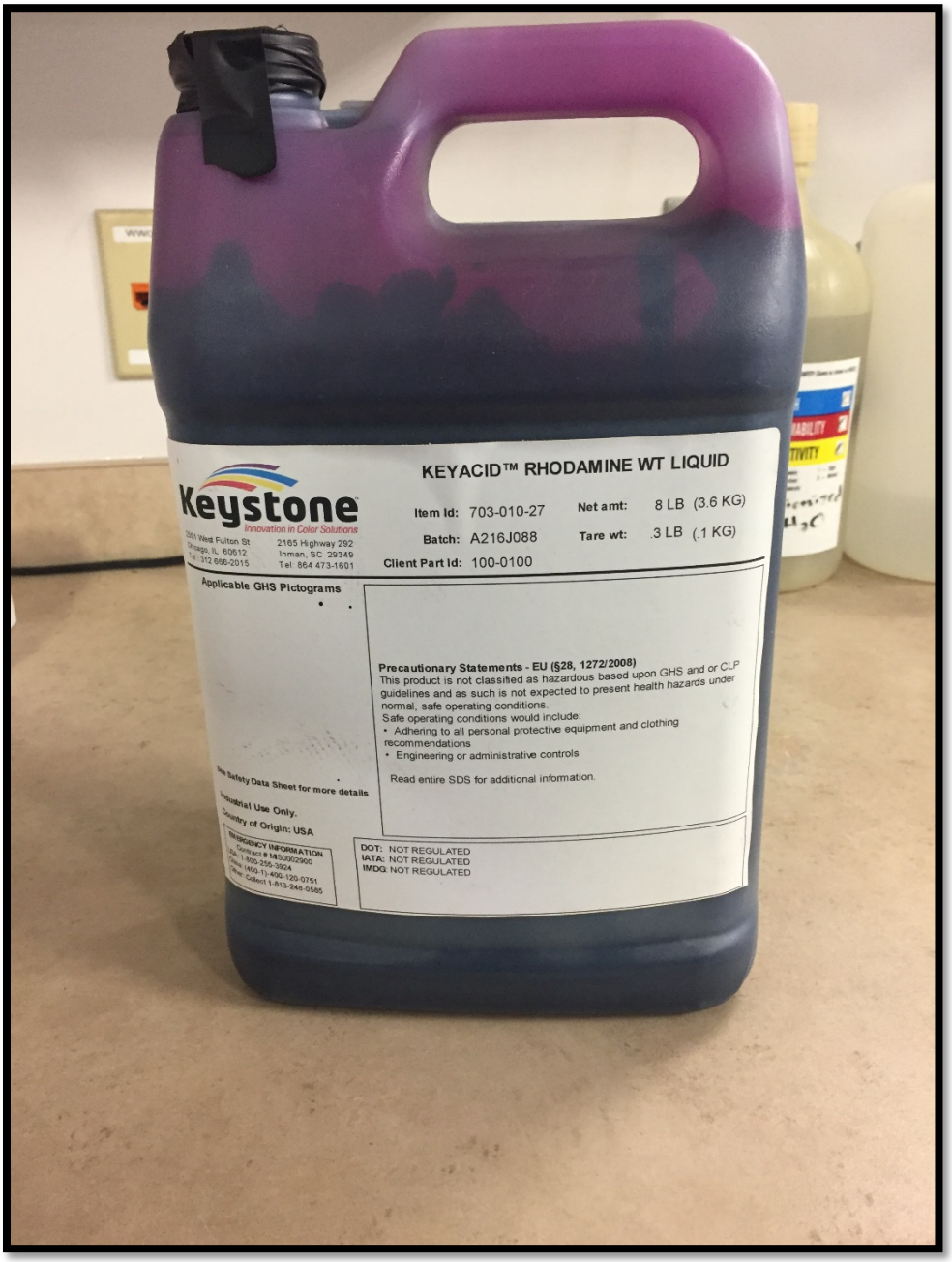

Photo 7
Description: Keystone KeyAcid Rhodamine WT Liquid was the dye used for the pilot tests.
Site: Tyco Fire Products
Location: Marinette, WI
Date: September 20, 2017