

DuFresne, Kristin I - DNR

From: Janeczek, Joseph <jjaneczek@tyco.com>
Sent: Tuesday, September 12, 2017 8:01 AM
To: Neal.Conor@epa.gov
Cc: Finn, Molly; Cisneros, Jose; Killian, James - DNR; DuFresne, Kristin I - DNR; Mator, Richard; mia Lombardi (JCI); Suennen, Ryan; Danko, Jeff; Nadeau, Steven C.; Janeczek, Joseph
Subject: RE: Tyco Pump Down Program - Response to July 25, 2017 Meeting
Attachments: SystemTestingLtr_WDNR_06202017.pdf

Attached is the Groundwater Treatment Plan referenced in the Plan Forward, Unfortunately I did not attach in yesterday's e-mail. My apologies.

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From: Janeczek, Joseph
Sent: Monday, September 11, 2017 5:00 PM
To: 'Neal.Conor@epa.gov'
Cc: Finn, Molly; Cisneros, Jose; 'James.Killian@wisconsin.gov'; DuFresne, Kristin I - DNR; Mator, Richard; mia Lombardi (JCI); Suennen, Ryan; Danko, Jeff; 'Nadeau, Steven C.'; Janeczek, Joseph
Subject: Tyco Pump Down Program - Response to July 25, 2017 Meeting

Mr. Neal Conor
Project Manager / Geologist
Land & Chemicals Division
US EPA, Region 5, LU-MC-16J
77 West Jackson Blvd
Chicago, IL

Re: Tyco Pump Down Program
Response to July 25, 2017 Meeting

Dear Mr. Neal:

Tyco Fire Products LP (Tyco) is in receipt of your correspondence dated August 10, 2017 regarding the meeting between the U. S. Environmental Protection Agency (EPA), Wisconsin Department of Natural Resources (WDNR), and Tyco on July 25, 2017 and EPA's position on future pump down activities in Cell 1 (the former Salt Vault) and Cell 2 (the former 8th Street Slip) at the Tyco Stanton Street facility. Tyco appreciates EPA's time to discuss this matter and would like to present further information to support Tyco's position regarding the requirements under the Agreement on Resolution of 2013 Five Year Review Technical Issues dated April 23, 2014 (AOR).

Under section I.A of the AOR, Tyco committed to reduce the water levels in Cell 1 and 2 to a Target Elevation of 577.5 feet above mean sea level (International Great Lakes Datum 1985). The AOR states that the "means to accomplish this water level, draw down shall be by utilizing an aggressive temporary groundwater extraction program that relies on off-site water disposal." (emphasis added). The AOR also provides that "Tyco commits to achieve the Target Elevation as soon as practicable, but not later than by December 31, 2017 subject to the Technical Impracticability provisions below."

At various points within paragraphs 1 and 4 of section 1.A, the AOR acknowledges that water levels may fluctuate, exceedances of the Target Elevation may recur and that subsequent plans and root cause analyses may be necessary to address the situation.

In 2016, Tyco conducted the groundwater extraction program (Pump Down Program). It was designed as a temporary system, it was aggressive in that more than one (1) million gallons were pumped out to reach the Target Elevation in both cells. And the groundwater was temporarily contained in tanks until it could be shipped off site for disposal. This aggressive pump down provided Tyco with significant information about the conditions at the site, the reaction of the groundwater levels to the pump down system and enabled Tyco to assess the overall performance and effectiveness of the interim remedy. One of the biggest and surprising lessons learned was that when the extraction system was shut down on October 24, 2016, within just one week of system shut down, the water recharged and exceeded the Target Elevation in Cell 1. In Cell 2, the water also recharged and soon exceeded the Target Elevation, although at a slower rate.

Given the relatively rapid rate of recharge, it was apparent that this temporary system would not be capable of maintaining the Target Elevation in the short-term or long-term and that, as provided for in the AOR, a root cause analysis regarding the source of the groundwater infiltration and a work plan for the design and implementation of more permanent solution would be necessary.

In accordance with the provisions of the AOR, Tyco notified EPA of this situation and has been in discussions and meetings with EPA regarding the inability of the system to maintain the Target Elevation and Tyco's plans for investigation, testing and design toward a permanent solution. However, as outlined in your August 10 letter, EPA indicated that it is the Agency's position that Tyco resume pump down activities using the temporary extraction system to meet the Target Elevation, and that it believes that Tyco can achieve the Target Elevation within four weeks of pumping.

Tyco believes conducting an additional pump down with the current system and hydraulic conditions will needlessly repeat the previous results. Based on the prior results, repeating the aggressive pump down will create no value or environmental benefit because the water levels will rebound immediately to exceed the Target Elevation once the pump down is stopped. Additionally, the time, resources and expense to conduct this activity would be wasted as it cannot achieve the goal of maintaining the Target Elevation. Tyco believes this meets the criteria for Technical Impracticability as provided for in the AOR (and EPA guidance), and consequently, Tyco is seeking EPA's concurrence on that determination, for the reasons set forth below.

The AOR states that "[i]n the event it becomes obvious that the Target Elevation is not likely to be achieved by December 31, 2017, due to Technical Impracticability as defined in U.S. EPA Guidance," Tyco shall notify EPA and "submit a plan and schedule for implementation which proposes alternative means to address the then prevailing site conditions in Cells 1 and 2."

In the referenced guidance (EPA's 1993 *Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration (Publication 9324.2-25) (1993 Guidance)*), EPA discussed the Technical Impracticability provision in the proposed Subpart S rule and noted:

The determination involves a consideration of the “**engineering feasibility and reliability**” of attaining media cleanup standards as well as situations where remediation may be “technically possible,” but the “scale of the operations required might be of such a **magnitude and complexity** that the alternative would be impracticable” (emphasis in original).

Tyco believes the facts and circumstances of the 2016 Pump Down Program clearly meet the criteria. Based on the unequivocal language of the AOR, the existing system was purposely designed as a temporary system for an aggressive drawdown of groundwater to achieve the Target Elevation, not as a permanent approach to maintain the Target Elevation. The system cannot operate during periods of freezing conditions. The use of offsite disposal to manage the groundwater extracted was intended to be temporary and not part of a long term solution (under the Revised Barrier Wall Groundwater Monitoring Plan Update, “groundwater extracted during long-term pump down operation is expected to be treated through the onsite system”) and as such, it is not feasible nor technically possible to continually operate this system to maintain the Target Elevation. In addition, as EPA is aware, the offsite disposal facility that was used in 2016 is currently not available for use; hence, pumping and offsite disposal is not a viable approach at this time even if it was sensible or technically practicable, which it is not.

The current temporary system is also not a reliable means to maintain the Target Elevation. As noted, running the system for four weeks may achieve the Target Elevation momentarily, but once the system is turned off, the water levels will rebound and no longer meet the Target Elevation criteria. The magnitude and complexity of running the system to achieve such a momentary goal is impracticable and would tie up manpower and resources that could otherwise be working to move forward on determining the cause of water infiltration and developing a more permanent solution.

The 1993 Guidance also notes that “[i]n the context of remedy selection, both [the RCRA and Superfund] programs consider the notion of technical feasibility along with reliability and economic considerations; however, **the role of cost (or scale) of the action is subordinate to the goal of remedy protectiveness.**” (emphasis in original). The cost and resources to complete the temporary pump down is inordinately high (approximately \$1,000,000 and two-full time staff). As the guidance notes, the goal of remedy protectiveness is primary over cost and scale; however, in this situation, the remedy is to maintain Target Elevation, and the temporary nature of the existing system is not capable of achieving that remedy. Simply stated, when the factors of “technical feasibility along with reliability and economic considerations” are evaluated against the real world results of the aggressive 2016 interim measure, they clearly override the protectiveness factor, because any anticipated protectiveness was wholly ineffective due to its short-term water level reduction. As such, the economic considerations cannot be ignored and clearly support a Technical Impracticability determination. (See Sections 4.4.1 and 4.4.5 of the 1993 Guidance, “The point at which the cost of ARAR compliance becomes inordinate must be determined based on the particular circumstances of the site.”).

However, even if EPA does not agree that the criteria have been met for Technical Impracticability, the 1993 Guidance as well as the AOR support the position that the EPA should agree to a modification or re-design of the system that will meet the target water levels, where the current technology is not capable of maintaining the prescribed remedy.

Path Forward

Based on the information provided above, our previous telephone discussions regarding pump down operations, and our July 25, 2017 presentation, Tyco provides the following additional information and proposed path forward:

Stormwater System. Tyco will complete activities to modify the stormwater management system to minimize the potential for groundwater to enter the system, and to minimize infiltration of stormwater into the subsurface. These improvements include abandonment of subsurface piping at Outfalls 3, 5 and 6, which is to be replaced by overland flow

systems, regrading, and assessment and lining of the remaining subsurface conveyance system. A work plan for the stormwater improvements has been reviewed and approved by the EPA and WDNR.

Groundwater Treatment System. Tyco has completed numerous upgrades to the groundwater treatment system with a goal of increasing the treatment capability of groundwater containing higher arsenic concentrations. Tyco prepared and received WDNR approval to conduct a testing program to determine treatment system capabilities. A copy of the work plan for the testing program is attached. The testing program is estimated to take approximately 45 days to complete and an estimated 300,000 gallons of groundwater would be extracted during the testing period (which will also serve as a partial pump down). Based on the results of the testing program the following is anticipated to be determined:

- treatability of the higher arsenic concentration groundwater mixture;
- ratio of pump down area groundwater to remaining site groundwater that may be treated by the existing system; and
- alternatives to treatment of the pump down area groundwater. This may include installation of a bypass system to allow more efficient management of groundwater that cannot be treated, installation of a pretreatment system.

The testing program was initiated on September 11, 2017. Once the treatment testing program is complete, Tyco will utilize the resulting data to determine what further modifications to the groundwater treatment plant are necessary and complete an engineering design for a permanent conveyance system. Based on current knowledge, Tyco believes the permanent conveyance system may include one of the following components:

- connecting the four other extraction wells in Cell 1 and the two other extraction wells in Cell 2 into the permanent conveyance lines existing for extraction wells EW-2 and EW-3 for onsite treatment. This will also include electrical connections and operational systems to optimize groundwater recovery and maintenance of Target Elevation;
- connecting the four extraction wells in Cell 1 and the two extraction wells in Cell 2 into the storage tanks located adjacent to Building 59. This option would only be used if it is determined that onsite treatment at the existing groundwater treatment plant is not possible and offsite disposal is required as a permanent solution or if treatment testing concludes that pre-treatment of the higher arsenic concentration groundwater is necessary before conveyance to the existing groundwater treatment plant.
- installation of a horizontal well network within the pump down area to more effectively manage the Target Elevation. The horizontal well network would likely be connected to the existing conveyance lines. Determination of location and engineering specifications would need to be evaluated for this option.

Proposed Schedule:

The following is a proposed schedule for implementation of the testing program, system design and installation, and Target Elevation achievement:

- Deliver and install temporary storage tanks for treatment system testing – week of August 21, 2017 (completed);
- Conduct groundwater extraction and treatment testing program – September through October 2017 (in progress);
- Complete Storm water Outfall 5 and 6 modifications – September through October 2017;
- Evaluate data, complete permanent system design and submit Design Plan to the agencies – November 2017 through January 2018;
- Agency Design Plan Review – February through March 2018;
- Comment Resolution and Procurement – March through May 2018;
- Construction – May through June 2018;
- Permanent System Start Up – July 2018; and
- Target Level Achievement Goal – October 2018.

The actual schedule may vary based on the data and complexity of the design of the permanent system.

Tyco is committed to pursuing and achieving a remedy to this situation that is protective of human health and the environment. In that regard, we need to ensure our efforts and resources are aligned to approaches that will be effective and maintainable in the long term to achieve that goal. We trust the EPA will agree with our interpretation of Technical Impracticability, or in the alternative, that modification to the system is warranted and concur with our tentative schedule for implementation of the testing, design and construction activities presented herein.

We look forward to resolution of this matter and we are available to discuss any additional questions or comments.

Joseph Janeczek, PE ARM

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June 20, 2017

Mr. Mark Stanek
Wisconsin DNR
Oshkosh Service Center
625 East County Road Y, Suite 700
Oshkosh, WI 54901

Re: Planned Operating Procedure for Groundwater Treatment System Testing
Pump Down Program Optimization
Tyco Fire Products LP Site
One Stanton Street, Marinette, WI
EPA# WID 006 125 215
WDNR BRRTS #02-38-000011

Dear Mr. Stanek:

The purpose of this correspondence is to provide information to the Wisconsin Department of Natural Resources (WDNR) regarding the planned procedure for evaluating the existing groundwater treatment system operational capabilities associated with the ongoing pump down program at the site. The pump down program is a required component of the Agreement on Resolution (AOR) for the 5-year technical review between the U.S. Environmental Protection Agency (USEPA) and Tyco Fire Products LP (Tyco).

Background

Tyco installed containment structures around the former Salt Vault and 8th Street Slip at the Stanton Street facility as part of remedial actions completed at the site. Additional containment structures surround the manufacturing area and portions of the "Wetlands Area" at the site. An engineered groundwater collection and treatment system (GWCTS) was installed at the site, coupled with phyto-pumping plots, to manage water levels within the site to prevent flooding of the manufacturing area. The GWCTS currently recovers groundwater water from the site through seven existing extraction wells and treats and discharges the groundwater under a Wisconsin Discharge Elimination System (WPDES) permit. A component of the successful treatment of site groundwater is the proper "blending" of the varied arsenic concentrations at the site prior to processing through the groundwater treatment system.

As part of the AOR, Tyco is required to lower existing water levels within the former Salt Vault and 8th Street Slip areas and maintain the water levels at or below the

target water level of 577.9 feet above mean sea level to reduce the possibility of offsite migration of impacted groundwater from these areas. Pump down operations were initiated during the 2016 field season using a temporary recovery system installed in these areas. While the target water levels in each area were reached during the pump down operation, the majority of the recovered water was transferred from the site for offsite disposal. Limited groundwater recovered from the areas was transferred to the groundwater treatment system for processing; however, ongoing system upgrades and discharge exceedences resulted in the cessation of treatment of groundwater collected from the pump down area. Based on pump down operations and area water level monitoring during the winter period, a permanent groundwater management program appears necessary to effectively manage the groundwater levels in the area.

Groundwater in the pump down area contains relatively high concentrations of arsenic. Because the groundwater treatment system was not designed to manage groundwater collected from the pump down area at the flow rates that appear to be required to effectively manage the groundwater levels in the area, testing of the treatment system is required. Below is a brief description of the planned testing operation to assess the groundwater treatment systems ability to treat the combined site groundwater.

Testing Procedures

Consistent with procedures used during the 2016 season, groundwater will be extracted from the pump down area using the existing temporary pump down system and placed in tanks located adjacent to the pump down area. Groundwater collected from the former 8th Street Slip will be placed in dedicated temporary storage tanks and groundwater collected from the former Salt Vault will be placed in separate dedicated temporary storage tanks.

Recovered groundwater will be transferred to one of two area-dedicated storage tanks to be located adjacent to the GWCTS building (Building 14). Each tank will be dedicated to groundwater recovered from the former 8th Street Slip and former Salt Vault, respectively, and will be labeled to avoid unnecessary mixing of the waters. Water samples will be collected from the water in the temporary storage tanks prior to incorporation into the treatment stream on a daily basis for laboratory testing of total arsenic concentration. This testing will provide information on the system influent concentration and possible changes in total arsenic concentrations in the groundwater from the pump down area that is contributed to the treatment stream during the system testing period. The concentration data may be used to assess treatment system effectiveness and potential groundwater withdrawal scenarios in the pump down area (varying rates or individual extraction well operation).

The anticipated flow rate necessary to maintain compliance with the target groundwater elevation in the pump down area is estimated at 1.5 gallons per minute (gpm) from each area at this time (combined 4,320 gallons per day). Based on current estimated maximum capacity of the GWCTS (30 gallons per minute), this represents approximately 10% of the total groundwater contributed to the treatment system. It is unknown if the treatment system has the ability to effectively treat the groundwater with this percentage of groundwater contribution from the pump down area.

Groundwater from the tanks located adjacent to the GWCTS building will initially be transferred to the GWCTS equilibration tank at a rate of approximately 0.25 gpm, while the remaining site-wide extraction wells continue pumping into the equilibration tank at their typical operating rates. Total flow into the GWCTS is estimated at 25-30 gpm. This will ensure proper mixing/dilution and represent operating conditions likely to be encountered during full scale operation. Care will be taken to avoid "slugging" or batch processing of former 8th Street Slip/Salt Vault water without proper mixing of other site groundwater to minimize the risk of discharge exceedences during the testing period.

In general, the treatment system includes an inclined plate separator followed by a microfiltration system, a primary reverse osmosis and a secondary (brine) reverse osmosis or vibratory shear enhancement process system prior to discharge of the treated water to the river. Addition of various treatment-associated chemicals occurs at selected locations along the treatment process. Following treatment of the groundwater through the existing system, a treated water sample will be collected from the ISCO sampler on a daily basis. A portion of the sample will be tested using the on-site laboratory to provide information on compliance with discharge criteria within approximately 24 hours of sample collection. The onsite testing results will aid in determining continued operation of the testing program and minimize the risk and volume of water that may be discharged that exceeds discharge criteria. In addition, a portion of the sample will be submitted to the project laboratory for testing of total arsenic concentration under quick turn-around (estimated at 3 days) to determine compliance with discharge criteria.

Depending on initial results, the ratio of groundwater supplied to the treatment system from the former Salt Vault and 8th Street Slip may be increased to determine the maximum rate of groundwater that can be contributed to the treatment system from the pump down area. The increase in volume of water contributed from the former Salt Vault and 8th Street Slip that is incorporated into the treatment train will depend on the initial treated water testing results, but will likely be in 0.25 gpm increments from each area. The increase in volume of water contributed to the treatment system will continue until break-through is encountered, compliance is achieved, or sufficient volume/rate is achieved to ensure future compliant

operation. It should be noted that the existing WPDES permit allows for the discharge of 0.680 parts per million (ppm) of total arsenic to the river. However, based on the variance request submitted to the agencies, the target maximum discharge criteria during the testing period will be 0.5 ppm.

Based on the testing results, an operational plan will be developed for permanent management of groundwater recovered from the pump down area.

Closure

I trust the information provided herein provides sufficient detail on the testing program to allow WDNR to approve the approach, as well as provide notification of the potential for limited discharge criteria exceedences during the planned activities. As discussed during our June 16, 2017 conversation, Tyco is interested in moving forward with the testing activities immediately upon your approval and installation of the temporary tanks near the GWCTS building. Should you have any questions, or require additional information, please do not hesitate to contact me at 262-951-6888.

Sincerely,



Tyco Fire Protection Products

Attachments

cc: Joseph Janeczek – Johnson Controls
Rich Mator – Johnson Controls
Ryan Suennen – Tyco Fire Protection Products
Conor Neal – USEPA
Kristin DuFresne - WDNR