

Attachment 2
Revised Page iv and Pages 3-4, Exhibit 3
Excerpt from the
Petition for Adjusted Standards for the Closed Collinsville Landfill
December 4, 2014

EXECUTIVE SUMMARY

Tetra Tech, Inc. (Tetra Tech) was retained by the City of Collinsville, Illinois (the City) to prepare this Groundwater Assessment of 31 Additional Parameters under 35 Illinois Administrative Code (IAC) 620.410 and the 4th Quarter 2013 Groundwater Monitoring Results as a part of the Closed City of Collinsville Landfill's monitoring program for Illinois Environmental Protection Agency's (IEPA) review.

The quarterly monitoring was prompted based on Violation Notice M-1998-00195, issued by the IEPA on October 6, 1998. This violation notice was a result of the IEPA's inspection of the landfill completed on April 22, 1998 that identified levels of chloride and Total Dissolved Solids (TDS) in monitoring well MW-1 had exceeded the Class II Groundwater Standards of 200 mg/L and 1,200 mg/L, respectively (35 IAC 620.420(a), except as provided in Section 620.450 or subsection (a)(3) or (d)).

In response to Violation Notice M-1998-00195, Tetra Tech performed several surface and subsurface investigations. The initial investigation was performed in 1999. In order to further assess the elevated concentrations of certain constituents, Tetra Tech prepared a Groundwater Assessment Plan dated May 2000 as a Supplemental Permit Application for the Closed Collinsville Landfill, pursuant to 35 Illinois Administrative Code Subtitle G, Part 807. The IEPA approved Supplemental Permit Number 2000-173-SP on January 3, 2001 to modify the groundwater monitoring program. The annual assessment of the groundwater at the Closed Collinsville Landfill was established under Supplemental Permit Number 2000-173-SP. Since 2000, the requirements of the groundwater monitoring program have been adjusted based on the findings of the 2006 assessment monitoring, but quarterly monitoring and an annual evaluation of the data continues under Supplemental Permit Number 2013-373-SP.

The subject of this report, submitted as a Supplemental Permit Application in accordance with Attachment A, Condition 25 of Supplemental Permit Number 2012-373-SP, includes an evaluation of the 31 additional parameters under 35 IAC 620.410 a), b), and e) and the presentation of the 4th Quarter 2013 sampling results collected concurrent with the 31 additional parameters.

4th Quarter analytical results detected three of the 31 additional parameters – perchlorate, Mecoprop (MCP) and p-dioxane (1,4-dioxane). Concentrations of perchlorate and MCP exceed the newly established Class I Groundwater Standards and arsenic exceeds the recently revised standard. The presence of perchlorate and arsenic are related to past activities at the former coal mine that once operated at the site. 1,4-Dioxane may be associated with the packaging of dynamite, but the most likely source is current use of herbicides that contain surfactants with 1,4-dioxane as an impurity. Additional monitoring is needed to assess the source of MCP. The three newly detected parameters will be monitored for three additional and consecutive quarters to evaluate background concentrations, identify baseline conditions and further assess the source of the MCP.

3.0 PREVIOUS INVESTIGATIONS

3.1 1998 Violation Notice M-1998-00195

On April 22, 1998, the IEPA performed an inspection of the Closed Collinsville Landfill and sampled monitoring well MW-1 for inorganics, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, herbicides, and polychlorinated biphenyls (PCBs). Results indicated concentrations of inorganic parameters, chloride, and TDS, were above Class II Groundwater Standards and the IEPA issued Violation Notice (VN) M-1998-00195 on October 6, 1998. The current well network including MW-1 is shown on Figure 2.

3.2 1999 Limited Surface and Subsurface Investigation

The 1998 violation prompted the City to perform a groundwater investigation. In March 1999, Tetra Tech performed a limited surface and subsurface investigation, which included the installation of one piezometer, P-2, and the collection of groundwater samples from the existing well MW-1 and piezometer P-2. MW-1 was located along the western toe of the landfill and piezometer P-2 was installed upgradient and southeast of the landfill. Levels of chloride (11 mg/L) and TDS (776 mg/L) in P-2 were below their respective Class II groundwater standards and higher concentrations were found in MW-1, located downgradient of the landfill.

During Tetra Tech's March 1999 investigation, multiple surface water samples were collected from nearby ponds and creeks. The surface water was tested for elevated concentrations of chloride and TDS. The limited investigation verified the presence of chloride and TDS in MW-1 above Class II groundwater standards adjacent to the landfill and identified the absence of elevated chloride and TDS in surface water samples and groundwater upgradient of the landfill.

3.3 2000-2007 Groundwater Monitoring and Groundwater Investigations

3.3.1 Quarterly Assessment Monitoring (Supplemental Permit 2000-173-SP)

Based on the March 1999 limited groundwater investigation, a Groundwater Assessment Plan (Supplemental Permit 2000-173-SP) was prepared to modify the groundwater monitoring program for the Closed Collinsville Landfill. The IEPA approved this supplemental permit on January 3, 2001. The purpose of the program was to monitor the groundwater and determine whether releases from the facility were occurring or whether constituents in the groundwater were below groundwater quality standards. The groundwater assessment program consisted of quarterly groundwater sampling and comparison of the results to groundwater quality standards cited in the IAC Section 35 Part 620.420(a). The list of parameters specified in the permit included List 1 Field Parameters, List 2 Routine Indicator Parameters, and List 3 Inorganic and Organic Annual Parameters. The list of parameters is identified in Appendix A, Table 1. The landfill was monitored for List 1 and List 2 parameters on a quarterly basis and List 3 parameters annually.

3.3.2 2001-2002 Assessment Monitoring (Supplemental Permit 2001-468-SP)

In 2001, Tetra Tech installed additional piezometers (P-3, P-5, P-6, P7, and P-8) and monitoring wells MW-2 and MW-3. The piezometer and monitoring well locations are shown on Figure 2 in Appendix A. The investigation included an evaluation of the monitoring program and an assessment of groundwater flow and the hydraulic gradient. The groundwater was defined as Class I groundwater. The annual 2001 Groundwater Assessment Monitoring Report was submitted in June 2003 as part of Supplemental Permit 2001-468-SP, which was approved by the IEPA on August 23, 2003.

The 2001 Groundwater Assessment Monitoring Report (revised in 2002 and 2003) noted several constituents above Class I groundwater standards at various locations. The elevated parameters included chloride, TDS, barium, beryllium, cadmium, chromium, iron, manganese, lead, and nickel. The report questioned the integrity of well MW-1 and further suggested that high turbidity or the presence of abandoned coal mines might account for the elevated levels.

3.3.3 2002-2006 Groundwater Monitoring (Supplemental Permits 2002-207-SP, 2002-347-SP, and 2003-417-SP)

Tetra Tech continued to perform quarterly monitoring under Supplemental Permit No. 2001-468-SP. Three Supplemental Permits were approved during the period 2002-2004. Supplemental Permits Nos. 2001-468-SP and 2002-207-SP were combined and approved on August 26, 2003. The combined permits entailed the submittal of a revised 2001 Groundwater Assessment Monitoring Report (Revised 2003). Supplemental Permit 2003-417-SP was approved on November 30, 2004 and adopted the revised background concentrations for specific non-detected organic parameters and established a contingency to re-establish the background concentrations for field parameters (List 1), filtered and unfiltered inorganic parameters, and pentachlorophenol (parameters from Lists 2 and 3).

Since the third quarter 2002 groundwater sampling events, Tetra Tech performed groundwater sampling in accordance with low-flow sampling methods per guidance in the April 1998 U.S. Environmental Protection Agency (USEPA) *Ground Water Issue for Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. The presence of silt and clay particles in the sample (turbidity) was believed to contribute to elevated levels of inorganic constituents such as beryllium, chromium, and sulfate. In 2003, quarterly monitoring continued and monitoring well MW-1A was installed to evaluate the integrity of adjacent well MW-1. Monitoring well MW-1 was installed approximately twenty-five years ago and no well construction or boring logs were available for this well. Supplemental Permits 2001-468-SP and 2002-347-SP specified that MW-1 was to remain a part of the monitoring program until results demonstrated the well was improperly constructed or damaged.

In 2004, two surface water samples were added to the monitoring program and background concentrations were reestablished. The surface water locations were sampled quarterly for a year for chloride and TDS. The results of the 2004 quarterly monitoring of the creeks confirmed the low levels of TDS and chloride found in surface water samples in 1999. Concentrations present