STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF	)	
	)	
MALLINCKRODT US, LLC	)	
	)	**DECLARATION OF**
CONCERNING A FORMER	)	**HARRY K. WETHERBEE, P.E.**
CHLOR-ALKALI MANUFACTURING	)	
FACILITY IN ORRINGTON,	)	
PENOBSCOT COUNTY, MAINE	)	

I, Harry K. Wetherbee, do depose and state as follows:

1. I am a Professional Engineer licensed in Maine. I have a Master of Science in Civil Engineering received from the University of Massachusetts-Lowell. I am the president and Principal Engineer at Geotechnical Services Inc. ("GSI"), an engineering and construction-related services firm that I started and that has been in existence for over 25 years. I have been an Adjunct Professor at the New Hampshire Technical Institute teaching courses in soil mechanics and foundation design for the past 11 years.

2. As result of my experience as a Professional Engineer, in the capacity of construction project manager and construction resident engineer, I have developed an expertise in the requirements of the Occupational Health and Safety Administration ("OSHA") rules concerning excavation and trenching, which are found at 29 C.F.R. §§ 1926.650 – 1926.652 (Subpart P - Excavations).

3. Trenching and excavation work presents potentially serious hazards to workers. As a result, OSHA has recently announced its Agency Priority Goal for 2018 to reduce trenching and excavation hazards. Cave-ins during trenching pose a significant risk of death or serious

injury and are more likely than most other construction-related incidents to result in worker fatality. The Center for Disease Control and Prevention's National Institute for Occupational Safety and Health ("NIOSH") notes that 350 workers died in trenching or excavation cave-ins during the period from 2000 through 2009. Following a significant education and outreach push by OSHA and NIOSH, the number of annual fatalities from excavation and trench cave-ins declined somewhat. However, according to OSHA, the number of workers that died in 2016 (23) was more than double that of 2015 (12), and through June of 2017, 15 deaths and 19 injuries related to trench and excavation operations were reported nationwide.

4. OSHA's regulatory requirements in 29 C.F.R. Subpart P regarding excavations and trenches are quite prescriptive due to the recognition that working in deep excavations and trenches involves more risk (and therefore require more prescriptive hazard mitigation techniques) than working in shallow excavations and trenches.

5. OSHA recognizes that there are differing levels of risk (and therefore risk management requirements) associated with different excavation and trenching situations, depending upon, among other things, the depth of the excavation, the soil classifications of the material being excavated (*see* Appendix A (Soil Classification) to 29 C.F.R. Subpart P), the depth below ground surface of the water table, whether an excavation needs to be dewatered, the length of time the excavation has been open and exposed to varying weather conditions, and the length of time personnel are working in the excavation.

6. In general, the deeper the excavation and the longer timeframe that workers are expected to be in the excavation (both from an individual entry point of view and the number of entries over an extended timeframe), the higher the potential for an incident. Expanding the size and footprint for an excavation that requires trenches below the groundwater table, in particular,

disproportionately increases the risks to worker safety. Excavating smaller isolated areas at depth, however, generally presents less overall risk than working larger areas at depth over a relatively long period of time.

7. Procedures for excavations involving less consolidated soils are significantly more prescriptive under the OSHA Subpart P regulations, due to increased susceptibility of such soils to collapse or cave-in. *See* Appendix A to 29 C.F.R. Subpart P (Paragraph (b) – Definitions of Soil Types (Stable Rock, Type A, Type B or Type C); Appendix B to 29 C.F.R. Subpart P (Sloping and Benching); and Appendix C to 29 C.F.R. Subpart P (Timber Shoring for Trenches).

8. Excavation below the water table and subsequent dewatering of the excavated area to allow access to the bottom of the excavation creates a more unstable situation at the vertical limits (bottom) of the excavation than for a dry excavation. Hence, access to such an excavation by construction, geotechnical testing or sampling personnel, despite following OSHA requirements, is inherently less safe than access to a dry excavation.

9. Based upon my review of the documents listed in Appendix A to the Declaration, I have the following opinions:

A. The excavation necessary to remove the soils in the Plant area would require excavation below the water table and dewatering of the excavated area. Excavations that occur below the water table with associated dewatering are inherently more unstable than dry excavations.

B. The soils to be excavated are likely to be OSHA Type C soils. *See* Appendix A to 29 CFR Subpart P (Paragraph (b) – Definitions (Type C). Type C soils are the least stable of the soil types classified by OSHA and require extensive and time-consuming safety engineering.

C. Due to the depth of excavation and types of soils, a complex excavation support system involving not only sheet pile walls but bracing and supports, would be required.

D. Due to the depth of excavation below the groundwater table, an extensive dewatering system of well points and pumps would be required to dewater the excavation both inside and outside the sheet piles.

10. Based upon my review of the documents listed in Appendix A to this Declaration that the contaminant of concern to be addressed via the proposed excavation will either remain in place or be captured by a hydraulic capture system and my personal experience in over 30 years as Professional Engineer involved in designing and implementing deep excavations, it is my professional opinion that removal of that material by excavation poses a threat to worker safety.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 10, 2018

Harry K. Wetherbee, P.E.

Michelle Bowie

MICHELLE D. BOWIE, Notary Public
My Commission Expires October 5, 2021

APPENDIX A

1. Site Investigation Report, Holtrachem Manufacturing Site, Orrington, Maine Volume 1, Section 5, Camp Dresser & McKee, Inc., December 22, 1998, and Figures 5-1 through 5-9

    5-1. Topography of the bedrock surface

    5-2. Extent and thickness of glacial till

    5-3. Extent and thickness of sand, gravel and fill deposits

    5-4. Stratigraphic Cross Section Location Plan

    5-5. Stratigraphic Cross Section A-A'

    5-6. Stratigraphic Cross Section B-B'

    5-7. Stratigraphic Cross Section C-C' and D-D'

    5-8. Stratigraphic Cross Section E-E

    5-9. Stratigraphic Cross Section F-F

2. Plant Area Corrective Measures Implementation Plan – Phase 1, Orrington Remediation Site; CDM Smith, Geosyntec Consultants, February 2017:

    a. Existing Conditions, Figure

    b. Subsurface Profiles - Sheet 1

    c. Subsurface Profiles - Sheet 2

    d. Subsurface Profiles - Sheet 3

    e. Subsurface Profiles - Sheet 4

3. Depth of Excavation Below the Groundwater Table – Removing Mercury Above 2.2 mg/kg, prepared by Geosyntec, August 22, 2018

4. Figure 3, Groundwater Flow Summary Selected Plant Area Locations, Orrington Remediation Site, Orrington, Maine, Sevee & Maher Engineers, August 22, 2018