STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Remediation and Solid Waste Management
Division of Technical Services

MEMORANDUM

TO: Nicholas Hodgkins, VRAP Coordinator, Division of Remediation

FROM: Troy Smith, Certified Environmental Hydrogeologist, GE502, Technical Services Division

DATE: December 10, 2014

PROGRAM: Voluntary Remedial Action Program

SITE: General Alum Chemical, Searsport

REMEDIATION NUMBER: REM01170

SUBJECT DOCUMENTS: Investigations Summary Report, Voluntary Response Action Program, 34 Kidder Point Road, Searsport, Maine; prepared by CES, Inc., November 2014.

Remediation and Shoreline Stabilization Plan, Voluntary Response Action Program, 34 Kidder Point Road, Searsport, Maine; prepared by CES, Inc., November 2014.

Public Communication Plan, Voluntary Response Action Program, 34 Kidder Point Road, Searsport, Maine; prepared by CES, Inc., November 2014.

The purpose of this memo is to provide comments and recommendations for your consideration on the subject document submitted as part of the VRAP Application. Please contact me if you have any questions or concerns.

In addition to the subject documents I have reviewed portions of the 1984 E.C. Jordan investigation completed on Lot 83, in the vicinity of the former sulfuric acid plant. This document contains valuable hydrogeologic information that supports the proposed remedial plan.

I am in agreement with the remedial plan as proposed and I offer the following comments and recommendations based on the information provided by CES and the proposed remedial plan.

1.0 Comments

The conceptual site model (CSM) is an important tool that facilitates the selection of remedial alternatives and to evaluate the effectiveness of remedial actions in reducing the exposure of environmental receptors to contaminants (ASTM E1689-95(2014)). The CSM is an opportunity for the author to focus the reader on the important aspects of the problem that need to be addressed in a concise manner that utilizes that available scientific data. The subject documents provide a table summarizing the preliminary CSM (investigation report) and revised CSM (remediation plan) but does not provide any text to explain the authors interpretation. Without supporting text in the CSM the reader must interpret the relationships between the source(s), migration pathways, and receptors. This may lead to the reader misunderstanding the problem, which will affect the readers understanding of the proposed remedy.

The CSM table includes low pH as a parameter, but does not include any contaminants of concern or how they might be related to the low pH conditions. The presence of sulfur in the shallow subsurface facilitates the biologically mediated lowering of pH. The lowering of the pH has effects on the geochemistry that are not addressed in the CSM. Without understanding the contaminants of concern and their relationship to the low pH condition, the selection of a remedy and evaluation of a remedy will be incomplete. This may lead to complications when the remedy is implemented.

2.0 Recommendations

The CSM should be further developed to provide the reader a better understanding of the source material present (sulfur in shallow surface soils); the biologically mediated reduction in pH; the effect on the geochemical equilibrium; and the migration pathway (groundwater transport of plume) to the identified receptors. A more complete CSM will facilitate the selection of remedial alternatives and provide the information needed to evaluate the effectiveness of the remedial actions. This can be done using the existing information contained in the 1984 E.C. Jordan investigation and the additional information contained in the subject documents.

CES may want to consider the benefits of completing a small demonstration test (pilot test) prior to completing the full scale remedial action. The pilot test could be setup in a controlled container at the site using site soils and site groundwater along with the proposed soil amendment (alkaline product). Soils in the affected area would be placed in the container after the visible

sulfur is removed following the proposed plan. The soil would be mixed with the appropriate amount of alkaline product as described in the plan. Groundwater from SB-102 can be pumped into the container (using a peristaltic pump) such that it is allowed to infiltrate the soils and discharge out of the container. The rate of pumping will be appropriate given the scale of the pilot project so that it does not flood the test container. The discharge volume and pH of the discharge water can be monitored relative to the number of pore volumes flushed through the container. Additionally, the discharge water can be analyzed for the appropriate parameters to make sure that the proposed plan does not have adverse impacts on the intertidal zone when the full scale remedial action is completed. If any adjustments in the calculated alkaline product needed to neutralize the remaining soils and groundwater plume can be made prior to full scale implementation.