Plan

Erosion Control and Storm Water Management Plan Amendment

Ashland/NSP Lakefront Site

Project I.D.: 176X0012

NSPW

Eau Claire, Wisconsin

September 2015 (revised)
March 2017 (amended)
September 2017

Foth | Envirocon

Joint Venture

Foth | Envirocon
Joint Venture

101 International Drive, P.O. Box 16655
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July 21~~March 7~~, 2017 September 11, 2017

Mr. Eric Ealy
Project Coordinator
Xcel Energy, Inc., on behalf of NSPW
414 Nicollet Mall-2
Minneapolis MN 55401

Dear Mr. Ealy:

RE: *Erosion Control and Storm Water Management Plan Amendment*
Ashland/NSP Lakefront Site

On behalf of Foth Infrastructure & Environment/Envirocon Joint Venture (FE JV), the *Erosion Control and Storm Water Management Plan Amendment (Erosion Control Plan)* for the Ashland/NSP Lakefront Site is enclosed.

On March 7, 2017, r~~R~~evisions were made to the Phase 1 *Erosion Control and Storm Water Management Plan* (FE JV, 2015a) based on the Phase 2 Wet Dredge Final Design (FE JV, 2017a). The March 2017 *Erosion Control Plan* (FE JV, 2017b) has been amended to present a revised Figure 1 (Watershed Areas During Construction) and the addition of Section 4.3, Alum Storage, Handling, and Spill Response. The Amendment to the *Erosion Control Plan* has been posted to the FE JV Portal~~SharePoint~~ site.

Section 4.4, Sulfuric Acid Storage, Handling, and Spill Response; and Section 4.5, Biorem-2000 Storage, Handling, and Spill Response.

If you have any questions concerning this report, please contact either of the undersigned at (920) 497-2500.

Sincerely,

Foth Infrastructure & Environment/Envirocon Joint Venture

Steve Laszewski

Steve J. Laszewski, Ph.D.
Management Committee Member

Denis Roznowski

Denis Roznowski, P.E.
Project Manager

Erosion Control and Storm Water Management Plan
Amendment

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Erosion Control and Storm Water Management Plan
Amendment

Project ID: ~~16X002~~17X001

Prepared for
NSPW
Eau Claire, Wisconsin

Prepared by
Foth Infrastructure & Environment/
Envirocon Joint Venture

September 2015 (revised)
March 2017 (amended)
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Erosion Control and Storm Water Management Plan

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List of Abbreviations, Acronyms, and Symbols

BMP	Best Management Practices
City	City of Ashland
DWTS	Dredge Water Treatment System
Erosion Control Plan	*Erosion Control and Storm Water Management Plan Amendment*
FE JV	Foth Infrastructure & Environment/Envirocon Joint Venture
Final Design	*Final Design for Phase 2 Wet Dredge*
MGP	Manufactured Gas Plant
MTTD	medium temperature thermal desorption
NAPL	non-aqueous phase liquid
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NSP	Northern States Power Company
NSPW	Northern States Power Company, a Wisconsin Corporation
QA	quality assurance
RA	remedial action
RCN	Runoff Curve Number
RD	remedial design
RI Report	*Remedial Investigation Report*
RUSLE2	Revised Universal Soil Loss Equation
Site	Ashland/NSP Lakefront Site
STWTS	Short-Term Water Treatment System
Tc	time of concentration
TSS	total suspended solids

1 Introduction

This *Erosion Control and Storm Water Management Plan* Amendment *(Erosion Control Plan*) has been prepared on behalf of Northern States Power Company, a Wisconsin Corporation (NSP/NSPW) by Foth Infrastructure & Environment/Envirocon Joint Venture (FE JV) and has been developed for remedial action (RA) activities at the Ashland/NSP Lakefront Site in Ashland, Wisconsin (Site). This *Erosion Control Plan* addresses erosion control during construction and post-construction storm water management, as described in the *Final Design for Phase 2 Wet Dredge* (*Final Design*) (FE JV, 2017a). Specifically, this Plan addresses activities required to ensure compliance with the RAs described in the *Record of Decision* (*ROD*) (USEPA, 2010) for the Kreher Park, Upper Bluff/Filled Ravine, and Copper Falls Aquifer operating units. Revisions were made to the Phase 1 *Erosion Control and Storm Water Management Plan* (FE JV, 2015a) based on the Phase 2 Wet Dredge *Final Design*.

1.1 Purpose

The purpose of this *Erosion Control Plan* is to demonstrate that the Site is in compliance with state and local erosion control and storm water management regulations and ordinances.

1.2 Regulatory Requirements

This *Erosion Control Plan* was completed in compliance with Wisconsin Administrative Code (Wis. Admin. Code) Chapters NR 151 and NR 216, and the City of Ashland (City) Unified Development Ordinance. The Water Resources Application for Project Permits (WRAPP) is included in Appendix A, along with Form 3500-053c.

2 Background Information

2.1 Site Location

The Site is located in Ashland, Wisconsin, along the southern shore of Chequamegon Bay, which is part of southwestern Lake Superior (Drawing No. 3). The National Priority List (NPL) Site (CERCLIS # WISFN 0507952) consists of approximately 25 acres of upland (onshore) and approximately 16 acres offshore. The Site is generally bounded by U.S. Highway 2 (Lake Shore Drive) to the south, Ellis Avenue and its extension to the City marina to the west, Prentice Avenue and its extension to a boat launch to the east, and the Breakwater to the north constructed in Chequamegon Bay in 2015, further described below. Photographs showing site conditions in 2005, prior to the initiation of Phase 1 work, are provided in Appendix B.

2.2 Site History

A manufactured gas plant (MGP) operated from 1885 until 1947 in the area of the Former NSPW Service Center on the Upper Bluff. Other industrial activities operated on the Site, including lumber operations and an active railroad corridor. The John Schroeder Lumber Company operated in the location currently occupied by Kreher Park from 1901 to 1931. The city of Ashland and Ashland County each owned (and the City still owns) portions of Kreher Park. The Soo Line Rail owned and operated rail lines in Kreher Park for more than 100 years from the 1870s to 1987, and that property is now owned by the Wisconsin Central Ltd. Railroad. Historical features shown on Drawing No. 3 present the current layouts for Kreher Park and the Upper Bluff/Filled Ravine.

Kreher Park was formed from the placement of fill on the lakebed. The fill consists of 4 to 5 feet of soil overlying wood debris deposited in the late 1800s by sawmill operations. Details of the Site geology and hydrogeology are described in the *Remedial Investigation Report* (*RI Report*) (URS, 2007). The Former WWTP and NSPW Service Center were demolished in April 2013.

Remedial efforts in the area under the former gas plant and at Kreher Park west of the recreational vehicle (RV) park were initiated in early 2014. The remedial activities included removing contaminated soil and then covering the area with clean material, and barriers were installed to stop groundwater from moving outside Kreher Park. Certain areas were covered with clay/asphalt to limit rain and snowmelt from seeping through the ground. A metal bulkhead wall was constructed along the shoreline to contain the groundwater before it was treated and discharged into the Chequamegon Bay. Additional work, as it relates to dredging of sediments at the Site was performed including construction of a Breakwater in 2015 that will serve as a wave attenuator for the Phase 2 Wet Dredge project (and served in that capacity for the Wet Dredge Pilot Study work successfully completed in 2016).

Based on the positive results of the 2016 Wet Dredge Pilot Study, a full-scale Phase 2 Wet Dredge sediment removal will be performed starting in the 2017 construction season.

2.3 Scope of Work

The scope of work associated with Phase 2 Wet Dredge activities will involve the following activities:

- Mobilization and Site preparation;
- Installation of the water quality barrier system;
- Debris removal and sediment dredging;
- Debris and sediment management and disposal;
- Air and odor management;
- Water management; and
- Site restoration.

This *Erosion Control Plan* is supported by the following plans included as part of the remedial design (RD) which provides additional detail for elements discussed in the sections below:

- *Final Design for Phase 2 Wet Dredge* (FE JV, 2017a)
- *Phase 1 Operations, Maintenance, and Monitoring Plan – Revision 3~~2~~* (FE JV, 2017c~~6~~)
- *Health and Safety Plan for Phase 2 Wet Dredge* (FE JV, 2017d~~b~~)
- *Remedial Action Waste Management Plan* (FE JV, 2015b)

2.4 Land Disturbance Activities and Schedule

The scope of work involves a number of land disturbance activities. The Phase 2 Wet Dredge will be implemented utilizing infrastructure established during the Pilot Study project. Infrastructure that relates to the Phase 2 Wet Dredge includes offloading pad, dewatering pad, on-site dredged material transport roads, processing pad, Dredge Water Treatment System (DWTS), and load-out area for off-site transportation and disposal. Land disturbance construction activity, in order of completion, is to include the following:

1. Install erosion and sediment control Best Management Practices (BMP);
2. Perform additional Site grading to maintain drainage for separation of contact and non-contact surface water for the expanded project operations footprint.
3. Remove and relocate 500 kilo-volt-ampere (kVA) transformer and cable pull boxes in the proposed sediment processing area extension area and cap DNW-13 below the proposed

asphalt pad extension. Remove 150 kVA transformer by existing Short-Term Water Treatment System (STWTS).

4. Install protection for DNW-20.

5. Relocate culvert west of T-pad through sheet pile wall/install new culverts below new road areas and in former swale area below proposed asphalt pad extension.

6. Extend asphaltic surfaces as shown on Drawing No. 5. Regrade existing asphalt surfaces as needed for proper drainage.

7. Install anchor plates for proposed new fabric sediment stabilization area structure (which cannot be done when ground is frozen).

8. Install new sumps in geotube dewatering pad area and sediment stabilization area/ abandon sumps in laydown area.

9. Construct containment berm for geotextile tube dewatering area.

10. Modify gate/fencing near Ellis Avenue.

11. Landscape restoration.

Infrastructure modifications will be made in fall 2016 to allow completion of infrastructure work and subsequent mobilization and dredging to commence as soon as possible in 2017, subject to ice-out date. The current Phase 2 Wet Dredge implementation schedule is presented on Figure 10-1 in the *Final Design*. The schedule is based on an estimated "ice out" date of April 15, 2017. The first on-the-water activities of gap closure and barrier system installation are dependent on ice out. The on-land preparation of DWTS enhancements and tent structure erection can occur prior to ice out as depicted in the construction schedule. The schedule reflects dredging activities completed in 2017 and placing restorative layer in 2018.

Remedial construction activities will disturb approximately 2.0 acres (Drawing No. 4). BMPs employed during construction for erosion control and storm water management are discussed in detail in Section 3 and are shown on Drawing Nos. 4 through 7, 30 and 31. Figure 1 illustrates the storm water drainage patterns during construction.

Post-construction storm water details are discussed in detail in Section 4. Post-construction storm water from the restored remediation areas will drain to a network of grassed swales located throughout the project area (Drawing No. 4). Discharge from the swales will ultimately be to Lake Superior. Figure 2 illustrates the storm water drainage patterns following construction.

2.5 Responsibility and Authority

The responsibility and authority for the implementation and quality assurance (QA) of the *Erosion Control Plan* rests with the FE JV. The FE JV personnel include:

Title	Name	Affiliation	Phone
Owner	Eric Ealy	Xcel Energy, Inc. (on behalf of NSPW)	(612) 330-2928
Project Manager	Denis Roznowski	FE JV	(920) 496-6756
Certifying Engineer	Steve Garbaciak	FE JV	(630) 368-3069
QC Officer	Dave Gehring	FE JV	(509) 531-4908
CQA Officer	Kris Gamble	FE JV	(417) 861-6160
Project Health & Safety Supervisor	Dan Allen	FE JV	(720) 404-6325
Construction Manager	Brad Hay	FE JV	(678) 822-3568

3 Erosion Control Plan

3.1 Soil Series Information

Soils information was obtained using the Natural Resources Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/). The predominant soils in the area are filled soils in the Kreher Park and flat, near-shore areas, and Udorthents (ravines and escarpments) further inland. A map of the soil survey can be found in Appendix C.

3.2 Wetlands Information

The presence of wetlands in the area of construction was determined by reviewing Wetland Inventory Maps and by using the Wetland Locator Tool available on the Wisconsin Department of Natural Resources (WDNR) website (http://dnr.wi.gov/wetlands/locating.html). The resulting wetland map can be found in Appendix C. No mapped wetlands are shown within the project limits.

3.3 Universal Soil Loss Equation Calculations

The need for BMPs is determined by applying the Revised Universal Soil Loss Equation (RUSLE2) spreadsheet for various slopes and soil types on the subject Site. The RUSLE2 worksheet for the project area is included in Appendix D. In the spreadsheet, an average slope and slope length present during construction activities was used. Also, silty clay was used as the soil type, which represents the Portwing-Herbster complex and fill soils found in the area.

The results show that approximately 1.1 tons/acre of soil loss will occur. No reduction is required to meet the sediment yield limits. However, a combination of BMPs will be installed in compliance with their respective WDNR Technical Standards during and after construction to assure that the 5 tons per acre per year requirements are met.

3.4 Construction BMPs

BMPs will be implemented in accordance with Wis. Admin. Code NR 151 and 216 and local codes. The locations and types of the proposed BMPs are shown on Drawing Nos. 3 through 6. Calculation summaries for culverts and ditches are found in Appendix D. Components of the *Erosion Control Plan* include:

- *Tracking Pads:* An equipment tracking pad was previously installed where load out of equipment occurred for the former STWTS. Two other pads will be constructed at loadout areas on asphalt adjacent to the sediment processing tent. The locations of the proposed tracking pads are shown on Drawing No. 6 and details are shown on Drawing No. 7 for the sumps draining the sediment processing tent asphalt pad.

- *Silt Fences:* Silt fencing will be installed around the Phase 2 perimeter fence (Drawing No. 6). The silt fencing is attached to the perimeter fence for structural support. All other installation procedures, including trenching, will follow WDNR Technical Standard 1056 (WDNR, 2006b). Silt fences will also be installed around any

temporary soil stockpiles and other interior disturbed areas, as needed, and those details are found on Drawing Nos. 30 and 31.

- *Ditch Checks:* Ditch checks will be installed across drainage ditches to reduce water velocity flowing in the channels. Locations are shown on Drawing No. 22, and details are shown on Drawing No. 31. Ditch checks will be constructed with rock-filled bags. WDNR Technical Standard 1062 will be followed (WDNR, 2006a).

- *Temporary Grading Practices:* Temporary grading practices will be employed as needed to minimize construction site erosion. Temporary grading practices may include creating diversions and shallow depressions with the intent of slowing and ponding runoff. WDNR Technical Standard 1067 will be followed (WDNR, 2004a).

- *Construction Site Diversion:* Temporary diversions will be employed as needed to minimize run-on to construction areas. Diversions will include ditch checks to encourage sediment removal. WDNR Technical Standard 1066 will be followed (WDNR, 2004c). In addition, sand bags and wattles will be used to prevent run-on. Details are shown on Drawing No. 31.

- *Turbidity Barrier:* Specialized *t*urbidity barriers will be placed in Chequamegon Bay during dredging activities (Drawing No. 15 of *Final Design*). Details are shown on Drawing Nos. 17 and 18 of the *Final Design*. The barriers will provide sediment containment beyond the on-shore BMPs.

- *Dust Control:* Dust control will be employed as necessary during demolition and excavation work. Dust control will adhere to the WDNR Technical Standard 1068 (WDNR, 2004b) and will include the application of water or commercially available compounds.

- *Non-Channel Erosion Mat:* Non-channel erosion mats will be used in areas to be seeded, to protect the soil surface from erosion until vegetation is established (Drawing No. 31). Non-channel erosion mats will be Class II Type C, and installation will adhere to the WDNR Technical Standard 1052 (WDNR, 2003a).

- *Seeding:* Any area remains undisturbed for an extended period, including soil stockpiles that are left inactive for more than seven days, will be seeded per WDNR Technical Standard 1059 (WDNR, 2003d). A site restoration plan that involves seeding work will be implemented following completion of remedial activities.

- *Inlet Protection:* Storm inlets adjacent to construction activities will be protected in accordance with WDNR Technical Standard 1060 (WDNR, 2003c).

3.5 Inspection

During construction activities or until construction is complete, the Site owner and contractor will inspect the erosion and sediment control practices weekly and within 24 hours following a

rainfall of 0.5 inches or greater. In addition to the erosion control inspection, the contaminated soil stockpiles associated with the medium temperature thermal desorption (MTTD) unit will also be inspected and documented on the same schedule for erosion-related issues. A copy of the WDNR Erosion Control Inspection Form is included in Appendix E.

4 Storm Water Management Plan

The Site will have two phases of post-construction storm water management. The initial phase, shown on Figure 2, is an interim phase that will exist prior to the installation of the final cover over Kreher Park. The final phase, yet to be designed, will take place following the installation of the final cover and should be considered the post-construction conditions.

The interim grading plan and drainage will remain for the period between completion of the Phase 1 RA and completion of the final cover. The duration between interim grading and installation of the final cover depends upon the time required to design and implement the Phase 2 sediment remedy but is expected to be approximately three years for a wet dredge scenario (one year for design and two years to complete the Phase 2 sediment remedy).

During the interim phase, storm water from the Kreher Park area will drain to three culverts, ultimately discharging to Lake Superior (Drawing No. 6). Modeling results for sizing the three culverts can be found in Appendix D, along with ditch sizing and watershed runoff modeling results. The culverts and ditches were designed from a capacity standpoint for peak runoff from the 25-year, 24-hour storm event.

The final post-construction site conditions will be based on City of Ashland requirements. At the time of this revised *Erosion Control Plan*, it is anticipated that the post-construction site will be restored with no net increase in paved areas.

4.1 Storm Water Quantity

This project is exempt from post-construction storm water peak discharge performance standards under Wis. Admin. Code Chapter NR 151.123(2)(b), which states that the peak discharge performance standard does not apply to the following: "Except as provided under s. NR 151.121(5), a re-development post-construction site." Since the project is a re-development site and NR 151.121(5) does not apply, compliance with the post-construction peak discharge regulations is not required.

The project is also exempt from the City of Ashland post-construction storm water requirements under Unified Development Ordinance 781, Part 8, as the ordinance defers to Chapter NR 151.

4.2 Storm Water Quality

4.2.1 Sediment Control

Wis. Admin. Code Chapter NR 151 requires that redevelopment sites reduce, to the maximum extent practicable, the total suspended solids (TSS) load from parking areas and roads by 40% based on average annual basis, as compared to no runoff management controls.

Compliance with TSS performance standards from the post-construction site will be achieved through the installation of vegetated slopes and swales (Drawing No. 6). A vegetated slope will be installed down the filled ravine area. Rock rip-rap will be placed in the steep gradient section where the swale drops to the railroad grade ditch. A second vegetative slope filters storm water

as it flows to the south side of Kreher Park into a vegetated swale. The swales will then continue east and west along the south side of Kreher Park, one small swale entering an inlet of the Prospect Street storm water culvert and the others joining at the center of Kreher Park at a central 24-inch reinforced concrete pipe (RCP) culvert that runs nearly the width of Kreher Park to within 50 feet of the central outfall at the shoreline bulkhead wall.. The swales were designed from a capacity standpoint for peak runoff from the 25-year, 24-hour storm event. Runoff from the Former NSPW Service Center area and the Long-Term Water Treatment System (LTWTS) area will drain to storm inlets located along St. Claire Street. Roof runoff from the LTWTS drains through underground drains to the railroad grade ditch than west under Ellis Street. Swale and riprap sizing calculation summaries are provided in Appendix F.

4.2.2 Infiltration

The Ashland/NSP Lakefront Site is exempt from infiltration requirements under Chapter NR 151.124(3)(b)(3), which states that the infiltration performance standard does not apply to the following: "Except as provided under s. NR 151.121(5), a re-development post-construction site." Since the project is a re-development site and NR 151.121(5) does not apply, compliance with the post-construction infiltration regulations is not required.

4.2.3 Maintenance

All Site storm water facilities will be inspected and maintained by NSPW. The vegetated swales, culverts, and riprap protection will be inspected and maintained on a regular basis and following large storm events. A copy of the proposed Storm Water Facilities Maintenance Plan and inspection checklist is included in Appendix G.

4.3 Alum Storage, Handling, and Spill Response

A successful pilot test for use of aluminum sulfate (alum) to reduce turbidity in surface water, resulted in the need to manage an aqueous solution of alum (30-60% by weight) on the Site that was not originally planned. Based on the Safety Data Sheet provided in Technical Memorandum #16-08 (FE JV, 2016), the pH of the material is 1.9, a corrosive hazard; and the reportable spill quantity is 5,000 lbs (approximately 450 gallons). Although there are no constraints on volume stored, a few hundred gallons of alum has been stored in the DWTS, but the volume stored is increasing to accommodate the increased scale of the project to as much as 3,000 gallons (twelve 250-gallon totes). Thus, this section has been added to the *Erosion Control Plan* to briefly outline the updated alum storage, handling, and spill response procedures.

Figure No. 1 shows the location for Alum Storage. The Alum Storage is an asphalt-lined surface sloped to sumps with no outlet to surface water. This will provide containment in the event of an alum release with a containment volume of at least 3,000 gallons – more than enough capacity to contain the volume of one 330-gallon tote and equal to or greater than the maximum volume of alum expected to be stored in the Alum Storage.

Alum is transported from the Alum Storage to the buffer area using the following steps:

1. A 250-gallon tote is moved from the contained Alum Storage to the water's edge using a telehandler or equivalent.

2. At the water's edge, the tote is trans loaded into a tank on a float.

3. The float is pushed to the edge of the buffer area some distance from the water's edge.

4. The alum is trans loaded from the tank on a float to another tank on a float that is staged on the north side of the buffer curtain.

5. The alum is then dispensed from the second tank into the lake.

An alum release could occur during storage or during movement of the totes on land or water. The eight to twelve 250-gallon totes are stored in the contained Alum Storage untilmoved to the water's edge. Alum from a leaking tote while stored in the asphalt-lined Alum Storage would drain to the sump where it would be pumped to the Modutank and then treated in the DWTS. As shown on Figure 1, the sump at northeast corner of the asphalt may drain to the surface water sump between the Modutank and geotube pad. Since this is a non-contact staging area, clean storm water collecting in this area would be inspected and pumped to surface water (blue line as shown on Figure 1) unless there is a chemical spill. Thus, ponded water will be kept off the asphalt to the extent practical so accidental releases can be detected and the volume of liquid removed (alum/water) in case of release can be minimized. If any spillage of alum were to occur on the ground during movement, the alum and effected soil would be removed and disposed of as necessary. Spillage or leakage of alum while the tote is on a float over water would be rapidly diluted by lake water.

4.4 Sulfuric Acid Storage, Handling, and Spill Response

As part of the Dredge Water Treatment System (DWTS) operations, sulfuric acid is used to lower the pH of the treated effluent water before discharge to surface water. Due to the quantity of sulfuric acid used and the limited space for storage available within the covered DWTS Tent Structure, as many as two totes of sulfuric acid containing up to 330 gallons of sulfuric acid each may be also be stored in the Alum Storage. Based on the Safety Data Sheet (Appendix H), the pH of the material is <0.03, a corrosive hazard and strong acid; and the reportable spill quantity is 1,000 lbs (approximately 65 gallons). Due to the need to store sulfuric acid outside the covered and bermed DWTS Tent Structure, this section has been added to the *Erosion Control Plan* to briefly outline the updated sulfuric acid storage, handling, and spill response procedures. Since the two chemicals (alum solution and sulfuric acid) stored in the Alum Storage are compatible, a comingled release would not yield an unexpected hazardous reaction. However, both liquids are corrosive and of low pH, so specialized handling procedures must be followed in accordance with the Site-specific *Health and Safety Plan*.

Figure No. 1 shows the location for Alum Storage. The Alum Storage is an asphalt-lined surface sloped to sumps with no outlet to surface water. This will provide containment in the event of a sulfuric acid release with a containment volume of at least 3,000 gallons – more than enough capacity to contain the volume of one 330-gallon tote and equal to or greater than the maximum volume of sulfuric acid expected to be stored in the Alum Storage. A tote of sulfuric acid is moved, as needed, from the contained Alum Storage to the DWTS using a telehandler or equivalent.

A sulfuric acid release could occur during storage or during movement of the totes. The two totes are stored in the contained Alum Storage until moved to the DWTS. Sulfuric acid from a leaking tote while stored in the asphalt-lined Alum Storage would drain to the sump where it would be pumped to the Modutank and then treated in the DWTS. As shown on Figure No. 1, the sump at the northeast corner of the asphalt drains to the plugged surface water sump at the Alum Storage. Since this is a non-contact staging area, clean storm water collecting in this area would be inspected and pumped using a sump pump to surface water (blue line as shown on Figure No. 1) unless there is a chemical spill. Thus, ponded water will be kept off the asphalt to the extent practical so accidental releases can be detected and the volume of liquid removed (alum/water) in case of release can be minimized. If any spillage of sulfuric acid were to occur to the ground during movement (which is unlikely), the sulfuric acid and effected soil would be removed and disposed of as necessary.

4.5 Biorem-2000 Storage, Handling, and Spill Response

As part of the dredging operations, a proprietary Biorem-2000 liquid solution is used to treat oil sheens in the barge hopper. Based on the Safety Data Sheet (Appendix H), the Biorem-2000 is a neutral pH, non-hazardous liquid with only limited environmental effect if a spill were to occur. There is no reportable quantity in the event of a spill nor is there a limit on how much of the product can be stored. Specialized handling procedures such as wearing safety goggles and impervious gloves to avoid contact with skin and eyes must be followed in accordance with the Site-specific *Health and Safety Plan*.

Two 55-gallon drums of Biorem-2000 are stored near the bulkhead wall just south of the point. Figure No. 1 shows the location for Biorem-2000. The point is the land location near MW-35 well nest and DNW-6 just northwest of Modutank 1. A drum pump is used to transfer the product into a 3-gallon hand sprayer that is taken out on the push boat/jet boat and applied to material hopper barges.

A Biorem-2000 release could occur during storage or during movement of the drums. Biorem-2000 from a leaking drum while stored in would drain to the contained area surrounding the drums, south of the bulkhead wall. This area is not asphalt-covered and the two 55-gallon drums are not stored on secondary containment. This area actually doesn't drain to a storm water outfall, except during a large storm event, but infiltrates into the ground where it is recovered in the LTWTS groundwater recovery system. If any spillage of sulfuric acid were to occur to the surface water during movement (which is unlikely), the small volume (3 gallons) of Biorem-2000 would be diluted by the large volume of surface water within the barrier containment resulting in insignificant environmental effect.

5 Conclusions

City of Ashland and state of Wisconsin erosion control requirements are met through the implementation of BMPs. For construction associated with remediation activities, the proposed BMPs include silt fences, tracking pads, ditch checks, dust control, dewatering, temporary grading activities, construction site diversions, turbidity barriers, erosion mats, and seeding. These BMPs will be installed in accordance with Wis. Admin. Code Chapter NR 151.

The storm water management facilities designed for the Ashland/NSP Lakefront Site comply with the storm water quality and quantity regulations of Chapter NR 151. The project is exempt from post-construction performance standards under NR 151.12(2)(c), since it is a redevelopment site that will not increase exposed parking lot or road areas. However, TSS removal will be enhanced through the installation of a network of vegetated swales throughout the restored area.

6 References

Burns & McDonnell, 2012. *Phase 1 Remedial Design Work Plan Ashland/NSP Lakefront Site.* June 2012.

Dames & Moore, 1997. *Aquifer Performance Test and Groundwater Monitoring Results for Northern States Power Facility, Ashland, Wisconsin*.

Foth Infrastructure & Environment/Envirocon Joint Venture, 2015a. *Erosion Control and Storm Water Management Plan* – Ashland/NSP Lakefront Site. September 2015.

Foth Infrastructure & Environment/Envirocon Joint Venture, 2015b. *Remedial Action Waste Management Plan* – Ashland/NSP Lakefront Site. September 2015.

~~Foth Infrastructure & Environment/Envirocon Joint Venture, 2016. *Phase 1 Operations, Maintenance, and Monitoring Plan – Revision 2* – Ashland/NSP Lakefront Site. December 2016.~~

Foth Infrastructure & Environment/Envirocon Joint Venture, 2016. Technical Memorandum #16-08 to Scott Hansen and Jamie Dunn regarding "Implementation of Water Quality Management Contingency." October 6, 2016.

Foth Infrastructure & Environment/Envirocon Joint Venture, 2017a. *Final Design for Phase 2 Wet Dredge* – Ashland/NSP Lakefront Site. March 2017.

Foth Infrastructure & Environment/Envirocon Joint Venture, 2017b. *Erosion Control and Storm Water Management Plan* – Ashland/NSP Lakefront Site. March 2017.

Foth Infrastructure & Environment/Envirocon Joint Venture, 2017c. *Phase 1 Operations, Maintenance, and Monitoring Plan – Revision 3* – Ashland/NSP Lakefront Site. June 2017.

Foth Infrastructure & Environment/Envirocon Joint Venture, 2017d~~b~~. *Health and Safety Plan for Phase 2 Wet Dredge* – Ashland/NSP Lakefront Site. March 2017.

URS, 2007. *Remedial Investigation Report* - Ashland/Northern States Power Lakefront Superfund Site. August 31, 2007.

URS, 2008. *Feasibility Study* - Ashland/Northern States Power Lakefront Superfund Site. December 5, 2008.

WDNR, 2003a. *Non-Channel Erosion Mat (1052)*. August, 2003. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2003b. *Stone Tracking Pad and Tire Washing (1057)*. August, 2003. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2003c. *Storm Drain Inlet Protection for Construction Sites (1060)*. October, 2003. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2003d. *Seeding for Construction Site Erosion Control (1059)*. November, 2003. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2004a. *Temporary Grading Practices for Erosion Control (1067)*. March, 2004. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2004b. *Dust Control on Construction Sites (1068)*. March, 2004. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2005a. *Channel Erosion Mat (1053)*. August, 2005. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2005b. *Turbidity Barrier (1069)*. August, 2005. Wisconsin Department of Natural Resources Conservation Practice Standard.

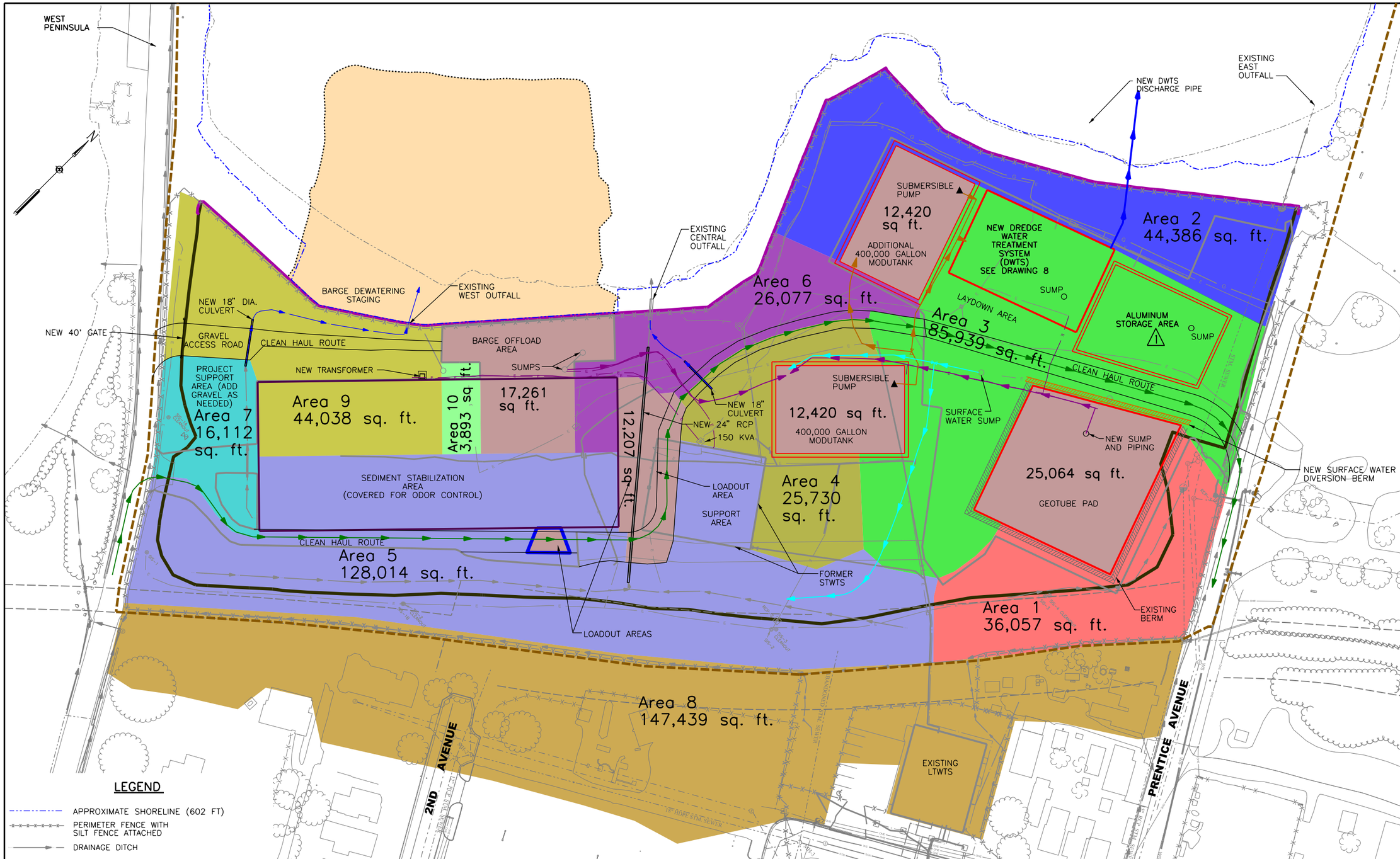
WDNR, 2006a. *Ditch Check (1062)*. March, 2006. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2006b. *Silt Fence (1056)*. March, 2006. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2006c. *Construction Site Diversion (1066)*. March, 2006. Wisconsin Department of Natural Resources Conservation Practice Standard.

WDNR, 2007. *Dewatering (1061)*. April, 2007. Wisconsin Department of Natural Resources Conservation Practice Standard.

Figures



LEGEND

- APPROXIMATE SHORELINE (602 FT)
- PERIMETER FENCE WITH SILT FENCE ATTACHED
- DRAINAGE DITCH
- WASTEWATER DISCHARGE PIPE
- WATER TREATMENT DISCHARGE PIPE
- WASTEWATER PIPE TO BE ABANDONED
- PHASE 2 PROJECT AREA
- BULKHEAD WALL LOCATION
- SOIL-BENTONITE CUTOFF WALL LOCATION
- 600 EXISTING CONTOUR (SEE NOTE 3)
- PILOT DREDGE AREAS
- CULVERT
- ALLSITE STRUCTURE
- SUMP
- SUMP CONVEYANCE PIPE
- REINFORCED CONCRETE PIPE (RCP)
- SURFACE WATER DIVERSION BERM
- TRANSFER CONVEYANCE PIPE
- SUMP CONVEYANCE PIPE
- SURFACE DRAINAGE PIPE
- LOADOUT AREA
- TRUCK ROUTE DIRECTION
- CONTACT STORM WATER CATCHMENT AREA/DIRTY HAUL ROUTE (ALL OTHER AREAS ARE NON-CONTACT STORMWATER)
- DRAINAGE DITCH
- SUBMERSIBLE PUMP

NOTES:

1. HORIZONTAL DATUM: NAD83 WISCONSIN PLANE, NORTH ZONE, U.S. FEET.
2. VERTICAL DATUM: NAVD88 USING GEOID 12A.
3. UPLAND SURVEY FROM FE JV DATED SEPTEMBER 2015. BATHYMETRIC SURVEY PERFORMED BY J.F. BRENNAN DATED MAY 2, JULY 19, 23 AND AUGUST 10, 2016.
4. ENGINEERING CONTROLS WILL BE CONSTRUCTED TO DIVERT WATER AWAY FROM THE LOADOUT AREA.

Foth | Envirocon Joint Venture
Foth Infrastructure & Environment, LLC
2121 Innovation Court, Suite 300
P.O. Box 5126
De Pere, WI 54115-5126
Phone: 920-497-2500 Fax: 920-497-8516

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ASHLAND/NSP LAKEFRONT SITE EROSION CONTROL AND STORM WATER MANAGEMENT PLAN FOR PHASE 2 WET DREDGE

NORTHERN STATES POWER COMPANY

ASHLAND COUNTY WISCONSIN

NO.	BY	DATE	REVISIONS DESCRIPTION
1	BGS	07/2017	ADDED ALUMINUM STORAGE AREA
2			
3			
4			

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:

RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.

BY _____ DATE _____

DATE OF PREPARATION

	BY	DATE
SURVEYED		
DRAWN	JOW	JULY 2017
DESIGNED		
CHECKED	DMR	JULY 2017

WATERSHED AREAS DURING CONSTRUCTION

HORIZONTAL SCALE: 0 50' 100'

PROJECT ID: 16X002

1R1

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Appendix H

Safety Data Sheets for Alum Solution, Sulfuric Acid, and Biorem-2000

SAFETY DATA SHEET

Version 2

1. Identification of the Substance / Preparation and of the Company / Undertaking

Product Name: Aluminum Sulfate Liquid
Recommended Use Industrial, Manufacturing or Laboratory use.
Company Name:
Hawkins, Inc., 2381 Rosegate, Roseville, MN 55113 (612-331-6910)

Emergency Telephone:
CHEMTREC (US): 1-800-424-9300

2. Hazards Identification

GHS - Classification

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2

Signal Word: **Warning**
Hazard Statements:
• Causes skin irritation
• Causes serious eye irritation
• May cause respiratory irritation
Physical Hazards

Corrosive to metals	Category 1

• May be corrosive to metals

Precautionary Statements:

• Call a POISON CENTER or doctor if you feel unwell
• IF ON SKIN: Wash with plenty of soap and water
• If skin irritation occurs: Get medical advice/attention
• Take off contaminated clothing and wash before reuse
• Wash face, hands and any exposed skin thoroughly after handling
• Wear protective gloves/protective clothing/eye protection/face protection
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• If eye irritation persists: Get medical advice/attention
• Immerse in cool water/wrap in wet bandages
• Absorb spillage to prevent material damage
• Store in corrosive resistant aluminum container with a resistant inliner

3. Composition / Information on Ingredients

Hazardous

Chemical Name	CAS No	Weight-%	EC No
Aluminum sulfate	10043-01-3	30-60	233-135-0

Non-Hazardous

Chemical Name	CAS No	Weight-%	EC No
Water	7732-18-5	30-60	231-791-2

4. First Aid Measures

Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.

Skin Contact: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation persists, call a physician.

Inhalation: Move to fresh air. If symptoms persist, call a physician.

Ingestion: Clean mouth with water and drink afterwards plenty of water. If symptoms persist, call a physician.

Note to Physicians: Treat symptomatically.

5. Fire-fighting Measures

Flammable Properties:
Not considered to be a fire hazard

Explosive Properties:
Not considered to be an explosion hazard

Suitable Extinguishing Media:
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable Extinguishing Media:
No information available

Protective Equipment and Precautions for Firefighters:
In the event of a fire, wear full protective clothing and MSHA/NIOSH (approved or equivalent) self-contained breathing apparatus with full facepiece operated in the pressure-demand or other positive pressure mode

6. Accidental Release Measures

Personal Precautions: Use only with adequate ventilation.

Environmental Precautions: Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

Other Information: Not applicable.

7. Handling and Storage

Advice on Safe Handling: Avoid contact with skin, eyes or clothing. Use only with adequate ventilation.

Storage Conditions: Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from any source of heat or ignition. Keep away from incompatible substances.

8. Exposure Controls / Personal Protection

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	Ontario TWA
Aluminum sulfate		(vacated) TWA: 2 mg/m³ Al Aluminum	

Chemical Name	European Union	China	Japan	Korea	Australia	Taiwan
Aluminum sulfate				TWA: 2 mg/m³	2 mg/m³	

Engineering Controls: Ensure adequate ventilation, especially in confined areas

Personal protective equipment (PPE)

Eye/Face Protection: Tight sealing safety goggles.

Body Protection: Suitable protective clothing.

General Hygiene Considerations:

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid

Appearance: Clear

Odor: Odorless

Color: No information available

Odor Threshold: No information available

Property	Values	Remarks • Method
pH:	1.9	No information available
"Salt Out" Point (°F):		No information available
Melting Point/Freezing Point:	-15.56 °C	No information available
Boiling Point/Boiling Range:	101 °C	No information available
Flash Point:		No information available
Evaporation Rate (BuAc=1):		No information available
Flammability (solid, gas):		No information available
Flammability Limits in Air:		No information available
Upper Flammability Limit:		
Lower Flammability Limit:		
Vapor Pressure (mm Hg) :		No information available
Vapor density (Air =1)		No information available
Specific Gravity (H_2O=1):	1.335	No information available
Specific Gravity (2nd value):		No information available
Water Solubility:	Completely miscible	No information available
Solubility(ies):		No information available
Partition Coefficient (n-octanol/water)		No information available
Autoignition Temperature:		No information available
Decomposition Temperature:		No information available
Kinematic Viscosity:		No information available
Dynamic Viscosity:		No information available
Oxidizing Properties:	No information available	
Explosive Properties:	No information available	

9.2. Other information

Softening Point: No information available
Molecular Weight: No information available
VOC Content(%): No information available
Density: No information available
Bulk Density: No information available

10. Stability and Reactivity

Stability: Stable under normal conditions of use and storage

Conditions to Avoid: Heat, flames and sparks

Incompatible Materials: No information available

Hazardous Decomposition Products: None under normal use conditions

Possibility of Hazardous Reactions: None under normal processing

11. Toxicological Information

Product Information

Chemical Name	Oral LD_{50} :	Dermal LD_{50} :	LC_{50} (Lethal Concentration):
Aluminum sulfate	1930 mg/kg (Rat)		
Water	90 mL/kg (Rat)		

Chronic Toxicity:

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP

12. Ecological Information

Ecotoxicity

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Aluminum sulfate		*100: 96 h Carassius auratus mg/L LC50 37: 96 h Gambusia affinis mg/L LC50 static*	*136: 15 min Daphnia magna mg/L EC50, 38.2: 48h Daphnia magna mg/L LC50*

Persistence and Degradability: No information available.

Bioaccumulation: No information available.

Mobility: No information available.

13. Disposal Considerations

Waste from Residues/Unused Products: Disposal should be in accordance with applicable regional, national and local laws and regulations

14. Transport Information

DOT

Description Not DOT Regulated

15. Regulatory Information

International Inventories

AICS	Complies
TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	-
IECSC	Complies
KECL	Complies
PICCS	Complies

Chemical Name	AICS	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS
Aluminum sulfate	Listed	Listed	Listed	-	Listed	-	(1)-25	Listed	KE-01042	Present
Water	Listed	Listed	Listed	-	Listed	-	-	Listed	KE-35400	Present

Inventory Legend

AICS - Australian Inventory of Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

RESTRICTIONS - REACH TITLE VII No information available

US Federal Regulations

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	CERCLA Hazardous Substances and the Reportable Quantities	SARA Extremely Hazardous Substances EPCRA RQ	SARA Extremely Hazardous Substances TPQ
Aluminum sulfate	5000 lb 2270 kg	-	-

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive hazard	No

U.S. State Right-to-Know Regulations

California Proposition 65:
This product does not contain any Proposition 65 chemicals

16. Other Information

National Fire Protection Association (NFPA) Ratings

NSF/ANSI 60 Certification

Certified to NSF/ANSI 60

Maximum Use (mg/L unless otherwise indicated):	150
Prepared By:	HSE Department
Issue Date:	No data available
Revision Date:	21-Oct-2015
Revision Note:	SDS sections updated 2

Disclaimer:
Please be advised that it is your responsibility to inform your employees of the hazards of this substance, to advise them of what these properties mean and be sure they understand exposure information. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication.

The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. No warranty or guaranty, express or implied, is made regarding performance, stability, or otherwise. This information is not intented to be all-inclusive as to the manner and conditions of use, handling, and storage. Other factors may require additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, the handling and use remains the responsibility of the consumer. No suggestions are intended as, and should not be constructed as, a recommendation to infringe on any existing patents or to violate any Federal, State, or local laws.

End of Safety Data Sheet

SAFETY DATA SHEET

Version 2

1. Identification of the Substance / Preparation and of the Company / Undertaking

Product Name: Sulfuric Acid 40%
UN/ID No UN-2796
Synonyms: Oil of vitriol; Babcock acid; Sulphuric acid
Formula: H_2SO_4 in H_2O
Molecular Weight: 98.07

Company Name:
Hawkins, Inc. 3100 E. Hennepin Avenue Minneapolis, MN 55413 (612-331-6910)

Emergency Telephone:
CHEMTREC (US): 1-800-424-9300

2. Hazards Identification

GHS - Classification

Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 1 Category 1A
Serious eye damage/eye irritation	Category 1
Carcinogenicity:	Category 1B
Specific target organ toxicity (single exposure)	Category 1
Specific target organ toxicity (repeated exposure)	Category 1

Signal Word: **Danger**
Hazard Statements:
• Fatal if inhaled
• Causes severe skin burns and eye damage
• May cause cancer
• Causes damage to organs
• Causes damage to organs through prolonged or repeated exposure
Physical Hazards

Corrosive to metals	Category 1

• May be corrosive to metals

Precautionary Statements:
• P271 - Use only outdoors or in a well-ventilated area
• P284 - Wear respiratory protection
• P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
• P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
• P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
• P363 - Wash contaminated clothing before reuse
• P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
• P280 - Wear protective gloves/protective clothing/eye protection/face protection
• P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• P310 - Immediately call a POISON CENTER or doctor/physician
• P201 - Obtain special instructions before use
• P202 - Do not handle until all safety precautions have been read and understood
• P281 - Use personal protective equipment as required
• P308 + P313 - IF exposed or concerned: Get medical advice/attention
• P307 + P311 - IF exposed: Call a POISON CENTER or doctor/physician
• P321 - Specific treatment (see supplemental first aid instructions on this label)
• P405 - Store locked up
• P260 - Do not breathe dust/fume/gas/mist/vapors/spray
• P264 - Wash face, hands and any exposed skin thoroughly after handling
• P270 - Do not eat, drink or smoke when using this product
• P314 - Get medical advice/attention if you feel unwell
• P501 - Dispose of contents/ container to an approved waste disposal plant
• P334 - Immerse in cool water/wrap in wet bandages
• P390 - Absorb spillage to prevent material damage
• P406 - Store in corrosive resistant aluminum container with a resistant inliner

3. Composition / Information on Ingredients

Hazardous

Chemical Name	CAS No	Weight-%	EC No
Sulfuric acid	7664-93-9	39-41	231-639-5

Non-Hazardous

Chemical Name	CAS No	Weight-%	EC No
Water	7732-18-5	Balance	231-791-2

4. First Aid Measures

General Advice: Immediate medical attention is required.

Eye Contact: Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

Skin Contact: Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Inhalation: Move to fresh air. Call a physician or poison control center immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Remove from exposure, lie down. Clean mouth with water and drink afterwards plenty of water. Call a physician or poison control center immediately.

Note to Physicians: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.

Self-protection of the First Aider: Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. Fire-fighting Measures

Flammable Properties:
Concentrated material is a strong dehydrating agent; Reacts with organic materials and may cause ignition of finely divided materials on contact

Explosive Properties:
Contact with metals may evolve flammable hydrogen gas

Suitable Extinguishing Media:
Carbon dioxide (CO_2); Foam; Dry chemical; Water spray may be used to keep fire exposed containers cool

Unsuitable Extinguishing Media:
DO NOT USE WATER

Specific Hazards Arising from the Chemical:
The product causes burns of eyes, skin and mucous membranes; Thermal decomposition can lead to release of irritating and toxic gases and vapors; In the event of fire and/or explosion do not breathe fumes

Protective Equipment and Precautions for Firefighters:
In the event of a fire, wear full protective clothing and MSHA/NIOSH (approved or equivalent) self-contained breathing apparatus with full facepiece operated in the pressure-demand or other positive pressure mode; Structural firefighter's protective clothing is ineffective for fires involving this material; Sealed containers may rupture when heated

6. Accidental Release Measures

Personal Precautions: Evacuate personnel to safe areas. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Keep people away from and upwind of spill/leak.

Environmental Precautions: Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods for Cleaning Up: Dike far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Prevent product from entering drains. Dam up. After cleaning, flush away traces with water.

Other Information: Not applicable.

7. Handling and Storage

Advice on Safe Handling: Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems.

Storage Conditions: Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers.

Incompatible Materials: Strong acids and bases; Oxidizing agents; Water; Lithium; Organic materials; Halogens; Metals; Strong reducing agents

8. Exposure Controls / Personal Protection

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	Ontario TWA
Sulfuric acid	TWA: 0.2 mg/m³ thoracic fraction	1 mg/m³ TWA	TWA: 0.2 mg/m³

Chemical Name	European Union	China	Japan	Korea	Australia	Taiwan
Sulfuric acid		TWA: 1 mg/m³ STEL: 2 mg/m³	Ceiling: 1 mg/m³	STEL: 0.6 mg/m³ TWA: 0.2 mg/m³	1 mg/m³ 3 mg/m³ STEL	TWA: 1 mg/m³

Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992)

Engineering Controls: Ensure adequate ventilation, especially in confined areas

Personal protective equipment (PPE)

Eye/Face Protection: Tight sealing safety goggles. Face protection shield.

Body Protection: Gloves made of plastic or rubber. Rubber boots. Suitable protective clothing. Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear chemical resistant clothing such as gloves, apron, boots or whole bodysuits made from neoprene, as appropriate.

General Hygiene Considerations:
Wash contaminated clothing before reuse. When using do not eat, drink or smoke. Keep away from food, drink and animal feeding stuffs. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Take off all contaminated clothing and wash it before reuse. Wear suitable gloves and eye/face protection.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Appearance: Oily liquid
Color: Clear
Odor: Odorless
Odor Threshold: No information available

Property	Values	Remarks • Method
pH:	1	
"Salt Out" Point (°F):		No information available
Melting Point/Freezing Point:	-57 °C / -70 °F	
Boiling Point/Boiling Range:	107 °C / 225 °F	
Flash Point:		No information available
Evaporation Rate (BuAc=1):		No information available
Flammability (solid, gas):		No information available
Flammability Limits in Air:		No information available
Upper Flammability Limit:		
Lower Flammability Limit:		
Vapor Pressure (mm Hg) :		No information available
Vapor density (Air =1)		No information available
Specific Gravity (H_2O=1):	1.303	
Specific Gravity (2nd value):		
Water Solubility:	Freely soluble in water with heat liberation.	
Solubility(ies):		No information available
Partition Coefficient (n-octanol/water)		No information available
Autoignition Temperature:		No information available
Decomposition Temperature:		No information available
Kinematic Viscosity:		No information available
Dynamic Viscosity:		No information available
Oxidizing Properties:	No information available	
Explosive Properties:	Contact with metals may evolve flammable hydrogen gas	

9.2. Other information

Softening Point: No information available
Molecular Weight: 98.07
VOC Content(%): No information available
Density: No information available
Bulk Density: No information available

10. Stability and Reactivity

Stability: Stable under normal conditions of use and storage; Releases heat and toxic, irritating vapors when mixed with water

Conditions to Avoid: Exposure to air or moisture over prolonged periods; Incompatibles; Heat

Incompatible Materials: Strong acids and bases; Oxidizing agents; Water; Lithium; Organic materials; Halogens; Metals; Strong reducing agents

Hazardous Decomposition Products: Thermal decomposition can lead to release of irritating and toxic gases and vapors; Carbon dioxide (CO_2); Sulfur oxides; Hydrogen cyanide; Hydrogen sulfide

Possibility of Hazardous Reactions: None under normal processing

11. Toxicological Information

Product Information

Acute Toxicity: 0% of the mixture consists of ingredient(s) of unknown toxicity.

The following values are calculated based on chapter 3.1 of the GHS document

Chemical Name	Oral LD_{50} :	Dermal LD_{50} :	LC_{50} (Lethal Concentration):
Sulfuric acid	2140 mg/kg (Rat)		347 ppm (Rat) 1 h 510 mg/m³ (Rat) 2 h
Water	90 mL/kg (Rat)		

Chronic Toxicity:

Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen

Chemical Name	IARC
Sulfuric acid	1

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans

Target Organ Effects: Eyes, Respiratory system, Skin, Teeth

12. Ecological Information

Ecotoxicity

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
Sulfuric acid		*500: 96 h Brachydanio rerio mg/L LC50 static*	*29: 24 h Daphnia magna mg/L EC50*

Persistence and Degradability: No information available.

Bioaccumulation: No information available.

Mobility: No information available.

13. Disposal Considerations

Waste from Residues/Unused Products: Disposal should be in accordance with applicable regional, national and local laws and regulations

Contaminated Packaging: Do not reuse container.

14. Transport Information

DOT

Proper shipping name	SULFURIC ACID
Hazard Class	8
UN/ID No	UN-2796
Packing Group	II
Reportable Quantity (RQ)	1000 lbs
Description	UN2796, SULFURIC ACID, 8, PG II

15. Regulatory Information

International Inventories

All of the components in the product are on the following Inventory lists: TSCA (United States):, Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), South Korea (KECL):, China (IECSC), Philippines (PICCS),
This product contains a substance not listed on international inventories - it is for research and development use only.

AICS	Complies
TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	-
IECSC	Complies
KECL	Complies
PICCS	Complies

Chemical Name	AICS	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS
Sulfuric acid	Listed	Listed	Listed	-	Listed	-	(1)-724 (1)-430	Listed	KE-32570	Present
Water	Listed	Listed	Listed	-	Listed	-	-	Listed	KE-35400	Present

Inventory Legend

AICS - Australian Inventory of Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

RESTRICTIONS - REACH TITLE VII No information available

US Federal Regulations

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	CERCLA Hazardous Substances and the Reportable Quantities	SARA Extremely Hazardous Substances EPCRA RQ	SARA Extremely Hazardous Substances TPQ
Sulfuric acid	1000 lb 454 kg	1000 lb EPCRA RQ	1000 lb TPQ

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Sulfuric acid	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive hazard	Yes

U.S. State Right-to-Know Regulations

California Proposition 65:
This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65:
Sulfuric acid	Carcinogen

16. Other Information

National Fire Protection Association (NFPA) Ratings

NSF Certification

Certified to NSF/ANSI 60

Maximum Use (mg/L unless otherwise indicated):	50
Prepared By:	HSE Department
Issue Date:	05-Oct-2012
Revision Date:	08-May-2013
Revision Note:	Updated section(s) 16

Disclaimer:
Please be advised that it is your responsibility to inform your employees of the hazards of this substance, to advise them of what these properties mean and be sure they understand exposure information. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication.

The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. No warranty or guaranty, express or implied, is made regarding performance, stability, or otherwise. This information is not intented to be all-inclusive as to the manner and conditions of use, handling, and storage. Other factors may require additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, the handling and use remains the responsibility of the consumer. No suggestions are intended as, and should not be constructed as, a recommendation to infringe on any existing patents or to violate any Federal, State, or local laws.

End of Safety Data Sheet

Safety Data Sheet

1. Product and Company Identification

Product Identifier: BioRem-2000 Surface Cleaner
General Use: Designed to remediate oil, grease and other hydrocarbons on hard surfaces.
Product Description: Amber liquid

Manufacturer:
Clift Industries, Inc.
PO Box 471578
Charlotte, NC 28247
704-752-0031

Emergency Telephone
CHEMTREC
800-424-9300

2. Hazards Identification

Classification: Acute toxicity, Oral, Dermal, Inhalation Category 5
Eye Irritation, Category 2B

Signal Word: Warning!

Hazard Statement:	H303+H313 +H333	Maybe harmful if swallowed, in contact with skin or if inhaled.
	H320	Causes eye irritation.
Precautionary Statements Prevention:	P264	Wash hands thoroughly after handling.
Precautionary Statements Response:	P304 + 340	**IF INHALED**: Remove victim to fresh air and keep at rest in a position comfortable for breathing
	P301+330+ 331	**IF SWALLOWED**: Rinse mouth. Do NOT induce vomiting.
	P303+352	**IF ON SKIN**: Wash with plenty of soap and water.
	P305+351+ 338	**IF IN EYES**: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing.

3. Composition/Information on Ingredients

Ingredients	CAS No.	Weight %
Aqua	7732-18-5	70-90
Microbes	Proprietary	1-5
Enzymes	Proprietary	1-5
Cleaning Aid	Proprietary	10-20
Nutrients	Proprietary	1-5

4. First Aid Measures

Eye Contact: Flush eyes for fifteen minutes with water. If irritation persists, contact a physician.
Skin Contact: Wash with soap and water. If irritation persists, contact a physician.
Inhalation: Not normally required. Move to fresh air. If symptoms persist, get medical attention.
Ingestion: Not normally required. Contact a physician if ingested.

5. Fire Fighting Measures

Extinguishing Media: Unused form: Water spray, dry chemical or carbon dioxide.
Used form: That which is compatible to liquid (s) absorbed.
Special Fire Fighting Procedures: None required.
Hazardous Combustion Products: Carbon monoxide and/or carbon dioxide.
Unusual Hazards: None expected. Refer to absorbed liquid(s) MSDS(s). Extreme heat may cause pressure to build up inside drum.

6. Accidental Release Measures

Spill or Leak Procedures: If material is unused, collect and recover for reuse. Wear protective equipment. Not a listed hazardous waste.

7. Handling and Storage

Handling Precautions: Avoid contact with skin and eyes. Do not swallow. Wash hands thoroughly after handling.
Storage Precautions: Store in cool, dry area. Prevent product from freezing. Keep out of reach of children. Shelf life: 3 years as long as the product is kept in a clean, dry environment away from direct sunlight and/or excessive heat.
General: Refer to absorbed liquid(s) MSDS(s). Follow label directions carefully. Make sure all containers are labeled properly. The container can be hazardous when empty. Follow label cautions even after the container is empty. Do not re-use empty containers for food, clothing or products for human or animal consumption, or where skin contact can occur.

8. Exposure Controls/Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.
PERSONAL PROTECTION
Eyes: Safety goggles or glass with side shields
Respirator: NIOSH/MSHA approved respirator when ventilation is inadequate.
Gloves: Impervious gloves.
Other: Maintain eyewash and safety shower in work area.
OSHA HAZARDOUS COMPONENTS
(29 CFR 1910.1200):

EXPOSURE LIMIT 8 hrs. TWA (ppm)
OSHA PEL ACGIH TLV

None

9. Physical/Chemical Characteristics

Appearance: Amber liquid
Odor: Bland
pH: 7
Melting Point/Freezing Point: 32º F (0º C)
Initial Boiling Point and Range: 212º F (100º C)
Flash Point: None **Method**: Not available.
Evaporation Rate: Not established.
Flammable Limits: Not applicable.
Conditions of Flammability: Non-flammable.
Explosive Properties: Not established.
Vapor Pressure: Not available.
Vapor Density: Not established.
Relative Density (H_2O =1): 1.079
Solubility in Water: Soluble
VOC (g/L): 0

10. Stability and Reactivity Data

General: This is a stable material
Conditions of Reactivity: Reacts with sodium hypochlorite or calcium hypochlorite.
Incompatible Materials: Strong oxidants
Conditions to Avoid: Excessive heat or flame.
Hazardous Decomposition: Not established.
Hazardous Polymerization: Will not occur.

11. Toxicological Data

LD50: Not established.
LC50: Not established.

Carcinogenicity: IRAC: None
National Toxicology Program: None
OSHA: None
California Prop 65: No listed ingredient

Reproduction Toxicity: Not available
Teratogenicity: Not available
Mutagenicity: Not available
Synergistic Products: Not available

12. Ecological Data

No data available

13. Disposal Considerations

Waste Disposal Method: Observe all federal, state and local regulations.

14. Transport Information

D.O.T. (Department of Transportation):
Proper Shipping Name: Non-hazardous liquid
Hazard Class: Not regulated
Identification Number: Not applicable

15. Regulatory Information

CERCLA (Comprehensive Environmental Response Compensation and Liability Act): No Reportable Quantity
OSHA Hazard Communication Standard, 28 CFR 1910.1200: No hazardous ingredient.
SARA Title III (Superfund Amendments and Reauthorization Act): No listed ingredient.
TSCA (Toxic Substances Control Act): All ingredients are listed.

16. OTHER INFORMATION:

NFPA Hazard Rating: **Health** – 1
None → Extreme **Fire** – 0
0 → 4 **Reactivity** – 0
PPE – B

Reason for Issue: GHS changes to Sections 2 & 3.
Prepared by: J. Pickett
Approved by: C. Matthews
Approval Date of Issue: 5/1/2015
Approval Date: 5/1/2015

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