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US ARMY INSTALLATION MANAGEMENT COMMAND
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FORT GEORGE G. MEADE, MARYLAND 20755-5000

October 14, 2016

Environmental Division

Mr. Robert Stroud
NPL/BRAC/Federal Facilities Branch
U.S. Environmental Protection Agency
701 Mapes Road
Fort Meade, MD 20755

Dear Mr. Stroud:

Enclosed please find the *First Semi-Annual Long-Term Monitoring Report (January 1 through August 31, 2016)* for the Manor View Dump Site at Fort George G. Meade (Report). Copies of the Report have also been furnished to Fran Coulters (U.S. Army Environmental Command), Elisabeth Green (Maryland Department of the Environment), Christopher Williams (Anne Arundel County Schools), and the Fort George G. Meade Restoration Advisory Board.

Please provide comments on the Report within 60 calendar days of receipt. Written comments should be addressed to Fort George G. Meade, Attention: IMME-PWE (George Knight), 4216 Roberts Ave., Suite 5115, Fort Meade, Maryland 20755-7068 or george.b.knight7.civ@mail.mil.

If you have any questions, please feel free to contact Denise Tegtmeier at (301) 677-9559 or me at (301) 677-7999.

Sincerely,

A handwritten signature in black ink that reads "Michael P. Butler for".

George B. Knight, PG
Program Manager, Installation Restoration Program
Directorate of Public Works Environmental Division

Enclosure

Mr. Francis J. Coulters
Cleanup & Munitions Response Division
U.S. Army Environmental Command
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Subject:
First Semi-Annual Long-Term Monitoring Report (January 1 through August 31, 2016)
FGGM 93, Manor View Dump Site
Fort George G. Meade, Anne Arundel County, Maryland

ENVIRONMENT

Date:
October 17, 2016

Contact:
John Cherry

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Email:
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Our ref:
10153005.0001

Dear Mr. Coulters:

This letter presents the results of groundwater sampling and operation and maintenance (O&M) activities completed at Manor View Dump Site (**Figure 1**) at Fort George G. Meade (FGGM) during the first half of 2016 (January 1 through June 30, 2016). Additional semi-annual long-term monitoring (LTM) activities were conducted in August 2016. The PIKA International, Inc. – Arcadis U.S., Inc. Joint Venture LLC (the JV) conducted all work in accordance with Contract W91ZLK-13-D-0009: Task 0009.

The LTM sampling schedule is included in **Table 1**. All site activities completed during the reporting period were conducted in accordance with the LTM program established in the Remedial Design (RD; Arcadis 2015) and included the following components:

- Semi-annual LTM of contaminants of concern (COCs) in groundwater (i.e., arsenic, cadmium, chromium, cobalt, lead, selenium, thallium, trichloroethene [TCE] and vinyl chloride [VC]);
- Semi-annual LTM of soil gas for methane;
- Annual LTM of indoor air in the crawl space at Manor View Elementary for TCE and its daughter products (i.e., 1,1-dichloroethene [DCE], cis-1,2-DCE, trans-1,2-DCE, and VC) including an additional sample location in the storage closet outside of the crawl space;

- Annual mowing and comprehensive site inspection to confirm compliance with all of the land use control (LUC) objectives and to ensure that the integrity and effectiveness of the existing soil cover is maintained; and
- Annual operational testing of the soil vapor extraction system and methane monitors in the houses adjacent to the western portion of the Site and in the crawl space at the Manor View Elementary School.

Additional monitoring, not required by the LTM program, was conducted at SG-82S to reassess elevated methane readings observed during semi-annual LTM. Documentation of the above mentioned activities is presented and discussed herein including field sampling forms, inspection forms, laboratory analytical reports, data validation reports, and a photo log. Documentation of sampling and inspection activities (i.e., sampling logs and inspection checklists) are included in **Attachment 1** and **Attachment 2**, respectively. Analytical laboratory reports are provided in **Attachment 3**.

All field activities completed during the reporting period were conducted in accordance with the procedures established in the RD (Arcadis 2015) and the Fort Meade and Phoenix Military Reservation Remedial Action Operations and Long-term Management Accident Prevention Plan, as amended in May 2016 (JV 2016a). As indicated in the Field Modification Memorandum, the groundwater sampling method employed at the Site transitioned from low-flow procedures to a no-purge groundwater sampling approach (i.e., HydraSleeves™) in the second quarter of 2016 (JV 2016b). Low-flow purging and sampling was conducted at 10 percent of the monitoring locations sampled at FGGM and the Phoenix Military Reservation (PMR), in addition to the collection of samples from HydraSleeves™, for comparison purposes. Following the collection of two rounds of comparison data, an evaluation of the application of HydraSleeves™ at FGGM and PMR will be conducted and presented under separate cover (JV 2016b). All LTM analytical data collected during the first half of 2016 were validated in accordance with the Final Quality Assurance Project Plan (QAPP; Arcadis 2011). QAPP Addendum #4 was prepared to guide work activities under Contract No. W91ZLK-13-D-0009: Task 0009 (JV 2016c). Data validation is conducted by a third party and includes a review of the laboratory report narrative for noted deficiencies and the potential impact to data usability; review of chain-of-custodies, sample preservation, and sample receipt logs and electronic data validation of select quality control parameters. No major deficiencies were identified during the data validation. The data validation report for analytical data collected during the second quarter of 2016 is provided in **Attachment 4**.

Groundwater Sampling

The first 2016 semi-annual groundwater sampling event was conducted from June 8 through June 20, 2016. Groundwater samples were collected from five monitoring wells (MW-01, MW-02, MW-03, MW-04, and MW-7) using low-flow purging and sampling procedures and from six monitoring wells (MW-02, MW-05, MW-06, MW-09, MW-10, and MW-11) using in-situ HydraSleeve™ samplers. Low-flow procedures were utilized at the locations listed above due to the limited water column observed at these locations which was not sufficient for the larger HydraSleeve™ necessary to collect the sample volume required at the Site. MW-02 was sampled using both a HydraSleeve™ and low-flow procedures for comparison purposes. Following the collection of two rounds of comparison data, an evaluation of the application of in-situ passive samplers at FGGM will be conducted and presented under separate cover. Monitoring well locations are provided on **Figure 2**.

Groundwater samples were submitted for analysis of volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260B, total metals via USEPA Method 6010, and biogeochemical parameters (i.e., pH [SM 4500-H B-2011], alkalinity [SM 2320B-2011], hardness [SM 2340C-2011], chloride [300.0], specific conductance [120.1], nitrate [300.0], chemical oxygen demand [SM 5220D-2011], turbidity [180.1], ammonia [350.1], sulfate [300.0], and total dissolved solids [SM 2540C-2011]). Prior to conducting groundwater sampling, each monitoring well was gauged with an electronic water level meter and depth to water and total sounded depth measurements were recorded. Groundwater elevation data for the first semi-annual event of 2016 is presented in **Table 2**. Groundwater elevations ranged from 160.06 feet (ft) above mean sea level (msl) at MW-5 to 167.53 ft msl at MW-01.

All purge water and decontamination fluids generated during the semi-annual sampling event were combined before being containerized. All waste was stored in 55-gallon Department of Transportation approved drums, properly labeled and staged at the FGGM designated investigation derived waste (IDW) storage area located inside the enclosure for the Operable Unit 4 (OU-4) hydraulic containment system located off Magazine Road. Approximately 10 gallons of purge water were generated during the semi-annual sampling event. Per Maryland Department of Environment's request, analytical results from non-OU-4 sites are screened against standards documented in Table 1 of Code of Maryland Regulation 26.13.02.14 (Maximum Concentration of Contaminants for the Toxicity Characteristic) and as presented in **Table 3** of this report. If concentrations are below the comparison criteria, the hydraulic containment system can be used to process the IDW. Upon completion of the IDW screening analysis (documented in the forthcoming OU-4 Semi-Annual Operation and Maintenance Report planned for submittal under separate cover) the liquid waste will be processed using the hydraulic containment system.

A comprehensive analytical groundwater data table presenting the first semi-annual 2016 results is presented in **Table 4**. A brief discussion of COC concentrations is presented below:

- TCE was detected in exceedance of its Remedial Goal (RG) of 5 micrograms per liter ($\mu\text{g/L}$) at one location, FGGM93-MW-9 (10.8 $\mu\text{g/L}$).
- VC was not detected above laboratory reporting limits at any of the ten monitoring locations.
- Arsenic, cadmium, chromium, lead, selenium, and vanadium were detected at several locations but below their respective RGs.
- Cobalt was detected above its laboratory reporting limit at 9 of the 10 monitoring wells sampled, seven of which at concentrations exceeding its RG of 5 $\mu\text{g/L}$. The maximum concentration of cobalt was observed at MW-4 (24 $\mu\text{g/L}$).

In addition to the detections of COCs summarized above, the following VOCs were also detected above laboratory reporting limits: chloroform, cis-1,2-dichloroethene, and toluene.

In-Situ Soil Gas Monitoring

The first 2016 semi-annual in-situ soil gas monitoring event was conducted on June 17, 2016. Landfill gas measurements (i.e., methane, carbon dioxide, and oxygen) were collected in-situ using a Landtec GEM™ 2000 landfill gas monitor from 14 monitoring points (VMP-1, VMP-4, VMP-11, VMP-26, VMP-27, VMP-29 through VMP-33, VMP-36, MP-A, VE-C, and VE-F). Soil gas monitoring points SG-82S, SG 82M, and SG-82D were not sampled as access was impeded by private property (i.e., playground equipment and

trampoline) located behind 4950 Hayden Drive. SG-82S, M, and D were sampled on July 11, 2016 and August 23, 2016 following the removal of these items. Soil gas monitoring locations are displayed on **Figure 3**.

Prior to conducting monitoring activities, the landfill gas monitor was calibrated in accordance with manufacturer specifications. Two landfill gas readings were collected at each monitoring point: (1) an initial reading collected from the monitoring point head space and (2) a final reading following a three-volume purge of the monitoring point. Following documentation of the initial reading, a three-volume purge was conducted at each monitoring point to displace stagnant air within the headspace and to capture a representative sample of the soil vapor from the screened interval. Flow rates and purge times were recorded following the three-volume purge at each monitoring point. A summary data table presenting the June 2016 methane soil-gas results is presented in **Table 5**. The three-volume purge summary from the first semi-annual event is presented on **Table 6**.

As summarized in **Table 5**, methane was not detected following the three-volume purge at any location sampled on June 17, 2016 including VMP-1, VMP-4, VMP-11, VMP-26, VMP-27, VMP-29 through VMP-33, VMP-36, MP-A, VE-C, and VE-F. Nested locations SG-82S, SG-82M, and SG-82D were sampled on July 11, 2016 following the removal of the trampoline and playground preventing access to this location in June 2016. Following purging activities, methane was observed at SG-82S, SG-82M, and SG-82 D at a concentration of 8.9%, 18.2%, and 2.0%, respectively. Elevated methane concentrations exhibited at these locations are the result of the on-going degradation of woody debris intermixed with soil in this area, and similar to that observed during the expansion of the 2012 removal action in the vicinity of nearby locations VMP-30 and VMP-31. These three locations were resampled on August 23, 2016 to confirm results. Following purging activities, methane was recorded below the lower explosive limit (5%) at each location: SG-82S (4.4%), SG-82M (0%), and SG-82D (3.3%). It is important to note that more volume was purged during the second re-sampling event to ensure a sample representative of conditions within the screened interval was achieved and air purged from the sample location was monitored continuously until a stable reading was achieved.

Indoor Air Sampling

The annual indoor air sampling event was conducted on June 16 – June 17, 2016. As indicated in the RD (Arcadis 2015), a time integrated sample was collected from the indoor sampling location MV-13, located in the crawl space at the Manor View Elementary School. An additional sample was collected from within the utility closet (MV-14). Indoor air monitoring locations are presented on **Figure 4**. The samples were collected using 6L Summa® canisters with flow controllers pre-set by ALS Laboratories. During Summa® canister deployment, materials and chemicals housed in the storage room above the crawl space were documented and photographed. Safety Data Sheets were obtained for the chemicals within the storage room and are provided in **Attachment 5**. The Summa® canister was lowered into the crawl space and the crawl space entry hatch was closed while the sample was collected. The flow controllers of the Summa® canisters regulated passive sampling over a 24-hour period. Following the 24-hour sample period, the Summa® canisters were retrieved and submitted to ALS Laboratories for analysis of TCE and its daughter products via USEPA method TO-15.

A comprehensive data table presenting the annual indoor air analytical results is presented in **Table 7**. A brief discussion of detected VOC concentrations is presented below:

- TCE was detected above RG of $1 \mu\text{g}/\text{m}^3$ within the crawl space (MV-13 - $5.7 \mu\text{g}/\text{m}^3$). Concentrations of TCE within the utility closet (MV-14) were below laboratory reporting limits.
- All other analytes were detected below laboratory report limits at MV-13 and MV-14.

Annual Inspection Findings

Completed inspection forms documenting completion of the annual site inspection are provided in **Attachment 2**. A photo log documenting the annual inspection is presented in **Attachment 6**. A summary of the inspection findings is presented below:

- **Existing Soil Cover:** The existing soil cover of the eastern and western portions of the Site was inspected on August 22, 2016 and was observed in good condition. No signs of settling, subsidence, or erosion were noted and no waste material was exposed at the ground surface. Several groundhog holes/settling above groundhog tunnels were observed across the Site; however, no exposed waste was identified. The annual mowing event including mowing of the open area west of the forested area bisecting the western and eastern portions of the Site and vegetation clearing along the former vapor extraction trench was also conducted on August 22, 2016. Vegetation cleared from the former vapor extraction trench included small shrubs and bushes including various types of forbs (i.e., poke weed) with large stems up to 1-inch in diameter. Photographic documentation of the mowed soil cover, vegetation clearing, and examples of typical groundhog holes/settling are presented in Attachment 6 (Photos 1 through 8).
- **Soil Vapor Extraction System:** The soil vapor extraction system was started August 22, 2016. The system was shut down immediately following the completion of the operational testing. It should be noted that although the system was started with little to no issue and mechanical components of the system were found in working order (i.e., blower), minor equipment replacements may be required should the system be operated full time in the future (i.e., breakers).
- **Monitoring Locations:** As part of the annual inspection all of the monitoring locations (i.e., monitoring wells and soil gas monitoring points) were evaluated with respect to integrity of construction and security. All monitoring locations were found to be visible, accessible, undamaged and secured. Several bolts were found to be missing from the soil gas monitoring points. Inspection confirmed these points are still capped and secure. The bolts will be replaced during the next semi-annual monitoring event.
- **Fence:** In general, the fence was observed in good condition and was locked upon arrival to the Site. This fence does not allow access to the western portion of the Site and continues to delineate the land use associated with the Manor View Elementary School play yard and the western portion of the Site. Minor sagging was observed on the eastern portion of the fence between the Manor View Elementary School and the western portion of the Site along the access road; however, the fence is still operating as intended. This portion of the fence will be observed during future site visits to ensure the fence continues to deviate the two land uses (i.e., the western portion of the Site from the Manor View Elementary play field).
- **Methane Monitors:** One methane monitor (Kidde Nighthawk™ AC Plug-in Operated Carbon Monoxide and Explosive Gas Alarm with Digital Display, Model No. KN-COEG-3) is located in each of the housing units in the room nearest to the western portion of the Site (20 total installed by Corvias

prior to housing being reoccupied). The JV inspected and tested 16 methane monitors on July 11, 2016 with representatives from the U.S Army Environmental Division and the Corvias Group. Access could not be obtained to one monitor at 4950 Hayden Drive and three monitors were missing from 4961 Hartell Court and 4954 and 4953 Hayden Drive. Corvias Group replaced the missing monitors and all four remaining monitors were tested on August 22, 2016 by the JV. In general, the methane monitors were mounted to the wall in the living room of each housing unit. Methane monitors were observed in good condition. The batteries were replaced in one monitor at 4948 Hayden Drive. The methane monitor installed in the crawl space at the Manor View Elementary School (S-Tech Natural Gas [Methane] Detector, Model No. STCH-1000LC) was tested on June 16, 2016 and was found to be operating as intended.

- **Land Use:** No changes in land use were observed at the Site including the crawl space of the Manor View Elementary School. Photos 9 and 10 of **Attachment 6** depict the current conditions within the utility closet at the Manor View Elementary School, confirming the use of the crawl space remains unchanged.
- **LUC Signage:** Five LUC signs are present at the Site as depicted on **Figure 5**. On August 22, 2016, the signs were inspected to document that each sign remained in-place and in good condition. Photographs of each sign are provided in **Attachment 6** (Photos 11 through 15). During the mowing event, overhanging vegetation in the northeast corner of the site was removed, per Army request, and to ensure visibility of LUC sign 5. No issues or damages were noted during the inspection.
- **Construction Activities:** Construction activities are planned as a component of revitalization efforts at the Manor View Elementary School. Construction is planned to occur on the eastern portion of the Site and may include the planting of trees and restoration of the storm basin at the southern end of the Site. Off-Site construction includes vegetative improvements to the parking lot and surrounding the school and may impact monitoring wells located on Manor View Elementary School property.

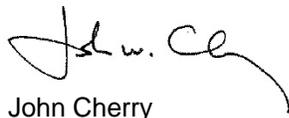
Future Activities

LTM will continue at FGGM 93 in accordance with the monitoring program established in the RD (Arcadis 2016). The next semi-annual LTM event will be conducted in November 2016 and will include groundwater and soil-gas monitoring.

Should you have any questions or comments, please contact the undersigned at your earliest convenience.

Sincerely,

PIKA – Arcadis JV LLC



John Cherry
Project Manager

Copies:

George Knight (Installation Restoration Program)
Robert Stroud (United States Environmental Protection Agency)
Elisabeth Green (Maryland Department of the Environment)
Christopher Williams (Anne Arundel County School)

Enclosures:

Tables

- 1 Long Term Monitoring Program Summary
- 2 Well Construction Details and Groundwater Elevations
- 3 COMAR 26.13.02.14 Table 1 Maximum Concentration of Contaminants for the Toxicity Characteristic
- 4 Groundwater Monitoring Results
- 5 Summary of Soil Gas Methane Results
- 6 Three Volume Purge Summary – June 2016
- 7 Indoor Air Monitoring Results

Figures

- 1 Manor View Dump Site Location Map
- 2 Monitoring Well Locations
- 3 Soil Gas Monitoring Locations
- 4 Indoor Air Sample Locations
- 5 Extent of Land Use Controls

Attachments

- 1 Sampling Field Logs
- 2 Annual Inspection Checklist
- 3 Analytical Reports (provided on CD)
- 4 Data Validation Reports (provided on CD)
- 5 Safety Data Sheets
- 6 Photo Log

References

Arcadis. 2011. Quality Assurance Project Plan (QAPP) for the Performance Based Acquisition at Fort Meade. March 2011.

Arcadis. 2015. Revised Final Remedial Design, FGGM 93 Manor View Dump Site, Fort George G. Meade. Maryland. Revised Final. August 2015.

JV. 2016a. Remedial Action Operations and Long-term Management Accident Prevention Plan Version 005, Fort George G. Meade, Maryland. May 2016.

JV. 2016b. Field Modification Memorandum – No-Purge Groundwater Sampling Transition. Fort George G. Meade, Maryland. June 2016. JV. 2016c. Final Site-Wide Quality Assurance Project Plan Addendum 4, Fort George G. Meade, Maryland. September 2016.

TABLES



Table 1
Long-term Monitoring Program Summary
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Category	Analytical Parameters	Sampling Frequency	Monitoring Wells	Sampling Method
Groundwater	40 CFR 258, Appendix I Parameters (Volatile Organic Compounds, Total Metals, and Water Quality Parameters ²)	Semi-annually	MW-1	HydraSleeve™ Samplers (Low-flow sampling may be employed if necessary based on water levels)
			MW-2	
			MW-3	
			MW-4	
			MW-5	
			MW-6	
			MW-7	
			MW-9	
			MW-10	
			MW-11	
			Soil Gas	
VMP-4				
VMP-11				
VMP-26				
VMP-27				
VMP-29				
VMP-30				
VMP-31				
VMP-32				
VMP-33				
VMP-36				
MP-A				
VE-F				
VE-C				
SG-82 (S,M,D)				
Indoor Air	Trichloroethene and its daughter products	Annually, concurrent with groundwater monitoring schedule.	MV-13, Manor View Elementary Crawl Space MV-14, Storage Closet ⁴	SUMMA® Canister

Notes:

1. The groundwater monitoring program may be modified over time based on monitoring results, upon concurrence from the Maryland Department of the Environment and the United States Environmental Protection Agency.
2. Water quality parameters include pH, alkalinity, hardness, chloride, specific conductance, nitrate, chemical oxygen demand, turbidity, ammonia, sulfate, and total dissolved solids.
3. MW-8 was removed from the monitoring program following well abandonment on October 3, 2014. Abandonment was deemed necessary as the well had shifted outside of its manhole following excavation and backfilling activities conducted during implementation of the Non-Time Critical Removal Action.
4. MV-14 was added to the monitoring program in 2015 following review of results from additional indoor air sampling requested by MDE during regulatory review of the Remedial Action Completion Report in 2015. Additional sampling results are documented in the 2015 Annual Long-Term Monitoring and Land Use Control Report.

Table 2
Well Construction Details and Groundwater Elevations
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Well ID	Well Material	Well Diameter (inches)	Top of Casing Elevation (ft msl)	Measured Total Depth (ft bmp)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft bgs)	6/8/2016	
								Depth to Water (ft bTOC)	Groundwater Elevation (ft msl)
MW-1	PVC	2	212.71	49.60	40	50	10	45.18	167.53
MW-2	PVC	2	208.58	53.30	44	54	10	41.97	166.61
MW-3	PVC	2	210.68	49.86	40	50	10	45.76	164.92
MW-4	PVC	2	209.41	49.35	40	50	10	46.44	162.97
MW-5	PVC	2	202.94	51.90	42	52	10	42.88	160.06
MW-6	PVC	2	199.50	47.55	38	48	10	38.64	160.86
MW-7	PVC	2	216.16	53.65	45	55	10	49.11	167.05
MW-9	PVC	2	206.57	49.80	40	50	10	41.10	165.47
MW-10	PVC	2	187.78	35.32	25	35	10	25.04	162.74
MW-11	PVC	2	188.15	39.10	30	40	10	26.55	161.60

Notes:

ft bgs - feet below ground surface
ft bTOC - feet below top of casing
ft msl - feet above mean sea level
PVC - polyvinyl chloride

Table 3
COMAR 26.13.02.14 Table 1 Maximum Concentration
of Contaminants for the Toxicity Characteristic
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



USEPA Hazardous Waste Number	Contaminant	CAS No. ¹	Regulatory Level (milligrams per liter)
D004	Arsenic	7440-38-2	5
D005	Barium	7440-39-3	100
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100
D022	Chloroform	67-66-3	6
D007	Chromium	7440-47-3	5
D023	o-Cresol	95-48-7	200.0 ³
D024	m-Cresol	108-39-4	200.0 ³
D025	p-Cresol	106-44-5	200.0 ³
D026	Cresol		200.0 ³
D016	2,4-D	94-75-7	10
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13 ²
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13 ²
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3
D008	Lead	7439-92-1	5
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10
D035	Methylethylketone	78-93-3	200
D036	Nitrobenzene	98-95-3	2
D037	Pentachlorophenol	87-86-5	100
D038	Pyridine	110-86-1	5.0 ²

Table 3
COMAR 26.13.02.14 Table 1 Maximum Concentration
of Contaminants for the Toxicity Characteristic
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



USEPA Hazardous Waste Number	Contaminant	CAS No. ¹	Regulatory Level (milligrams per liter)
D010	Selenium	7782-49-2	1
D011	Silver	7440-22-4	5
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400
D042	2,4,6-Trichlorophenol	88-06-2	2
D017	2,4,5-TP (Silvex)	93-72-1	1
D043	Vinyl chloride	75-01-4	0.2

Notes:

1. Chemical Abstracts Service number.
2. Quantitation limit is greater than the calculated regulatory level. The quantitation limit, therefore, becomes the regulatory level.
3. If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 milligrams per liter.

Table 4
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Constituents of Concern	Sample Location:		MW-1	MW-2	MW-2	MW-3	MW-4	MW-5	MW-6
	Date:		6/8/2016	6/9/2016	6/15/2016	6/8/2016	6/9/2016	6/15/2016	6/15/2016
	Sample ID:		FGGM93-MW-1 (060816)-LF	FGGM93-MW-2 (060816)-LF	FGGM93-MW-2(061516)-HS	FGGM93-MW-3 (060816)-LF	FGGM93-MW-4 (060816)-LF	FGGM93-MW-5(061516)-HS	FGGM93-MW-6(061516)-HS
	Sample Type:		N	N	N	N	N	N	N
	Methodology:		Low-Flow	Low-Flow	HydraSleeve	Low-Flow	Low-Flow	HydraSleeve	HydraSleeve
	Remedial Goal ¹	Unit							
Biogeochemical Parameters									
Alkalinity	---	µg/L	< 12000 U	< 24000 U	30000	< 7000 U	< 5000 U	28000	54000
Ammonia Nitrogen	---	µg/L	< 100 U	< 100 U	< 100 U	A	< 100 U	< 100 U	57 J
Chemical Oxygen Demand	---	µg/L	< 5000 U	< 8000 U	6000	< 9000 U	< 10000 U	12000	7000
Chloride	---	µg/L	2000	8500	3500	284000	290000 J	43200	33900
Hardness (as CaCO3)	---	µg/L	--	--	47400	--	--	45500	137000
Nitrate-N	---	µg/L	2400	3300	3600	2100	2400	2700	6500
pH	---	S.U.	5.87 J	6.01 J	6.54 J	5.63 J	4.83 J	6.54 J	6.51 J
Specific Conductivity	---	µmhos/cm	99	121	122	77	965	161	434
Sulfate	---	µg/L	26900	14600	16700	24500	23500	9300	74500
Total Dissolved Solids	---	µg/L	75000	98000	93000	83000	519000	132000	295000 J
Total Hardness	---	µg/L	35400	43100	--	23200	65200	--	--
Turbidity	---	ntu	25.8 J	22.7 J	119 J	108 J	2.07 J	134 J	1290 J
Metals, Total									
Aluminum	---	µg/L	180	81 J	520	2900	1500	190	< 89 U
Antimony	---	µg/L	< 2.2 U	0.91 J	< 2.2 U	< 2.2 U	< 2.2 U	1.1 J	< 2.2 U
Arsenic	10	µg/L	< 3 U	< 3 U	1.5 J	5.1	< 3 U	< 3 U	< 3 U
Barium	---	µg/L	29	61	48	160	200	83	61
Beryllium	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	0.81 J	0.33 J	< 1 U
Cadmium	5	µg/L	< 1.1 U	< 1.1 U	1.5	< 1.1 U	1.4	0.78 J	< 1.1 U
Calcium	---	µg/L	9300	12200	13900	7000	17800	14700	44500
Chromium	100	µg/L	1.5 J	1.4 J	4.7	13	2.8	2.1 J	0.97 J
Cobalt	5	µg/L	11	5.2 J	5.5 J	7.4	24	9.8	3.4 J
Copper	---	µg/L	2.1 J	< 5.6 U	6.7	13	35	4.1 J	3.6 J
Iron	---	µg/L	420	600	10500	8300	140	150	< 56 U
Lead	15	µg/L	< 2.2 U	< 2.2 U	2.7	4.1	< 2.2 U	1.3 J	< 2.2 U
Magnesium	---	µg/L	2900	3100	3100	1400	5000	2100	6200
Manganese	---	µg/L	68	27	23	69	100	14	41
Mercury	---	µg/L	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Nickel	---	µg/L	13	5.5 J	5.3 J	8.9	25	11	7.1
Potassium	---	µg/L	3600	2800	3300	2400	2400	2100	4200
Selenium	50	µg/L	2.1 J	< 5.6 U	< 5.6 U	< 5.6 U	2.4 J	2 J	< 5.6 U
Silver	---	µg/L	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U
Sodium	---	µg/L	2000	5200	2500	5800	167000	8000	25800
Thallium	0.5	µg/L	0.37 J	< 1 U	< 1 U	< 1 U	< 1 U	0.45 J	< 1 U
Vanadium	---	µg/L	1.1 J	< 2.2 U	2.1 J	12	< 2.2 U	< 2.2 U	< 2.2 U
Zinc	---	µg/L	17	17	29	37	79	29	22
Volatile Organic Compounds									
1,1,1-Trichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-trichloro-1,2,2-trifluoroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone (MEK)	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-Pentanone	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

Table 4
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Constituents of Concern	Sample Location:		MW-1	MW-2	MW-2	MW-3	MW-4	MW-5	MW-6
	Date:		6/8/2016	6/9/2016	6/15/2016	6/8/2016	6/9/2016	6/15/2016	6/15/2016
	Sample ID:		FGGM93-MW-1 (060816)-LF	FGGM93-MW-2 (060816)-LF	FGGM93-MW-2(061516)-HS	FGGM93-MW-3 (060816)-LF	FGGM93-MW-4 (060816)-LF	FGGM93-MW-5(061516)-HS	FGGM93-MW-6(061516)-HS
	Sample Type:		N	N	N	N	N	N	N
	Methodology:		Low-Flow	Low-Flow	HydraSleeve	Low-Flow	Low-Flow	HydraSleeve	HydraSleeve
	Remedial Goal ¹	Unit							
Acetone	---	µg/L	< 5 U	< 5 U	< 13.1 U	< 5 U	< 5 U	< 5 U	< 35.9 U
Benzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromochloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Carbon Disulfide	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Carbon Tetrachloride	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroform	---	µg/L	< 1 U	3.7	0.65 J	2.1	< 1 U	0.62 J	< 1 U
Chloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	---	µg/L	< 1 U	0.78 J	0.71 J	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,3-Dichloropropene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Cyclohexane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dichloromethane	---	µg/L	< 1 U	< 1 U	3.2	< 1 U	< 1 U	< 1 U	2.8
Ethylbenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylenes	---	µg/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl Acetate	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl N-Butyl Ketone (2-Hexanone)	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylcyclohexane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl-tert-butylether	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Naphthalene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene (Monomer)	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.55 J	< 1 U
Total Xylenes	---	µg/L	--	--	< 3 U	--	--	< 3 U	< 3 U
trans-1,2-Dichloroethene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	5	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2	1
Vinyl chloride	2	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Field Parameters									
pH	--	S.U.	5.15	5.42	5.66	5.65	4.47	6.71	5.63
Specific Conductivity	--	µS/cm	117	114	106	87	867	120	348
Turbidity	--	ntu	46.3	35.2	81.4	12.7	9.0	67.2	>>100
Dissolved Oxygen	--	mg/L	4.84	3.96	2.05	3.53	8.24	6.04	0.79
Temperature	--	°C	15.44	15.41	13.69	15.19	19.49	14.89	15.13
Oxidation Reduction Potential	--	mV	138.3	62.4	209.5	108.2	149.6	210.4	224.2

*Notes are provided on the last page of Table 4.

Table 4
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Constituents of Concern	Sample Location:		MW-7	MW-7	MW-9	MW-10	MW-11
	Date:		6/8/2016	6/8/2016	6/20/2016	6/20/2016	6/20/2016
	Sample ID:		FGGM93-DUP (060816)-LF	FGGM93-MW-7(060816)-LF	FGGM93-MW-9 (062016)-HS	FGGM93-MW-10 (062016)-HS	FGGM93-MW-11 (062016)-HS
	Sample Type:		FD	N	N	N	N
	Methodology:		Low-Flow	Low-Flow	HydraSleeve	HydraSleeve	HydraSleeve
	Remedial Goal ¹	Unit					
Biogeochemical Parameters							
Alkalinity	---	µg/L	< 8000 U	< 6000 U	< 5000 U	< 5000 U	67000
Ammonia Nitrogen	---	µg/L	< 100 U	< 100 U	81 J	59 J	39 J
Chemical Oxygen Demand	---	µg/L	< 8000 U	< 9000 U	17000 J	< 6000 U	< 11000 U
Chloride	---	µg/L	44700	51800	7200	16100	51300
Hardness (as CaCO3)	---	µg/L	--	--	110000	69800	77100
Nitrate-N	---	µg/L	1600	1800	4600	4400	3000
pH	---	S.U.	5.35 J	5.38 J	4.67 J	5.82 J	7.32 J
Specific Conductivity	---	µmhos/cm	216	233	339	205	415
Sulfate	---	µg/L	22300	21000	136000	50000	46100
Total Dissolved Solids	---	µg/L	154000	168000	263000	172000	282000
Total Hardness	---	µg/L	44900	45800	--	--	--
Turbidity	---	ntu	0.33 J	0.66 J	13.2	39.4	40.7
Metals, Total							
Aluminum	---	µg/L	74 J	79 J	2800	440	200
Antimony	---	µg/L	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U
Arsenic	10	µg/L	< 3 U	< 3 U	< 3 U	< 3 U	< 3 U
Barium	---	µg/L	110	120	51	65	60
Beryllium	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Cadmium	5	µg/L	0.37 J	0.46 J	< 1.1 U	0.48 J	< 1.1 U
Calcium	---	µg/L	11600	11800	35900	15700	27300
Chromium	100	µg/L	1.2 J	1 J	2.1 J	1.9 J	5.5
Cobalt	5	µg/L	18	16	4.5 J	8	< 5.6 U
Copper	---	µg/L	< 5.6 U	< 5.6 U	11	2.5 J	7
Iron	---	µg/L	120	130	490	520	190
Lead	15	µg/L	< 2.2 U	< 2.2 U	< 2.2 U	0.88 J	< 2.2 U
Magnesium	---	µg/L	3900	4000	5000	7400	2200
Manganese	---	µg/L	230	220	280	120	3 J
Mercury	---	µg/L	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Nickel	---	µg/L	8.9	9.6	3.8 J	11	3.6 J
Potassium	---	µg/L	3500	3300	2500	3800	2200
Selenium	50	µg/L	< 5.6 U	< 5.6 U	2.5 J	< 5.6 U	2 J
Silver	---	µg/L	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U
Sodium	---	µg/L	23300	24900	4000	6200	46000
Thallium	0.5	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vanadium	---	µg/L	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U
Zinc	---	µg/L	12	15	11	21	51
Volatile Organic Compounds							
1,1,1-Trichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2,2-Tetrachloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-trichloro-1,2,2-trifluoroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1,2-Trichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,3-Trichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2,4-Trichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromo-3-chloropropane	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
1,2-Dibromoethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dichloropropane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,3-Dichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,4-Dichlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
2-Butanone (MEK)	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
4-Methyl-2-Pentanone	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

Table 4
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Constituents of Concern	Sample Location:		MW-7	MW-7	MW-9	MW-10	MW-11
	Date:		6/8/2016	6/8/2016	6/20/2016	6/20/2016	6/20/2016
	Sample ID:		FGGM93-DUP (060816)-LF	FGGM93-MW-7(060816)-LF	FGGM93-MW-9 (062016)-HS	FGGM93-MW-10 (062016)-HS	FGGM93-MW-11 (062016)-HS
	Sample Type:		FD	N	N	N	N
	Methodology:		Low-Flow	Low-Flow	HydraSleeve	HydraSleeve	HydraSleeve
	Remedial Goal ¹	Unit					
Acetone	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Benzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromochloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromodichloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromoform	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Bromomethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Carbon Disulfide	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Carbon Tetrachloride	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-11	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
CFC-12	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorobenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chlorodibromomethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloroform	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Chloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	---	µg/L	< 1 U	< 1 U	1.4	< 1 U	< 1 U
cis-1,3-Dichloropropene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Cyclohexane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Dichloromethane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Isopropylbenzene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
m&p-Xylenes	---	µg/L	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Methyl Acetate	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl N-Butyl Ketone (2-Hexanone)	---	µg/L	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Methylcyclohexane	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Methyl-tert-butylether	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Naphthalene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
o-Xylene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Styrene (Monomer)	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Total Xylenes	---	µg/L	--	--	< 3 U	< 3 U	< 3 U
trans-1,2-Dichloroethene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,3-Dichloropropene	---	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	5	µg/L	< 1 U	< 1 U	10.8	< 1 U	< 1 U
Vinyl chloride	2	µg/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Field Parameters							
pH	--	S.U.	5.33	5.33	4.24	4.91	6.84
Specific Conductivity	--	µS/cm	284	284	351	197	358
Turbidity	--	ntu	2.50	2.50	5.52	23.3	31.3
Dissolved Oxygen	--	mg/L	2.36	2.36	4.55	6.38	5.38
Temperature	--	°C	18.04	18.04	18.75	15.92	17.41
Oxidation Reduction Potential	--	mV	119.0	119.0	277.8	168.6	129.2

*Notes are provided on the last page of Table 4.

Table 4
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Notes:

1. Remedial Goals presented were established in the Record of Decision (U.S. Army, 2014).
 2. Values exceeding the remedial goal are boldfaced and highlighted yellow. Detected values are bolded.
- °C - degrees Celcius
µg/L - micrograms per liter
µmhos/cm - micromhos per centimeter
µS/cm - microsiemens per centimeter
FD - Field Duplicate
J - Indicates an estimated result. Result is less than laboratory reporting limits.
mg/L - milligrams per liter
mV - millivolt
N - Normal
ntu - nephelometric units
S.U. - Standard Unit
U - Indicates that the analyte was analyzed but not detected above the detection limit.

Table 5
Summary of Soil Gas Methane Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Sample Location	Final Methane (%) ⁽¹⁾		Final Methane (%) ⁽¹⁾	Final Methane (%) ⁽¹⁾	Final Methane (%) ⁽¹⁾
	3/31/2015	8/26/2015	6/17/2016	7/11/2016	8/23/2016
VMP-1	0	1.2	0	NS	NS
VMP-4	0	0	0	NS	NS
VMP-11	0	0	0	NS	NS
VMP-26	0	3.6	0	NS	NS
VMP-27	0	2.6	0	NS	NS
VMP-29	0	0.4	0	NS	NS
VMP-30	0	0	0	NS	NS
VMP-31	0	0	0	NS	NS
VMP-32	0	0	0	NS	NS
VMP-33	0.9	0.2	0	NS	NS
VMP-36	0	0	0	NS	NS
MP-A	0	2.1	0	NS	NS
VE-C	0	0	0	NS	NS
VE-F	0	1.1	0	NS	NS
SG-82S	0	0	NS ⁽²⁾	8.9	4.4
SG-82M	0	0	NS ⁽²⁾	18.2	0
SG-82D	0	0.8	NS ⁽²⁾	2.0	3.3

Notes:

1. Soil gas results measured in 2015 are provided for comparison purposes.
2. Not sampled due to private property covering point. Resampled on July 11, 2016 and August 23, 2016.
3. Concentrations presented above were measured following the removal of a minimum of three volumes from the sample point.
4. Concentrations exceeding the lower explosive limit for methane (5%) are presented in boldfaced font and are highlighted yellow.

% - percent

NS - Not Sampled

VMP - vapor monitoring point

MP - monitoring point

VE - vapor extraction

SG - soil gas

Table 6
 Three Volume Purge Summary - June 2016
 FGM 93 Manor View Dump Site
 Fort George G. Meade, Maryland



Weather: 77°F/Sunny _____ Barometric Pressure: 29.93 inches _____

Sample Point ⁽¹⁾	Start Time ⁽²⁾	Stop Time ⁽²⁾	Vacuum (inches of water)	Flow (L/m)	Purge Duration (minutes)	Methane ⁽³⁾ (%)	Carbon Dioxide (%)	Oxygen (%)	Approximate Volume Purged (ft ³)
VMP-1									
INITIAL	1300	1301	0	0.4	0.5	0.3	10.1	1.4	0.357
FINAL	1303	1306		10	1	0.0	0.1	20.0	
VMP-4									
INITIAL	1311	1312	0	0.4	0.5	0.0	0	21.5	0.357
FINAL	1313	1315		10	1	0.0	0	20.1	
VMP-11									
INITIAL	1349	---	0	0.4	0.5	0.0	0	20.9	0.007
FINAL	---	---		---	---	---	---	---	
VMP-26									
FINAL	1229	---	0	0.4	0.5	0.0	0	22.5	0.007
VMP-27									
FINAL	1227	---	0	0.4	0.5	0.0	0	21.7	0.007
VMP-29									
FINAL	1252	---	0	0.4	0.5	0.0	0	0	0.007
VMP-30									
INITIAL	1239	1239	0	0.4	0.5	0.0	0	20.7	0.357
FINAL	1239	1241		10	1	0.0	0	20.8	
VMP-31									
INITIAL	1233	1233	0	0.4	0.5	0.0	0	21.0	0.357
FINAL	1235	1236		10	1	0.0	0	20.8	
VMP-32									
FINAL	1245	---	0	0.4	0.5	0.0	0	20.4	0.007
VMP-33									
FINAL	1223	---	0	0.4	0.5	0.0	0	21.5	0.007
VMP-36									
FINAL	1248	---	0	0.4	0.5	0.0	0	21.5	0.007
MP-A (Venting 0.5" DIA. Hole)									
INITIAL	1331	1331	0	0.4	0.5	0.0	0	21.0	1.057
FINAL	1332	1333		30	1	0.0	0	21.1	

Table 6
Three Volume Purge Summary - June 2016
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Weather: 77°F/Sunny _____ Barometric Pressure: 29.93 inches _____

Sample Point ⁽¹⁾	Start Time ⁽²⁾	Stop Time ⁽²⁾	Vacuum (inches of water)	Flow (L/m)	Purge Duration (minutes)	Methane ⁽³⁾ (%)	Carbon Dioxide (%)	Oxygen (%)	Approximate Volume Purged (ft ³)
VE-C (Venting prior to sampling, Capped after sampling)									
INITIAL	1318	1318	0	0.4	1	0.0	5.1	16.1	4.214
FINAL	1318	1323		30	4	0.0	0	20.3	
VE-F (Venting prior to sampling, Capped after sampling)									
INITIAL	1337	1338	0	0.4	0.5	0.0	0	21.1	4.207
FINAL	1338	1343		30	4	0.0	0	20.8	
SG-82S⁽⁴⁾, 7/11/2016									
INITIAL	1120	1121	---	10	0.5	5.5	19.6	0.1	0.525
FINAL	1122	1123		10	1	8.9	9.5	0.1	
SG-82M⁽⁴⁾, 7/11/2016									
INITIAL	1131	1132	---	10	0.5	1.4	6.5	0.4	0.525
FINAL	1133	1134		10	1	18.2	8.6	1.02	
SG-82D⁽⁴⁾, 7/11/2016									
INITIAL	1137	1138	---	10	0.5	10.8	18.1	0.2	0.525
FINAL	1140	1141		10	1	2.0	21.8	0.1	
SG-82S⁽⁴⁾, 8/23/2016									
INITIAL	1258	1258	---	0.4	0.5	1.4	33.7	0.2	2.107
FINAL	1308	1310		30	2	4.4	28.1	0	
SG-82M⁽⁴⁾, 8/23/2016									
INITIAL	1259	1259	---	0.4	0.5	0	29	0.3	2.107
FINAL	1306	1308		30	2	0	29.7	0	
SG-82D⁽⁴⁾, 8/23/2016									
INITIAL	1300	1300	---	0.4	0.5	0.6	3.5	15.6	2.107
FINAL	1302	1306		30	2	3.3	35.6	0	

Notes:

1. All results were collected on June 17, 2016 unless noted otherwise.
2. Initial methane concentrations are not recorded for monitoring locations constructed of 0.25-inch diameter polyethylene tubing because methane concentrations fluctuate too quickly during purging with Landtec GEM™ 2000 due to the small volume associated with the construction of the monitoring point
3. The lower explosive limit for methane is 5%.
4. SG-82S, SG-82M, and SG-82D were not sampled as access to these locations was inhibited by private property. These locations were resampled on July 11, 2016 and August 22, 2016.

% - percent

ft³ - cubic feet

L/m - liters per minute

Table 7
Indoor Air Monitoring Results
FGGM93 Manor View Dump Site
Fort George G. Meade, Maryland



Site Specific Volatile Organic Compound Analyte List	Sample Location:		MV-13	MV-14
	Sample ID:		FGGM93-MV-13 (061716)	FGGM93-MV-14 (061716)
	Date:		6/17/2016	6/17/2016
	Remedial Goal ¹	Unit		
1,1-Dichloroethene	---	ug/m3	< 0.8 U	< 0.8 U
cis-1,2-Dichloroethene	---	ug/m3	< 0.8 U	< 0.8 U
Tetrachloroethene	---	ug/m3	< 1 U	< 1 U
trans-1,2-Dichloroethene	---	ug/m3	< 0.8 U	< 0.8 U
Trichloroethene	1.0	ug/m3	5.7	< 1 U
Vinyl chloride	---	ug/m3	< 0.5 U	< 0.5 U

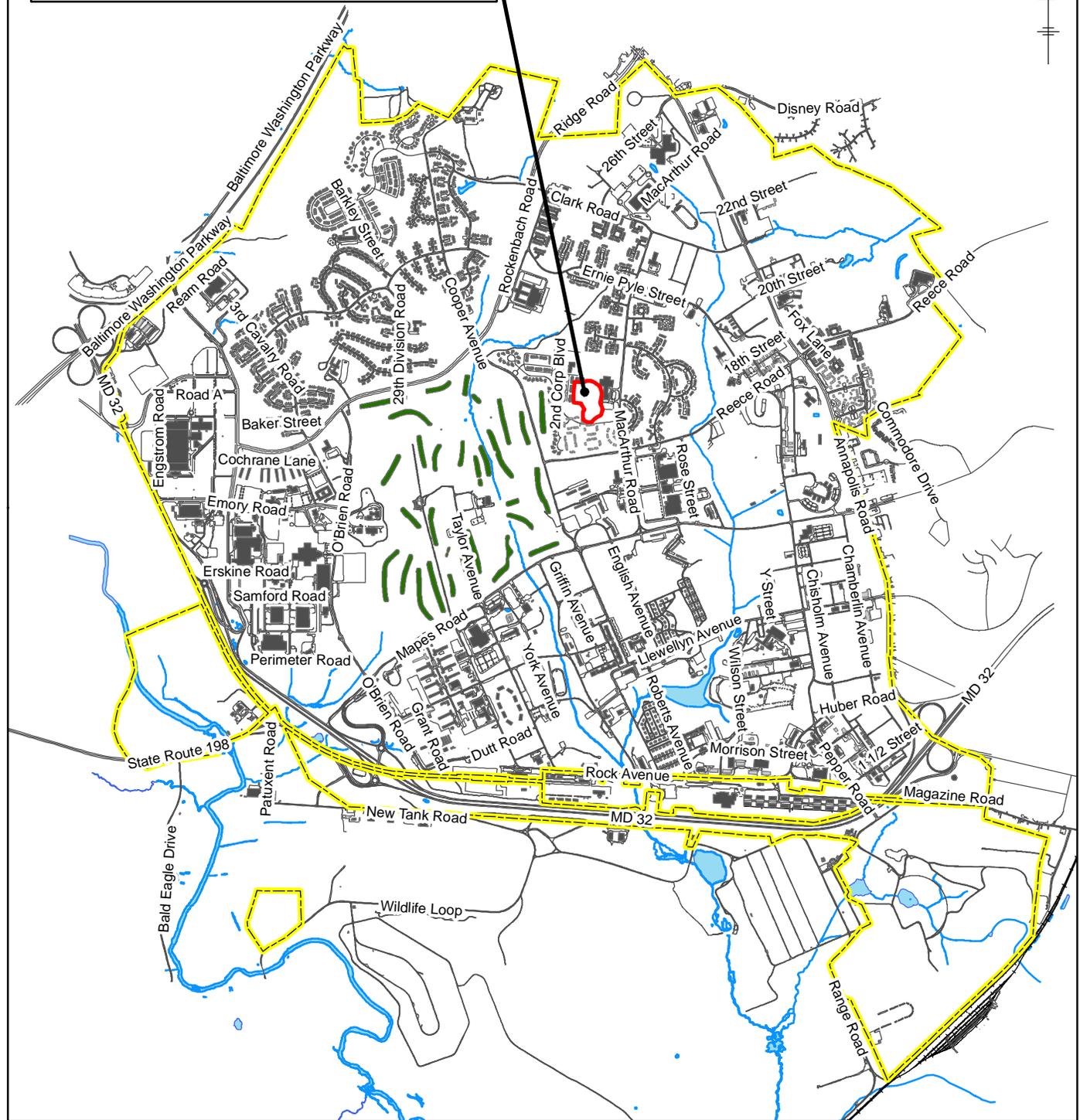
Notes:

1. Remedial Goals presented were established in the Record of Decision (U.S. Army 2014).
 2. Values exceeding the remedial goal are boldfaced and highlighted yellow. Detected values are bolded.
- µg/m³ - micrograms per cubic meter
 J - Indicates an estimated result. Result is less than laboratory reporting limits.
 U - Indicates that the analyte was analyzed but not detected above the detection limit.

FIGURES

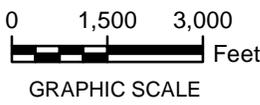


MANOR VIEW DUMP SITE



LEGEND:

- MANOR VIEW SITE BOUNDARY
- INSTALLATION BOUNDARY



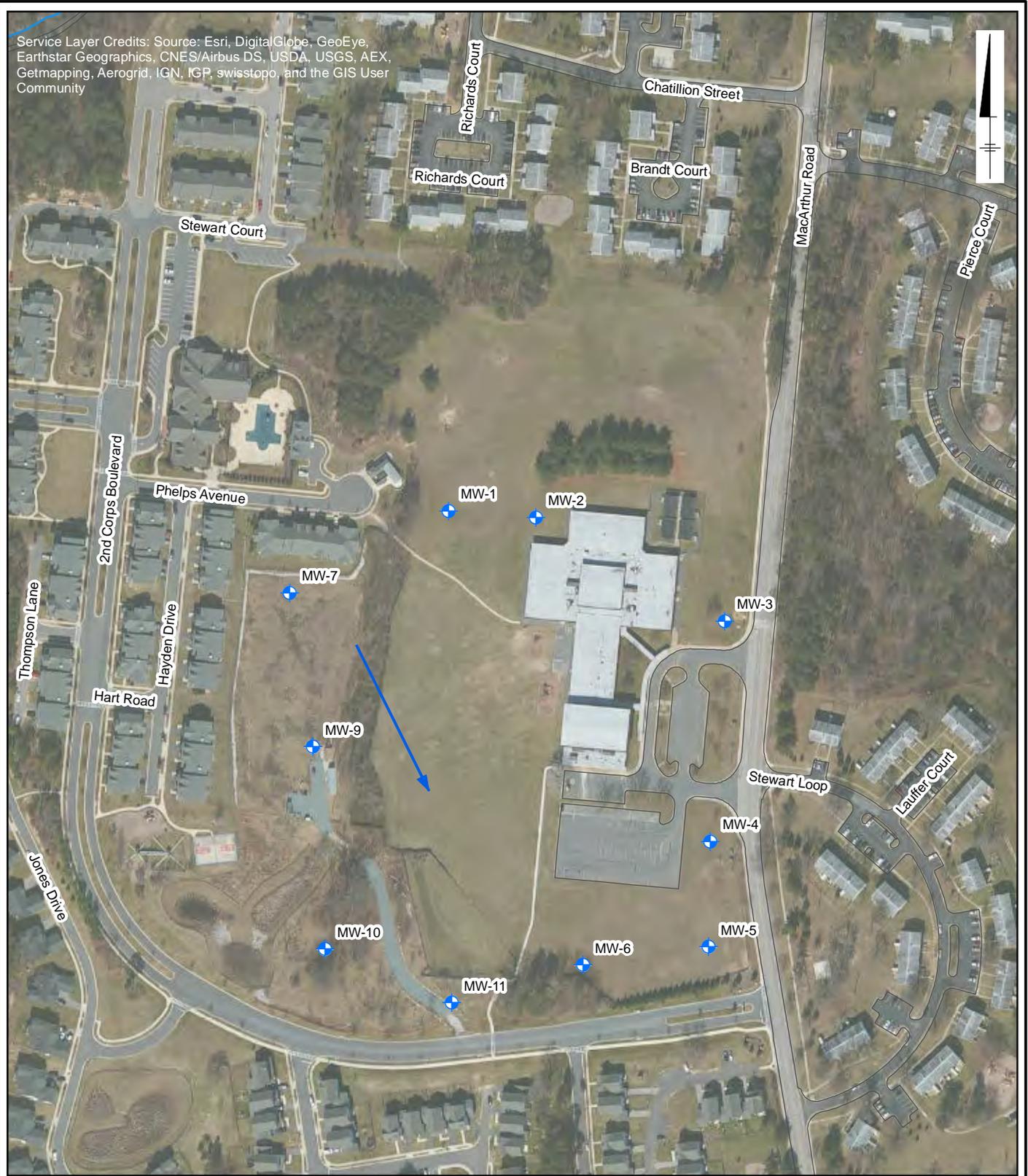
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

MANOR VIEW DUMP SITE SITE LOCATION MAP



FIGURE
1

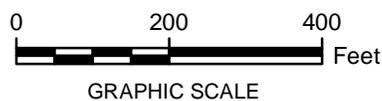
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGR, swisstopo, and the GIS User Community



CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
 FORT MEADE
 Document Path: Z:\GIS\PROJECTS\ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FCGM 932015105_MW_Locs_2015.mxd

LEGEND

-  MONITORING WELL
-  GROUNDWATER FLOW DIRECTION

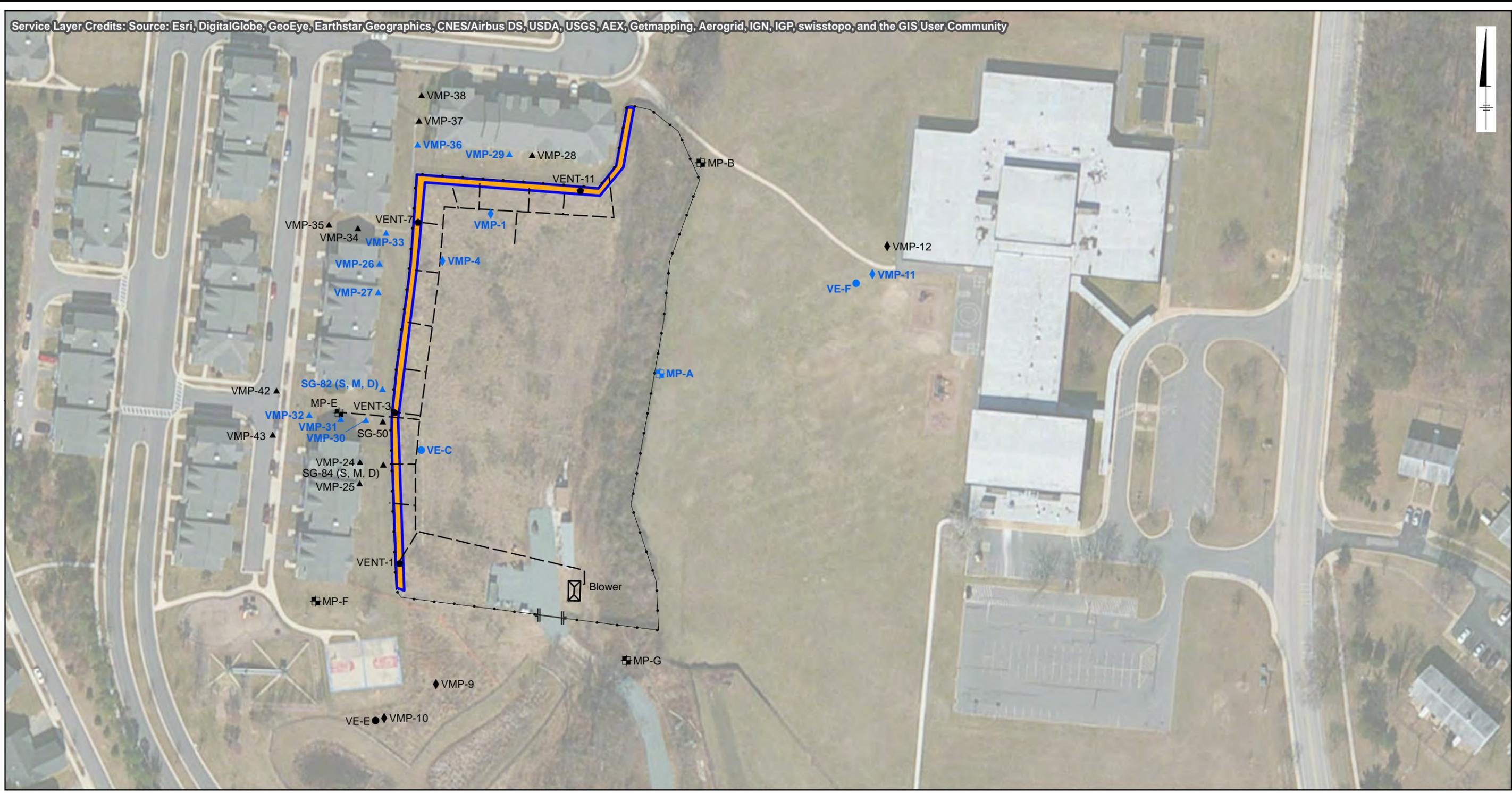


FORT GEORGE G. MEADE, MARYLAND
 MANOR VIEW DUMP SITE

MONITORING WELL LOCATIONS

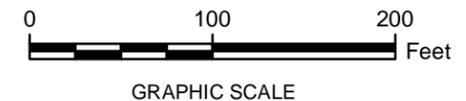


FIGURE
2



LEGEND:

- Monitoring Point
- Trench Well
- Deep Vapor Monitoring Point
- Shallow Vapor Monitoring Point
- Former Vapor Extraction Well
- Perimeter Fence
- Gate
- Subsurface Piping Network Associated with the Dormant Soil Vapor Extraction System (2012 - Present)
- Capped Passive Gas Collection Trench



FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

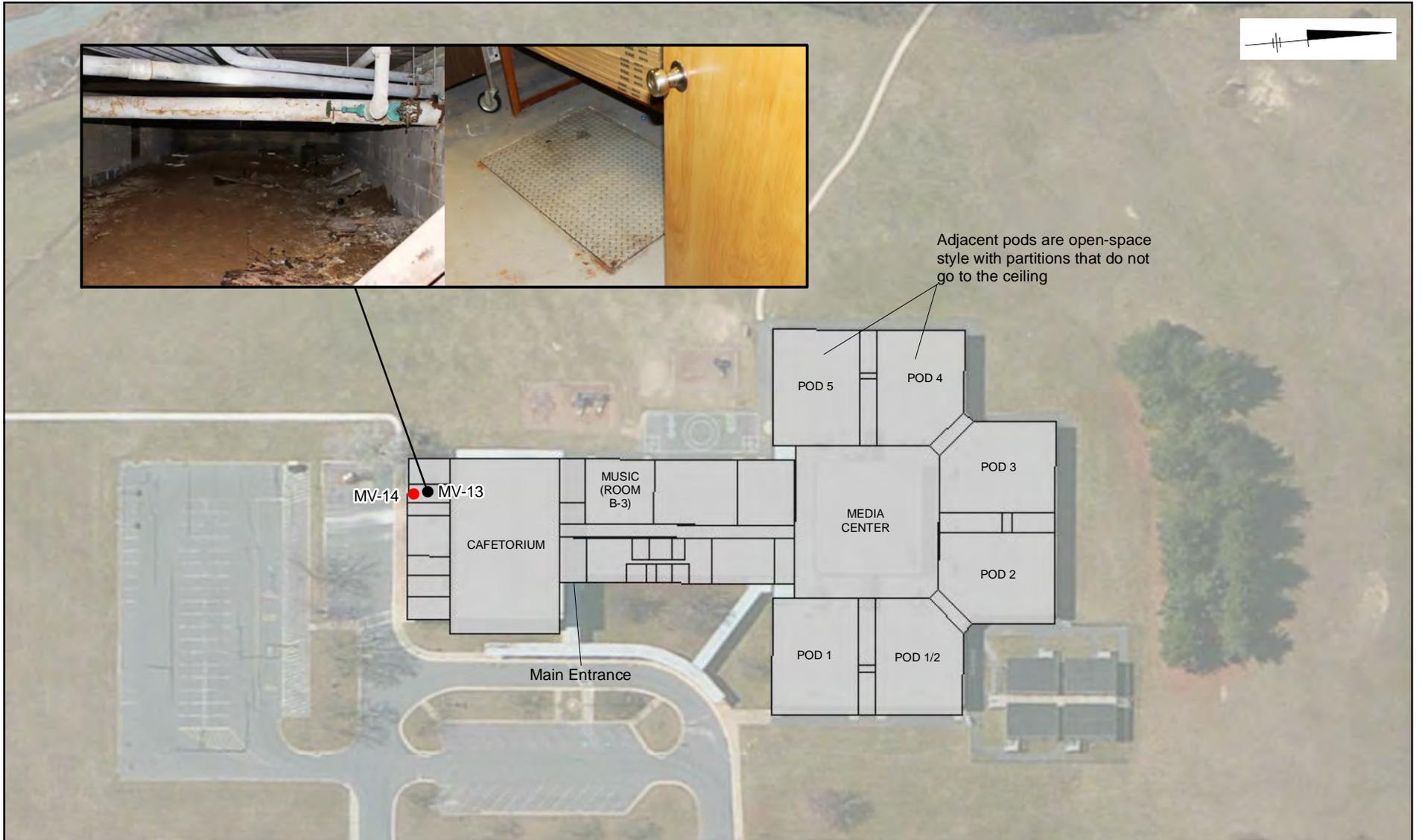
SOIL GAS MONITORING LOCATIONS



FIGURE
3

Notes:
 1. The soil vapor extraction system was shutdown on August 17, 2012. The system remains off but in an operational status.
 2. Monitoring locations included in the long-term monitoring program are displayed as a blue symbol with blue labels.

CITY: MPLS_DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_ViewRemedial Design for FGGM 93201506_SiteMap_SoilGas_2015.mxd

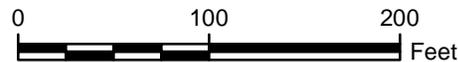


LEGEND:

- Indoor Air Sample
- Additional Indoor Air Monitoring Locations, sampled per regulatory comments on the Remedial Action Completion Report

NOTE:

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



GRAPHIC SCALE

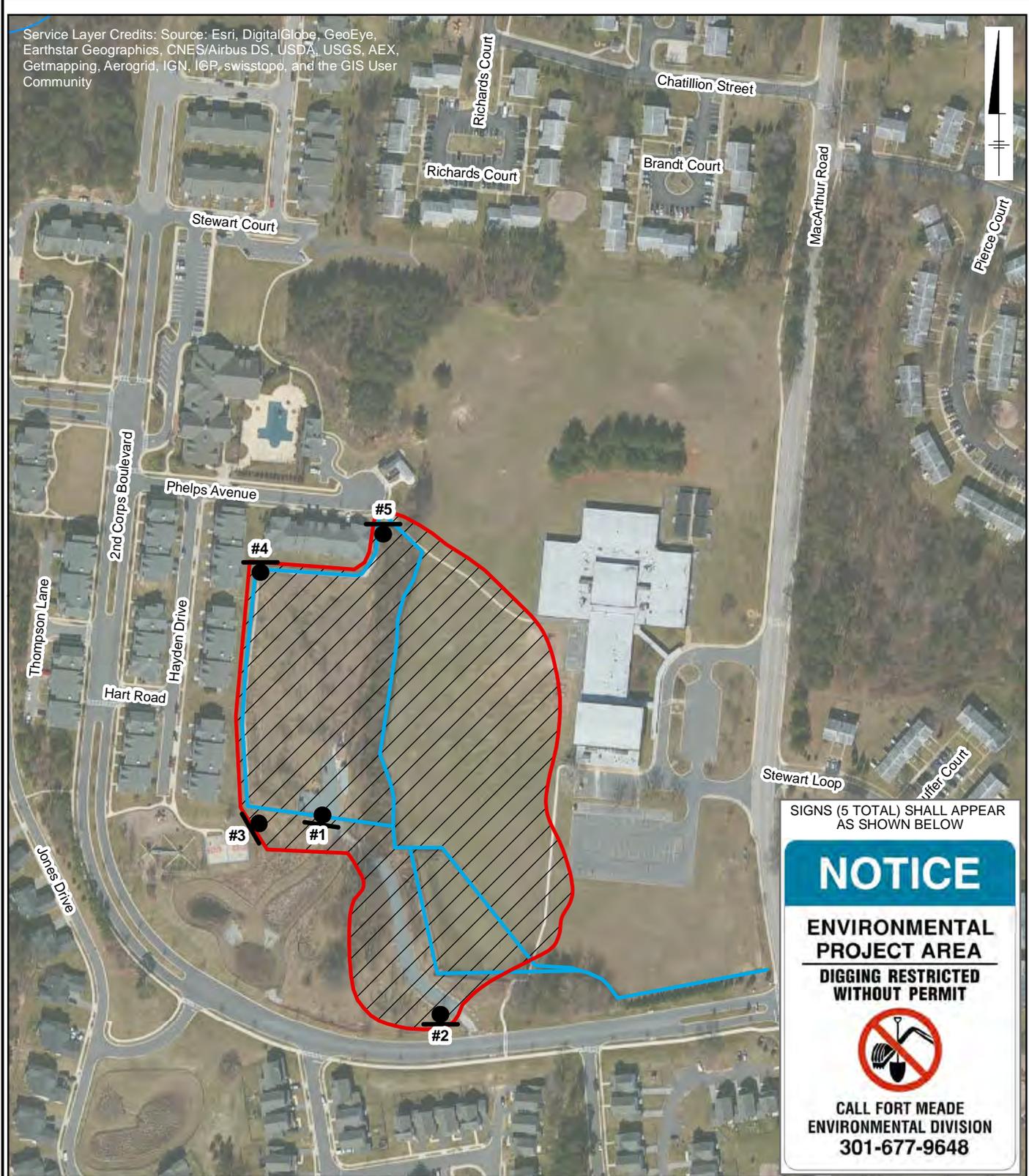
FORT GEORGE G. MEADE, MARYLAND
 MANOR VIEW DUMP SITE

INDOOR AIR SAMPLE LOCATIONS



FIGURE
4

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



SIGNS (5 TOTAL) SHALL APPEAR AS SHOWN BELOW

NOTICE

ENVIRONMENTAL PROJECT AREA

DIGGING RESTRICTED WITHOUT PERMIT



CALL FORT MEADE ENVIRONMENTAL DIVISION 301-677-9648

CITY: MPLS_DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GIS\PROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FCGM 932015\08_LandUse_2015.mxd

LEGEND:

-  SIGN LOCATIONS
-  CURRENT ENGINEERING CONTROL / FENCE
-  SITE BOUNDARY
-  EXTENT OF LAND USE CONTROLS

0 200 400



GRAPHIC SCALE Feet

FORT GEORGE G. MEADE, MARYLAND
MANORS VIEW DUMP SITE

EXTENT OF LAND USE CONTROLS



FIGURE

5

ATTACHMENT 1

Sampling Field Logs



ATTACHMENT 2

Annual Inspection Checklist



Annual Inspection Checklist
 FGM 93 Manor View Dump Site
 Fort George G. Meade, Maryland

Inspector: J. Butkowsky
 Date/Time: 8/22/16

Weather/Temperature (°F): 85°F Sunny
 Ground Conditions: Damp

Land Use

Inspector walked over entire site. Yes No

Reason why not?

Signs appropriately posted:

Sign Number	Location	In-place (Y/N)	Legible (Y/N)	Corrective Action Taken
1	Entrance Gate	Y	Y	
2	Access Road	Y	Y	
3	Basketball Court	Y	Y	
4	NW corner of fenced area	Y	Y	
5	Northernmost Extent of fence	Y	Y	

Are any visual signs of disturbance or construction activities noted during inspection? If yes, please describe in detail below: Yes No

Is the fence separating the school yard from the western portion of the Site intact? Describe the condition of the fence and any necessary repairs below: Yes, one small section is sagging but remains impassable

Are there any visual signs that indicate the designated use of the crawl space has changed. If yes, please describe in detail below: Yes No

Annual Inspection Checklist
 FGGM 93 Manor View Dump Site
 Fort George G. Meade, Maryland

Soil Cover

Check for any signs of the following conditions - note whether corrective action was taken:

Condition	Yes/No	Corrective Action Taken	Designation of Location Shown on Attached Map
Intrusive Activities	N	NA	NA
Construction Activities	N	NA	NA
Signs of Settling, Subsidence, or Erosion	N	NA	NA
Changes in Land Use	N	NA	NA
Other	—	—	—

Are there any signs of stressed vegetation of areas with no vegetation? If yes, please note the area and provide additional detail below: Yes No

Are there any signs of burrowing animals in the soil cover? If yes, please note the area and provide additional detail below: Yes No

Several ground hog tunnels typically along the fence line and in the dense vegetative area in the middle of the site

Are there any surface disturbances from vehicles or other physical actions? If yes, please note the area and provide additional detail below: Yes No

Is there any precipitation ponding on the soil cover? If yes, please note the area and provide additional detail below: Yes No

Small amount in Northeast corner, likely weather related

Are there any gullies, washouts, or other disturbances caused by water erosion? If yes, please note the area and provide additional detail below: Yes No

Is the subsurface soil vapor extraction system operational? If no, please note the operational issues encountered: Yes No

Is any new construction currently being conducted on the Site and/or planned to begin in the next 12 months: Yes No

Per Army, construction planned for MV elementary. No signs of construction noted at site

Annual Inspection Checklist
 FGGM 93 Manor View Dump Site
 Fort George G. Meade, Maryland

Soil Cover (continued)

When was the last mowing/vegetation clearing event conducted: 8/22/16

When is the next annual mowing/vegetation clearing event scheduled: Summer 2017

Describe the soil cover with respect to vegetation growth (i.e., grass height, amount of vegetation along the trench, etc.): last high grass & some large vegetation along fence line between school and western half of site

Does the existing vegetation growth necessitate an additional mowing/vegetation clearing event before the next annual event: Yes No

Monitoring Well Inspection JUNE 2016

Monitoring Well	Visible	Accessible	Undamaged	Secured	Comments
MW-1	Y	Y	Y	Y	
MW-2	Y	Y	Y	Y	
MW-3	Y	Y	Y	Y	
MW-4	Y	Y	Y	X	
MW-5	Y	Y	Y	Y	
MW-6	Y	Y	Y	Y	
MW-7	Y	Y	Y	Y	
MW-9	Y	Y	Y	Y	
MW-10	Y	Y	Y	Y	
MW-11	Y	Y	Y	Y	

* ALL WELLS IN GOOD CONDITION*

Soil Gas Monitoring Point Inspection

Monitoring Well	Visible	Accessible	Undamaged	Secured	Comments
VMP-1	✓	✓	✓	✓	
VMP-4	✓	✓	✓	✓	
VMP-11	✓	✓	✓	✓	
VMP-12	✓	✓	✓	✓	
VMP-26	✓	✓	✓	✓	MISSING BOLTS
VMP-27	✓	✓	✓	✓	
VMP-29	✓	✓	✓	✓	
VMP-30	✓	✓	✓	✓	
VMP-31	✓	✓	✓	✓	
VMP-32	✓	✓	✓	✓	MISSING BOLTS
VMP-33	✓	✓	✓	✓	
MP-A	✓	✓	✓	✓	
VE-C	✓	✓	✓	✓	
VE-E	✓	✓	✓	✓	MISSING BOLTS
SG-82 (S, M, D)	✓	* ✓	✓	✓	

* COVERED BY TRAMPOLINE JUNE 2016, REMOVED IN JULY 2016.

Methane Monitor Inspection Summary

FGGM 93 Manor View Dump Site

Fort George G. Meade, Maryland

Number	Location Description	Inspection Date	Condition of Monitor ¹	Green Light On (Y/N)	Buzzer Sounds When Test Button Pressed (Y/N)	Replacement Required (Y/N)	Comments
1	Crawl Space at Manor View Elementary School	6/16/16	Good	Y	Y	N	
2	4964 Hartell Court	7/11/16	Good		Y	N	
3	4963 Hartell Court	7/11/16	Good		Y	N	
4	4962 Hartel Court	7/11/16	Good		Y	N	
5	4961 Hartel Court	7/11/16					Detector Missing
6	4960 Hartel Court	7/11/16	Good		Y	N	
7	4959 Hayden Drive	7/11/16	Good		Y	N	
8	4958 Hayden Drive	7/11/16	Good		Y	N	
9	4957 Hayden Drive	7/11/16	Good		Y	N	
10	4956 Hayden Drive	7/11/16	Good		Y	N	
11	4955 Hayden Drive	7/11/16	Good		Y	N	
12	4954 Hayden Drive	7/11/16	—		—	—	Detector Missing
13	4953 Hayden Drive	7/11/16	—		—	—	Detector Missing
14	4952 Hayden Drive	7/11/16	Good		Y	N	
15	4951 Hayden Drive	7/11/16	Good		Y	N	
16	4950 Hayden Drive	7/11/16	—		—	—	Unable to gain access
17	4949 Hayden Drive	7/11/16	Good		Y	N	
18	4948 Hayden Drive	7/11/16	Good		Y	N	Replaced dead Battery
19	4947 Hayden Drive	7/11/16	Good		Y	N	
20	4946 Hyden Drive	7/11/16	Good		Y	N	
21	4945 Hayden Drive	7/11/16	Good		Y	N	

Notes:

1. Condition of monitor should be evaluated as Good, Fair, or Poor.

Y - Yes

N - No

Methane Monitor Inspection Summary
 FGGM 93 Manor View Dump Site
 Fort George G. Meade, Maryland

Number	Location Description	Inspection Date	Condition of Monitor ¹	Green Light On (Y/N)	Buzzer Sounds When Test Button Pressed (Y/N)	Replacement Required (Y/N)	Comments
1	Crawl Space at Manor View Elementary School						
2	4964 Hartell Court						
3	4963 Hartell Court						
4	4962 Hartel Court						
5	4961 Hartel Court	8/22/16	Good	Y	Y	N	
6	4960 Hartel Court						
7	4959 Hayden Drive						
8	5958 Hayden Drive						
9	4957 Hayden Drive						
10	4956 Hayden Drive						
11	4955 Hayden Drive						
12	4954 Hayden Drive	8/22/16	Good	Y	Y	N	
13	4953 Hayden Drive	8/22/16	Good	Y	Y	N	
14	4952 Hayden Drive						
15	4951 Hayden Drive						
16	4950 Hayden Drive	8/22/16	Good	Y	Y	N	
17	4949 Hayden Drive						
18	4948 Hayden Drive						
19	4947 Hayden Drive						
20	4946 Hyden Drive						
21	4945 Hayden Drive						

Notes:

1. Condition of monitor should be evaluated as Good, Fair, or Poor.

Y - Yes

N - No

ATTACHMENT 3

Analytical Reports
(Provided on CD)



ATTACHMENT 4

Data Validation Reports
(Provided on CD)



ATTACHMENT 5

Safety Data Sheets



Safety Data Sheet

Cleaner and Conditioner

Section 1

Product Description

Product Name: Cleaner and Conditioner

Recommended Use: Multi-Purpose Cleaner and Floor Restorer

Synonyms: None

Supplier Details:

Ultra Chem Labs Corp

4581 Brickell Privado St

Ontario, CA 91761 USA

1-909-605-1640

Emergency Telephone: 1-800-535-5053

Section 2

Hazard Identification

OSHA/HCS status :

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture: Not Classified

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements:

Prevention : Not applicable

Response : Not applicable

Storage : Not applicable

Disposal : Not applicable

GHS label elements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 3

Composition/Information on Ingredients

Chemical Name	CAS-No	Weight %	Trade Secret
C9-C11 Linear Primary alcohol Ethoxylate	68439-46-3	1-5	
Propylene Glycol	57-55-6	1-5	

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Safety Data Sheet

Section 4

First Aid Measures

Description of necessary first aid measures

Eye Contact:

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin Contact:

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion:

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most Important Symptoms/Effects, Acute And Delayed

Potential Acute Health Effects

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Eye contact : No known significant effects or critical hazards.

Over-Exposure Signs/Symptoms

Skin contact: No specific data.

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact: No specific data.

Indication Of Immediate Medical Attention And Special Treatment Needed, If Necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

Section 5

Fire-fighting measures

Extinguishing Media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known

Specific hazards arising from the chemical: In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products:

Decomposition products may include the following materials:

carbon dioxide

carbon monoxide

metal oxide/oxides

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Safety Data Sheet

Section 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders:

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up:

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7 Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 8 Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Safety Data Sheet

Section 8 Exposure controls/personal protection

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.

Skin protection

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical-resistant gloves.

Body protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection:

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Safety Data Sheet

Section 9

Physical and chemical properties

Appearance

Physical state: Liquid

Color: Yellow

Odor: Lemon Fragrance added

Odor threshold: Not available

pH: 8.0±0.5

Melting Point: 60 °C / 140 °F

Boiling point: >100°C

Flash point: 93°C

Evaporation rate: 0.22

Flammability (solid, gas): Not available

Lower and upper explosive: Not available

(flammable) limits

Vapor pressure: 1.7 mmHg

Vapor density: 4.1 [Air = 1]

Specific gravity: 1.02 + 0.01 g/cm³

Solubility: 100% in water

Partition coefficient: n-octanol/water: Not available

Auto-ignition temperature: Not available

Viscosity: Not available

VOC content: 0%

VOCs are calculated following the requirements under 40 CFR, Part 59, Subpart C for Consumer Products and Subpart D for Architectural Coatings.

Section 10

Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible materials: Strong oxidizing agents, strong acids such as bleach

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11

Toxicological information

Information on toxicological effects

Acute toxicity

No information available

Irritation/Corrosion

No information available

Sensitization

No information available

Mutagenicity

No information available

Safety Data Sheet

Section 11

Toxicological information

Carcinogenicity

Contains no carcinogenic materials.

Reproductive toxicity

No information available

Teratogenicity

No information available

Specific target organ toxicity (single exposure)

No information available

Specific target organ toxicity (repeated exposure)

No information available

Aspiration hazard

No information available

Information on the likely routes of exposure: No information available

Potential acute health effects

Eye contact : May cause irritation

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : May cause irritation to mouth and throat

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact: No specific data.

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure:

Potential immediate effects: Not available

Potential delayed effects : Not available

Long term exposure

Potential immediate effects: Not available

Potential delayed effects : Not available

Safety Data Sheet

Section 11

Toxicological information

Potential chronic health effects

Not available

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12

Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available

Other adverse effects : No known significant effects or critical hazards.

Section 13

Disposal considerations

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Safety Data Sheet

Section 14

Transport information

DOT Classification: Not regulated

Additional Information: Keep from freezing

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15

Regulatory information

U.S. Federal regulations :

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air

Pollutants (HAPs)

SARA 311/312

Classification : Not applicable

Composition/information on ingredients: No products were found.

State regulations:

California Proposition 65

This product contains no Proposition 65 chemicals:

International regulations

Canada inventory : All components are listed or exempted.

CERCLA

This material, as supplied, contains no substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Clean Water Act

This product contains no substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Section 16

Other information

Hazardous Material Information System (U.S.A.)

Health		1
Flammability		0
Physical hazards		0

Safety Data Sheet

Section 16

Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (NFPA)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Prepared By: Ultra Chem Labs Corp
4581 Brickell Privado St
Ontario, CA 91761
909-605-1640

Issuing Date: 03/25/15
Revision Date:
Revision Note: New Issue

Section 16

Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

Safety Data Sheet

Neutralizer (Floor Care)

Section 1

Product Description

Product Name: Neutralizer (Floor Care)

Recommended Use: Natural food grade acidic rinse and residue remover

Synonyms: None

Supplier Details:

Ultra Chem Labs Corp

4581 Brickell Privado St

Ontario, CA 91761 USA

1-909-605-1640

Emergency Telephone: 1-800-535-5053

Section 2

Hazard Identification

OSHA/HCS status :

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture: Not Classified

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements:

Prevention : Not applicable

Response : Not applicable

Storage : Not applicable

Disposal : Not applicable

GHS label elements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 3

Composition/Information on Ingredients

Chemical Name	CAS-No	Weight %	Trade Secret
Citric acid (food grade)	77-92-9	15-20	
Malic acid (food grade)	6915-15-7	15-20	

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Safety Data Sheet

Section 4

First Aid Measures

Description of necessary first aid measures

Eye Contact:

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin Contact:

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion:

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most Important Symptoms/Effects, Acute And Delayed

Potential Acute Health Effects

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Eye contact : No known significant effects or critical hazards.

Over-Exposure Signs/Symptoms

Skin contact: No specific data.

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact: No specific data.

Indication Of Immediate Medical Attention And Special Treatment Needed, If Necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

Section 5

Fire-fighting measures

Extinguishing Media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known

Specific hazards arising from the chemical: In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products:

Decomposition products may include the following materials:

carbon dioxide

carbon monoxide

metal oxide/oxides

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Safety Data Sheet

Section 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders:

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up:

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7 Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 8 Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Safety Data Sheet

Section 8 Exposure controls/personal protection

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.

Skin protection

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical-resistant gloves.

Body protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection:

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Safety Data Sheet

Section 9

Physical and chemical properties

Appearance

Physical state: Liquid

Color: Light Green

Odor: No Fragrance added

Odor threshold: Not available

pH: 3.5±0.5

Melting Point: 60 °C / 140 °F

Boiling point: >100°C

Flash point: 172.5°C

Evaporation rate: 0.22

Flammability (solid, gas): Not available

Lower and upper explosive: Not available

(flammable) limits

Vapor pressure: 1.7 mmHg

Vapor density: 4.1 [Air = 1]

Specific gravity: 1.3 g/cm³

Solubility: 100% in water

Partition coefficient: n-octanol/water: Not available

Auto-ignition temperature: Not available

Viscosity: Not available

VOC content: 0%

VOCs are calculated following the requirements under 40 CFR, Part 59, Subpart C for Consumer Products and Subpart D for Architectural Coatings.

Section 10

Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible materials: Strong oxidizing agents, strong acids such as bleach

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11

Toxicological information

Information on toxicological effects

Acute toxicity

No information available

Irritation/Corrosion

No information available

Sensitization

No information available

Mutagenicity

No information available

Safety Data Sheet

Section 11

Toxicological information

Carcinogenicity

Contains no carcinogenic materials.

Reproductive toxicity

No information available

Teratogenicity

No information available

Specific target organ toxicity (single exposure)

No information available

Specific target organ toxicity (repeated exposure)

No information available

Aspiration hazard

No information available

Information on the likely routes of exposure: No information available

Potential acute health effects

Eye contact : May cause irritation

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : May cause irritation to mouth and throat

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact: No specific data.

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure:

Potential immediate effects: Not available

Potential delayed effects : Not available

Long term exposure

Potential immediate effects: Not available

Potential delayed effects : Not available

Safety Data Sheet

Section 11

Toxicological information

Potential chronic health effects

Not available

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12

Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available

Other adverse effects : No known significant effects or critical hazards.

Section 13

Disposal considerations

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Safety Data Sheet

Section 14

Transport information

DOT Classification: Not regulated

Additional Information: Keep from freezing

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15

Regulatory information

U.S. Federal regulations :

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air

Pollutants (HAPs)

SARA 311/312

Classification : Not applicable

Composition/information on ingredients: No products were found.

State regulations:

California Proposition 65

This product contains no Proposition 65 chemicals:

International regulations

Canada inventory : All components are listed or exempted.

CERCLA

This material, as supplied, contains no substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Clean Water Act

This product contains no substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Section 16

Other information

Hazardous Material Information System (U.S.A.)

Health		1
Flammability		0
Physical hazards		0

Safety Data Sheet

Section 16

Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (NFPA)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Prepared By: Ultra Chem Labs Corp
4581 Brickell Privado St
Ontario, CA 91761
909-605-1640

Issuing Date: 03/25/15
Revision Date:
Revision Note: New Issue

Section 16

Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

Safety Data Sheet

Q-128

Section 1

Product Description

Product Name: Q-128

Recommended Use: Hospital grade disinfectant, odor eliminator and cleaner

Synonyms: None

Supplier Details:

Ultra Chem Labs Corp

4581 Brickell Privado St

Ontario, CA 91761 USA

1-909-605-1640

Emergency Telephone: 1-800-535-5053

Section 2

Hazard Identification

OSHA/HCS status :

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture: Acute toxicity (Oral) : Category 4 Acute toxicity (Dermal) : Category 4

Skin corrosion : Category 1A Serious eye damage : Category 1

GHS label elements:

Hazard pictograms



Signal word : Danger

Hazard statements : Harmful if swallowed or in contact with skin.

Causes severe skin burns and eye damage.

Precautionary statements:

Prevention : Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection

Response : IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim

to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse.

Storage : Store locked up

Disposal : Dispose of contents/ container to an approved waste disposal plant.

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Hazards not otherwise classified: Not known

Safety Data Sheet

Section 3 Composition/Information on Ingredients

Chemical Name	CAS-No	Weight %	Trade Secret
n-Alkyl dimethyl benzyl ammonium chlorides (BTC 2125 M)(1839-83)	68391-01-5	1-5	
n-Alkyl dimethyl ethylbenzyl ammonium chlorides (BTC 2125)(1839-83)	68956-79-6	1-5	
Sodium carbonate	497-19-8	0-5	
Tetrasodium salt of ethylene diaminetetracetic acid	64-02-8	1-5	
C9-C11 Linear primary alcohol ethoxyate	68439-46-3	1-5	

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 4 First Aid Measures

Description of necessary first aid measures

Eye Contact:

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do.

Continue rinsing. Get medical attention immediately.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects

persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin Contact:

Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Ingestion:

Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately.

Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Safety Data Sheet

Section 5

Fire-fighting measures

Extinguishing Media

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical:

Not flammable or combustible.

Hazardous thermal decomposition products:

Decomposition products may include the following materials:

Carbon oxides

nitrogen oxides (NO_x)

Sulfur oxides

Oxides of phosphorus

Special protective actions for fire-fighters: Use personal protective equipment.

Special protective equipment for fire-fighters: Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Safety Data Sheet

Section 6

Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.

For emergency responders:

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up:

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7

Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities:

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Safety Data Sheet

Section 8 Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear antistatic protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection:

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Safety Data Sheet

Section 9

Physical and chemical properties

Appearance

Physical state: Liquid

Color: Clear Green

Odor: N/A

Odor threshold: Not available

pH: 8.3

Melting Point: 60 °C / 140 °F

Boiling point: 85 °C

Flash point: 101 °C

Evaporation rate: 1.7

Flammability (solid, gas): Not available

Lower and upper explosive (flammable) limits: Not available

Vapor pressure: 5.87 mmHg

Vapor density: 1.5 [Air = 1]

Specific gravity: 1.04 g/cm³

Solubility: 100% in water

Partition coefficient: n-octanol/water: Not available

Auto-ignition temperature: Not available

Viscosity: Not available

VOC content: Not available.

Section 10

Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: None known

Incompatible materials: Acid

Hazardous decomposition products: Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulfur oxides Oxides of phosphorus

Section 11

Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose
n-Alkyl dimethyl ethylbenzyl ammonium chlorides (BTC 2125)(1839-83)	LD50 Oral	Rat	250 mg/kg
Sodium carbonate	LD50 Oral LD50 Dermal	Rat Rabbit	2800 mg/kg 1111 mg/kg
C9-C11 Linear primary alcohol ethoxyate	LD50 Oral	Rat	1400 mg/kg
Tetrasodium salt of ethylene diaminetetracetic acid	LD50 Oral	Rat	25200 mg/kg

Safety Data Sheet

Section 11

Toxicological information

Irritation/Corrosion

No information available

Sensitization

No information available

Mutagenicity

No information available

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. OSHA No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No information available

Teratogenicity

No information available

Specific target organ toxicity (single exposure)

No information available

Specific target organ toxicity (repeated exposure)

No information available

Aspiration hazard

No information available

Information on the likely routes of exposure: No information available

Potential acute health effects

Eye contact : May cause irritation

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : May cause irritation to mouth and throat

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact: No specific data.

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure:

Potential immediate effects: Not available

Potential delayed effects : Not available

Long term exposure

Potential immediate effects: Not available

Potential delayed effects : Not available

Safety Data Sheet

Section 11

Toxicological information

Potential chronic health effects

Not available

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12

Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Tetrasodium salt of ethylene diaminetetracetic acid	Acute LC50 35000 ul/L Fresh water	Daphnia - Daphnia magna Fish - Menidia beryllina	48 hours 96 hours
Sodium Carbonate	Acute LC50 565 mg/l	Daphnia magna Fish	96 hours
C9-C11 Linear primary alcohol ethoxyate	Acute LC50 8.5 mg/l	Fish	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available

Other adverse effects : No known significant effects or critical hazards.

Safety Data Sheet

Section 13

Disposal considerations

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14

Transport information

DOT Classification: Not regulated

Additional Information: Keep from freezing

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15

Regulatory information

U.S. Federal regulations :

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air

Pollutants (HAPs)

SARA 311/312

Classification : Immediate (acute) health hazard

California Prop 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Safety Data Sheet

Section 15

Regulatory information

State regulations:

California Proposition 65

International regulations

Canada inventory : All components are listed or exempted.

CERCLA

This material, as supplied, contains no substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Clean Water Act

This product contains no substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Section 16

Other information

Hazardous Material Information System (U.S.A.)

Health		3
Flammability		1
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (NFPA)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Safety Data Sheet

Section 16

Other information

Prepared By: Ultra Chem Labs Corp
4581 Brickell Privado St
Ontario, CA 91761
909-605-1640

Issuing Date: 03/25/15
Revision Date:
Revision Note: New Issue

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

Slam Dunk Plus

Section 1

Product Description

Product Name: Sealer

Recommended Use: High performance environmentally safe/wood seal and finish

Synonyms: None

Supplier Details:

Ultra Chem Labs Corp
4581 Brickell Privado St
Ontario, CA 91761 USA
1-909-605-1640

Emergency Telephone: 1-800-535-5053

Section 2

Hazard Identification

OSHA/HCS status :

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture: Not Classified

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements:

Prevention : Not applicable

Response : Not applicable

Storage : Not applicable

Disposal : Not applicable

GHS label elements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 3

Composition/Information on Ingredients

Chemical Name	CAS-No	Weight %	Trade Secret
Tributoxyethyl Phosphate Plasticiser	78-51-3	1-5	
Propylene Glycol	57-55-6	1-5	

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Safety Data Sheet

Section 4

First Aid Measures

Description of necessary first aid measures

Eye Contact:

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin Contact:

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion:

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most Important Symptoms/Effects, Acute And Delayed

Potential Acute Health Effects

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Eye contact : No known significant effects or critical hazards.

Over-Exposure Signs/Symptoms

Skin contact: No specific data.

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact: No specific data.

Indication Of Immediate Medical Attention And Special Treatment Needed, If Necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed.

The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

Section 5

Fire-fighting measures

Extinguishing Media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known

Specific hazards arising from the chemical: In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products:

Decomposition products may include the following materials:

carbon dioxide

carbon monoxide

metal oxide/oxides

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Safety Data Sheet

Section 6

Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders:

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up:

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7

Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Store in accordance with local regulations.

Conditions for safe storage, including any incompatibilities:

Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled

Section 8

Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

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Safety Data Sheet

Section 8 Exposure controls/personal protection

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.

Skin protection

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical-resistant gloves.

Body protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection:

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Safety Data Sheet

Section 9

Physical and chemical properties

Appearance

Physical state: Liquid

Color: Milky white

Odor: Mild odor

Odor threshold: Not available

pH: 8.5±0.5

Melting Point: 0°C (32°F)

Boiling point: >100°C

Flash point: 92°C

Evaporation rate: 0.22

Flammability (solid, gas): Not available

Lower and upper explosive (flammable) limits: Not available

Vapor pressure: 17 mmHg

Vapor density: <1

Specific gravity: 1.025 + 0.01 g/cm³

Solubility: Not available

Partition coefficient: n-octanol/water: Not available

Auto-ignition temperature: Not available

Viscosity: Not available

VOC content: 0.5%

VOCs are calculated following the requirements under 40 CFR, Part 59, Subpart C for Consumer Products and Subpart D for Architectural Coatings.

Section 10

Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible materials: Strong oxidizing agents, strong acids such as bleach

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11

Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose
Propylene Glycol	LD50 Oral	Rat	22,000 mg/kg
	LD50 Dermal	Rabbit	20,800 mg/kg
Tributoxyethyl Phosphate	LD50 Oral	Rat	5000 mg/kg
Plasticiser	LD50 Dermal	Rabbit	5000 mg/

Safety Data Sheet

Section 11

Toxicological information

Irritation/Corrosion

No information available

Sensitization

No information available

Mutagenicity

No information available

Sensitization

No information available

Mutagenicity

No information available

Teratogenicity

No information available

Specific target organ toxicity (single exposure)

No information available

Specific target organ toxicity (repeated exposure)

No information available

Aspiration hazard

No information available

Information on the likely routes of exposure: No information available

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact: Adverse symptoms may include the following: irritation, redness

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact : Adverse symptoms may include the following: pain or irritation, watering, redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure:

Potential immediate effects: Not available

Potential delayed effects : Not available

Long term exposure

Potential immediate effects: Not available

Potential delayed effects : Not available

Safety Data Sheet

Section 11

Toxicological information

Potential chronic health effects

Not available

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	12735 mg/kg

Section 12

Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Tributoxyethyl Phosphate Plasticiser	Acute EC50 75ppm	Daphnia magna	48 hours
Propylene Glycol	Acute LC50 51,400 mg/l	Fish-Pimephales promelas	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available

Other adverse effects : No known significant effects or critical hazards.

Section 13

Disposal considerations

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Safety Data Sheet

Section 14

Transport information

DOT Classification: Not regulated

Additional Information: Keep from freezing

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15

Regulatory information

U.S. Federal regulations :

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air

Pollutants (HAPs)

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients:

Name	%	Fire Hazard	Sudden Release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Propylene glycol	1-5	No	No	No	Yes	No
Tributoxyethyl phosphate	1-5	No	No	No	Yes	No

State regulations:

California Proposition 65

International regulations

Canada inventory : All components are listed or exempted.

CERCLA

This material, as supplied, contains no substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Clean Water Act

This product contains no substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Section 16

Other information

Hazardous Material Information System (U.S.A.)

Health	1
Flammability	0
Physical hazards	0

Safety Data Sheet

Section 16

Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (NFPA)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Prepared By: Ultra Chem Labs Corp
4581 Brickell Privado St
Ontario, CA 91761
909-605-1640

Issuing Date: 03/27/15
Revision Date:
Revision Note: New Issue

Section 16

Other information

Notice to reader

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Safety Data Sheet

Safety Data Sheet

Super Heavy Duty Degreaser

Section 1

Product Description

Product Name: Super Heavy Duty Degreaser

Recommended Use: Heavy duty three dimensional degreaser and cleaner

Synonyms: None

Supplier Details:

Ultra Chem Labs Corp

4581 Brickell Privado St

Ontario, CA 91761 USA

1-909-605-1640

Emergency Telephone: 1-800-535-5053

Section 2

Hazard Identification

OSHA/HCS status :

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture: Eye irritation - Category 2

Signal word : No signal word

Hazard statements : Causes irritation to skin and eyes

Precautionary statements:

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Wash hands thoroughly after handling.

Response : Not applicable

Storage : Not applicable

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 3

Composition/Information on Ingredients

Chemical Name	CAS-No	Weight %	Trade Secret
MIPA (Monoisopropanolamine)	78-96-6	27	
Benzyl Alcohol	100-51-6	15	
Water	7732-18-5	58	

Section 4

First Aid Measures

Safety Data Sheet

Section 4

First Aid Measures

Description of necessary first aid measures

Eye Contact:

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin Contact:

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion:

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most Important Symptoms/Effects, Acute And Delayed

Potential Acute Health Effects

Inhalation : No known significant effects or critical hazards.

Ingestion : May cause burns to mouth, throat and stomach

Skin contact : May cause irritation

Eye contact : May cause eye damage

Over-Exposure Signs/Symptoms

Skin contact: Adverse symptoms may include the following: pain or irritation redness

Ingestion: Adverse symptoms may include the following: stomach pains

Inhalation: No specific data.

Eye contact: Adverse symptoms may include the following: pain, watering, redness

Indication Of Immediate Medical Attention And Special Treatment Needed, If Necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 5

Fire-fighting measures

Extinguishing Media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media: None known

Specific hazards arising from the chemical: In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products:

Decomposition products may include the following materials:

carbon dioxide

carbon monoxide

metal oxide/oxides

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Safety Data Sheet

Section 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders:

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up:

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7 Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 8 Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

Appropriate engineering controls:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Safety Data Sheet

Section 8 Exposure controls/personal protection

Individual protection measures

Hygiene measures:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.

Skin protection

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical-resistant gloves.

Body protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection:

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Safety Data Sheet

Section 9

Physical and chemical properties

Appearance

Physical state: Liquid

Color: Blue

Odor: No Fragrance added

Odor threshold: Not available

pH: 3.5±0.5

Melting Point: 60 °C / 140 °F

Boiling point: >100°C

Flash point: 172.5°C

Evaporation rate: 0.22

Flammability (solid, gas): Not available

Lower and upper explosive (flammable) limits: Not available

Vapor pressure: 1.7 mmHg

Vapor density: 4.1 [Air = 1]

Specific gravity: 1.3 g/cm³

Solubility: 100% in water

Partition coefficient: n-octanol/water: Not available

Auto-ignition temperature: Not available

Viscosity: Not available

VOC content: 0%

VOCs are calculated following the requirements under 40 CFR, Part 59, Subpart C for Consumer Products and Subpart D for Architectural Coatings.

Section 10

Stability and reactivity

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid: No specific data.

Incompatible materials: Strong oxidizing agents, strong acids such as bleach

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11

Toxicological information

Information on toxicological effects

Acute toxicity

No information available

Irritation/Corrosion

No information available

Sensitization

No information available

Mutagenicity

No information available

Safety Data Sheet

Section 11

Toxicological information

Carcinogenicity

Contains no carcinogenic materials.

Reproductive toxicity

No information available

Teratogenicity

No information available

Specific target organ toxicity (single exposure)

No information available

Specific target organ toxicity (repeated exposure)

No information available

Aspiration hazard

No information available

Information on the likely routes of exposure: No information available

Potential acute health effects

Eye contact : Causes irritation

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : Causes irritation to mouth and throat

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact: Adverse symptoms may include the following: irritation, redness

Ingestion: No specific data.

Inhalation: No specific data.

Eye contact : Adverse symptoms may include the following: pain or irritation, watering, redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure:

Potential immediate effects: Not available

Potential delayed effects : Not available

Long term exposure

Potential immediate effects: Not available

Potential delayed effects : Not available

Safety Data Sheet

Section 11

Toxicological information

Potential chronic health effects

Not available

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	14214 mg/kg

Section 12

Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Monoisopropanolamine	Acute LC50 680.4 mg/l	Fish-Pimephales promelas	96 hours
Benzyl alcohol	Acute LC50 15 mg/l	Fish - Lepomis macrochirus	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available

Other adverse effects : No known significant effects or critical hazards.

Section 13

Disposal considerations

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Safety Data Sheet

Section 14

Transport information

DOT Classification: Not regulated

Additional Information: Keep from freezing

Special precautions for user:

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15

Regulatory information

U.S. Federal regulations :

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air

Pollutants (HAPs)

SARA 311/312

Classification : Not applicable

Composition/information on ingredients: No products were found.

State regulations:

California Proposition 65

This product contains no Proposition 65 chemicals:

International regulations

Canada inventory : All components are listed or exempted.

CERCLA

This material, as supplied, contains no substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Clean Water Act

This product contains no substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Section 16

Other information

Hazardous Material Information System (U.S.A.)

Health		1
Flammability		0
Physical hazards		0

Safety Data Sheet

Section 16

Other information

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (NFPA)



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Revision Note: New Issue

Section 16

Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet

ATTACHMENT 6

Photo Log



Attachment 6 – Photo Log



Photo: 1

Date:
August 22, 2016

Description:
Mowed field and southwest corner of fenced area

Location:
Facing southwest



Photo: 2

Date:
August 22, 2016

Description:
Mowed field, northwest corner of western portion of the Site

Location:
Facing west

Attachment 6 – Photo Log



Photo: 3

Date:
August 22, 2016

Description:
SVE system shed and electrical panel following mowing activities

Location:
Facing northeast



Photo: 4

Date:
August 22, 2016

Description:
Mowed field and shed

Location:
Access gate facing north

Attachment 6 – Photo Log



Photo: 5

Date:
August 22, 2016

Description:
Fence clearing in northwest corner of the Site near man gate

Location:
Northwest



Photo: 6

Date:
August 22, 2016

Description:
Fence clearing along the north face of the fence

Location:
Man gate facing east

Attachment 6 – Photo Log



Photo: 7

Date:

August 22, 2016

Description:

Burrowing animal tunnel and settling near south face of the fence (west of truck gate)

Location:

Facing south



Photo: 8

Date:

August 22, 2016

Description:

Burrowing animal tunnel / settling near south face of the fence (west of truck gate)

Location:

Facing south

Attachment 6 – Photo Log



Photo: 9

Date:
June 16, 2016

Description:
Utility closet in cafetorium
at Manor View Elementary
School

Location:
Door of utility closet



Photo: 10

Date:
June 16, 2016

Description:
Access hatch to the crawl
space at Manor View
Elementary School

Location:
Utility closet



Photo: 11

Date:
August 22, 2016

Description:
Sign Location #4

Location:
Northwest corner of the Site facing south

*Picture was taken prior to the completion of mowing and clearing activities



Photo: 12

Date:
August 22, 2016

Description:
Sign Location #3

Location:
Southwest corner of the Site facing northwest



Photo: 13

Date:
August 22, 2016

Description:
Sign Location #1

Location:
Adjacent to access gate
facing northwest



Photo: 14

Date:
August 22, 2016

Description:
Sign Location #2

Location:
Access road off 2nd Corps
Boulevard facing north

Attachment 6 – Photo Log



Photo: 15

Date:
August 22, 2016

Description:
Sign Location # 5 and
clearing of overhanging
vegetation at northeast
corner of Site

Location:
Facing south