

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Stone Castle Recycling - Parowan Facility - Removal Polrep
Initial Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VIII

Subject: POLREP #2
Start of Removal Activities - Sorting and Processing Debris
Stone Castle Recycling - Parowan Facility
A8F5
Parowan, UT
Latitude: 37.8393198 Longitude: -112.8572735

To: Pat Sheehan, UTDEQ
David Ostrander, EPA Region 8
Laura Williams, EPA Region 8

From: Steven Merritt, On-Scene Coordinator

Date: 12/8/2014

Reporting Period: 12/1/2014-12/7/2014

1. Introduction

1.1 Background

Site Number:	A8F5	Contract Number:	EP-S8-13-02
D.O. Number:	0068	Action Memo Date:	11/24/2014
Response Authority:	CERCLA	Response Type:	Time-Critical
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	12/1/2014	Start Date:	12/2/2014
Demob Date:	12/20/2014	Completion Date:	12/31/2014
CERCLIS ID:	UTN000801903	RCRIS ID:	
ERNS No.:		State Notification:	
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Time-Critical Removal Action - Inactive Waste Management Facility

1.1.2 Site Description

The Site is a commercial property allegedly leased to Stone Castle Recycling, LLC (Stone Castle) and owned by both the Wheeler Family Trust and the Carr Family Trust. There are two separate buildings on the property: an office/garage building that formerly served as a used car dealership and a smaller garage at the rear of the property used for outdoor recreational vehicle repair. Stone Castle leased the used car dealership portion of the property in August 2013 for use as a recycled technology resale storefront. From August through September of 2013, Stone Castle employees moved cathode-ray tube (CRT) televisions and other electronic waste materials to the Site.

When it functioned as an operating entity, Stone Castle dismantled electronics, sold the component parts, and recovered raw materials. During this dismantling procedure, Stone Castle removed the cathode-ray from the leaded-glass vacuum tube inside CRT televisions. Stone Castle segregated, crushed, and sent this glass to other leaded glass makers to melt down and create new leaded-glass CRTs. Following the move from analog to digital broadcasting, and the corresponding shift from CRT televisions to plasma and liquid-crystal display (LCD) high-definition televisions, the market for leaded glass collapsed. Stone Castle had large volumes of nearly worthless CRTs and recovered raw materials without sufficient revenue to properly process electronic waste, to pay employees and facility leases, and to dispose of the electronic wastes. Large quantities of stockpiled and newly-received electronics wastes were moved around between four discrete properties at the three Utah facilities. These wastes, placed into corrugated cardboard "Gaylord boxes" were frequently stored outside of already full warehouse storage areas, where they rapidly deteriorated and failed, spilling their contents onto the ground, subjecting the contents to further weathering.

The electronic wastes brought to the Site were placed in the garage and stockpiled in corrugated cardboard boxes on the ground at the northwest corner of the Site. Once placed, they were abandoned and left to weather and burn. The burned hazardous debris pile now covers approximately 0.10 acre, ranges from one to two feet high, and contains roughly 400 tons of material. The mixed electronic waste pile covers approximately 0.09 acre, ranges from two to 10 feet high, and contains roughly 600 tons of debris. The

intact CRT pile covers 0.11 acre, is roughly eight feet high throughout, and contains roughly 250 tons of material.

1.1.2.1 Location

The Site consists of a commercial property that has been subdivided into two parcels in Iron County, Utah. The property is located approximately 1.5 miles west of Parowan, UT, at 1338 West 200 Road. The Site is situated between single-family residential properties, a manufactured home community, a self-storage facility, and an agricultural field. The Site is located along the Interstate 15 corridor in the southwest corner of Utah, an arid and scenic area known for Zion National Park and Cedar Breaks National Monument.

1.1.2.2 Description of Threat

The lead in the CRT glass is the primary contaminant present at the Site. Lead is listed as a hazardous substance per 40 CFR §302.4. Concentrations of lead in the funnel glass of CRTs is typically in the 25-30% w/w range and the frit between the panel and the funnel often exceeds 75% w/w. Lead is prone to leaching from the surfaces of broken CRT glass once the cathode-ray tube is ruptured and exposed to weathering in the environment. It is estimated that there are over 380 tons of leaded glass in the electronic wastes at the Site. Both the TCLP testing and soil sampling results demonstrate that the lead present in the debris at the Site is being released into the soils and surrounding environment.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

The electronic wastes and the leaded-glass CRTs, which have been left on the ground and exposed to the elements, have already caught on fire and burned. They may catch fire again since curved CRT panel glass and projection screen television lenses can concentrate solar radiation onto combustible materials in the debris piles. Burning electronic waste poses a significant threat to exposed populations and the environment because harmful quantities of toxic combustion byproducts, volatilized metal, and respirable particulates would likely be present in the smoke plume, threatening populations downwind and facilitating the rapid migration of contaminants.

On August 13, 2014, acting on information provided by both the EPA Region 8 Resource Conservation and Recovery Act (RCRA) Program and the Solid and Hazardous Waste Division of the Utah Department of Environmental Quality (UT DEQ), the OSC conducted a preliminary assessment of the Site to determine whether a Removal Site Evaluation was warranted. At the time of this visit, UT DEQ was pursuing all available enforcement remedies available under the Utah Solid and Hazardous Waste Act and RCRA to have Stone Castle Recycling complete a clean-up of the Site by September 28, 2014. EPA agreed to postpone activities until after the September 28, 2014 deadline.

On September 29, 2014, after Stone Castle failed to comply with the UT DEQ enforcement order deadline for removing wastes, the property owner contacted the OSC and agreed to provide legal access to the EPA. The OSC immediately tasked the Superfund Technical Assessment and Response Team (START) contractor to perform an assessment and treatability study on the wastes at the Site to determine if a removal was warranted and feasible. A detailed discussion of the treatability study can be found in POLREP1 for this Site.

On October 14, 2014, the EPA mobilized the START contractor to begin a formal Removal Site Evaluation at the Site. As part of this assessment effort, START collected soil samples and samples of each of the debris piles for use in a treatability study. The soil sampling data revealed the presence of lead and trace amounts of other metals that had migrated into the soils from the electronic wastes present at the Site. The debris samples confirmed that lead present in the CRT glass was leachable and prone to migrate. Findings from the investigation revealed:

- In-situ soil lead values ranged between 6.1 mg/kg and 81.2 mg/kg in areas where CRT glass was present on the surface. The OSC also noted that there were areas where CRT glass had been pulverized and driven into the soil profile, likely further elevating lead levels in the impacted soils.
- Toxicity Characteristic Leaching Procedure (TCLP) results from the leaded-glass indicated that the leachate contained between 27 and 444 mg/L of lead, well exceeding the RCRA toxicity characteristic regulatory limit of 5 mg/L.
- Lead concentrations from the TCLP tests of the three waste pile composite samples collected by START at the Site ranged from 3.6 mg/L to 50.1 mg/L, again well in excess of the toxicity characteristic regulatory limit of 5 mg/L.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

The Site was discovered by the Solid and Hazardous Waste Division in the Utah Department of Environmental Quality (UT DEQ) during the course of an investigation into three electronics waste recycling facilities operated by Stone Castle in Clearfield, Cedar City, and Parowan, Utah. Stone Castle, the potentially responsible party (PRP) at the Parowan Site, was in the business of scrapping used and donated cathode-ray tube television sets on behalf of non-profit organizations and municipalities along the Interstate 15 corridor in Utah. Stone Castle operated at the Site from approximately August 2013 to March 2014, when there was a fire at the Site. After the fire, the electronic waste materials at the Site were abandoned.

The storage of these materials outside led to multiple fires at the Stone Castle facilities throughout Utah, potentially caused by projection television lenses concentrating heat from solar radiation onto flammable materials. The CRT stockpile left outside at the Site caught fire on March 2, 2014, following a fire at the Stone Castle facility in Clearfield, UT, in 2008, and preceding fires at the Stone Castle facilities in Cedar

City, UT, on July 8, 2014 and Clearfield, UT, on November 2, 2014. During the fire at the Site, the Parowan Fire Department used heavy equipment to push containerized CRTs and electronic wastes away from the waste materials engulfed in the fire to create a fire break. As a result, there are three discrete piles of material at the Site: burned electronic waste debris containing approximately 340 cubic yards of material, mixed electronic waste debris containing approximately 830 cubic yards of material, and 640 cubic yards of intact CRT televisions in deteriorating corrugated cardboard boxes.

2.1.2 Response Actions to Date

Monday, December 1, 2014

- Mobilization of ERRS crew and equipment to the Site.
- Mobilization of skid-steer and support vehicles to the Site,
- Mobilization of START and monitoring/sampling equipment to the Site.
- Mobilization of EPA to the Site.
- OSC telephone consultation with UTDEQ about the removal and the Site.

Tuesday, December 2, 2014

- Excavator, loader, and water truck arrived on Site.
- Crew began dismantling piles and sorting the hazardous debris and non-hazardous debris.
- START setup and conducted air monitoring around the perimeter of the Site during operations without VIPER.
- Moved vehicles out of the CRT and electronic waste storage area to facilitate sorting of hazardous and non-hazardous debris.
- Located the access ways and cleanout for the septic tank area within the burned debris.
- Moved CRTs and other waste/debris out of the warehouse to make room for the monoammonium phosphate and Portland cement that would be delivered later.

Wednesday, December 3, 2014

- Continued dismantling of the CRT boxes and electronic waste piles, separating the pallets and cardboard from the hazardous debris.
- START setup and conducted air monitoring around the perimeter of the Site during operations with VIPER and fed the data into the Site GIS viewer.
- Received initial batch of monoammonium phosphate fertilizer (MAP) at the Site
- The horizontal shredder arrived on Site.
- The crew received initial technical training on the proper operation of the horizontal shredder.

Thursday, December 4, 2014

- Continued technical training on the horizontal shredder.
- Processed both non-hazardous waste and CRTs through the machine to validate training.
- Continued dismantling of the CRT boxes and electronic waste piles, separating these from the non-hazardous pallets and corrugated cardboard.
- Media (KSL) visited the Site to collect video of the removal action and interview the EPA OSC and local neighbors about the project.
- Received remaining shipment of MAP and the shipment of the Portland cement at the Site.

Friday, December 5, 2014

- Sent the first load of previously crushed hazardous debris and MAP mixture through the horizontal grinder to validate homogenization and moisture content.
- Jammed the horizontal grinder with the volume of waste and prior damage to the 4" screens that came installed in the unit.
- Removed the damaged screens for inspection and cleaned out the horizontal grinder to permit the conveyor to run freely again.
- Finished dismantling of the CRT boxes and electronic waste piles, separating these from the non-hazardous pallets and corrugated cardboard.

Saturday, December 6, 2014

- The pug mill arrived on the Site and was placed near the horizontal grinder.
- Crew sorted through the remaining hazardous debris pile to remove large items (motors and steel) that may damage the screens on the horizontal grinder.
- Crew raked and scraped some of the impacted soils to remove and collect leaded-glass shards and debris chunks for processing through the horizontal grinder.
- RM contacted local welders and the representatives for the horizontal grinder vendor to facilitate repair or replacement of the screens in the horizontal grinder.
- Work concluded at 12:30PM for the weekend.

Sunday, December 7, 2014

- Crew rest day while awaiting repair of existing screens and delivery of replacements.
- No work performed at the Site.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

2.1.4 Progress Metrics

Waste Stream	Medium	Estimated Quantity	On-Site Treatment	Off-Site Disposal	Percent Complete
Non-Hazardous Debris	Solid Waste	300 cubic yards	Segregation and Grinding	Local Landfill	75%
Raw Electronic Wastes (1 st Pass)	Hazardous Debris	1500 cubic yards	Grinding and Wetting	None	85%

Crushed Electronic Wastes (2 nd Pass)	Hazardous Debris	Volume reduced to 400 cubic yards	Grinding and MAP Mixing	None	1%
Treated Electronic Wastes and Impacted Soil(Pug Mill)	Solid Waste	Volume expands to 500 cubic yards	Scraping Soil, Mixing, and Adding Portland Cement	CERCLA-Approved OSR Landfill	0%

2.2 Planning Section

2.2.1 Anticipated Activities

The response action will involve mechanical processing, on-Site chemical treatment, and off-Site transportation and appropriate landfill disposal of all wastes present at the Site. The mechanical processing will consist of crushing the hazardous debris with a horizontal grinder to reduce particle sizes, maximize particle surface area, and homogenize the material for more effective chemical treatment. The chemical treatment, which will apply the approach recommended by the data from the treatability study, involves adding water and commonly used and readily available reagents, such as Portland cement and phosphate fertilizers, to the wastes in an effort to stabilize the mixture and permanently immobilize leachable metals in the hazardous debris.

During the mechanical processing and chemical treatment of the wastes, START will provide oversight and technical support to ensure the specifications developed in the treatability study are met. START will provide personal air sampling and dust monitoring to minimize exposures to airborne dust and metals during operations, in accordance with OSHA regulations. START will also conduct perimeter air sampling and respirable dust monitoring to ensure compliance with NESHAPs and to ensure that there are no off-Site exposures from the treatment process to neighboring populations.

2.2.1.1 Planned Response Activities

Now that all non-hazardous debris and potentially damaging items have been sorted out of the CRT and electronic waste, the remaining electronic wastes will be crushed by the horizontal grinder and stockpiled nearby. The crushed hazardous debris stockpile will be fed into the horizontal grinder a second time with the appropriate concentration of MAP to ensure smaller particle sizes, homogenous mixing of the MAP reagent with the waste, and sufficient contact time. Impacted soils will be mixed with these treated wastes and Portland cement via the pug mill to coat the surfaces and encapsulate the hazardous materials. Treated wastes will be tested and profiled before being placed into dumpsters for transport to a landfill for disposal. It is expected that all material will be removed from the Site by December 20, 2014.

2.2.1.2 Next Steps

- Receive and install replacement 4" screens in the horizontal grinder.
- Crush remaining hazardous debris and consolidate with waste treatment stockpile.
- Crush remaining non-hazardous debris and consolidate with local landfill stockpile.
- Receive and install 2" screens in the horizontal grinder
- Amend waste treatment stockpile with MAP and process with horizontal grinder a second time.
- Sieve the processed and amended wastes to characterize the particle sizing and density for proper chemical treatment.
- Decontaminate and demobilize horizontal grinder.
- Setup and load the silo of the pug mill with Portland cement.
- Scrape up and stockpile remaining impacted soils from the Site.
- Mix impacted soils and the MAP treated hazardous debris together in a stockpile.
- Feed this mixed stockpile into the pug mill, adding moisture if needed, to coat these materials with the Portland cement.
- After treatment with Portland cement and sufficient contact time, treated wastes will be loaded into dumpsters and covered with tarps.
- START will collect composite samples of each treated waste batch, arrange for TCLP analysis of prior to shipment to ensure compliance with RCRA and with the Off-Site Rule from 40 CFR §300.440.
- Wastes will be transported to an approved RCRA facility for final disposal.
- Topsoil will be placed in the excavation area, amended with fertilizer, and reseeded.
- Take metal and motors removed from debris to a recycling facility for scrap value.
- Properly dispose of oil, automotive fluids, paints, solvents, and chemicals found at the Site.

2.2.2 Issues

The horizontal grinder is proving to be an invaluable tool for both waste volume reduction (up to 70%) and homogeneous mixing of the MAP into the previously crushed hazardous debris. However, the metallic screens installed around the hammer wheel that ensure adequate particle size reduction are not robust enough to withstand the impacts from some of the materials we are sending through the grinder. Specifically, fan motors and hardened steel components are breaking the screens inside the grinder after they collide with the hammers on the hammer wheel, reducing the effectiveness of the horizontal grinder and causing delays as we await repairs or shipments of replacement screens. It remains to be seen whether this will delay the final disposal.

2.3 Logistics Section

Contract Equipment:

- Skid-Steer and Forks

- Stakebed Pickup Truck
- RM Pickup Truck

Rented Equipment:

- Excavator
- Front-End Wheel Loader
- Water Truck
- Vermeer BG6000 Horizontal Shredder
- Aran ASR 280B Pug Mill

Treatment Supplies:

- Monoammonium Phosphate
- Portland Cement

Monitoring/Sampling/Safety Equipment:

- DataRAM 4000 Dust Monitors and Air Sampler – 4
- Niton XRF Soil Metals Instrument
- VIPER Rapid Deployment Kit
- Digital Sound Level Meter

2.4 Finance Section

2.4.1 Narrative

While the initial cost estimates for this Site from the Action Memorandum were in the range of \$650,000, we are realizing significant cost savings from the volume reductions and the non-hazardous debris sorting performed thus far. As a result, the actual costs for this removal are now expected to be in the range of \$300,000 as of this POLREP, unless additional mechanical issues with the grinder or pug mill or treatability issues cause delays.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	\$550,000.00	\$165,000.00	\$385,000.00	70.00%
USCG PST IAG	\$15,000.00	\$3,200.00	\$11,800.00	78.67%
START	\$50,000.00	\$7,200.00	\$42,800.00	85.60%
Intramural Costs				
USEPA - Direct	\$10,000.00	\$3,000.00	\$7,000.00	70.00%
USEPA - InDirect	\$10,000.00	\$2,000.00	\$8,000.00	80.00%
Total Site Costs				
	\$635,000.00	\$180,400.00	\$454,600.00	71.59%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff


2.5.1 Safety Officer

There have been no safety issues to date. Personnel operating heavy equipment in proximity to electronic wastes have been complying with the PPE requirements of the HASP. Perimeter monitoring indicates that respirable dust emissions have been comparable to the existing background air pollution present at the Site from the nearby interstate and highway traffic. Noise levels at the boundary of the property are less than 60 dB.

2.5.2 Liaison Officer

N/A

2.5.3 Information Officer

Rich Mylott, EPA Region 8 PIO has been providing press support to the removal action remotely. Rich can be reached at 303-312-6654 

3. Participating Entities

3.1 Unified Command

U.S. EPA Region 8 - Emergency Response Unit
Utah Department of Environmental Quality – Division of Solid and Hazardous Waste

3.2 Cooperating Agencies

Parowan City
Parowan Public Works
Parowan Volunteer Fire Department

4. Personnel On Site

EPA On-Scene Coordinator
USCG PST FOOSC-R
START Monitoring and Sampling Support
ERRS Removal Manager
ERRS Foreman
ERRS Field Cost Accountant
ERRS Equipment Operators – 2
ERRS Truck Driver
ERRS Laborer - 2

5. Definition of Terms

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
RCRA – Resource Conservation and Recovery Act
UT DEQ – Utah Department of Environmental Quality
START – Superfund Technical Assessment and Emergency Response Team
ERRS – Emergency and Rapid Response Services (EPA Contractor)
USCG – U.S. Coast Guard
PST – Pacific Strike Team
RM – Removal Manager
FOOSC-R – Federal On-Scene Coordinator Representative
MAP – Monoammonium Phosphate Fertilizer
OSR – CERCLA Off-Site Rule Approved Facility

6. Additional sources of information

6.1 Internet location of additional information/report

[EPA OSC Website for Removal Action](#)
[UTDEQ DSHW Website for NOV and CDO](#)

6.2 Reporting Schedule

POLREPs will be completed weekly on Mondays through the conclusion of the EPA removal action.

7. Situational Reference Materials

Please see the [Links](#), [Bulletins](#), and [Documents](#) sections of the website for additional background information on the site.

POLREP #2 Last Updated 1/9/2015