

15 August 2005
File No. 29433-020

U. S. Environmental Protection Agency
25089 Center Ridge Road
Westlake, OH 44145

Attention:

Brad Stimpfle

On-Scene Coordinator

Superfund Division, Region 5, Emergency Response Branch

Subject:

Mosaic Tile Plant Dump Site - Zanesville, Ohio
Northern Parcel - OUI

Removal Action Basis of Design

Mr. Brad Stimpfle:

On behalf of Collins & Aikman Accessory Mat, Inc., Haley & Aldrich has prepared this Basis of Design letter that describes the Removal Action and provides the key design criteria proposed for completing the engineering design. The letter is organized according to the key project features and activities described in the Mosaic Tile Plant Dump Site Northern Parcel - OUI (the "Site") Removal Action Work Plan, dated May 2005. It presents the basis of design, and a list of planned drawings and key technical specifications. A schedule for completing the design phase of the Removal Action project is attached.

Your review and approval of this Basis of Design letter is requested. Following your concurrence, we will finalize the engineering design and submit the project plans for your approval. We understand that U.S. EPA will be the Agency approving project design submissions and that independent applications to other agencies, such as Ohio EPA, will not be required.

BASIS OF DESIGN

Site Preparation and Site Management

- Southern Parcel. Permission is needed to use the Southern Parcel to stage/stockpile imported materials nearby the Site (e.g., stone, clay, cover soil, construction equipment and materials). It will also be necessary to access the Southern Parcel to complete the excavation and re-grading on the adjacent perimeter of the Northern Parcel. Your assistance in obtaining permission to access to the Southern Parcel is requested.
- Public Roads. County bridges over Chaps Run on Woody Lane (steel bridge with wood deck) and Coopermill Road (reinforced-concrete bridge) have 20-ton load limits. Because trucks delivering imported soil materials, geosynthetic products and

OFFICES
Boston
Massachusetts
Dayton
Ohio
Detroit
Michigan
Hartford
Connecticut
Kansas City
Kansas
Los Angeles
California
Manchester
New Hampshire
Parsippany
New Jersey
Portland
Maine
Rochester
New York
San Diego
California
Santa Barbara
California
Tucson
Arizona
Washington
District of Columbia

construction equipment to the Site will exceed the 20-ton gross vehicle weight, we propose to bring loaded trucks to the Site via Benjamin Avenue; empty trucks will exit via Woody Lane and Coopermill Road.

Erosion and Sedimentation Control. Erosion and sedimentation control measures specified on the project plans will be implemented prior to disturbance of site soils. Clearing and grubbing. These activities will involve removal of the many trees greater than 6-inches in diameter. The merchantable timber will be harvested prior to the clearing and grubbing work. Root balls will be removed, stockpiled on Site and characterized for appropriate disposition either on-Site or off-Site. Other vegetation will be chipped or shredded and re-used on Site as soil protection or amendment to the vegetative soil layer of the cover system.

Fencing. The site will be fenced during construction to discourage trespassers or unauthorized visitors. The existing fencing will need to be removed, on an as-needed basis, to accommodate construction activities on the project perimeter. Temporary fencing will be placed during construction. Permanent fencing will be replaced at the completion of the Removal Action.

Exclusion Zone. An exclusion zone will be established to delineate the work zone where waste materials and waste residuals are encountered. Vehicles, equipment and personnel will be decontaminated at the boundary of the exclusion zone.

Perimeter Excavations and Backfill

Groundwater Monitoring Wells. Where existing wells will be disturbed by the perimeter excavation, the wells will be sealed using procedures recommended by the Ohio Technical Guidance for Sealing Unused Wells (1996). Well sealing will be documented with Ohio DNR Water Well Sealing Reports.

Excavate visible waste from north, south and west sides to create a perimeter buffer per the Removal Action Plan to < 400 mg/kg total lead (Pb)

Separate and stockpile on Site the various materials (e.g., tile, glaze, soil, brick, pallets)

Field screen the various materials using an X-Ray Fluorescence Analyzer (XRF) that has been calibrated to various Site matrices (e.g., tile, glaze, soil, etc.) (XRF) calibration range < 400 mg/kg to > 1,800 mg/kg total Pb)

Verification Sampling Analysis of surface soils on 25-foot triangular grid using XRF that has been calibrated to Site matrices; with 10% off-Site laboratory confirmation analysis performed using SW-846 Method EPA 6020 for total Pb.

Characterize excavated perimeter soils using XRF calibrated to various Site matrices. Relocation on Site (beneath cover) of all materials > 400 mg/kg but < 1,800 mg/Kg total Pb; dispose of (at location off Site) materials > 1,800 mg/Kg total Pb as hazardous waste if > 5.0 mg/l TCLP Pb; materials greater than 1,800 mg/Kg total Pb but < 5.0 mg/L TCLP Pb will be disposed of (at location off Site) as non-hazardous waste.

The perimeter excavations will be backfilled with low permeability clay adjacent to the limits of waste remaining on Site, and the anchor trench for the low permeability cover will be located in the clay. The clay will satisfy the requirement of permeability less than 1×10^{-7} cm/sec. Compliance with this criterion will be determined by measuring the moisture content and relative density of the clay placed in the perimeter excavation. Those two parameters will be compared to moisture-

density-permeability relationships established prior to construction using testing of multiple samples of the imported clay.

Excavation at Locations Listed in 2003 Soil Report and Observed Surficial Glaze

- The investigation grid from 2003 Soil Investigation Report will be re-surveyed to locate 13 nodes where near surface Pb concentrations exceeded 1,800 mg/Kg. A Site walk will visually identify other areas of exposed glaze that can readily be excavated. Due to matrix heterogeneity and highly variable historical sample data (Soil Report), the mean concentration of the field duplicate results where, Replicate Percent Difference (RPD) > 50%, will be used to determine locations for "Hot Spot" removal.
- Excavate no more than four feet below ground surface at locations from 2003 Soil Report (50-foot grid samples) with > 1,800 mg/kg total Pb and/or at locations of visible surficial glaze.
- Separate materials, stockpile and characterize for on-Site re-location beneath cover, off-Site hazardous-waste disposal or off-Site non-hazardous waste disposal as described above for perimeter excavations. Wood materials will not be placed beneath the cover.

Construction-Phase Air Monitoring

- Perimeter air monitoring will be performed using one upwind and three downwind Gill-Air personal air monitors, or equivalent. Particulates and Pb will be monitored. The action level for Pb will be 25 ug/cubic meter (selected at 50% of the OSHA PEL). The action level for particulates will be based on an empirical relationship between particulate concentration and Pb concentration developed using Site data from the 2003 Soil Report.
- Work zone air monitoring will be performed using a MiniRAM, a portable, real-time particulate meter, or equivalent. The action level for particulate in the work zone will be 4 mg/cubic meter.
- Dust suppression activities will be initiated if there is a sustained visible emission. Initiating dust suppression at this lower visible threshold will help to insure that particulate and Pb concentrations remain below Site action levels.

Stormwater Management

- Permanent surface water run-on and run-off control structures will accommodate peak flow from the 25-year (occurrence) 24-hour (duration) storm event.
- The permanent stormwater sedimentation pond will be designed, consistent with the requirements of OAC 3745-27-08, to satisfy the following criteria:
 - a. The principal spillway will safely discharge the flow from a 10-year 24-hour storm event using non-mechanical means.
 - b. The inlet elevation of the emergency spillway will provide flood storage with no flow entering the emergency spillway while allowing flow through the principal spillway during a 25-year 24-hour storm event.
 - c. The combination of principal and emergency spillways will safely discharge the flow from a 100-year 24-hour storm event using non-mechanical means.

- Construction-phase stormwater management, erosion and sedimentation control measures will be generally consistent with the requirements of the General Permit For Storm Water Discharges Associated With Construction Activity, effective 2003.
 - Construction-phase water collected from areas of exposed waste will be collected and stored. Storage will be provided to accommodate runoff from a single 1-year 24-hour rain event.
 - The collected stormwater will be tested for Pb and hardness, and transported off Site for treatment if the lead concentrations exceed those given in Table 7-9 of OAC 3745-1-07 (concentrations vary depending on the water hardness). If the Pb concentration is less than that in Table 7-9, the water will be discharged to the on-Site drainage ditch.
- d. The embankment design will provide for no less than one foot net freeboard.

Cover System Design

■ Cover Section. A Type 2 low permeability final cover, as described in the Ohio EPA document, "Final Covers for Hazardous Waste Surface Impoundments, Waste Piles, and Landfills" (2000) is proposed for the Northern Parcel - OUI. The Type 2 Cover generally consists of at least one low permeability layer, a drainage layer, a protection layer, and a surface layer. We propose that the surface layer consist of six inches of topsoil vegetated with mixed grasses similar to those specified by Ohio DOT for road embankments. The protection layer will consist of 12 inches of ordinary fill, presumably obtained from off-site sources. The drainage layer will be a geocomposite drainage layer consisting of drainage net with geotextile bonded to both sides. The low permeability layer will consist of a 40-mil thick flexible membrane liner. The geocomposite drainage layer will serve as a cushion layer, protecting the flexible membrane liner during the placement of the protection layer soil and topsoil. The flexible membrane liner does not require protection from degradation due to freeze-thaw cycles and will be protected from penetrations by the 18-inch layers of protection soil and topsoil, and by the geocomposite drainage layer.

Selection of a Type 2 Cover is justified based on findings of the Site Groundwater Report (2004), indicating that the Pb-containing glaze waste placed as late as 1967 had not leached to groundwater in 37 years. Further, the leaching potential of residual Pb is lower, particularly compared to municipal waste landfills, because there is no organic material available to decompose and generate acidic leachate. The residual materials are currently only subject to leaching by precipitation. After placement of the engineered cover, the liner will practically eliminate infiltration of precipitation. The future risk will also be reduced because waste with total Pb concentrations > 1,800 mg/kg will have been removed from the perimeter and surface of the Site.

■ Site Side Slopes. The side slopes of the restored Site will be based on the calculated stability of the final grades and of the cover system, and will not be steeper than 3H:1V. The design criteria for the stability of the proposed Type 2 Cover will be

consistent with those given in OAC 3745-29-08, that is, the following factors of safety (FS) will be used:

- FS for hydraulic uplift will be 1.40.
- FS for static slope stability will not be less than 1.50.
- FS for seismic slope stability analysis will be not less than 1.00.
- FS against liquefaction will be not less than 1.00 for internal slopes, interim slopes and final slopes.

- Restored Height. The final height of the restored Site will be determined by the amount of waste material taken off Site during the Removal Action, and by the thickness of the final cover system. The final grading plan will be adjusted as needed in response to field conditions, with the final grades being either higher or lower than the design plans, depending on the amount of waste left on Site. There is no restriction to the final height of the restored Site.

Project Completion

- Restoration. The restored Site will be seeded with a mixture of grasses, as previously described, to minimize erosion and sedimentation. The perimeter of the Site will be fenced and gated. Trees will be planted along the perimeter to provide a vegetative screen where there are adjacent residences. The Site access roads will permit access to the toe of slope, but no permanent road to the top of the slope will be constructed. Groundwater Monitoring Wells. Wells that were sealed and abandoned during the removal action will be replaced per Ohio EPA groundwater monitoring recommendations.
- Project construction records, including record drawings will be compiled and submitted to U.S. EPA.

PLANS AND SPECIFICATIONS

The following drawings are anticipated for the engineering design of this project:

DRAWING NO.	TITLE
T-1	Title Sheet
C-1	Existing Site Conditions
C-2	Clearing and Grubbing Plan
C-3	Waste Consolidation & Hot Spot Excavation Plan
C-4	Erosion and Sediment Control Plan
C-5	Subgrade Plan
C-6	Final Grading Plan
C-7	Cross-Sections
C-8	Cover System Details
C-9	Details
C-10	Long Term Monitoring Plan

The following table presents the technical specifications for key project components that will be utilized for this project.

SECTION NUMBER	SECTION DESCRIPTION
02100	Site Clearing
02200	Earthwork
02250	Dust Control
02270	Erosion and Sediment Control
02322	Excavated Materials Management
02527	Groundwater Monitoring Wells
02630	Storm Drainage
02713	Crushed Stone
02714	Non-Woven Geotextile
02715	Geocomposite Drain
02724	Pavement Underdrain Pipe
02771	Geomembrane
02772	Geosynthetic Interface Strength Testing
02930	Topsoil Placement and Seeding
03482	Catch Basin Filters

SCHEDULE

A revised schedule for the design phase of this Removal Action project is attached. It shows that final selection of the contractor to perform the work is scheduled for mid-October.

CLOSING

Your prompt review of this letter is respectfully requested. Please do not hesitate to contact us should you require additional information.

Sincerely yours,

HALEY & ALDRICH, INC.

John V. Klingeshirn, P.E.
Senior Engineer / Project Manager

Shawn Dine for

Jeffrey A. Klaiber, P.E.
Senior Vice President

Attachment Removal Action Design Phase Schedule

Cc James L. Thomas, MPH, CIH - Collins & Aikman
William J. Haswell, P.E. - Haley & Aldrich Design and Construction

G:\29433\010\Design Basis Letter.doc

[illegible]

Activity Week	August				September			October				
	8-12 4	15-19 5	22-26 6	29-2 7	5-9 8	12-16 9	19-23 10	26-30 11	3-7 12	10-14	17-21	24-28
Establish Basis of Design												
Submit Basis of Design to USEPA		*										
Agency Review of Basis of Design												
Prepare Construction Contract Documents												
Solicit Bids and Work Plans from Contractors												
Submit Construction Plans to USEPA					*							
USEPA Reviw of Costruction Plans												
Submit Contractor(s) to EPA for Approval					*							
USEPA Review of Contractor(s) Information												
USEPA Approval of Contractor(s)								*				
Final Selection of Contractor												