



RECEIVED
JAN 28 2015
OHIO EPA - DMWM

January 23, 2015

The Ohio Environmental Protection Agency
Division of Materials and Waste Management
P.O. Box 1049
Columbus, Ohio 43216-1049

**RE: 2014 Vail Mine Reclamation Site LAMP Summary Report
73888 Skull Fork Road
Londonderry Township, Guernsey County, Ohio**

Emerald Environmental Services (EES) has developed an alternative reuse of Conditioned Alum Residuals (CAR), Biosolids Incinerator Ash (BIA), Paper Fines (PF) and other permitted beneficial reuse materials that add agronomic benefit to the former Vail Mine property. These materials will be utilized in EES's proprietary soil blending process that produces material for reclamation or commercial landscaping. EES currently holds a process patent (US Patent Number US 6,537,340 B1).

No CAR, BIA, PF or any other beneficial reuse materials were delivered to the Site in 2014. A copy of the Ohio EPA-approved LAMP is included as an attachment to this letter.

The Director (Ohio EPA), or his authorized representative(s), may enter upon the premises of the Vail Mine site where soil amending takes place, at any reasonable time, for the purpose of making inspections, collecting samples of CAR, BIA and PF and soils amended with these materials, conducting tests, or examining records or reports pertaining to the soil amending processes of the Vail Mine.

Respectfully submitted
Emerald Environmental, Inc.

A handwritten signature in black ink, appearing to read "William Mello", with a long horizontal flourish extending to the right.

William Mello
Environmental Scientist

ENVIRONMENTAL

INDUSTRIAL HYGIENE

WASTE MANAGEMENT

◆
800-570-0690
<http://www.emerald-environmental.com>
KENT-AKRON



APPENDIX A
CERTIFICATION STATEMENT



"I certify, under penalty of law, that the information that will be used to determine compliance with the requirements contained in Chapters 3734 and 6111 of the Ohio Revised Code, and all rules thereunder, for the period beginning August 11, 2014 and ending December 31, 2014 was prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

Scott Hershberger / Sec. / Treas.
Name and Title

[Signature]
Signature



APPENDIX B

Ohio EPA-Approved LAMP



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

OHIO E.P.A.

AUG 11 2014

RECEIVED

AUG 25 2014

OHIO EPA - DMWM

EMERALD ENVIRONMENTAL SERVICES, INC.

I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

August 11, 2014
Mr. Scott Hershberger
Emerald Environmental Services, Inc.
1621 St. Clair Ave.
Kent, OH 44240

By: Dan Lassiter Date: 8-11-14

Subject: Emerald Environmental Services, Inc.
LAMP Permit Approval and Exemption for Beneficial Use of
Conditioned Alum Residuals

Effective Date: August 11, 2014

Expiration Date: August 10, 2019

Dear Mr. Hershberger:

The Ohio Environmental Protection Agency (Ohio EPA) has reviewed the Land Application Management Plan (LAMP) submitted on April 23, 2014 by Emerald Environmental Services, Inc. (Emerald) at the request of K&R Conservation, LLC, pursuant to Chapters 6111 and 3734 of the Ohio Revised Code (ORC) for the proposed beneficial use of conditioned alum residuals and other approved materials at the Vail Mine Reclamation Site (Vail Mine Site) in Freeport, Ohio. The submitted LAMP permit application proposes to beneficially use conditioned alum residuals (CAR), which consist of alum residuals from drinking water treatment, as a material to blend with the existing topsoil and other beneficial use materials for reclamation purposes. Emerald will condition the alum residuals at the Vail Mine Site, located at 73888 Skull Fork Road in Londonderry Township, Guernsey County.

Emerald will receive the alum residuals at the Vail Mine Site for conditioning. Emerald anticipates also blending biosolids incinerator ash (BIA) and paper fines with the CAR to create a nutrient-rich growing medium. If Emerald receives BIA at the Vail Mine Site, Ohio EPA will be notified. The paper fines that Emerald may use at the Vail Mine Site have received previous approval from Ohio EPA for beneficial use (approved by the Director of Ohio EPA (Director) on November 25, 2013).

Pursuant to the authority of the Director under ORC Chapters 6111 and 3734, this LAMP permit for the Vail Mine Site reclamation is approved subject to compliance with all conditions below.

BA: _____ Date: _____

Enlightenment Protestors
Official documents as well as the records of the
| central file to be a full record of the

Further, the Director has determined that granting an exemption from the applicable solid waste provisions of ORC Chapter 3734 to use CAR and other approved materials in quantities and under the circumstances specifically authorized in this LAMP permit is unlikely to adversely affect the public health or safety or the environment. Therefore, pursuant to ORC Section 3734.02(G), the Director hereby exempts Emerald from the applicable solid waste provisions of ORC Chapter 3734 and rules adopted thereunder specific to the land application of CAR and other approved materials as authorized in this permit approval. "Approved materials" includes CAR, BIA, paper fines and any other material approved by Ohio EPA for use in a soil blend.

This permit authorizes Emerald to beneficially use conditioned alum residuals for soil amendment in accordance with the LAMP permit application submitted on April 23, 2014, which is attached and incorporated herein. The CAR may be mixed with BIA, paper fines, or another approved material. All other beneficial uses must be separately approved by Ohio EPA.

Conditions

1. The Director, or his authorized representative(s), may enter upon the premises of the Vail Mine Site, at any reasonable time, for the purpose of conducting inspections; collecting samples of approved materials, soil blends mixed with approved materials, or both; conducting tests; or examining records or reports pertaining to the soil blending process of the approved materials.
2. Not later than 14 days prior to conditioning alum residuals at the Vail Mine Site, Emerald shall provide written notice to Ohio EPA, identifying the source of the alum residuals.
3. Concentrations of any constituents in the CAR shall not exceed the limits for the specified constituents listed in Table I.
4. Not later than 14 days prior to transporting BIA to Vail Mine Site, Emerald shall identify to Ohio EPA, in writing, the source of the BIA.
5. Concentrations of any constituents in the BIA shall not exceed the limits for the specified constituents listed in Table I.
6. Only paper fines that Ohio EPA has approved for beneficial use as a soil blend may be used in accordance with this approval at the Vail Mine Site.
7. Emerald shall use the following blending ratios for soil blends used for reclamation purposes at the Vail Mine Site: CAR at 50-100%; BIA at 0-20%; paper fines at 0-20%; combination of topsoil, sand, compost, manure, leaves, or peat at 0-50%.

8. Emerald shall utilize soil erosion and sedimentation controls in order to prevent discharge to waters of the state.
9. Emerald shall notify Ohio EPA in writing of its intention to use another approved material at the Vail Mine Site. Only materials that have been approved by Ohio EPA may be used at the Vail Mine Site for soil blending pursuant to this permit.
10. Issuance of this permit does not relieve Emerald of the duty to comply with all applicable federal, state, and local laws, ordinances, and regulations, except as specifically exempted herein.
11. Emerald shall collect and analyze at least one sample per year of each approved material intended for beneficial use and Emerald shall collect and analyze additional samples if there are substantial changes in the generation process or the raw materials used. For the purposes of this permit, a substantial change in the raw materials is a change which results in higher levels of the constituents in Table I or additional constituents.
 - a. The samples collected shall be representative of the approved materials beneficially used for the calendar year.
 - b. Emerald shall have the sample(s) analyzed for the constituents listed in Table I.
 - c. The reported detection limit for the analysis shall be below the limit specified for each constituent in Table I.
 - d. Emerald shall employ analytical methods that generate constituent results in units consistent with the units in Table I.
12. The following shall be maintained by Emerald for a minimum of five years after the completion of beneficial use authorized by this permit and made available to Ohio EPA upon request:
 - a. Records of the annual volume of all approved materials that are beneficially used;
 - b. A sampling plan detailing the sampling and analysis as required by Condition 11;
 - c. All laboratory reports of all analyses of all approved materials.

Table I

Constituents	Total (mg/kg)*
Arsenic (As)	41
Cadmium (Cd)	39
Copper (Cu)	1500
Lead (Pb)	300
Mercury (Hg)	17
Nickel (Ni)	420
Selenium (Se)	100
Zinc (Zn)	2800

* - dry weight basis

13. Any records required to be maintained in accordance with Condition 12 shall be provided to the Director upon request.
14. Storage and land application of the CAR or other approved materials shall not create a nuisance and shall not adversely affect public safety or health or the environment. Should a nuisance condition develop, or a determination be made by Ohio EPA that storage or blending of CAR or other approved materials is a threat to human health or the environment, then permission to use this material may be revoked upon written notification from the Director. Immediately upon the effective date of any such revocation, Emerald shall cease land application of CAR and other approved materials at the Vail Mine Site.
15. Emerald shall not cause pollution or cause any CAR or other approved material to cause pollution to any waters of the state and shall only discharge to waters of the state in accordance with an effective national pollutant discharge elimination system (NPDES) permit. Any unauthorized discharges to waters of the state shall be reported to Ohio EPA (call 1-800-282-9378) within 2 hours of discovery.
16. The Director shall be notified in writing within seven days if Emerald discovers noncompliance with this LAMP permit. The Director may add, delete, or change any conditions to this LAMP permit to protect human health or the environment. Additionally, permission to use the approved materials in a soil blend may be revoked upon written notification from the Director.

17. Each year, by January 31st, Emerald shall submit a report regarding the beneficial use of the CAR, BIA, or paper fines for the previous calendar year. This annual report shall include the total amount, in tons, of all materials beneficially used at the Vail Mine Site and analytical results for any analyses performed.
18. The annual report shall be sent to the following address:

Ohio EPA - DMWM
Authorizing Actions and Engineering Unit
P.O. Box 1049
Columbus, OH 43216-1049
19. In the annual report, Emerald shall include the following annual certification statement. The certification statement shall be printed out and signed beginning one year after the effective date of this approval and annually thereafter:

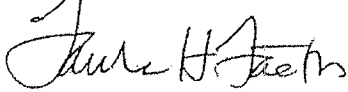
"I certify, under penalty of law, that the information used to determine compliance with the requirements contained in Chapters 3734. and 6111. of the Ohio Revised Code, and all rules adopted thereunder, for the period beginning (insert date of last certification statement) and ending (insert current certification statement date) was prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."
20. This permit to beneficially use CAR and other approved materials at the Vail Mine Site shall expire at midnight on the expiration date shown above. In order to receive authorization to beneficially use CAR and other approved materials beyond the above date of expiration, Emerald shall submit such information and forms as are required by Ohio EPA not later than 180 days prior to the above date of expiration.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to ORC Section 3745.04. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00 which the Commission, in its discretion, may reduce if by affidavit it is demonstrated that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section.

An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, Ohio 43215

Sincerely,



Craig W. Butler
Director

DH

Attachment: LAMP

cc: Scott Hershberger, Emerald Environmental Services, Inc.
Timothy Fulks, DSW, SEDO
Jennifer Witte, DSW, SEDO
Mark Stello, SEDO
Dale Warner, DMWM, SEDO

Re: Vail Mine Reclamation Site
Permit – Short Term
Approval
Beneficial Use
Guernsey County
BENU020371

Permit – Short Term
Exemption



Plan Approval - Management Plan For Sludge or Industrial Byproducts other than Treated Sewage

Note: This form, with the attachments indicated, is intended to serve as the main substance of the management plan. If you prefer to submit a separate and complete document to serve as your management plan, you must respond to questions where a description or calculation is requested (such as items C.1 through C.4), simply enter the page numbers of the submitted plan where the information requested can be found. Please respond on this form when just a check mark or brief statement is requested.

APPROVED
 OHIO ENVIRONMENTAL PROTECTION AGENCY
 AUG 11 2014

FOR AGENCY USE ONLY		AS EVIDENCED BY COPY OF LETTER OF APPROVAL
Application Number:	Date Received:	HERETO ATTACHED

Applicant:	Emerald Environmental Services, Inc.
Facility Owner:	K & R Conservation, LLC
Application/Plans Prepared by:	Emerald Environmental
Project Name:	Vail Mine Reclamation/Substitute Topsoil Utilization

A. Background Information

a. Briefly describe type and source of material to be land applied: Conditioned Alum Residuals (CAR). Other materials such as Paper Fines (PF), Biosolids Incinerator Ash (BIA), other approved beneficial reuse materials, topsoil, sand, compost, manure, leaves, peat may be added to enhance agronomic benefit.

b. Briefly describe proposed uses of materials (agronomic uses, soil blends, structural fill, etc.): Soil Blends

c. Existing Plan Approval number: _____ N/A

B. Generating Facility N/A

a. Amount of sludge/byproduct generated: up to 10,000 dry tons/year

b. Amount proposed for beneficial use: up to 10,000 dry tons/year

c. Disposal method for amount not used: N/A

d. Storage capacity at facility: in excess of 730 days

C. Land Application (If N/A, Skip to D) N/A

a. Use category of land application area (check all that apply): Unrestricted Access site Restricted Access site

b. Quantity of material to be land applied:
 _____ Inches/acre/year (annual average-liquid) 4000-8000 Dry tons/acre/year (annual average-sludge)

c. Does the land application area have subsurface drains/tiles located less than 24 inches below natural grade?
 Yes No Unknown at this time

d. Amount of land area available for land application if known (do not include buffer zones in the figure) up to 45 acres

e. Maximum slope of land to be used for land application = 6 %

f. Type(s) of crops or vegetation to be grown on land application area: Wildlife habitat blends and cover

C.1 Describe the method or methods used for the storage and land application of sludge/other byproducts (including detailed information about the distribution system):

CAR or materials blended with CAR will be applied to ground surface in mine impacted areas with conventional excavation equipment. Areas will be planted and seeded upon completion.

C.2 State what the maximum land application rate(s) are proposed to be and the total acres required and available for land application. Attach calculations and references showing how the application rates and acreage needs were determined.

Up to 2 feet of CAR or CAR Blended with materials identified above will be placed over impacted areas. This amount is consistent with the Appalachian Regional Reforestation Initiative (ARRI) and other guidance for mine reclamation. The following approximate blending ratios will be utilized - CAR 50-100%, BIA - 0-20%, PF - 0-20%, topsoil, sand, compost, manure, leaves, peat combined - 0-50%

C.3 Describe the monitoring of the material to be land applied and the soils in the land application area(s), including frequency, methods and parameters that will be measured in each.

All beneficial reuse materials will have separate approvals in place, each with specific monitoring requirements. Monitoring will be conducted in accordance with these approval requirements. Additional records including type of beneficial use material utilized, application date, thickness of application, date of seeding or planting, area of site material was placed and milestones for establishing vegetative cover will be maintained.

C.4 Describe the appropriate weather conditions required for the land application of sludge/other byproducts and how they will be determined and documented.

N/A - material will be blended as weather conditions allow. Materials must be loose and dry for blending and application to be done efficiently.

C.5 Check which land application activities listed below are proposed. If yes, please explain how runoff, ponding or discharges to waters of the state will be prevented (attach separate pages as needed).

- | | |
|--|---|
| Do you propose to land apply during precipitation events?
If yes, please explain: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Do you propose to spray irrigate when instantaneous wind speeds exceed 20 miles per hour?
If yes, please explain: Material will not be spray irrigated | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Do you propose to land apply within 10-year floodplain?
If yes, please explain: Not Applicable | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Do you propose to land apply in wetlands?
If yes, please explain: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Do you propose to land apply where the land application contract is expired or void?
If yes, please explain: Not Applicable | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Do you propose to land apply when the ground is saturated at or near the surface?
If yes, please explain: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Do you propose to land apply where there is at less than 12 inches between final grade and bedrock, sand or gravel lenses, compacted glacial till, and/or normal ground water elevation?
If yes, please explain: Not Applicable | <input type="checkbox"/> Yes <input type="checkbox"/> No |

C.6 List setback distances that will be observed for all of the following:

Ditches/Streams/Waterways: _____ feet Private Water Supply Well: _____ feet

Residences/Business: _____ feet
Sinkholes: _____ feet
Pond or Lake: _____ feet

Public Water Supply Well: _____ feet
Public Surface Drinking Water Intake: _____ feet
Other: Setbacks not applicable to blended soil application use. _____ feet

Attach additional pages if different setbacks are proposed for different methods of application (e.g. greater setbacks should be observed for surface application than injection).

C.7 Land application on frozen/snow-covered ground is not recommended. If land application on frozen/snow-covered ground is proposed, please indicate which of the following practices will be used to minimize pollutant discharges or nuisances:

- Application rate is limited to 10 wet tons/acre for solid materials (50% moisture or more) and 5 wet tons/acre for material less than 50% moisture. For liquids the application rate is limited to 5,000 gallons/acre.
- Applications will be made on land with at least 90% surface residue cover.
- Material shall not be land applied on more than 20 contiguous acres, separated by breaks of at least 200 feet.
- Application setbacks shall be increased to at least 200 feet from all grassed waterways, drainage ditches, streams, surface inlets, and water bodies.
- The rate of application will not exceed: _____ lbs Nitrogen/acre or _____ lbs Phosphorus/acre
- Application will not take place on slopes greater than 6% unless material is applied in alternating strips less than 200' wide generally on the contour, or in the case of contour strips, on alternating strips.

If any of these practices are not proposed to be followed, please attach a description of how pollutant discharges will be minimized during application on frozen/snow covered ground.

C.8 Describe or list any other practices that will be used to minimize pollutant discharges or nuisances:

There are no specific pollutant discharges or nuisances associated with the blended soil materials different than application of naturally occurring soils in this region.

C.9 Land Application Records

How will land application information be recorded? : Records are kept for shipments from all beneficial reuse material received for use at the site. Land application records will be maintained as specified in C.3 and in the Land Application Management Plan included with this submittal.

- Ohio EPA's Land Application Record Form Our Own Land Application Record Form (attached)

Where will the records be kept? : Emerald Environmental

C.10 Application Site Map (If known):

a. A map locating each land application site shall be attached. Each site shall be labeled "Restricted access site" or "Unrestricted access site". The map(s) should show the following items and are considered part of this plan:

- All present and known proposed occupied buildings within 300 feet of the land application area.
- All present and known proposed non occupied buildings within 300 feet of the land application area.
- All present and known proposed public and private water supply wells within 1,000 feet of the land application area.
- All sinkholes and waters of the state (including ditches, grass waterways, streams and rivers) within 200 feet of the land application area.
- All public surface drinking water supply intakes within 1500' of the land application area.
- All present and known proposed developments and public access areas within 300 feet of the land application area.

b. If the land application site(s) are not known, will site maps be submitted before land application starts? Yes No

D. Other Beneficial Uses

1. Is this material one of the following:
- Spent Foundry Sand
 - Bottom Ash From Coal Combustion
 - Fly Ash
 - Steel Slag
 - Sludge
 - Other:
2. If the material is "Other", have you contacted Ohio EPA to discuss the applicable regulations? Yes No
3. Is a comprehensive management plan attached for uses other than land application? Yes No

E. Miscellaneous Information:
 The following items shall be included with this land application management plan:

- Two copies of the Permit-to-Install/Plan Approval Application Form A or the NPDES Permit Application.
- If applicable, two copies of the site and soil evaluation(s) (For renewal applications, this is only needed if additional or different areas)
- One copy of the sampling results for the material to be beneficially used (the most recent, but no older than one year).
- Four copies of this management plan and any attachments or Four copies of a separate/complete management plan.
- Fee check payable to "Treasurer, State of Ohio."

The following additional information is included with this form: DVD submittal dated 2-20-14

F. The foregoing data is a true statement of facts pertaining to this proposed management plan.

Printed (Person Preparing Plan): Scott Hershey Title: Project Manager

Signed: [Signature] Date: 04/22/2014

APPROVED
 OHIO ENVIRONMENTAL PROTECTION AGENCY
 AUG 11 2014
 AS EVIDENCED BY COPY OF
 LETTER OF APPROVAL
 HERETO ATTACHED



ALTERNATIVE MANAGEMENT PRACTICES

CONDITIONED ALUM RESIDUALS AND BIOSOLIDS INCINERATOR ASH
FOR
RECLAMATION

January 22, 2014

Prepared by:

EMERALD ENVIRONMENTAL SERVICES, Inc.

APPROVED
OHIO ENVIRONMENTAL PROTECTION AGENCY
AUG 11 2014
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

ENVIRONMENTAL

INDUSTRIAL HYGIENE

WASTE MANAGEMENT

800-570-0690
www.emerald-environmental.com
KENT-AKRON-CLEVELAND



Contents

1. INTRODUCTION..... 3

2. BACKGROUND..... 3

3. CONTACT NAMES..... 6

4. ALTERNATIVE REUSE METHOD..... 6

4.1 EMERALD TOPSOIL BLENDING..... 6

4.1.1 ALTERNATIVE REUSE DESCRIPTION..... 6

4.1.2 SAMPLING AND EVALUATION PLAN..... 7

4.1.3 SAMPLING PROCEDURES..... 8

5. TRANSPORTATION METHODS..... 98

5.1 SOLID CAR AND BIA TRANSPORT..... 98

6. EMERGENCY RESPONSE..... 109

6.1 EMERGENCY CONTACT NUMBERS..... 109

APPENDIX A

Sampling and Analysis Report



1. INTRODUCTION

Emerald Environmental Services (EES) has teamed with K & R Conservation, LLC (K & R) to conduct site restoration work and the former Vail Mine located at 73888 Skull Fork Road in Freeport, OH utilizing Conditioned Alum Residuals (CAR), Biosolids Incinerator Ash (BIA), Paper Fines (PF) and other permitted beneficial reuse materials. Unimproved topsoil, compost, manure or peat oil, compost, manure or peat may be added if available or desired to enhance topsoil materials. The site is a former underground coal mine with mine impact in the vicinity of the former operation area. The current site owner, K & R wishes to restore these areas to productive habitat with this project.

EES proposes an alternative reuse of CAR and CAR/BIA blends or CAR blended with PF or other permitted materials that add agronomic benefit for this project. The material will be utilized in EES's proprietary soil blending process that produces material for reclamation or commercial landscaping. EES currently holds a process patent (US Patent Number US 6,537,340 B1).

2. BACKGROUND

EES submitted an IAWMP request to Ohio EPA in January 2009 to utilize CAR for reclamation purposes at the Vail Mine site in Freeport, Ohio. The request was modified in November, 2009 to include BIA as a soil additive for nutrient enhancement purposes. EES holds a permit for beneficial reuse of PF and may obtain other beneficial reuse approvals in the future.

The Vail Mine is an Ohio Division of Mineral Resources Management Abandoned Mine Land (AML) Site located in Guernsey County, Ohio (Mine API #340598013702). The underground mine, formerly owned by the Island Creek Coal Company, was abandoned in 1981. Gob and spoil piles and lightly vegetated areas currently comprise the former operations area on the Property. Figures 1 and 2 are examples of current site conditions. By using alternative technologies to generate cover material that will support vegetation, EES intends to conduct reclamation of the affected areas of the Vail Mine property. Furthermore EES may market some of topsoil materials for landscaping or reclamation purposes at other sites if deemed practical.

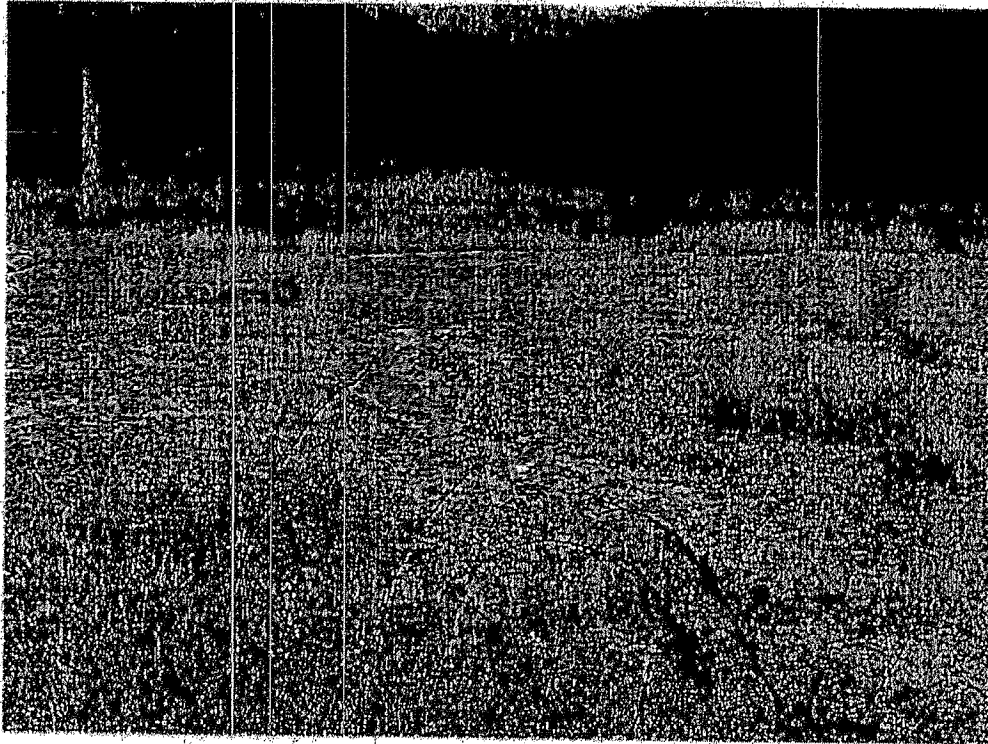


Figure 1. Mine Spoil - Western Part of Site

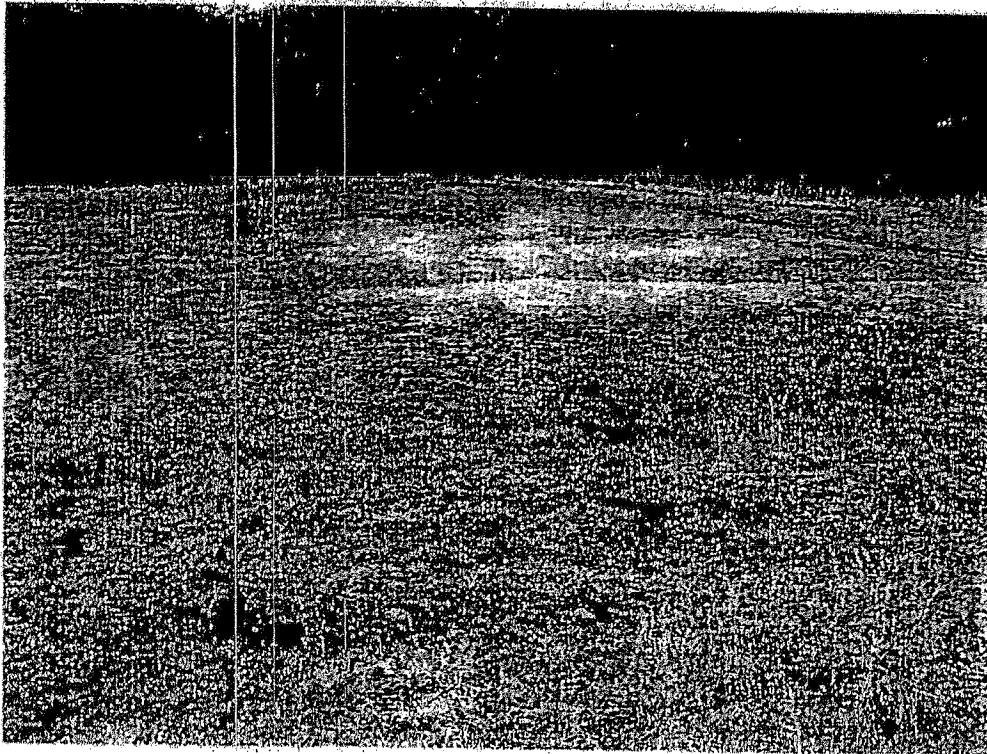


Figure 2. Mine Spoil - North side of Site near former mine portal

On June 26, 2009 EES prepared a report titled **BACKGROUND EXISTING SURFACE MATERIAL SAMPLING COLLECTION AND ANALYSIS FOR THE VAIL MINE RECLAMATION** that characterized existing site conditions. This report was submitted to Ohio EPA SEDO in June, 2009.

Additional studies, test plots and research were done to demonstrate the suitability of the CAR and CAR/BIA blends for this project. A compilation of these documents, which were submitted to Ohio EPA SEDO can be found in the Compilation of Submittals IAWMP Request submitted with this plan.



3. CONTACT NAMES

The following persons have been designated contact persons for the development, implementation and coordination of this management plan for the Emerald Environmental Services, Inc.:

Mr. Bob Walls, Jr.
K & R Conservation, LLC
2250 Yorktown
Uniontown, Ohio 44685
Phone 330-699-5335
wallswb@aol.com

Mr. Scott Hershberger
Emerald Environmental Services, Inc.
P.O. Box 1953
1621 St. Clair Avenue
Kent, Ohio 44240
Phone: 330-677-0785
Fax: 330-677-1567
shershberger@emerald-environmental.com

4. ALTERNATIVE REUSE METHOD

The following alternative reuse for reclamation will be used at the Vail Mine facility owned by K & R. EES will implement and manage the alternative reuse program described herein.

4.1 EMERALD TOPSOIL BLENDING

EES has developed a proprietary process (US Patent # US 6,537,340 B1) that incorporates alum water treatment residuals (AWTR) into a topsoil product. AWTR does not undergo disposal and is utilized to enhance properties of the topsoil product. As part of the process, EES has developed this plan to utilize CAR, CAR/BIA blends or other permitted beneficial reuse materials such as PF to blend with CAR for reclamation purposes. EES received a LAMP approval from Ohio EPA on November 25, 2013 for the reuse of PF as a soil amendment. Unimproved topsoil, compost, manure or peat may be added to further enhance agronomic benefit or organic content of topsoil or reclamation blends.

4.1.1 Alternative Reuse Description

The alternative reuse process involves utilizing CAR or CAR blended with BIA, PF or other materials as needed to optimize agronomic properties to produce a topsoil product. BIA, PF or other permitted materials will be blended with CAR that maximizes the agronomic benefits and other beneficial properties in the blended soils. The topsoil is produced at in house processing and conditioning facility or subcontract commercial blending facilities, then marketed and utilized as a landscaping or reclamation product. Detailed testing and evaluation of CAR, BIA, PF and other materials is conducted both before and after topsoil product to monitor product quality. Each load of CAR, BIA, PF or other materials are documented on a Bill of Lading or manifest to enable complete tracking of materials moved to the Vail Mine site.



4.1.2 Sampling and Evaluation Plan

Prior sampling of both CAR and BIA was conducted to evaluate potential contaminants within the materials. Results have been presented to Ohio EPA previously. The initial sampling data for this project suggests that pre-blended CAR does not contain concentrations of the selected metals in excess of ranges documented in typical soils and BIA metals concentrations comply with Ohio Sludge Rule thresholds. Sources of BIA will be tested and evaluated for compliance with metals concentrations in Ohio Sewage Sludge Rules. Any other materials to be included will be reviewed on a case by case basis and will be submitted to Ohio EPA for approval for use either as an amendment to this plan or as a stand-alone approval. CAR and BIA are acceptable for alternative reuse in the Emerald soil blending process when limited to blending ratios to optimize nutrient and organic content blended materials to be marketed.

Since PF has its own LAMP approval, it will be monitored in accordance with its LAMP approval.

4.1.2.1 On Going Monitoring

Ongoing Monitoring of CAR will be conducted to assess and document that CAR constituents remain within range of naturally occurring soils. Such sampling will entail analysis of pre-blended CAR and final blended soils. Analysis will be performed for pH, Arsenic, Cadmium, Total Chromium, Copper, Lead, and Mercury.

Ongoing Monitoring of BIA will be conducted to assess variability of target BIA constituents found to impact potential reuse plans. Such sampling will entail analysis of pre-blended BIA and final blended soils. Analysis will be performed for pH, Arsenic, Cadmium, Total Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

Pre-blended CAR and BIA will be secured at a rate of:

One sample per month or 1,000 cubic yards of CAR or BIA, whichever is greater.

Topsoil products will be sampled on regular intervals to evaluate target analytes in blended soils prior to resale, to facilitate suitability evaluation. Blended soils will be sampled at the following rate:

One sample per 5,000 cubic yards of blended soils produced or once per year, whichever is greater.



Final blended soils may be considered acceptable if they contain concentrations below the maximum levels found in the table below:

Analyte	Maximum Concentration
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Molybdenum	35
Nickel	420
Selenium	100
Zinc	2800

4.1.3 Sampling Procedures

All sampling will be conducted by securing grab samples with stainless steel trowels or coring tools. Sampling equipment is thoroughly decontaminated using a non-phosphate detergent wash and de-ionized water rinse between each use. All samples are placed in decontaminated sample jars. Sampling technicians utilize disposable latex gloves while handling samples and sample containers to reduce the risk of cross-contamination. Gloves are replaced between each sample.

5. DEVELOP LAND APPLICATION AREAS

EES will develop application areas as identified in the enclosed Conditioned Residuals Land Application Areas dated 11/25/09. One area will be utilized at a time and completed prior to moving forward with subsequent areas. Mine spoil which will be mechanically loosened to a depth of up to 2 feet and then up to a 2-foot thick layer of CAR/BIA loosely applied. The BIA, PF or other materials, when utilized would be brought directly to the land application or blending area for inclusion into topsoil.

5.1 SEED AND MULCH APPLICATION AREAS

- o Completed application areas will be fertilized, seeded and mulched per the recommendations in the Forestry Reclamation Advisory No. 6 and No. 2. Please note that all soil and/or blended topsoil materials are to be prepared/placed to create a suitable rooting medium for good tree growth as practical that is recommended in the advisory.
- o EES will utilize applicable soil erosion and sedimentation control requirements.



6. TRANSPORTATION METHODS

All CAR, BIA and PF transported from the Generator facilities will be transported off-site via truck in accordance with all applicable DOT requirements and local weight restrictions. In accordance with the provisions of this plan, CAR, BIA, PF and other materials may be transported as follows:

6.1 *SOLID CAR AND BIA TRANSPORT*

All solid CAR BIA to be transported with either:

1. Semi dump trailers
2. Dump trucks
3. Roll-off containers

All vehicles, containers, tractors, and/or trailers to be DOT compliant. Only drivers having valid commercial driver's licenses to be utilized for operation of commercial vehicles.