

34202005

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Forsyth Co.



STATE OF NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
DIVISION OF WASTE MANAGEMENT  
1646 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1646

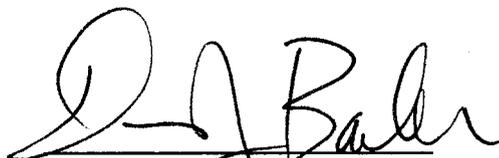
**Atlantic Scrap and Processing, LLC**

is hereby issued a

**PERMIT TO OPERATE**

**AUTO SHREDDER RESIDUE (ASR) RECLAMATION OPERATION**

located at 1426 West Mountain Street, Kernersville, Forsyth County, North Carolina, in accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit. The facility is located and described by the approved construction plan and the permit application narrative.



Donald J. Barber, Head  
Permitting Branch  
Solid Waste Section

## ATTACHMENT 1

### Approved Documents

1. Conceptual Work Plan, Buried Metal Recovery Project, W.Z. Baumgartner & Associates, Inc., April 2004.
2. Operational Plan and Facility Drawings, W.Z. Baumgartner & Associates, Inc., February 2005.
3. Star Screen Revision 2005, HVFRecoveries, LLC,

## ATTACHMENT 2 PERMIT CONDITIONS

1. This permit authorizes the reclamation of Auto Shredder Residue (ASR) and other solid waste material that is recovered from the existing at the Atlantic Scrap and Processing, LLC, landfill as described in the approved plans and documents listed in Attachment 1.
  - a. This permit does not authorize the disposal of any new or additional ASR or other solid waste into the present landfill.
  - b. Material that is removed from the present landfill and is not recovered as a marketable material by processing is authorized for return to the landfill as fill material as described in the approved plans and drawings.
2. This permit shall expire either when the final load of material is reclaimed from the present landfill or 3 (three) years from the date of permit issuance, whichever occurs earliest.
  - a. Prior to the expiration date of the permit, the permittee may submit a written request for an extension of the permit for a specified and limited amount of time needed for the completion of the reclamation of material presently disposed at the landfill.
  - b. The expiration of the permit will have no affect on the on-going processing of newly generated ASR through the processing plant, which is not an activity regulated under the North Carolina Solid Waste Rules.
3. The permittee shall submit a revised Groundwater Monitoring system with a revised groundwater compliance boundary to the Solid Waste Section by the close of business May 31, 2005. Ground water quality at this facility is subject to the classification and remedial action provisions of 15 NCAC 2L.
4. The permittee shall submit an updated Closure Plan consistent with the document dated May 1999 titled "LANDFILL CLOSURE TRANSITION PLAN FOR INDUSTRIAL LANDFILL" to the Solid Waste Section by the close of business October 28, 2005. The updated closure plan shall provide:
  - a. Conceptual final contours and final landfill footprint configuration;
  - b. Final cap materials;
  - c. Construction quality assurance specifications;
  - d. Sedimentation and erosion control practices;
  - e. Design details showing typical cross-sections;

- f. Notice to Register of Deeds that states the property was used for disposal of solid waste; and
  - g. Any other pertinent design elements for placing the processed ASR and closing the landfill.
5. This facility shall be maintained and operated in accordance with the North Carolina Solid Waste Management rules.
- a. Amendments or revisions to the Solid Waste Management Rules or violations of standards may necessitate the modification of the construction and operation plans of this facility.
  - b. The operating and permit conditions are subject to revision or revocation at any time the operations either threaten or have the potential to threaten the environment or public health.
6. Site preparation shall be in accordance with the approved site plan.
7. The site shall be adequately secured by means of gates, chains, berms, fences or other means to prevent unauthorized entry except when an operator is on duty.
- a. A sign shall be posted at the entrance to the facility containing the facility name, contact name and number, and permit number.
  - b. An attendant shall be on duty at the site at all times while it is in use to assure compliance with operation requirements and to prevent entry of hazardous waste and other unacceptable waste onto the site.
8. All earth-disturbing activities will be conducted in accordance with all applicable federal, state, and local requirements.
- a. Adequate erosion control measures shall be practiced to prevent silt from leaving the site in accordance with the Sedimentation Control Act, 15A NCAC 4.
  - b. Temporary seeding shall be utilized as necessary to control erosion. Seeded slopes shall be covered with straw or similar material if necessary to prevent erosion.
  - c. Surface water shall be diverted from the operational area and not be impounded over waste.
  - d. No materials will be tipped, stored or stockpiled in standing water.
9. Effective vector control measures shall be applied to control any potential vectors including flies, rodents, insects, and vermin.

10. The facility shall be operated in a manner that does not cause a nuisance. Dust, litter and odor control measures shall be employed to minimize releases.
11. The open burning of solid waste is prohibited.
12. Appropriate and effective equipment shall be available to control accidental fires and arrangements made with the local fire protection agency to immediately provide fire-fighting services when needed. Employees shall be trained in fire prevention and emergency action procedures.
13. Fires and other incidents that do not conform with the normal operating conditions authorized by this permit shall be reported to the Regional Waste Management Specialist within 24 (twenty-four) hours of the occurrence with a written notification to be submitted within 15 (fifteen) calendar days of the occurrence.
  - a. The permittee is not required to report minor and isolated incidents that do not cause nuisance nor threaten human health or the environment. However, should an incident be questionable, the permittee shall contact the Regional Waste Management Specialist for concurrence or guidance.
14. Since the waste stream is limited by this permit to only those materials recovered from the existing landfill and auto shredder residue from on-site operations, a formalized waste screening plan is not required at this time. However, the permittee shall provide training to employees to handle unexpected and potentially dangerous wastes such as drums, liquid containers or other wastes. Such incidents shall be reported in accordance with Permit Condition No. 13 above. Also, any changes in the waste stream may warrant a review or change in this permit condition.
15. Paint and other liquid waste materials shall be managed and stored on site in a manner to prevent release to the environment and removed from the site for disposal in an approved facility in a timely manner.
16. Daily, monthly and annual records shall be maintained for the amount of material processed and the amount of recovered materials shipped. The data shall provide a means for estimating the amount of materials excavated from and material returned to the landfill. At the end of the project, the permittee shall provide the following information:
  - a. Total materials removed from the landfill and processed (in tons),
  - b. Total materials recovered (in tons), and
  - c. Total fill material returned to the landfill (in tons).

- End -

SOLID WASTE SECTION DATABASE TRACKING FORM

Circle one: Add New Facility

Edit Existing Facility  
(only list permit # and info. that has changed)

Add C&D Unit

SW SITES DATABASE

PERMIT NUM: (10) 34-17  
SITE NAME: (40) ATLANTIC SCRAP AND PROCESSING, LLC  
SITE ADDRESS: (30) P.O. Box 608  
SITE CITY: (25) KERNERSVILLE COUNTY: FORSYTH

FACILITY TYPE DATABASE

FACILITY TYPE (circle one): LF I T TP MRF C YW  
WASTE TYPE :  
(check only the main type of waste received )  
MSW \_\_\_\_\_  
IND \_\_\_\_\_  
CD \_\_\_\_\_  
LCID \_\_\_\_\_  
MED \_\_\_\_\_  
TIRE \_\_\_\_\_  
TIRE COLL \_\_\_\_\_  
OTHER (list) AUTO SHREDDER RESIDUE

FACILITY INFO DATABASE

STATUS: OPEN CLOSED INACTIVE  
LINED: YES NO  
PUB/PRIV: PUBLIC PRIVATE  
REGIONAL: YES NO  
IF REGIONAL, LIST COUNTIES \_\_\_\_\_

APPLICANT DATABASE

APPLICANT NAME: (25) BILL PERRY  
APPLICANT TITLE: (30) PROJECT MANAGER/ADMINISTRATOR  
APPLICANT ROAD: (30) P.O. Box 608  
APPLICANT CITY: (20) KERNERSVILLE STATE: (2) NC ZIP: (10) 27285-0608  
APPLICANT PHONE: 336-996-2350 APPLICANT FAX: 336-996-0493  
CONTACT NAME: (25) \_\_\_\_\_  
CONTACT TITLE: (30) SAME  
CONTACT ROAD: (30) \_\_\_\_\_  
CONTACT CITY: (20) \_\_\_\_\_ STATE: (2) \_ ZIP: (10) \_\_\_\_\_  
CONTACT PHONE: \_\_\_\_\_ CONTACT FAX: \_\_\_\_\_  
OPERATOR NAME: (25) \_\_\_\_\_  
OPERATOR TITLE: (30) SAME  
OPERATOR ROAD: (30) \_\_\_\_\_  
OPERATOR CITY: (20) \_\_\_\_\_ STATE: (2) \_ ZIP: (10) \_\_\_\_\_  
OPERATOR PHONE: \_\_\_\_\_

Signature: [Signature] Date Completed: 8/18/04  
updated May 10, 1996

**Bill Perry**

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**From:** Bill Perry [fridge@infionline.net]  
**Sent:** Tuesday, August 09, 2005 12:58 PM  
**To:** Geof Little  
**Cc:** Jason Watkins; Roger asap Ruminski (rruminski@atlanticscrap.com); Frank Brenner; Steve Earp  
**Subject:** Confirmation of Equipment Change Permit #34-20

Geoff

I am sending under separate cover the new drawing for the Huron reclaim system that depicts the replacement of the existing trommel. Huron is in the process of switching out the equipment and should be finished by the end of this week. This will enhance their recovery operation according to them.

Thanks in advance,

Bill Perry



File



**NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor  
William G. Ross Jr., Secretary

March 3, 2005

Bill Perry  
Atlantic Scrap and Processing, LLC  
PO Box 608  
Kernersville, NC 27285-0608

Post-it® Fax Note 7671		Date 03-03-05	# of pages 7
To Bill Perry	From Great Little		
Co./Dept. ASAP	Co. DENR		
Phone #	Phone # 919-733-4996		
Fax # 336-996-0493	Fax #		

Re: Permit to Operate  
ASR Reclamation Operation  
Permit No. 34-20  
Atlantic Scrap and Processing, LLC  
Forsyth County, North Carolina

Dear Mr. Perry:

Enclosed is a Solid Waste Permit to Operate the above referenced facility. The permit approves the processing of Auto Shredder Residue (ASR) reclaimed from the landfill located on the property shown in the approved plans and the return of unmarketable processed byproducts to the same landfill prior to final closure.

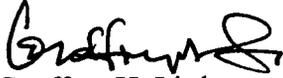
The permit shall expire either when the final load of material is reclaimed from the present landfill or 3- (three-) years from the date of permit issuance, whichever occurs earliest. If needed, you may request an extension of the permit for the limited amount of time needed to complete the reclamation of material presently disposed at the landfill.

Please note the following:

- This permit does not authorize the disposal of any new or additional material in the present landfill.
- Processing newly generated ASR through the processing plant is not an activity regulated under the North Carolina Solid Waste Rules. The expiration of the permit will have no affect on that continuing activity.
- Permit Condition No. 3 requires you to submit a revised Landfill Groundwater Monitoring Plan by the close of business May 31, 2005.
- Permit Condition No. 4 requires you to submit a Landfill Closure Plan by the close of business October 28, 2005.

We look forward to working with you during the completion of the project. Please contact me at (919) 733-4996 extension 266 or the Regional Waste Management Specialist, Jason Watkins, at (336) 771-4608 extension 340 should you have any questions regarding the enclosed Permit to Operate.

Sincerely,



Geoffrey H. Little  
Environmental Engineer  
Solid Waste Section

c: Jim Coffey, DWM  
Jim Barber, DWM  
Brent Rockett, DWM  
Jason Watkins, DWM

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**Atlantic Scrap and Processing, LLC**

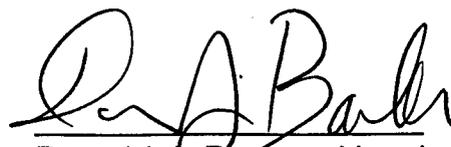
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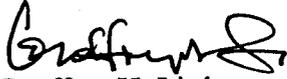
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Sincerely,



Geoffrey H. Little  
Environmental Engineer  
Solid Waste Section

c: Jim Coffey, DWM  
Jim Barber, DWM  
Brent Rockett, DWM  
Jason Watkins, DWM

-Booklet-

34-20

Conceptual Work Plan  
Buried Metal Recovery Project

April, 2004

Approved March 3<sup>rd</sup>, 2005

Permit # 34-20

CONCEPTUAL WORK PLAN

BURNING HILL DEVELOPMENT PROJECT

**APPROVED**  
DIVISION OF WASTE MANAGEMENT

SOLID WASTE SECTION

~~AUTENTIC SCRAP AND PROCESSING, LLC~~

**APPROVED**  
KERNETT, NORTH CAROLINA

DIVISION OF WASTE MANAGEMENT

SOLID WASTE SECTION

DATE 03-03-05 BY G. Little

34-20 Forsyth County

APRIL 2004



W. Z. BAUMGARTNER & ASSOCIATES, INC.

Environmental Engineers & Consultants

P.O. Box 680369

Franklin, TN 37068-0369

97054



04/14/04

W Z B

**CONCEPTUAL WORK PLAN**  
**BURIED METAL RECOVERY PROJECT**  
**ATLANTIC SCRAP AND PROCESSING, LLC**  
**KERNERSVILLE, NORTH CAROLINA**

**Introduction**

This conceptual work plan has been developed so that the feasibility of recovering buried metal at the Atlantic Scrap and Processing landfill can be evaluated. There have been similar successful projects in other locations. In each case, site specific procedures were developed to make certain that the project proceeded without impediment. It is understood that such impediments could be related to environmental regulations, health and safety issues, regulatory permitting, or public relations.

**Extent of Metal-bearing Material**

The existing landfill at the Atlantic Scrap and Processing facility was permitted in the early 1970's by the State of North Carolina. The landfill was needed to dispose of shredder residue from the recently constructed automobile shredder. For a number of years the shredder was operated with only ferrous metal recovery. As metal markets changed and as recovery technology improved, the site began recovering some nonferrous metals from the downstream system on the shredder. Several different generations of nonferrous recovery equipment have been utilized at the site. Each generation was more efficient than the technology that preceded it. By the time the last waste was placed in the landfill, the site was utilizing eddy-current technology to recover a high percentage of nonferrous metals.

The amount of shredder residue produced by a facility varies according to the size of the shredder, the hours of operation, and the infeed material. Shredding automobiles produces more residue per ton of infeed than does the shredding of household appliances or other light iron feedstock. At this particular facility there was no requirement to measure the volume of waste generated and placed in the landfill. In addition, this site has been the subject of a bankruptcy and many of the historical operating records are not available. Using information from similar

size operations, it is likely that on average 75 to 100 tons of shredder residue were generated by the shredder during a full production day. Using this generation rate and assuming 230 operating days per year for 25 years, the potential shredder residue in the landfill would be about 500,000 tons.

During the past year, the company has excavated some test pits in the landfill and processed the excavated material in order to evaluate the potential for recoverable metals. Those tests were marginally successful. Metal was recovered at a rate that would justify re-processing the material in the landfill provided the metal content of the excavated residue does not drop below the level of the test pit material. Because of the developing technology for nonferrous recovery, it is anticipated that deeper excavation into the landfill will uncover residue with higher metals content since it was generated during the time of less sophisticated technology.

#### **Site Limitation Issues**

There are several factors relating to the location, shape, and topography of the site that impact on the project approach.

The scrap yard is located on a level plateau of land. At the time the shredder was constructed, the plateau ended just north of the shredder, and the natural ground surface sloped down to a valley, the floor of which is about 90 feet below the plateau elevation. This sloping area was a natural location for the landfill.

Over time as waste was deposited in the area, the footprint of the landfill expanded east to the edge of a marshy area and north to a natural depression. Shredder residue is a non-homogeneous material containing a variety of fibers and wire. Since the material tends to "weave" itself together, the angle of repose of the material can be steeper than at other types of landfills (generally greater than 1:1). The material has proven to be stable when placed in landfill environments, and no significant erosion issues have existed in the past.

The project will disturb a portion of the outslope on the east side of the landfill (see project sequencing maps). This side of the landfill has experienced some slope stability problems in the

past, and one of the benefits of the project will be to replace the existing slope with a more stable waste placement. Also, the outslope in the north side of the landfill has been stabilized along the lower portions, and the recovery project will not disturb those already stabilized portions. As indicated on the project sequencing maps, the excavation will proceed from the edge to the center of the fill. This will allow an earthen berm to remain in place during the entire project time to prevent any sediment from being washed from the recovery working face during precipitation events.

This landfill site is part of an ongoing, viable scrap yard. All necessary utilities and infrastructure already exist on the site. There will be some new equipment installed for processing the excavated material. Any new equipment will be installed inside the footprint of the existing landfill.

#### **Process Flow Chart**

Figure No. 1 presents a conceptual Process Flow Chart for the metals recovery project. It is expected that considerable refinement may take place before the most advantageous arrangement is determined. However, this Process Flow Chart is adequate for the purpose of identifying those components that require attention in the work plan. Also attached at the end of this document are a series of site maps showing the sequence of the project. Reference will be made to that project sequence as the flow chart is discussed.

*Project Startup* - Prior to the initiation of any excavation or recovery, the various equipment components need to be purchased or fabricated and installed on the site. It is anticipated that some of the new equipment will be located on the existing concrete slabs. Provisions for all utilities will be prior to startup.

This site will be covered under the general stormwater permit for metals recycling. Best management practices (BMPs) for all of the stockpile areas will be developed and implemented prior to recovery activities. It is likely that this will involve silt fences around the pile areas. It is not anticipated that a detention pond will be required.

There are two other contingencies which should be addressed before the project begins. First, it is unlikely that the excavated material will be a fire hazard. However, provision will be made for dealing with such a fire on site. This will include a combination of a dirt pile for smothering and a water source. A brief fire response plan will be prepared and discussed with operating personnel.

The second contingency is dust control. It is likely that the excavated material will have the potential for fugitive dust emissions as it dries out. The screening process is the most likely process to generate dust. Provisions should be made for some type of water spray for dust control, even if the process does not need the washing step to produce a quality product. During the dry periods of the year, some provisions may need to be provided for wetting the haul roads on site.

**Excavation** - It is proposed on the project sequence maps that the excavation begin at the east side of the site (Sequence Map #1). The excavated material will be stockpiled in a designated area close to the processing equipment. It is anticipated that the excavation activity will be periodic. Even with moderate size excavating equipment, more material can be excavated and stockpiled than can be processed in the same amount of time. There will be times when weather conditions will not allow excavation but will allow processing. Therefore, the project as designed includes intense excavation periods to build the infeed stockpile followed by periods when the primary activity is processing.

The excavation sequence will leave a wall of material between the site operations and the marshy area. This will reduce the potential for contaminated runoff leaving the site. The excavation plan for the perimeter of the landfill will include leaving existing material to an elevation five feet above the original ground surface.

As can be noted on the following sequence maps, the excavation will proceed in an orderly manner through the various zones of the site. As the excavation progresses, there will be, until the end of the project, a gap between the excavation area and the refilling area. This is to allow the processed material to be placed in layers and compacted without interfering with the

excavation operation. As soon as a zone has been refilled to the target elevation, the installation of a soil cap will commence.

***Infeed Stockpile*** - Immediately following excavation, the material to be processed will be placed in the infeed stockpile. This stockpile should be located close to the processing equipment. Sufficient area should be available to accommodate a volume of material equal to several weeks production. The pile will be surrounded by silt fencing and/or bales of straw to catch any material that washes off the pile. The area devoted to containment of the pile may need to be adjusted to maximize the control of fines that may be washed from the pile during rainfall.

***Screening (Washing)*** - Prior to the metals separation in the eddy-current, the metal-bearing material will be processed in a screening operation. Provisions are made in this concept to include a washing process either before or during the screening. Some in-field testing will be done to determine the most efficient metals recovery process.

If washing is a part of the final process, a tank will be provided for capturing and reusing the water. This tank will need to have the solids removed on a regular basis. A place will be provided to place the solids removed from the pit and allow them to dry. It is anticipated that these solids can be placed back in the landfill without any further handling.

The screening operation will generate a side-stream product of fines. At this stage of development, it is planned to stockpile these fines and use them as the top layer of the landfill material. This will allow a smooth surface that will make future use of the site more desirable. It is possible that subsequent testing of the fines may reveal recoverable metals. If this proves to be the case, the fines may be processed on site or shipped to another location for processing.

***Eddy-Current Process*** - The primary processing on the site will be the eddy-current equipment. Preliminary testing had proved that sufficient metal can be recovered using this technology to make the project feasible. It is assumed at this point that a single pass process will be used. However, once the recovery is underway, experiments with a dual pass process using a different setup for the eddy-current may prove feasible. If this is the case, the stockpile for processed

material will be divided into two portions.

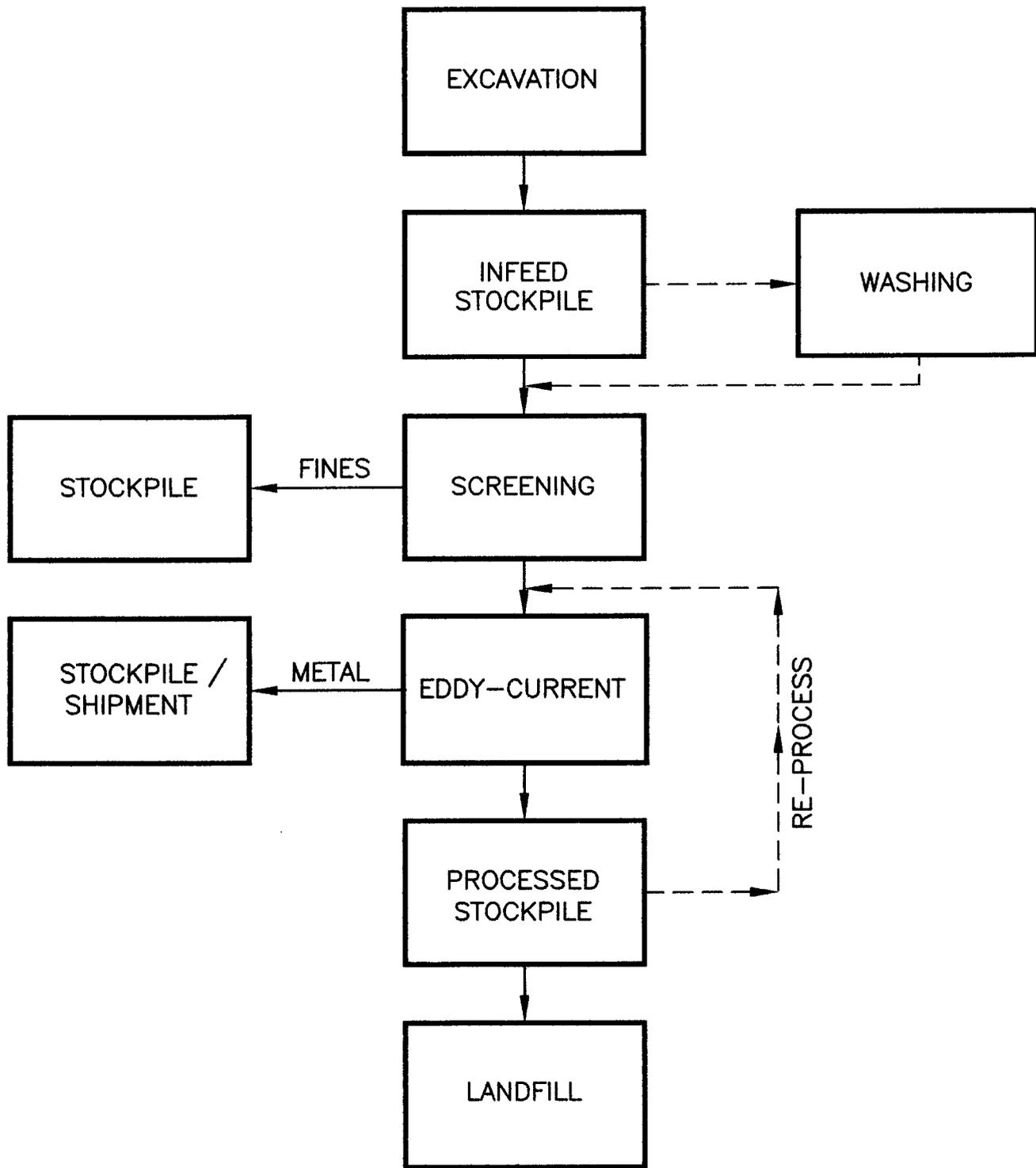
The metal removed in the eddy-current process will be stockpiled until a sufficient quantity has been generated to justify shipment. This stockpile will need to be managed to minimize any contaminated runoff.

***Processed Material Stockpile*** - This stockpile will need to be surrounded with a silt fence or bales of straw. The area for the pile will need to be large enough to allow accumulation during periods when the process is operating but no refilling is being performed.

***Landfill*** - All of the residue processed (with the possible exception of the fines) will be landfilled on-site. The processed material could differ considerably from normal, freshly generated shredder residue. Fresh shredder residue is very fibrous, and hence, very stable in stockpiles. The angle of repose for fresh material is typically greater than 1:1. For this project, the processed material may need to be handled much more like soil and will need to be placed in layers and compacted carefully.

**ATTACHMENTS**

WZB



**PROCESS FLOW CHART**  
**BURIED METAL RECOVERY PROJECT**  
**ATLANTIC SCRAP and PROCESSING LLC**  
**KERNERSVILLE, NORTH CAROLINA**

*W Z B*

SEQUENCE for MINING

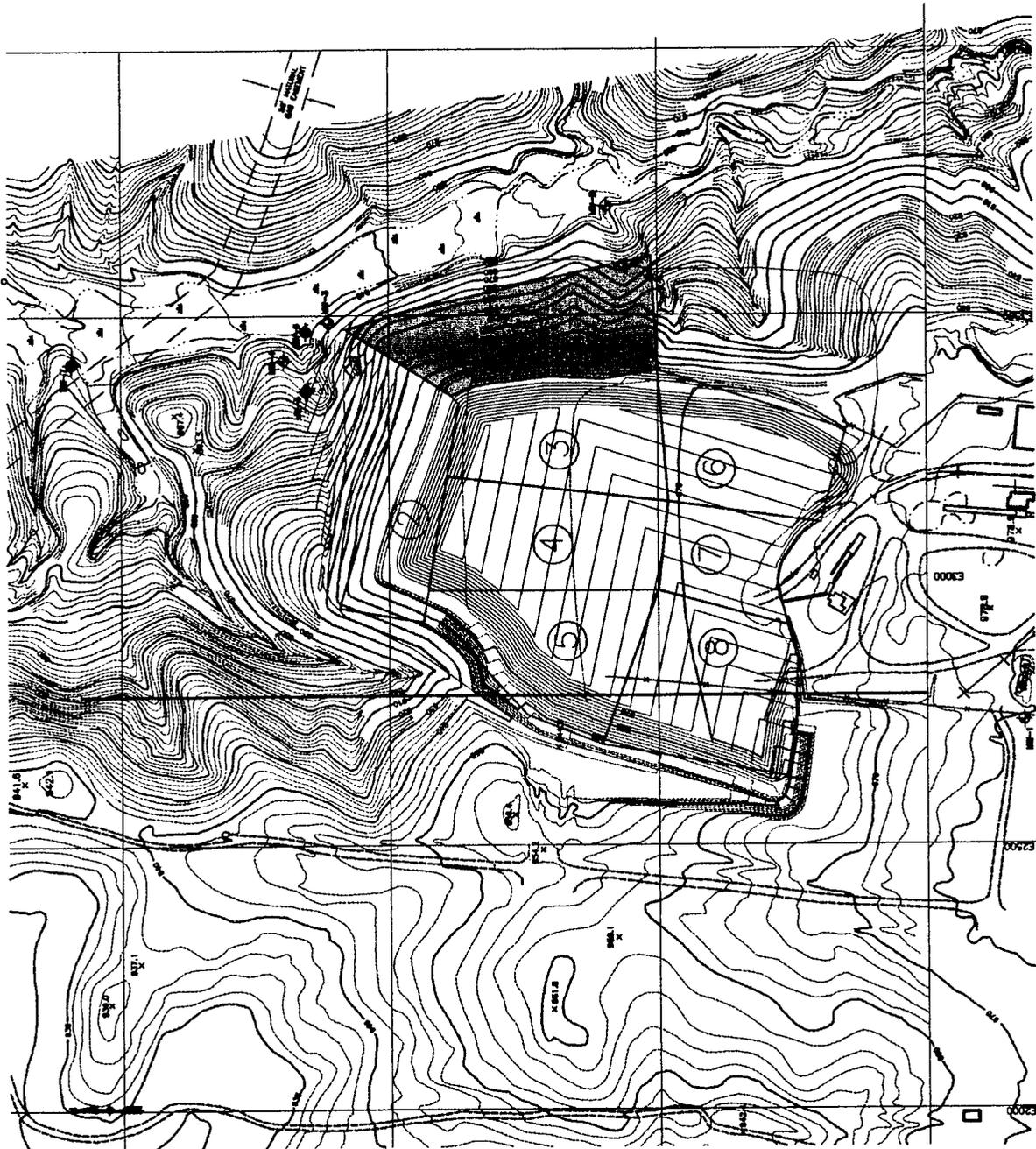
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LEGEND FOR MINING SEQUENCE

- 1 EXCAVATE
- 2 RECOVERY
- 3 REFILL
- 4 COVER/CLOSE



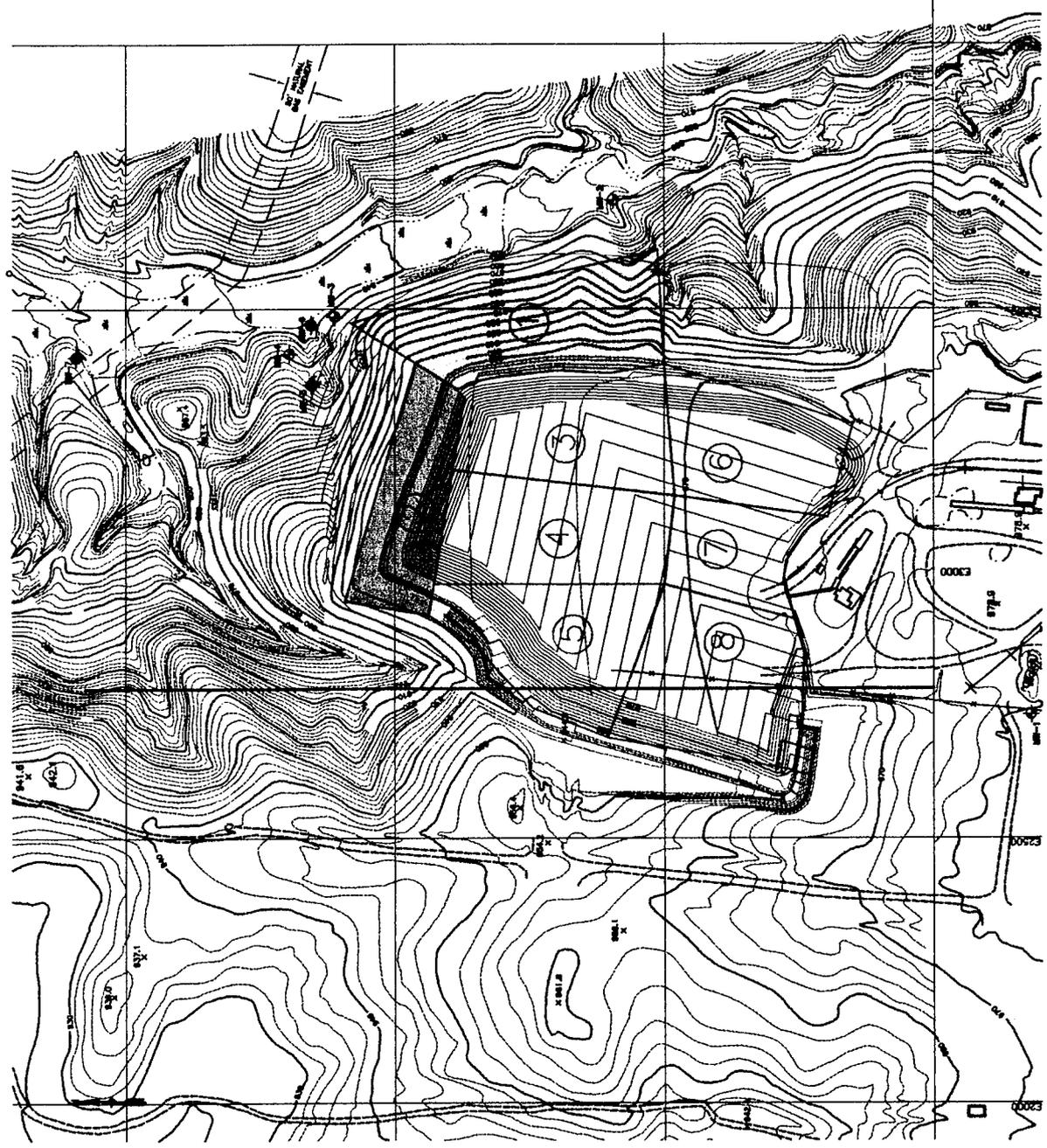
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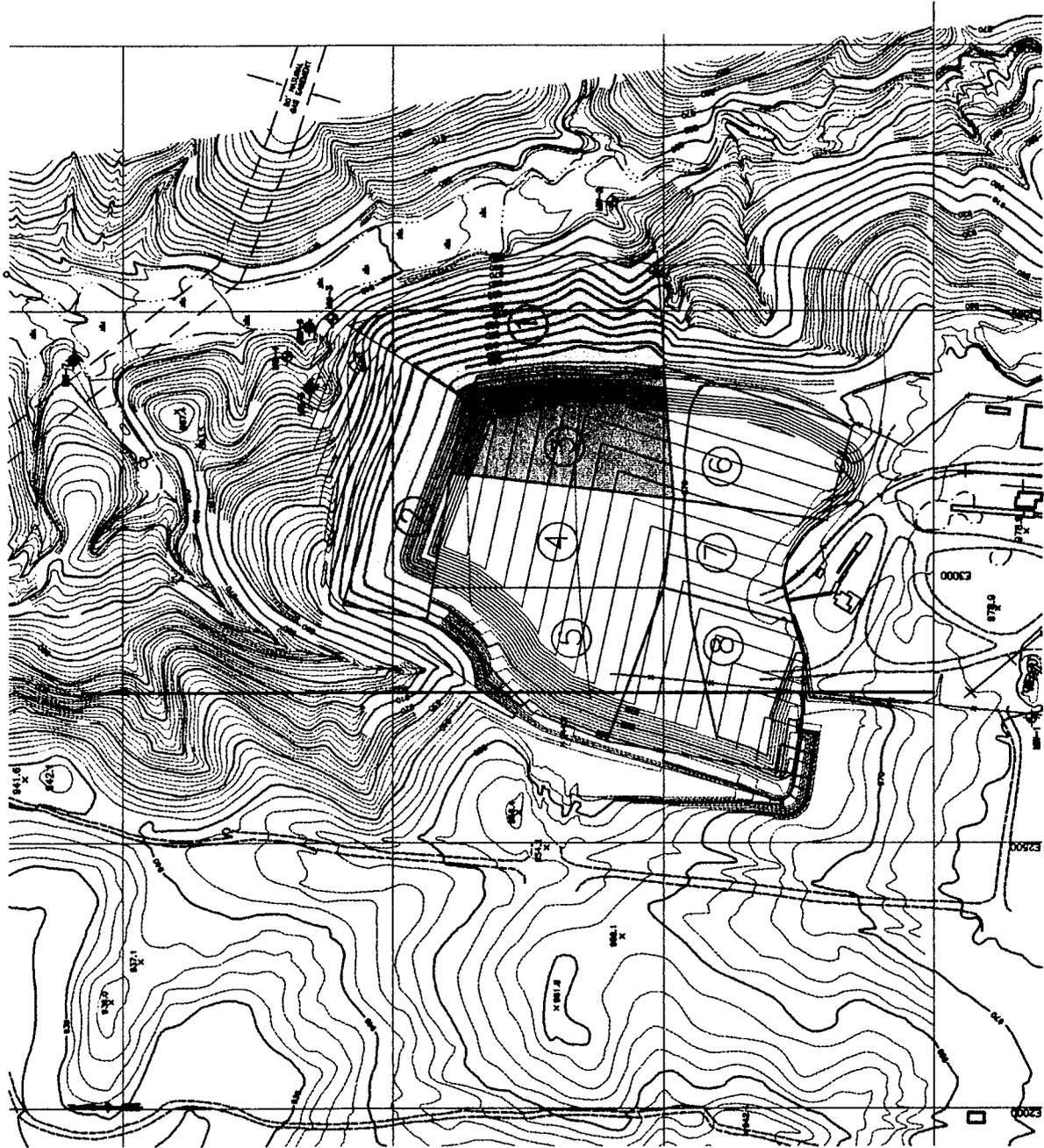
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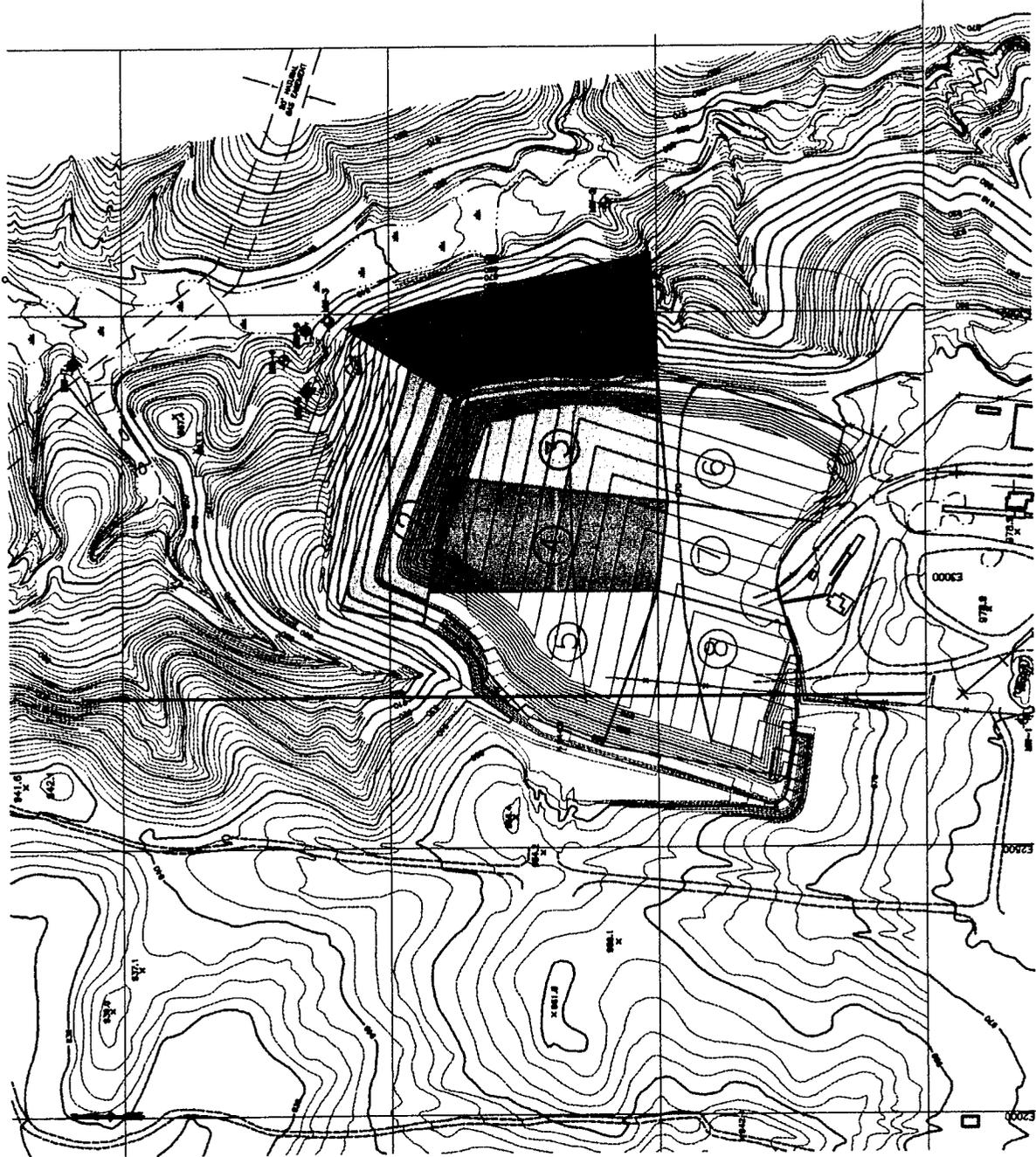
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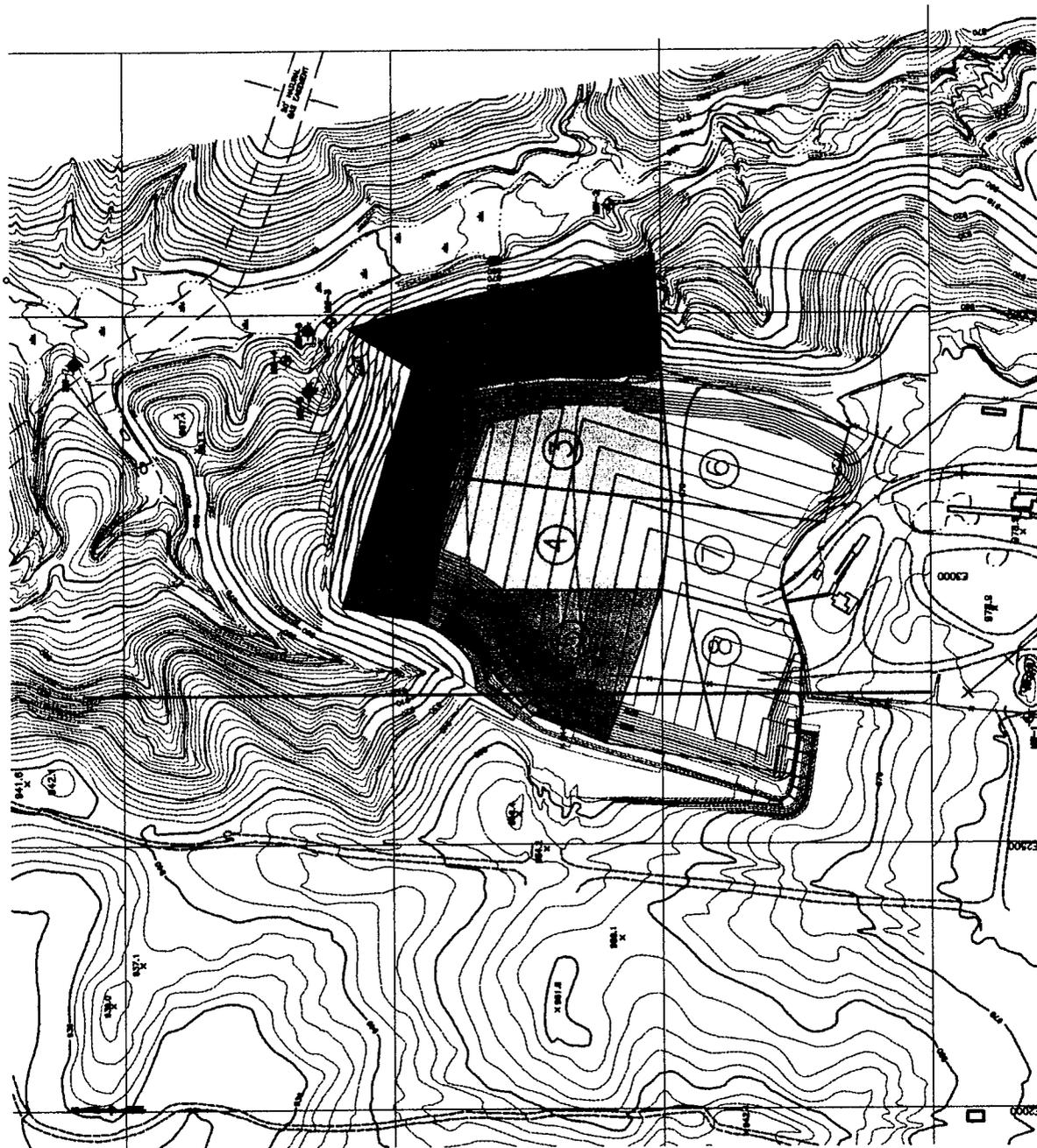
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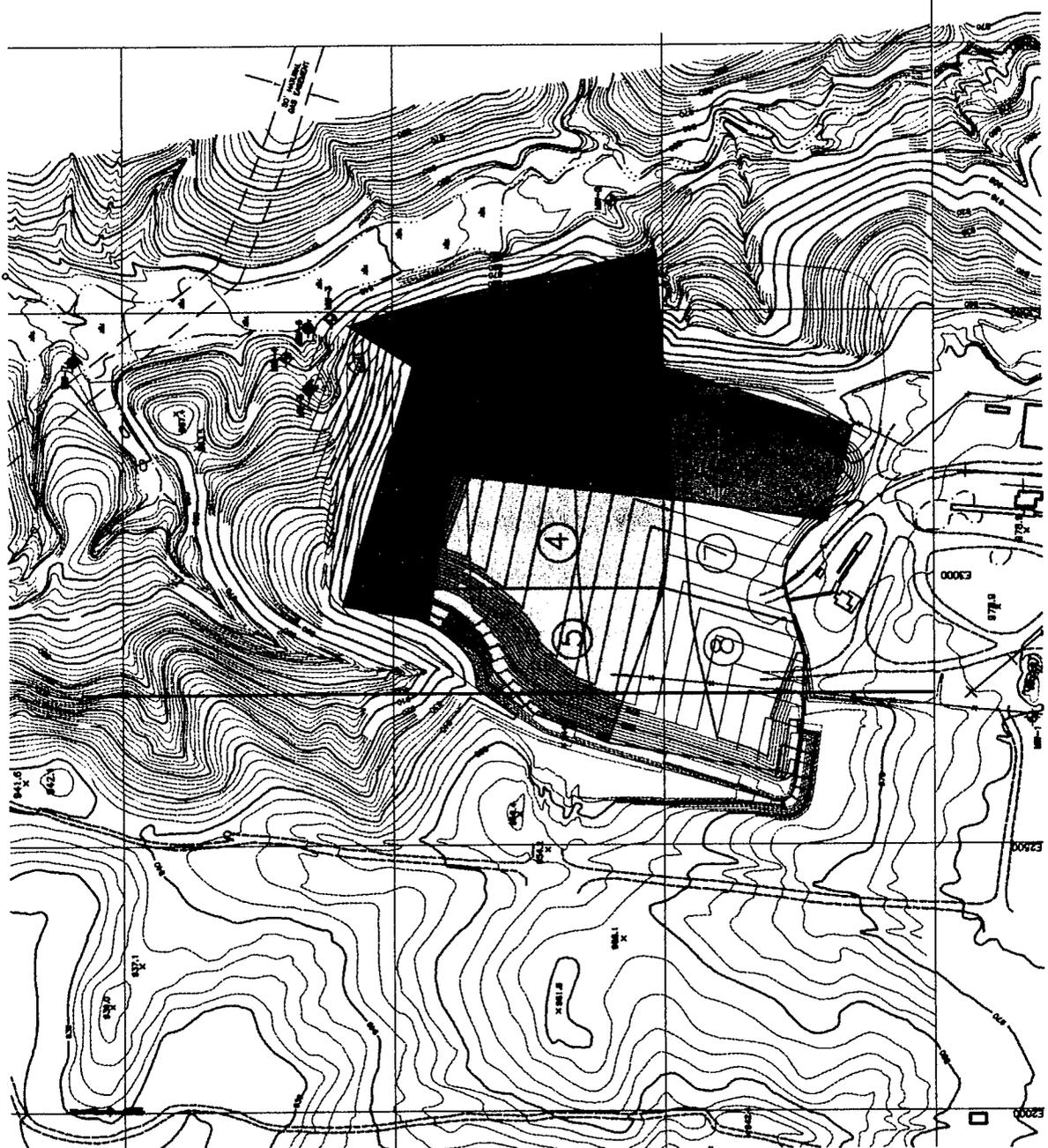
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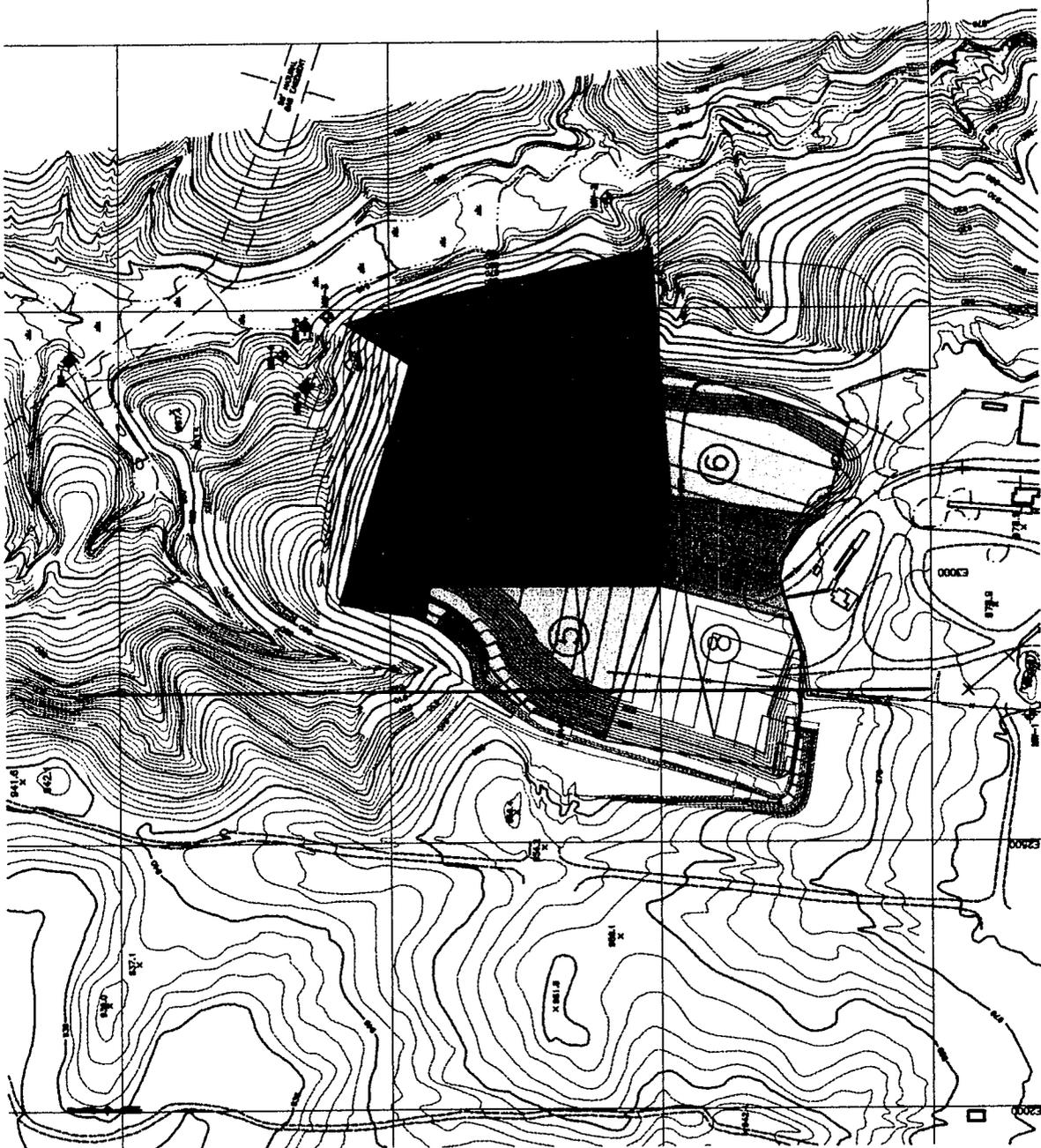
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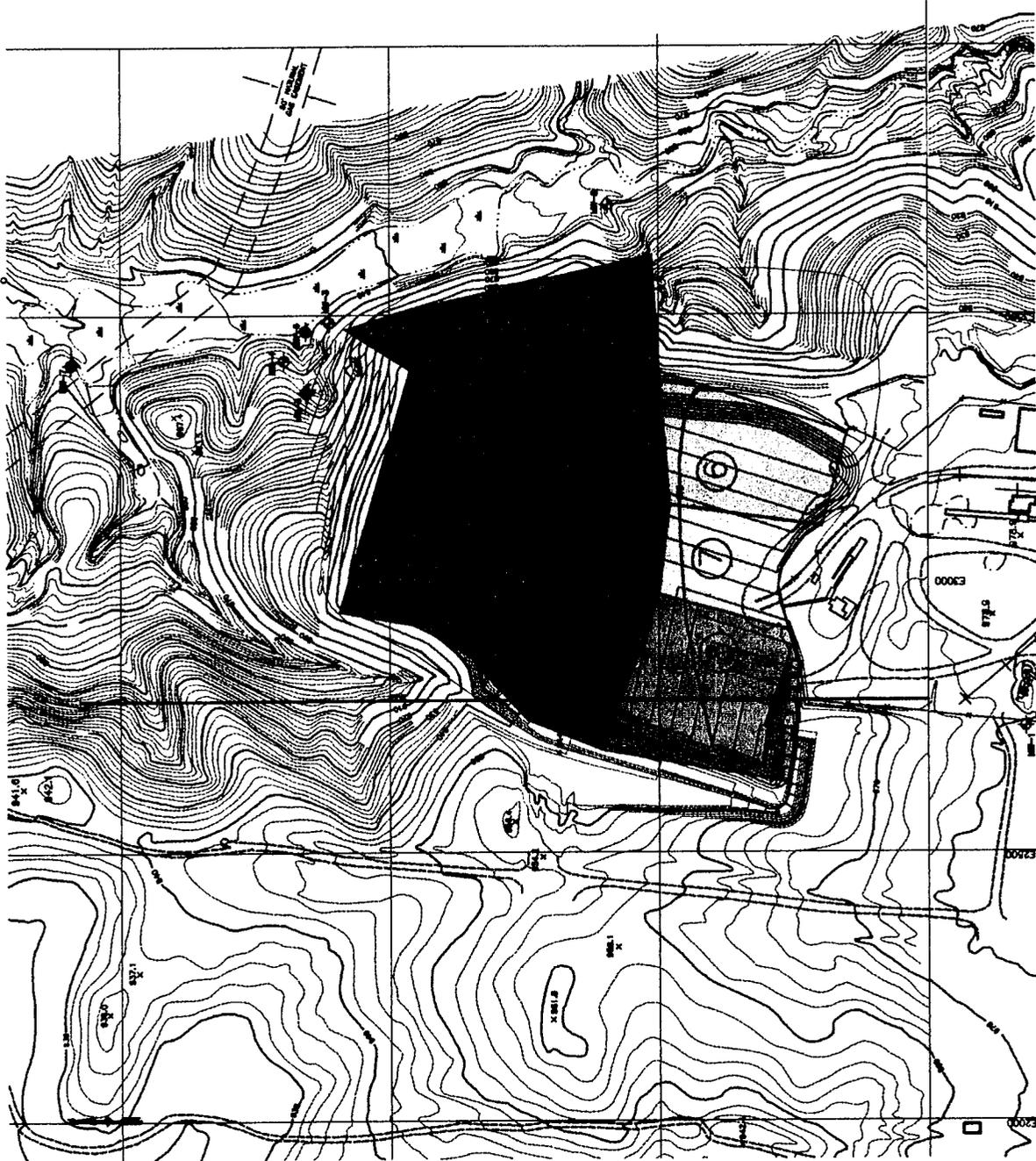
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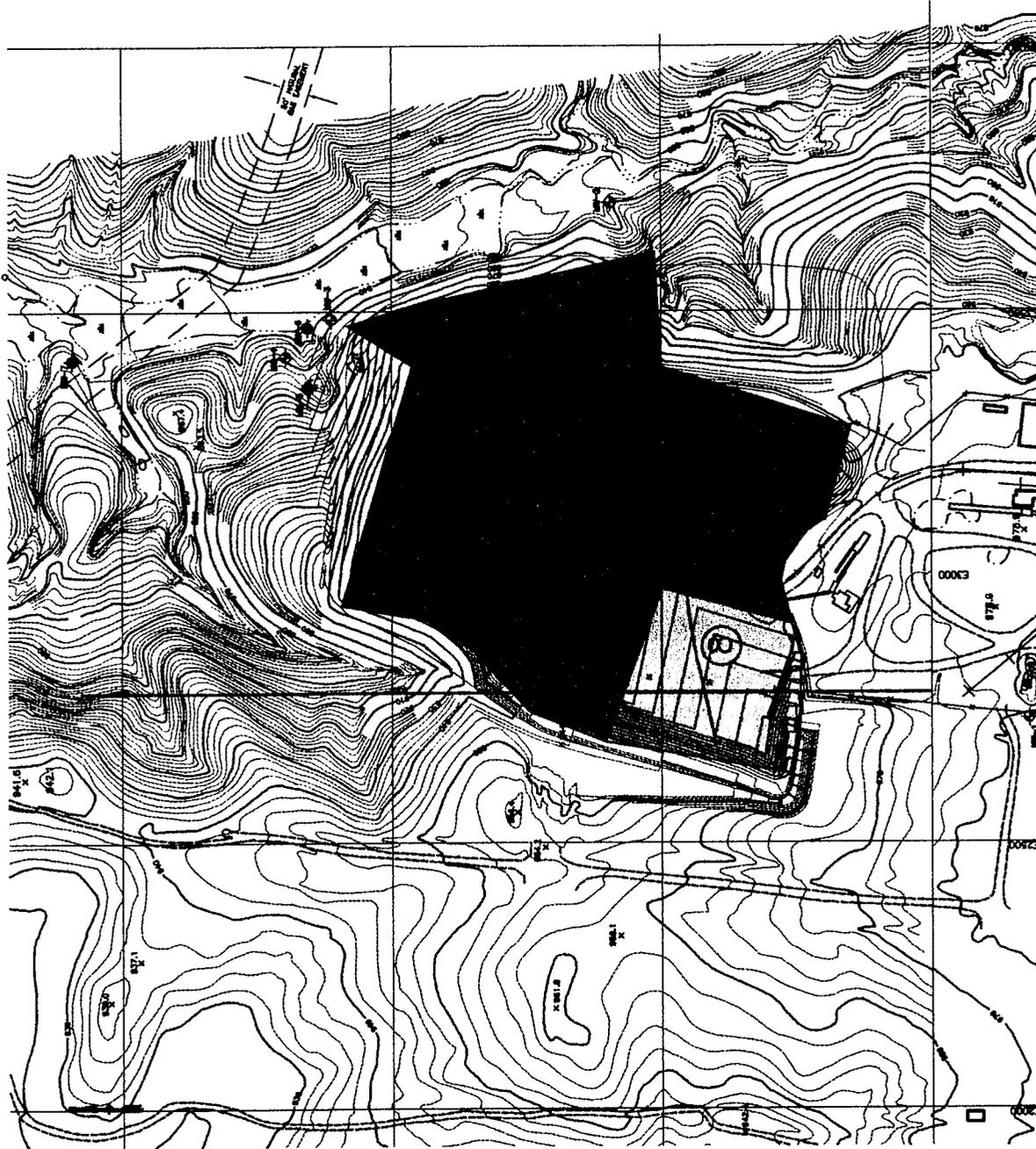
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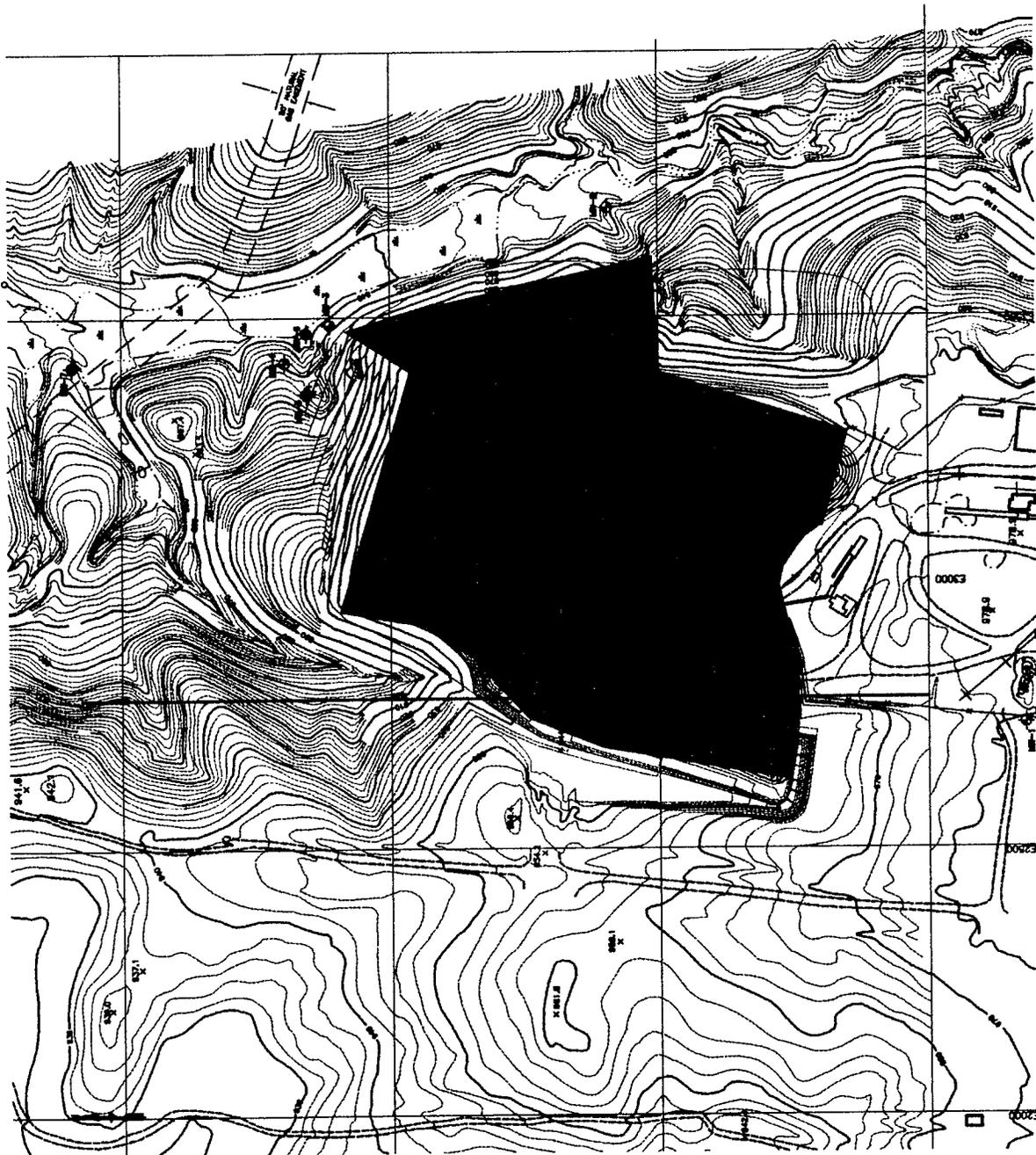
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6

**Subject: Atlantic Scrap**

**Date: Thu, 23 Sep 2004 14:57:42 EDT**

**From: METANT1@aol.com**

**To: Jim.Barber@ncmail.net**

Jim,

It was good to meet you on site last week. I am working on the various items for submission and hope to have most of those ready by the end of next week. I have to be back in Kernersville next week and I am taking several proposals regarding equipment layout with me.

We have decided to expand and overlay the existing concrete pad adjacent to the building we plan to use for electrical switchgear. The processing equipment is being fabricated to sit on a level pad. It will be more economical to pour additional concrete rather than try to shim all of the equipment on the existing pad. This will add several more weeks to the project startup.

If there are any other questions that have come to mind, please let me know so that we can attempt to address them in our submittal.

Mike

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Mike

## **Attachment A**

This is the description of the "Enhanced Cap Design as submitted in correspondence to the NC Solid Waste Section dated 6-01-04 from Mike Tant with WZ Baumgartner">

From bottom to top the cap will consist of an approximately one-foot cushion layer, a GCL layer, a one-foot layer of soil; and either a vegetative layer or a cover constructed using Descobond.

It is ASAP's intention to use the Descobond product as discussed with HVF representatives if it is deemed to be acceptable based on the manufacturers claims. This is still under study and for purposes of this Agreement it should be noted that it will entail an adequate layer of clay (soil) of an approximate depth of 2 feet (see the above description from the correspondence submitted to NC Solid Waste Section).

# Soil stabilisation and road building

**Descobond is a non-toxic soil stabiliser that can provide an economical way to structurally stabilise an existing road from sub-base to surface. Andy Desin, inventor of Descobond, started out as a truck salesman, working in quarries and mines. He found the maintenance of haul roads was a constant problem. Heavy trucks and torrential rainfall necessitated constant and expensive road maintenance using motorgraders and road rollers. He tested commercial soil stabilisers and found that most were expensive and had a limited life and effectiveness.**

DAVID BURNETT, DESCOBOND EUROPE AND  
JODY DESIN, DESCOBOND USA

The most common was magnesium chloride, but this tended to wash out under heavy rain. Magnesium chloride would also corrode the aluminium gearbox casing on trucks and clog transmission breather filters. Convinced there had to be a better way, Andy tried every available compound and resin. Finally, he began to have some success with biological components and eventually the rubber tree plant proved to be the answer: Descobond was born.

## Native soils

Native soils encountered in road building and other load-bearing applications often lack the mechanical properties required. Inadequate soil strength can lead to defects in the road surface, rutting, corrugation, cracking and failure of pavements and gross shifts in the load surface. In addition, poor water absorption of clay soils can lead to heaving, surface failure, seasonal shifts, extrusion of base material and other problems. A range of soil compositions can serve as good road base material, but high strength, resistance to shear, erosion or swelling by water are necessary properties. Most native soils require some stabilisation to achieve the goals and provide a proper material for road construction (see Figures 1-3).

Soils too weak to bear the expected load can be stabilised by adding materials, such as aggregate. These impart mechanical strength and introduce chemical stabilisers to reduce water absorption and increase cohesion of the soil matrix by forming a cement-like bonding compound. The actual stabilisation and results depend upon the soil types, stabiliser application methods and road construction techniques.

## Health and safety

Conventional haul roads needed constant grading and compacting to keep them safe. The consequences of a fully loaded mining truck – which can weigh over 300 tonnes – leaving the road at 30mph do not need to be spelled out.



Figure 1: Dusting was a major problem for this Chilean road.



Figure 2: Descobond mixed with water was sprayed from a tanker onto the road.



Figure 3: The stabilised road.

Andy knew the solution had to be strong, permanent, rain-storm-resistant, and able to withstand flash floods. Also, the stabiliser should be essentially non-toxic for the safety of the construction crew, also avoiding pollution of rivers and harm to wildlife located downstream from the stabilised road. In 1995, he installed several haulage and mountain roads and paths and trails in ecologically sensitive areas of Chile and the USA. Today, the original Descobond surface is still performing well with no washout or cracking and zero biological impact. Descobond is approved by the US Fish and Wildlife Department.

## Chemical formation

When Descobond comes into contact with soil particles, it coats and penetrates them using water as the medium. Penetration of the loose soil particles or compacted surface is observed as a softening of the soil, an effect caused by a rapid diffusion induced by the lowering of the interfacial free energy (surface tension) between the material and the soil. The resulting combination resembles a saturated

*“The Descobond road bed can be used immediately: there is no waiting time. In addition, the road bed is toughened as traffic compacts it in the early set-up stage.”*

**Figure 4: River bottom silt, combined with the stabiliser, was used to build several miles of road hardshoulder in Fresno County, California.**



**Figure 5: A heavy pneumatic-tyred roller maximised compaction.**



**Figure 6: Preparing an area for processing green waste near San Jose, California. The city engineer was concerned that contaminants could affect the groundwater, so the clients treated the area with Descobond. After testing, the engineer approved the facility.**



**Figure 7 below: A parking area for heavy trucks in Watsonville, California.**



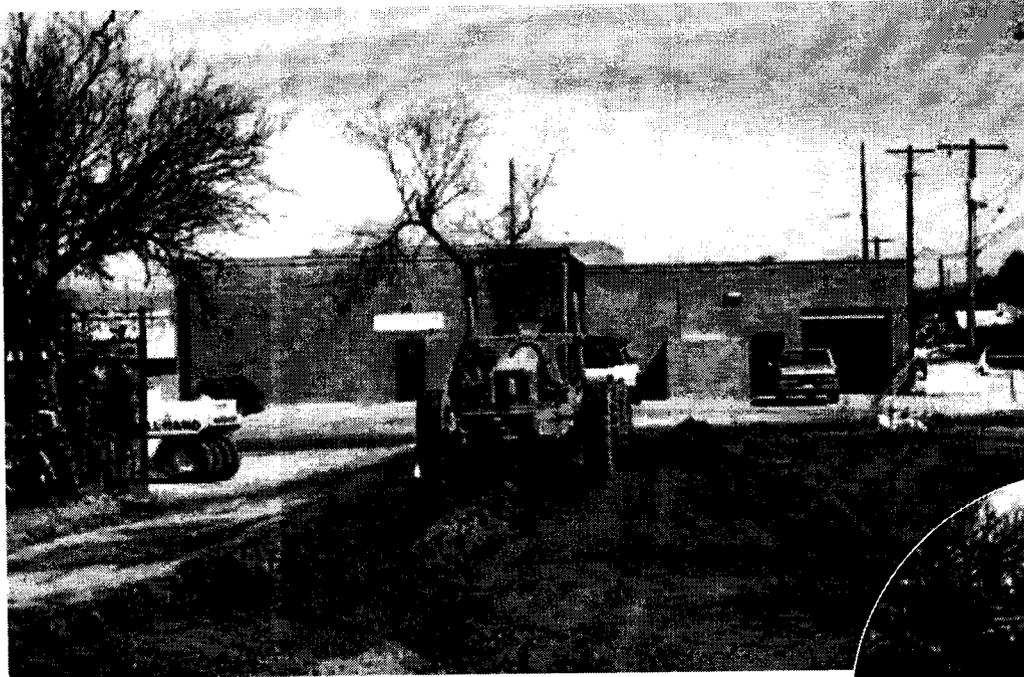
bound sponge. Once equilibrium film thickness is achieved, drying begins. Penetration and subsequent establishment of the film thickness to trigger drying usually takes 10–20 minutes, according to the soil structure. This provides both interfacial bonding of the soil particles (increased adhesion and reduced moisture sensitivity) and inner particle bonding (increased cohesion and reduced swelling). The subsequent increase in adhesive and cohesive strength and decrease in moisture sensitivity promotes true soil stabilisation.

It is important to understand that the penetration potential occurs between soil particles (increased cohesive strength), on their surface (water shedding) and inside the soil particle through absorption (locking the bond) to form a rigid reinforcing network for the compacted soil structure (see Figures 4 and 5).

**Crescent Lake Wildlife Reserve, Garden County, Nebraska**

An extensive handicapped-accessible trail is being built with Descobond at Crescent Lake Wildlife Reserve in mid-west USA. Locally available brackish water and volcanic soils are being used. Construction traffic is minimal, as the only product being brought into this environmentally sensitive area is Descobond in 19-litre containers. The trail road is mapped out by the U.S. Corps of Engineers and flagged and taped. Biological matter such as grass and roots are removed with a small motorgrader or blade attachment. At this stage, additional road-building sand, clay fines or pea-size stone material can be laid on the trail road. A tractor disk plough, rotary hoe or hand cultivator is then run down the trail road to churn up 80mm of soil, and to mix in the sand, clay and stones. The Descobond is mixed into local brackish water held in an 18,000-litre water truck and the diluted stabiliser is sprayed onto the road bed.

The rotavator or disk plough is run down the road again to mix the stabiliser into the soil until it is moist with the resin. Heavy rubber-tyred compactors then compress the moist soil into a cambered (convex) road or trail way. Repeated compaction will produce a better and tougher surface. This process can be a year-round activity, provided the Descobond concentrate is prevented from freezing and the moistened roadbed soil is compressed before it can freeze. Once water has been squeezed out of the road bed,



**Figure 8: Mixing Descobond into existing soil for an external storage area in Tucson, Arizona.**

freezing is no longer a concern as the Descobond has bonded with the sand and clay fines in a permanent chemical reaction.

Other applications are:

- fast, easy, near-permanent repair for potholes
- sealing of landfill and industrially polluted soil (see Figure 6)
- sub-base preparation of unstable soils for housing development, avoiding piling
- pathways for handicapped and wheelchair access
- rural and dirt/soil farm roads and stone driveways
- inexpensive semi-trailer and lorry overnight parking (see Figure 7)
- recreational boat parking and access ways
- launching ramps for boats (bitumen emulsion required to be really water resistant)
- building containment ponds
- waste-water runoff management
- external storage areas (see Figures 8 and 9)
- sewer sub-base preparation.

**The benefits**

The Descobond road bed can be used immediately: there is no waiting time. In addition, the road bed is toughened as traffic compacts it in the early set-up stage (see Figure 10). Extra compaction is useful to create a tougher road. The material is shipped as a concentrate and becomes an inexpensive solution for marginal lands where water transportation and road building materials are major cost factors. Descobond actually gives a faster and stronger result if the water supply (such as sea water) has a high mineral contaminant. The only caveat is that excessive biological matter, such as pond weed, must be strained out or it will decay in the road bed and provide entry points for water, resulting in damage during the winter when this freezes.

Positive camber or convex surface to a road prevents ponding in low points. However, if a pond or lake is desired, a large concave surface can be created with Descobond, providing a bio-neutral lake or river bed.

Little equipment is needed: a simple garden rotary hoe, 208-litre drum, garden hose liquid applicator and humble lawn roller suffice for a small project. The Descobond road

bed does not leach or contain any toxic chemicals beyond the stone or crushed rock used as the road bed. It can be used to stabilise a sub-base soil for housing and roadways and car parks to prevent cracking of concrete and asphalt. Most concrete and asphalt road bed failure is associated with the failure of the sub-base due to underground streams or soil movements due to inadequate sub-base compaction. Stabilisation alleviates this problem.

**The future**

Descobond has been undergoing laboratory trials in Montana as a concrete admixture. The slump and strength are proving to be excellent, with good air entrainment and low water/cement ratio. Preliminary trials show that less water per cubic metre is needed, making Descobond an inexpensive replacement for plasticisers and water-proofing admixtures, in addition to its advanced role in stabilisation.

**Concluding remarks**

Descobond has been adopted in the USA and South America for eight years with good results, but is new to Europe, Africa and the Middle East. It is hoped that it can be of use to marginal areas where traditional methods are too expensive in both material cost and transportation. In particular, it is a tolerant catalyst. Dilutions of the concentrate vary from 50 parts water to 1 part Descobond for road building and truck parking, down to 100:1 when used as a tack coating to stop wind-blown soil erosion over landfills and in environmentally sensitive coastal areas. It can be used to replace expensive rubber liners in agricultural waste storage, in municipal landfills and to seal contaminants in brownfield sites.



**Figure 9: The finished storage area.**



**Figure 10: A stabilised haulage road near Casper, Wyoming.**

**Technical Report: To The Facilities Manager  
Make Sand, Rocks, Industrial Waste & Soil into 'Concrete',  
with Descobond ®  
<http://www.descobond.net>**

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**We have developed a concentrated, bio-friendly, soil stabiliser that dilutes and mixes easily with soil, sand, rocks, granular industrial waste and water and when compacted sets up overnight to form a rock hard paving surface. Descobond is a concentrated milky liquid that is non-toxic and therefore it is inexpensive to ship by air, sea, truck, lorry, UPS, or Post Office delivery.**

**The finished product is the same colour as the soil base used, but it is rock hard and smooth for driveways, wheelchair paths, café terrace and parking areas, and landfill capping. If a small amount of Bitumen Emulsion is blended in, Descobond becomes highly water resistant and can be used to prepare ponds and drainage ditches, replacing expensive and messy alternatives.**

**Application is with a rotary hoe to prepare the ground, water dispenser to apply the product, rotary hoe again to mix, and then rubber tired compactor (road roller) to compact the finished pathway. The Descobond path or roadway can be used immediately, in fact, use is encouraged to compact the surface and remove the water. The finished path, or road, or parking has been measured by Highway Testing equipment to be as hard as local concrete roads and will last for many trouble free years. May I ask for a few moments of your time to discuss this wonderful product? Distributors are needed all over Europe and Africa. Thank you in advance,  
Very truly yours**

David T. Burnett, Director  
AMETECH Limited – DESCOBOND EUROPE  
The Technology Centre, Station Road,  
Framlingham, Woodbridge, Suffolk  
IP13 9EZ, UK  
Tel/fax 44-1728-724311  
Mobile 44-7771-558800  
[ametech@BTopenworld.com](mailto:ametech@BTopenworld.com)  
[DESCOBOND@aol.com](mailto:DESCOBOND@aol.com)

**Uses for DESCOBOND concentrate:**

**Fast, easy and near permanent repair for road potholes.**

**Cap and lockup of landfill and industrially polluted soil.**

**Locking up soil contaminated with diesel oil or old lubricant, or many types of industrially polluted soils.**

**Brown Field soil lockup: limit compaction to 3"- 8" deep at any one pass with the pneumatic compactor (road roller).**

**Sub-base preparation on unstable soils for housing.  
Pathways for handicapped and wheelchair access.  
Rural and dirt / soil farm roads and stone driveways.  
Inexpensive semi-trailer and lorry overnight parking.  
Recreational boat parking and access ways.  
Launching ramps for boats (needs Bitumen Emulsion to be really water resistant).**

**Building containment ponds and all kinds of waste water runoff management, and dust and particulate control.**

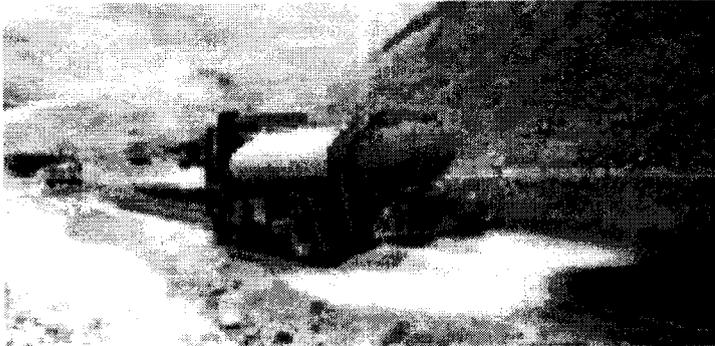
**Sewer sub base preparation.**

**Can be applied year round (but Descobond must be stored above freezing).**

**Finished surface can be used right away. No waiting time.**

**The Descobond route to rock-hard road and yard surfaces**

**Recyclers fully appreciate the benefits of making their yards and approach roads impenetrable to waste water, diesel fuel spills and a whole host of other industrial pollutants. Based on rubber tree plant resins, the Descobond process also locks up pollutants already contained within the soil.**



This ecological (no salt) road leading to the Los Pelambres copper mine at 9000 ft in the Andes mountains of Chile is suitable for 250-tonne trucks. Prepared with Descobond, there is no sinking, no mud after heavy snowstorms and no traffic interruptions. The road is also easy to clean.

penetrable to ants, moles, rabbits, waste water, diesel fuel spills and industrial pollutants. In addition, pollutants already in the soil can be cheaply and permanently locked up by the Descobond process.

'Thumper' tests indicate that Descobond road surfaces have the same impact resistance as Interstate Highway concrete. Descobond contains nothing toxic - apart from the actual crushed rock and stone - and is easy to apply. Grass and weeds are removed with a motorgrader blade prior to the spreading of additional road-building sand, gravel, clay fines or pea-size rocks. A disc plough or rotovator is used to break up and churn the top three inches of soil into the rock and sand mix. Descobond is added to a 4000-gallon water truck and the dilution is sprayed over the job site; the soil mix is again turned using the plough or rotovator until moist. Then, a heavy rubber-tyre compactor is used to squeeze all the moisture out of the soil.

and grains of sand to form a durable rock-like material. Descobond surfaces laid in 1995 in the U.S. and in the high Andes of South America have shown no signs of cracking, splitting, washing out or leaching and remain in perfect condition.

Recycling yards can be tailored to have a flat or slightly convex work area surrounded by concave containment borders, or leach ponds, to catch and recover undesirable or hazardous run-off. Descobond makes an excellent sub-base for concrete or asphalt and can be used as an inexpensive admixture directly in concrete to reduce the water needed and to replace expensive chemical waterproofers, air-entrainment chemicals and plasticisers.

Additional applications for Descobond concentrate include: the fast, easy and near-permanent repair of road potholes; the capping and lock-up of landfill and industrially-polluted soil; the lock-up of soil contaminated with diesel oil or old

Recycling site and road preparation with Descobond is basically a story about ants, rabbits, moles and any other critters - including humans - that make holes in the ground and allow pollutants to enter the ground water.

Construction of a recycling yard, environmentally-sensitive job site or holding pond can become extremely difficult if you encounter previously unseen holes. Montana truck salesman Andy Desin discovered the Descobond process after wrestling with these problems for several years in North and South America's mining and quarries sector. He found that, by using resins extracted from the humble rubber tree plant, he was able to take ordinary soil, sand, rocks and gravel and turn them into an inexpensive rock-hard surface that was similar in performance to concrete but cheaper and environmentally more aesthetic.

**Water-resistant crust**

A Descobond yard or road looks like the original base soil but the strong, water-resistant crust is im-



In the central plains of Chile, this Descobond road is constructed on a dry creek bed - no weeds, no mud, no fine dust.

mediately: in fact, the more heavy traffic that passes over it in the 24-hour set-up stage, the tougher the final surface. Application can be all year round provided that the Descobond surface is kept from freezing.

**Durable rock-like material**

The Descobond catalyst sets up in a permanent chemical reaction at a molecular level with the clay fines

lubricant, or of many other types of industrially-polluted soils; brown-field soil lock-up; the building containment ponds and all kinds of waste water run-off management; and sewer sub-base preparation.

*For further information contact:  
AMETECH Ltd. / Descobond,  
Framlingham, Suffolk, U.K.,  
Phone / Fax +44 1728 724-311,  
E-mail: ametech@btopenworld.com*

**By David Burnett, Descobond Europe and Jody Desin, Descobond U.S.**

## Bill Perry

---

**From:** David Burnett [ametech@btopenworld.com]  
**Sent:** Tuesday, December 02, 2003 4:42 AM  
**To:** Bill Perry  
**Subject:** Descobond Inquiry

Hi Bill

Yes DESCOBOND has been successfully used to both line and cap landfills in Iowa and elsewhere. Please provide me with your snail mail address, telephone and fax and we will get you a package in the mail from our Montana office.

Are you interested in a dealership?

Thanks/regards

Dave Burnett

AMETECH Limited - DESCOBOND Europe

The Technology Center, Station Road,

Framlingham, Woodbridge, Suffolk

IP13 9EZ, UK

Tel/fax 44-1728-724311

Mobile 44-7771-558800

[ametech@BTopenworld.com](mailto:ametech@BTopenworld.com)

----- Original Message -----

**From:** Bill Perry

**To:** [ametech@btopenworld.com](mailto:ametech@btopenworld.com)

**Sent:** Monday, December 01, 2003 5:13 PM

**Subject:** Descobond Inquiry

Hello-

I read a recent article about your process and am interested in obtaining additional information. We are going to closure on an old landfill in the near future and if we use this process – it might make the site more amenable to reuse for storage, truck parking, etc. The landfill was used for the disposal of auto – shredder fluff. Has your process been used in such an application? Please send to me more information if you have available. I am interested in cost data as well. Also, do you have a US distributor for your products in the south and southeast areas?

Thanks in advance,

Bill Perry

North Carolina

- End of Booklet -

Conceptual Work Plan  
Buried Metal Recovery Project

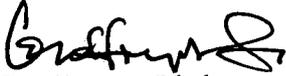
April, 2004

Approved March 3<sup>rd</sup>, 2005



We look forward to working with you during the completion of the project. Please contact me at (919) 733-4996 extension 266 or the Regional Waste Management Specialist, Jason Watkins, at (336) 771-4608 extension 340 should you have any questions regarding the enclosed Permit to Operate.

Sincerely,



Geoffrey H. Little  
Environmental Engineer  
Solid Waste Section

c: Jim Coffey, DWM  
Jim Barber, DWM  
Brent Rockett, DWM  
Jason Watkins, DWM

STATE OF NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
DIVISION OF WASTE MANAGEMENT  
1646 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1646

**Atlantic Scrap and Processing, LLC**

is hereby issued a

**PERMIT TO OPERATE**

**AUTO SHREDDER RESIDUE (ASR) RECLAMATION OPERATION**

located at 1426 West Mountain Street, Kernersville, Forsyth County, North Carolina, in accordance with Article 9, Chapter 130A, of the General Statutes of North Carolina and all rules promulgated thereunder and subject to the conditions set forth in this permit.

The facility is located and described by the approved construction plan and the permit application narrative.



Donald J. Barber, Head  
Permitting Branch  
Solid Waste Section

## ATTACHMENT 1

### Approved Documents

1. Conceptual Work Plan, Buried Metal Recovery Project, W.Z. Baumgartner & Associates, Inc., April 2004.
2. Operational Plan and Facility Drawings, W.Z. Baumgartner & Associates, Inc., February 2005.

## ATTACHMENT 2 PERMIT CONDITIONS

1. This permit authorizes the reclamation of Auto Shredder Residue (ASR) and other solid waste material that is recovered from the existing at the Atlantic Scrap and Processing, LLC, landfill as described in the approved plans and documents listed in Attachment 1.
  - a. This permit does not authorize the disposal of any new or additional ASR or other solid waste into the present landfill.
  - b. Material that is removed from the present landfill and is not recovered as a marketable material by processing is authorized for return to the landfill as fill material as described in the approved plans and drawings.
2. This permit shall expire either when the final load of material is reclaimed from the present landfill or 3 (three) years from the date of permit issuance, whichever occurs earliest.
  - a. Prior to the expiration date of the permit, the permittee may submit a written request for an extension of the permit for a specified and limited amount of time needed for the completion of the reclamation of material presently disposed at the landfill.
  - b. The expiration of the permit will have no effect on the on-going processing of newly generated ASR through the processing plant, which is not an activity regulated under the North Carolina Solid Waste Rules.
3. The permittee shall submit a revised Groundwater Monitoring system with a revised groundwater compliance boundary to the Solid Waste Section by the close of business May 31, 2005. Ground water quality at this facility is subject to the classification and remedial action provisions of 15 NCAC 2L.
4. The permittee shall submit an updated Closure Plan consistent with the document dated May 1999 titled "LANDFILL CLOSURE TRANSITION PLAN FOR INDUSTRIAL LANDFILL" to the Solid Waste Section by the close of business October 28, 2005. The updated closure plan shall provide:
  - a. Conceptual final contours and final landfill footprint configuration;
  - b. Final cap materials;
  - c. Construction quality assurance specifications;
  - d. Sedimentation and erosion control practices;

- e. Design details showing typical cross-sections;
  - f. Notice to Register of Deeds that states the property was used for disposal of solid waste; and
  - g. Any other pertinent design elements for placing the processed ASR and closing the landfill.
5. This facility shall be maintained and operated in accordance with the North Carolina Solid Waste Management rules.
- a. Amendments or revisions to the Solid Waste Management Rules or violations of standards may necessitate the modification of the construction and operation plans of this facility.
  - b. The operating and permit conditions are subject to revision or revocation at any time the operations either threaten or have the potential to threaten the environment or public health.
6. Site preparation shall be in accordance with the approved site plan.
7. The site shall be adequately secured by means of gates, chains, berms, fences or other means to prevent unauthorized entry except when an operator is on duty.
- a. A sign shall be posted at the entrance to the facility containing the facility name, contact name and number, and permit number.
  - b. An attendant shall be on duty at the site at all times while it is in use to assure compliance with operation requirements and to prevent entry of hazardous waste and other unacceptable waste onto the site.
8. All earth-disturbing activities will be conducted in accordance with all applicable federal, state, and local requirements.
- a. Adequate erosion control measures shall be practiced to prevent silt from leaving the site in accordance with the Sedimentation Control Act, 15A NCAC 4.
  - b. Temporary seeding shall be utilized as necessary to control erosion. Seeded slopes shall be covered with straw or similar material if necessary to prevent erosion.
  - c. Surface water shall be diverted from the operational area and not be impounded over waste.
  - d. No materials will be tipped, stored or stockpiled in standing water.
9. Effective vector control measures shall be applied to control any potential vectors including flies, rodents, insects, and vermin.

10. The facility shall be operated in a manner that does not cause a nuisance. Dust, litter and odor control measures shall be employed to minimize releases.
11. The open burning of solid waste is prohibited.
12. Appropriate and effective equipment shall be available to control accidental fires and arrangements made with the local fire protection agency to immediately provide fire-fighting services when needed. Employees shall be trained in fire prevention and emergency action procedures.
13. Fires and other incidents that do not conform with the normal operating conditions authorized by this permit shall be reported to the Regional Waste Management Specialist within 24 (twenty-four) hours of the occurrence with a written notification to be submitted within 15 (fifteen) calendar days of the occurrence.
  - a. The permittee is not required to report minor and isolated incidents that do not cause nuisance nor threaten human health or the environment. However, should an incident be questionable, the permittee shall contact the Regional Waste Management Specialist for concurrence or guidance.
14. Since the waste stream is limited by this permit to only those materials recovered from the existing landfill and auto shredder residue from on-site operations, a formalized waste screening plan is not required at this time. However, the permittee shall provide training to employees to handle unexpected and potentially dangerous wastes such as drums, liquid containers or other wastes. Such incidents shall be reported in accordance with Permit Condition No. 13 above. Also, any changes in the waste stream may warrant a review or change in this permit condition.
15. Paint and other liquid waste materials shall be managed and stored on site in a manner to prevent release to the environment and removed from the site for disposal in an approved facility in a timely manner.
16. Daily, monthly and annual records shall be maintained for the amount of material processed and the amount of recovered materials shipped. The data shall provide a means for estimating the amount of materials excavated from and material returned to the landfill. At the end of the project, the permittee shall provide the following information:
  - a. Total materials removed from the landfill and processed (in tons),
  - b. Total materials recovered (in tons), and
  - c. Total fill material returned to the landfill (in tons).

-Booklet-

Operational Plan  
for the  
Buried Metal Recovery Project

Revised Feb., 2005

Approved March 3<sup>rd</sup>, 2005

Permit # 34-20



Permit # 34-20

# OPERATIONAL PLAN

## APPROVED

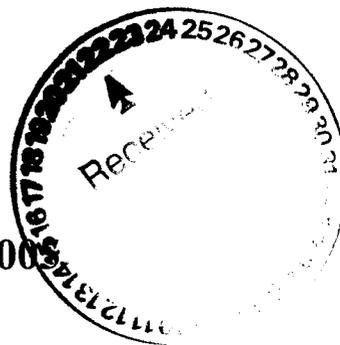
DIVISION OF WASTE MANAGEMENT

SOLID WASTE SECTION

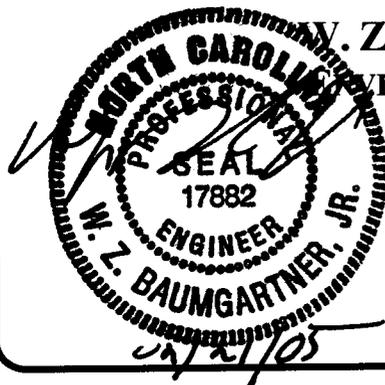
DATE 03-03-05 BY G. L. W. H.

34-20 Forsyth County FOR THE

**BURIED METAL RECOVERY PROJECT  
ATLANTIC SCRAP AND PROCESSING, LLC (ASAP)  
FORSYTH COUNTY, KERNERSVILLE  
NORTH CAROLINA**



REVISED FEBRUARY 2005



**W. Z. BAUMGARTNER & ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS & CONSULTANTS  
P. O. Box 680369  
FRANKLIN, TENNESSEE 37068-0369

97054

W Z B

## INTRODUCTION

This Operation Plan has been developed to be consistent with the *Conceptual Work Plan* previously approved by the North Carolina Division of Solid Waste Management and the conditions of NCDENR Permit No. 34-17 issued to Atlantic Scrap and Processing, LLC (ASAP). Consideration has been given to project flexibility in the selection of processing equipment and its layout. It is anticipated that most variations in material composition can be accommodated by minor adjustments in equipment or process flow. It is understood by ASAP that this Operation Plan will be considered a part of the final permit issued by NCDENR. Consequently, if it becomes apparent that major changes or additions to the Operation Plan are needed, the company will notify representatives of NCDENR and submit any needed amendments or revisions in a timely manner.

The landfill at the ASAP facility was permitted in the early 1970's by the State of North Carolina. The landfill was a private industrial landfill used to dispose of shredder residue generated from the automobile shredder constructed in 1970's. This shredder was one of the first such machines installed in the south. The primary focus in the early days of shredding automobiles (and other ferrous containing scrap) was the recovery of ferrous metals. Little, if any effort was made to recover nonferrous metals as the technology for efficient recovery did not exist. As metal markets changed and as recovery technology improved the site began recovering some nonferrous metals from the downstream system on the shredder. Currently the site has a relatively sophisticated nonferrous recovery system utilizing eddy-current technology. However, up until the time shredder residue was being shipped to an off-site landfill, a fraction of nonferrous and some ferrous metal was buried with the residue.

As indicated in the Conceptual Work Plan, it is estimated that 75 to 100 tons of shredder residue were generated by the shredder during a full production day. Using this generation rate and assuming 230 operating days per year for 25 years it is calculated that the potential shredder residue in the landfill is about 500,000 tons. As the waste was placed in the landfill, it was covered periodically with native clay soil excavated from a borrow pit located on the same property. Exact records are not available but it estimated that the landfill contains

between 600,000 and 700,000 cubic yards including shredder residue and the soil used for interim cover.

Based on all preliminary studies, it appears feasible to install recovery equipment and process the waste presently buried in the landfill. A detailed Process Flow Chart was presented in the Conceptual Work Plan. The actual project will follow that flow chart with the exception that it is anticipated that no washing operation will be required. Following is a plan for each aspect of the operation.

### **EXCAVATION**

- Excavation of the waste will proceed in sequence across the width of the landfill. The overall project site map (Attachment No. 1) presents the landfill divided into designated zones numbered 1 through 9. The excavation of landfill material will begin in Zone 2. As the excavation in Zone 2 reaches a depth where equipment access becomes difficult, excavation in Zone 3 will be initiated. Once the project is fully underway, it is likely that work, either excavation or filling, will be occurring in as many as three contiguous zones at any given time. The metals recovery operation will proceed in a westerly direction through Zone 8. Zones 1 and 9, which represent the existing outsoles, will be left until last. These zones may or may not be excavated depending on the projected ratio of recoverable material to existing cover soil. If these areas are excavated, additional erosion control measures will be added and the new outslope will be constructed with terraces and drainage features required to protect the integrity of the slopes.
- In each area to be excavated, a barrier will always be left in place to isolate the active excavation from surface streams. Any precipitation falling in the pit will remain in the pit.
- For each zone excavated, care will be taken in preserving the stability of the "highwall" on the sides of the cell which are undisturbed landfill material. Shredder residue has been shown to have an angle of repose approaching vertical due to its fibrous composition. For this operation, the highwall will be benched or stepped

down to protect the integrity of the undisturbed material. A ten-foot wide bench will be created for every twenty feet of vertical excavation. In any areas where a substantial soil lens is encountered, the sidewall will be sloped rather than left vertical.

- It is anticipated that some pockets of perched water will be encountered at various places in the landfill. These should be isolated and are not true groundwater. If groundwater is encountered, excavation in that area will cease.
- During dry weather, a water truck will be available to control dust from the excavation zone to the processing equipment.
- Excavation will be suspended during periods of extreme wet or extreme cold weather.
- The designated stockpile areas allow considerable flexibility in the operation. In the event of weather conditions which do not allow excavation to proceed in an efficient manner or, in the event of a breakdown of excavation equipment, the infeed stockpile is sufficiently large to allow the material processing to continue for up to two weeks.

#### **INFEEED STOCKPILE**

- An infeed storage area is provided adjacent to the processing equipment. (See Processing Site Plan – Attachment No. 2.) The volume of the storage area will be equal to approximately two weeks of production to allow the processing equipment to function during periods when wet weather suspends excavation.
- A silt fence will be maintained on the downstream side of the storage area.
- The pile and silt fencing will be inspected daily.
- Care will be exercised to make sure the storage pile does not interfere with the railroad spur adjacent to the pile area.

#### **MATERIAL SCREENING**

- Screens will process the residue prior to the eddy-current separation.
- Oversize material will be placed on the residue stockpile (except large pieces of ferrous metal) for return to the landfill.
- Undersize material (fines) will be stockpiled for use in the landfill cap as a leveling

course before soil placement.

- It is expected that during most of the year, the infeed material will have sufficient moisture content such that fugitive dust production in the screening operation will not be a problem. During dry periods, if dust production becomes a problem the screening operation will be modified to minimize dust emissions.
- Any litter recovered during the screening process will be stored in an area surrounded by windscreens.

### **EDDY-CURRENT SEPARATION**

- All processing equipment is installed on a new concrete pad to facilitate easy maintenance and materials management.
- The processing equipment for this operation was designed and selected to provide sufficient flexibility to accommodate variations in the infeed composition. It is assumed that the infeed material excavated from the landfill will not be uniform due to differences in shredder operation over the years. It is also likely that some areas will be drier or wetter and will contain varying amounts of dirt mixed with the residue. All of these factors have been included in the design and construction of the equipment.
- Following the screening operations, residue will be passed through a series of magnets and eddy-currents machines.
- Conveyors carry recovered metals to a stockpile on the concrete pad adjacent to the site access road.
- Conveyors carry processed residue to a storage pile located in the existing landfill.
- The processing equipment is designed with some redundancy so that when minor equipment malfunctions occur, a particular unit can be bypassed and the overall operation will continue.

## **RECOVERED METALS STOCKPILE**

- All recovered metals will be deposited in stockpiles on the west end of the new concrete pad (see Attachment No 2).
- Except under unusual conditions, recovered metal will be shipped each day the facility operates.
- Sufficient room is provided on the concrete pad to allow a truck staging and loading area.

## **RESIDUE STOCKPILE**

- All processed residue will be stockpiled prior to being placed back in the landfill.
- A stacker conveyer is provided to allow the location and size of the stockpile to vary according to weather conditions and excavation/bury sequencing.
- As part of this stockpile area, space will be provided for soil recovered from Zones 2 and 3 of the landfill. There are in the landfill layers of soil used for intermediate cover during the operation of the landfill. Some of these layers were sufficiently thick to justify recovery of the soil. When these "lenses" of soil are encountered, they will be removed to the stockpile area without any additional processing. This soil will be segregated to the extent possible and used as part of the final landfill cover. After Zone 2 has been filled to grade, a temporary soil stockpile area will be established in the Zone 2 area. This stockpile will move west following the excavation to keep the recovered soil close to the next area to be filled. This soil stockpile will always be within the landfill footprint and will be protected with a silt fence.
- The entire stockpile area is located within the footprint of the existing landfill.
- A silt fence will be maintained on the downstream side of the stockpile.

## **LANDFILL**

- As soon as an excavated area has reached its maximum depth and a sufficient gap exists to allow landfilling and excavation to take place simultaneously, processed residue will be returned to the landfill.
- Waste will be compacted using a suitable track dozer or a landfill compactor.
- As the level of the waste approaches the surface of the landfill, fines from the stockpile will be placed on the processed residue as a leveling and consolidation layer.
- Until the final decision is made relative to the cap design (soil and vegetation vs. soil and Descobond) a minimum one-foot layer of soil will be placed over the waste.
- If an area of the landfill will be left undisturbed for a period exceeding ninety days, the area will be seeded to establish a vegetative cover on the interim soil layer.
- Filling activities will be conducted in a manner so as to minimize any potential for impoundment of surface water.
- After the leveling layer of recovered fines, a two-foot layer of clay will be placed over the landfill as part of the final cover. This layer will be placed and compacted in 6-inch lifts.

## **EROSION CONTROL MEASURES**

- All activities associated with the buried metal recovery project will be conducted within the footprint of the existing landfill.
- No new surface water discharge point will be created nor will there be any major increase in the volume of runoff from the facility.
- The existing erosion control measures will be maintained in accordance with appropriate North Carolina Department of Environment and Natural Resources (NCDENR) rules and regulations.
- The western portion of the existing landfill (excluding haul road corridors) will be hydroseeded as soon as weather conditions permit.
- If the two zones which include the landfill out slopes are mined, additional erosion control measures will be installed along the toe of each slope. A significant portion of

Zone 9 is already protected by existing erosion control measures. Physical improvements to the eastern toe of the landfill would have to be made in order to construct an erosion control/sediment control structure. Evaluation of this area and the feasibility of excavation Zone 1 will be an ongoing process during the metals recovery operation. An amendment to this plan and the current erosion control plan will be developed and submitted before any activity is commenced in this area.

- All existing erosion control devices have been inspected by the Land Quality Section of NCDENR and found to be in compliance with a previously approved erosion and sedimentation plan.

### **ACCESS AND SECURITY MEASURES**

- The access and security measures currently in place at ASAP will be maintained as in the past.
- Operating personnel will be present whenever activity associated with the buried metal recovery project is underway.
- During non-business hours an hourly visual inspection of the project area will be conducted by on-site security personnel.
- Access to the project area is limited from the southern end by means of the fenced scrap processing area and from other directions by berms, topography and the side-slopes of the landfill.

### **SAFETY REQUIREMENTS**

- Equipment and fill dirt for suppression is provided for to control any accidental fires which may occur in the project area.
- The Town of Kernersville Fire Department is familiar with the best techniques of fire suppression at the site. ASAP officials have met with Officials from the Fire Department. The Town of Kernersville's Fire Department is the first responder to any incident pertaining to a fire at ASAP's facility.
- ASAP will report any fires that may occur at the project area within 24 hours and follow with a written notification within 15 days.

**ATTACHMENT NO. 1**  
**PROJECT SITE MAP**

WZB

**ATTACHMENT NO. 2**  
**PROCESS EQUIPMENT SITE MAP**

W Z B

**SOLID WASTE SECTION DATABASE TRACKING FORM**

Circle one: Add New Facility

Edit Existing Facility  
(only list permit # and info. that has changed)

Add C&D Unit

**SW SITES DATABASE**

PERMIT NUM: (10) 34-20  
SITE NAME: (40) Atlantic Scrap and Processing, LLC  
SITE ADDRESS: (30) 1426 West Mountain Street  
SITE CITY: (25) Kernersville COUNTY: Forsyth

**FACILITY TYPE DATABASE**

FACILITY TYPE (circle one):

LF I T TP MRF C YW

WASTE TYPE:  
(check only the main type of waste received)

MSW \_\_\_\_\_  
IND \_\_\_\_\_  
CD \_\_\_\_\_  
LCID \_\_\_\_\_  
MED \_\_\_\_\_  
TIRE \_\_\_\_\_  
TIRE COLL \_\_\_\_\_  
OTHER (list) Auto Shredder Residue

**FACILITY INFO DATABASE**

STATUS: OPEN CLOSED INACTIVE  
LINED: YES NO  
PUB/PRIV: PUBLIC PRIVATE  
REGIONAL: YES NO  
IF REGIONAL, LIST COUNTIES N/A

**APPLICANT DATABASE**

APPLICANT NAME: (25) Bill Perry  
APPLICANT TITLE: (30) Project manager / Administrator  
APPLICANT ROAD: (30) PO Box 608  
APPLICANT CITY: (20) Kernersville STATE: (2) NC ZIP: (10) 27285-0608  
APPLICANT PHONE: 336-996-2350 APPLICANT FAX: 336-996-0493  
CONTACT NAME: (25) \_\_\_\_\_  
CONTACT TITLE: (30) \_\_\_\_\_  
CONTACT ROAD: (30) SAME  
CONTACT CITY: (20) \_\_\_\_\_ STATE: (2) \_\_\_\_\_ ZIP: (10) \_\_\_\_\_  
CONTACT PHONE: \_\_\_\_\_ CONTACT FAX: \_\_\_\_\_  
OPERATOR NAME: (25) \_\_\_\_\_  
OPERATOR TITLE: (30) same  
OPERATOR ROAD: (30) \_\_\_\_\_  
OPERATOR CITY: (20) \_\_\_\_\_ STATE: (2) \_\_\_\_\_ ZIP: (10) \_\_\_\_\_  
OPERATOR PHONE: \_\_\_\_\_

Signature: Greg Littu Date Completed: 03-02-05

Route: JB   
GL

**W. Z. BAUMGARTNER & ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND CONSULTANTS

P.O. BOX 680369 • FRANKLIN, TN 37068-0369  
1113 MURFREESBORO RD., SUITE 310 • FRANKLIN, TN 37064  
615-595-0025 • FAX 615-595-1595

W. Z. BAUMGARTNER, JR., P.E., DEE, CHMM, REM  
MICHAEL E. TANT, P.E.  
J. CLAIBORNE THORNTON, III, P.E.

RICHARD L. WILLIAMS, P.E.  
GRAHAM P. McREDMOND, E.I.T.  
BRUCE D. MILLER, P.G., E.I.T.

March 1, 2005

*Mr. Geoffrey Little*  
**Division of Solid Waste Management**  
401 Oberlin Road, Ste. 150  
Raleigh, NC 27699-1646

**RE: Sediment and Erosion Control Permit  
Buried Metal Recovery Project  
Atlantic Scrap and Processing, LLC  
Kernersville, North Carolina**

Dear Mr. Little:

Yesterday I had a lengthy conversation with Mr. Brooks Cole of the Land Quality office in Winston-Salem. It appears that for some undetermined reason, the entire file relative to the Atlantic Scrap and Processing, LLC (ASAP) erosion control permit was placed in the "dead file" area sometime ago. According to Mr. Cole, once a file had been in that designation for a year or so, the file is discarded. Apparently this is what happened to the ASAP file as he indicated that he could find no records in his office.

I explained to him that the site obtained the original permit in 1992 and has made revisions and improvements in 1993, 1995 and 2000. The site was regularly visited by inspectors from the Land Quality Division and copies of most inspection reports were kept in the company files. I further explained that the original plan, and every subsequent update, included the on-site landfill and the associated borrow pit. I further explained that the landfill has never been "closed," though new waste was diverted to a commercial landfill several years ago. This was noted during a November 2002 inspection and was recorded on the inspection form. It has always been the intent of the company to maintain an active erosion control plan along with the corresponding permit until such time as the landfill is finally closed and the borrow stabilized and vegetated.

After I went through the history of the project with Mr. Cole, he was at a lost to explain why one of their inspectors had closed the file. He did acknowledge that there was no record of notification to the company concerning this decision. He indicated that, if the copies of the plans, approval and other records could be provided to his office, the file could be reopened and the permit reestablished.



Mr. Geoffrey Little  
March 1, 2005  
Page 2

Mr. Bill Perry has been able to compile a complete file on this project and is in the process of making copies of the documents. These copies will be delivered to Mr. Cole's office this afternoon. We are confident that these documents will satisfy the Land Quality staff that the erosion control permit has been in continuous effect since 1992.

We appreciate your assistance on this project. If you have any questions or require additional information, please contact me.

Very Truly Yours,

**W. Z. Baumgartner & Associates, Inc.**



Michael E. Tant, P.E.  
Vice President

MET/mt/97054cole

Enclosures

cc: Mr. Bill Perry, Atlantic Scrap and Processing, LLC

Central Files  
#34-20

**W. Z. BAUMGARTNER & ASSOCIATES, INC.**  
ENVIRONMENTAL ENGINEERS AND CONSULTANTS

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RICHARD L. WILLIAMS, P.E.  
GRAHAM P. McREDMOND, E.I.T.  
BRUCE D. MILLER, P.G., E.I.T.

February 25, 2005

*Mr. Geoffrey Little*  
**Division of Solid Waste Management**  
401 Oberlin Road, Ste. 150  
Raleigh, NC 27699-1646

**RE: Response to Permit to Construct Questions  
Buried Metal Recovery Project  
Atlantic Scrap and Processing, LLC  
Kernersville, North Carolina**

Dear Mr. Little:

Please find enclosed three (3) copies of the revised "As-Built" plans for the processing equipment for the buried metal recovery project. This equipment has been designed and constructed in accordance with the original concept plan submitted to your office in April 2004.

We have reviewed the General Stormwater Permit as well as the SWPPP for the facility. The General Stormwater Permit for Metals Recycling Facilities does not have any specific requirements for landfills associated with such operations. However, the permit does include landfills in the definition of terms. Further, the SWPPP includes the entire operating site and specifically identifies the landfill as a possible source of stormwater contamination. This particular permit has been in affect since 2000 and Atlantic Scrap and Processing, LLC has been covered since September 2001.

Thank you again for your assistance on this project. If you have any questions or require additional information, please contact me.

Very Truly Yours,

**W. Z. Baumgartner & Associates, Inc.**



Michael E. Tant, P.E.  
Vice President

MET/mt/97054permit resp.

Enclosures

cc: Mr. Bill Perry, Atlantic Scrap and Processing, LLC, w/enclosures

# W. Z. BAUMGARTNER & ASSOCIATES, INC.

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RICHARD L. WILLIAMS, P.E.  
GRAHAM P. McREDMOND, E.I.T.  
BRUCE D. MILLER, P.G., E.I.T.

February 21, 2005

## VIA OVERNIGHT DELIVERY

*Mr. Geoffrey Little*

### **Division of Solid Waste Management**

401 Oberlin Road, Ste. 150  
Raleigh, NC 27699-1646

**RE: Operational Plan  
Buried Metal Recovery Project  
Atlantic Scrap and Processing, LLC  
Kernersville, North Carolina**

Dear Mr. Little:

Enclosed are two copies of the revised *Operation Plan* for the buried metal recovery project at Atlantic Scrap. We believe that these revisions are responsive to the discussion we had during our meeting on February 18, 2005.

Thank you again for your assistance and advice on this project. If you have any questions or require additional information, please contact me.

Very Truly Yours,

**W. Z. Baumgartner & Associates, Inc.**



Michael E. Tant, P.E.  
Vice President

MET/ph/97054op.rev

Enclosures

cc: Mr. Bill Perry, Atlantic Scrap and Processing, LLC, w/enclosures



# W. Z. BAUMGARTNER & ASSOCIATES, INC.

ENVIRONMENTAL ENGINEERS AND CONSULTANTS

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RICHARD L. WILLIAMS, P.E.  
GRAHAM P. McREDMOND, E.I.T.  
BRUCE D. MILLER, P.G., E.I.T.

February 9, 2005

## VIA OVERNIGHT DELIVERY

*Mr. Geoffrey Little*  
**Division of Solid Waste Management**  
401 Oberlin Road, Ste 150  
Raleigh, NC 27699-1646

**RE: Operation Plan**  
**Buried Metal Recovery Project**  
**Atlantic Scrap and Processing, LLC**  
**Kernersville, North Carolina**

Dear Mr. Little:

Enclosed are two replacement copies of the *Operation Plan* for the buried metal recovery project at Atlantic Scrap. These copies have been properly sealed by a professional engineer. I apologize that unsealed copies were inadvertently mailed to your office. Please destroy the unsealed copies.

I will be meeting with Mr. Bill Perry this coming weekend and he plans to bring me up to date concerning yesterday's meeting. We will be making some revisions/corrections to the Operation Plan, and I will bring them to our meeting next Friday. In the meantime, if you have any questions, please contact me.

Very Truly Yours,

**W. Z. Baumgartner & Associates, Inc.**



Michael E. Tant, P.E.  
Vice President

MET/mt/97054swm.205

Enclosures

cc: Mr. Bill Perry, Atlantic Scrap and Processing, LLC



**W. Z. BAUMGARTNER & ASSOCIATES, INC.**  
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RICHARD L. WILLIAMS, P.E.  
GRAHAM P. McREDMOND, E.I.T.  
BRUCE D. MILLER, P.G., E.I.T.

January 11, 2005

**VIA OVERNIGHT DELIVERY**

*Mr. Jim Barber*  
Permitting Branch Supervisor  
**Division of Solid Waste Management**  
401 Oberlin Road, Ste 150  
Raleigh, NC 27699-1646

**RE: Operation Plan**  
**Buried Metal Recovery Project**  
**Atlantic Scrap and Processing, LLC**  
**Kernersville, North Carolina**



Dear Mr. Barber:

Enclosed are two copies of the *Operation Plan* for the buried metal recovery project at Atlantic Scrap. This plan is consistent with the *Conceptual Work Plan* previously approved and the permit issued by the Division. The final equipment selection and layout is more extensive and sophisticated than we originally discussed during your visit to the site. Consequently, the construction of the concrete pad for the equipment and the actual delivery/installation of the equipment has taken longer than anticipated. We now expect that the system will be fully operational in about sixty days.

We thank you again for your assistance. After you have reviewed the attached, please let me know if you have any questions or need additional information.

Very Truly Yours,

**W. Z. Baumgartner & Associates, Inc.**

Michael E. Tant, P.E.  
Vice President

MET/mt/97054swm

cc: Mr. Bill Perry, Atlantic Scrap and Processing, LLC



- End of Booklet -

34-20

Operational Plan

for the

Buried Metal Recovery Project

Revised Feb., 2005

Approved March 3<sup>rd</sup>, 2005



- Booklet -

Operational Plan  
for the

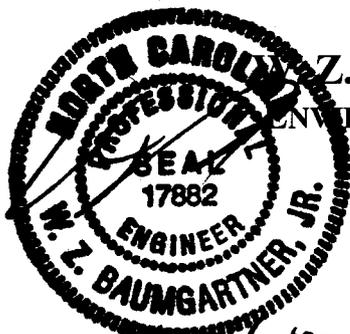
Buried Metal Recovery Project

January, 2005

# OPERATIONAL PLAN

FOR THE  
BURIED METAL RECOVERY PROJECT  
ATLANTIC SCRAP AND PROCESSING, LLC (ASAP)  
FORSYTH COUNTY, KERNERSVILLE  
NORTH CAROLINA

JANUARY 2005



W. Z. BAUMGARTNER & ASSOCIATES, INC.  
ENVIRONMENTAL ENGINEERS & CONSULTANTS  
P. O. Box 680369  
FRANKLIN, TENNESSEE 37068-0369

97054

*uh/ov/05*

*W Z B*

## INTRODUCTION

This Operation Plan has been developed to be consistent with the *Conceptual Work Plan* previously approved by the North Carolina Division of Solid Waste Management and the conditions of NCDER Permit No. 34-17 issued to Atlantic Scrap and Processing, LLC (ASAP).

The landfill at the ASAP facility was permitted in the early 1970's by the State of North Carolina. The landfill was a private industrial landfill used to dispose of shredder residue generated from the automobile shredder constructed in 1970's. This shredder was one of the first such machines installed in the south. The primary focus in the early days of shredding automobiles (and other ferrous containing scrap) was the recovery of ferrous metals. Little, if any effort was made to recover nonferrous metals as the technology for efficient recovery did not exist. As metal markets changed and as recovery technology improved, the site began recovering some nonferrous metals from the downstream system on the shredder. Currently the site has a relatively sophisticated nonferrous recovery system utilizing eddy-current technology. However, up until the time shredder residue was being shipped to an off-site landfill, a fraction of nonferrous and some ferrous metal was buried with the residue.

As indicated in the Conceptual Work Plan, it is estimated that 75 to 100 tons of shredder residue were generated by the shredder during a full production day. Using this generation rate and assuming 230 operating days per year for 25 years, it is calculated that the potential shredder residue in the landfill is about 500,000 tons. As the waste was placed in the landfill, it was covered periodically with native clay soil excavated from a borrow pit located on the same property. Exact records are not available but is estimated that the landfill contains between 600,000 and 700,000 cubic yards including shredder residue and the soil used for interim cover.

Based on all preliminary studies, it appears feasible to install recovery equipment and process the waste presently buried in the landfill. A detailed Process Flow Chart was presented in the Conceptual Work Plan. The actual project will follow that flow chart with the exception that

it is anticipated that no washing operation will be required. Following is a plan for each aspect of the operation.

### **EXCAVATION**

- Excavation of the waste will proceed in sequence across the width of the landfill.
- In each area to be excavated, a barrier will always be left in place to isolate the active excavation from surface streams. Any precipitation falling in the pit will remain in the pit.
- It is anticipated that some pockets of perched water will be encountered at various places in the landfill. These should be isolated and are not true groundwater. If groundwater is encountered, excavation in that area will cease.
- During dry weather, a water truck will be available to control dust from the excavation zone to the processing equipment.
- Excavation will be suspended during periods of extreme wet or extreme cold weather.

### **INFEED STOCKPILE**

- An infeed storage area is provided adjacent to the processing equipment. (See Processing Site Plan.) The volume of the storage area will be equal to approximately two weeks of production to allow the processing equipment to function during periods when wet weather suspends excavation.
- A silt fence will be maintained on the downstream side of the storage area.
- The pile and silt fencing will be inspected daily.
- Care will be exercised to make sure the storage pile does not interfere with the railroad spur adjacent to the pile area.

### **MATERIAL SCREENING**

- Screens will process the residue prior to the eddy-current separation.
- Oversize material will be placed on the residue stockpile (except large pieces of ferrous metal) for return to the landfill.
- Undersize material (fines) will be stockpiled for use in the landfill cap as a leveling

course before soil placement.

### **EDDY-CURRENT SEPARATION**

- All processing equipment is installed on a new concrete pad to facilitate easy maintenance and materials management.
- Following the screening operations, residue will be passed through a series of magnets and eddy-currents machines.
- Conveyors carry recovered metals to a stockpile on the concrete pad adjacent to the site access road.
- Conveyors carry processed residue to a storage pile located in the existing landfill.

### **RECOVERED METALS STOCKPILE**

- All recovered metals will be deposited in stockpiles on the west end of the new concrete pad (see site plan).
- Except under unusual conditions, recovered metal will be shipped each day the facility operates.
- Sufficient room is provided on the concrete pad to allow a truck staging and loading area.

### **RESIDUE STOCKPILE**

- All processed residue will be stockpiled prior to being placed back in the landfill.
- A stacker conveyer is provided to allow the location and size of the stockpile to vary according to weather conditions and excavation/bury sequencing.
- The entire stockpile area is located within the footprint of the existing landfill.
- A silt fence will be maintained on the downstream side of the stockpile.

## **LANDFILL**

- As soon as an excavated area has reached its maximum depth and a sufficient gap exists to allow landfilling and excavation to take place simultaneously, processed residue will be returned to the landfill.
- Waste will be compacted using a suitable track dozer or a landfill compactor.
- As the level of the waste approaches the surface of the landfill, fines from the stockpile will be placed on the processed residue as a leveling and consolidation layer.
- Until the final decision is made relative to the cap design (soil and vegetation vs. soil and Descobond) a minimum one foot layer of soil will be placed over the waste.
- Filling activities will be conducted in a manner so as to minimize any potential for impoundment of surface water.

## **EROSION CONTROL MEASURES**

- All activities associated with the buried metal recovery project will be conducted within the footprint of the existing landfill.
- No new surface water discharge point will be created nor will there be any major increase in the volume of runoff from the facility.
- The existing erosion control measures will be maintained in accordance with appropriate North Carolina Department of Environment and Natural Resources (NCDENR) rules and regulations.
- All existing erosion control devices have been inspected by the Land Quality Section of NCDENR and found to be in compliance with a previously approved erosion and sedimentation plan.

## **ACCESS AND SECURITY MEASURES**

- The access and security measures currently in place at ASAP will be maintained as in the past.
- Operating personnel will be present whenever activity associated with the buried metal recovery project is underway.
- During non-business hours an hourly visual inspection of the project area will be

conducted by on-site security personnel.

- Access to the project area is limited from the southern end by means of the fenced scrap processing area and from other directions by berms, topography and the side-slopes of the landfill.

#### **SAFETY REQUIREMENTS**

- Equipment and fill dirt for suppression is provided for to control any accidental fires which may occur in the project area.
- The Town of Kernersville Fire Department is familiar with the best techniques of fire suppression at the site. ASAP officials have met with Officials from the Fire Department. The Town of Kernersville's Fire Department is the first responder to any incident pertaining to a fire at ASAP's facility.
- ASAP will report any fires that may occur at the project area within 24 hours and follow with a written notification within 15 days.

**ATTACHMENT NO. 1**  
**PROJECT SITE MAP**

W Z B

Control Files  
Forsyth County

**Subject:** RE: Permission for testing/Atlantic Scrap  
**From:** "Bill Perry " <fridge@infionline.net>  
**Date:** Tue, 1 Mar 2005 12:21:45 -0500  
**To:** "Geof Little" <geof.little@ncmail.net>

Thanks a lot

Bill

-----Original Message-----

**From:** Geof Little [mailto:geof.little@ncmail.net]  
**Sent:** Tuesday, March 01, 2005 11:56 AM  
**To:** Bill Perry  
**Cc:** Jim Barber; Jason Watkins; j coffey >> JAMES COFFEY; Brent Rockett  
**Subject:** Re: Permission for testing/Atlantic Scrap

Dear Bill:

As you and I discussed by telephone this morning, you are granted temporary and conditional authorization to use material stockpiled from the adjacent landfill for trial operation of the Auto Shredder Residue (ASR) processing equipment through the close of business Friday, March 4, 2005. I anticipate issuing the permit for processing reclaimed landfill ASR by that time.

In the interim, this authorization allows you to use reclaimed landfill ASR to operate the equipment for the purpose of making necessary adjustments and having manufacturer representatives inspect the equipment during trial operation.

Please note that this authorization does not give you permission to perform any activities that would cause a nuisance or adversely affect human health or the environment. All stockpiled material shall be managed in accordance with state and federal rules.

Please keep us advised as to the progress of the trial operations.

Sincerely,

Geof Little

---

**Geoffrey H. Little**  
Solid Waste Section  
NC-DENR  
401 Oberlin Road, Suite 150  
1646 Mail Service Center  
Raleigh, North Carolina 27699-1646

---

Tel: 919-733-4996 ext 266  
Fax: 919-733-4810  
e-Mail [geof.little@ncmail.net](mailto:geof.little@ncmail.net)

Bill Perry wrote:  
Hello Geof,

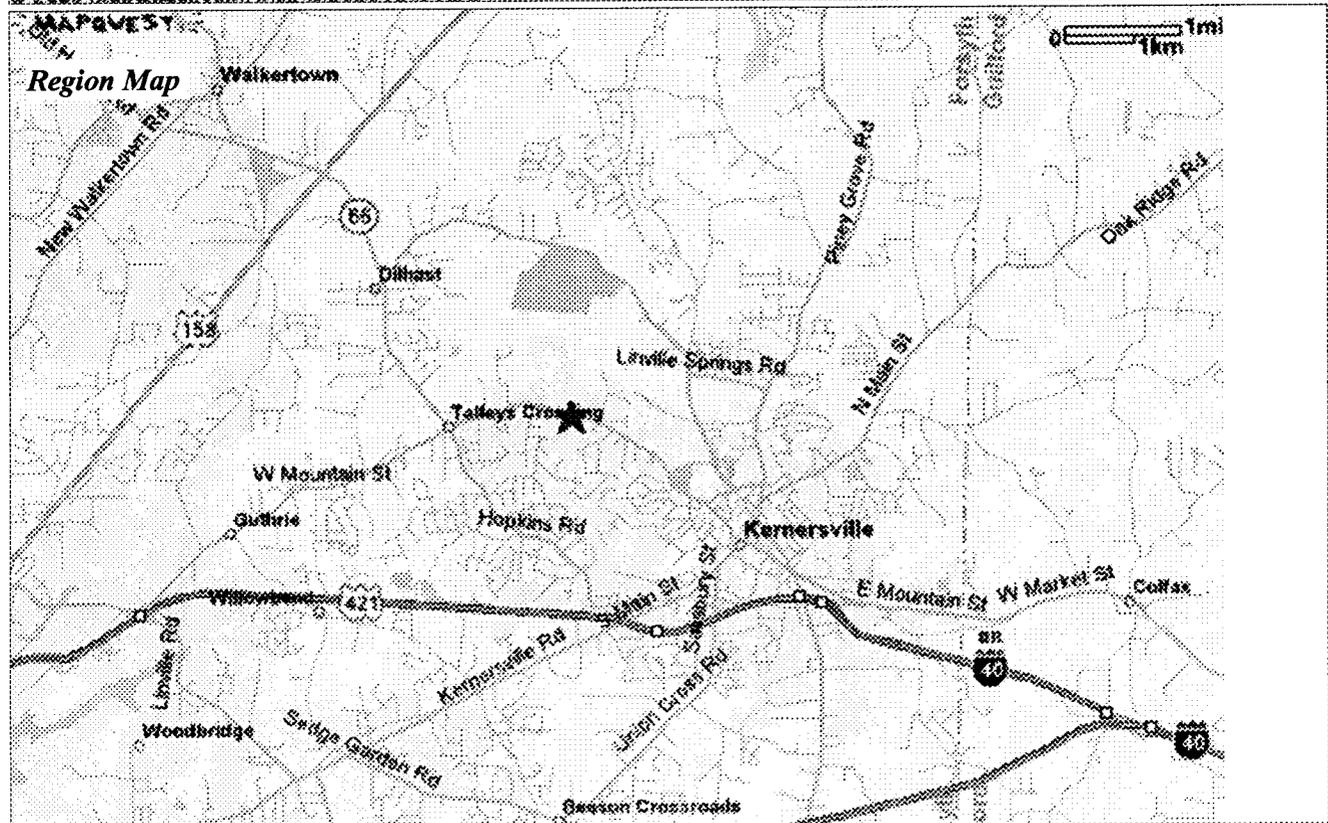
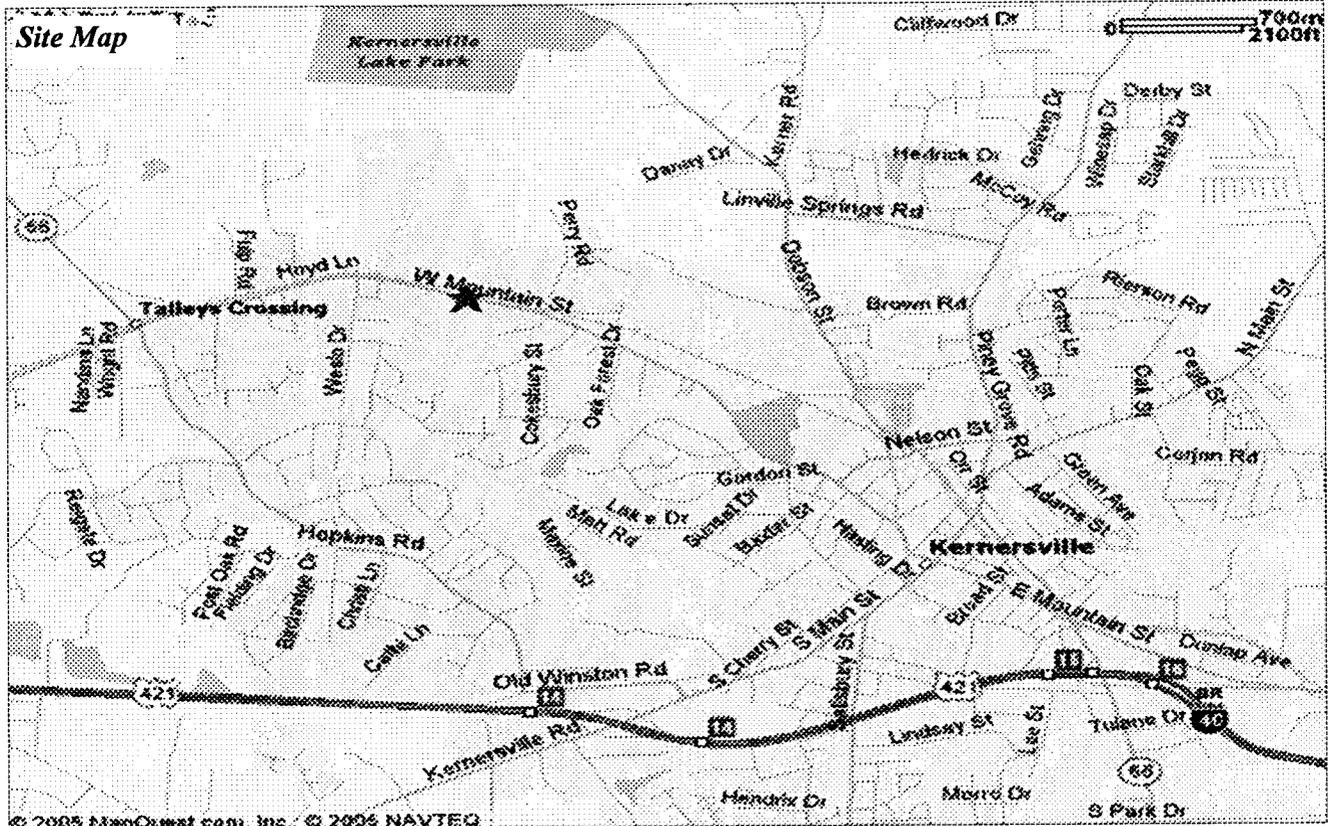
As we discussed we need permission to start testing the material recovery set up. In order to do this we must process limited amounts of material from the landfill. This will not be "full scale" production. We must set up all of the eddy current machines as well as dial in sensitivity settings for the "air – jet" box. All conveyor belts, transfer points, etc. need to be tested as well. We will not begin full-scale production until we receive the permit as we discussed.

Thanks in Advance,

Bill Perry

**Location Map**

Permit #	Facility Name	County	Site Address
34-13	Atlantic Scrap and Processing, LLC	Forsyth	1426 West Moun



Buried material Recovery  
Operational Plan

- Estimated 500,000 tons buried material  
+ 25 yrs  
+ 230 operating days/yr  
~ 87 tons/day (operating day)

- Cover material: periodically covered w/soil  
→ 600 to 700K material (soil + cover)

Descobond 500 is a soil stabilizer formulated to improve road performance through soil bonding.

\* Advantages of Descobond 500 are:

1. Higher resistance to rutting, displacement and failure
2. Lower maintenance cost
3. Lower life cycle costs due to increased road lifetime
4. Significant savings in excavation, transportation, disposal and labor costs
5. Reduces base and pavement thickness by increasing structural strength
6. Non-toxic to the environment

## **1.0 Introduction**

DESCOBOND 500 (DB500) is a non-toxic soil stabilizer that can be used for soil bonding and surface sealing. The concept of DB500 is to provide an economical way to structurally stabilize an existing road from the sub-base to the surface. A wide variety of soils can be used for road building when using DB500 since the product can be diluted to fit the application. In general, the product may be diluted from 1:50 to 1:100 with water depending on the soil used.

### **1.1 Native Soils**

Native soils encountered in road building and other load bearing applications often lack the mechanical properties required for satisfactory results. Inadequate soil strength can lead to defects in the road surface, rutting, corrugation, cracking and failure of pavement and gross shifts in the load surface. Poor water absorption properties of clay soils can lead to heaving, surface failure, seasonal shifts, extrusion of base material and other problems.

Soils too weak to bear the anticipated load can be stabilized by the addition of materials which impart mechanical strength, such as aggregate and by the addition of chemical stabilizers which decrease water absorption and increase the cohesion of the soil matrix by forming a cement-like compound to hold the matrix together. The appropriate type of stabilization and results to be expected depend upon the soil types encountered and methods of application of the stabilizer and construction of the road. A range of soil compositions can serve as good road base material, but high strength, resistance to shear and resistance to erosion or swelling by water are required. Most native soils require some extent of stabilization to achieve the goals and provide a proper material for road construction.

Roads treated with DB500 exhibit:

- \* Complete and total resistance to rutting, displacement and failure
- \* Increased road lifetime
- \* Higher load bearing capacity
- \* Lower maintenance cost
- \* Lower life cycle costs

DB500 reduces road construction costs through:

- \* Eliminate or reduce the replacement of unsuitable native soils
- \* Significant savings in excavation, transportation, disposal and labor costs
- \* Eliminate or reduce the traditional pozzolanic stabilizers (cement)
- \* Reduction of pavement thickness by increasing sub-base strength

\* Reduction of base thickness by increasing structural strength

### **1.2 Chemical Matrix Formation**

When DB500 comes in contact with soil particles it coats and penetrates them by using nature's solvent: water. The penetration of the loose soil particles or compacted surface can be physically observed by a softening of the soil. This effect is caused by a fast diffusion potential induced by the lowering of the interfacial free energy (surface tension) between DB500 and the soil. The resulting soil-DB500 combination resembles a saturated bound sponge. The product has been formulated to dry (plate out) when an equilibrium film thickness is achieved. This penetration and subsequent establishment of the film thickness drying switch is soil dependent but usually takes 10 to 20 minutes. This gives the soil particles not only interfacial bonding (increased adhesion and reduced moisture sensitivity) but also inner particle bonding (increased cohesion and reduced swelling). The subsequent increase in adhesive and cohesive strength and decrease in moisture sensitivity promotes true soil stabilization.

It is very important to understand that the penetration potential occurs in between soil particles (increase cohesive strength) on their surface (water shedding) and inside the soil particle through absorption (locking the bond) to form a rigid reinforcing network for the compacted soil structure.

### **1.3 Surface Sealing**

For surface sealing, depending on the soil type and degree of densification, diluted DB500 can penetrate from the surface to a depth of 1/4 to 1 inch. Depending on the dilution and type of equipment used, several applications may be necessary to properly seal the surface.

## **2.0 Environmental**

DB500 provided by C.F.O. offers the construction industry a new way of working with soils. That is, to use the soils on site and reduce the use of imported base rocks and fills to complete a project. The time will come when we will have to reduce the amount of imported materials to protect our natural environment. C.F.O. is committed to provide the soil stabilizing solution for in-place mixing by enhancing the soil structure.

### **2.1 Long Term Effects**

DB500-soil mixture can be recycled. The combinations of products listed as a whole actually produce bound aggregates in which the constituent bonded products resemble elements in the soil. The material can be excavated and reused with the potential of producing an even better road base since the soil particles would be considered precoated.

## **3.0 Project Considerations**

Road design is a complex matter, taking into account materials available, contractor experience and available equipment, weather conditions, desired life cycle, expected loads, local specifications, and, of course, economic constraints. The material presented in this section is meant to serve as a general guide in using DB500 to improve road performance and lower costs. However, this discussion assumes a good road design based on local experience and engineering practices have been implemented, and it is not the intent to substitute such for proper design. Inadequate drainage or insufficient design strength for the actual load, will hinder DB500 performance. DB500 will improve the performance of a correctly designed road and enable the road to meet design strength and desired lifetime at lower cost and with less maintenance.

Three parameters must be determined when preparing to use DB500

- \* What is the appropriate depth of treatment of the road base
- \* Moisture content of the existing soil
- \* How much DB500 concentrate should be used per cubic yard (meter) of soil

The answers to these questions depend on desired load bearing capacity, road lifetime, available materials, and road design.

### 3.1 Recommended Guideline For Using DB500

Prior To Project	Laboratory testing to ensure compatibility with soil, amount, kind, and dilution of DB500 product. Use approved standard and official methods to establish a mix design.
Delivery System	Water truck with a capacity of 4000 gallons is recommend or equivalent spay unit with acceptable spray nozzles to obtain an even distribution over the entire working surface.
Equipment	<p><u>Motorized Grader (Blade)</u> with ripper attachments or any soil exposing system (mixing machines) which can be used to homogeneously mix the soil on site once the product has been introduced to the soil.</p> <p><u>Pugmill CTB plant</u> is by far the most proficient method to properly homogenize the soil-DB500 mixture. The mixed product may be delivered to the laydown site by any means as long as it does not disrupt homogeneity, and have a restricting volume such that it supports densification to the point where it will not flow freely out of the transport vehicle at the location of the dump. The central mixing plant used must be calibrated for delivery of all constituent components making up the soil-DB500 mixture.</p> <p><u>Compaction</u> pneumatic tire rollers, sheeps foot, or pad foot this may vary depending on the job. A steel drum roller may be used if the project engineer desires it and should used in combination with a sheeps foot.</p>
Dilution Mixing	<p>Once the dilution is known from laboratory testing, the products are diluted in the following manner.</p> <p>DB500 is added to the delivery unit which was previously filled with water to the total correct dilution.</p>

### 3.2 Road Base Depth and Depth of DB500 Treatment Considerations

While recognized engineering standards specify soil strength and properties in base and sub-base materials, the depth of the base and sub-base is chosen by load expectations and experience with local freeze-thaw conditions. In general, for untreated aggregate base, the Asphalt Institute recommends a thickness between 6-12 inches(150-300 mm). Our data confirms this, but further investigation shows that DB500 can also support heavy loads at a 4 inch depth. In general, the Asphalt Institute recommends with light traffic conditions such as parking areas and low-truck traffic rural roads (up to 104 Equivalent 80 KN axle loads, EAL) constructed with a 6 inch(150 mm) base, moderate truck traffic areas (in the range of 105 EAL) constructed with a 8 inch(200 mm) base thickness, and high truck traffic area (106 or greater EAL) requiring 12 inches(300 mm) of base. The entire depth of road base and sub-base (if any) must be treated when using DB500.

### 3.3 Application Rates of DB500

The standard application rates of DB500 are listed in the table below. Most native soils and road base materials will vary and may actually be a combination of the soil classes listed in the table.

The amount of concentrate to a given volume should be maintained according to the application rate, but the amount of water used is only a function of soil type and existing moisture content. These standard rates have been chosen through field experience to produce good strength properties with most soil types at a favorable cost.

General				Gallons(Liters) for 1 Acre at	
Class of Soil	AASHTO Designation	Gallons/yd <sup>3</sup>	Liters/m <sup>3</sup>	4 in. Depth	6 in. Depth
PI<10 low to non-plastic soils	A-1-a, A-1-b stone fragments, Gravel and Sand	0.12	0.61	66(250)	100(379)
	A3 Fine Sand	0.12	0.61	66(250)	100(379)
	A-2-4, A-2-5, Silty Sand, Gravel	0.06-0.09	0.31-0.46	33-50 (125-189)	50-75 (189-284)
	A-4, A-5, Silty soils	0.06-0.09	0.31-0.46	33-50 (125-189)	50-75 (189-284)
PI<30 Medium plastic soils	A-2-6, A-2-7 Clay Gravel, Sand, PI<30	0.06	0.31	33(125)	50(189)
	A-6,A-7-5, A-7-6, Clay Soils PI<30	0.06-0.09	0.31-0.46	33-50 (125-189)	50-75 (189-284)
PI>30 High plastic soils	A-2-6, A-2-7 Clay Gravel, Sand PI>30	0.09-0.12	0.46-0.61	50-66 (189-250)	75-100 (284-379)
	A-6,A-7-5, A-7-6, Clay Soils PI>30	0.12	0.61	66 (250)	100 (379)

PI = Plasticity Index  
AASHTO = American Association of State Highway and Transportation Officials  
4 in. = 102mm  
6 in. = 150mm

In general, 0.12 Gallon/yd<sup>3</sup> (0.61 Liters/m<sup>3</sup>) should be used for poor soils, 0.09 Gallons/yd<sup>3</sup> (0.41 Liters/m<sup>3</sup>) should be used for fair soils and 0.06 Gallons/yd<sup>3</sup> (0.31 Liters/m<sup>3</sup>) for good soils. Application of DB500 may vary depending on the changing soil conditions during a project and in general the application rate should not fall under 0.06 gallon/yd<sup>3</sup> (0.31 Liters/m<sup>3</sup>).

#### 4.0 Soil Mix Design And Evaluation

Interpretation of laboratory tests of stabilized soil is difficult because different official agencies use different testing methods and each method tests for a different soil property. There is no such thing as a general, reliable laboratory test of "soil strength." A study by the U.S. Department of Transportation Federal Highway Administration completed in 1992 covering over 160 miles of test and demonstration sections (FHWA- FLP-92-011) concluded that available "standard tests" often give mixed or misleading results unless modified to account for the affect of the stabilizer on soil properties. These modifications must be applied from experience and do not suit the capabilities of the average commercial or highway testing facility. The report further states that, "standard testing" procedures employed by highway materials laboratories frequently produce mixed results that are inconclusive. Because stabilizers provide properties to the soil or aggregate not normally found in these construction materials, the standard tests were not designed to identify these properties and cannot adequately predict actual field performance. An example is tensile strength provided by the binding properties of the stabilizers. None of the standard tests, including Proctor, CBR and unconfined compression test for this property.

For the reasons stated, C.F.O. provides laboratory testing guidelines for DB500 soil mix designs. The design method is general in nature and could be used as a model by those interested in doing soil mix design work. The design method takes into account the local conditions that might influence the projects initial and long term performance. These are but not limited to local seasonal temperatures, rainfall, and how much loading will occur due to traffic. An application of this design method can be requested from C.F.O. The California Bearing Ratio (CBR) Test (ASTM D 1883) is a particular problem because the standard instructions call for soaking the sample in

water for 96 hours prior to testing. This does not reproduce field conditions, as the road base is crowned, sheds moisture, and drains the subgrade moisture into adjacent material. Again, from the DOT report, "while moisture can be mechanically forced into the stabilized sample in the laboratory, moisture does not have similar access to the stabilized soil in the field due to loss of capillarity that has resulted from treatment." The CBR test must be modified to allow the sample to cure to near full strength (28 days) and the sample should not be soaked, or soaked only to a small fraction of saturation in order for the test to give meaningful results.

Ultimately, the best predictor of DB500 performance is a properly conducted field test at the project site.

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- End of Booklet-

Operational Plan  
for the

Buried Metal Recovery Project  
January, 2005