

**CONSERVATION PLAN FOR THE INCIDENTAL TAKING OF THE  
SPOTTED DUSKY SALAMANDER**

**December 19, 2008  
Revised January 9, 2012**

**MOUNDS PRODUCTION COMPANY, LLC  
LEFEVRE-MAGER # 5 SURFACE MINE  
PULASKI COUNTY, ILLINOIS**

**Prepared For: Illinois Department of Natural Resources**

**Prepared By: Mounds Production Company, LLC**



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Cover Photo from Illinois Salamanders Poster, Brandon, Illinois Department of Natural Resources, April 2002

## Introduction

### **Project Background.**

In January 2008, Mounds Production Company, LLC ("MPC") applied to the Department of the Army for a permit to affect 4.98 acres of wetlands on a 440 acre proposed clay mining site under Section 404 of the Clean Water Act. Under the permit MPC sought to relocate portions of an intermittent stream system in order to proceed with the extraction of absorbent clay from its principal mine in Pulaski, County Illinois. Rights to these mineral resources on the properties of Gary and Athalyn LeFevre and Don and Marion Michel were acquired when MPC purchased the clay processing and manufacturing facility in Mounds, Illinois and related mining assets from American Colloid Company. The areas in question were permitted by the Illinois Department of Natural Resources, Office of Mines and Minerals in 2005. During the Section 404 permitting process, MPC was informed that this principal mine site was a known habitat of an Illinois-listed endangered species, *Desmognathus conanti*, or Spotted Dusky Salamander. At that time, MPC contacted the Illinois Department of Natural Resources to begin the consultation process.

### **Project Location.**

The LeFevre-Mager Mine #5 is located on Clay Pit Road and Feather Trail Road about 0.5 miles north of Olmsted, Illinois. The mineral leases involved include the 273 acre LeFevre tract and the 167 acre Mager tract and have been mined for absorbent clay since the 1970's. The LeFevre Mager Mine #5 permit area is comprised of 102 acres, located in portions of Sections 21, 16 and 15, Township 16 South, Range 1 East, of the Third Principal Meridian, Pulaski County, Illinois; however, in this Conservation Plan, references to the "affected wetland area" refer only to the approximately 4630 ft of intermittent 2<sup>nd</sup> and 3<sup>rd</sup> order stream and associated 4.98 acres of wetland corridors on which MPC proposes to conduct surface mining and related activities. **See Attachment 1. Site map with UTM Coordinates.**

## Biological Data

### **Description.**

The Spotted Dusky Salamander is a moderately stout salamander with dark markings and remnants of larval pale spots on the back. **See Attachment 2.** These markings form an irregular dark-bordered light stripe down the back of the adult salamander. Juveniles are more prominently spotted. The underside is light with black flecks. Larvae are short, between eight and 12 millimeters long, with glistening, white gills (Phillips, et al., 1999).

Adult Spotted Dusky Salamanders range from about six to 14 centimeters total length. Males are generally larger than the females, possibly due to the male's greater average longevity (Petranka, 1998).

### **Habitat and Life Habits.**

Throughout most of its range, the Spotted Dusky Salamander is known to occur in woodland seeps, streams and cold headwater springs. In Illinois, cold, rocky and heavily forested ravines provide optimum habitat (Herkert, ed., 1992).

Adults are mainly active on the surface at night, taking shelter under leaves, logs and rocks or in burrows during the day. They feed on invertebrates such as arthropods, annelids and mollusks as well as other salamanders and their own larvae. They mate in spring to early summer, roughly April to July. In spring of the year, females may migrate short distances to breeding habitats. Later, juveniles disperse from these sites into the surrounding forest. During the winter, the adults and juveniles retreat to underground areas, dispersing into surrounding forest in spring (Petranka, 1998). Eggs are deposited in clusters of 10 to 20 in burrows or in depressions under logs or leaves near water. The female guards the nest, curling around the eggs to protect them. Hatching occurs in one to two months depending upon temperature. The larvae make their way into the nearby water where they grow and feed until transforming the following spring (Smith, 1961, and Phillips et al., 1999).

### **Distribution and Range.**

The Spotted Dusky Salamander, is by some considered a subspecies of the Dusky Salamander which occurs widely from southern New Brunswick and southeastern Quebec to the Gulf Coast of Alabama, Mississippi, and Louisiana (Petranka, 1998). The Spotted Dusky Salamander occurs in the southern portion of the Dusky Salamander Range, from southern Illinois southeastward to northeastern Georgia and southward to Florida, Alabama, Mississippi, and Louisiana (Petranka, 1998). It is found in extreme southern Illinois where it is known from a number of locations in Pulaski County. The historical range of this salamander in southern Illinois was probably much the same as its present range (Herkert, ed., 1992). Because it barely enters the state, the dusky salamander was originally placed on the Illinois Department of Conservation's list of rare and endangered species (Brandon & Huheey, 1979). In 2002, however, the Illinois Department of Conservation changed the name of the listed species from the Dusky Salamander, *Desmognathus fuscus*, to the Spotted Dusky Salamander, *Desmognathus fuscus conanti*, and then again revised the listed name to *Desmognathus conanti* in 2009.

### **Potential Impacts**

#### **Mining.**

MPC principal raw materials surface mine is located on the LeFevre-Mager site. This project involves the phased rerouting and subsequent mining of intermittent streams and associated narrow palustrine & riparian wetland corridors. Trees will be harvested and other vegetation will be removed prior to the progression of mining across the proposed permit area. The topsoil will be removed; and overburden (material that lies between the topsoil and the Porter's Creek formation of absorbent clay) will then be stripped using bulldozers and/or pan scrapers. The clay will be mined using excavators, loaded onto trailer dump trucks and hauled to MPC's Mounds plant for processing. A Spotted Dusky Salamander marginal habitat may be impacted when activity occurs near wetland bottoms and intermittent stream banks.

Mounds Production Company must begin mining of this area no later than October 2012 in order to continue to operate the Mounds plant. It is expected

that mining will proceed for several years, and that only a few 5 to 10 acres of the site will be used for active mining at any one time. For example only 12 acres of land were affected on the LeFevre-Mager #5 mine during the last 4 years.

#### **Water Course Diversion.**

Concurrently with the development of the mine, MPC plans to divert the surface water flows into wetlands which are being developed to the south east of the present water course. These actions affect a portion of the salamander habitat located on the LeFevre-Mager # 5 surface mine, and potentially will affect the Spotted Dusky Salamander. **See Attachment 3. LeFevre-Mager Mine Wetland Mining & Restoration Plan** Following water course diversion, the existing wetland corridor will be mined as indicated above, thereby disturbing the marginal salamander habitat present on the site.

#### **Mitigating Measures.**

In Measures to Minimize Potential Impacts on the Spotted Dusky Salamander below, MPC outlines measures it believes will minimize any potential impacts on the Spotted Dusky Salamander resulting from MPC's mining activities on the affected wetlands.

#### **Quantification of Take**

The principal area of potential impact, where the Spotted Dusky Salamanders and larvae have been identified, or are thought to occur is the central stream zone of the LeFevre-Mager Mine #5. The number of Spotted Dusky Salamanders actually occurring in this drainage is unknown; however, MPC has carried out survey of the site and located a second year juvenile salamander and suitable habitat and food supplies in the central drainage of the LeFevre-Mager Mine 35 site. It is reasonable to expect incidental take during site clearing activities and the stripping and mining of the affected wetland area.

#### **Measures To Minimize Potential Impacts on the Spotted Dusky Salamander**

MPC has consulted with the Illinois Department of Natural Resources ("IDNR"), USACE, the United States Department of Agriculture Natural Resource Conservation Service ("USDA-NRCS"), and the Illinois Natural Areas Inventory in developing its general mining plan, wetland mitigation plan, and this Conservation Plan. To the extent possible, MPC's plans minimize detrimental impacts to the ecology and cultural resources of the area. MPC has developed this Conservation Plan for the sustainable use and ultimate restoration of mined wetland forest and drainage courses on the LeFevre-Mager tracts and is preserving upstream forested habitat. It is expected that site restoration should result in the eventual re-colonization of the recreated forested wetland habitat by the Spotted Dusky Salamander.

Mounds Production Company, LLC, Oil-Dri Corporation of America and any and all environmental consultants/contractors, shall be responsible for overseeing/coordinating all minimization, monitoring, and mitigation efforts identified within the LeFevre-Mager Mine # 5 absorbent clay surface mine

(Pulaski County, Illinois) Conservation Plan and Final Incidental Take Authorization document. In addition, Mounds Production Company, LLC, Oil-Dri Corporation of America, and all retained consultants/contractors, shall be responsible for planning, contract execution, and construction supervision for this entire project. All minimization, monitoring, and mitigation efforts associated with the LeFevre-Mager Mine #5 absorbent clay surface mine (Pulaski County, Illinois) must first be reviewed and officially approved in writing by an authorized agent of the Illinois Department of Natural Resources (Department) prior to any form of implementation.

Per environmental mitigation guidelines established in 17 Ill. Admin. Code 1080.40, Mounds Production Company, LLC and Oil-Dri Corporation of America shall make a one time mitigation payment of \$150,000.00 specifically to the "Illinois DNR Wildlife Preservation Fund". Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5), authorization for the incidental take of the State listed Spotted Dusky Salamander (*Desmognathus conanti*) in Pulaski County, Illinois [associated with the LeFevre-Mager Mine #5 absorbent clay surface mine] shall be granted by the Department, subject to specific terms and conditions described in a Final Authorization and Implementing Agreement.

The mitigation payment for the LeFevre-Mager Mine #5 absorbent clay surface mine (\$150,000.00) shall be used by the Illinois Department of Natural Resources and its designated Agents solely for Spotted Dusky Salamander conservation, restoration, management, and/or recovery efforts including but not limited to: Spotted Dusky Salamander habitat restoration/ enhancement/ acquisition; biological surveys; captive rearing; and/or species translocation efforts anywhere within Pulaski County, Illinois.

#### **Reduced Mine Area.**

MPC's initial plans contemplated mining the entire LeFevre-Mager Site, and included stream relocations to the west and south of the presently proposed footprint. However, upon realization of the potential presence in the drainages of the Spotted Dusky Salamander, MPC abandoned plans to mine a steep ravine near Feather Trail Road, wooded areas to the north and, the southern most reaches of the principal drainage system. MPC now plans to mine only 4.98 acres of wetlands, or about half the original area of potential salamander habitat as indicated on attachment 3. MPC will maintain an undisturbed buffer between mine areas and the ravine along Feather Trail road and between mine areas and the central drain north of Phase 2 and south of the Phase 3 reaches. MPC will protect the upper reaches of the stream and ravine habitats that play a critical role in Spotted Dusky Salamander life reproduction and life cycle. MPC will not harvest timber, mine or conduct related mining activities within this critical habitat area. MPC will install silt fence upslope of the buffer where ever mining and related activities will impact protected areas. During all mining activity on adjacent areas, particularly clearing and stripping, MPC will limit sediment transport to protect habitat and limit incidental take. In addition, MPC will utilize other Best Management Practices (USDA-NRCS, 1997, and GSWCC, 2002), including a diversion ditch/berm system upslope of silt fences when necessary to reduce sediment transport into the system. **See Attachment 3.**



## Compensation/Mitigation of Incidental Take

### **Abandonment of Clay Assets/Habitat Preservation.**

By reducing the size of its mine, MPC is effectively abandoning mineable and valuable clay to limit affected areas and better manage sediment and erosion control on the site. Abandoned areas were chosen to provide hydrologic connection and wildlife habitat upstream and wildlife habitat downstream of affected areas to enhance the re-colonization of the site by the dusky salamander upon completion of site reclamation and wetland restoration.

### **Mitigation Compensation.**

The Mounds Production Company and Oil-Dri Corporation agrees to make a one time payment of \$150,000.00 specifically to the "Illinois DNR Wildlife Preservation Fund". Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5), authorization for the incidental take of the State listed Spotted Dusky Salamander (*Desmognathus conanti*) in Pulaski County, Illinois [associated with the LeFevre-Mager Mine #5 absorbent clay surface mine] shall be granted by the Department, subject to specific terms and conditions described in a Final Authorization and Implementing Agreement.

### **Habitat Restoration/Habitat Creation.**

On the LeFevre-Mager site MPC will continue to reclaim previously disturbed wetland areas as new mining progresses. . Our approach is to return the system to functioning palustrine & riparian systems by construction of re-meandered channels in the approximate original locations. **See attachment 4 Stream Re-meander Plans with Idealized Cross-sections.** Reconstructed stream landscape position and placement in the watershed along with re-connection to the upstream existing drainage ways will provide the hydrologic component. Soil substrate from adjacent areas will be replaced, and thus should function similar to previous substrate materials. Finally, the mitigation site will be seeded with native wetland grasses and forbs and planted with native trees and shrubs according to the standards and specifications outlined in **attachment 5-Wetland Planting Plan.**

**The intent of this plan is to ultimately increase salamander habitat on this site and, in the process, improve flood storage, reduce non-native plant presence in the watershed, increase hardwood tree prevalence and enhance aesthetic value.**

The habitat reconstruction will include the replacement of 4.98 acres of disturbed wetlands and 4630 ft of intermittent stream and ditches with 8.90 acres of forested riparian and palustrine wetlands, and 5295 ft of intermittent streams. The drainage ways will be re-meandered and woody debris placed in the channel to enhance habitat. **See attachment 6: Log Vanes (MWGC 3.3) and Root Wads (MWGC 2.10).**

We also propose to protect 1.3 acres of palustrine & forested wetlands and associated 1150 ft of intermittent stream and establish 10.5 acres of native buffer



vegetation between riparian system components and surrounding more intensive land uses.

The above constructed and protected wetlands and associated buffers comprise a total of 20.7 acres of wetlands and transitional habitat and 6445 feet of stream channel that will be protected in perpetuity from disruption by way of restrictive covenant. The provision of protected areas will enhance the potential for colonization of the reconstructed enhanced habitat by Spotted Dusky Salamander with the intent to assure the survival of a viable population of the species on this tract.

The habitat will be surveyed (see *Surveying and Monitoring* below) to determine the rate at which spotted dusky salamanders colonize the re-constructed habitat.

### **Surveying and Monitoring**

Beginning in the fall 2008, MPC retained the services of a biologist specialist to carry out surveys of the Spotted Dusky Salamander population on the site. An initial survey: 2 days (separate weeks) was carried out to determine if Spotted Dusky Salamanders appeared to be present in the areas to be affected by the proposed mining. A second year juvenile dusky was located in the project area, and suitable habitat was found. No adult salamanders, other juveniles, or larvae were located in this first review.

Between 1974 and 2007 IDNR biologists and their agents surveyed the site on several occasions. In 1974, eight Spotted Dusky Salamanders were collected on the site. No salamanders were located on the site in subsequent surveys by the IDNR and in 2006 Dr. Ronald Brandon, in an unpublished report to the IDNR, suggested that the site should be considered for de-listing, since it was at best marginal. (McDowell, 2008). IDNR staff or their Agent(s) will be allowed to continue to conduct monitoring and surveys annually of the site during the Spring, between April 1 and May 30, and in the Fall between September 1<sup>st</sup> and October 15<sup>th</sup>, during mining and remediation.

Following mine site reclamation, stream re-meandering and wetland plantings, permanent monitoring stations will be located at intervals spaced every 500 hundred feet along the wetland corridor. These stations will be evaluated twice annually in the spring, and fall at the beginning and end of the growing season. Copies of these monitoring reports will be submitted annually to the IDNR and the USACE, no later than January 31<sup>st</sup> of the next year.

### **Survival of the Spotted Dusky Salamander in the Wild in the State of Illinois.**

Mounds Production Company asserts that the proposed taking will not materially reduce the likelihood of the survival of the Spotted Dusky Salamander in Illinois as follows:

First, Mounds Production Company, LLC, will make a one-time mitigation payment of \$150,000.00 which shall be used by the Illinois Department of Natural Resources and its designated Agents solely for Spotted Dusky Salamander

conservation, restoration, management, and/or recovery efforts. Second, the Mounds Production Company's riparian wetland restoration plan provides for certain areas of undisturbed potential habitat both upstream and downstream of the proposed LeFevre-Mager Mine # 5 absorbent clay surface mine area. These should serve as a source from which Spotted Dusky Salamanders could colonize the riparian and palustrine wetlands once restored. Third, this site is, at best, a marginal site for these salamanders and significant tracts of other much more critical and viable Spotted Dusky Salamander habitat acreage have recently been acquired in Pulaski County specifically to provide for Spotted Dusky Salamander species preservation and conservation. Fourth, the species has shown a capability in the past to propagate in marginal locations within mining areas, making it possible that it will relocate itself within the site to co-exist with active mining and reclamation activities.

### **Verification of Funding**

While mining or reclamation activities are occurring on the permit area of the LeFevre-Mager mine site, MPC will obtain and maintain a surety bond of no more than \$84,000.00 which is in excess of both MPC and IDNR's estimation of project costs for reclamation. MPC will provide proof of bonding to IDNR prior to commencing mining of any portion of the site that was not disturbed in previous mining and site disturbances.

### **No-Take Alternatives**

There are no practical no-take alternatives which allow for the continued operation of Mounds Production Company in Pulaski County, Illinois, since the only no-take alternative would require abandonment of the active mine, Mounds Production Company's principal raw materials source. MPC may only mine on real property in which it has a contractual or other legal right to mine. Specifically, MPC is contractually obligated to LeFevre and Michel to complete mining activities on specified pieces of property before seeking to mine elsewhere (see attachment 7). Even on those sites on which it has the right to mine, MPC can only mine where recovery of the clay is economically feasible. Because the Spotted Dusky Salamander habitat is found where Mounds gravel's contacts with Porter's Creek clay outcrops, it is likely that any other economically feasible sites would be determined to be a potential Spotted Dusky Salamander occurrence. This tract is being, and has been, actively mined to supply the Mounds plant with raw materials for 25 years. It has been permitted under state laws for this purpose and closure of this site would mean the closure of the business and loss of up to 65 well-paying jobs in a severely economically depressed area of the state.

### **Summary**

MPC is committed to minimizing harm to the Spotted Dusky Salamander that may occur due to permitted mining activities on the LeFevre-Mager mine site. MPC is and has been mining on the surrounding lands for many years. The continued presence of the Spotted Dusky Salamander on this active mine attests to the care with which MPC carries out its land disturbing activities. MPC

proposes to reroute portions of the central drainage system, while protecting water and wildlife source areas both upstream and downstream from the affected areas.

Wherever feasible, structures will be placed so as to minimize potential Spotted Dusky Salamander habitat disturbance and destruction. Spotted Dusky Salamander habitat will be protected from sediment damages by Best Management Practices such as silt fencing, water control berms, and vegetated buffers. Any known incidental take will be recorded, with all related records appropriately retained at MPC's Mounds plant. Such incidental take will be reported to the IDNR and any animals or animal remains turned over to the IDNR pursuant to conditions of the final Incidental Take Authorization.

Post-mining reclamation will occur on an ongoing basis as mining of new acreage on the site proceeds, and will include restoration of any disturbed wetland habitat. MPC will also protect the constructed habitat and other potential habitat through deed restrictions as outlined above. The entire site will be monitored, as indicated above

### **Implementing Agreement**

The Plant Manager, Mounds Production Company, LLC, an officer of Oil-Dri Corporation, will be responsible for MPC's execution on the LeFevre-Mager tract of all site-specific obligations under the incidental take authorization. See Attachment 7, Background and Organizational Structure Mounds Production Company, LLC.

The Senior Geologist, Oil-Dri Corporation of America, will be MPC's primary contact with the IDNR, coordinating MPC's performance under the incidental take authorization and ensuring MPC's timely filing of all required plans and reports under the Incidental Take Authorization.

The Vice President and General Counsel, Oil-Dri Corporation of America, will be responsible at the corporate level for ensuring MPC's executing of all obligations under the incidental take authorization.

As the Manager of Mounds Production Company, the MPC plant manager has the authority to commit the resources necessary to carry out the provisions of the Incidental Take Agreement with respect to mitigation payments, and site restoration, and to provide site access for habitat and species monitoring or other necessary activities to be performed by the Illinois Department of Natural Resources or its designated Agents.

Finally, payment and bond agreed upon under this implementing agreement shall not be required until issuance of mining permit, incidental take authorization and other governmental authorizations needed to resume mining activity.

## References

- Admiraal, Alicia N., Morris, Marilyn J., Brooks, Thomas C., Olson, Jeffrey W., and Miller Michael V., 1997. *Illinois Wetland Restoration and Creation Guide*. Illinois Natural history Survey, Special Pub. 19.
- Brandon, Ronald A., and James E. Huheey. 1979. Distribution of the dusky salamander, *Desmognathus fuscus* (Green), in Illinois. *Natural History Miscellanea* No 205, pp. 1-7.
- Georgia Soil and Water Conservation Commission, 2000. *Manual for Erosion and Sediment Control in Georgia*, 5<sup>th</sup> ed.
- Herkert, James R., ed., 1992. *Endangered and Threatened Species of Illinois: Status and Distribution, Vol. 2: Animals*, Illinois Endangered Species Protection Board, p. 76.
- Karlin, Alvan A. and Ralph A. Pfungsten. 1989. In Pfungsten, Ralph A. and Floyd L. Downs, eds. *Salamanders of Ohio*. Ohio Biological Survey Bulletin New Series Vol. 7, No. 2, pp. 174-180.
- Maryland Department of the Environment, Water Management Administration, 1999, rev. 2000. *Maryland's Waterway Construction Guidelines*.
- McDowell, T. Unpublished Fall 2008 Endangered Species Report for *Desmognathus conanti* at Olmsted Illinois Clay Mine Site. 2008
- Petranka, James W. 1998. *Salamanders of the United States and Canada*. Smithsonian Institution Press, Washington, DC, pp. 173-181.
- Phillips, Christopher A., Brandon, Ronald A., Moll, Edward O., 1999. *Field Guide to Amphibians and Reptiles of Illinois*, Illinois Natural History Survey, Champaign, IL, Manual 8, pp. 76-77.
- Smith, Philip W., 1961. *The Amphibians and Reptiles of Illinois*. Illinois Natural History Survey, Vol. 28, Article 1, pp. 59-61.
- United States Department of Agricultural, Natural Resource Conservation Service, 1997. *National Engineering Handbook, Part 650*. Engineering Field Handbook, 5<sup>th</sup> ed.

Attachments

# Attachment 1 – LeFevre-Mager Mine #5 Site Location Map



**Attachment 2 – Photo of Adult Spotted Dusky Salamander  
Collected on the LeFevre Site, by T. McDowell, photo by S.  
Ballard**

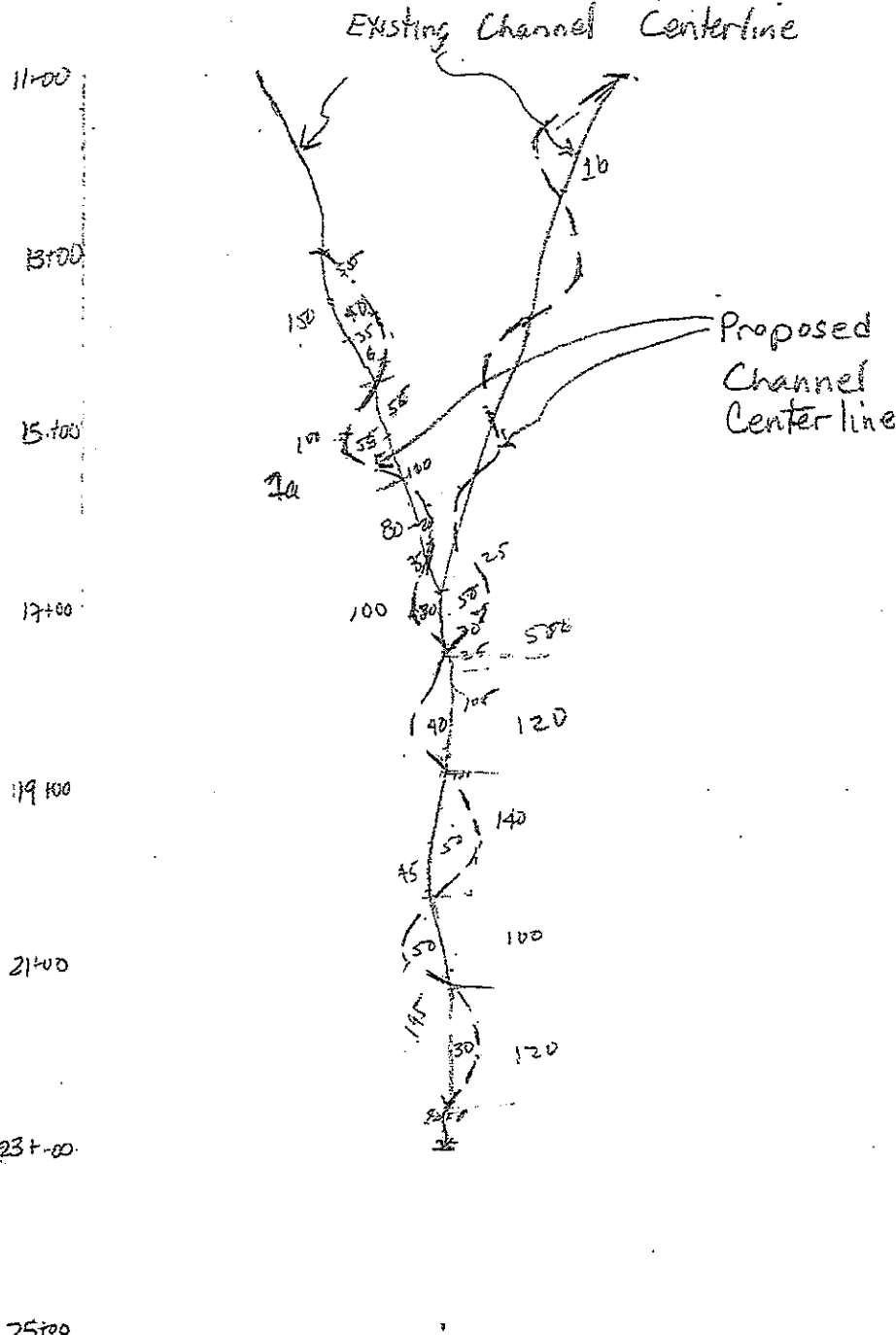
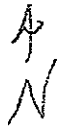






**Attachment 4 – Proposed Stream Re-meander Plan with  
Idealized Post Reclamation Cross-section**

6/17/08



K1a	Existing Sinuosity phase 1a	$\frac{1075}{1000} = 1.08$
	1b	$\frac{640}{600} = 1.07$
K1b	Proposed Sinuosity phase 1a	$\frac{1250}{1000} = 1.25$
	1b	$\frac{850}{600} = 1.42$
	total K1	$\frac{2090}{1600} = 1.29$
		Scale: 1" = 200'

STAEDTLER® No. 937 811E  
 Engineer's Computation Pad

A  
N

### Proposed Channel Re-meander

13+00

15+00

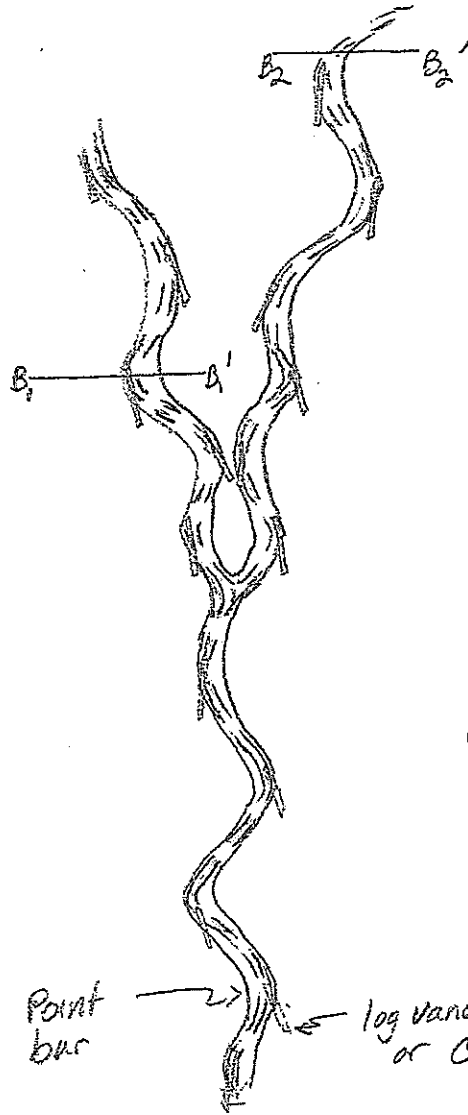
19+00

19+00

21+00

23+00

25+00



CHANNEL WIDTH

Depth 10'  
2'

CUT BANK 3:1 (6')  
Bar BANK 6:1 (12')

Vegetated width  
buffer 50'

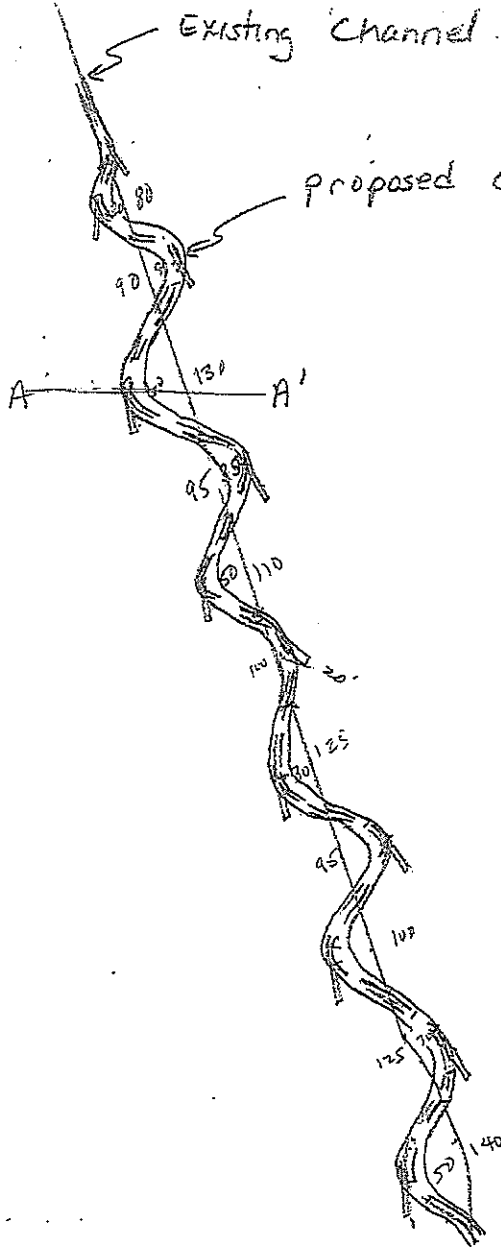
14 log vane locations

Point bar

log vanes on outside bend or cut bank

1" = 200'

A  
 N 100



3+00  
 5+00  
 7+00  
 9+00  
 11+00  
 13+00

Initial  
 $K_{2E} = 1120/1120$   
 $= 1.00$

Proposed  
 $K_{2E} = 1425/1120$   
 $= 1.27$

12 log vane locations

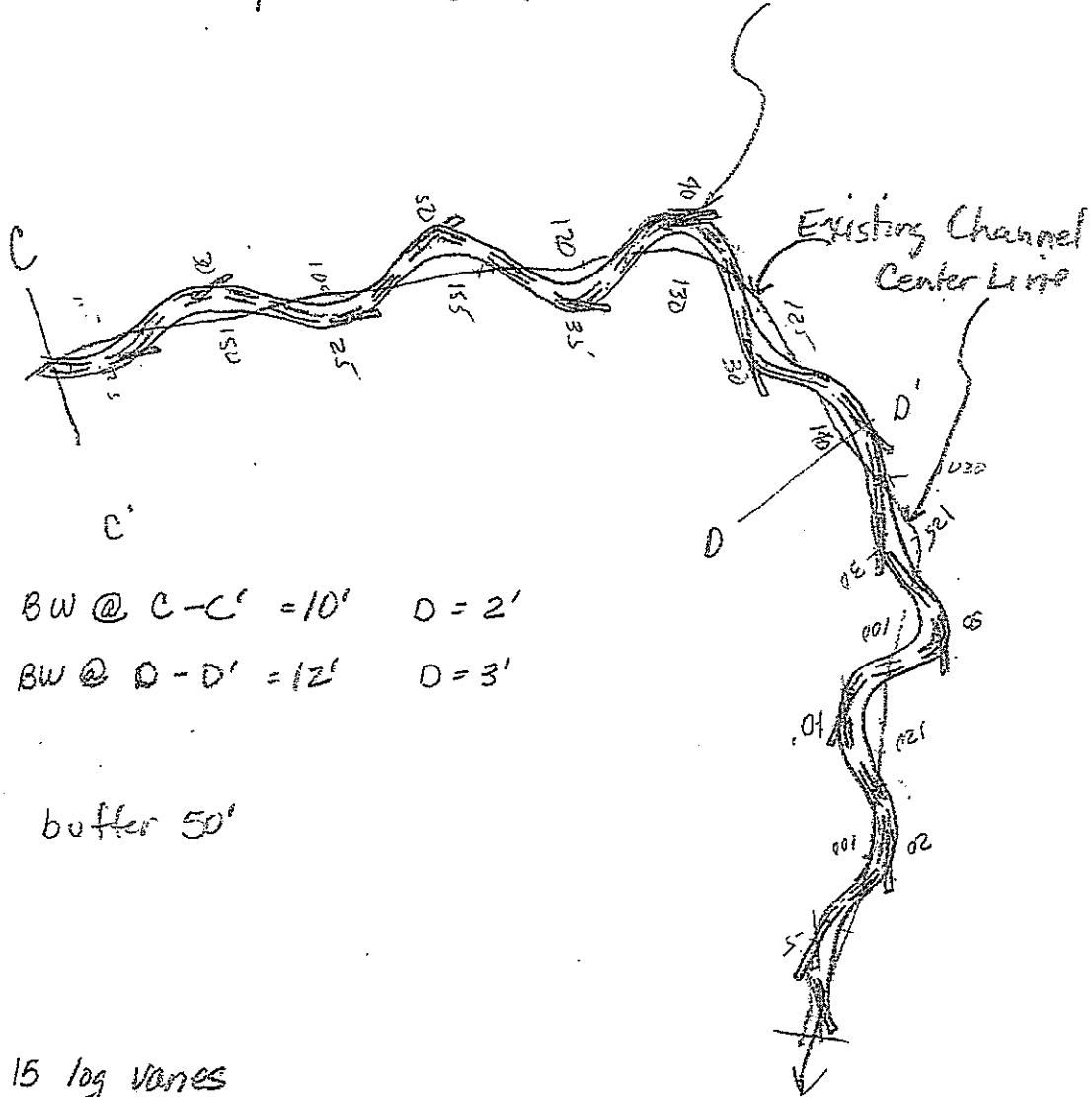
Proposed Channel Depth 2'  
 Width 10'

Cut Bank 3:1  
 Bar Bank 6:1  
 Buffer 50'

1" = 200'

STAEDTLER® No. 937 811E  
 Engineer's Computation Pad

Proposed Channel Remainder



BW @ C-C' = 10'    D = 2'

BW @ D-D' = 12'    D = 3'

buffer 50'

15 log vanes

Existing Sinuosity

$$K = \frac{1665}{1150} \approx 1.45$$

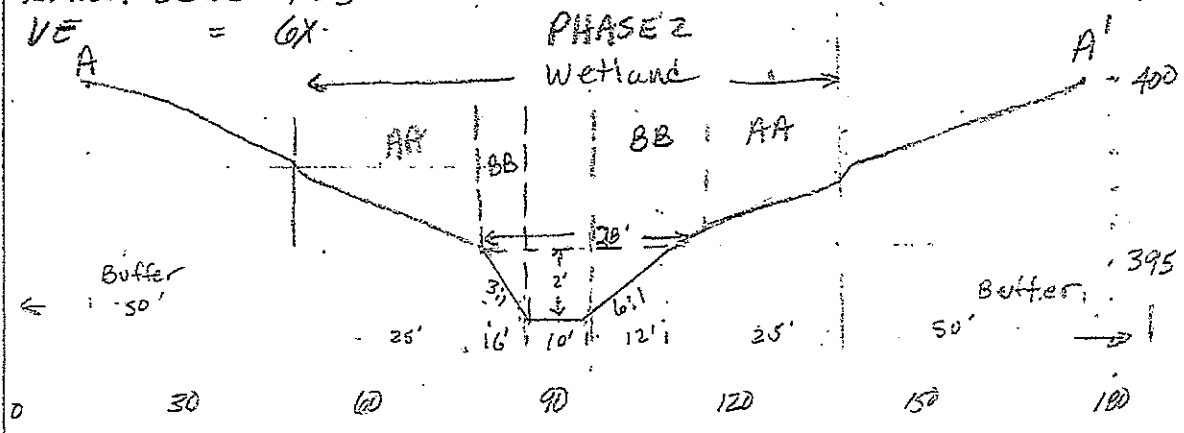
Proposed Sinuosity  $1770/1150 = 1.5$

1" = 200'



HORIZONTAL SCALE 1"=30'  
 Vertical Scale 1"=5'  
 VE = 6X

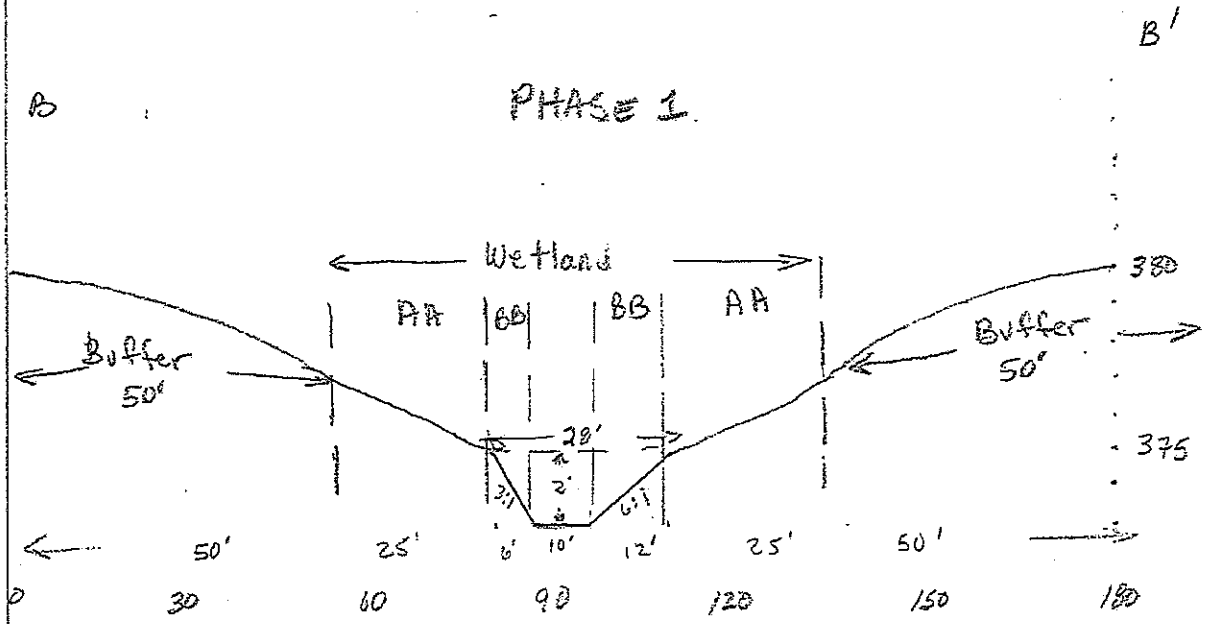
Proposed Restoration Phases 1 + 2



Revegetate  $50 + 6 + 50 + 12 = 118'$   
 $45 + 45 = 90'$   
 $\frac{118 + 90}{208'} = 208'$  total width  
 1 - woody low growth

Phase 2 Proposed Mitigation for 0.23 ac wetland and 1120 ft stream  
 wetland  $68 \times 1425 = 96,900 / 43,560 = 2.2$  ac  
 buffer  $100 \times 1120 = 112,000 / 43,560 = 2.6$   
 Stream 1425 ft  
 $\frac{2.2 + 2.6}{4.8}$  ac

PHASE 1



Phase 1 Proposed Mitigation for 2.7 ac wetland and 1660' stream  
 Wetland  $68 \times 2100 = 142,800 / 43,560 = 3.28$  ac  
 Buffer  $100 \times 1660 = 166,000 / 43,560 = 3.81$   
 Stream 2100 ft  
 $\frac{3.28 + 3.81}{9.1}$  ac

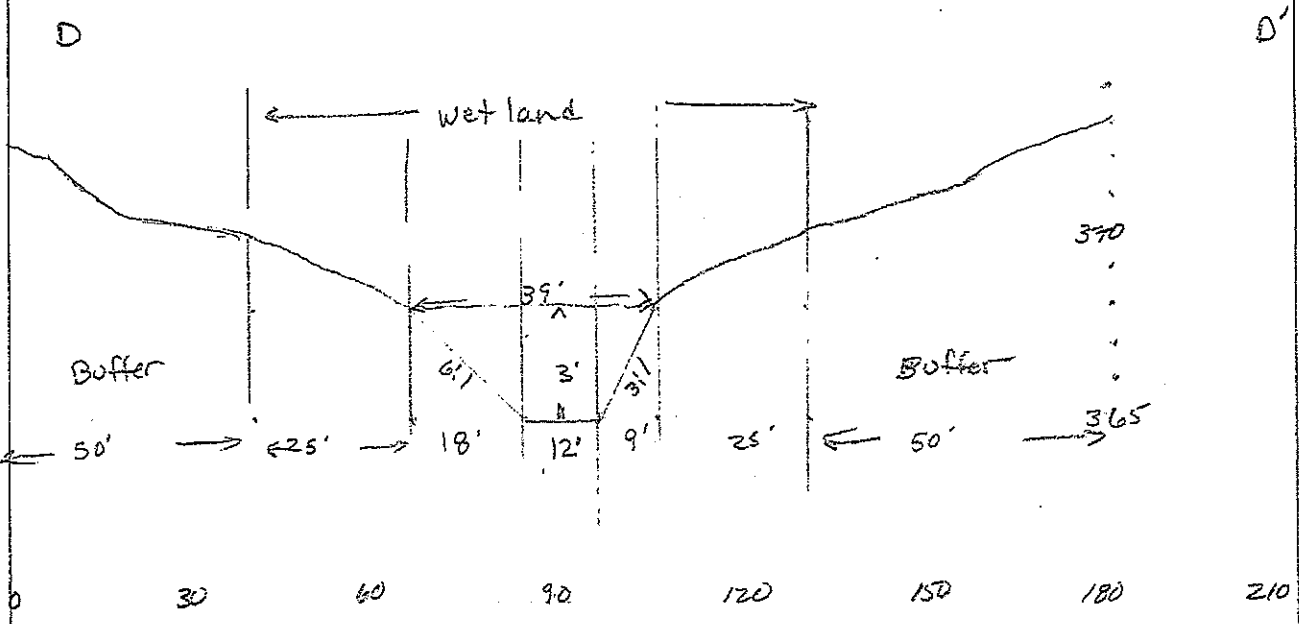
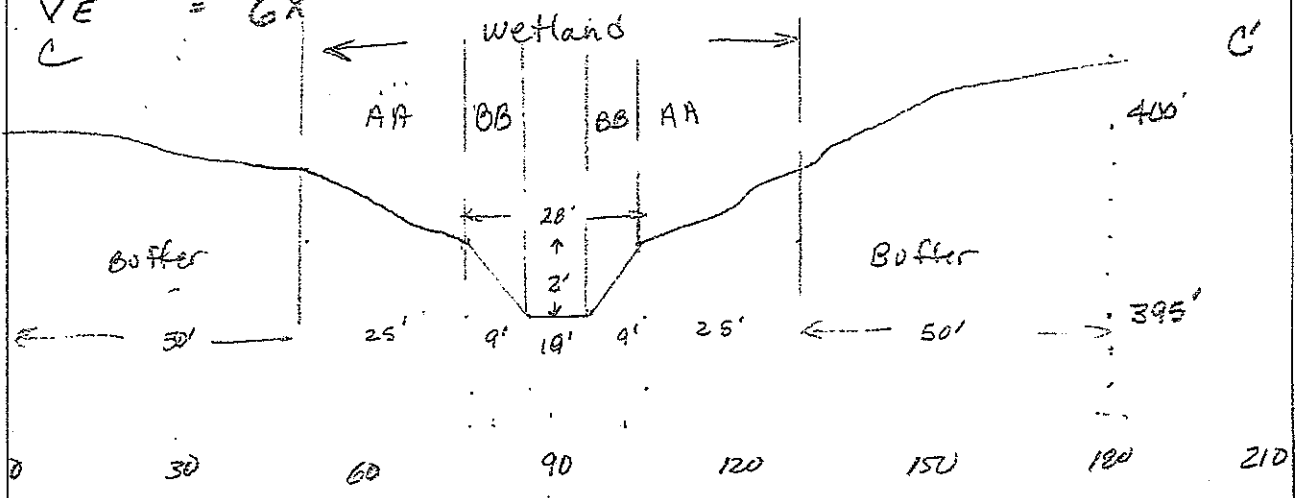
No. 937 811E  
 Engineer's Computation Pad  
 STAEDTLER®



HORIZONTAL SCALE  
1" = 30'

VERTICAL SCALE  
1" = 5'  
VE = 6X

Proposed Restoration Phase 3



Phase 3 Proposed Mitigation for 1.99 ac wetland and 1665' stream

wetlands  $(68 \times 1030) + (77 \times 740)$   
70,440 + 56,980  
Buffers 100 x 1770

$= 127,020 / 43560 = 2.92 \text{ ac}$   
 $= 177000 / 43560 = 4.06$

stream 1770'

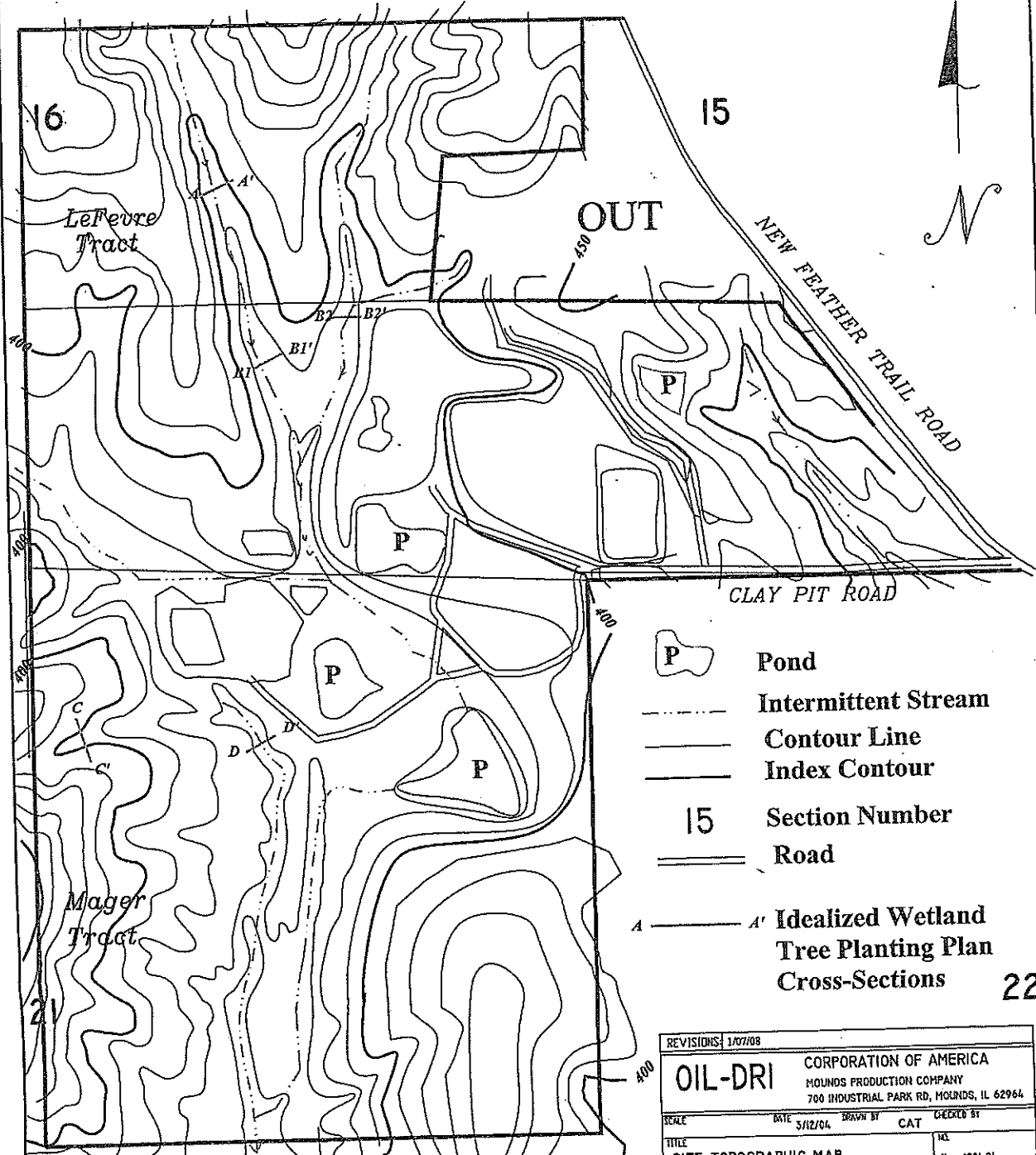
Totals: Wetlands 4.98 ac  
Streams 4630 ft  
Buffer

mitigation 8.4 ac  
5245 ft  
10.5 ac  
6.98 ac Ratio 1.69:1 1.14:1

No. 937 811E  
Engineer's Computation Pad  
STAEOTLER

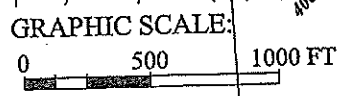
**Attachment 5 – Wetland Planting Plans, Topographic Map,  
Stream Profiles and Cross-Sections**

LEFEVRE-MAGER MINE  
 SITE TOPOGRAPHIC MAP  
 JUNE 1, 2007  
 T15S, R1E, S15, 16 & 21



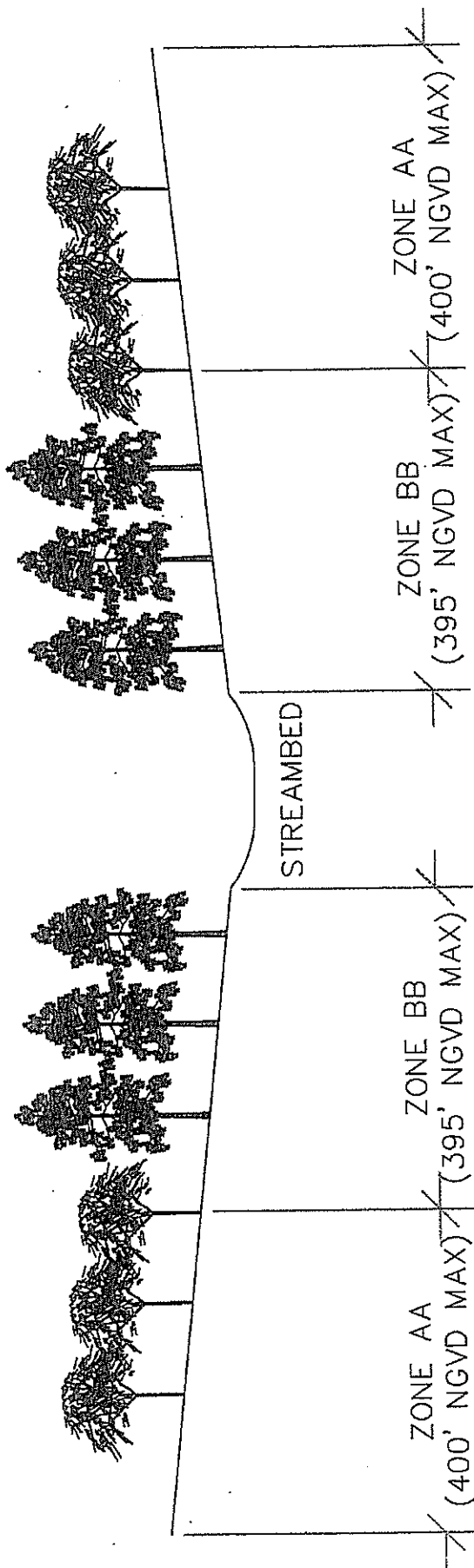
- Pond
- Intermittent Stream
- Contour Line
- Index Contour
- 15 Section Number
- Road
- A-A' Idealized Wetland Tree Planting Plan Cross-Sections

22



REVISIONS: 1/07/08			
CORPORATION OF AMERICA MOUNDS PRODUCTION COMPANY 700 INDUSTRIAL PARK RD, MOUNDS, IL 62964			
SCALE	DATE 3/12/04	DRAWN BY CAT	CHECKED BY
TITLE SITE TOPOGRAPHIC MAP MAGER/LEFVRE MINE PULASKI CO., IL		NO. IL - 1201-91 IL - 1495-00	

# LEFEVRE / MAGER USACE WETLAND MITIGATION - TREE PLANTING PLAN



ZONE AA  
(450 - BARE ROOT SEEDLINGS/AC)

- TAXODIUM DISTICHUM - BALD CYPRESS
- NYSSA AQUATICA - TUPELO
- CEPHALANTHUS OCCIDENTALIS - BUTTON BUSH
- QUERCUS PALUSTRIS - PIN OAK
- QUERCUS LYRATA - OVERCUP OAK

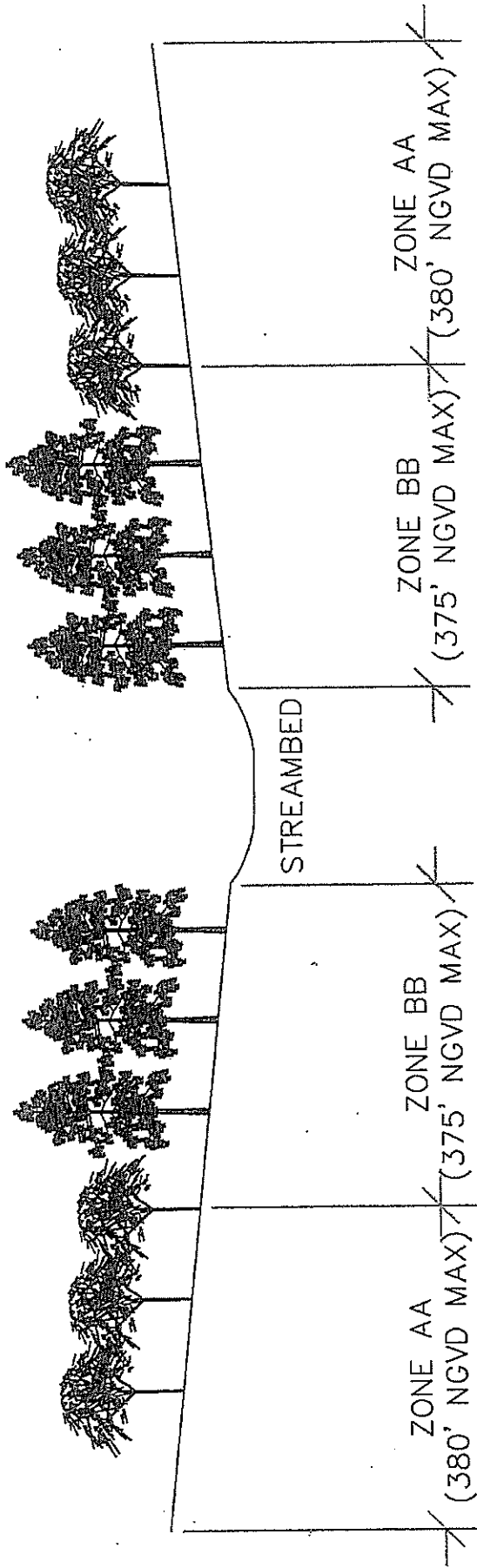
ZONE BB  
(450 - BARE ROOT SEEDLINGS/AC)

- QUERCUS BICOLOR - SWAMP WHITE OAK
- QUERCUS MACROCARPA - BUR OAK
- QUERCUS FALCATA - CHERRYBARK OAK
- QUERCUS MICHAUXII - SWAMP CHESTNUT OAK

\*SECTION A - A'  
IDEALIZED TYPICAL CROSS-SECTION OF STREAM AND RIPARIAN WETLAND CORRIDOR

\*Refer to Wetland Mining & Restoration Plan & Site Topo Maps for section locations  
MODIFIED BY: CAT: 6/13/08

# LEFEVRE / MAGER USACE WETLAND MITIGATION - TREE PLANTING PLAN



ZONE AA  
(380' NGVD MAX)

ZONE BB  
(375' NGVD MAX)

ZONE AA  
(380' NGVD MAX)

ZONE BB  
(375' NGVD MAX)

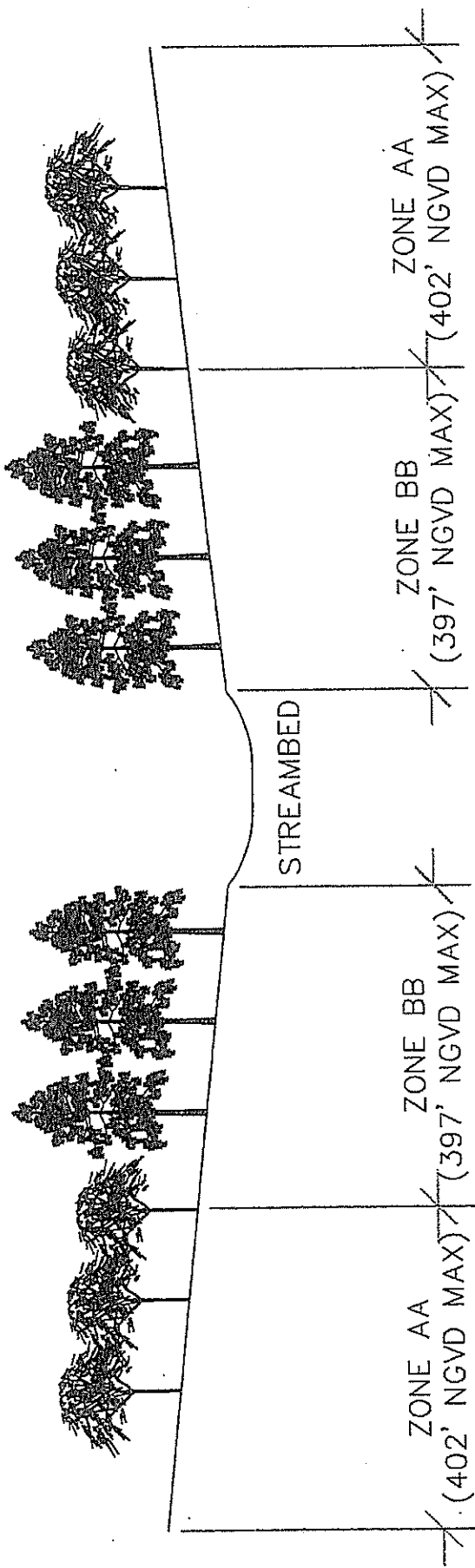
- TAXODIUM DISTICHUM - BALD CYPRESS
- NYSSA AQUATICA - TUPELO
- CEPHALANTHUS OCCIDENTALIS - BUTTON BUSH
- QUERCUS PALUSTRIS - PIN OAK
- QUERCUS LYRATA - OVERCUP OAK

- QUERCUS BICOLOR - SWAMP WHITE OAK
- QUERCUS MACROCARPA - BUR OAK
- QUERCUS FALCATA - CHERRYBARK OAK
- QUERCUS MICHAUXII - SWAMP CHESTNUT OAK

\*SECTION B - B'  
IDEALIZED TYPICAL CROSS-SECTION OF STREAM AND  
RIPARIAN WETLAND CORRIDOR

\*Refer to Wetland Mining & Restoration Plan & Site Topo Maps for section locations  
MODIFIED BY: CAT; 6/16/08

# LEFEVRE / MAGER USACE WETLAND MITIGATION - TREE PLANTING PLAN



ZONE AA  
(402' NGVD MAX) / (397' NGVD MAX) / (402' NGVD MAX) /

ZONE BB  
(397' NGVD MAX) / (402' NGVD MAX) /

ZONE AA  
(450-BARE ROOT SEEDLINGS/AC)

ZONE BB  
(450 BARE ROOT SEEDLINGS/AC)

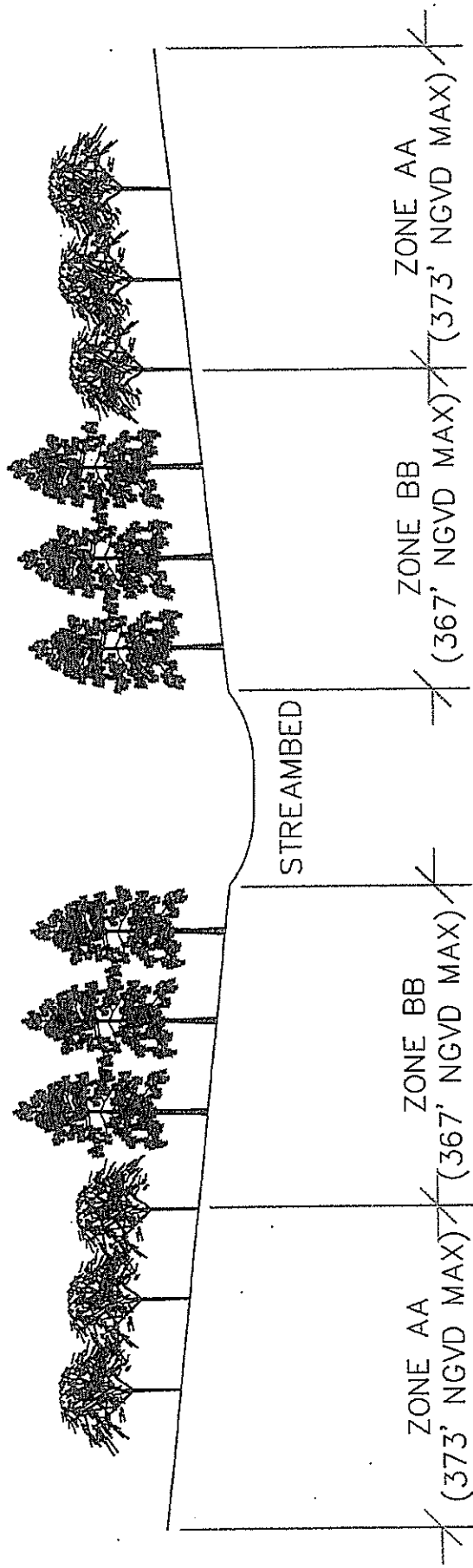
- QUERCUS BICOLOR-SWAMP WHITE OAK
- QUERCUS MACROCARPA-BUR OAK
- QUERCUS FALCATA-CHERRYBARK OAK
- QUERCUS MICHAUXII-SWAMP CHESTNUT OAK

- TAXODIUM DISTICHUM-BALD CYPRESS
- NYSSA AQUATICA-TUPELO
- CEPHALANTHUS OCCIDENTALIS-BUTTON BUSH
- QUERCUS PALUSTRIS-PIN OAK
- QUERCUS LYRATA-OVERCUP OAK

\*SECTION C - C'  
IDEALIZED TYPICAL CROSS-SECTION OF STREAM AND RIPARIAN WETLAND CORRIDOR

\*Refer to Wetland Mining & Restoration Plan & Site Topo Maps for section locations  
MODIFIED BY: CAT; 6/16/08

# LEFEVRE / MAGER USACE WETLAND MITIGATION - TREE PLANTING PLAN



ZONE AA  
(373' NGVD MAX)

ZONE BB  
(367' NGVD MAX)

ZONE AA  
(450 - BARE ROOT SEEDLINGS/AC)

ZONE BB  
(450 BARE ROOT SEEDLINGS/AC)

- QUERCUS BICOLOR - SWAMP WHITE OAK
- QUERCUS MACROCARPA - BUR OAK
- QUERCUS FALCATA - CHERRYBARK OAK
- QUERCUS MICHAUXII - SWAMP CHESTNUT OAK

- TAXODIUM DISTICHUM
- NYSSA AQUATICA - TUPELO
- CEPHALANTHUS OCCIDENTALIS - BUTTON BUSH
- QUERCUS PALUTRIS - PIN OAK
- QUERCUS LYRATA - OVERCUP OAK

\*SECTION D - D'  
IDEALIZED TYPICAL CROSS-SECTION OF STREAM AND RIPARIAN WETLAND CORRIDOR

\*Refer to Wetland Mining & Restoration Plan & Site Topo Maps for section locations  
MODIFIED BY: CAT; 6/16/08



Species recommended for natural community restoration

<u>Upland Zone</u>	<u>Bottomland Zone:</u> <u>Flooding</u> <u>Intermittant and</u> <u>Seasonal</u>	<u>Emergent Wetland</u> <u>Zone: Flooding</u> <u>from 6" - 24"</u> <u>(Intermittant to</u> <u>Permanent)</u>	<u>Littoral</u> <u>Zone/Aquatic Bed</u> <u>(Pond): Flooding</u> <u>from 24" - 72"</u> <u>(Permanent)</u>
White Oak- <i>Quercus alba</i>	Cherrybark Oak- <i>Quercus pagoda</i>	Bald Cypress- <i>Taxodium distichum</i>	Water Lilly - <i>Nymphaea odorata</i>
Black Oak- <i>Quercus velutina</i>	Pin Oak- <i>Quercus palustris</i>	Buttonbush- <i>Cephalanthus occidentalis</i>	*Floating-leaved & submerged Pondweeds - <i>Potamogeton nodosus</i> , <i>diversifolius</i> , <i>crispus</i> , <i>pectinatus</i> , <i>amplifolius</i> , <i>foliosus</i> , <i>pusillus</i>
S. Red Oak- <i>Quercus rubra</i>	Overcup Oak - <i>Quercus lyrata</i>	Sweet Flag- <i>Acorus calamus</i>	Water Milfoil - <i>Myriophyllum heterophyllum</i>
Cherrybark Oak- <i>Quercus pagoda</i>	Bur Oak - <i>Quercus macrocarpa</i>	Marsh Mallow- <i>Hibiscus sp. (militaris, lasiocarpus)</i>	
Pignut Hickory- <i>Carya glabra</i>	Shellbark Hickory - <i>Carya laciniosa</i>	Soft Rush - <i>Juncus effusus</i>	
Shagbark Hickory- <i>Carya ovata</i>	Bitternut Hickory- <i>Carya cordiformis</i>	Bulrushes - <i>Scirpus sp.</i>	
Black Walnut- <i>Juglans nigra</i>		Water Lilly - <i>Nymphaea odorata</i>	
		Spatterdock - <i>Nuphar lutea</i>	
		Bur Reed - <i>Sparganium- eurycarpum</i>	
		Arrowheads - <i>Sagittaria sp.</i>	
		Thalia - <i>Thalia dealbata</i>	
		Spike Rushes - <i>Eleocharis sp.</i>	
		Water Starwort - ? <i>Callitriche heterophylla</i>	
		Water Crowfoot - <i>Ranunculus sp.</i>	
		Water Purslane - <i>Ludwigia palustris</i>	

4296

DRAFT PROPOSAL TO REFOREST  
SURFACE MINED LANDS NEAR OLMSTED, IL.

Site Preparation—The heavy fescue sod and weed cover should be burned prior to planting. Adequate fire breaks will need to be established beforehand.

Seedling Recommendations—Pin Oak and Willow Oak in the bottoms and Red oak on the hills. Grey Dogwood, Silky Dogwood, and Wild Plum should do well on either site.

Vegetative control—Fusilade 2000 sprayed in 4 foot bands over the seedlings to control fescue as needed. Don't use crop oil with the Fusilade.

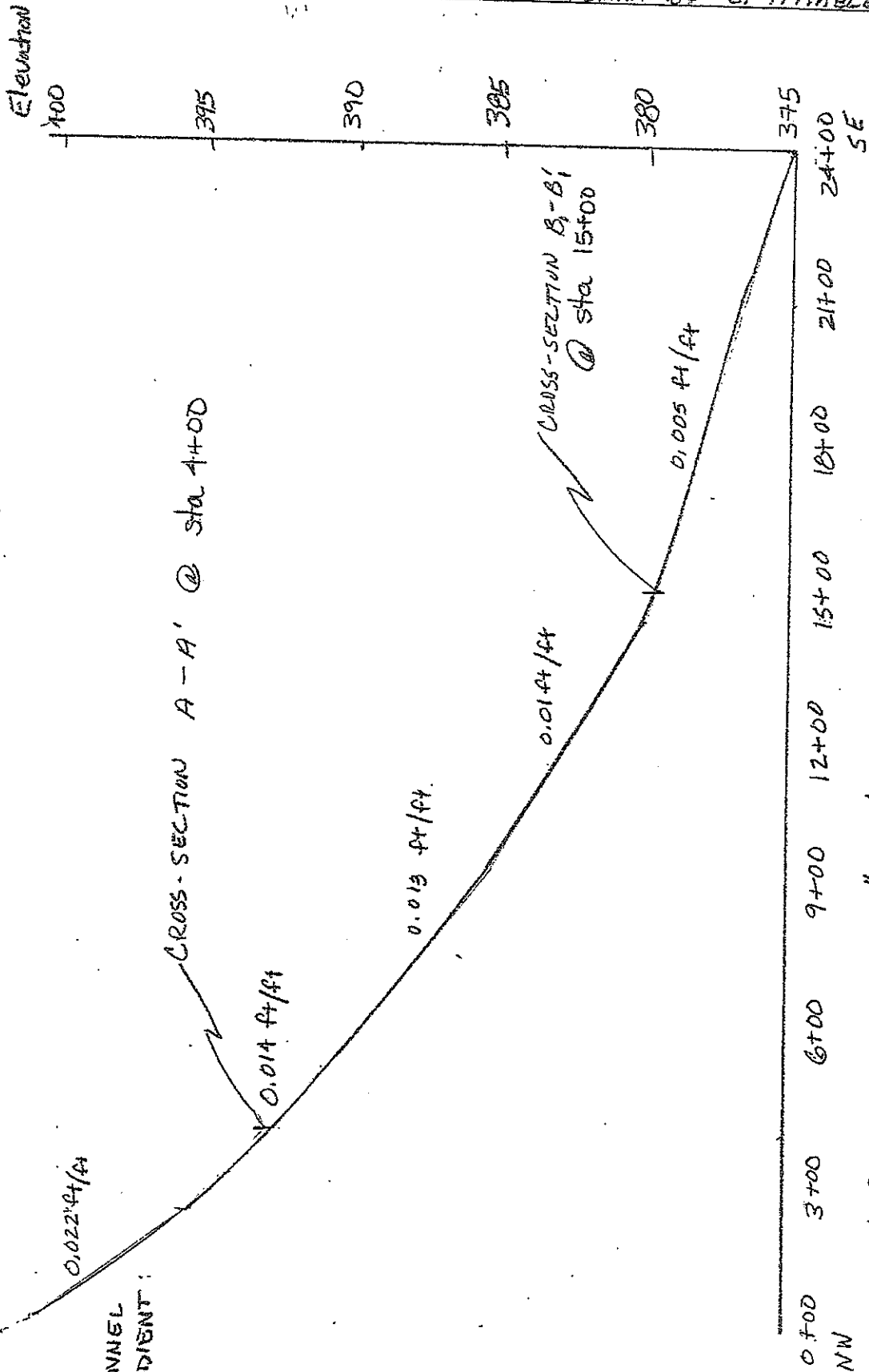
Hillside Erosion—Some of the worst spots may need to be smoothed over with a dozer prior to planting. Use 3 year old red oaks to get a great root system (and because we have some). If you're politically incorrect, we have some non-native Sawtooth Oak which is a fast grower and a heavy mast producer.

Prices—Tree seedlings planted on a 10X10 spacing (436 seedlings/acre) cost \$374/acre if we have the seedlings. If we have to order the seedlings, the cost may get close to \$500/acre depending on current markets. Shrubs planted on a 6X6 spacing (1210 shrubs/acre) cost \$974/acre.

Thankyou, and feel free to contact me at 618-776-5449 or 618-201-1694 if you have any questions.

Dave Maginel  
Conservation Technologies

PROFILE # 1 : PHASES 1+2

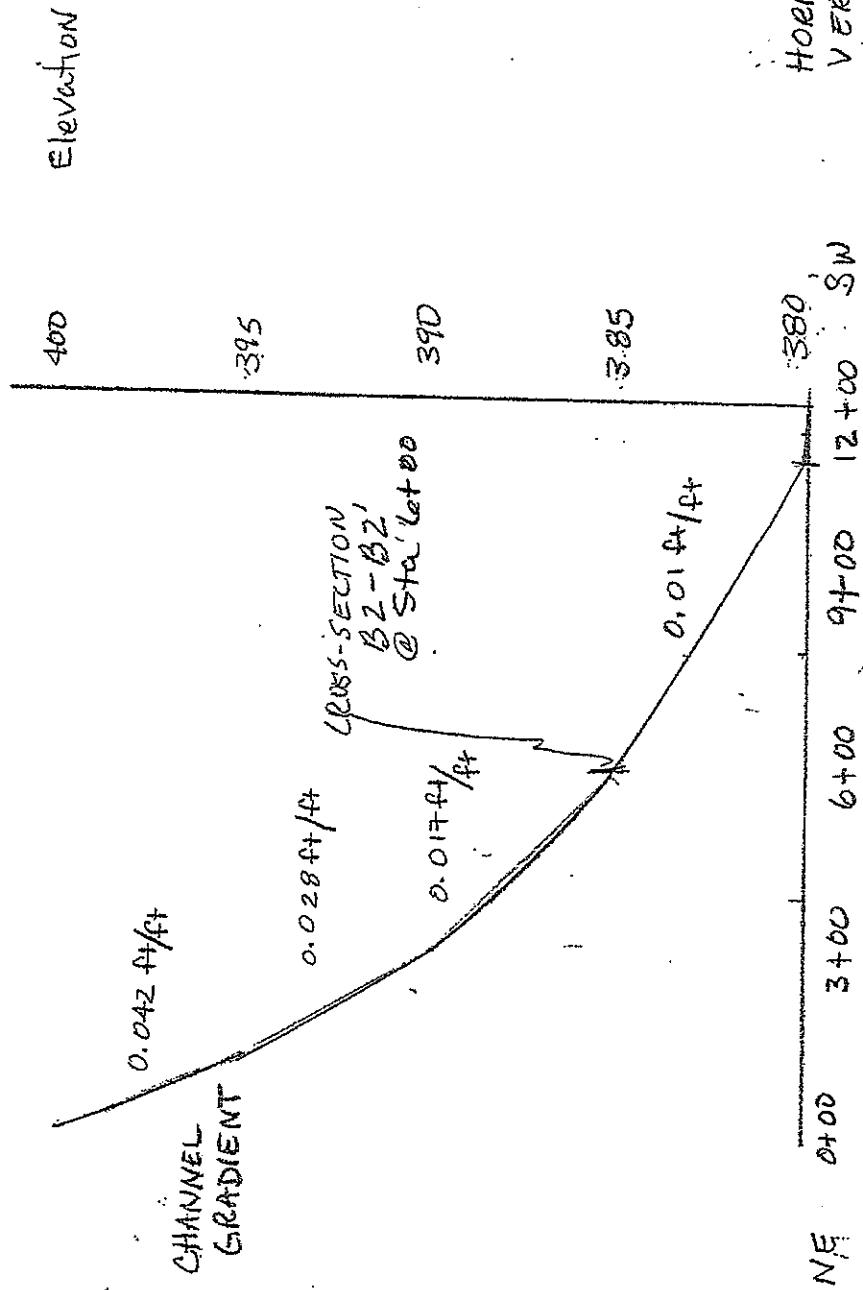


HORIZONTAL SCALE 1"=300'

VERTICAL SCALE 1"=5'

VERTICAL EXAGGERATION 600X

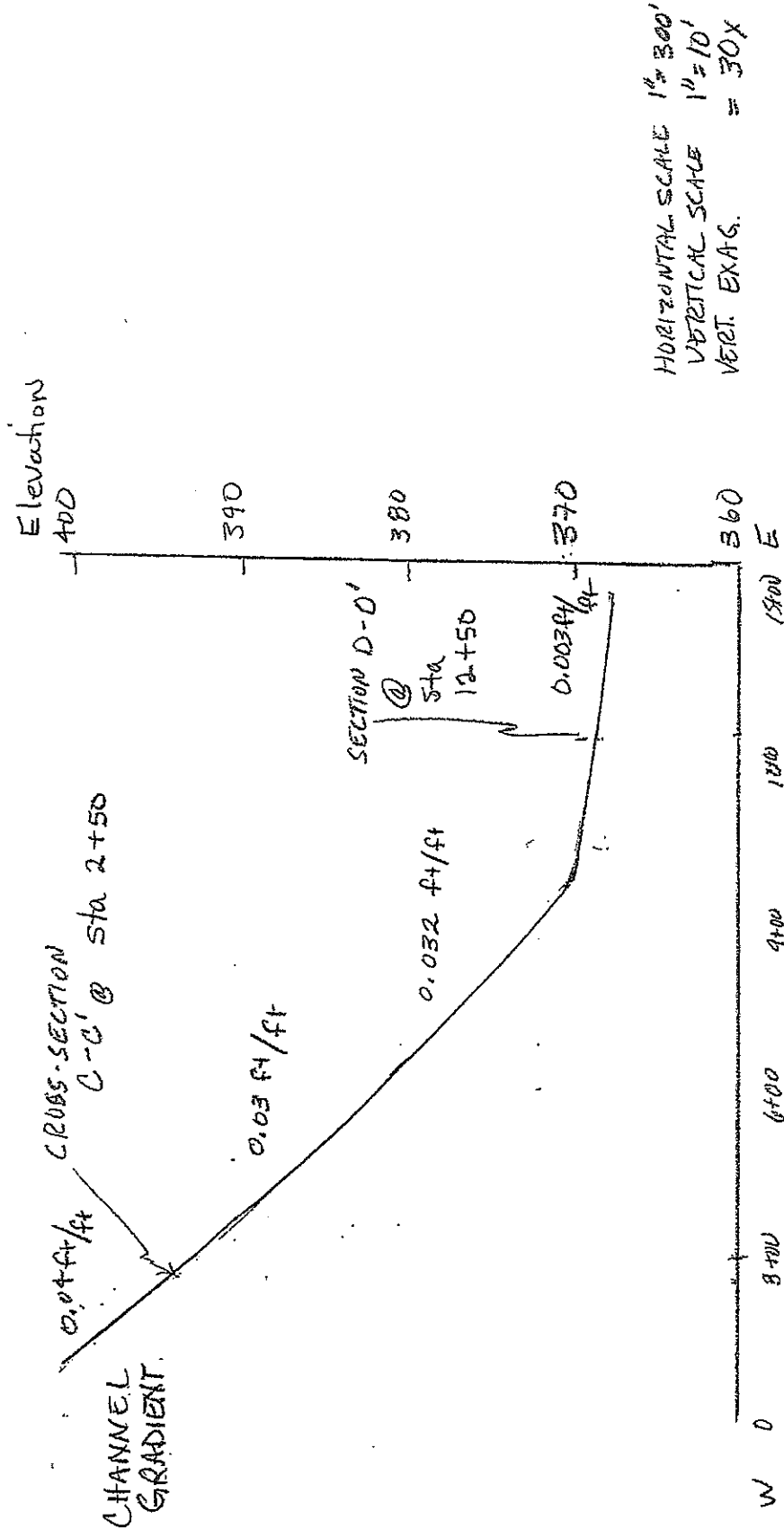
PROFILE #2 : PHASE 1



HORIZONTAL SCALE 1" = 300'  
 VERTICAL SCALE 1" = 5'

VERTICAL EXAGGERATION = 60X

PROFILE #3 PHASE 3



EXISTING SYSTEM  
CROSS-SECTION:

A - A' @ Station 4+00

Ditched

Fescue  
Pasture

Extent  
of  
Wetlands

Elev  
400

CL = Center  
line  
of  
Channel  
or  
Ditch

Dist. 0 25 50  
W CL E  
A A'

396'

B<sub>1</sub> - B<sub>1</sub>' @ Station 15+00

Elev

Pasture

Palustrine  
Wetland  
Extent  
of  
Wetland

390  
388  
386  
384

Dist. 0 30 60 90 120 150 160  
W CL E  
B<sub>1</sub> B<sub>1</sub>'

B<sub>2</sub> - B<sub>2</sub>' @ Station 6+00

Extent of Emergent + Palustrine  
Wetlands

Ditched  
Fescue  
Pasture

392  
390  
388  
386  
384

0 30 60 90 120 150 175  
W CL E  
B<sub>2</sub> B<sub>2</sub>'

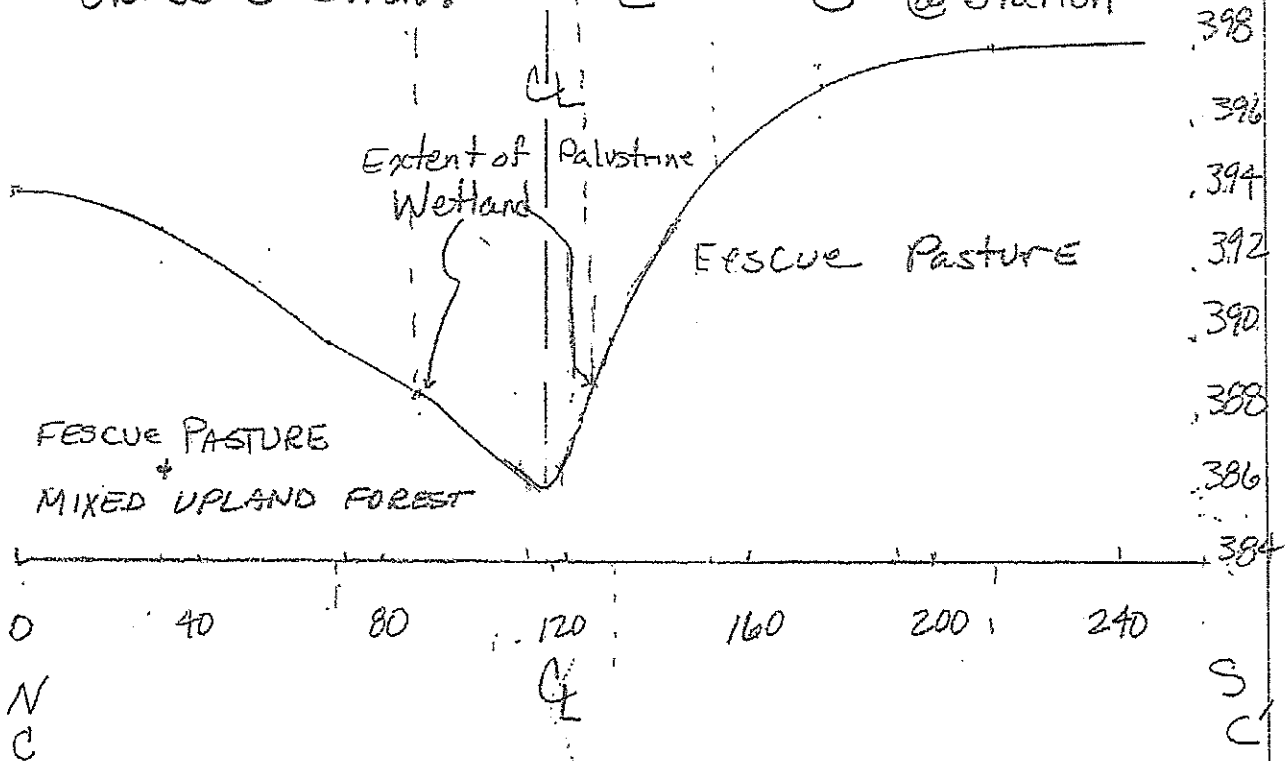
Horizontal scale 1" = 30'

Vertical Scale 1sq = 1ft  
Vertical exaggeration = 30 X

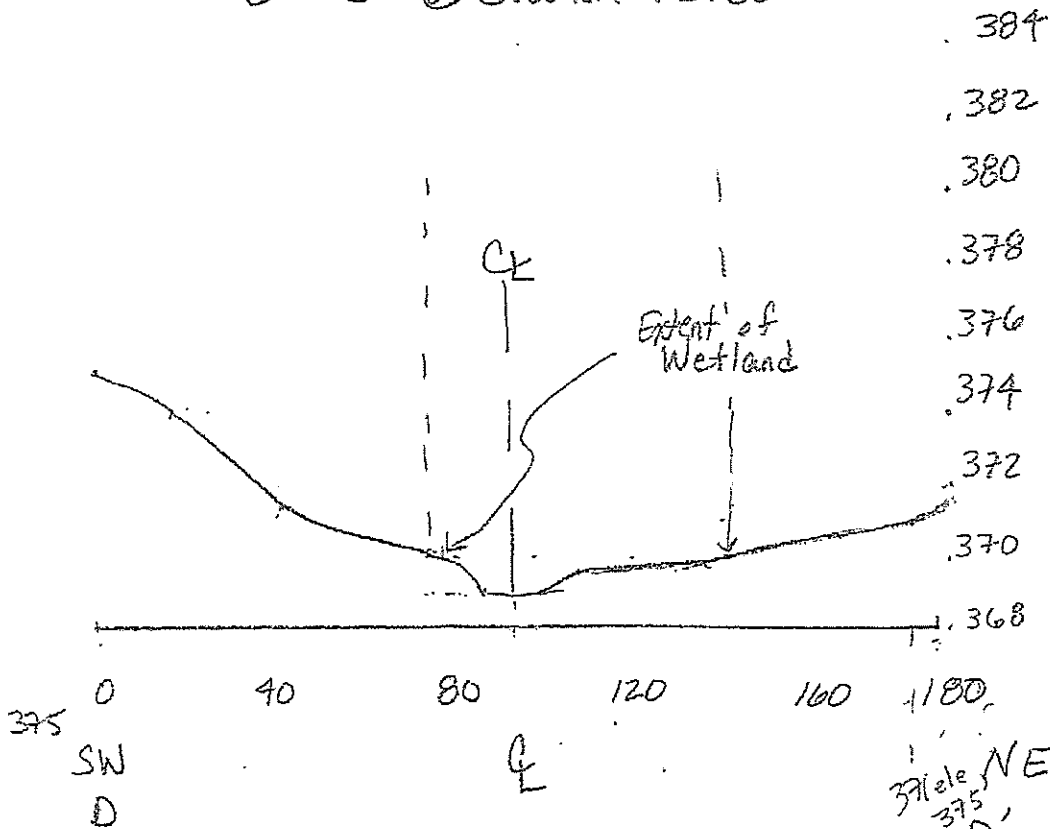
STAEDTLER® No. 937 811E  
 Engineer's Computation Pad

EXISTING SYSTEM (CONTINUED)

CROSS-SECTION: C - C' @ Station



D - D' @ Station 12+50



Horizontal Scale 1" = 400' Vertical Scale 1sq = 1ft  
Vertical Exaggeration = 40X



**Attachment 6 – Log Vane and Root Wad Standards & Specifications**

## MGWC 2.10: ROOT WADS

*Woody vegetative system with simple structures for limited bank stabilization and aquatic habitat enhancement.*

### DESCRIPTION

Root wads are used for limited bank stabilization and can be cost-effective when native materials are available. Additionally, root wads enhance fish rearing habitat by creating scour pools and overhead cover.

### EFFECTIVE USES & LIMITATIONS

The following limitations should be considered before incorporating root wads into stream restoration plans:

- The adoption of this measure as a stream restoration technique is rather recent, and therefore its performance is currently being assessed and documented.
- Root wads should not be used in stream sections where the bed is severely eroded or where undercutting is likely to occur such as where the terrain is rocky or where narrow channels are bounded by high banks. Additionally, they should be avoided in braided streams and in reaches with sandy/silty soils.
- Flows greater than bankfull discharge may cause local scour around the top of the structure and may even initiate total bank collapse in severe instances. Therefore, root wad revetments require systematic monitoring, especially after high flows, for evidence of local erosion and organic decay of the structure.
- Vanes can be used in combination with root wads to reduce bank erosion.
- Root wads can be an effective restoration measure when used on the following Rosgen stream types: B3, B4, B5, B6, C1, C2, C3, C4, C5, C6, DA, E3, E4, E5, and E6.

### MATERIAL SPECIFICATIONS

When choosing natural materials for root wad revetments, the following guidelines, compiled from stream restoration projects in Maryland, should be observed:

- Intact stumps should be taken from fresh, green, healthy parent trees, preferably hardwood, with a minimum base diameter of 12 inches (30 centimeters). The size of the ball and fan should be determined by the stream size and availability of parent trees. The length of the rootwad should be at least 20 feet (6 meters) in most
- Footer and brace logs should have a diameter equivalent to that of the root wad.
- Fill soil should be native to the site, when possible, and should contain enough fine material to allow for rapid revegetation of the disturbed bank.
- Boulders used to anchor root wads and associated footer and brace logs should be of adequate size; a minimum diameter of 2 feet (61 centimeters) has been recommended.

Approximate Cost (\$1999):  
\$168-\$1,121 per root wad

### INSTALLATION GUIDELINES

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. The construction of a root wad revetment should proceed as follows (refer to Detail 2.10a):

## MGWC 2.10: ROOT WADS

*Woodly vegetative system with simple structures for limited bank stabilization and aquatic habitat enhancement.*

### DESCRIPTION

Root wads are used for limited bank stabilization and can be cost-effective when native materials are available. Additionally, root wads enhance fish rearing habitat by creating scour pools and overhead cover.

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\$168-\$1,121 per root wad

### INSTALLATION GUIDELINES

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. The construction of a root wad revetment should proceed as follows (refer to Detail 2.10a):

## MGWC 2.10: ROOT WADS

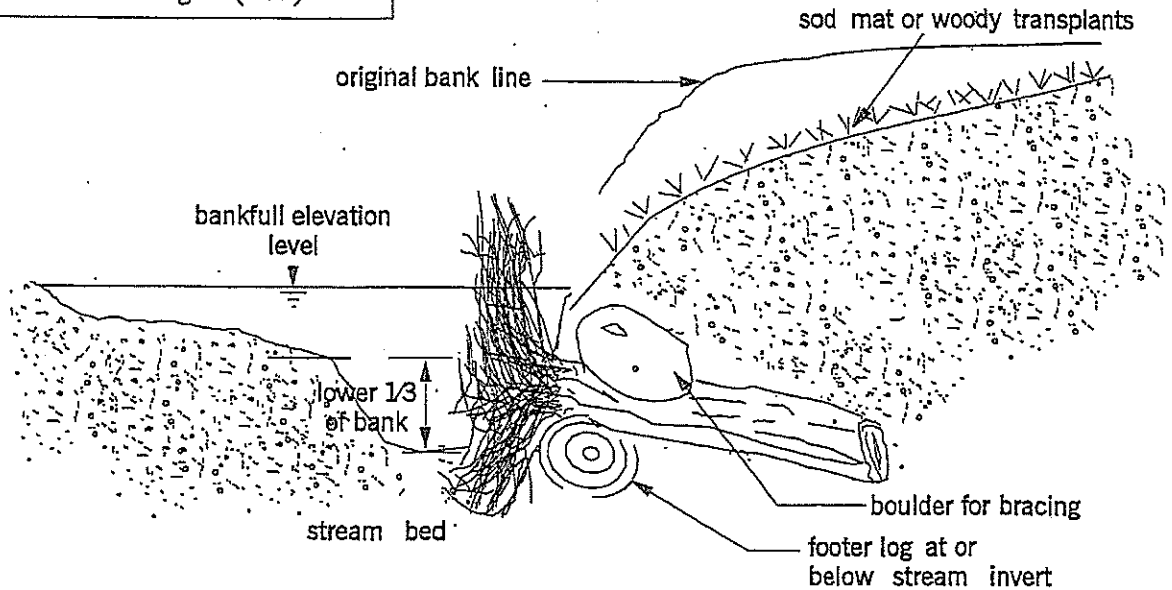
1. The location of the revetment should vary depending upon flow conditions and the reach's degree of curvature (refer to Detail 2.10b).
2. Stream flow should be diverted away from the site and sediment control devices installed according to a plan approved by the WMA or local authority. (See Section 1, *Temporary Instream Construction Measures, Maryland's Guidelines to Waterway Construction.*)
3. Work should proceed from the upstream section to the downstream end of the reach or meander beginning with excavation of a toe trench to a depth of one-half to two-thirds the diameter of the footer logs. Trenches should also be excavated for root wad placement. Appropriately sized root balls should be set at approximately 1/3 the bankfull height in order to provide toe protection.
4. Placement of the root wad components should be as follows:
  - Footer logs should be positioned in the trench below the stream invert such that each upstream log is shingled over its downstream neighbor.
  - In cut sections, root wads should be positioned in trenches such that the root mass of the trunk sits level with the cut end of the stump. The root mass should be oriented perpendicularly to the direction of flow. An angle of 30 to 60 degrees to the channel center line is usually adequate. Subsequent root wads should be spaced such that the bank is shielded from flows deflected by adjacent upstream root wads.
5. The root wad revetment should be backfilled to the specified grade, and fill material should be tightly packed in the joints, connections, and gaps to firmly secure all components. Larger material should be used to plug holes and gaps to keep fill from falling into the channel. The backfilled area should be sloped and protected with 1 to 2 feet of sod mat or temporary erosion control measures and should be seeded, mulched, and planted with woody transplants or live woody cuttings according to an approved revegetation plan within 72 hours of the revetment's completion. Stone may be necessary on flashy streams.

# Maryland's Guidelines To Waterway Construction

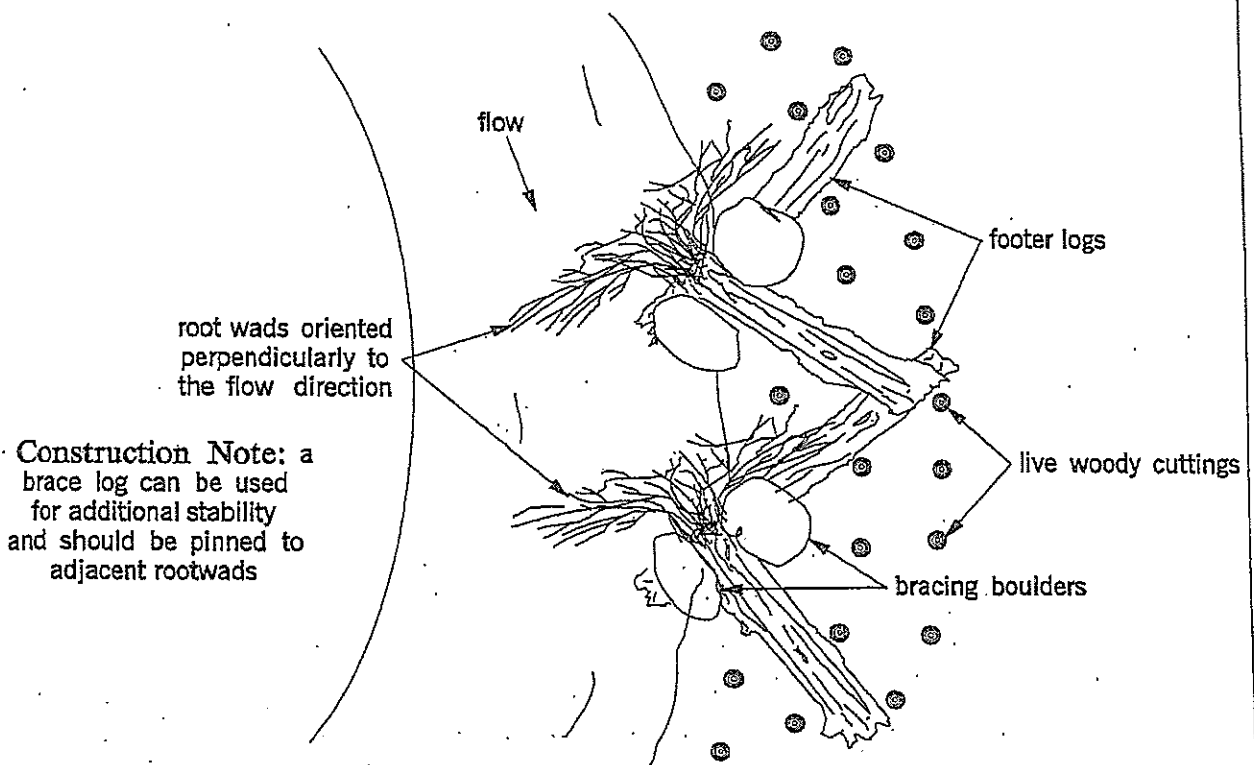
## DETAIL 2.10(a): ROOT WAD REVETMENT

Section & Plan Views Adapted  
From Rosgen (1999)

SECTION VIEW



PLAN VIEW



**Construction Note:** a brace log can be used for additional stability and should be pinned to adjacent rootwads

# Maryland's Guidelines To Waterway Construction

## DETAIL 2.10(b): ROOT WAD PLACEMENT

Adapted From Chang (1988)

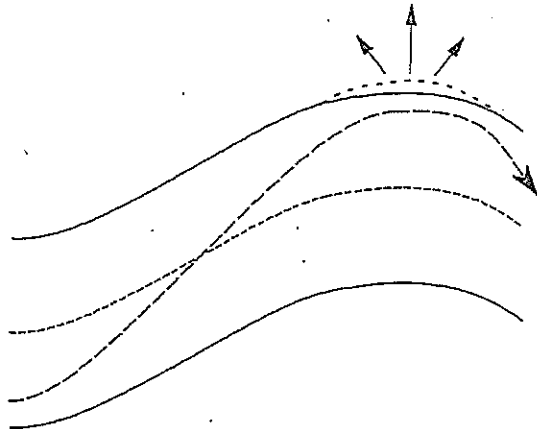
thalweg

channel centerline

erosional area

Case 1: mild bend/  
low flow

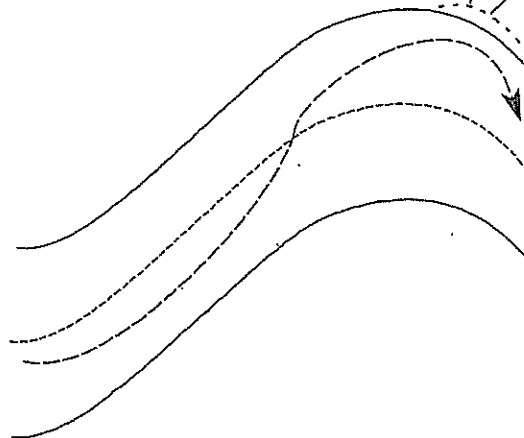
lateral migration and  
bend growth



place rootwads on concave bank  
centering around apex of curve

Case 3: sharp bend/  
low flow

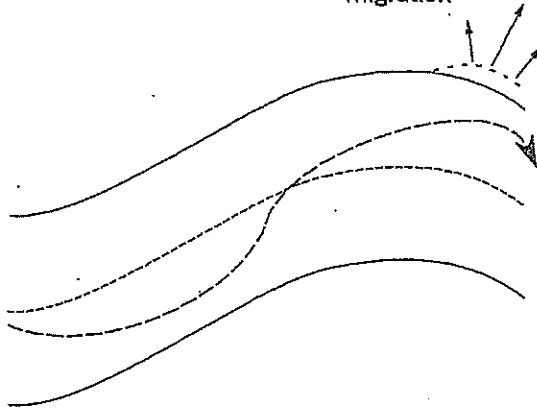
downvalley  
migration



place rootwads on concave bank  
at apex of curve and continue into  
crossover reach of bend exit

Case 2: mild bend/  
high flow

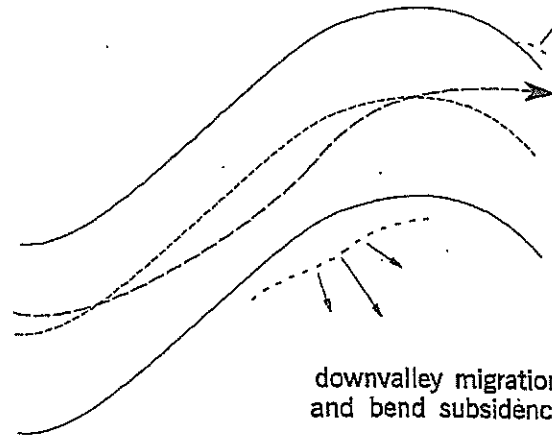
downvalley  
migration



place rootwads on concave bank  
at apex of curve and continue into  
crossover reach of bend exit

Case 4: sharp bend/  
high flow

downvalley migration  
and bend subsidence



place rootwads on concave bank at apex of  
curve and continue into crossover reach of  
bend exit; place rootwads on convex bank in  
the crossover reach of bend entrance

## MGWC 3.2: LOG VANES

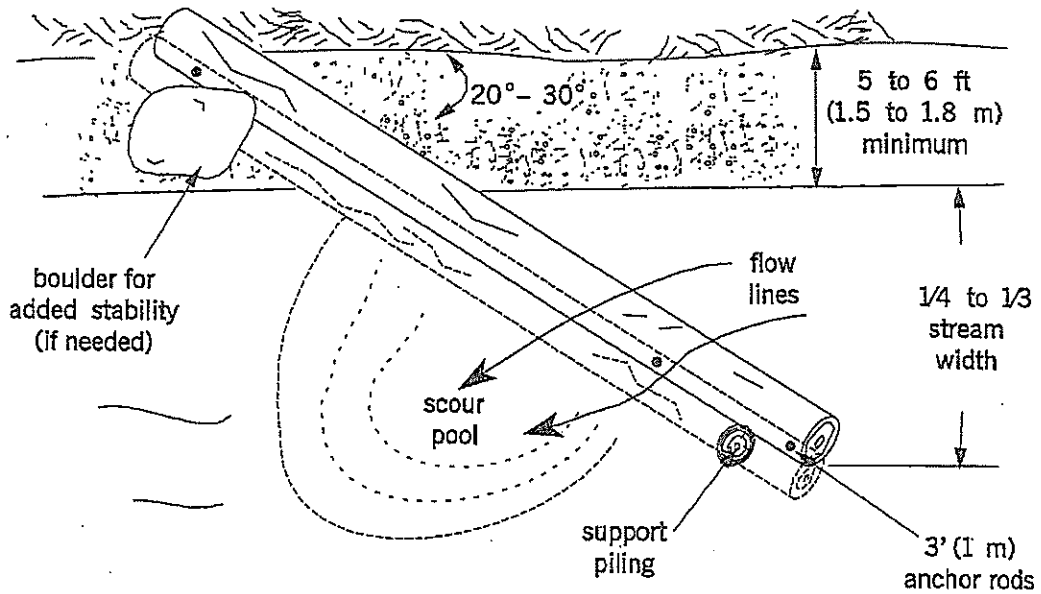
alternating banks. Vanes used for habitat creation should be spaced 1 or more channel widths apart depending upon the pattern of scour pools in natural reference reaches. Additionally, the following primary design criteria need to be satisfied: shape and orientation, height, and length.

- *Shape and orientation.* Vanes should be angled 20 to 30 degrees from the upstream bank.
  - *Height.* The bank-end of the vane should be at the bankfull elevation and the tip of the vane should be partially embedded in the streambed such that it is submerged even during low flows. The vane should be placed at a vertical angle of 3% to 7%.
  - *Length.* Vanes should span a maximum of 1/3 of the channel width, depending on the channel size. Channels less than 20 feet may require a vane to extend 1/2 of the channel width. The larger the channel, the shorter the vane should be relative to the channel width.
1. When installing vanes, the bank end of the structure should be firmly anchored a minimum of 5 to 6 feet (1.5 to 1.8 meters) into the slope. When two or more smaller logs are used in place of one larger log, they should be anchored to each other with 3-foot (0.9-meter) rods of 1/2 to 5/8-inch (1.3 to 1.6-cm) diameters. The rods should be driven in until a 4-inch (10-centimeter) tail remains, which should be bent in a downstream direction. When necessary, the logs may also be secured with cables. Log structures should be anchored to the stream bed with support pilings with lengths exceeding probable scour depths.
  2. Large rocks can be positioned on the downstream face of the vanes to provide further stability. The rocks should be installed in accordance with MGWC 3.1 Boulder Placement.
  3. All disturbed areas should be permanently stabilized in accordance with an approved sediment and erosion control plan.

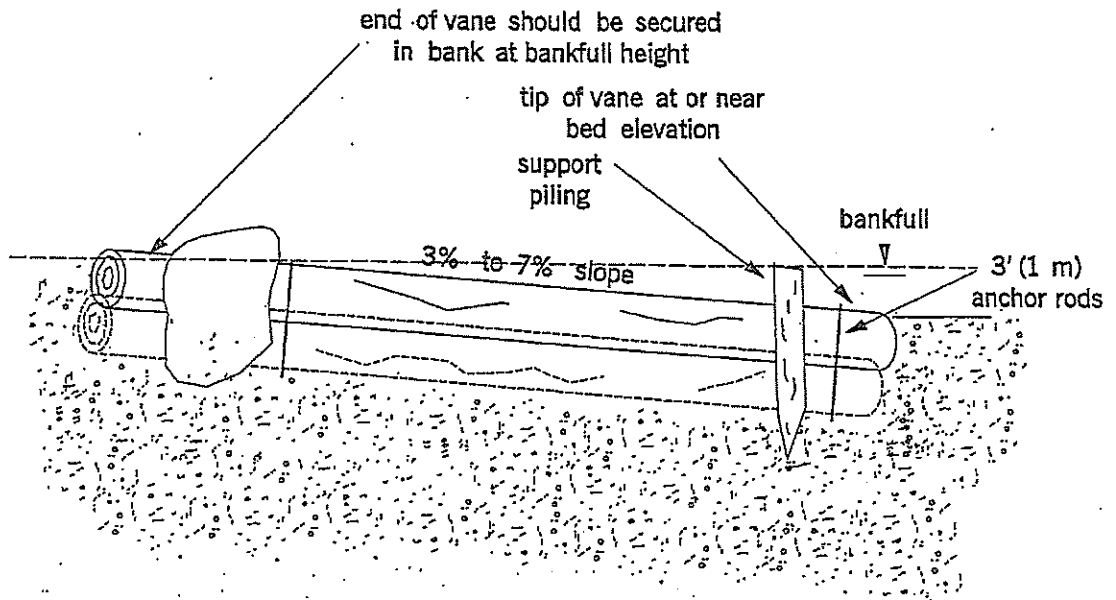
# Maryland's Guidelines To Waterway Construction

## DETAIL 3.2(a): LOG VANES

PLAN VIEW: LOG VANE



SECTION VIEW: LOG VANE



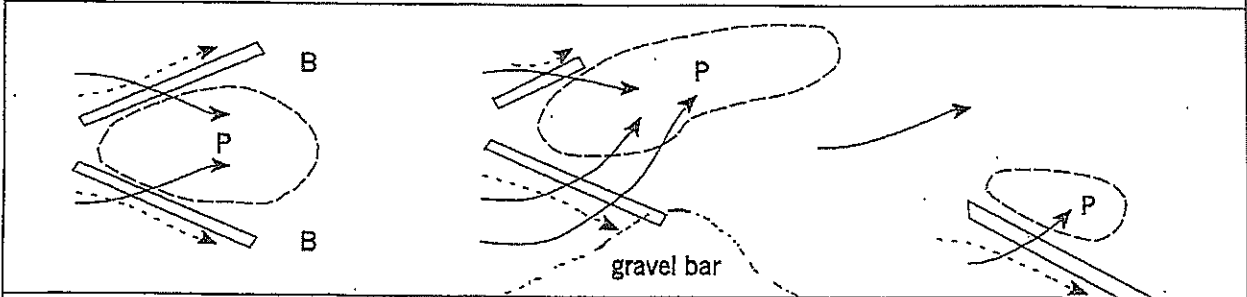


# Maryland's Guidelines To Waterway Construction

## DETAIL 3.2(b): ALTERNATIVE VANE PLACEMENT

### PLAN VIEW: ALTERNATIVE VANE CONFIGURATIONS

Source: Hey (1995)



Symmetrical

Asymmetrical

Straight

**LEGEND:**

P, pool; B, bar; E, bank erosion; ———> main/surface flow; - - - - -> near bed flow;  
 - - - - -> over topping flow

## **Attachment 7 – Organizational Structure of Mounds Production Company, LLC.**

1. **Relationship between Oil-Dri Corporation of America and Mounds Production Company, LLC (“Mounds”)** -- As noted in exhibit 21.1 to its 2011 Form 10-K (attached), Mounds Production Company LLC is a subsidiary of Oil-Dri Corporation of America.
2. **Business relationship between Oil-Dri and/or Mounds and the LeFevre/Michel landowners** -- As noted in public property records, the landowners retain ownership over the relevant properties, Mounds is required to utilize specified landowner properties for clay mining, and Mounds has recorded rights to mine the relevant properties. The property records are voluminous, but each contain a clause dividing up between Mounds and the landowners the responsibility for aspects of the mining process. See example attached. Critical for the purpose of this ITA is that the landowner properties are the only available source for raw material to operate the Mounds plant and that Mounds accepts responsibility for the sites during mining and during reclamation activities following mining.

Attachment 7-1

**OIL DRI CORP OF AMERICA (ODC)**

**10-K**

Annual report pursuant to section 13 and 15(d)

Filed on 10/12/2011

Filed Period 07/31/2011

THOMSON REUTERS ACCELUS™



THOMSON REUTERS

Attachment 7-1  
Table of Contents

Exhibit No.	Description	SEC Document Reference
11.1	Statement re: Computation of Income per Share.	Filed herewith.
14.1	Code of Ethics	Available at Oil-Dri's website <a href="http://www.oildri.com">www.oildri.com</a> or in print upon request to Investor Relations, Oil-Dri Corporation of America, 410 North Michigan Avenue, Suite 400, Chicago, IL 60611-4213, telephone (312) 321-1515 or e-mail to <a href="mailto:info@oildri.com">info@oildri.com</a> .
21.1	Subsidiaries of Oil-Dri.	Filed herewith.
23.1	Consent of PricewaterhouseCoopers LLP.	Filed herewith.
31.1	Certifications pursuant to Rule 13a – 14(a).	Filed herewith.
32.1	Certifications pursuant to Section 1350 of the Sarbanes-Oxley Act of 2002.	Furnished herewith.
99.1	Mine Safety Disclosure	Filed herewith.
*	Management contract or compensatory plan or arrangement.	

## EXHIBIT 21.1:

## SUBSIDIARIES OF OIL-DRI

Subsidiary	State or Country of Organization
Blue Mountain Production Company	Mississippi
Oil-Dri Canada ULC	Canada
Mounds Management, Inc.	Delaware
Mounds Production Company, LLC	Illinois
ODC Acquisition Corp.	Illinois
Oil-Dri Corporation of Georgia	Georgia
Oil-Dri Corporation of Nevada	Nevada
Oil-Dri Production Company	Mississippi
Oil-Dri SARL	Switzerland
Oil-Dri (U.K.) Limited	United Kingdom
Taft Production Company	Delaware

tract no. 153  
Altoned 153

STATE OF ILLINOIS )  
COUNTY OF PULASKI ) SS  
THIS INSTRUMENT FILED FOR RECORD  
THIS 1 DAY OF Nov. A.D. 1988  
AT 10:20 O'CLOCK A.M. P.M.  
AND RECORDED IN BOOK 119 PAGE 36  
Koselle Barbara  
RECORDED

LEASE

THIS AGREEMENT entered into as of this 15th day of November, 1988, between Gary L. LeFevre and Athalyn LeFevre, (hereinafter referred to collectively as "Lessor"), and Absorbent Clay Products, Inc., an Illinois corporation, (hereinafter referred to as "Lessee").

WHEREAS, Lessor is the owner of certain real estate situated in the County of Pulaski, State of Illinois, as more fully described and set forth in Exhibits 1 through 5 attached hereto and incorporated herein by reference (hereinafter referred to as "leased premises");

WHEREAS, Lessor is interested in leasing the above described properties for the purpose of mining; and

WHEREAS, Lessee is interested in entering into a lease agreement with Lessor to mine the above described properties;

NOW THEREFORE, in consideration of the mutual agreements hereinafter contained, the parties agree as follows:

(1) Lessor, in consideration of the sum of One Dollar (\$1.00) paid by Lessee, the receipt of which is hereby acknowledged, and in further consideration of the rents and royalties to be paid and the covenants and conditions to be kept, and performed by Lessee as herein provided, hereby leases unto Lessee the above described real estate (leased premises) situated in the County of Pulaski, State of Illinois, for a term of ninety-nine (99) years from and after the date hereof, for the purpose only of exploring for, mining, taking out, and removing

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therefrom, the merchantable raw clay which is, or which hereafter may be found on, in, or under the leased premises, together with the right to construct all buildings, make all excavations, openings, ditches, drains, railroads, roads, and other improvements on the leased premises which are or may become suitable or necessary for the mining and removing of raw clay from the leased premises, with the right to cut and use such timber thereon, as may be necessary for the construction of buildings, and for the usual purposes of such mining operations, special care being exercised to clear up and remove all combustible debris in order to prevent any fires.

(2) Lessee may put in engines and machinery, build roads, and do such other things on the leased premises as may be necessary or usual to carry on such mining operations; and all such engines, machinery, buildings, improvements so put up or erected, and material found on the leased premises shall form part of the realty, it being understood that Lessee, on termination of this lease, by paying up any arrears which may be or become due, owing, or payable on this lease to Lessor, may remove within 120 days after such termination of this lease, such buildings, engines, machinery, and temporary improvements. All mines of raw clay shall be opened and worked by Lessee in such manner as is only usual and customary in the skillful and proper mining operations of similar character, and so as not to do, cause, or permit any unnecessary or unusual permanent injury to the mines, or inconvenience or hindrance in the subsequent operating of the said mines; and at the termination of this

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lease, whether by the act of the parties, or any of them, or by limitation or otherwise, the mines shall be left in good order and good workmanlike condition; and in the working of the mines, Lessee shall deposit all earth or rubbish at such places and in such manner as will not obstruct or embarrass the future operation of the mines; and Lessee shall not remove or impair any supports, timber, framework or shafts necessary or proper for the use and maintenance of such mines or the approaches thereto, or shall any tram roads, railroad track, ditches, or improvements of a permanent nature made by Lessee be impaired, removed or destroyed by Lessee at the termination of this lease.

(3) Until actual mining operations are commenced, Lessor shall have the right to use the leased premises for agricultural purposes, including the raising of livestock, and fish farming, and Lessor may retain the production therefrom without charge; provided, however, that Lessee shall have the right to utilize portions of the leased premises for deposit of overburden, if such deposits are in accordance with sound mining practice and do not involve overburden from any property other than the "leased premises" unless consent is given by Lessor, which consent shall not be unreasonably withheld. (If the parties disagree on deposits of overburden they shall retain a mining expert to resolve the dispute.) Such right to use the leased premises for the aforesaid purposes shall apply to each tract of real estate subject to this lease, and such right shall continue as to each such tract until mining operations are commenced on that specific tract. If mining operations are



commenced on a specific tract at a time when there are growing crops on such tract, Lessee shall pay Lessor the fair value of such growing crops. If mining operations are discontinued on any specific tract of real estate, such agricultural purpose rights are automatically resumed.

(4) During the term of this lease, Lessee shall pay to Lessor as a minimum rental for the leased premises the sum of Six Thousand Dollars (\$6,000.00) per year. All yearly rental payments shall be paid in equal quarterly installments on the fifteenth day of January, April, June, and October of each year. The amount of rent paid by Lessee in any given year pursuant to this paragraph shall be credited toward the amount of any royalty rentals due and owing by Lessee for that year under paragraph (5) hereof.

(5) Lessee shall pay to Lessor a royalty for each ton of finished clay products sold at a royalty bearing the percentage relationship of \$1.00 per ton that the current average f.o.b. plant price per ton of package cat litter sold by Lessee bears to the average price per ton of same sold by Lessee during the base period of July 1, 1976, to December 31, 1976; said royalty to be adjusted every six months to reflect the same percentage relationship. For example: if the average price of all package cat litter sold by Lessee during the base period is equal to \$50.00 a ton, the royalty will be \$1.00. If, during the next six months, the average price of all package cat litter sold by Lessee is \$100.00 per ton, then the royalty will be \$2.00. Lessee shall deliver to Lessor a calculation of this royalty rate

every six months, such calculation shall be in the form of Exhibit 7 hereto. The term "sold" means net sales after deducting sales adjustments, freight out, charges for pallets, or other similar non-product charges. Said royalty to be reviewed and adjusted every six months; provided, however, if in any year during the term of this lease the Mounds plant of Lessee produces (a) less than 60,000 tons of package cat litter and (b) package cat litter makes up less than 25% of the total volume of all products produced by Lessee from the Mounds plant, Lessor shall have the option of receiving during any such year (i) the royalty set forth above or (ii) a royalty calculated as follows: \$1.31 times the percentage increase in the "SAMI" reported average price per ton as all types of cat litter sold in the United States from January 1, 1988 (\$326.07) through January 1 of the royalty year for which this calculation is required. In the event that such "SAMI" reported price is not available, a reliable publication or market reporting service evaluating cat litter price data shall be used in lieu of such "SAMI" report.

Lessee shall, as soon as practicable after the beginning of each month, transmit to Lessor accompanied by the royalty payment due an exact and truthful statement of the amount of clay sold from the leased premises the preceding month, such statement to be in the form of Exhibit 8 hereto, verified by the oath of someone having knowledge of the facts. Lessee shall further transmit to Lessor on or before each royalty adjustment date an exact and truthful statement as to each average price of products referred to above, verified by the other of someone

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having knowledge of the facts, which information Lessor shall keep confidential. Lessor shall have access at all times during normal business hours to all information needed to verify the information reported by Lessee.

Lessor shall at all times have, possess and hold a lien on all the raw clay mined and all improvements made on the leased premises as security for any unpaid balance of royalties payable under this lease and which lien may be enforced against such property in like manner as liens confirmed by mortgages are, or may be entitled to be enforced, under the laws of the State of Illinois.

(6) Lessee agrees that it will not mine, or otherwise obtain any amount of clay for operation of Lessee's present plant in Mounds, Illinois from any source other than the leased premises, or the properties subject to a certain Lease Agreement dated September 1, 1977 between Lessee and the MARIAN MICHEL and ATHALYN LEFEVRE LAND TRUST, Donald Michel and Gary LeFevre, Joint Trustees, including an Addendum to such Lease Agreement, dated December 29, 1986, between Lessee and MARIAN MICHEL and DONALD C. MICHEL, ATHALYN LEFEVRE and GARY L. LEFEVRE, T. RICHARD MAGER as Trustee of Land Trust LM-1, and the MARIAN MICHEL and ATHALYN LEFEVRE LAND TRUST, Donald C. Michel and Gary L. LeFevre, Joint Trustees, attached hereto and collectively described as Exhibit 6 until the clay deposits on the property leased hereunder are depleted of merchantable clay.

(7) When Lessee shall cease, for whatever cause or reason to operate its Mounds plant Lessor may at any time

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thereafter terminate this lease. In addition, if during any calendar year Lessee produces less than 75,000 tons of product at its Mounds plant, Lessee and Lessor shall attempt to negotiate a different royalty rate or otherwise amend Section 5 hereto to their mutual satisfaction by June 30 of the following year. If Lessee and Lessor are unable to agree on a mutually acceptable amendment in the royalty rate, Lessor may at any time after June 30, upon ten days written notice to Lessee, terminate this Lease.

(8) Lessee shall notify Lessor when, in Lessee's opinion, merchantable raw clay required by Lessee and which is required to be purchased hereunder is not available, in whole or in part, from the leased premises. Subsequent to such notice, Lessor will inspect the property, and if, in the opinion of Lessor, there still remains in or on the leased premises merchantable raw clay which is capable of satisfying Lessee's requirements, in whole or in part, Lessor shall give Lessee notice thereof. If Lessee refuses to proceed to mine and remove clay from the leased premises for a period of sixty (60) days after receiving notice from Lessor, Lessor may terminate this Lease upon ten days written notice to Lessee.

(9) Lessee agrees to pay during the term of this lease any increase in property taxes applicable to the leased premises above the amount paid by the owners of the leased premises in 1989 for the tax year 1988.

(10) Lessor agrees to pay the property taxes applicable to the leased premises only in an amount not to exceed the amount

paid by the owners of the leased premises in 1989 for the tax year 1988.

(11) Lessee shall obtain all required or necessary permits and licenses for the mining of clay, and Lessee shall maintain such required or necessary permits or licenses for the mining of clay, so long as Lessee continues to mine clay pursuant to the provisions of this lease. Lessee shall at all times during the term of this lease be in compliance with state and federal law and regulations for the mining of clay. Lessee shall cause this lease to be recorded if such recordation is required by law.

(12) Lessee agrees to indemnify and hold harmless Lessor against liability on any claim or obligation imposed against Lessor or the leased premises during or after the term of this lease arising out of the activities or omissions of Lessee or its agents or employees during the term of this lease. Lessor agrees to indemnify and hold harmless lessee against liability on any claim or obligation imposed against Lessor or the leased premises during or after the term of this agreement arising out of the activities or omissions of Lessor or their agents or employees during the term of this lease. Such indemnification obligation shall be absolute and unqualified. Lessee at its own expense shall obtain and keep in full force, at all times that this lease is in effect, adequate insurance and the policy or policies shall name Lessor as one of the additional named insured. Lessee shall deliver copies of all such insurance policies to Lessor.

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(13) In no event shall this lease or the leasehold estate become an asset of Lessee in bankruptcy, receivership, or other judicial proceedings. In case Lessee is adjudged a bankrupt, or its business and assets are taken over by an assignee for the benefit of creditors, or by a receiver or other court custodian, and remain unreleased therefrom for forty (40) days, or in the event Lessee should cease doing business, for whatever cause, for a period of twenty (20) consecutive days, Lessor may, at Lessor's option and without notice, terminate this lease.

(14) Lessee agrees that when this lease shall terminate for any cause, Lessee shall quietly and peacefully surrender possession of the leased premises to Lessor, and Lessee will enter, or cause to be entered, a certificate of that fact on the proper book of record in whatever jurisdiction this lease may have been recorded, and will execute or cause to be executed such releases or assignments, including the recording of same, as may be necessary to clear the record and divest Lessee of all rights and titles given or acquired under this lease. The present lease is granted under the express condition that, if the rent or royalties hereby reserved, or any part thereof, or any taxes payable by Lessee hereunder, shall be and remain unpaid after the days and times when by the proceeding covenants they should be paid, or in the event of termination of this lease, for any reason, or in case Lessee shall fail to keep or perform any of the covenants or conditions herein expressed to be kept or performed on Lessee's part, then, and from thenceforth and in any

of these events it shall be lawful for Lessor, at Lessor's option, to enter into and upon the leased premises with or without any previous notice or process whatsoever, to re-enter, and to have and possess the premises again, as of their first and former state, and wholly to exclude therefrom Lessee and all persons claiming under Lessee, and, in addition, Lessor may terminate this lease, or Lessor may, at their option, re-enter and relet the leased premises, or any part thereof, for any term, at a rent and terms that Lessor may choose. Lessor shall have the right to obtain reimbursement from Lessee of all expenses incurred in regaining possession of the leased premises and the right to recover all addition rental required under the lease term if Lessor does not elect to terminate the lease, but re-enters and relets the leased premises for the benefit of Lessee.

(15) Lessor reserves to themselves and their agents the right at any time to enter upon the leased premises or any part or parts thereof to inspect and survey them, and measure the quantity of raw clay that may be therein or thereon or that shall have been mined or removed therefrom, not unnecessarily or unreasonably hindering or interrupting the works or operation of Lessee. Lessor also reserves the right to grant to any person or corporation the right-of-way for any railroad or road over or across the leased premises, to be cut or constructed in a manner not unreasonably to interfere with the improvements and mining operations as carried on at the time on the leased premises; and Lessor further reserves the right to sell, cut and remove any

timber on the land, together with the usual rights and privileges of lumbering, not inconsistent with the necessary rights of Lessee herein.

(16) Lessee shall not assign, transfer, or sublet this lease or any part thereof without the written consent of Lessor which consent shall not be unreasonably withheld.

(17) Any and all modifications of alterations of or additions to or changes in any terms, conditions, or agreements contained herein shall be void and not binding on any party hereto unless set forth in writing and signed by the parties.

(18) This lease shall be construed in accordance with the laws of the state of Illinois.

Entered into this 15th day of November, 1988.

"Lessor"

Gary E. LeFevre  
Gary E. LeFevre

Athalyne LeFevre  
Athalyne LeFevre

"Lessee"

Absorbent Clay Products, Inc.

By: Gary E. LeFevre  
Its: PRESIDENT

(1492/A)