Report

Lake Leota – Lake Dredging Planning

City of
Evansville, WI

June 2004

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June 14, 2004

Mr. Bill Connors, City Administrator
City of Evansville
31 South Madison Street
Evansville, WI 53536

Re: Lake Leota – Lake Dredging Planning Report
City of Evansville, Wisconsin

Dear Mr. Connors:

This letter report summarizes the findings of our Scope of Services No. 1 and No. 2 for the City of Evansville. We understand it is the desire of the City of Evansville to improve the water quality of Lake Leota and preserve the longevity of the lake. We also understand it is the goal of the City to improve Lake Leota by dredging accumulated sediments. This report provides a plan to achieve the City's goals. The following tasks have been completed:

1. We have reviewed and summarized relevant information from past reports and determined the need for an Upstream Watershed Study.

2. We have determined permit requirements for dredging and dredging costs for mechanical, hydraulic, and dry excavation dredging methods.

3. We have assessed disposal sites and the need to update dredging plans.

This letter report will be submitted to the Wisconsin Department of Natural Resources (DNR) as part of subsequent grant applications.

Lake Leota Background Information and Reports

The following past Lake Leota reports were reviewed:

- DNR, *Lake Leota, Rock County Management Alternatives*, 1979.

  This DNR report discussed five management alternatives. Dredging the lake below the photic zone to an average depth of 10 feet would require removal of approximately 270,000 cubic yards of sediment. Soil conservation practices could be implemented to reduce the amount of upstream erosion and sedimentation. Rough fish could be removed to reduce turbidity. The dam could be removed to allow the creek to return to its natural state. A do-nothing alternative was also presented because of the DNR's perceived view of the very limited recreational potential for Lake Leota.

986
LL-987

- Owen Ayres & Associates Inc., *Preliminary Plan Lake Leota Rehabilitation Project,* 1980.

This report presented a dredging plan that would remove a total of 233,000 cubic yards of sediment. The lake would be dredged at graduated depths from 6 to 10 feet. Sideslopes of 4:1 from a distance of 20 feet from the existing shoreline would be dredged to the desired depth. A 75-foot buffer zone extending into the lake from the south track of the railroad would be left in its natural state. Two properties were investigated for spoils disposal: the Cadman property and the Gildner property. Ayres recommended hydraulic dredging for sediment removal.

- Gibbs, Sheri, *Proposal for Restoration of Lake Leota and Allen Creek,* 2000.

This report highlights the history of events surrounding Lake Leota. A notable section spelled out past roadblocks, including costs of dredging, DNR permits, and an environmental assessment. The report also poses potential solutions such as dredging the upper and lower lake, rerouting the creek to the upper lake, and creating a small holding pond for dredging maintenance.

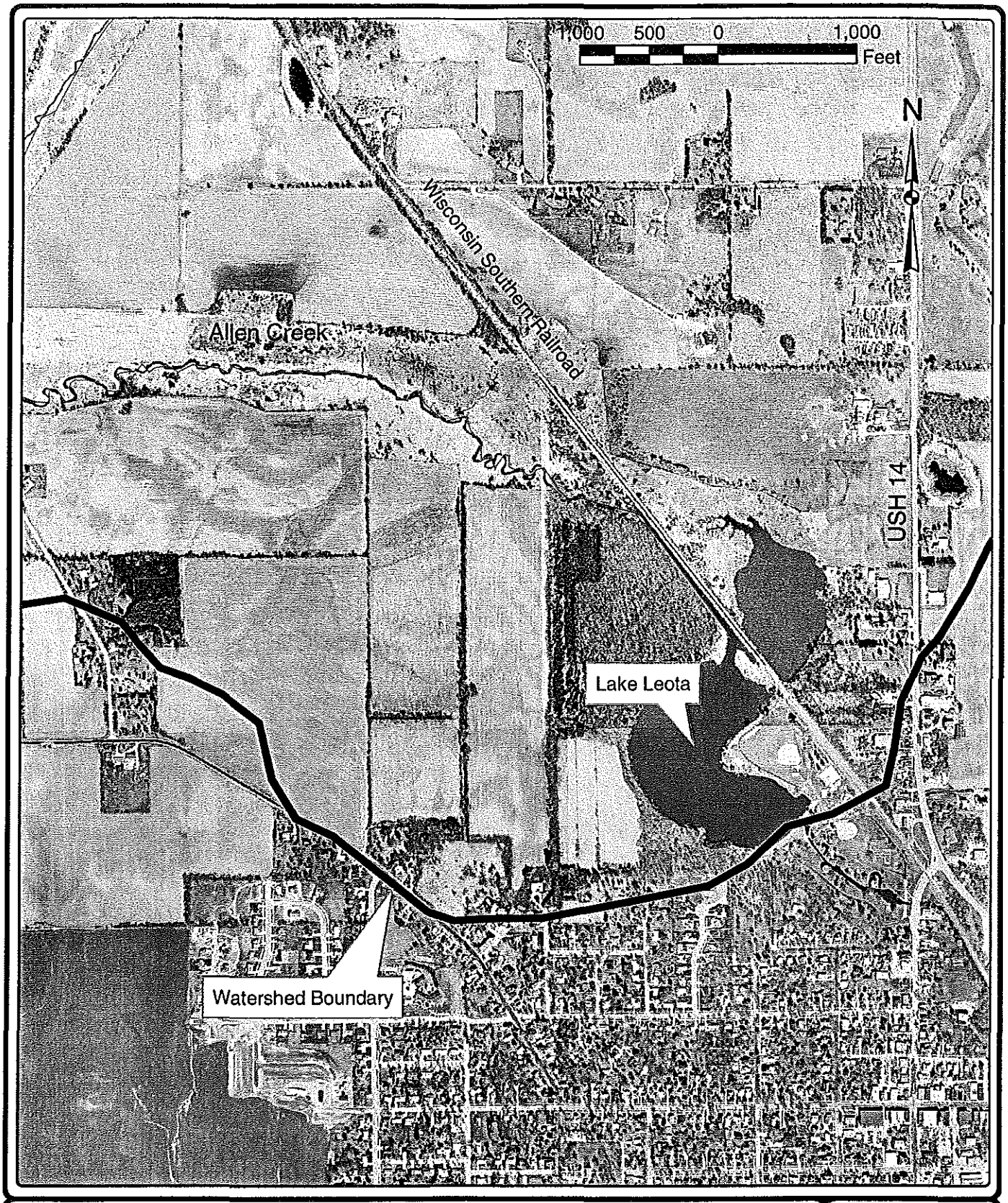
- University of Wisconsin-Platteville, *Lake Leota Evaluation Report*, 2001.

This report was prepared by a group of engineering students under the guidance of faculty advisors. This report stressed that the success of a lake rehabilitation project depends on the initial study of the lake and continued monitoring following implementation. Removal of 276,000 cubic yards of sediment from the lower lake was recommended. Sediment would be removed to create lake depths from 12 feet in a new sedimentation basin to 6 to 10 feet in the main lake. A 30,000 cubic yard sedimentation basin would be designed for maintenance dredging every ten years. Hydraulic dredging was found to be the most economical method of sediment removal. The report also recommended that rerouting the creek to the upper lake would not be feasible primarily because of the size of the culvert required.

Additional information from these reports is summarized by topic below.

A. Background and Management Problems

The Lake Leota watershed contains a drainage area of 21 square miles. The watershed is within the Allen Creek and Middle Sugar River watershed. The upper and lower portions of the lake are divided by a railroad bridge. The upper lake is approximately 11.8 acres, and the lower lake is approximately 26.6 acres. A map of the watershed is included as Figure 1. Figure 2 shows an aerial photograph of the lake and surrounding area.



LAKE LEOTA
AERIAL PHOTOGRAPH

LAKE LEOTA-LAKE DREDGING PLAN
CITY OF EVANSVILLE
EVANSVILLE, WISCONSIN

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FIGURE 2
1-354.003

Lake Leota is an impoundment first constructed in 1847 as a mill pond; which was drained in the late 1800's after the mill closed. As a result of public support for water recreation, the lake was dug out again in 1923. Since its re-creation, the lake has experienced a number of lake management challenges including sediment infilling, turbidity, rough fish, high nutrient input and aquatic weeds, and stream bank erosion on Allen Creek.

B Erosion, Sedimentation Rates, and Sediment Quality

Approximately 18.9 square miles, or 90 percent, of the watershed is zoned agricultural and consists of gradual slopes of 0 percent in the east and 1 to 3 percent in the west. The DNR calculated the average soil loss for the watershed to be 44,000 tons/year. Using sedimentation rates from the DNR 1979 report, approximately 2,900 cubic yards per year (97 percent) from sheet and rill erosion and 100 cubic yards per year (3 percent) from stream bank erosion accumulate in Lake Leota. The 1979 DNR rate was for a 24-acre lake; Owen Ayres 1980 report adjusted this calculation for a 26.6-acre lake to 3,200 cubic yards/year.

Seventeen sites of severely eroded stream bank areas were identified by the DNR in 1979. Stabilization of these areas would help prevent some sedimentation and nutrient loading.

The average depth of water to the top of the sediment bed for the lower portion of the lake was 1.5 feet in 2001. In 1979 the average lake depth to the top of the sediment was 3 feet. The UW-Platteville students calculated a sediment accumulation rate of 0.8 inches per year based on the accumulation from 1979 to 2001. In 1979 the DNR reported the sedimentation rate from 1964 to 1977 from an average of the rates near the inlet and near the dam. The calculated rate was 0.9 inches per year. Data from 1954 to 1964 showed a sedimentation rate of 0.6 inches per year. Data for these sedimentation rates were collected by the U.S. Department of Agriculture, Agricultural Research Service in 1977. The USDA collected sediment cores for radiometric dating to determine sedimentation rates.

Five sediment samples were collected by Save Our Lakes and Environment (SOLE) members and submitted to the Soil and Plant Analysis Lab at the University of Wisconsin-Madison in January 2003. Lake sediments were tested for minerals, heavy metals, percent moisture, percent solids, pH, organic matter, phosphorous, potassium, nitrogen, and texture. Sediment sampling results and sample locations are included in Appendix A. The sediments had a moisture content between 51 and 56 percent. Most of the samples, except for one with a high sand content, were between 67 to 73 percent silt and between 23 to 32 percent clay. The results of the analysis were submitted to the DNR in 2003. The DNR determined that no additional sampling would be required for

dredging plans and that the analysis fulfilled requirements of NR 347 for sediment analysis.

C. Water Quality

Turbidity continues to be a problem in Lake Leota and is contributing to the population of rough fish (mostly carp) and bullheads in the lake. DNR explained in their 1979 report that if the lake were dredged to the bottom, turbid water would continue to prevent light penetration to the lake bottom and prevent excessive weed growth. If the lake were dredged and the fish were eradicated, turbidity would be reduced, but nuisance weed growth would return in 5 to 10 years. The lake would fill in and light would reach the lake floor producing aquatic plants. A 10-foot dredging depth appears desirable and depths in excess of 8 feet will limit rooted aquatic weed growth according to the Owen Ayres 1980 report.

Nutrient levels in the lake are related to the highly fertile soils in the watershed and the erosion of soils from the dominant agricultural land use noted in the 1979 DNR report. The DNR determined that nutrient runoff was mostly due to nonpoint cropland runoff as well as excessive wildlife populations and other natural causes. The average phosphorus concentrations in milligrams/liter measured by the DNR are shown in Table 1.

	Lake Leota Outlet	North Branch Allen Creek	West Branch Allen Creek
Average (1977)	0.18	0.21	0.12

Table 1 Phosphorous Concentrations (mg/l) 1979 DNR

The phosphorus concentrations in Table 1 reflect the relationship to the dominant agricultural land use as compared to other similar watersheds shown in the UW-Platteville report.

About 4.5 miles of the stream above Lake Leota are classified Class II and Class III trout waters. Allen Creek below Evansville was recently added to the state's antidegradation list as an Exceptional Resource Water (ERW) as defined in NR 102.11. ERWs have excellent water quality and valued fisheries but already receive discharges from point sources. One notable point source in the watershed is the Brooklyn Wastewater Treatment Plant effluent.

D. Hydrology

Allen Creek drains over 21 square miles of the watershed before draining into Lake Leota. Allen Creek above Lake Leota has a history of manipulation and reditching. The creek flows along the railway as a drainage ditch before discharging into the lake. The natural path of the creek flowed to the upper lake first and then to the lower portion of the lake. The railway and drainage ditch altered the original stream course.

E. Fish

The fish population in Leota consists mostly of rough fish, including carp, and bullheads which contribute to the turbidity problem of the lake. The fish keep the bottom lake material stirred up, eat plant debris and aquatic organisms attached to aquatic plants, and aid in controlling in-lake weed problems. According to the UW-Plattevile report, the highly turbid waters are unsuitable conditions for game fish.

Upstream Watershed Study Needs Assessment

According to conversations with Mike Halsted, the DNR water quality specialist, a watershed study would not be required prior to dredging Lake Leota, but it would be an advantageous step to extend the success of the project because the study would address the high sedimentation rates. He also made another recommendation of simplifying the project as much as possible to allow the goals of the project to be achieved. Alternatives such as rerouting the creek to the upper lake and building a berm on the upper lake were discussed. These ideas would involve an extensive floodplain and hydrologic study to be completed to assess the downstream effects of the modified stream hydrology. Further, these ideas may not provide much benefit, in terms of the City's goals for Lake Leota, compared to the difficulty and added cost.

A watershed study may help to identify the existing physical environment features, the secondary and cumulative effects of the project, the significance of the project, and other components required for the dredging environmental assessment (EA). The watershed study would be a tool for understanding and managing the Lake Leota watershed and sedimentation rates. A watershed study could also serve as a decision-making tool for the Park Board and SOLE committee to determine which long-term management alternatives for the lake are reasonable and feasible.

Recommended watershed study components are included as Appendix B.

Permit Requirements

The following permit requirements were identified for a Lake Leota dredging project. These components would need to be completed during the design phase of this project.

1. DNR permits will be required under Chapter 30.20 for dredging and for a long-term maintenance plan for future dredging. This permit application would also be submitted to the Army Corp of Engineers. A blank copy of the Chapter 30 permit application is included in Appendix C. The DNR contact for this project is Cami Peterson.

2. An EA is required by the DNR to assess the effects of the dredging project. Dredging projects over 3,000 cubic yards require the completion of an EA. A blank copy of the EA form is included in Appendix D. Components of the EA include:

   a. Project Summary

      Project summary, purpose and need, permits, estimated costs and funding sources

   b. Proposed Physical Changes

      (1) The quantity of material removed
      (2) Manipulation of aquatic resources
      (3) Any buildings, structures, or roads constructed
      (4) Emissions and discharges

   c. Affected Environment

      (1) Description of the existing physical and biological environment, including threatened and endangered species, and wetlands.
      (2) Description of the existing land use, cultural and historical resources in the area, and other special resources such as park areas.

   d. Environmental Consequences

      Probable adverse and beneficial impacts including indirect and secondary impacts to the physical, biological, and cultural environment

e. Alternatives

Describe feasible project alternatives

f. Significance of Project

(1) Significance of environmental effects
(2) Significance of cumulative effects
(3) Significance of risk
(4) Significance of precedent

g. Issue Identification

(1) Summarize citizen and agency involvement activities
(2) List agencies, groups, and individuals contacted regarding the project.

Russ Anderson or Cathy Bleser of the DNR's South Central Regional office would assist with the EA process for this project. As part of the EA process, a public notice would be issued and a 30-day period would follow for public comment. If substantial public comment was received, a public meeting would be held.

3. A WPDES permit (Dredging Operations – Carriage and Interstitial Water [WI-0046558-3]) would be needed for the return water from hydraulic dredging to surface waters. Bob Liska is the contact at the DNR for this permit. The limit for TSS in the permit is in the range of 40-80 mg/L. A blank copy of the WPDES permit application is included in Appendix E.

4. NR 216 Construction Site Stormwater Discharge Permit – A Notice of Intent (NOI) for Stormwater Discharges Associated with Land Disturbing Construction Activities is required because the area of land disturbance at the disposal site would be greater than 1 acre. Acquisition of this permit is often the responsibility of the contractor doing the work and is obtained by the contractor just prior to the start of the project. A blank copy of the NR 216 NOI permit application is included in Appendix F.

5. A site approval must be submitted to the DNR for the disposal site and is a condition of the dredging permit.

6. A permit to work within the railway corridor with Wisconsin Southern Railroad (U.P. Railroad leased to Wisconsin Southern) may be required. Numerous calls to the railroad company remain unreturned.

Dredging Cost Review

The dredging volumes calculated for the UW-Platteville report were checked for accuracy using a planimeter to manually check the estimated dredging volume. The manual check indicated that the UW-Platteville quantity appears to be reasonable based on the existing and proposed contours in the report. The UW-Platteville dredging plan includes a 12-foot-deep sedimentation basin and the rest of the lower lake is proposed to be between 6 and 10 feet deep. If dredging took place in 2005, it is estimated that 10,000 cubic yards more would have accumulated since the UW-Platteville report. Therefore, the UW-Platteville estimate of about 276,000 cubic yards of material to dredge was increased by 10,000 cubic yards for cost estimating purposes in this report (290,000 cubic yards is used).

Three lake dredging alternatives were developed for review and analysis. Planning cost opinions were developed for different management alternatives. Costs for completion of items on SOLE's "Wish List" (besides dredging and restoration of disturbed areas), as described in the Analysis of Needs section for the last grant submittal, are not included in these cost opinions. The "Wish List" is attached in Appendix G.

The summary of the opinion of construction cost for each alternative is included in Table 2. The components of the cost opinion for each alternative are included in Appendix H.

Dredging Alternative	Opinion of cost
Hydraulic Dredging (IDD System) based on conversation with Brennan	$7,200,000
Hydraulic Dredging (Conventional) based on conversation with Brennan	$3,200,000
Hydraulic Dredging (Conventional) based on conversation with Inland Dredge	$3,500,000
Mechanical Dredging based on conversation with RG Huston	$4,500,000
Drawdown and Limited Hydraulic Dredge	$2,300,000

Table 2 Opinions of Construction Cost for Dredging Alternatives (assuming disposal area approximately 2.65 miles away) *Costs include 30% Technical Services and Contingency

A. Hydraulic Dredge

Our review of the UW-Platteville report indicates that the unit costs used for hydraulic dredging of $3 per cubic yard is low. Calls to hydraulic dredging contractors (JF Brennan and Inland Dredge) indicate the cost for hydraulic dredging and disposal approximately 2.65 miles away would be in the range of $5 to $8 per cubic yard using conventional hydraulic dredging technology. Using the IDD technology with disposal 2.65 miles away, JF Brennan indicates the cost is in the range of $15 to $19 per cubic yard, which makes use of this technology cost prohibitive. This substantially raises the cost from the UW-Platteville report. Other costs not included in the Platteville report include costs for the return water line to Allen Creek from the disposal site, pipeline layout to the disposal site, pipeline road crossings, technical services, and contingencies. These costs are included in the costs in this report.

The City should be aware that the per cubic yard cost for hydraulic dredging would decrease if the disposal site was closer to the lake. A disposal site located 1 mile away or less would be ideal.

Inland Dredge shared other design issues:

- The dredge disposal area must have a berm capable of containing the full dredged quantity plus 50 to 75 percent more volume for water storage while maintaining a 2-foot freeboard from berm overtopping.
- The pumps will pump a mix consisting of 10 percent sediment and 90 percent water.
- Dredged materials disposed of on agricultural lands should be no more than approximately 10 to 12 inches deep to allow the farmer to till the dredged materials into the underlying topsoil.
- Dredged materials could be sold to a local business that could use the dredged materials in the products they sell (i.e.: potting soil, etc.).

B. Mechanical Dredge

Our review of the UW-Platteville report indicates that the unit cost used for hydraulic dredging of $3.50 per cubic yard is low. Calls to mechanical dredging contractors (RG Huston) indicate that the cost for mechanical dredging and disposal approximately 2.65 miles away would be on the order of $9 per cubic yard. This figure agrees with our own recent experience. This substantially raises the cost from the UW-Platteville report. In addition, the costs for dewatering/stream rerouting, site access road construction, and site access road removal in the UW-Platteville report appear to be low. The UW-

Platteville report indicates that the materials for the site access road construction are readily available at the construction site, so materials will not need to be purchased. It is unlikely this will be the case. Costs in this report reflect more realistic numbers for these items. The UW-Platteville report also doesn't include costs for technical services and contingencies.

C. Drawdown and Limited Hydraulic Dredge

One alternative suggested by the DNR is a focus on habitat creation. This alternative would be planned to be significantly less expensive than dredging the entire lake. The lake would be drawn down for a season, and lake sediments would be dredged in small areas to create some pools. Some areas would be filled with dredged sediments and planted with aquatic and wetland plantings. A drawdown would involve draining most of the water from the lake, which would kill most of the undesirable fish, allow for recolonization or rejuvenation of native aquatic plants, and help solidify soft sediments. The lake would become a restored habitat area to support a variety of wildlife. Nature trails or boardwalks could also be constructed later to view wildlife. Aesthetic value would still increase with this alternative as well as creation of wetland habitat, which are both goals of the SOLE committee. Canoeing, kayaking, and fishing would also be possible. The cost for this alternative includes dredging half of the sediment from the lake and planting the other half with wetland plantings. The sedimentation basin would be constructed as one of the dredged areas.

Preliminary Identification of Disposal Sites

Members of the SOLE committee were asked to investigate proposed spoils disposal sites. The SOLE committee obtained verbal permission for disposal of spoils from the owner of Templeton Farms with a combination of filling in an old quarry and land spreading on agricultural land. These agricultural fields total approximately 126 acres and are about 2.65 miles northwest of Lake Leota. The quarry has an approximate volume of around 50,000 cubic yards in which dredged materials might also be deposited. These locations are in T4N R10E Sections 8 and 9. The elevation change from the lake to the field is about 35 to 45 feet. The surface water elevation is about 905 feet amsl, and the elevation at Templeton Farms is from 940 to 950 feet amsl (above mean sea level).

Another potential agricultural field option would be the two fields directly north of the lake location in T4N R10E, NW ¼ Section 22 and SW ¼ of Section 15. These agricultural fields would provide a disposal area of 124 acres and are located approximately 0.85 miles north of Lake Leota. The elevation of these fields is between 940 and 950 feet amsl. No contact has been made with these two landowners by SOLE.

The potential disposal sites are shown on Figure 3.

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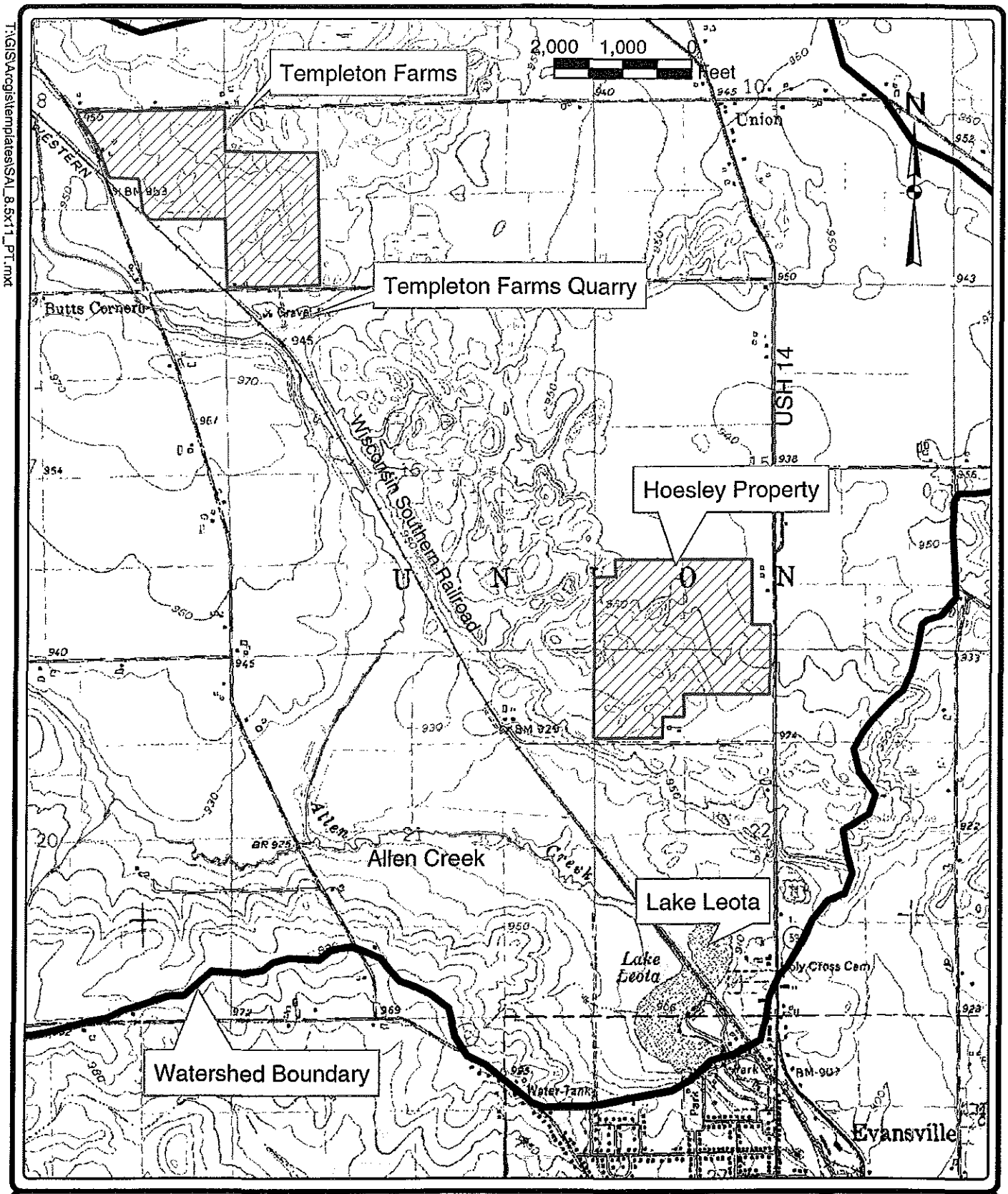

LAKE LEOTA
POTENTIAL DREDGING MATERIAL DISPOSAL SITES
LAKE LEOTA-LAKE DREDGING PLAN
CITY OF EVANSVILLE
EVANSVILLE, WISCONSIN

STRAND ASSOCIATES, INC.® ENGINEERS

FIGURE 3
1-354.003

Depth of Sediment (inches)	Area Required (acres)
3 in	650
6 in	325
10 in	195
1 ft	165

Table 3 Acres Required for Land Disposal for Sediment Depths (assuming 10% reduction in sediment volume after dewatering)

The DNR (Mike Halsted) has indicated that solid waste program will identify whether or not any solid waste regulations will apply to the selected disposal site.

Disposal site sediment depths are calculated in Appendix I and shown below in Table 3 assuming an estimated dredged sediment quantity of 290,000 cubic yards.

Typical land spreading applications would deposit approximately 10 to 12 inches of dredged spoils on top of agricultural land to allow for chisel plowing of the 10 to 12 inches of material into the native topsoil. However, we recommend application of about 5 to 6 inches maximum based on the available nitrogen in the sediments (Appendix A) and crop agronomic rates for Nitrogen.

Engineering Design Documents Needs Assessment

In order to go forward with completion of the dredging project, it is our recommendation that the City of Evansville enter into a contractual agreement with a design engineering firm to complete the final design and contract documents (specifications and drawings) for this project. This recommendation is based on the following:

1. Contract documents (specifications) will include a bid bond, construction performance and payment bonds, agreement, insurance, technical specifications, and other information that will serve to protect the City. The agreement will be a signed contract between the City and the Contractor that will define the procedures to be followed during construction. The specifications will contain the technical requirements that the Contractor will need to conform to during construction. The DNR doesn't require a professional engineer to stamp the dredging plans.

2. The UW-Platteville drawings and designed dredging plan can serve as the basis for the final contract plans. If the Drawdown and Limited Hydraulic Dredge option is chosen, then the dredging plan would need to be redesigned.

3. Since the DNR doesn't require a watershed study (although one is recommended to protect your investment), we feel that the watershed study/monitoring can proceed separately from the dredging project and can proceed at a pace as funds are available. The dredging project can proceed prior to and/or in conjunction with the watershed study.

As part of the final design and contract document preparation, the following information may need to be addressed. Costs for addressing these issues are included in the technical services and contingencies portion of the cost.

1. Topographical survey of the dredged materials disposal site. This may be needed to design and assess the feasibility of a dewatering area for the dredged materials and a restoration plan. If adequate topographical information is available from the county or other sources, it may be possible to use this instead.

2. Topographical survey of the pumping route to the disposal site. This is needed to assist in determining the conflicts and other issues associated with the selected route.

3. Topographical survey check of the UW-Platteville survey and design. We have obtained the digital survey and design drawings from the UW-Platteville and have received permission from Professor Max Anderson for use of these documents for construction. In lieu of this check, the Contract Documents could be written to require that the bidders satisfy themselves as to the existing topographic conditions prior to bidding.

4. Construction Easements will likely be needed for the pumping route and possibly the disposal site. These easements should be obtained directly by the City of Evansville.

5. Information on the "native" lake bottom (the bottom of the stream before the dam was built) including elevation and parent materials is needed. It may be possible to obtain this information from published maps and other materials or through sediment coring.

6. Information on stream flow and return water flow for hydraulic dredging to assess whether lake drawdown will occur or downstream flows will be impacted.

7. Soils testing at the disposal site areas may be necessary to assist in determining a stable berm cross section and depth to underlying sand and gravel soils. This was also a recommendation of the Owen Ayres report.

During construction, we recommend that the City hire an engineering consultant to observe the construction for conformance with the specifications and drawings and assist in the administering of the construction contract.

Funding Sources

Potential sources of funding for future Lake Leota efforts are listed below:

- River Management Grant (for watershed study)
- Lake Management Grant (for watershed study)
- Army Corp of Engineers Section 206 Program (Aquatic ecosystem restoration)
- State and Tribal Assistance Grant (STAG) or other special federal funding
- City Referendum

A funding source table is included in Appendix J.

Conclusions, Recommendations, and Schedule

This report has presented several alternatives for the City of Evansville to review and decide if they will address the committee's goals. Below is a summary of alternatives for Lake Leota:

A. <u>Summary of Dredging Alternatives</u>

- Mechanical dredging and long-term maintenance
- Hydraulic dredging and long-term maintenance
- Limited hydraulic dredging, drawdown, habitat creation, and long-term maintenance
- Do-nothing

We recommend consideration of two of the above alternatives for the City to pursue at this time: (1) hydraulic dredging and long-term maintenance or (2) limited dredging, drawdown, and habitat creation. This recommendation is based on the lower cost of these two alternatives and their ability to satisfy the City's dredging goals for Lake Leota.

Hydraulic dredging would be the desired method if the City chose to pursue the complete dredging option. Hydraulic dredging would eliminate the need to construct hauling roads and trucking on city streets.

The second option of limited dredging, drawdown, and habitat creation would focus on dredging key areas along with habitat creation for Lake Leota. The City's recreational use goals and swimming and fishing uses can still be achieved with this option, and it adds aesthetic value to the lake and community. Smaller beautification projects like wetland boardwalks could be coupled with this alternative or implemented later. This option was recommended by the DNR as a more economical option with a focus on wildlife. This type of project may be more suited for potential funding from the Army Corp of Engineers Section 206 program for aquatic ecosystem restoration.

Understanding the dynamics of the watershed, non-point source pollution, and sedimentation rates are key to developing a plan to improve the water quality and to provide for a successful dredging project. For either option, a watershed study is recommended to protect the City's substantial investment in improving Lake Leota.

The "do nothing" alternative was not seriously considered in this report because it fails to meet the City's and SOLE's dredging goals. However, if costs of dredging are considered prohibitive and/or grants cannot be obtained, it may be advisable for the community to reassess their goals and consider either a shallow lake with limited habitat creation, or dam removal and stream restoration, or simply continuing to do nothing.

B. Additional Recommendations

1. The City should approve the writing of two Lake Management grant applications for the watershed study to meet the August 1, 2004, grant application deadline. If these grant(s) are awarded, the August 1, 2004 grant cycle would have a grant award notification date in mid-September 2004, money available in mid-November 2004, and the watershed study would need to be completed approximately a year after work on the study has started.

2. The City should investigate and pursue funding opportunities for design and construction of the dredging project. In particular, the City should further investigate the Army Corp of Engineers Section 206 Program (aquatic ecosystem restoration) as well as the possibility of a City referendum to fund this project. When considering funding sources and amounts, the City should consider including costs that will allow the City to add some of the higher priority "Wish List" items to the dredging project.

3. The City should discuss the two recommended dredging options above to determine which option is most desirable to the City. Cost opinions should be refined as the focus to one plan is developed.

4. The City should investigate finding a dredged materials disposal site that is closer to the lake. This will bring the cost of dredging down.

5. The City should submit the locations of the disposal sites to the DNR for evaluation to determine if any solid waste regulations apply to a given disposal site.

6. The City should investigate the existence of local businesses that may be interested in buying and utilizing the dredged materials in the products they sell (i.e.: potting soil, etc.)

C. Additional Conclusions

According to Mike Halsted of the DNR, use of the upper lake through rerouting the creek and building a berm around the upper lake would add undue complexity and cost to the dredging project. We therefore conclude that use of the upper lake is not considered a feasible option.

D. Schedule

Table 4 presents a planning timeline that can be used by the City of Evansville to plan future efforts and track progress on this project.

Timeframe	Action
June – Sept. 2004	Determine desired alternative to meet the City's goals.
June and July 2004	Determine if the City will pursue a watershed study.
By August 1, 2004	Apply for two lake management grants for watershed study.
Fall 2004	Public meetings to gain further input and support from the City. Key if a referendum is planned.
November 2004	Begin watershed study if grants awarded.
November 2005	Complete watershed study if grants awarded
May 2005	Secure dredging project funding. Begin design. Start EA.
July 2005	Determine and finalize spoil site location and plan with land owner.
October 2005	Complete design documents. Apply for permits.
January 2006	Permits issued.
January 2006	Advertise for bids.
February 2006	Open Bids.
March 2006	Begin Dredging Construction Project.
September 2006	End Dredging Construction Project.
Long Term	Maintenance of Sedimentation Basin and Implementation of watershed study recommendations.

Table 4 Planning Timeline

Please call if you have any questions.

Sincerely,

STRAND ASSOCIATES, INC.

Jon H. Lindert/JMC
Jon H. Lindert, P.E.

Jane M. Carlson
Jane M. Carlson, P.E.

Enclosures

cc: Troy Larson

JMC:JHL:pll\\S:\@Sai\351--400\354\003\Wrd\Letter Report\Report.doc

Appendix A

Sediment Sample Results

State of Wisconsin \ DEPARTMENT OF NATURAL

WISCONSIN
DEPT. OF NATURAL RESOURCES

www.dnr.state.wi.us
www.wisconsin.gov

Quality Natural Resources Management
Through Excellent Customer Service

2514 Morse Street
Janesville, Wisconsin 53545
Telephone 608-743-4820
FAX 608-743-4801
TTY 608-743-4808

Jim Doyle, Governor
Scott Hassett, Secretary
Ruthe E. Badger, Regional Director

March 25, 2003

Jim Turner
510 South Madison Street
Evansville, WI 53536

Subject: Lake Leota Dredging Analyses

Dear Mr. Turner:

The Department has evaluated the sediment sample analysis taken from Lake Leota. Based on the results provided it does not appear that additional sampling will be required. Your next step is to officially apply for a permit under 30.20, Wisconsin Statutes which should include the final plans, including the dredge method selected and the area where the spoils will disposed. Under no circumstances can the spoils be disposed of in wetland areas. Once your disposal plans have been provided, I will be have the solid waste program identify whether or not any solid waste regulations will apply. You may also be required to obtain a WPDES permit, this will depend on the methods you use to dredge. For more information regarding the WPDES program contact Tom Harpt at (608) 275-3285.

If you have questions regarding the above determination, contact me at (608) 743-4820.

Sincerely,

Mike Halsted
Water Management Specialist

1-1-3

University of Wisconsin–Madison/Extension

Soil & Plant Analysis Laboratory
Soil Science Department
5711 Mineral Point Road
Madison, Wisconsin 53705-4453
Phone (608) 262-4364
FAX (608) 263-3327
http://uwlab.soils.wisc.edu

College of Agricultural and Life Sciences

Date: February 6, 2003
Lab No: 5130
Acct. No: 557875

TO: Jim Turner
510 S. Madison St.
Evansville, WI 53536

FROM: John D. Parsen, Lab Manager
Soil & Plant Analysis Lab

RE: 5 lake sediment samples submitted January 24, 2003

We are enclosing the results of your samples.
If you have any questions please let us know.

Thank you.

JDP:jjh
Enclosures

P2-3

Soil and Plant Analysis Lab
Univ. of Wisconsin-Madison
5711 Mineral Point Road
Madison, WI 53705-4453

Phone (608)262-4364
Fax (608)263-3327
http://uwlab.soils.wisc.edu/

Lab No. 5130 Acct. No. 557875

Client- Jim Turner
510 S. Madison St.
Evansville, WI 53536

Re: 5 lake sediments submitted January 24, 2003
Results mailed: February 6, 2003

Unit: ppm = mg/kg = mg/liter. 1% = 10,000 ppm.

Total Minerals

Sample ID	P %	K %	Ca %	Mg %	S %	Zn ppm	B ppm	Mn ppm	Fe ppm	Cu ppm	Al ppm	Na ppm
1	0.10	0.08	2.80	0.57	0.10	68.56	69.99	465.23	13813.83	38.51	9025.66	47.67
2	0.10	0.09	4.27	0.55	0.16	79.34	67.57	466.53	16281.62	39.62	11544.38	47.02
3	0.08	0.09	5.70	0.55	0.16	80.56	67.03	467.95	16662.78	39.78	12166.26	58.31
4	0.09	0.11	5.41	0.54	0.14	88.36	64.82	540.30	18765.42	41.97	14275.78	56.83
5	0.09	0.12	5.98	0.58	0.14	89.43	70.49	551.98	19134.23	41.74	15798.54	71.48

Heavy Metals

Sample ID	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm	Li ppm
1	10.2	<3	26.7	38.5	13813.8	465.2	24.5	<5	32.7	68.6	<0.2
2	11.7	<3	29.2	39.6	16281.6	466.5	19.9	<5	34.8	79.3	0.5
3	9.6	<3	23.4	39.8	16662.8	468.0	88.8	<5	33.5	81.0	1.4
4	12.2	<3	27.3	42.0	18765.4	540.3	18.5	<5	37.6	88.4	3.2
5	10.7	<3	21.5	41.7	19134.2	552.0	17.9	<5	34.6	89.4	4.6

Sample ID	NH_4-N ppm	NO_3-N ppm	Solids %	Moisture %
1	128.2	1.2	47.7	52.3
2	166.9	1.1	48.7	51.3
3	113.2	0.9	46.3	53.7
4	188.9	1.1	46.2	53.8
5	175.5	1.3	43.6	56.4

Sample ID	pH	O.M. %	P ppm	K ppm
1	7.8	5.9	2	75
2	7.8	5.5	2	73
3	7.9	5.5	1	77
4	7.9	5.1	2	87
5	7.9	4.9	2	88

P3-3

SPAL Physical Report

Turner

Soil And Plant Analysis Lab
University Of Wisconsin-
Madison/Extension
College of Agriculture and Life Science
5711 Mineral Point Rd
Madison WI 53705
Phone (608) 262-4364

Account ID 557875

Lab ID 5130 Date Received Friday, January 24, 2003

Sample ID	% Sand	% Silt	% Clay	Soil Texture
S1	21	59	20	Silt Loam
S2	6	71	23	Silt Loam
S3	1	73	26	Silt Loam
S4	1	68	31	Silty Clay Loam
S5	1	67	32	Silty Clay Loam

University of Wisconsin–Madison/Extension

Soil & Plant Analysis Laboratory
Soil Science Department
5711 Mineral Point Road
Madison, Wisconsin 53705-4453
Phone (608) 262-4364
FAX (608) 263-3327
http://uwlab.soils.wisc.edu

College of Agricultural and Life Sciences

Date: February 27, 2003
Lab No: 5130
Acct. No: 557875

TO: Jim Turner, S.O.L.E.
510 S. Madison St.
Evansville, WI 53536

FROM: John D. Parsen, Lab Manager
Soil & Plant Analysis Lab

RE: 5 lake sediment samples submitted January 24, 2003

We have changed the report to have new headings for the Phosphorus and Potassium (ppm. They are now Available P and Available K.

We have included the Soil Test Reports for your lake sediments.

If you have any questions please let us know.

Thank you.

JDP:jjh

Samples Analyzed By:
UW Soil & Plant Analysis Lab
5711 Mineral Point Road
Madison, WI 53705

SOIL TEST REPORT

UW-SPAL eRFS 2.0.1

University of Wisconsin-Extensic
University of Wisconsin-Madisc
Soils Department, Madison, V

Results also available on-line at http://uwlab.soils.wisc.edu
lab number: 5130 access code: 64fs

B-NO. 5130
County Account No.
Dane 557875
Received Date Processed
1/24/2003 2/27/2003

Jim Turner
S.O.L.E., 510 S. Madison St.
Evansville, WI 53536

This Report is for:
Jim Turner S.O.L.E.
510 S. Madison St.
Evansville,WI 53536

Field Id 1
slope: 0%
0
Soil Name (or subsoil group)
unknown
Depth
1

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	P_2O_5	K_2O	Fertilizer Credit Legume N	Manure N	P_2O_5	K_2O	Nutrients to Apply N	P_2O_5	K_2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Miscellaneous	n/a										
(no crop)											
(no crop)											
(no crop)											

The lime required for this rotation to reach pH 0.0 is 0 T/a of 60-69 lime or 0 T/a of 80-89 lime.

ADDITIONAL INFORMATION

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.
Because of the low potassium buffering capacity of this soil, retest every 2 years.
The nitrogen recommendation should be applied in sidedressed or split application on sandy soils.

A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spri

A soil nitrate test may better estimate actual corn N nee

If conservation tillage leaves more than 50% residue cc when corn follows after corn, add an additional 30 N lbs

If alfalfa will be maintained for more than three years, increase recommended K_2O by 20% each year.

TEST INTERPRETATION

Cropping Sequence	Very Low	Low	Optimum	High	Very High	Excessive
Miscellaneous						
(no crop)						
(no crop)						
(no crop)						

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M. %	Phosphorus ppm	Potassium ppm	Calcium ppm	Magnesium ppm	Estimated CEC	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm	Sulfur Avail. Index	LAB USE Texture Code	Sample Density	Buffer Code	
1	7.8	5.9	2	75									1	1.18	N.R.	
Adjusted Avg.	7.8	5.9	2	75												

SECONDARY & MICRONUTRIENT RECOMMENDATIONS

Recommendations based on A2809 Soil Test Recommendations for Field, Vegetable, and Fruit Crops
page 1 for field '1'

Farmer's Copy

mples Analyzed By:
UW Soil & Plant Analysis Lab
5711 Mineral Point Road
Madison, WI 53705

SOIL TEST REPORT

UW-SPAL eRFS 2.0.1

University of Wisconsin-Extensio
University of Wisconsin-Madiso
Soils Department, Madison, W

Results also available on-line at http://uwlab.soils.wisc.edu
lab number: 5130 access code: 64fs

B NO. 5130

y Account No.
Dane 557875

Received Date Processed
1/24/2003 2/27/2003

Jim Turner
S.O.L.E., 510 S. Madison St.
Evansville, WI 53536

This Report is for:
Jim Turner S.O.L.E.
510 S. Madison St.
Evansville,WI 53536

d 2
slope: 0%
0

Name (or subsoil group)
unknown

Depth
1

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	P_2O_5	K_2O	Fertilizer Credit Legume N	Manure N	P_2O_5	K_2O	Nutrients to Apply N	P_2O_5	K_2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Miscellaneous	n/a										
(no crop)											
(no crop)											
(no crop)											

The lime required for this rotation to reach pH 0.0 is 0 T/a of 60-69 lime or 0 T/a of 80-89 lime.

ADDITIONAL INFORMATION

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.

A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spri

A soil nitrate test may better estimate actual corn N nee

If conservation tillage leaves more than 50% residue co when corn follows after corn, add an additional 30 N lbs

If alfalfa will be maintained for more than three years, increase recommended K_2O by 20% each year.

TEST INTERPRETATION

Cropping Sequence	Very Low	Low	Optimum	High	Very High	Excessive
Miscellaneous						
(no crop)						
(no crop)						
(no crop)						

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M. %	Phosphorus ppm	Potassium ppm	Calcium ppm	Magnesium ppm	Estimated CEC	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm	Sulfur Avail. Index	LAB USE Texture Code	Sample Density	Buffer Code	
2	7.8	5.5	2	73									2	1.18	N.R.	
ljusted Avg.	7.8	5.5	2	73												

SECONDARY & MICRONUTRIENT RECOMMENDATIONS

Recommendations based on A2809 Soil Test Recommendations for Field, Vegetable, and Fruit Crops
page 1 for field '2'

Farmer's Copy

Samples Analyzed By:

UW Soil & Plant Analysis Lab
5711 Mineral Point Road
Madison, WI 53705

SOIL TEST REPORT

UW-SPAL eRFS 2.0.1

University of Wisconsin-Extensio
University of Wisconsin-Madiso
Soils Department, Madison, W

Results also available on-line at http://uwlab.soils.wisc.edu
lab number: 5130 access code: 64fs

S-NO: 5130
Account No.
Dane 557875

Jim Turner
S.O.L.E., 510 S. Madison St.
Evansville, WI 53536

This Report is for:

Jim Turner S.O.L.E.
510 S. Madison St.
Evansville,WI 53536

Received Date Processed
1/24/2003 2/27/2003

Id 3
slope: 0%
0

l Name (or subsoil group)
unknown

Depth
1

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	Crop Nutrient Need P_2O_5	Crop Nutrient Need K_2O	Fertilizer Credit Legume N	Fertilizer Credit Manure N	Fertilizer Credit P_2O_5	Fertilizer Credit K_2O	Nutrients to Apply N	Nutrients to Apply P_2O_5	Nutrients to Apply K_2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Miscellaneous	n/a										
(no crop)											
(no crop)											
(no crop)											

The lime required for this rotation to reach pH 0.0 is 0 T/a of 60-69 lime or 0 T/a of 80-89 lime.

ADDITIONAL INFORMATION

N.R.=Not required for calculation of lime requirement when soil pH is 6.6 or higher.

A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the spri

A soil nitrate test may better estimate actual corn N nee

If conservation tillage leaves more than 50% residue co when corn follows after corn, add an additional 30 N lbs

If alfalfa will be maintained for more than three years, increase recommended K_2O by 20% each year.

TEST INTERPRETATION

Cropping Sequence	Very Low	Low	Optimum	High	Very High	Excessive
Miscellaneous						
(no crop)						
(no crop)						
(no crop)						

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M. %	Phosphorus ppm	Potassium ppm	Calcium ppm	Magnesium ppm	Estimated CEC	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm	Sulfur Avail. Index	LAB USE Texture Code	Sample Density	Buffer Code	
3	7.9	5.5	1	77									2	1.18	N.R.	
ljusted Avg.	7.9	5.5	1	77												

SECONDARY & MICRONUTRIENT RECOMMENDATIONS

Farmer's Copy

amples Analyzed By:

UW Soil & Plant Analysis Lab
5711 Mineral Point Road
Madison, WI 53705

SOIL TEST REPORT

UW-SPAL eRFS 2.0.1

University of Wisconsin-Extensic
University of Wisconsin-Madisc
Soils Department, Madison, V

Results also available on-line at http://uwlab.soils.wisc.edu
lab number: 5130 access code: 64fs

B NO. 5130

y Account No.
Dane 557875

Received Date Processed
1/24/2003 2/27/2003

Jim Turner
S.O.L.E., 510 S. Madison St.
Evansville, WI 53536

This Report is for:

Jim Turner S.O.L.E.
510 S. Madison St.
Evansville,WI 53536

ld 4
slope: 0%
0

il Name (or subsoil group)
unknown

Depth
1

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	P_2O_5	K_2O	Legume N	Fertilizer Credit Manure N	P_2O_5	K_2O	Nutrients to Apply N	P_2O_5	K_2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Miscellaneous	n/a										
(no crop)											
(no crop)											
(no crop)											

The lime required for this rotation to reach pH 0.0 is 0 T/a of 60-69 lime or 0 T/a of 80-89 lime.

ADDITIONAL INFORMATION

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A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.

Starter fertilizer (e.g. 10+20+20 lbs $N+P_2O_5+K_2O$/a) is advisable for row crops on soils slow to warm in the spr

A soil nitrate test may better estimate actual corn N nee

If conservation tillage leaves more than 50% residue c when corn follows after corn, add an additional 30 N lb

If alfalfa will be maintained for more than three years, increase recommended K_2O by 20% each year.

TEST INTERPRETATION

Cropping Sequence	Very Low	Low	Optimum	High	Very High	Excessive
Miscellaneous						
(no crop)						
(no crop)						
(no crop)						

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M. %	Phosphorus ppm	Potassium ppm	Calcium ppm	Magnesium ppm	Estimated CEC	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm	Sulfur Avail. Index	LAB USE Texture Code	Sample Density	Buffer. Code	
4	7.9	5.1	2	87									2	1.18	N.R.	
djusted Avg.	7.9	5.1	2	87												

SECONDARY & MICRONUTRIENT RECOMMENDATIONS

Farmer's Copy

Samples Analyzed By:
UW Soil & Plant Analysis Lab
5711 Mineral Point Road
Madison, WI 53705

SOIL TEST REPORT

UW-SPAL eRFS 2.0.1

University of Wisconsin-Extens
University of Wisconsin-Madi
Soils Department, Madison,

Results also available on-line at http://uwlab.soils.wisc.edu
lab number: 5130 access code: 64fs

LAB NO. 5130
nty Account No.
Dane 557875
e Received Date Processed
1/24/2003 2/27/2003

Jim Turner
S.O.L.E., 510 S. Madison St.
Evansville, WI 53536

This Report is for:
Jim Turner S.O.L.E.
510 S. Madison St.
Evansville,WI 53536

eld 5
slope: 0%
ps 0
oil Name (or subsoil group)
unknown
v Depth
1

NUTRIENT RECOMMENDATIONS

Cropping Sequence	Yield Goal	Crop Nutrient Need N	Crop Nutrient Need P_2O_5	Crop Nutrient Need K_2O	Fertilizer Credit Legume N	Fertilizer Credit Manure N	Fertilizer Credit P_2O_5	Fertilizer Credit K_2O	Nutrients to Apply N	Nutrients to Apply P_2O_5	Nutrients to Apply K_2O
	per acre	lbs/a			lbs/a	lbs/a			lbs/a		
Miscellaneous	n/a										
(no crop)											
(no crop)											
(no crop)											

The lime required for this rotation to reach pH 0.0 is 0 T/a of 60-69 lime or 0 T/a of 80-89 lime.

ADDITIONAL INFORMATION

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A lime recommendation is calculated only when soil pH is more than 0.2 units below the optimum pH.

Starter fertilizer (e.g. 10+20+20 lbs N+P_2O_5+K_2O/a) is advisable for row crops on soils slow to warm in the sp

A soil nitrate test may better estimate actual corn N ne

If conservation tillage leaves more than 50% residue when corn follows after corn, add an additional 30 N li

If alfalfa will be maintained for more than three years, increase recommended K_2O by 20% each year.

TEST INTERPRETATION

Cropping Sequence	Very Low	Low	Optimum	High	Very High	Excessiv
Miscellaneous						
(no crop)						
(no crop)						
(no crop)						

LABORATORY ANALYSIS

Sample Identification	Soil pH	O.M. %	Phosphorus ppm	Potassium ppm	Calcium ppm	Magnesium ppm	Estimated CEC	Boron ppm	Manganese ppm	Zinc ppm	Sulfate-Sulfur ppm	Sulfur Avail. Index
5	7.9	4.9	2	88								
Adjusted Avg.	7.9	4.9	2	88								

LAB USE

Texture Code	Sample Density	Buffer Code	
2	1.10	N.R.	

SECONDARY & MICRONUTRIENT RECOMMENDATIONS

Recommendations based on A2809 Soil Test Recommendations for Field, Vegetable, and Fruit Crops
page 1 for field '5'

Farmer's Copy

Appendix B

Watershed Modeling Proposed Approach

APPENDIX B
WATERSHED MODELING PROPOSED APPROACH

We propose to complete the Lake Leota Watershed Study in two phases. Phase I will include the identification of potential source areas of point and nonpoint source pollutants through field investigation and screening-level modeling. Phase II will evaluate the impact of Best Management Practices (BMPs) on sedimentation rates for Lake Leota and evaluate potential grant and loan opportunities for plan implementation. The study phases are discussed in greater detail below.

Adequate funding is crucial to the success of the Lake Leota watershed study. Funding, in the form of both grants and loans, may be available from several governmental sources including the following:

- Wisconsin Department of Natural Resources (DNR)
- Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP)
- US Environmental Protection Agency (USEPA)
- US Fish & Wildlife Service (USFWS)
- US Army Corps of Engineers (USACE)
- US Department of Agriculture (USDA)

Eligible recipients include local governments, nongovernmental organizations, and individual citizens. Stakeholders groups such as SOLE can help show local support for projects, increasing the likelihood of funding from governmental agencies.

Phase I

The first objective in Phase I of the Lake Leota Watershed Study is to identify the locations of potential source areas of nonpoint source pollutants in the watershed. SOLE members and other volunteers may help complete this task as part of in-kind services for cost-sharing of various grant programs. Volunteers, staff, engineers, and scientists would walk along the main channels in the watershed documenting areas of streambank erosion and agricultural land appearing to be subject to erosion. A log of digital photos linked to aerial photos using Geographic Information Systems (GIS) software would further document current conditions in the Lake Leota watershed.

Screening-level computer modeling would be included as part of Phase I to help identify potential source areas for sediment in the watershed based primarily on land use. The computer model PLOAD is part of the BASINs suite of models developed by the USEPA to analyze water quality. PLOAD is a GIS-based model that calculates pollutant loads, including total suspended solids, for watersheds. PLOAD is a tool that estimates the nonpoint source pollutant loads on an annual average basis. PLOAD can also be employed to estimate the effect of BMPs on pollutant loads. Data required for the computer modeling could be obtained from several sources, including site visits, coordination with County conservation agents, DNR, and USGS.

Phase II

Phase II will assess the best mix of BMPs to be used at critical locations in the watershed. Examples of BMPs to be investigated may include the use of conservation tilling and no-till instead of conventional plowing, the implementation of buffer strips along streambanks, and streambank restoration to reduce the instream contribution to the sediment load. The existing conditions PLOAD model will be modified to incorporate BMPs throughout the contributing watershed to Lake Leota. The models comparing BMPs will help determine the relative benefits of different practices on sediment loading to Lake Leota. County conservation agents, and potentially key landowners, would also be interviewed to solicit their opinions about the most feasible BMPs for specific landowners or sites.

Phase II of this assessment will include an analysis of programs that can provide funding and technical assistance to individual property owners. We anticipate that SOLE could then work with the targeted property owners to obtain funding and implement recommended BMPs. Likely sources of funding for this work would include the Targeted Runoff Management (TRM) Program through the DNR for small-scale, short-term projects to control nonpoint pollution and the Land and Water Resource Management Cost-Share Program through DATCP for soil conservation and water quality practices.

A brief report would be prepared at the end of each phase documenting Phase I and II activities and recommendations. The SOLE committee could then facilitate outreach to the landowners to educate them on the results of the modeling, benefits of the BMPs, and potential funding sources. These in-kind activities by the committee would help satisfy the local cost share for the grant program(s).

Additional information may be available from the DNR in the future. The DNR is in the early stages of planning a Total Maximum Daily Load (TMDL) for the Pecatonica-Sugar River Basin. We anticipate that the Lake Leota watershed will be part of this study. The DNR may undertake a monitoring effort to provide better information as part of this study and will likely include sediment and phosphorus as study parameters.

It appears that two phases of the Lake Leota Watershed Study could be completed for a fee between $25,000 and $30,000.

Appendix C

Blank Chapter 30 Permit Application for Lake Dredging

State of Wisconsin
Department of Natural Resources

APPLICATION FOR LAKE DREDGING
Form 3500-53I (R 1/2002)

The Wisconsin Department of Natural Resources helps protect your rights in public waters as well as public safety, by ensuring adequate planning and design of projects affecting fish and wildlife habitat, water quality and natural scenic beauty. This is done through permit and plan approval requirements for individual water projects. Chapters 30 and 31 of the Wisconsin Statutes require written permits for certain activities on or near a waterway: for example, to place any material below the ordinary high water mark (such as rock riprap, fish cribs, culverts, fords, etc.); to construct a bridge, dredge material from a lake or stream; create a pond; or to construct, operate, or maintain a dam. A single pier or wharf can generally be placed without a permit, provided state standards are met; more extensive piers or marinas require a permit.

Before submitting this application for a lake dredging permit, please contact your county, city or village zoning department to find out if your project site is in either a mapped wetland or floodplain and if local zoning restrictions could affect your project. Please see the Wetland Information topic (found in the Waterway and Wetland Permits Web Page) or request Wetland Packet #20 in addition to this packet for details.

A complete application with detailed drawings will help us make a decision about your application for a permit. The following information is necessary for a complete application.

To help us make a decision in the shortest time possible, please submit the following information:

1. **A copy of your deed or similar proof of ownership** (e.g. land contract, current property tax receipt).

2. **Good photographs that clearly show the existing project area.** Remember, too much snow cover or vegetation may obscure important details. If possible, have another person stand near the project area for size reference.

3. **Five (5) copies of a completed application Form 3500-53 including applicant information page and project plans.** When completing your application, **please use a ballpoint pen with black ink.** The site location sketch and plan drawings (see Sample Drawing) should be clear and to scale and have enough detail to find the site and understand the project proposal. **Please follow the sample drawing and information requirements pages attached. Also, make sure your phone number (both business and home) and property address or fire number is on the application. Plans may be submitted on a separate page(s), but please submit five (5) copies.**

4. **Five (5) copies of a narrative description of your proposal,** on a separate blank page. Please state:
   - what the project is,
   - how you intend to carry out the project, including methods, materials and equipment,
   - your proposed construction schedule and sequence of work,
   - what temporary and permanent erosion control measures will be used, and
   - the location of any disposal area for dredged or excavated materials.

5. **Five (5) copies of site maps.** Provide copies of relevant maps (when possible), such as USGS topographic map, Wisconsin Wetland Inventory map, FEMA floodplain maps, soil or zoning maps, with the project location clearly identified.

6. **The appropriate application fee (complete Form 3500-53A).**

If you have questions or problems in filling out or completing the application requirements, please call or contact the Water Management Specialist for the county where your project is located.

When you are finished compiling your application materials, remember to check your application for completeness. Then make copies of all materials so that you can submit **five copies** of the requested information to the Department. We also recommend that you keep a complete copy for your own records. Remember, incomplete applications may cause a delay in processing.

NOTE: Depending upon the type, complexity, and location of your proposed project, **processing can take 60 working days (3 months) or longer to complete a review, public notice and any required environmental analysis if your application is completed in detail.**

State of Wisconsin
Department of Natural Resources

APPLICATION FOR LAKE DREDGING
Form 3500-53I (R 1/2002)

Thank you for contacting the Wisconsin Department of Natural Resources.
Enclosed are the project application materials you have requested.

Lake Dredging Information Requirements

All applications to remove material from a lakebed require the following information, on the application form and plan drawing sheet supplied or additional sheets if necessary.

1. In the **"proposed materials"** box, indicate what equipment and method of excavation will be used. The application must contain a description of the sequence of construction events including the installation of temporary and permanent erosion control measures and final landscaping and stabilization measures for the spoil disposal area.

2. In the **"location sketch"** box, sketch or trace a map that clearly indicates the location of the project. Recommended scale is 1" = 2000'. The map should enable the Department investigator to locate the project site.

3. The **top view** should include the following information:

   a. The location of the shoreline and the location of the cross-section.
   b. The proposed dredge area.
   c. The spoil disposal area. NOTE: If spoils are to be hauled from the site for disposal, provide a map showing where disposal will occur.
   d. Floodplain and wetland boundary.
   e. Depth contours up to the limit of the proposed dredging.
   f. The scale of the top view and a north arrow.

Note: Spoil disposal is not allowed in wetlands or floodplains.

4. The **cross-section view** of the project should be selected approximately perpendicular to the lake and include the following:

   a. The normal water level in the lake.
   b. A profile of the existing bottom and the proposed dredged bottom.
   c. The scale or dimensions of the drawing.

5. Proper erosion control measures, including the use of staked hay bales and silt fencing, must be used and maintained during and after the construction of this project. All erodible areas must be immediately seeded and mulched with a fast growing grass mixture. This grass seed mixture must become established and stabilize all erodible areas. These erosion control measures must adequately protect the waterway and wetlands from erosion and run-off.

Please select the scale of the drawing carefully to fit all the necessary information on the application form. If necessary, use additional sheets. Be sure to draw all the plans as accurately as possible. The Department may require additional information to evaluate the project.

Please send the completed application to the Water Management Specialist for the county where your project is located (a complete listing of addresses by county can be found on the Waterway and Wetland Permits web page link below).

http://www.dnr.state.wi.us/org/water/fhp/waterway/wmscoun.htm

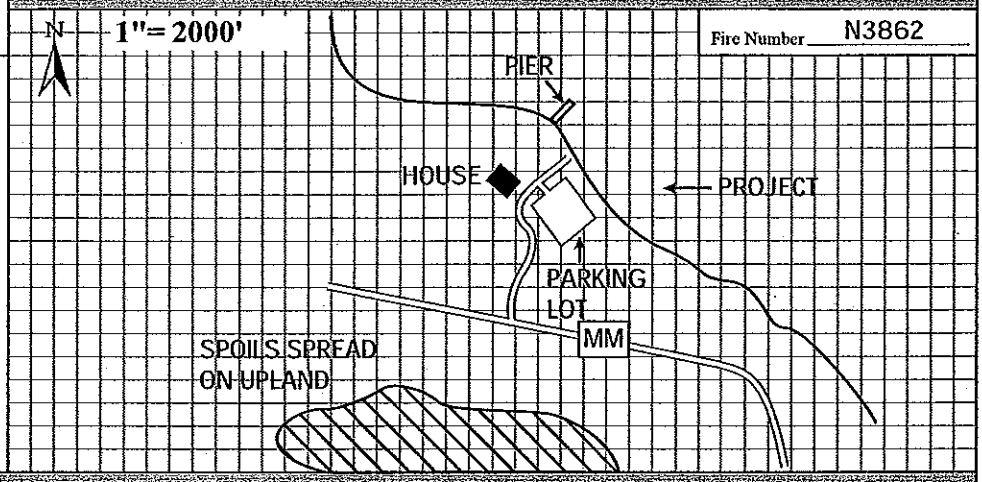
DRAWINGS OF PROPOSED ACTIVITY SHOULD BE PREPARED IN ACCORDANCE WITH SAMPLE DRAWING

Proposed Materials

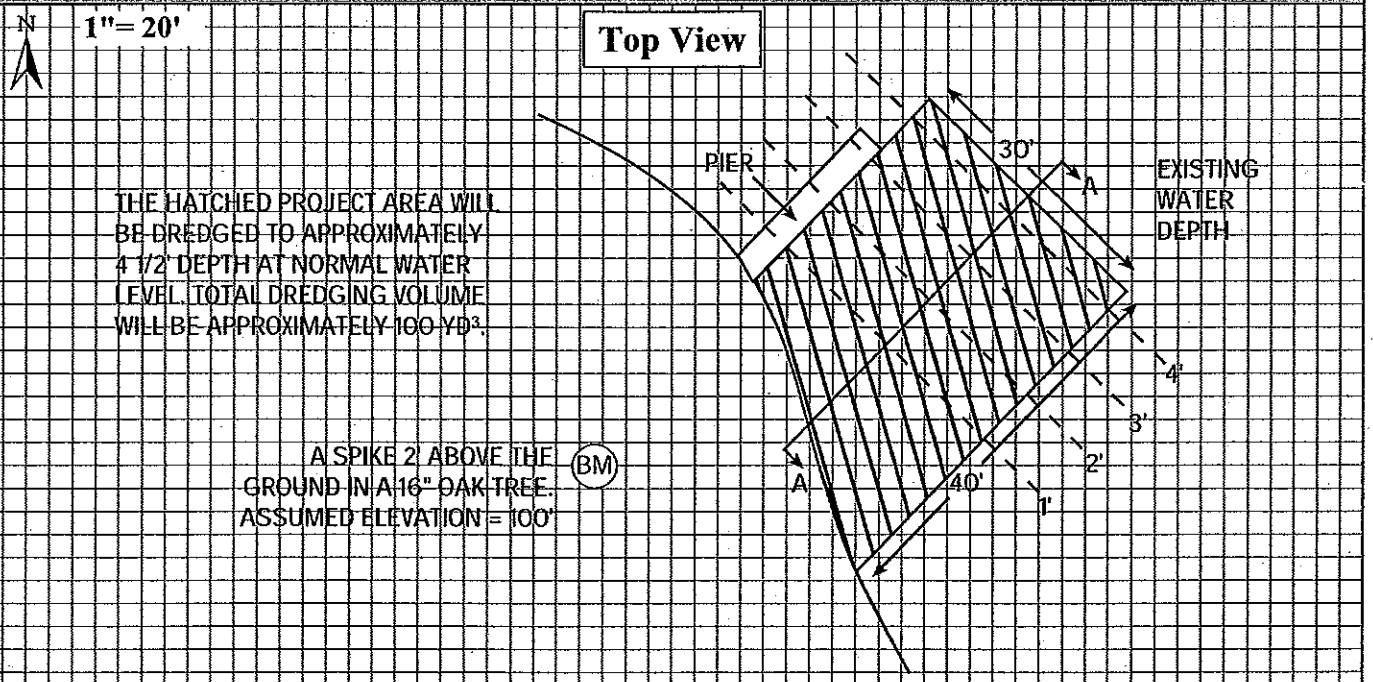
Excavation will be by clamshell dredge. Spoils will be hauled off site to an upland location. Totaldredge volume is approximately 100 cubic yards.

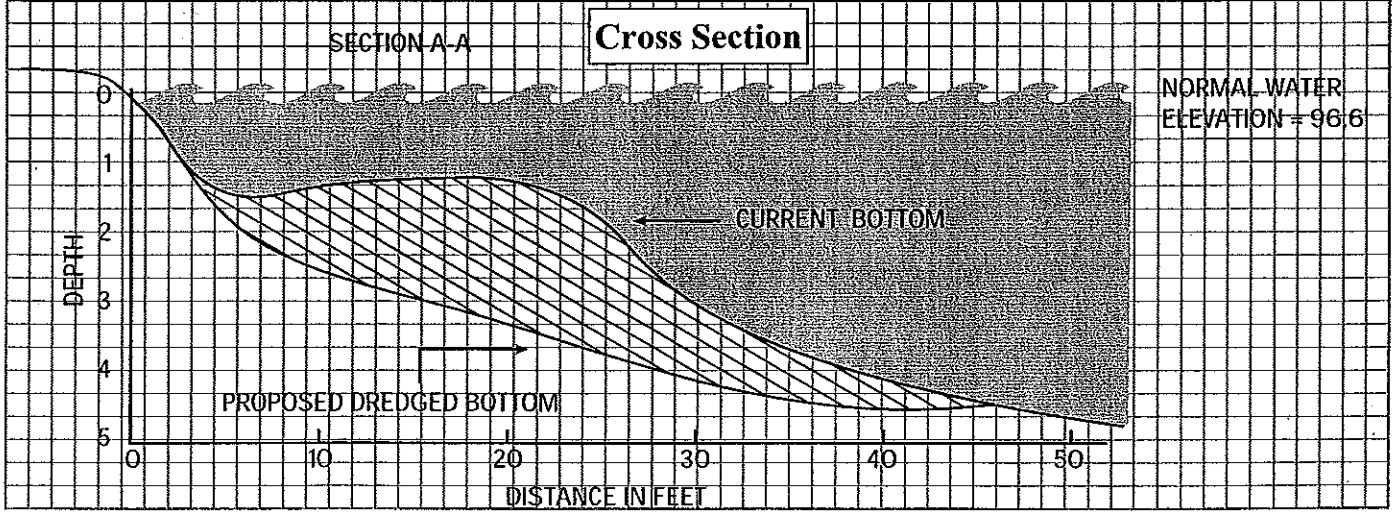
Location Sketch (Indicate scale.) Show route to project site; include nearest main road and crossroad.

LAKE DREDGING SAMPLE DRAWING



Project Plans. (Include top view and typical cross sections. Clearly identify features and dimensions or indicate scale.) Use additional sheets if necessary.





State of Wisconsin
Department of Natural Resources
(Return to appropriate DNR Regional/Service Center Office)

State / Federal Application for Water Regulatory Permits and Approvals

Form 3500-053 (R 4/01)

PLEASE COMPLETE BOTH PAGES 1 & 2 OF THIS APPLICATION. PRINT OR TYPE. The Department requires use of this form for any application filed pursuant to Chapter 30, Wis. Stats. The Department will not consider your application unless you complete and submit this application form. Personally identifiable information on this form will not be used for any other purpose, but it must be made available to requesters under Wisconsin's open records law [s. 19.31-19.39, Wis. Stats.].

1. Applicant (Individual or corporate name)

Address

City, State, Zip Code | Fire Number

Telephone No. (Include area code) | Tax Parcel Number

2. Agent/Contractor (firm name)

Address

City, State, Zip Code

Telephone No. (Include area code)

3. If applicant is not owner of the property where the proposed activity will be conducted, provide name and address of owner and include letter of authorization from owner. Owner must be the applicant or co-applicant for structure, diversion and stream realignment activities.

Owner's Name | Address | City, State, Zip Code

4. Is the applicant a business? ☐ Yes ☐ No

If YES, is the permit or approval you are applying for necessary for you to conduct this business in the State of Wisconsin?

☐ Yes ☐ No

If YES, please explain why (attach additional sheets if necessary):

5. Project Location

Address _____

Village/City/Town _____

Fire Number _____ Tax Parcel Number _____

Waterway _____

County _____

Govt. Lot _____ OR _____1/4, _____1/4, of Section _____,

Township _____North, Range _____ (East) (West)

6. Adjoining Riparian (Neighboring Waterfront Property Owner) Information

Name of Riparian #1 | Address | City, State, Zip Code

Name of Riparian #2 | Address | City, State, Zip Code

7. Project Information (Attach additional sheets if necessary)

(a) Describe proposed activity (include how this project will be constructed)

(b) Purpose, need and intended use of project

(c) I have applied for or received permits from the following agencies: (Check all that apply)

☐ Municipal ☐ County ☐ Wis. DNR ☐ Corps of Engineers

(d) Date activity will begin if permit is issued _____; be completed: _____.

(e) Is any portion of the requested project now complete? ☐ Yes ☐ No

If yes, identify the completed portion on the enclosed drawings and indicate here the date activity was completed:

I hereby certify that the information contained herein is true and accurate. I also certify that I am entitled to apply for a permit, or that I am the duly authorized representative or agent of an applicant who is entitled to apply for a permit. Any inaccurate information submitted may result in permit revocation, the imposition of a forfeiture(s) and requirement of restoration.

Signature of Applicant(s) or Duly Authorized Agent | Date Signed

LEAVE BLANK - FOR RECEIVING AGENCY USE ONLY

Corps of Engineers Process No.	Wisconsin DNR File No.	
Received By	Date Received	Date Application Was Complete

Drawings of proposed activity should be prepared in accordance with sample drawing.

Proposed Materials

Location Sketch (Indicate scale)
Show route to project site: include nearest main road and crossroad.

N 1" = ft.

Fire Number _____

Project Plans (Include top view and typical cross sections. Clearly identify features and dimensions or indicate scale.)
Use additional sheets if necessary.

N 1" = ft.

Top View

Cross Section

Appendix D

Environmental Assessment Forms

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED
FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)
Form 1600-1 Rev. 3-87

Department of Natural Resources (DNR)

Region or Bureau
Type List Designation

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m., _____.
(date)

Contact Person:
Title:
Address:
Telephone Number

Applicant: _____

Address: _____

Title of Proposal: _____

Location: County _____ City/Town/Village _____

Township Range Section(s) _____

PROJECT SUMMARY

1. General Description (brief overview)

Insert Text

2. Purpose and Need (include history and background as appropriate)

Insert Text

3. Authorities and Approvals (list local, state and federal permits or approvals required)

Insert Text

4. Estimated Cost and Funding Source

Insert Text

PROPOSED PHYSICAL CHANGES (More fully describe the proposal)

5. Manipulation of Terrestrial Resources (include relevant quantities - sq. ft.,

cu. yard., etc.)

Insert Text

6. Manipulation of Aquatic Resources (include relevant quantities - cfs., acre feet, MGD, etc.)

Insert Text

7. Buildings, Treatment Units, Roads and Other Structures (include size of facilities, road miles, etc.)

Insert Text

8. Emissions and Discharges (include relevant characteristics and quantities)

Insert Text

9. Other Changes

Insert Text

10. Identify the maps, plans and other descriptive material attached

Attachment ___ County map showing the general area of the project
Attachment ___ USGS topographic map
Attachment ___ Site development plan
Attachment ___ Plat map
Attachment ___ DNR county wetlands map
Attachment ___ Zoning map
Attachment ___ Other

AFFECTED ENVIRONMENT (Describe existing features that may be affected by proposal)

Information Based On (check all that apply):

[ ] Literature/correspondence (specify major sources)

[ ] Personal Contacts (list in item 28)

Field Analysis By: [ ] Author [ ] Other (list in item 28)

Past Experience With Site By: [ ] Other (list in item 28)

11. Physical (topography - soils - water - air)

Insert Text

12. Biological (dominant aquatic and terrestrial plant and animal species and habitats including threatened/endangered species; wetland amounts, types and hydraulic value)

Insert Text

13. Cultural

a. Land use (dominant features and uses including zoning if applicable)

Insert Text

c. Archaeological/Historical

Insert Text

14. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

Insert Text

ENVIRONMENTAL CONSEQUENCES (probable adverse and beneficial impacts including indirect and secondary impacts)

15. Physical (include visual if applicable)

Insert Text

16. Biological (include impacts to threatened/endangered species)

Insert Text

17. Cultural

a. Land Use (include indirect and secondary impacts)

Insert Text

b. Social/Economic (include ethnic and cultural groups, and zoning if applicable)

Insert Text

c. Archaeological/Historical

Insert Text

18. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

Insert Text

19. Summary of Adverse Impacts That Cannot Be Avoided (more fully discussed in 15 through 18)

Insert Text

ALTERNATIVES (no action - enlarge - reduce - modify - other locations and/or methods)

20. Identify, describe and discuss feasible alternatives to the proposed action and their impacts. Give particular attention to alternatives which might avoid some or all adverse environmental effects.

Insert Text

EVALUATION OF PROJECT SIGNIFICANCE (Complete each item)

21. Significance of Environmental Effects

a. Would the proposed project or related activities substantially change the quality of the environment (physical, biological, socio-economic)? Explain.

Insert Text

b. Discuss the significance of short-term and long-term environmental effects of the proposed project including secondary effects; particularly to geographically scarce resources such as historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered species or ecologically sensitive areas. (The reversibility of an action affects the extent or degree of impact)

Insert Text

22. Significance of Cumulative Effects.

Insert Text

23. Significance of Risk

a. Explain the significance of any unknowns which create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analyses would eliminate or reduce these unknowns? Explain why these studies were not done.

Insert Text

b. Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires, or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.

Insert Text

24. Significance of Precedent

a. Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Explain the significance.

Insert Text

b. Describe any conflicts the proposal has with plans or policy of local, state or federal agencies that provide for the protection of the environment. Explain the significance.

Insert Text

25. Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to be) highly controversial, and summarize the controversy.

Insert Text

26. Explain other factors that should be considered in determining the significance of the proposal.

Insert Text

SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES

27. Summarize citizen and agency involvement activities (completed and proposed).

Insert Text

28. List agencies, groups and individuals contacted regarding the project (include DNR personnel and title).

Date	Contact	Comment Summary

The following Department of Natural Resources Staff have participated in the review of the this project:

Insert Text

29. Final Incidental Take Authorization

Insert Text

EIS DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Wis. Adm. Code, the Department is authorized and required to determine whether it has complied with s. 1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

30. Complete either A or B below.

A. EIS Process Not Required . . . . . [ ]

Analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion therefore, an environmental impact statement is not required prior to final action by the Department on this project.

B. Major Action Requiring the Full EIS Process. . . . . [ ]

The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator Date Signed

Noted: Area Director or Bureau Director Date Signed

Copy of news release or other notice attached? [ ] Yes [ ] No

Number of responses to public notice

Public response log attached? [ ] Yes [ ] No

CERTIFIED TO BE IN COMPLIANCE WITH WEPA Date Signed
Regional Director or Director of BISS (or designee)

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the

decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Note: Not all Department decisions respecting environmental impact, such as those involving solid waste or hazardous waste facilities under sections 144.43 to 144.47 and 144.60 to 144.74, Stats., are subject to the contested case hearing provisions of section 227.42, Stats.

This notice is provided pursuant to section 227.48(2), Stats.

Appendix E

Blank WPDES Permit Application

GENERAL PERMIT REQUEST FOR COVERAGE
Dredging Operations
WPDES Permit No. WI-0046558-3

State of Wisconsin
Department of Natural Resources

Rev. 05/21/2001

For Department Use Only Stamp Date Received
FID#:

SECTION I: **FACILITY LOCATION INFORMATION**		
Facility Name	Contact	Title
Facility Address - Street	Phone #	Fax #
City, State, Zip Code	County	Internet Address
Site Map: Attach a site map, such as a USGS topographic map, showing the location of the facility, the discharge site for groundwater discharges, and/or receiving water for surface water discharges.		

SECTION II: **MAILING ADDRESS INFORMATION (Parent Company/Owner - if different from above)**		
Parent Company/Owner	Company Contact	Phone #
Mailing Address - P.O. Box, Street, or Route	Title	
City, State, Zip Code	Fax #	Internet Address

Complete SECTION III only for those outfalls that are identified as surface or groundwater discharges in SECTION IV, question 1, of the ELIGIBILITY CHECKLIST.

SECTION III: **DISCHARGE CHARACTERIZATION**

Type of Wastewater (check all that apply):	**Outfall #** (#1, #2, etc.)	**Average Daily Flow** (gallons of water discharged per day)	**Type of Wastewater** (check all that apply):	**Outfall #** (#1, #2, etc.)	**Average Daily Flow** (gallons of water discharged per day)
☐ Carriage Water (Water portion of dredged slurry)	#		☐ Interstitial Water (Also known as pore water. Water squeezed from dewatered sediment)	#	
	#			#	
	#			#	
☐ Other (describe type)	#		☐ Other (describe type)	#	
	#			#	
	#			#	
☐ Other (describe type)	#		☐ Other (describe type)	#	
	#			#	
	#			#	

SECTION IV: **ELIGIBILITY CHECKLIST**

For Department Use Only:
- ☐ Eligible
- ☐ Ineligible
  - ☐ ERW
  - ☐ ORW

1. What is the receiving water for your discharge, not including discharges of domestic wastes? If your facility has more than one outfall (an outfall is an individual discharge point, like a pipe, channel, or seepage pond, that wastewater enters prior to discharging to a receiving water), indicate in the space provided which outfalls go to groundwater and which go to surface waters. (check all that apply)

☐ Groundwater (this includes infiltration of wastewater through the soil via irrigation, septic systems and associated drain fields, ditches, absorption ponds, etc.).

Outfall #(s):_____

☐ Surface Water (this includes creeks, streams, rivers, and lakes and any ditches, storm sewers, and pipes that convey wastewater to a creek, stream, river, and lake).

Outfall #(s):_____

What is the name of the surface water your discharge enters?

_____

How far is it from the point where it leaves your plant until it reaches the surface water (how far does it travel through storm sewers or drainage ditches)? (Check one):

☐ Less than 1000 feet
☐ Between 1000 and 5000 feet
☐ Greater than 5000 feet

☐ Sanitary Sewer (discharge to a Publicly Owned Treatment Works). A septic system is not considered a sanitary sewer. If all discharges from your facility go to a sanitary sewer, you do not require regulation under a WPDES discharge permit. Therefore, skip the rest of the checklist and sign page 3. We will remove you from our tracking system. If at some point in the future operations at your facility result in a discharge, you will need to inform the Department. If only some or no discharges from your facility go to the sanitary sewer, identify the receiving water for the other discharges below.

For facilities with discharges to groundwater or surface waters, continue on to question #2.

2. Other than water that has come in contact with petroleum products (this does not include water from groundwater clean-up operations), are any of the following wastewaters from your facility discharged to surface waters or groundwater? (check all that apply)

☐ No ☐ Yes	Contact cooling water.
☐ No ☐ Yes	Water from boiler cleaning operations.
☐ No ☐ Yes	Air compressor condensate contaminated with oil and grease.
☐ No ☐ Yes	Water softener regeneration backwash.
☐ No ☐ Yes	Other process wastewaters (wastewaters that come in contact with or are the result of production operations at a facility).

If you answered yes to any of the above, your discharge is not eligible for this General Permit. Skip the rest of the checklist and complete the signatory requirements on page 3. Contact the Department to obtain application for an individual WPDES discharge permit. If you answered no to all of the above, continue with the checklist.

(Continued on next page)

3. To the fullest extent of your knowledge, does your discharge contain any of the substances listed below or other substances that would be harmful to animal, plant, aquatic life (metals, volatile compounds, etc.)?

SECTION IV: ELIGIBILITY CHECKLIST

alpha–BHC	4,4'-DDT	Polychlorinated Biphenlys (PCB)
beta–BHC	Dieldrin	Pentachlorobenzene
gamma–BHC (Lindane)	Hexachlorobenzene	Photomirex
delta–BHC	Hexachlorobutadiene	1,2,3,4-Tetrachlorobenzene
Chlordane	Mercury	1,2,4,5-Tetrachlorobenzene
4,4'-DDDMirex	2,3,7,8-Tetrachlorodibenzo-p-dioxin	
4,4'-DDE	Octachlorostyrene	Toxaphene

☐ No. Continue on to question #4.
☐ Yes. Your discharge is not eligible for this General Permit. Skip the rest of the checklist and complete the signatory requirements in Section V. Contact the Department to obtain application for an individual WPDES discharge permit.

4. Does your discharge flow to a wetland?

☐ No. Continue on to question #5.
☐ Yes. The Department will need to determine if your discharge causes significant adverse impacts to wetlands. Continue on to question #5.

For Department Use Only
☐ NR 103 Completed
☐ N/A

5. Have any analyses been performed on the sediment to be dredged?

☐ No. Continue on to question #6.
☐ Yes. Attached a copy of the results of the analysis to this form and continue on to question #6.

Answer question #6 only if you discharge to the Great Lakes (Lake Michigan or Lake Superior)

6. Will dredged materials be disposed by either of the following methods? (check applicable method)

☐ Beach Nourishment
☐ Unconfined Disposal

This is the end of the checklist. Complete signatory requirements in Section V below.

SECTION V: SIGNATORY REQUIREMENTS

Signature of person completing the form, attesting to the accuracy and completeness of the statements made	Date Signed
Typed or Printed Name and Title	Phone #

This form must be signed by the official representative of the permitted facility who is: the owner, the sole proprietor for a sole proprietorship, a general partner for a partnership, a ranking elected official or other duly authorized representative for a unit of government, a manager for a limited liability company, or a responsible officer of at least the level of manager, having overall responsibility for the operation of the facility for a corporation. If this form is not signed, or is found to be incomplete, it will be returned.

Signature	Date Signed
Typed or Printed Name and Title	Phone #
Fax #	Internet Address

Mail to: Regional Wastewater Permit Coordinator
Wisconsin Department of Natural Resources

Appendix F

Blank NR 216 Notice of Intent Permit Application

State of Wisconsin
Department of Natural Resources

Notice of Intent - Storm Water Discharges Associated With Land Disturbing Construction Activities General Permit

Form 3400-161 (R 10/02)

$200 Application Fee

This Notice of Intent form (NOI) is authorized by s. 283.37, Wis. Stats. Submittal of a completed NOI to the Department is mandatory for any landowner who intends to discharge storm water from a construction site to waters of the state and who must apply for permit coverage in accordance with 40 CFR Part 122, Chapter 283, Wis. Stats., and Chapter NR 216, Wis. Adm. Code. Failure to submit a completed NOI to the Department at least 14 working days prior to the date on which land disturbing construction activities commence may result in forfeitures up to $10,000 per day, pursuant to s. 283.91(2), Wis. Stats. Personally identifiable information on this NOI may be used for other water quality program purposes.

Submission of this NOI constitutes notice that the landowner identified in Section I intends to be authorized by a general WPDES permit issued for storm water discharges associated with land disturbing construction activities in the State of Wisconsin. Becoming a permittee obligates the landowner to comply with the terms and conditions of the general permit. **An erosion control plan and a storm water management plan meeting the requirements of Chapter NR 216, Wis. Adm. Code, must be completed before submitting this NOI.**

All necessary information must be provided on this NOI. Failure to complete this NOI correctly may result in its rejection by the Department. Please read all instructions before completing.

Section I: Landowner Information

Name			Contact Person
Mailing Address			Title
City	State	ZIP Code	Telephone Number

Section II: Contractor Information (if currently known)

Name			Contact Person
Mailing Address			Title
City	State	ZIP Code	Telephone Number

Section III: Construction Site Information

Site Name	County
Location Description	☐ City of ☐ Township of, or ☐ Village of

Quarter-Quarter ☐ NW ☐ NE ☐ SW ☐ SE Quarter ☐ NW ☐ NE ☐ SW ☐ SE Section ___ ___ Township ___ ___ N Range ___ ___ ☐ E ☐ W

Is this site wholly contained on the above quarter quarter section? ☐ Yes ☐ No

*Use more space if needed to describe site location.

Total Area of Site	Total Estimated Disturbed Area	Percent of Site Impervious: (including rooftops and paved areas)	
		Before Construction	After Construction
Acres	Acres	%	%

Type of Construction (check all that apply)

☐ Residential ☐ Commercial ☐ Industrial ☐ Reconstruction

☐ Utility ☐ Transportation (streets, roads, non-WisDOT highway projects, etc.)

☐ Other (describe)

Discharge: Does your construction site's storm water discharge to: (check all that apply)

☐ Storm drain system - infiltrates to groundwater

☐ Storm drain system to surface water - enter system owner's name and receiving waters:

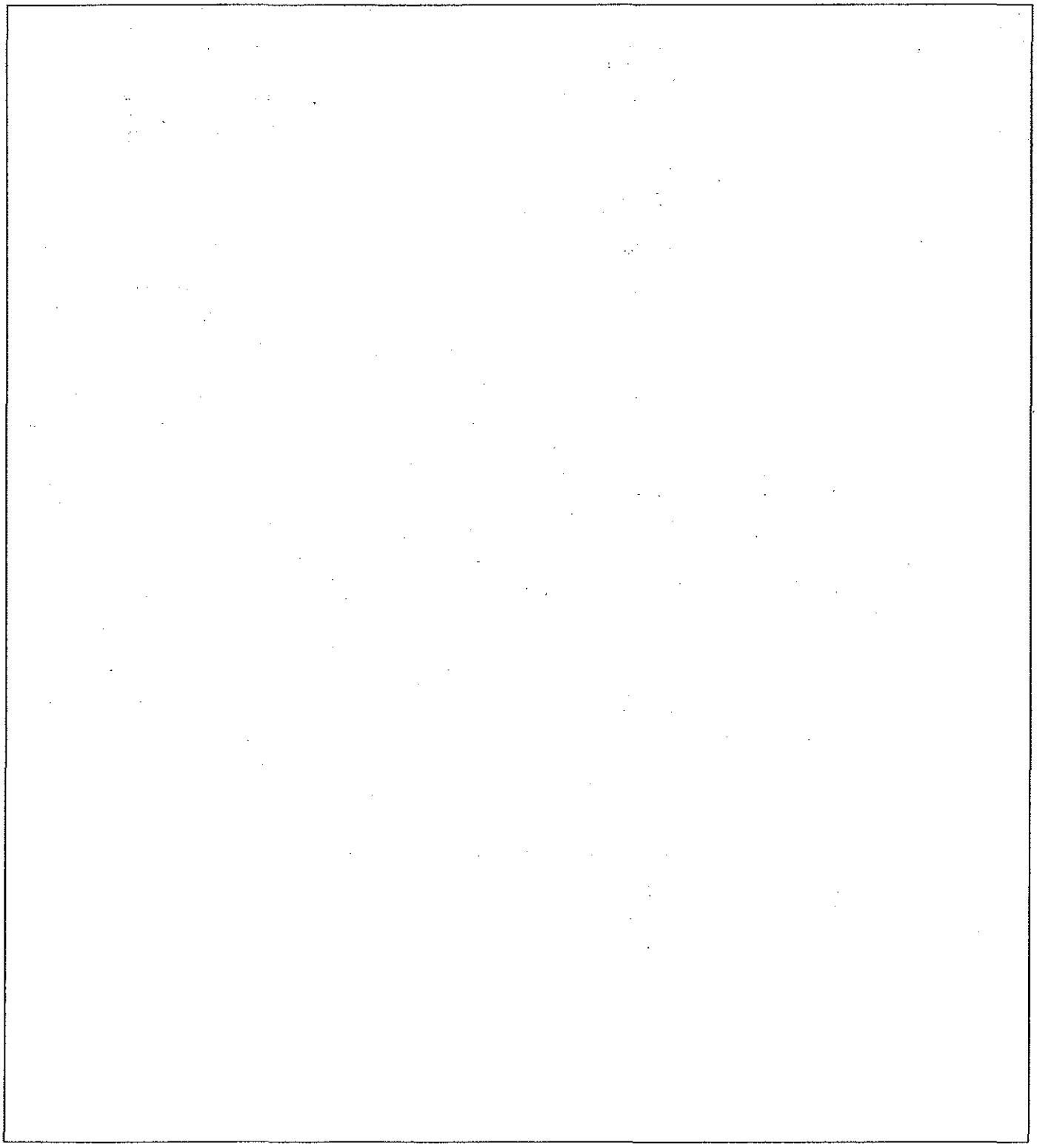
☐ Directly or indirectly to waters of the state - enter name of river, lake, wetland:

☐ Infiltration to groundwater occurs on site

Section IV. Site Location Map

Attach a legible photocopy from the appropriate USGS 7.5 minute series topographic map (not a plat map), with the perimeter of the construction site clearly identified.

Name of Quadrangle



Section V: Additional Information

Project Start Date (month/day/year)	Approximate Project End Date (month/day/year)

Management Practices: Identify planned erosion and sediment control practices to reduce impacts **during** construction (check all that apply)

☐ Phasing of Construction ☐ Diversion of Clean Water ☐ Phased Revegetation ☐ Dewatering Sediment Control
☐ Sediment Basin(s) and/or Trap(s) ☐ Stabilizing Channelized Flow ☐ Silt Fencing ☐ Vehicle Tracking Control
☐ Erosion Control Mating and/or Mulch ☐ Other

Identify planned storm water management practices to reduce impacts **following** construction (check all that apply)

☐ Storm Water Pond(s) ☐ Infiltration Practice(s) ☐ Infiltrate Rooftop Runoff ☐ Oil/Water Separator(s)
☐ Clean Water Diversion(s) ☐ Covered Storage Area(s) ☐ Other

Plans: Has the construction site erosion control plan been completed for this site in conformance with s. NR 216.46, Wis. Adm. Code and the "Wisconsin Construction Site Best Management Practices Handbook"? ☐ Yes ☐ No

Has the storm water management plan been completed for this site in conformance with s. NR 216.47, Wis. Adm. Code? ☐ Yes ☐ No
Note: These plans must be completed before submitting this NOI.

Local Requirements: Are the construction site erosion control and storm water management plans in compliance with applicable local requirements? ☐ Yes ☐ No If Yes, Local Agency Name:

Are you aware of any wetlands at the construction site or any wetlands that may be affected by the storm water discharge from the construction site? Please be aware that the Department shall, pursuant to s. NR 103.06(1)(b), Wis. Adm. Code, require that the storm water discharge comply with the water quality standards provisions in ch. NR 103. The presence of wetlands may affect certain aspects of the construction site project under the requirements of this code. ☐ Yes ☐ No

Are you aware of any listed threatened or endangered species at the construction site? Please be aware that the Department shall, pursuant to s. 29.604(6r), Wis. Stats., consult with the Bureau of Endangered Resources on whether approval of general permit coverage may affect a listed threatened or endangered species. The presence of a listed threatened or endangered species may affect certain aspects of the construction site project under the requirements of this statute. ☐ Yes ☐ No

Are you aware of any listed cultural or historical resources at the construction site? Please be aware that the Department shall, pursuant to s. 44.40, Wis. Stats., consult with the State of Wisconsin Historic Preservation Officer on whether approval of general permit coverage may have an adverse affect upon history property. The presence of historic property may affect certain aspects of the construction site project under the requirements of this statute. ☐ Yes ☐ No

Section VI: Certification

I certify under penalty of law this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify the provisions of the permit, including development and implementation of the construction site erosion control and storm water management plan, will be complied with. **Important: The person signing immediately below must be a representative of the landowner as defined in s. NR 216.43(7),Wis. Adm. Code. "Landowner" for purposes of this NOI is defined in s. NR 216.002(13), Wis. Adm. Code. Failure to have this NOI properly signed will result in its rejection and may delay the project.**

Landowner Printed Name	Title	Telephone Number
Landowner Signature		**Date Signed**

Complete below if NOI was prepared by a consultant or someone other than the landowner or an employee of the landowner. However, to be valid, the certification above must be signed by the landowner of the construction site.

Preparer Printed Name			Firm
Mailing Address			Title
City	State	ZIP Code	Telephone Number
Signature of Preparer		Date Signed	

Mail this completed Notice of Intent with $200 application fee to the appropriate Department of Natural Resources office in the region where the construction site is located. See the instructions for regional office addresses.

LEAVE BLANK - DNR USE ONLY	
Date Signed	Construction Site ID#
Application complete? ☐ Yes ☐ No	
Historic/Endangered Checked? ☐ Yes ☐ No	

Instructions

Type or clearly print your answers to all questions. Answer all questions. Incomplete NOI forms will be returned for completion.

Section I: Landowner Information

Provide the legal name of the person, firm, public organization, or any other entity that owns the construction site described in Section III of this application. The contact person should be the person completely familiar with the construction site activity and charged with compliance and oversight of the permit. The mailing address and phone number given should be for the contact person.

Section II: Contractor Information

If known at time of NOI submittal, provide the legal name of the person, firm, or any other entity that is the major contractor in charge of operating the construction site described in Section III of this application. The contact person should be the construction site manager completely familiar with the construction site activity and charged with implementation of the permit. The mailing address and phone number given should be for the contact person.

Section III: Construction Site Information

Enter the construction site's official or legal name and complete address, including county, city, state and zip code. Be sure to include the quarter quarter, quarter, section, township and range (to the nearest quarter section) of the site. If the site is on more than one quarter, enter the quarter that best describes the location of the site. Use additional space if needed to describe the site location.

Type of Construction: Make a mark next to the line that best describes the construction activity at the site. Transportation should be checked for construction of roads, bridges and railroads. Utilities should be checked for installation of sewer, electric and telephone systems. If the type of construction activity is not listed, please write down a brief description in the line after the "other" designation.

Area of Site: Indicate the total area of the construction site, and estimate the total area to be disturbed by construction activities. Please provide the percent of site impervious before and after construction.

Discharge: Indicate where storm water discharge occurs. (There may be more than one discharge point.) If the discharge is to a storm drain system (operated by municipalities, flood control districts, utilities or other similar entities), indicate this and list the name of the receiving body of water. The operator of the storm drain system will know the ultimate receiving waters. The operator of the storm drainage system must receive a copy of the NOI. Storm water discharging directly to state waters will typically have an outfall structure directly from the site to a river, lake, wetland, etc. If the discharge is to an unnamed tributary or drainage ditch, please list the named water body to which the discharge ultimately drains. E.g., "Unnamed tributary to the Red Cedar River." Finally, please indicate if infiltration occurs on site.

Section IV: Site Location Map (Section on form is self-explanatory)

Section V: Additional Information

Dates: Enter the project's anticipated start and end dates.

Management Practices: Check all applicable management practices that will be used on site to control erosion or list other control measures that will be used to control erosion at the construction site.

Plans: Indicate whether or not a construction site erosion control and storm water management plan has been completed for the site. This plan must be completed before a permit will be issued, and must be in conformance with the "Wisconsin Construction Site Best Management Practices Handbook". DO NOT include a copy of the construction site erosion control and storm water management plan.

Local Requirements: Indicate whether or not the construction site erosion control plan is in compliance with the local sediment and erosion control plans. DO NOT include copies of these plans. The local agency approving these plans must receive a copy of the NOI.

Section VI: Certification

State Statutes provide for severe penalties for submitting false information on this Notice of Intent form. State regulations require this form to be signed as follows:

1. For a corporation, by a responsible corporate officer including president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation covered by this permit;
2. for a unit of government, by a ranking elected official, or other duly authorized representative;
3. for a partnership, by a general partner; and for a sole proprietorship, by the proprietor;
4. for a limited liability company, by a manager.

After signature provide the name of the individual signing the NOI and date of signature. If the form was prepared by a consultant or someone other than an employee of the site landowner, please provide the name and address where this person may be contacted.

There is a $200 application fee required with the submittal of the NOI. Remit a check or money order payable to the Wisconsin Department of Natural Resources (do not send cash). A NOI submitted without the required application fee will be considered incomplete.

The DNR has published a handbook designed to assist contractors, consultants, and local units of government in choosing, designing and installing low cost, effective temporary or permanent construction site Best Management Practices. This handbook, Wisconsin Construction Site Best Management Practices, is available through Document Sales, 202 S. Thornton Ave., Madison, WI 53707. For more information on the cost and to order the handbook, please call (608) 266-3358 or 1-800-362-7253. If you need additional information about the NOI for construction activities, please contact the Department at (608) 267-7694.

Mailing

Unless otherwise directed, mail this completed NOI form with $200 application fee to the DNR office listed by county as follows:

NORTHERN REGION COUNTIES

Ashland	Lincoln	DNR Service Center 1401 Tower Ave. Superior, WI 54880 Phone: (715) 392-7988
Barron	Oneida	
Bayfield	Polk	
Burnett	Price	
Douglas	Rusk	
Florence	Sawyer	
Forest	Taylor	
Iron	Vilas	
Langlade	Washburn	

NORTHEAST REGION COUNTIES

Brown	Marquette	DNR Northeast Region P.O. Box 10448 Green Bay, WI 54307 Phone: (920) 492-5800
Calumet	Menominee	
Door	Oconto	
Fond du Lac	Outagamie	
Green Lake	Shawano	
Kewaunee	Waupaca	
Manitowoc	Waushara	
Marinette	Winnebago	

WEST CENTRAL REGION COUNTIES

Adams	Marathon	DNR Service Center 5301 Rib Mountain Rd. Wausau, WI 54401 Phone: (715) 359-4522
Buffalo	Monroe	
Chippewa	Pepin	
Clark	Pierce	
Dunn	Portage	
Eau Claire	St. Croix	
Jackson	Trempealeau	
Juneau	Vernon	
La Crosse	Wood	

SOUTH CENTRAL REGION COUNTIES

Columbia	Iowa	DNR South Central Region 3911 Fish Hatchery Rd. Fitchburg, WI 53711 Phone: (608) 275-3266
Crawford	Jefferson	
Dane	LaFayette	
Dodge	Richland	
Grant	Rock	
Green	Sauk	

SOUTHEAST REGION COUNTIES

Kenosha	Sheboygan	DNR Service Center 9531 Rayne Rd., Suite 4 Sturtevant, WI 53177 Phone: (262) 884-2300
Milwaukee	Walworth	
Ozaukee	Washington	
Racine	Waukesha	

Appendix G

SOLE "Wish List"

Analysis of Needs

a)

Community would like to see

1.) Improved shoreline aesthetics

2.) Flood and erosion control

3.) Nature trails

4.) More fishing (pan & game)

5.) Boating, docks, piers

6.)Informational signage

7.) Benches and shelters

8.) Goose control

9.)Wildlife viewing towers & scenic viewing spots

10.) Water fountains

11.)More lake side activities (scout camping, youth boating lessons,& youth day camps)

12.) Bike trails

13.)Nature education

14.)Winter activities (skating,sleding,cross country sking)

15.)Natural wetlands

16.)Camp sites

17.) Aesthetic setting (economic value)

Current Conditions

1.) There are now only a few trees on the park side of the lake. There are no plants or shrubs near the shoreline.

2.) The lake at present does hold enough water to control flooding to its full potential. (If dredged could triple its capacity)

3.) Trail on North side of the lake has grown over due to lack of maintenance.

4.) The shallow murky water and thick sediment cannot support these types of fish.

5.)The lake is navigable for row boats & canoes, but again the water is very shallow. No boat dock or launch and only 1 pier exists at the warming house.

6.) None exists

7.)There are no benches around the lake shore, but there are 3 shelters within the park.

8.)We have an over abundance of Canadian geese, producing an over whelming amount of guano.

9.) There is 1 railed roof

For observation on the Warming house.

10.) Currently none

11.) Currently none of these

12.) Currently none

13.) Currently none

14.) Ice skating is possible but the warming house has not been open for a number of years

15.) The wetlands are very limited in diversity

16.) Currently none

17.) Lack of features to draw touism

b.) 1.) Need for an improved shoreline
2.) Need to dredge lake to increase water volume (if dredged could triple.

3.) Trail on North side of lake needs to be reopened
4.) Rough fish need to be eradicated and the lake restocked with pan. and game fish.
5.) Insufficient wetland vegetation.

6.) No boat launch
7.) Geese
8.)Benches, signage and observation sites.
9.) Numbers 10 through 17 would fall into other projects.

v

Appendix H

Opinion's of Dredging Cost

Engineer's Opinion of Probable Cost
Lake Leota
Hydraulic Dredging based on conversation with JF Brennan using Mechanical Dewatering Technology

Hydraulic Dredging Alternative (IDD System)

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
1	12-inch hydraulic dredge (Using Integrated Dredging and Dewatering System)	290,000	CY	$18.00	$5,220,000
2	Mobilization fee for hydraulic dredge equipment	1	LS	$150,000.00	$150,000
3	Pipeline Layout for 2.65 miles	1	LS	$50,000.00	$50,000
4	Pipeline Road Crossings	1	EA	$2,000.00	$2,000
5	Return Water Line to Allen Creek	1	EA	$10,000.00	$10,000
6	Spoil Site Restoration	1	LS	$20,000.00	$20,000
7	Riprap Stream Banks	1,200	SY	$50.00	$60,000
8	Erosion Control and Maintenance	1	LS	$5,000.00	$5,000
9	Landscaping/Restoration at Lake	1	LS	$10,000.00	$10,000
				Sum #1	$5,527,000
				Technical Services and Contingency (30%)	$1,658,000
				Total	$7,200,000

6/8/2004

Engineer's Opinion of Probable Cost
Lake Leota
Hydraulic Dredging based on conversation with JF Brennan with Conventional Spoil site

Hydraulic Dredging Alternative

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
1	Spoil Site Construction (Berm to Contain Material and get 2' freeboard)	50,000	CY	$4.00	$200,000
2	Hydraulic Dredging (12-inch)	290,000	CY	$7.00	$2,030,000
3	Mobilization fee for hydraulic dredge equipment	1	LS	$70,000.00	$70,000
4	Pipeline Layout for 2.65 miles	1	LS	$50,000.00	$50,000
5	Pipeline Road Crossings	1	EA	$2,000.00	$2,000
6	Return Water Line to Allen Creek	1	EA	$10,000.00	$10,000
7	Spoil Site Restoration	1	LS	$25,000.00	$25,000
8	Riprap Stream Banks	1,200	SY	$50.00	$60,000
9	Erosion Control and Maintenance	1	LS	$10,000.00	$10,000
10	Landscaping/Restoration at Lake	1	LS	$10,000.00	$10,000
				Sum #1	$2,467,000
				Technical Services and Contingency (30%)	$740,000
				Total	$3,200,000

6/8/2004

Engineer's Opinion of Probable Cost
Lake Leota
Hydraulic Dredging based on conversation with Inland Dredge with Disposal 2.65 miles away

Hydraulic Dredging Alternative

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
1	Spoil Site Construction (Berm to Contain Material and get 2' freeboard)	50,000	CY	$4.00	$200,000
2	Hydraulic Dredging	290,000	CY	$8.00	$2,320,000
3	Mobilization fee for hydraulic dredge equipment	1	LS	$25,000.00	$25,000
4	Pipeline Layout for 2.65 miles	1	LS	$50,000.00	$50,000
5	Pipeline Road Crossings	1	EA	$2,000.00	$2,000
6	Return Water Line to Allen Creek	1	LS	$10,000.00	$10,000
7	Spoil Site Restoration	1	LS	$25,000.00	$25,000
8	Riprap Stream Banks	1,200	SY	$50.00	$60,000
9	Erosion Control and Maintenance	1	LS	$10,000.00	$10,000
10	Landscaping/Restoration at Lake	1	LS	$10,000.00	$10,000
				Sum #1	$2,712,000
				Technical Services and Contingency (30%)	$814,000
				Total	$3,500,000

6/8/2004

Engineer's Opinion of Probable Cost
Lake Leota
Mechanical Dredging based on conversation with RG Huston w/Disposal 2.65 miles away

Mechanical Dredging Alternative

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
1	Site Access Road Construction	25,000	CY	$20.00	$500,000
2	Mechanical Dredging	261,000	CY	$9.00	$2,349,000
3	Dewatering	1	LS	$250,000.00	$250,000
4	Spoil Site Restoration	1	LS	$25,000.00	$25,000
5	Site Access Road Removal	25,000	CY	$7.00	$175,000
6	Riprap Stream Banks	1,200	SY	$50.00	$60,000
7	Street Repair Allowance	1	LS	$50,000.00	$50,000
7	Erosion Control and Maintenance	1	LS	$10,000.00	$10,000
8	Landscaping/Restoration around Lake	1	LS	$15,000.00	$15,000
				Sum #1	$3,434,000
				Technical Services and Contingency (30%)	$1,030,000
				Total	$4,500,000

Note: Drawing Down of the Lake may reduce the sediment volume by approximately 10% due to the release of free water during dewatering.
290,000 CY x 10% = 29,000 CY
290,000 -29,000 = 261,000 CY

6/8/2004

Engineer's Opinion of Probable Cost
Lake Leota
Drawdown and Limited Hydraulic Dredge

ITEM NO	DESCRIPTION	Quantity	Units	Unit Price	Total
1	Spoil Site Construction (Berm to Contain Material and get 2' freeboard)	25,000	CY	$4.00	$100,000
2	Hydraulic Dredging	145,000	CY	$8.00	$1,160,000
3	Mobilization fee for hydraulic dredge equipment	1	LS	$25,000.00	$25,000
4	Pipeline Layout for 2.65 miles	1	LS	$50,000.00	$50,000
5	Pipeline Road Crossings	1	EA	$2,000.00	$2,000
6	Return Water Line to Allen Creek	1	LS	$10,000.00	$10,000
7	Spoil Site Restoration	1	LS	$15,000.00	$15,000
8	Riprap Stream Banks	1,200	SY	$50.00	$60,000
9	Undredged Area Plantings and restoration	1	LS	$350,000.00	$350,000
9	Erosion Control and Maintenance	1	LS	$5,000.00	$5,000
10	Landscaping/Restoration at Lake	1	LS	$10,000.00	$10,000
				Sum #1	$1,787,000
				Technical Services and Contingency (30%)	$536,000
				Total	$2,300,000

6/8/2004

Appendix I

Disposal Site Calculations

Sediment Disposal Calculations - Lake Leota Dredging
TLS/JHL
6/9/2004

Dredged amount = 290000 cu yards

= 7,830,000 ft ^3

Disposal Area

3 in deep sediment					
	7,830,000 ft ^3	/0.25 ft =	31320000 ft ^2		
	31320000 ft ^2	/43560	719 acres	= Area required	
			72	10% Reduction	
			647 acres	**=Adjusted Area Required**	
6 in deep sediment	7,830,000 ft ^3	/0.5 ft =	15660000 ft ^2		
	15660000 ft ^2	/43560	360 acres	= Area required	
			36	10% Reduction	
			324 acres	**=Adjusted Area Required**	
10 in deep sediment	7,830,000 ft ^3	/0.5 ft =	9433734.94 ft ^2		
	9433734.94 ft ^2	/43560	217 acres	= Area required	
			22	10% Reduction	
			195 acres	**=Adjusted Area Required**	
1 ft deep sediment	7,830,000 ft ^3	/1 ft =	7830000 ft ^2		
	7830000 ft ^2	/43560	180 acres	= Area required	
			18	10% Reduction	
			162 acres	**=Adjusted Area Required**	

Appendix J

Funding Sources