Lake Winona dredging documents and reports

Cal R. Fremling

Winona State University

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January 18, 1996

Environmental Quality Board
Environmental Review Program
300 Centennial Office Building
658 Cedar Street
St. Paul, MN 55155

RE: ENVIRONMENTAL ASSESSMENT WORKSHEET FOR DREDGING LAKE WINONA

To Whom It May Concern:

The City of Winona is herein applying for a permit to dredge 65.7 acres of East Lake Winona. The plan is to deepen the lake from a depth of eight feet to sixteen feet to eliminate weed growth and to enhance the lake. 1,260,000 cubic yards of sand and 125,200 cubic yards of muck will be dredged to Riverbend Industrial Park.

The permit to fill Riverbend Industrial Park was obtained from the Corps of Engineers in January, 1995.

Permits for dredging have been applied for from the Minnesota Pollution Control Agency (MPCA), from the Minnesota Department of Natural Resources (DNR) and the U.S. Army Corps of Engineers.

The sediment of Lake Winona in the area to be dredged was tested by two laboratories according to the Corps of Engineer's guidelines in February, 1995. These test results were circulated by the Corps of Engineers. No negative responses were received. A copy of the Report for Sediment Sampling and Analysis was filed with the MPCA with the permit application to MPCA. A copy of this report has also been filed with the City of Winona Public Library. This report is too bulky to attach to this EAW.

Enclosed are the following which have been included in the copies of this EAW sent to the EAW distribution list:

Public Works 507/457-8274
Water Department — 507/457-8270
Sewer Department — 507/457-8207
Park Maintenance — 507/457-8205

Central Garage — 507/457-8230
Street Department — 507/457-8276
Environmental Quality Board
Page 2
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1. County map
2. USGS 7.5\textdegree - 1:24,000 Scale
3. 22 x 34 plan sheet of area to be dredged
4. 22 x 34 plan sheet of area filled - ponding plan (2 sheets)
5. 8 x 11 site plan of area to be dredged, site plan of area to be filled, vicinity sketch, cross section of area dredged and filled (4 sheets total)

A press release is being made according to EQB guidelines.

Please process and approve.

Please call me at (507) 457-8274 if additional information is required.

Respectfully submitted,

Robert J. Bollant
Director of Public Works

RJB/Lmb
Enclosures
cc: Eric Sorensen, City Manager
PRESS RELEASE

On Monday, January 29, the City of Winona filed for permits from the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency and U.S. Army Corps of Engineers to dredge East Lake Winona.

Under this project 1,260,000 cubic yards of sand will be pumped from East Lake Winona to fill 72.5 acres of land in Riverbend Industrial Park. Riverbend is located between the lake outlet ditch and T.H. 61 easterly of Mankato Avenue. The sand will be taken from the northerly half of the lake between Chestnut Street and Huff Street. The dredge will cut the sand from beneath the muck and then drop the seven-foot thick layer of muck to the bottom of the lake. The lake will be 22 feet deep in the area being dredged for sand. One hundred, twenty-five thousand and two hundred (125,200) cubic yards of muck will be dredged from the Southeast corner of the lake near the hospital. The lake will be dredged to a 16 foot depth in this area. This muck will serve as topsoil on 39 acres of the Riverbend area being filled.

Fifty-six (56) acres of the lake will be dredged for sand and 9.7 acres for muck. When the project is finished approximately one-half of the 200 acre East Lake will have sufficient depth to prevent weed growth. The southerly one-third of the East Lake and all of the West Lake will still have weed growth.

In 1995, core samples of the lake sediment were collected at five locations and in 1989 two locations within the proposed dredge area. Analytical analyses were performed for twelve inorganics (mainly heavy metals), nine PCBs (polychlorinated biphenyls), total organic carbon, total solids, total volatile solids, nineteen pesticides and sixteen polynuclear hydrocarbons. The test results revealed no hazardous levels of any contaminant tested. Earlier tests have shown elevated lead levels near the mouth of storm sewers, but this lead exists as lead carbonate which is relatively insoluble in the hard water of Lake Winona.

An Environmental Assessment Worksheet for the proposed dredging is being filed Monday with the Minnesota Environmental Quality Board (EQB) and all of the regulatory agencies on the EQB list.

The permit to fill Riverbend Industrial Park was received from the U.S. Army Corps of Engineers in January, 1995.

Dr. Cal Fremling, former Winona State Professor of Biology, and Neal Mundahl, Winona State Professor, assisted Public Works in designing this dredging project in order to achieve the maximum enhancement of Lake Winona and to provide fill in Riverbend Industrial Park suitable for industrial development.

The project is estimated to cost 3.5 million dollars. Funding has not been obtained. The goal is to obtain all permits in 1996, secure funding in 1997 and dredge in 1998.
Environmental Assessment Worksheet (EAW)

NOTE TO PREPARERS
This worksheet is to be completed by the Responsible Governmental Unit (RGU) or its agents. The project proposer must supply any reasonably accessible data necessary for the worksheet, but is not to complete the final worksheet itself. If a complete answer does not fit in the space allotted, attach additional sheets as necessary.

For assistance with this worksheet contact the Minnesota Environmental Quality Board (EQB) at (612) 296-8253 or (toll-free) 1-800-652-9747 (ask operator for the EQB environmental review program) or consult “EAW Guidelines,” a booklet available from the EQB.

NOTE TO REVIEWERS
Comments must be submitted to the RGU (see item 3) during the 30-day comment period following notice of the EAW in the EQB Monitor. (Contact the RGU or the EQB to learn when the comment period ends.) Comments should address the accuracy and completeness of the information, potential impacts that may warrant further investigation, and the need for an EIS. If the EAW has been prepared for the scoping of an EIS (see item 4), comments should address the accuracy and completeness of the information and suggest issues for investigation in the EIS.

1. Project Title: Removing of sediments from Lake Winona by hydraulic dredging

2. Proposer: City of Winona
   Contact person: Robert J. Bollant, Dir. of PW
   Address: P.O. Box 378
   Winona, MN 55987
   Phone: (507)457-8274

3. RGU: City of Winona
   Contact person: Robert J. Bollant
   Address: P.O. Box 378
   Winona, MN 55987
   Phone: (507)457-8274

4. Reason for EAW Preparation
   □ EIS scoping  □ mandatory EAW  □ citizen petition  □ RGU discretion  □ Proposer volunteered

   If EAW or EIS is mandatory give EQB rule category number(s)

5. Project Location: NW Sect. 35
   SW 1/4 NE 1/4 Section 26 & 27 Township 107N Range 7W
   County: Winona
   City/Twp: Winona

   Attach copies of each of the following to the EAW:
   a. a county map showing the general location of the project;
   b. copy(ies) of USGS 7.5 minute, 1:24,000 scale map (photocopy is OK) indicating the project boundaries;
   c. a site plan showing all significant project and natural features.

6. Description: Give a complete description of the proposed project and ancillary facilities (attach additional sheets as necessary). Emphasize construction and operation methods and features that will cause physical manipulation of the environment or produce wastes. Indicate the timing and duration of construction activities.

   The City of Winona herein applies for a permit to remove sediment from Lake Winona by hydraulic dredging. The amount of sediment to be removed consists of 1,260,000 cy of sand and 125,200 cy of muck. 780,880 cy of sand will be used to fill 72.5 acres of industrial land in Riverbend Industrial Park. A permit to fill 96 acres in Riverbend Industrial Park (72.5 acres included in 96 acre area) was obtained from the U.S. Army Corps of Engineers in January 1995. An additional 479,120 cy of sand will be stockpiled for use throughout the City. 125,200 cy of muck will be dredged from a 9.7 acre area in southeastern section of the lake to be used as topsoil on a 38.8 acre area of the dredged fill area in Riverbend. The muck will be placed at a two foot depth and theoretically will dry to topsoil depth of 1.0 feet. 65.7 acres of the lake will be dredged to a minimum depth of 16 feet to eliminate weed growth and enhance the viability of Lake Winona.

Provide a 50 or fewer word abstract for use in EQB Monitor notice:

...
7. Project Magnitude Data

<table>
<thead>
<tr>
<th>Total Project Area (acres)</th>
<th>Riverbend 72.5 acres</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Number of Residential Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unattached: None</td>
</tr>
<tr>
<td>Attached:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial / Industrial / Institutional Building Area (gross floor space)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total to be determined when</td>
</tr>
</tbody>
</table>

| Indicate area of specific uses: |
| Unattached:                   |
| Attached:                    |

8. Permits and Approvals Required

<table>
<thead>
<tr>
<th>Unit of Government</th>
<th>Type of Application</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of MN</td>
<td>MPCA</td>
<td>For dredging Lake Winona and depositing dredge disposal in Riverbend</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Being applied for</td>
</tr>
<tr>
<td>State of MN</td>
<td>DNR</td>
<td>For dredging Lake Winona</td>
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<tr>
<td></td>
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<td>Being applied for</td>
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<tr>
<td>Federal Government</td>
<td>U.S. Army</td>
<td>For dredging Lake Winona</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Being applied for</td>
</tr>
</tbody>
</table>

9. Land Use

Describe current and recent past land use and development on the site and on adjacent lands. Discuss the compatibility of the project with adjacent and nearby land uses; indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazard due to past land uses, such as soil contamination or abandoned storage tanks.

Lake Winona has a high standing crop of bluegills, crappies, largemouth bass and bullheads. Northern pike, walleyes, yellow perch and carp are also common. Large year-round populations of nesting wild mallards and wild-domestic mallard hybrids have developed in recent years. Woodducks utilize the lake and nest in the adjacent forest and in nest boxes. Cormorants, gulls and ospreys fish the lake in summer. Canada geese have become common, especially in winter. Muskrats utilize the banks of the lake for their burrows, but construct no houses in the lake proper. The project should not significantly impact any of these fish or wildlife resources, nor will the project cause any soil contamination.

10. Cover Types

Estimate the acreage of the site with each of the following cover types before and after development (before and after totals should be equal):

<table>
<thead>
<tr>
<th>Types 2 to 8 Wetlands</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

| Wooded/Forest         |       |
|                       |       |

| Brush/Grassland       |       |
|                       |       |

| Cropland              |       |
|                       |       |

<table>
<thead>
<tr>
<th>Urban/Suburban Lawn</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

| Landscaping           |       |
|                       |       |

| Impervious Surface    |       |
|                       |       |

| Other (describe)      |       |
|                       |       |

| no charge             |       |

11. Fish, Wildlife, and Ecologically Sensitive Resources

a. Describe fish and wildlife resources on or near the site and discuss how they would be affected by the project. Describe any measures to be taken to minimize or avoid adverse impacts.

Lake Winona has an abundant supply of pan fish and also has bass, walleyes and northern. The lake has a year-round population of mallards, mostly domestic; some hybrids. There are also Canada geese and woodducks. There will be no adverse impacts; the fish balance will be enhanced by the project.

b. Are there any state-listed endangered, threatened, or special-concern species; rare plant communities; colonial waterbird nesting colonies; native prairie or other rare habitat; or other sensitive ecological resources on or near the site? □ Yes □ No

If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources was conducted. Describe measures to be taken to minimize or avoid adverse impacts.
12. Physical Impacts on Water Resources Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, impoundment) of any surface water (lake, pond, wetland, stream, drainage ditch)? □ Yes □ No If yes, identify the water resource to be affected and describe: the alteration, including the construction process; volumes of dredged or fill material; area affected; length of stream diversion; water surface area affected; timing and extent of fluctuations in water surface elevations; spoils disposal sites; and proposed mitigation measures to minimize impacts.

See Item 6. The fill permit for Riverbend was mitigated. An extensive diking system will be constructed with control structures in the fill area with primary and secondary ponds to MPCA discharge limits. The diking and ponding is shown on attached plans in the Appendix.

13. Water Use

a. Will the project involve the installation or abandonment of any wells? □ Yes □ No For abandoned wells give the location and Unique well number. For new wells, or other previously unpermitted wells, give the location and purpose of the well and the Unique well number (if known).

b. Will the project require an appropriation of ground or surface water (including dewatering)? □ Yes □ No If yes, indicate the source, quantity, duration, purpose of the appropriation, and DNR water appropriation permit number of any existing appropriation. Discuss the impact of the appropriation on ground water levels.

The hydraulic dredge will pump 1,100 GPM from Lake Winona. Lake Winona is fed from the Mississippi River by an underground flow of water through sand. Post flood pumping has shown that 1,100 GPM will not lower Lake Winona at all.

c. Will the project require connection to a public water supply? □ Yes □ No If yes, identify the supply, the DNR water appropriation permit number of the supply, and the quantity to be used.

14. Water-related Land Use Management Districts Does any part of the project site involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? □ Yes □ No If yes, identify the district and discuss the compatibility of the project with the land use restrictions of the district.

Both Lake Winona and Riverbend Industrial Park are behind the Corps of Engineers' permanent diking system and are thus excluded from the 100-year flood plains of the Mississippi River and its tributaries.

15. Water Surface Use Will the project change the number or type of watercraft on any water body? □ Yes □ No If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other users or fish and wildlife resources.

16. Soils Approximate depth (in feet) to:
Ground water: minimum surface average Bedrock: minimum average 150' 150'
Describe the soils on the site, giving SCS classifications, if known. (SCS interpretations and soil boring logs need not be attached.)

Sand and muck consisting of silt will be pumped from Lake Winona to fill Riverbend Industrial Park as described in Item 6.

17. Erosion and Sedimentation Give the acreage to be graded or excavated and the cubic yards of soil to be moved:
acres 65.9; cubic yards 1,260,000 cy of sand and 125,200 cy of muck
Describe any steep slopes or highly erodible soils and identify them on the site map.
Describe the erosion and sedimentation measures to be used during and after construction of the project.

The slopes in the fill area will be 3:1. The fill area is protected by permanent dikes; thus, the fill area will not be subject to erosion. The dredge spoil will be contained by diking and ponding.
18. Water Quality - Surface Water Runoff
   a. Compare the quantity and quality of site runoff before and after the project. Describe methods to be used to manage and/or treat runoff. There will be minimal run off from the dredged fill area of Riverbend Industrial Park as the surface water will soak into the sand. Any run off will discharge to a 3,700 foot long grassy ditch along the permanent dike which is the secondary pond.

   b. Identify the route(s) and receiving water bodies for runoff from the site. Estimate the impact of the runoff on the quality of the receiving waters. (If the runoff may affect a lake consult “EAW Guidelines” about whether a nutrient budget analysis is needed.) The discharge from the ponding areas will be to County Ditch No.4 which flows easterly for 2,400 ft and then discharges to the Mississippi River.

   a. Describe sources, quantities, and composition (except for normal domestic sewage) of all sanitary and industrial wastewaters produced or treated at the site.
      N/A

   b. Describe any waste treatment methods to be used and give estimates of composition after treatment, or if the project involves on-site sewage systems, discuss the suitability of the site conditions for such systems. Identify receiving water (including ground water) and estimate the impact of the discharge on the quality of the receiving waters. (If the discharge may affect a lake consult “EAW Guidelines” about whether a nutrient budget analysis is needed.) N/A

   c. If wastes will be discharged into a sewer system or pretreatment system, identify the system and discuss the ability of the system to accept the volume and composition of the wastes. Identify any improvements which will be necessary.
      N/A

20. Ground Water — Potential for Contamination
   a. Approximate depth (in feet) to ground water: Lake minimum; ______ average.

   b. Describe any of the following site hazards to ground water and also identify them on the site map: sinkholes; shallow limestone formations/karst conditions; soils with high infiltration rates; abandoned or unused wells. Describe measures to avoid or minimize environmental problems due to any of these hazards.
      None

   c. Identify any toxic or hazardous materials to be used or present on the project site and identify measures to be used to prevent them from contaminating ground water.
      None

21. Solid Wastes; Hazardous Wastes; Storage Tanks
   a. Describe the types, amounts, and compositions of solid or hazardous wastes to be generated, including animal manures, sludges and ashes. Identify the method and location of disposal. For projects generating municipal solid waste indicate if there will be a source separation plan; list type(s) and how the project will be modified to allow recycling.

      In 1995, core samples were collected at 5 locations and in 1989 two locations where dredging will be done. The cores were segmented and duplicate samples from each segment were sent to different laboratories for analysis. Analytical analyses were performed for 12 inorganics (mainly heavy metals), 9 PCBs (polychlorinated biphenils), total organic carbon, total solids, total volatile solids, 19 pesticides and 16 poly-

   b. Indicate the number, location, size, and use of any above or below ground tanks to be used for storage of petroleum products or other materials (except water).
      None

21.a. (cont) nuclear aromatic hydrocarbons. Sediments were also characterized physically. The tests revealed no hazardous levels of any contaminant tested. Earlier tests have shown elevated lead levels near the mouths of storm sewers, but the lead exists as lead carbonate which is relatively insoluble in the hard water of Lake Winona.
22. Traffic
Parking spaces added Existing spaces (if project involves expansion) Estimated total Average
Daily Traffic (ADT) generated Estimated maximum peak hour traffic generated (if known) and its timing:
For each affected road indicate the ADT and the directional distribution of traffic with and without the project. Provide an estimate of the impact on traffic congestion on the affected roads and describe any traffic improvements which will be necessary.

N/A

23. Vehicle-related air emissions
Provide an estimate of the effect of the project’s traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. (If the project involves 500 or more parking spaces, consult “EAW Guidelines” about whether a detailed air quality analysis is needed.)

N/A

24. Stationary source air emissions
Will the project involve any stationary sources of air emissions (such as boilers or exhaust stacks)? ☐ Yes ☐ No
If yes, describe the sources, quantities, and composition of the emissions; the proposed air pollution control devices; the quantities and composition of the emissions after treatment; and the effects on air quality.

There will be a diesel exhaust from the dredge on Lake Winona and from the bulldozer leveling the sand in the disposal site.

25. Will the project generate dust, odors, or noise during construction and/or operation? ☐ Yes ☐ No
If yes, describe the sources, characteristics, duration, and quantities or intensity, and any proposed measures to mitigate adverse impacts. Also identify the locations of sensitive receptors in the vicinity and estimate the impacts on these receptors.

There will probably be an odor of hydrogen sulfide from the dredge material near the outfall of the dredge pipe; however, the nearest house is 1,500 feet from the disposal site. Noise will be minimal.

26. Are any of the following resources on or in proximity to the site:
   a. archeological, historical, or architectural resources? ☐ Yes ☐ No
   b. prime or unique farmlands? ☐ Yes ☐ No
   c. designated parks, recreation areas, or trails? ☐ Yes ☐ No
   d. scenic views and vistas? ☐ Yes ☐ No
   e. other unique resources? ☐ Yes ☐ No
   If any items are answered Yes, describe the resource and identify any impacts on the resource due to the project. Describe any measures to be taken to minimize or avoid adverse impacts.
   Lake Winona is surrounded by City parks, municipal bandshell, playgrounds and a bike path. The east basin has three fishing piers. Garvin Heights scenic overlook views the project area. The project will have no adverse impacts on these resources.

27. Will the project create adverse visual impacts? (Examples include: glare from intense lights; lights visible in wilderness areas; and large visible plumes from cooling towers or exhaust stacks.) ☐ Yes ☐ No
If yes, explain.
On the contrary, the project will be educational and interesting to residents and visitor

28. Compatibility with plans
Is the project subject to an adopted local comprehensive land use plan or any other applicable land use, water, or resource management plan of an local, regional, state, or federal agency? ☐ Yes ☐ No
If yes, identify the applicable plan(s), discuss the compatibility of the project with the provisions of the plan(s), and explain how any conflicts between the project and the plan(s) will be resolved. If no, explain.

Both the dredging of Lake Winona and the filling of Riverbend Industrial Park are part of the City of Winona 1995 Comprehensive Plan.
29. Impact on infrastructure and Public Services Will new or expanded utilities, roads, other infrastructure, or public services be required to serve the project? ☐ Yes ☐ No
If yes, describe the new or additional infrastructure/services needed. (Any infrastructure that is a "connected action" with respect to the project must be assessed in this EAW; see "EAW Guidelines" for details.)
Lake Winona dredging will require no new infrastructure. In Riverbend Industrial Park, City water and sanitary sewer along with storm sewers and streets will serve a 72.5 acre industrial park. The sewage will be treated at the City WWTP. Storm water discharge will flow through a 3,700 foot long grass ditch, then flow through County

30. Related Developments; Cumulative Impacts No.

a. Are future stages of this development planned or likely? ☐ Yes ☐ No
If yes, briefly describe future stages, their timing, and plans for environmental review.
b. Is this project a subsequent stage of an earlier project? ☐ Yes ☐ No
If yes, briefly describe the past development, its timing, and any past environmental review.
c. Is other development anticipated on adjacent lands or outlets? ☐ Yes ☐ No
If yes, briefly describe the development and its relationship to the present project.
d. If a,b, or c were marked Yes, discuss any cumulative environmental impacts resulting from this project and the other development.

The dredging will: help control growth of nuisance weeds, remove nutrient-rich sediments that have a high biochemical oxygen demand, increase the volume of the lake, probably make artificial aeration unnecessary for about 45 years, make the lake bottom more productive of fish-food organisms, extend the useful life of the lake and make the lake more swimmable, fishable and aesthetically pleasing. The filling of Riverbend Industrial Park will: provide industrial space and employment, concentrate industry in one place (away from residential, riverside and scenic areas), reduce truck traffic

31. Other Potential Environmental Impacts If the project may cause any adverse environmental impacts which were not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.
The fill permit for Riverbend Industrial Park required mitigation, which the Port Authority of Winona mitigated and the fill permit was granted.

32. Summary of Issues (This section need not be completed if the EAW is being done for EIS scoping; instead, address relevant issues in the draft Scoping Decision document which must accompany the EAW.) List any impacts and issues identified above that may require further investigation before the project is commenced. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

Sediment sampling and analysis results for the City of Winona have been submitted to MPCA and USACE. The document is too bulky for attachment to this EAW. Several other comprehensive studies have been done on these projects and Lake Winona; they are available at the Winona Public Library.

30.d. (cont) near a school and residential areas, enable the area to be filled in a planned manner (rather than having it filled piecemeal) and provide the only possible disposal area for Lake Winona sediments.

Certifications by the RGU (all 3 certifications must be signed for EQB acceptance of the EAW for publication of notice in the EQB Monitor)
A. I hereby certify that the information contained in this document is accurate and complete to the best of my knowledge.
Signature
B. I hereby certify that the project described in this EAW is the complete project and there are no other projects, project stages, or project components, other than those described in this document, which are related to the project as "connected actions" or "phased actions" as defined, respectively, in Minn. Rules, pts. 4410.0200, subp. 9b and subp. 60.
Signature
C. I hereby certify that copies of the completed EAW are being sent to all points on the official EQB EAW distribution list.
Signature
Title of signer Date
DESCRIPTION FOR EQB MONITOR

The City of Winona is applying for a permit to dredge 65.7 acres of East Lake Winona. The plan is to deepen the lake from a depth of eight feet to sixteen feet to eliminate weed growth and to enhance the lake. 1,260,000 cubic yards of sand and 125,200 cubic yards of muck will be dredged to Riverbend Industrial Park (permits have been obtained for the fill area).
QUESTIONS AND ANSWERS REGARDING THE PLAN TO FILL
RIVERBEND INDUSTRIAL PARK BY DREDGING LAKE WINONA

Question- What is the basic plan?
Answer- The plan is based on the premises that: 1) Winona is in dire need of industrial land, and 2) Lake Winona and its surrounding parkland are among Winona's most valuable assets. A hydraulic dredge would mine 1,300,000 cubic yards of sand from the east basin of Lake Winona. The sand would be pumped to Riverbend Industrial Park (the wooded area between Fleet Farm and Shive Road) where 81 acres would be filled with 950,000 cubic yards of the sand. The rest of the sand (350,000 cubic yards) would be stockpiled and later used to fill low portions of Schain Industrial Park (the field north of Homer Road just beyond MediaWerks) and to raise low-lying parkland and athletic fields around Lake Winona. Additionally, 180,000 cubic yards of soil and organic muck would be pumped out of the 14-acre bay adjacent to Winona Knits to form a two-foot deep layer of muck atop the sand at Riverbend. The muck would dry to about one foot deep, forming topsoil that could be used for landscaping.

Question- How do you know that there are sand deposits in Lake Winona?
Answer- Lake sediments were sounded to a depth of 30 feet at 40 locations in 1986. They showed that the east basin is underlain with sand that extends downward to great depths, but that the sand deposits are covered by a layer of soil (mainly agricultural soil washed in due to early, destructive farming practices) of varying thickness, and an uppermost layer of organic muck about two feet thick. The 1986 soundings were confirmed with five test hole borings made through the ice in 1995. Only the sand is suitable for fill. Dredging will be done where the soil layer is thinnest and the sand deposits are closest to the surface.

Question- How would the dredging be done?
Answer- A floating 12-inch hydraulic dredge will extend its cutter head downward, removing sand to a depth of 30 feet. The overlying soil layer will cave in behind the cutterhead, remaining at the lake bottom.
The dredging company estimates that about 25% of the organic muck layer will be sucked up with the sand which will be piped under Mankato Avenue, along County Ditch No. 4 to Riverbend Industrial Park. The remaining 75% of the muck will settle to the bottom of the lake. The sand will drop out close to the outlet of the dredge pipe, but the water, silt and organics will flow to a basin where the silt and organics will settle out, to be mined later.

Question - What would the benefits be?
Answer - As a result of this dredging and previous dredgings, over one-half of the east lake will be at least 16 feet deep (too deep for weeds to grow). Decreased weeds will make the lake more attractive and should cause fish to grow faster by reducing the dense cover that protects stunted panfish from predators. Deepening the lake will increase its useful life span. Filling Riverbend and Schain Industrial Parks with sand (and providing utilities) will make them attractive to industry, ultimately resulting in jobs and an increased tax base for the City of Winona. The plan makes it possible to accomplish several vital projects for the approximate cost of the dredging alone. It is a window of opportunity that will never exist again. It is inevitable that Riverbend will be filled, but if it is filled with sand from some other source it will not be possible to ever dredge Lake Winona because there will be no place to put the dredged sediments.

Question - Wouldn't it be cheaper to fill Riverbend with sand from the Mississippi River (as was done at Fleet Farm)?
Answer - No, because the Corps would have to transport dredged sand to an off-loading area near Peerless Chain. The sand would then have to be pumped or trucked to Riverbend. This distance is greater than the average dredging distance from Lake Winona. This option would provide no benefit to Lake Winona.

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Answer - Today, the sediment input to East Lake Winona is minimal, mainly from storm sewers. The Lake initially filled with soil washed in with floods from Gilmore Valley and West Burns Valley because of poor land management. Sediment from Gilmore Valley is now intercepted by Boller Lake. West Burns Valley Creek is now flanked by levees and flows
directly into the Mississippi River. West Lake Winona acts as a trap for sediment from Woodlawn Cemetery and the surrounding valley. Organic sediments are produced constantly in Lake Winona from dead weeds, plankton, and fish, but they accumulate very slowly. About two feet of this organic muck (technically called sapropel) have formed in the last 50 years.

Question- Would the West Lake be dredged also?  
Answer- Not as part of the proposed project because: 1) it contains no significant sand deposits near enough to the surface to be dredged, 2) there are no basins nearby where sediment could be legally pumped, and 3) the great distance to Riverbend would make the cost prohibitive. If not dredged, the West Lake will fill very slowly (decades) with soil from the cemetery watershed and with organic sediments formed within the lake.

Question- What would the project cost?  
Answer- Site preparation, mitigation costs, and dredging would total almost $3,500,000. Unfilled and without permits, 81 acres of Riverbend Industrial Park is worth $40,500. With permits, filled and supplied with utilities it will be worth $2,025,000. The 350,000-cubic yard stockpile of sand for Lake Park and Schain Industrial Park will have an additional value of at least $735,000.

Question- How would the project be financed?  
Answer- There are no state or federal grants available. It would have to be financed by a city sales tax and/or bonding.

Question- Will the silt and organics be valuable as top soil?  
Answer- They will be sterile for a year or two, but after they have aged they will make good soil, as evidenced by the productivity of Winona's public gardens located on old dredge spoil.
Question: Will the dredging make Lake Winona into a crystal clear, walleye-filled lake that never has weed or algae problems?
Answer: No, because Lake Winona is highly eutrophic (enriched), mainly because it receives nutrient-rich storm sewer effluent from about one-half of Winona and part of Goodview. Consequently, it supports weeds, algae, and a huge fish population. Severe winter kills of fish in 1965 and 1969 led to a reclamation project in 1973 to restore the lake as a sportfishery, especially for children, the elderly, and the handicapped. Presently, Lake Winona is "on a life support system"; winter kills are prevented by artificial aeration at two sites. The lake now has four fishing piers and is encircled by an asphalted path used extensively for walking, jogging, bicycling, and rollerblading. The reclamation project has been very successful, but weeds are a problem because the lake is so rich and shallow (78% of the east basin is no deeper than 10 feet). Weeds grow to a depth of 15 feet, providing so much cover for panfish that they are overabundant and stunted. Dredging will increase the volume of the lake and make a large area too deep for weeds to grow. It should stimulate fish growth and may make artificial aeration unnecessary in the east basin.
QUESTIONS AND ANSWERS REGARDING THE PLAN TO FILL RIVERBEND INDUSTRIAL PARK BY DREDGING LAKE WINONA

Question- What is the basic plan?
Answer- The plan is based on the premises that: 1) Winona is in dire need of industrial land, and 2) Lake Winona and its surrounding parkland are among Winona's most valuable assets. A hydraulic dredge would mine 1,300,000 cubic yards of sand from the east basin of Lake Winona. The sand would be pumped to Riverbend Industrial Park (the wooded area between Fleet Farm and Shive Road) where 81 acres would be filled with 950,000 cubic yards of the sand. The rest of the sand (350,000 cubic yards) would be stockpiled and later used to fill low portions of Schain Industrial Park (the field north of Homer Road just beyond MediaWerks) and to raise low-lying parkland and athletic fields around Lake Winona. Additionally, 180,000 cubic yards of soil and organic muck would be pumped out of the 14-acre bay adjacent to Winona Knits to form a two-foot deep layer of muck atop the sand at Riverbend. The muck would dry to about one foot deep, forming topsoil that could be used for landscaping.

Question- How do you know that there are sand deposits in Lake Winona?
Answer- Lake sediments were sounded to a depth of 30 feet at 40 locations in 1986. They showed that the east basin is underlain with sand that extends downward to great depths, but that the sand deposits are covered by a layer of soil (mainly agricultural soil washed in due to early, destructive farming practices) of varying thickness, and an uppermost layer of organic muck about two feet thick. The 1986 soundings were confirmed with five test hole borings made through the ice in 1995. Only the sand is suitable for fill. Dredging will be done where the soil layer is thinnest and the sand deposits are closest to the surface.

Question- How would the dredging be done?
Answer- A floating 12-inch hydraulic dredge will extend its cutter head downward, removing sand to a depth of 30 feet. The overlying soil layer will cave in behind the cutterhead, remaining at the lake bottom.
The dredging company estimates that about 25% of the organic muck layer will be sucked up with the sand which will be piped under Mankato Avenue, along County Ditch No. 4 to Riverbend Industrial Park. The remaining 75% of the muck will settle to the bottom of the lake. The sand will drop out close to the outlet of the dredge pipe, but the water, silt and organics will flow to a basin where the silt and organics will settle out, to be mined later.

**Question- What would the benefits be?**
**Answer-** As a result of this dredging and previous dredgings, over one-half of the east lake will be at least 16 feet deep (too deep for weeds to grow). Decreased weeds will make the lake more attractive and should cause fish to grow faster by reducing the dense cover that protects stunted panfish from predators. Deepening the lake will increase its useful life span. Filling Riverbend and Schain Industrial Parks with sand (and providing utilities) will make them attractive to industry, ultimately resulting in jobs and an increased tax base for the City of Winona. The plan makes it possible to accomplish several vital projects for the approximate cost of the dredging alone. It is a window of opportunity that will never exist again. It is inevitable that Riverbend will be filled, but if it is filled with sand from some other source it will not be possible to ever dredge Lake Winona because there will be no place to put the dredged sediments.

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Port hears new dredging plan

by Ed Lee

In response to regulatory agencies' concerns, the Lake Winona Committee has met with Winona public works director Bob Bollant to revise a plan for dredging Lake Winona.

Bollant told the Port Authority on Thursday that the new dredge plan would cost $3.5 million rather than $4.5 million.

The original plan called for dredging a million yards of sand from a 30-foot-deep hole in the lake bottom near the hospital and using the sand to fill Riverbend Industrial Park.

Then, muck from other areas of the lake bottom could be dredged into the hole, thereby deepening the lake to 16 feet in most places.

Bollant said the plan didn't sit well with Department of Natural Resources officials, who opposed moving all of that muck.

Any pollutants within the muck would be stirred up and released during the move, DNR officials have said.

Lake Winona Committee members weren't heartbroken by the news because they've favored deepening a larger area of the lake.

Bollant and the committee devised a plan to dredge out 950,000 yards of sand from beneath the muck in 100 acres of the lake. The sand will fill 81 acres of Riverbend south of Frontenac Dr.

Bollant said dredging in that manner would require a dredge unit that's more powerful than the conventional units.

Some muck will be dredged out and placed on the sand at Riverbend to be used as topsoil, according to the revised plan.

The lake will be deepened 22-24 feet in 56 acres of the lake.

The DNR would approve the plan because the muck above the sand wouldn't be stirred greatly, Bollant said.

"They can pull sand from under the muck and let the muck drop down," Bollant said.

Testing labs on Feb. 22 began analyzing samples from five areas in the lake to determine if heavy metals, pesticides, lead, PCBs and other pollutants exist.

Bollant said sample results will go to regulatory agencies on about March 22. When the city applies for dredge permits, the regulatory agencies will consider the test results in determining whether to grant the permits.

To dredge, the city needs approval from the DNR, U.S. Fish and Wildlife Service, Army Corps of Engineers, the Environmental Agency, and the Minnesota Pollution Control Agency.

City manager Eric Sorensen reminded the Port Authority that taxpayers also have a say in whether or not the lake will be dredged. Coming up $3.5 million, through a referendum or some other option, will be a hurdle in the process, Sorensen said.

Under the revised plan, 350,000 yards of sand would be left over and could be sold or used by the city as fill for Schoen Industrial Park or Lake Park, Bollant said.

In deepening the lake, the Lake Winona Committee favors dredging large amounts of muck on top of the sand at Riverbend. When the muck dries out in two years, the result will be top soil, Bollant said.

Judy Bodway, Port Authority director, said the muck would make the affected Riverbend land harder to market because of the two-year dry out.

If placing the muck at Riverbend is deemed unacceptable, the committee would need to consider alternative sites for it.

Bollant and the committee members already have determined that dredging the west lake appears impossible because there's no place to put the dredged materials.

The Lake Winona Committee will meet at 7 p.m. on Wednesday at City Hall, and a report of the duck house project is on the agenda.
leadership role in helping our youth, families and workers by policies that support and strengthen these groups. I applaud this effort and do recognize that it is the business community who can remedy many of the present day ills of our world.

Thank you

From: Rev. Joseph L. Keefe
St. Mary’s Parish

On behalf of our parish and the hundreds who enjoyed our presentation of Godspell, I want to express heartfelt thanks to Winona Middle School Principal Scott Hannon. From him and secretary Dena Green, we received nothing but kind help in finding our way around the school auditorium and getting ready.

Thanks also to those who offered major support, namely Midtown Foods and Vanguard Technology Group, to patrons and the many volunteers who helped make this an all around success and gift to the community. Kudos to Denny Schrandt and Sarah Schrandt for wonderful working together in the direction, music and choreography of a truly all-star performance.

NFO works to help all farmers

From: Roy and Dixie Loken
Rollingstone, MN

We read with interest the article on the front page of the Lewiston Journal “Minnesota farmers ready to battle dairy ‘factories’.” It is yet another article on how farmers have to become better managers, and expand to survive. Farmers have been doing this since they started farming, or they wouldn’t have survived this long.

The fact that milk prices have stayed virtually the same since 1979 is causing hundreds of dairymen to give up, whether they are able to pay their bills or not. It is not managing and expanding that will solve agricultural problems, it is the price we receive for our production.

Some segments of agriculture are profitable. To name a few — sugar-beet growers, cranberry growers, raisin growers. They have organized. They focus on price and manage their production to maintain price.

This can also be done in dairy, grain, and livestock. The National Farmers Organization has a marketing system that helps all farmers. They market your production for you and the more production they market, there is an upward trend in price. The NFO is not a processor or packer, so they are not out trying to get the lowest price they can. They are working for the farmer. If it wasn’t for the NFO working in the marketing aspect of farming right now, prices would be a lot worse than they already are.

In order to keep the upward trend in price, we need your production. We can’t have the attitude of “let the neighbor do it.” We all have to be part of the solution and work together. Don’t let all the negative psychology the experts use threaten our way of making a living. There is no reason that we should not receive a fair price for our products, just as any other business.

From: Sherry Roth, EMD
Sherry Green,
Equality Die Cast
Joanne Franzen and
Kris Schultz,
ICI Fiberite

We would like to take this time and let everyone know how excited we are to have a team participating in the 25th Anniversary of WalkAmerica. Winona Walk America will take place on Saturday, May 13 with registration starting at 8 a.m. and the walk starting at 9 a.m. This year’s headquarters is at the Lion’s Shelter. Walk America is the first, biggest, and best walking event in the nation. Team Walk is fun! It’s great to walk with co-workers, friends, and family. A team consists of 5 or more people walking together. We do fun things like design our own team t-shirts and get a team photo taken on Walk America day. We even got to attend a Team Kick-Off party.

Get your team together and sign-up today. Call the March of Dimes at 507-282-0649, or pick up a registration form at local businesses. We encourage you to join event sponsors Econo Foods, KAGE Radio and Winona Post on Saturday, May 13 and “Walk For Someone You Love.”
have real bring his map (3 mine)
change "muck" organic sediment (0030)
impacted silt (soul)

area extend area toward Huff St.
must not dredge deeper than 30'

area to be dredged - cubic to be dredged (27/14.4 ft.)

14.4 ft. (depth of sand) ft.

does 14.4 ft. sand depth include the
deep holes within the dredge area

mention how deep muck is
and what resultant depth will be

* post settlement alluvium
soil was fed in from Galnre Valley and
West Burns Valley
March 29, 1995

PLAN FOR DREDGING LAKE WINONA
AND
FILLING RIVERBEND INDUSTRIAL PARK

1. Original Plan:
Dredge one million cubic yards of sand from area near
Mankato Avenue.

2. Dredge *silt and **organic ooze back into sand hole - deepen
140 AC of East Lake to 16' depth or greater.

3. Lake sediments sounded at 52 locations in May 1986 with help
of Charles Robers and his crew.

4. Plan had to be changed - cannot place silt and organic ooze
back into Lake - DNR.

5. Old plan:
140 acres to 16' depth or greater.

6. New Plan:
Pull sand from beneath silt, dredge to 30' depth, dredge
area with most sand, 3/4 of silt will drop down behind
cutter head.

7. Need 950,000 cubic yards of sand to fill 81 acres.
Stockpile 350,000 cubic yards for use in Lake Park and
Schain Industrial Park.

\[
\begin{align*}
\text{Dredge} & \quad 1,300,000 \text{ cubic yards sand} \\
\text{Stock pile} & \quad 350,000 \text{ cubic yards} \\
\text{w/silt} & \quad 129,000 \text{ cubic yards for 10 acres filled} \\
\text{and organic ooze} & \quad 479,000 \text{ cubic yards}
\end{align*}
\]

14.8 acres, 20' high

Push silt and organic ooze to corner, mine out for Lake Park
or sell and then refill with sand.

* Mainly topsoil washed in from Gilmore Valley and West Burns
  Valley.

** Nutrient-rich semi-solids formed within the lake from dead
  weeds, plankton and fish, but also from leaves and grass
  clippings from storm sewers.

PAGE 1
8. Place 2.0', 180,000 cubic yards of organic ooze on top of sand, dry to 1.0', dredge out 14 acres west of hospital, deepen Lake from 8' to 16'.

Rec by Lake Winona Committee, ready to meet as resource.

9. Will end up with approximately 1/2 of East Lake to 16' or greater.

10. February 22 - from ice:
Five test holes were drilled, samples had to be split for second lab analysis.

Tested according to Corps requirements

Confirmed that 1986 sounding plan was accurate.

Test for:
Volatile solids
11 heavy metals
Chlorinated hydrocarbons
DDT
Pesticides
PCBs

Split sample for second lab analysis

Schedule
11. Submit test data to required agencies

12. Go through environmental assessment

13. Obtain permits

14. Develop Financing plan
DREDGING LAKE WINONA
MARCH, 1995

Cost Estimate

1. Dredging sand 1,300,000 cy @$2.10/cy
   (pay on in place volume) $2,730,000

2. Dredging silt and organic ooze to be
   placed on top of sand
   2.0' deep 180,700 cy @$2.00/cy $361,400

3. Clearing 81 acres @$500/AC 40,500

4. Grub Bruski Drive and street East of Bruski
   (3700 x 70/43,560) = 6.0 AC @$2,000/AC 12,000

5. Mobilization (60% up front)
   Engineering & Testing 100,000
   TOTAL COST 200,000 $3,443,900

Use 3.5 million

Cost Benefit to Riverbend Industrial Park

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value without permits</td>
<td>81 acres @$500/acre $40,500</td>
</tr>
<tr>
<td>Value with permits</td>
<td>81 acres @$5,000/acre $405,000</td>
</tr>
<tr>
<td>Value filled with utilities, etc.</td>
<td>81 acres @$25,000/acre $2,025,000</td>
</tr>
</tbody>
</table>
DESIGN NOTES - 1995
DREDGE 1,300,000 CY OF SAND
NEED 950,000 CY TO FILL 81 ACRES

Depth of sand in Lake 14.4'
Depth of silt and organic ooze in Lake 7.2'

I. Sand area to be dredged
\[
\frac{1,300,000 \times 27}{14.4} = 2,437,500 = 55.9 \text{ acres} = 56 \text{ acres}
\]

II. Silt and organic ooze to be dredged from sand area - 25%
\[
\frac{2,437,500 \times 7.2' \times 0.25}{27} = 4,387,500 \text{ ft}^2/27 = 162,500 \text{ cy}
\]
Pile 10' depth
\[
\frac{4,387,500}{10 \times 43,560} = 10 \text{ Acres in Riverbend}
\]
Pile 350,000 cy of sand + 43,560 x 10 AC x 8' depth
\[
\frac{350,000 + 129,000}{27} = 479,000 \text{ cy}
\]
Pile 20' high
\[
\frac{479,000 \times 27}{43,560 \times 20} = 14.8 \text{ acres}
\]

III. Area to be covered with 2.0' of silt and organic ooze
\[
81 \text{ AC} - (14.8 + 10) = 56 \text{ Acres}
\]
Silt and organic ooze - Fig. 2.0' Depth
\[
56 \text{ AC} \times 43,560 \times 2 = 180,700 \text{ cy}
\]

IV. Area of silt and organic ooze to be dredged
Dredge 8' depth to 16'
\[
\frac{180,700 \text{ cy} \times 27}{43,560 \text{ sf/ac} 8} = 14 \text{ Acres} + 56 \text{ Acres}
\]

Dredge 70 Acres
LAKE WINONA

SCALE (in feet)

DEPTHS IN FEET

PRODUCED BY WINONA STATE UNIVERSITY IN
COOPERATION WITH THE WINONA AREA CHAMBER
OF COMMERCE, THE CITY OF WINONA AND THE
LAKE WINONA COMMITTEE.

KEY:
- BOAT LANDING (RAMP & DOCK)
- PARKING
- PUBLIC RESTROOMS
- PARKS AND PUBLIC LAND
- BIKE / JOGGING PATH
- COMPRESSOR UNIT
- SUSPENDED AIR LINE
- AERATOR

ADAPTED FROM MINNESOTA DNR HYDROGRAPHIC MAP 85-10
DRAFTING - STEPHEN G. RANNEBERG; TEXT - CALVIN R. FREMLING; ARTWORK - RICHARD G. DAVIS
1992
Caring for your catch
Lake Winona fish are excellent for eating all year round. Care of your fish after they are caught in warm weather are usually due to improper handling of fish after they are caught. Many fishermen change their fish on a string, by running the stringer into the fish's gill opening and out its mouth. This ruptures delicate blood vessels of the gill structures, resulting in the death of the fish. Dead fish spoil as rapidly in water as in air of the same temperature, thus a good catch soon becomes unsaltable. Doors must be placed on a stringer it should be attached only by the lower jaw so that the gills are not damaged. The best way to transport your catch is to put them on ice as soon as they are caught.

Because the gills are ordinarily red with blood, their appearance is an important indicator of freshness. If they are red, the fish is fresh. If they have turned white, however, decomposition has begun. After cleaning and eating their white-gilled catch, fishermen frequently complain that fish caught in the summer are "soft" and do not taste good!

Fishing regulations
Lake Winona is not part of the Minnesota-Wisconsin boundary waters, therefore it is subject to those fishing regulations pertaining to Minnesota's inland waters. Fishermen should obtain complete up-to-date regulations at area tackle shops.

The following is a synopsis of those regulations which are especially important to those who fish Lake Winona.

LIMTS: Daily possession limits are as follows: northern pike - 3, walleye - 6, bass - 6, muskellunge (minimum size 36 inches) - 1, crappie - 15, sunfish - 30, catfish - 5, perch - 100, bullhead - 100.

LICENSES: All residents who have attained the age of 16 and are under the age of 65 must have a Minnesota fishing license on their persons while angling. All nonresidents who have attained the age of 16 must have on their persons a nonresident Minnesota fishing license while angling. A nonresident under the age of 16 does not need a license if his parent or guardian has a nonresident license, but the child's catch must be included in the daily limit of the parent or guardian.

NUMBER OF LINES: Two lines may be used while angling through the ice, but only one line may be used during the icefree season. Tip-ups may be used on fishing lines during the winter, but the owner must be within 80 feet of the line.

SEASONS: Lake Winona is open continuously for the catching of crappies, sunfish, perch, catfish and bullheads. However, the season closes on February 15, for walleyes, northern pike, bass and muskellunge. The season usually reopens for walleyes and northern pike on the Saturday nearest May 15. The bass season usually reopens on the Saturday nearest May 30. The muskellunge season usually reopens on the Saturday nearest June 5. Consult official Minnesota Department of Natural Resources regulations each year to confirm opening and closing dates.

WATERCRAFT: All watercraft must display current registration, and all occupants must have readily available a U. S. Coast Guard approved flotation device. City ordinance prohibits use of outboard motors larger than 10 h.p.

FISH HOUSES: All fish houses must have the owner's name and address printed legibly on the outside with letters and figures at least three inches in height. All fish houses must be licensed. The metal tag furnished with the license must be attached to the door, no more than six inches from the top. Doors must be designed so that they may be opened from the outside at any time. All fish houses (including all parts thereof) must be removed from the ice by March 1. Littering is illegal.

Biological Information
Lake Winona is a very fertile (eutrophic) lake with a probable carrying capacity of over 300 pounds of game fish per acre. Because the lake is circulated by aerator systems during the entire year, fish may be found at all depths. The lake furnishes ample spawning habitat for sunfish, bass, crappie and bullhead. Buller Lake, which provides excellent spawning habitat for northern pike, is managed in a rearing area for Lake Winona's Wall eyes, which need water-washed gravel for spawning, do not reproduce well in the lake. Because it is inevitable that rough fish such as carp and buffalo will occur in any lake so near the river, it is essential to: (1) prevent winter kills (which favor rough fish), (2) control rough fish by netting and by preventing them from spawning, and (3) maintain predator populations at high levels so they will prey upon small rough fish.

Storm sewers supply Lake Winona with lawn fertilizers, tree leaves, grass clippings and other nutrients. These nutrients cause fish growths of curly leaf pond weed which cause problems for swimmers, boaters and fishermen. The plants also provide so much cover for the sunfish and crappies that predators like northern pike cannot eat enough of them. Consequently, the sunfish and crappies tend to overpopulate and to become stunted. Fishermen can help prevent stunting of sunfish and crappies by catching more of them and by taking them all home. It would be extremely difficult to overfish Lake Winona. Future plans for the lake include a weed harvester.

Lake Winona history
Lake Winona was a marshy, abandoned river channel when the first white settlers arrived in 1851. By 1860, intensive wheat farming had begun and the area was suffering from serious soil erosion problems. Gilmore Creek was diverted into Lake Winona in 1885 in an effort to prevent chronic winter kills of fish by supplying fresh water. However, Gilmore Creek quickly filled the lake with eroded agricultural soil and the lake was dredged for the first time in 1916. The dredged soil was used to construct park land and the Huff Street causeway. Because Gilmore Creek continued to cause frequent floods in the west end of Winona, the creek was recreated in 1944 through Boller Lake so that Boller Lake would act as a flood reservoir and as a settling basin for eroded soil. During the preceding 28 years, however, Lake Winona had once more filled with soil and it was dredged again during the 1950-1953 period at a cost of $485,000. Some of the dredged material was used to create the land on which the hospital and high school were later built.

A major fish kill occurred during late winter of 1965 because of oxygen depletion. Most game fish were killed and the lake quickly became infested by carp, bass and bullheads that survived the kill. Game fish were reintroduced but they became stunted because they had to compete with rough fish for space and food. A second winter kill occurred in 1969, compounding the rough fish problem. The rough fish became so abundant that they destroyed most weed beds and caused the lake to be constantly muddy. It was apparent that winter kills would occur with increasing frequency because Lake Winona was suffering from eutrophication (enrichment due to excess fertilization).

The Lake Winona Committee organized as a non-profit corporation in 1973 to initiate a lake reclamation program in cooperation with the City of Winona, the Minnesota Department of Natural Resources and Winona State University. The main goal of the reclamation program was to provide safe, quality fishing—especially for children, the elderly and the disabled. Winona and area citizens contributed over $22,000 to pay for an aerator system and an artificial fish hatchery. The City of Winona agreed to operate and maintain them. The Minnesota Department of Natural Resources, with the aid of many volunteers, killed all fish in Lake Winona and Boller Lake with a biodegradable chemical called rotenone in September, 1973. Volunteers cleaned up over 350,000 pounds of dead fish, most of which were stunted buffalo, carp and gizzard shad. The lake was then restocked with northern pike, largemouth bass, smallmouth bass, bluegill, walleye, channel catfish and muskellunge. Total DNR costs were about $23,000—all monies derived from fishing license fees and taxes on fishing equipment. In total, the Lake Winona project has been the most complex lake restoration project ever undertaken in Minnesota. Biologists at Winona State University, in cooperation with the Minnesota DNR, maintain regular biological and chemical surveillance of the lake. They are assisted in this work by St. Mary's College biologists and by students from Winona Senior High School.

The Lake Winona Committee is composed of volunteers from many walks of life, and it always welcomes new members. The Committee serves as a catalyst for new lake projects (e.g. bicycle paths, fishing piers) and its members contribute their time to northern pike, to construct fishing piers, to control rough fish, and to raise money for new projects.

Lake Winona is an important recreational lake for anglers and boaters. It serves as a home for numerous species of fish. The lake is surrounded by a network of waterways and wetlands, providing habitat for a variety of aquatic and terrestrial species. The lake is managed by the Winona County Parks and Recreation Department, and it is open to the public for fishing, boating, and swimming. The lake is also a popular destination for birdwatchers, who can observe a wide range of bird species in the surrounding area.

Lake Winona is a great place to spend a day with family and friends, enjoying the natural beauty of the area and participating in a variety of outdoor activities. Whether you are a seasoned angler or a casual paddler, there is something for everyone at Lake Winona.