

1991 KLA WHITE PAPER PROJECT

THE QUALITY OF WATER IN
CENTER LAKE, PIKE LAKE, AND WINONA LAKE

by

Mike Brill and Greg Lawrence

April 22, 1991

The Warsaw community is very fortunate to have three lakes within the city limits. Center, Pike, and Winona Lake bring obvious advantages to the community and its residents. However, with these beautiful natural resources accompany many challenges.

We must determine how we can effectively keep these lakes clean, thus making their use that much more attractive. The purpose of this paper is to enhance the awareness of our community regarding the water quality of the aforementioned three lakes. In addition to discussing the benefits of the lakes and the water quality issues, we will also examine the city's planning process. In our conclusion we will also pose some challenges for related future KLA white paper projects.

The benefits that the community reaps from the lakes are tremendous. First and foremost, a widely shared benefit to the residents of the community is the pure aesthetic value. The view of the lakes can be enjoyed from many locations throughout Warsaw and Winona Lake. There are parks located on each of the lakes that provide a very attractive location to relax. Many residents live around the lakes and enjoy the beauty daily from their homes. This community offers the unique opportunity to simultaneously own a home on a lake shore and live within the city limits.

The economic benefits derived from all three of the lakes are varied. The lakes obviously attract many tourists into the community. The tourists and local residents enjoy swimming, fishing, and skiing. These activities obviously generate a significant increase in revenues for many businesses. Hotels, restaurants, department stores, and specialty shops all directly benefit from the presence of Center, Pike, and Winona Lakes. As alluded to previously, the parks situated on the shore lines also profit during the warm months of the year.

The enjoyment, as well as the economic benefits derived from the lakes should be fully appreciated by the entire community. As we enjoy the advantages offered by the lakes, we must also be keenly aware of the challenges that must be met to ensure that the water quality is adequately maintained. We will review the water quality issues of the past, examine the present condition of the lakes, and recommend future considerations.

CENTER LAKE

Center Lake is a 120 acre natural lake. The lake is used as a municipal water supply. There is a public access site located at the end of Buffalo Street and also on the south shore. A city beach and park are located on the south shore.

Center has consistently maintained a good level of water quality over the years, far better than either Pike or Winona. As a result of the water cleanliness, Center has been a popular attraction for swimming and fishing.

Center Lake has the luxury of not having any inlets pouring into the lake. Therefore, Center has not been presented with the same type of problems as Pike Lake and Winona Lake. The primary source of pollutants into Center Lake is the runoff from the surrounding streets during rain storms. In the Spring, heavy rains carry a good deal of salt and oil off the streets. Fortunately, the sewers capture the majority of the runoff prior to it reaching the lake.

The future of Center Lake's water quality appears to be good.

PIKE LAKE

Pike Lake is a 230 acre natural lake. The city maintains a park with a campground, a boat ramp, and a beach on the south shore.

The campground on Pike Lake once attracted many fisherman; however, over time the fishing activity has slowed dramatically. Chemicals and pollutants have eliminated much of the lake's weed growth, and thus oxygen and cover for game fish. Today, well over 50% of the lake's fish population is rough fish.

Deeds Creek, a major inlet into Pike Lake is carrying a tremendous portion of agricultural runoff of sediment and nutrient into the lake. There are approximately 23,400 acres of farmlands draining into a 230 acre lake. The gradual buildup of this over the past years has had a tragic affect on the lake's water quality.

There are several critical problems which have contributed to the water pollutants carried in Deeds ditch. Those contributing factors are as follows:

- A county treatment plant has contributed a significant amount of flowage into Deeds ditch.
- Most of the county's mobile home parks, who operate semi-public sewage treatment plants, discharge into ditches that flow into Tippecanoe River. However, one mobile home park apparently discharges into Deeds Creek.
- Animal feed lots are producing significant drainage of nutrient and bacterial input into Deeds Creek.
- Commercial development on the east side of Warsaw is also causing runoff. Pike Lake's wetlands are being affected by storm surges which carry excess nutrients and sediments into the lake.

Pike Lake may not have hit the bottom in terms of water quality yet, but there appears to be significant room for improvements. There is presently an agricultural ordinance that is being developed that would limit the distance agricultural activity can occur near a ditch. If there is an agreement to implement the agricultural ordinance, it should have a dramatic positive effect on the lake quality.

WINONA LAKE

If you go back not too long ago to the year 1979, a swim in Winona Lake could have been more frightening than refreshing. The year began with twenty-eight wild ducks found dead in the water near the beach owned by the Winona Lake Bible Conference. The feathers of the ducks were stained with a black, oily substance that had been drained into the lake from a storm pipe on the northeast side of Winona Lake. In April of 1979, conservation officers and Winona Lake police investigated oil spewing into the lake. In July of 1979, a yellow substance similar to silicone sand flowed into the lake from the same drain pipe mentioned earlier. The substance covered the lake bottom approximately 75 feet from shore. In August of 1979, the entire lake bottom was discovered to be covered with metal shavings. Also in August, a red fiber with very small particles covered the same area.

In addition, numerous complaints from residents reported such things as noticing a "goeey substance" on their bodies after swimming and skin irritants. Police reports from 1979 and a letter from the Division of Water Pollution Control indicates Pike Lake and Center Lake were also affected by the presence of oil and metallic shavings.

Winona Lake pollution was, at that time, caused by three primary sources: emissions from nearby businesses, storm water discharges of particle containing water collected from neighboring streets, and the past (pre-1979) practice of landfilling with solid waste from the nearby industries.

As you can see, water quality has changed. Winona Lake is currently not seeing the problems it had in 1979. The City of Warsaw has recently taken action also with a \$7,000,000 bond issue for a city sewer project for Warsaw residents on the west shores of Winona Lake. This project will end the individual resident leach bed, septic systems. This will help sewage from Warsaw residents being a problem. However, the town of Winona Lake needs to investigate their sewage control from septic and leach beds.

The late 1980's saw a successful Walleye stocking program in Winona Lake. In 1986, 1,800,000 Walleye Fry were planted in the lake. In 1987, 52,000 two-inch fingerling Walleyes were planted in the lake. In 1989, 58,850 two-inch Walleye were planted again.

The Walleye is a most challenging and tasty fish for the angler and connoisseur alike. With the success of the Walleye stocking program, Winona Lake will benefit from people who live within the county and those who travel here to use this fishery.

It appears Winona Lake is not as affected by farm runoff as Pike Lake due to its larger size (562 acres) and less agricultural acres (18,309) draining into the watershed. Non-agricultural erosion can also be a problem. Several practices in the non-agricultural watershed could be implemented to reduce the sediment and nutrient inflow into Winona Lake. A large sand bar at the mouth of Wyland Ditch on Winona Lake is partially caused by commercial and residential development. Both commercial and residential development need to practice erosion control methods during construction. Developments need to be designed to reduce off-site runoff problems. Local plan commissions need to initiate design criteria in ordinances to minimize erosion. It is, after all, cheaper to prevent erosion problems from happening than to try and correct them once a development is completed with homes, streets, etc.

The City of Warsaw also makes an annual contribution of \$1,500 to each of the cities three lake associations. This money is then to be used for lake enhancement practices and studies only.

CONCLUSION

As Warsaw and Kosciusko County moves into the 1990's we hope our research enhances your awareness of how important an asset our lakes are to our community.

We have tried to touch each member of this community and remind them of those 90 degree sunny afternoons in July you and your family spent at Center Lake taking a nice refreshing swim. How about the sunrises over Pike Lake in the spring and the splash of a Walleye at the end of your line heading toward the boat and ultimately the frying pan. We must not forget the 562 acre mirror that Winona Lake can create to challenge the avid water skier. The amenities our lakes provide is not limited to the local community either. People travel to our community and utilize our lakes and there is an economic impact from the lakes to benefit our community. When people travel to Warsaw to use our lakes, they purchase gas for their cars, they eat in our restaurants, they utilize our pay telephones, use banking services, buy food at grocery stores, and they occasionally require medical attention. There is no business in our community that does not benefit from the utilization of our lakes.

In conducting our research we were pleased to see how the City of Warsaw has actively supported maintaining the water quality of our three lakes. We saw that there were some bleak years, but the three lakes made progress in lake enhancement during the 1980's.

The outlook for the 1990's is encouraging. As we mentioned, the City of Warsaw has issued a \$7,000,000 bond to provide a new city sewer for Winona Lake residents in the Warsaw city limits. The City of Warsaw also donates \$1,500 annually to the three lake associations for lake enhancement projects.

The city plan is about to propose a joint city/county project which will limit farming up to an approximate 50' to 100' from a drainage ditch to prevent chemical runoff and sediment build up which has caused Pike Lake siltation and other problems.

No Kosciusko Leadership Academy project would be complete without some contribution back to our community. We hope to offer several contributions to the community and even some that can be followed up on in the future by KLA members and their White Paper Projects. First to the City of Warsaw and to Mayor Plank, a map of the Winona Lake watershed. Secondly, to the members of our community a list of the people who are in charge of the three Warsaw lake associations.

- | | |
|----------------------------|--------------|
| 1. Center Lake Association | John Kleeman |
| 2. Pike Lake Association | Don Tosby |
| 3. Winona Lake Association | Mark Jensen |

These people have volunteered within these organizations to help keep our lakes at a quality level we can be proud of. If you have suggestions or can help, please let it be known to these people.

In future KLA classes, we would like to see you take our project even further and develop an "awareness" pamphlet for boaters. We have discussed several critical sources of pollutants to our lakes, specifically Center, Pike, and Winona Lakes. Another source of lake pollution is carelessness and thoughtless treatment of the lakes by boaters. Paper products and aluminum cans can be found frequently floating on many of our county's lakes, particularly following a heavy weekend of boating. What we see floating is only a small portion compared to what has already sunk to the bottom of the lake.

We would like to see a pamphlet composed that would remind boaters to treat the lakes with respect. This pamphlet could then be placed in marinas, sporting goods stores, bait and tackle stores, liquor stores, the license branch, and any other appropriate establishment. We would see this as a good reminder, particularly to those visitors that do not live around the lake. We feel that this enhanced awareness would help the city and community keep the lakes an asset for ourselves and other communities to use.

Future KLA classes may want to investigate the feasibility of ways to generate money for lake enhancement by looking at a special tax to be changed from concessions sold at the public beaches. Anyone who has ever been to Indianapolis knows that hotels and restaurants do this to support the Hoosier Dome. Our community lakes might benefit from a similar type of tax. Finally, future KLA classes may want to investigate the City of Winona Lake to see if a sewer project and bond issue would be necessary for them to help preserve the lake.

As with any White Paper Project, this one was approached from many different angles before we settled on the project as it is. A goal of our project is to benefit our community as best we can. We feel our accomplishments to date are a result of a joint effort with several people within the community. Other goals of this project will be accomplished by getting more people involved and looking into the projects and research that was too big for this one project. To future KLA members or community leaders that are interested in pursuing other projects, we would like to offer our White Paper Project and the research services that we have prepared.

BIBLIOGRAPHY

- Hipensteel, Peter, Preliminary Investigation of the Lakes of Kosciusko County, March 1989.
- Davis, John, Winona Gets Walleye, Outdoor Scene, Warsaw Times Union, May 1, 1986.
- Davis, John, Walleye Growth Good in Winona, Outdoor Scene, Warsaw Times Union, November 6, 1986.
- Davis, John, It's Winona in '89, Outdoor Scene, Warsaw Times Union, December 3, 1989.
- Davis, John, Where are the Walleye, Outdoor Scene, Warsaw Times Union, October 28, 1988.
- Muckle, Kathy, Pollution: Metal Shavings Cover Bottom of Winona Lake, Warsaw Times Union, August 10, 1979.
- Clinger, Ronald , and Herbuck, Gary, and Siebenmorgan, Paul, Problems with Winona Lake, Warsaw Times Union, August 3, 1982.
- Brown, Edward, Pike Lake Kosciusko County Fish Management Report 1984, January 25, 1985.
- Staff Writer, Additional Pike Lake Tests Being Conducted, Warsaw Times Union, September 23, 1982.
- Davis, John, Pike Lake Gets Fish Attractor, Warsaw Times Union, March 11, 1982.
- Brown, Edward, Center Lake Kosciusko County Fish Management Report 1984, January 18, 1985.
- Indiana Department of Conservation, Warsaw Quadrangle, Topographic Map.
- Various maps supplied by Kosciusko County Surveyors Office.