

Ishpeming's

PARTRIDGE CREEK DIVERSION



Partridge Creek near North Seventh Street

Prior to settlement, Partridge Creek was the primary waterway through Ishpeming. Today the creek contaminates Deer Lake with elevated levels of mercury.

ISHPEMING'S STORM SEWER

As Ishpeming developed, a storm sewer was constructed to channel the Partridge Creek underground through the downtown area. The storm sewer extended from North 7th Street westward through the downtown area and was interconnected with the sanitary sewer. When large amounts of rainwater, snowmelt or surface water runoff entered the combined sewer, the wastewater treatment plant overflowed into Carp River and subsequently Deer Lake. Around 1970, the City of Ishpeming diverted Partridge Creek into the New York Pit mine with permission from the Cleveland Cliffs Iron Company (Cliffs).

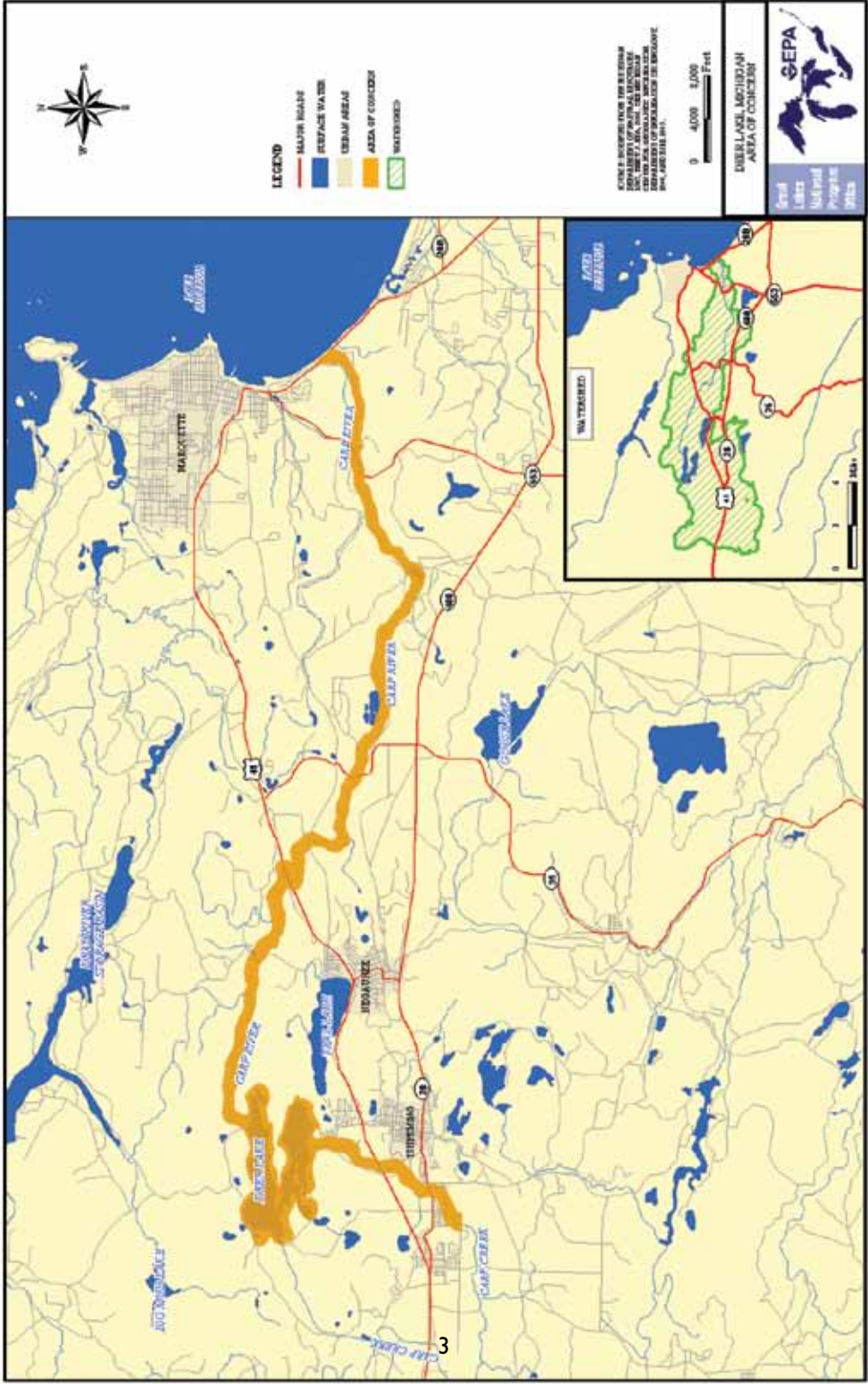
DEER LAKE AREA OF CONCERN

Under the 1987 amendments to the Great Lakes Water Quality Agreement, the State of Michigan identified Areas of Concern (AOCs) which have at least one Beneficial Use Impairment (BUI) that is an extraordinary problem, one that sets it apart from other sites with lesser contamination. Originally, the Deer Lake AOC had three BUIs. Two of them, reproductive problems and eutrophication, are slated for removal. The final BUI, restrictions on fish and wildlife consumption, is due to the mercury contamination of fish in Deer Lake.

Currently, Partridge Creek flows into the New York Pit mine. The creek enters the mine workings that exist underneath downtown Ishpeming. The mine workings are filled with water, like an underground lake.

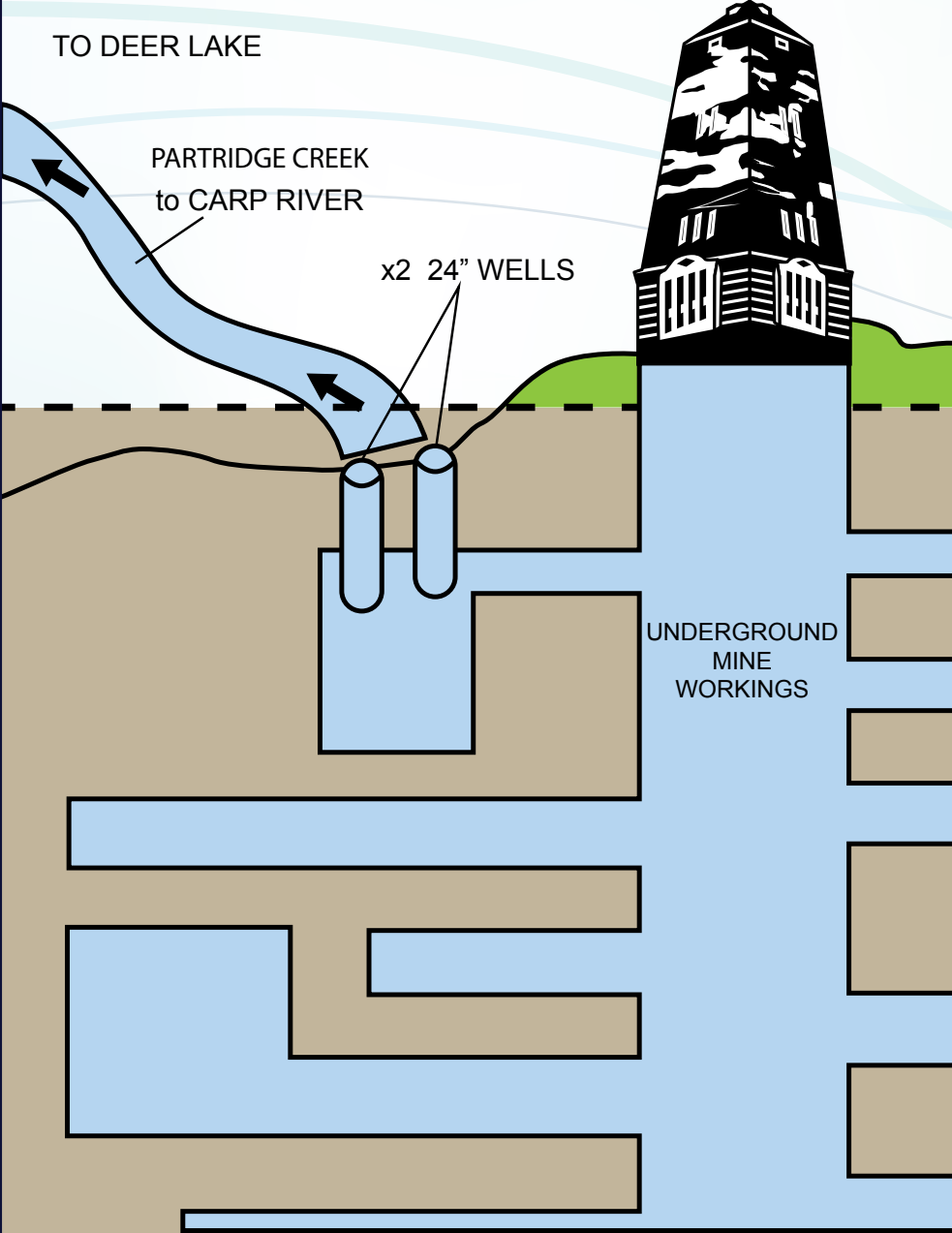
The creek causes water to flow through the mine workings. Mercury levels are elevated in the water released from Cliffs Shaft into the Carp River, which then flows on to Deer Lake. Deer Lake is contaminated with mercury from several sources, including a former gold mine, natural processes, former lab operations at the mine and existing sediment. The mercury in Deer Lake resulted in elevated levels in the lake's fish. Consequently, Deer Lake was listed as an AOC by the Environmental Protection Agency (EPA).

Diverting Partridge Creek from the mine workings back into the storm sewer will help eliminate the only controllable source of mercury contamination to Deer Lake, a requirement for delisting the AOC and removing the BUI.

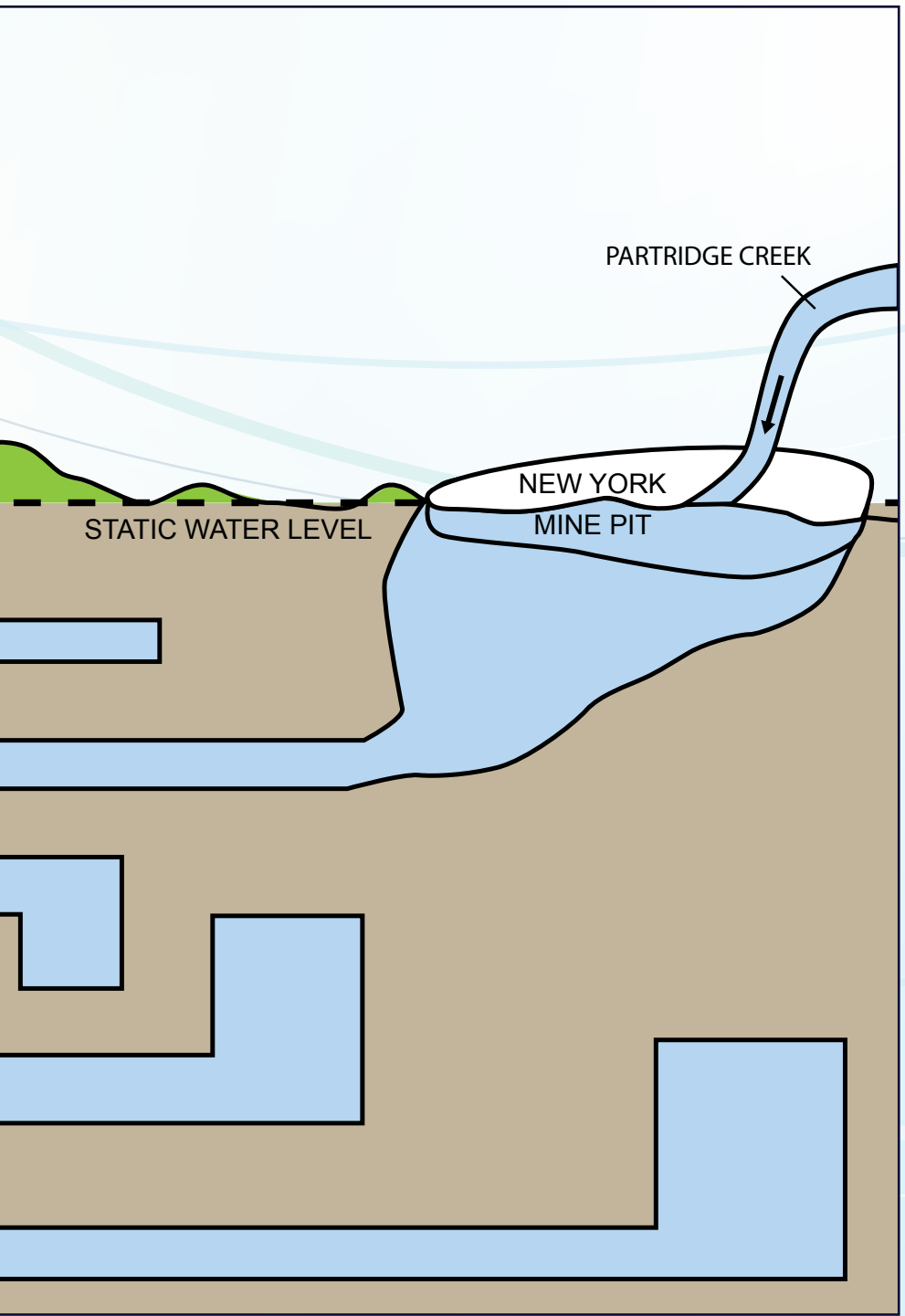


Map depicting Carp River route to Lake Superior and Carp River watershed (inset).

CLIFFS SHAFT MINES



Graphic representation of flow through mine workings



BENEFITS TO DELISTING

Deer Lake is a beautiful recreational resource and an abundant source of walleye and perch. After Partridge Creek is diverted and all of the BUI's have been removed it may be delisted as an Area of Concern.

In addition, delisting will improve property values and increase tourism and sport fishing. The Michigan Department of Community Health (MDCH) will determine when the fish consumption advisory may be lifted. The Departments of Environmental Quality (DEQ) and Natural Resources (DNR) will work together along with MDCH and the community to determine future fishing regulations on Deer Lake.



Courtesy of Michigan DNR

ISHPEMING'S STORM SEWER

Ishpeming's storm sewer system in the downtown area includes a brick tunnel that varies between 66 and 72 inches in height. The tunnel is deteriorating and nearing the end of its useful life. Some sections of the tunnel are collapsing. The present condition of the storm sewer prohibits the diversion of Partridge Creek.

Diverting the creek into the storm sewer will increase the flow through the storm sewer. This speeds up the rate at which the storm sewer deteriorates as water causes abrasion to the storm sewer tunnel. The storm sewer may be susceptible to collapse if it is not rebuilt prior to diverting the creek. Therefore, the storm sewer must be rebuilt in order to accommodate Partridge Creek. Maintaining the tunnel is expensive and time-consuming. It would cost more in the long term than reconstruction.



Representative image of brick storm sewer in good condition from Dedham, MA

COOPERATION

Consent Judgment – In 2006 the State of Michigan and Cliffs entered into an Amended Consent Judgment (ACJ) in Marquette County Circuit Court. The ACJ said in part that Cliffs would “... tak[e] steps necessary to compel the City of Ishpeming to redirect the Partridge Creek inflow from the Cliffs Shaft Mine.”

Deadline – The ACJ establishes a deadline for removing, or diverting, the creek from the mine workings by November 2015.

Partnership – Cliffs is supporting the City of Ishpeming in its efforts to divert the creek. Both parties understand the importance of diversion and have committed to complete the project as soon as possible.

CURRENT FUNDING AND CONSTRUCTION

The EPA awarded a \$2 million Great Lakes Restorative Initiative (GLRI) grant to the City of Ishpeming, which requires a \$700,000 match from the City and totals \$2.7 million of improvements. This grant award will complete Phase I of the project. Additional funding is needed to complete the entire project.

The following is a timetable for Phase I completion

Date	Task
Jan – April 2011	Obtain engineering services
April – Oct 2011	Prepare construction plans
Oct 2011 – Feb 2012	Solicit construction bids
Feb – Apr 2012	Prepare for construction
May – Nov 2012	Complete construction

CONSTRUCTION CONTINUED

When construction is underway, residents and business owners can expect street closures, loud noise, heavy equipment traffic, and other construction-related activities. Please be patient and remember how this project benefits our natural environment and Deer Lake. The project will also rebuild vital infrastructure in the downtown area.



Storm sewer construction underway.

ENGINEERING DETAILS

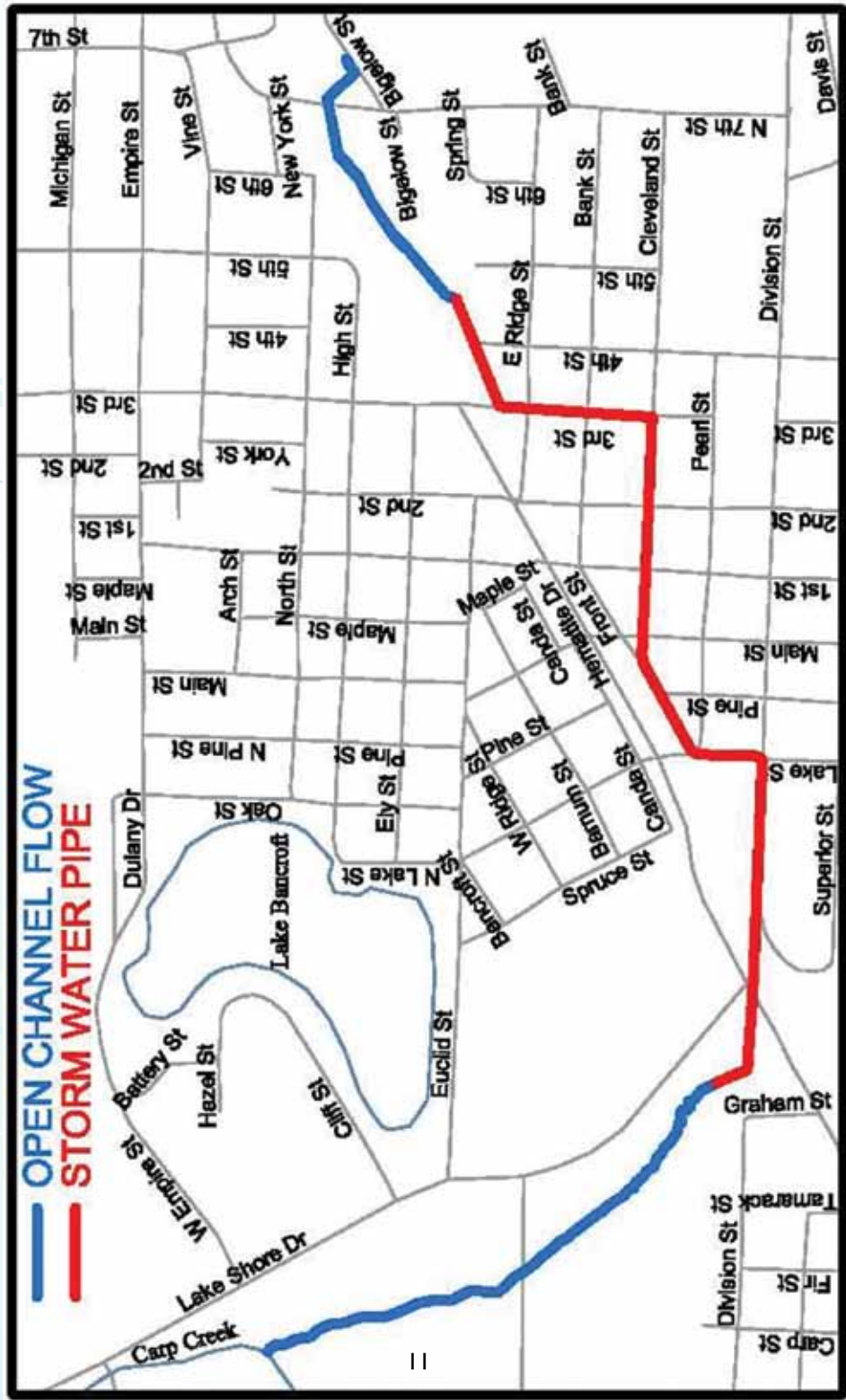
A phased approach must be used because of the large cost of the total project – \$8 million. The current GLRI grant award with matching funds of \$2.7 million will complete Phase I, which includes an approximate area from North 7th Street westward to Main Street. The exact extent of Phase I construction will be determined by cost estimates when detailed construction plans are completed.

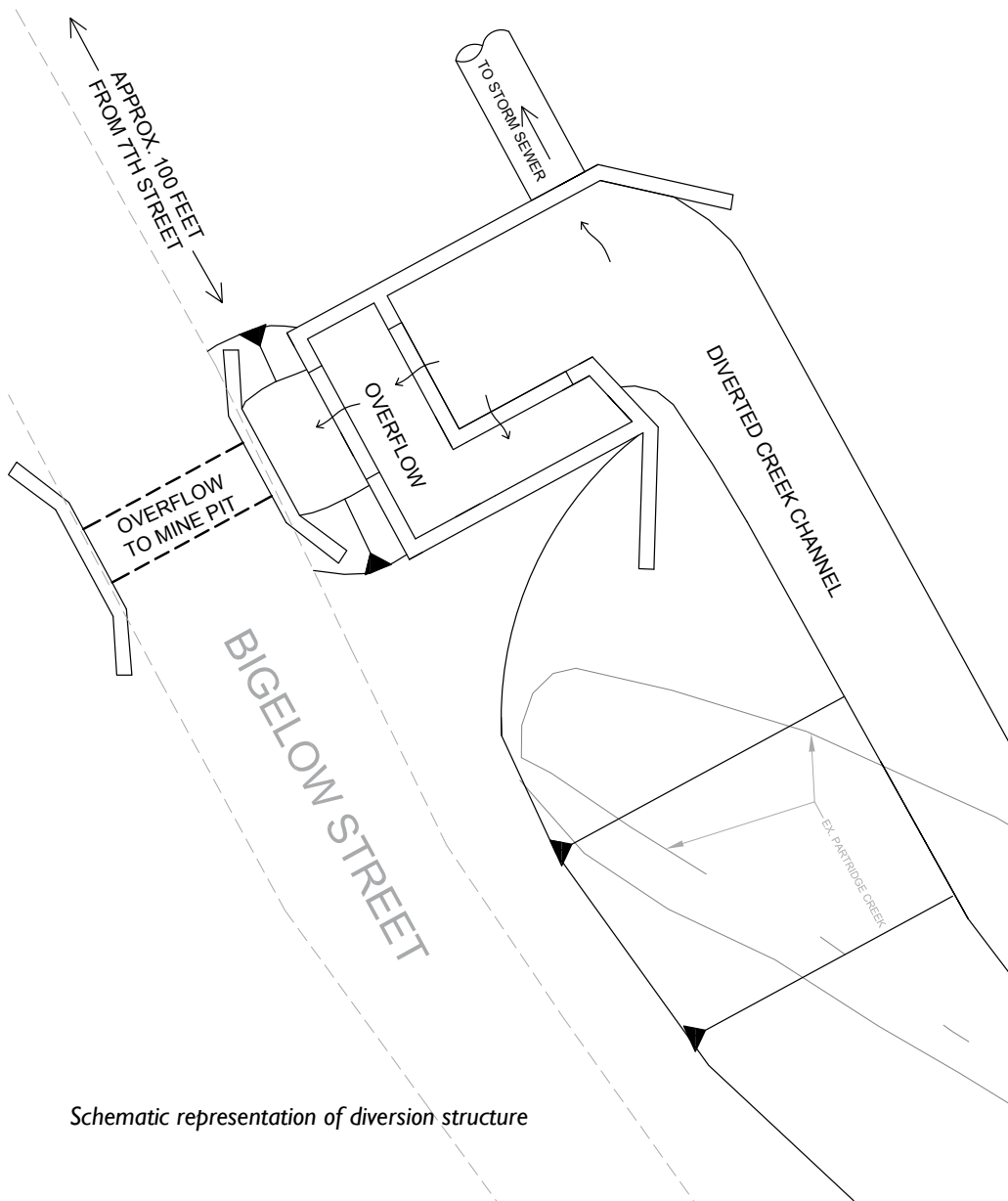
The storm sewer tunnel through downtown will be reconstructed as part of Phase I. In addition, the creek will be channeled through two areas and will be open to the surface, in a condition similar to a natural creek. Converting areas of Partridge Creek to natural conditions may result in improved wildlife habitat and create open space for recreation.

Reconstructing the storm sewer involves dismantling parts of streets through downtown in order to access the storm sewer. When the street has been removed, it is prudent to reconstruct all utilities within the street at the same time. For this reason, the reconstruction includes replacement of many water lines along the storm sewer's route. In addition, sanitary sewer lines sometimes cross and interconnect with the storm sewer. Reconstruction will replace many of these sanitary sewer lines. Finally, the sidewalks and streets must be restored to their pre-construction condition and this is also part of the project.

PRELIMINARY COST ESTIMATE

Work Categories	Engineer's Estimated Cost
Road Restoration	\$467,303
Sidewalk Restoration	\$457,875
Water Distribution Restoration & Replacement	\$363,491
Storm Water Infrastructure	\$1,002,787
Sanitary Sewer Restoration	\$132,747
TOTAL BUDGET	\$2,424,204





Schematic representation of diversion structure

The actual creek diversion will be accomplished by constructing a diversion structure. This diversion structure will channel the creek's flow back into the storm sewer. However, extreme precipitation and runoff events may cause an overflow that is partially discharged into the mine workings. The purpose is to prevent flooding and overflow in the downtown area.

FUNDING

To date, Cliffs has funded preliminary engineering services to help plan the project. These services have included grant applications and pursuit of other funding sources. The City of Ishpeming has pursued the following funding sources:

Source	Amount
U.S. Senate Appropriations	\$2 million
U.S. House of Representatives Appropriations	\$2 million
Community Development Block Grant (U.S. Department of Housing and Urban Development)	\$750,000
U.S. Fish and Wildlife Services	\$750,000
Great Lakes Restoration Initiative (GLRI)	\$2 million

BONDING

A bond is a formal contract to repay borrowed money with interest at fixed intervals. Municipalities issue, or sell, bonds in order to finance infrastructure improvements. For example, municipalities will often sell bonds in order to fund improvements to their water systems. The municipality will sell bonds totaling a set amount and then repay those who purchase the bonds, bond holders. The municipality will use the rates they generate from the sale of water to pay the bond holders. This type of bond is called a **revenue bond**.



BONDING CONTINUED

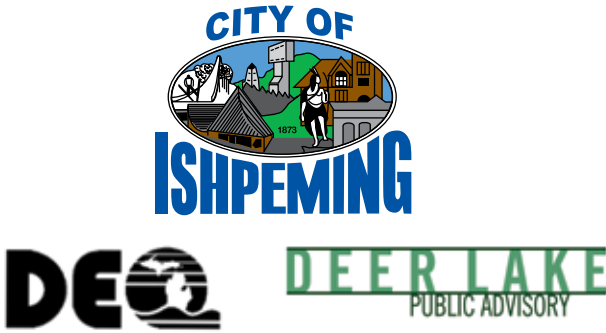
Generally, storm sewer systems do not generate revenue in the State of Michigan like water and sanitary sewer systems. In 1998, the case of Bolt v. City of Lansing established a legal precedent that prohibits storm sewer utilities. As a result, the diversion of Partridge Creek into the City of Ishpeming's storm sewer cannot be funded using a revenue bond. Instead, a different type of bond must be used.

A general obligation bond is a common type of municipal bond that is secured by a municipality's pledge to use legally available resources, including tax revenues, to pay bond holders. This type of bond will be used to finance phase I of the Partridge Creek Diversion project. The City of Ishpeming plans to sell general obligation bonds in May 2011 to repay the matching portion of the GLRI grant, approximately \$700,000. The city will use a portion of the public improvement millage that is currently levied – approximately 0.9 mills out of 4.5 mills levied to repay the bond.

The City of Ishpeming, with the support of Cliffs and the Deer Lake Public Advisory Council, continues to pursue grant funding, including future GLRI funding. Unfortunately, grant funding alone may not be able to cover the entire cost of the project – most grants require matching funding. The City of Ishpeming has made significant progress toward completing the project. Hopefully the momentum from Phase I construction will carry forward and lead to more funding.



The City of Ishpeming produced and distributed this brochure. This brochure is made possible by funding from the EPA and the DEQ, with support from the Deer Lake Public Advisory Council.



The purpose of this brochure is to provide public outreach. Partridge Creek and the mercury contamination of Deer Lake are issues that affect the residents of the City of Ishpeming and those that use Deer Lake. If you would like to learn more, please start with the following resources:

Great Lakes Restoration Initiative -- greatlakesrestoration.us/

Great Lakes Commission -- www.glc.org/spac/

Deer Lake AOC -- www.epa.gov/glnpo/aoc/drlake.html

City of Ishpeming -- www.ishpemingcity.org/

Cliffs Natural Resources -- www.cliffsnaturalresources.com

Michigan DEQ -- www.michigan.gov/deq/

Michigan DNR -- www.michigan.gov/dnr/

CITY OF



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