

Date | 11-25-2014
To | Chisago Lakes LID Board of Managers
cc | Jerry Spetzman
From | Greg Graske
Regarding | Fall Channel and Outlet Structure Inspection

On October 10, 2014 an inspection of the Chisago Lakes Outlet Channels and Structures was conducted. Chisago County staff Jerry Spetzman along with EOR engineer Greg Graske performed the field inspection of the channel system. The following summarizes the inspection, actions performed, and any future actions recommend. Actions in red are recommended for follow up in the near future, actions in orange are actions that require future follow up or monitoring but are not urgent, and actions in green are minor maintenance items that were completed in field prior to this report.

Channel from Chisago Lake to Wallmark Lake

The channel from Chisago Lake to Wallmark Lake was inspected. The channel area near Stinson Avenue appeared to be stable and the existing rock check dam appears to be eliminating any further head cutting and erosion of the channel. The trees along the channel section between Highway 8 and North Avenue were cleared two years ago. Banded Mystery Snails were noted at the beach area of Chisago Lake. Included below is a summary that discusses the Banded Mystery Snail taken from the Minnesota DNR website.



Photos: Banded Mystery Snail at Chisago Lake Beach

Chinese and Banded Mystery Snails *Bellamy (Cipangopa ludina) chinensis* and *Vivaparvus georgianus*

Species: Large, olive colored snails.

Origin: Chinese mystery snail (CMS) is native to Asia. It was brought to California in 1892 as a food source, and found in Massachusetts in 1915 — likely an aquarium release. The historic range of the banded mystery snail (BMS) is the southeastern U.S., primarily in the Mississippi River system up to Illinois. It is a popular aquarium snail that's been released in Minnesota.

Impacts: Both snails can form dense aggregations. In Asia, the CMS can transmit human intestinal flukes, however, cases have not been documented in the United States. It also is a carrier of trematode parasites found in native mussels. BMS can cause mortality of largemouth bass embryos when they invade nests.

Status: CMS are present in over 80 waters and BMS occurs in about 50 waters in Minnesota.

Chinese mystery snail (left) and Banded mystery snail (right)

Where to look: They are mainly found in lakes and in slow moving rivers. They are called “mystery” snails because in spring, they give birth to young, fully developed snails that suddenly and mysteriously appear. After reproducing in their fourth year, they die and their shells wash up on shore.



Regulatory classification (agency): Chinese, Japanese, and other mystery snails (species in the genus *Bellamy* / *Cipangopaludina*) are regulated invasive species (DNR). The banded is a regulated invasive species as well. All are illegal to introduce into state waters.

Means of spread: Most likely introduced via dumping of aquariums and by transfer from one water body to another.

Keys to identification: Chinese mystery snail has small shallow depressions above the shell opening and rows of fine, short stiff hairs parallel to the whorl of the shell (may wear off with age and abrasion).

Banded mystery snail has red bands that are parallel to the whorl of the shell.

Source: http://www.dnr.state.mn.us/invasives/aquaticanimals/chinese_banded_mysterysnails.html

Debris including branches, logs, and trash were noted at the upstream end of the Sportsman Drive Culvert. This debris was removed during the inspection.



Photos: Sportsman Drive culvert before and after debris removal

A new dog park was installed adjacent to the channel just upstream of Sportman Drive. The park comes quite close to the channel and could represent a source of nutrient loading to the ditch. It is recommended that coordination with Chisago City occur to discuss Best Management Practices for the park and suggest leaving the edge nearest the channel natural to provide for a natural buffer between the park and the channel.



Photos: New Dog Park

Recommended Action:

- Have CLLID Administrator contact Chisago City regarding dog park and discuss options for maintaining a buffer area

Minor Maintenance Items Completed:

- Debris Cleared from Sportsman Drive culvert trash rack

Channel from Wallmark Lake to County Road 19

No issues noted.

Recommended Action:

- None

Channel from Chisago Lake to Green Lake

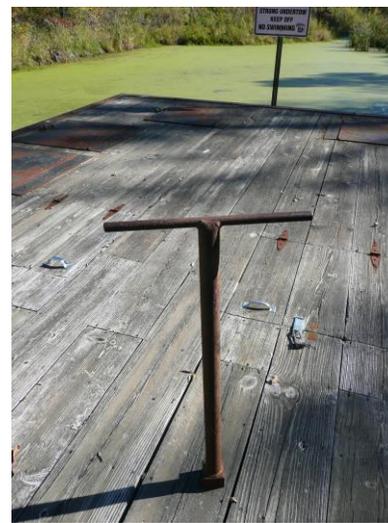
The channel was free of debris. No issues noted.

Recommended Action:

- None

Outlet Structure from Chisago Lake Outlet Channel into Green Lake

The outlet structure connecting the channel from Chisago Lake to Green Lake was visited. Several repairs were made to the structures in 2012. These repairs included fixing one of the gates, fixing the fence, and repairing a leak. The gates were tested and were working correctly. Water was observed flowing from the wetland area to Green Lake when opened. The gates were returned to the closed position upon completion of the inspection.



Photos: Outlet Structure

Recommended Action:

- None

Suggested Follow Up:

- Investigate options for a better tool for opening and closing gates

Minor Maintenance Items Completed:

- Tested Gate Operation

Outlet Structure and Pipe between Lake Ellen and Swamp Lake

A repair to the gate mechanism, clearing of vegetation and replacement of the missing control box cover was completed in 2012. The gate was exercised and appeared to be operational. The gate was opened on June 27th due to rising water levels on Green Lake. The water levels receded and the gate was closed on November 3rd. The pipes between Little Green Lake and Lake Ellen were also visited. A minor amount of debris was removed from the trash racks. The debris surrounding the weir was scheduled for removal on November 12th. Unfortunately, due to a winter storm on November 10th debris cleanup will be postponed until spring.



Photo: Left - Lake Ellen Outlet Structure. Right – Little Green Lake Outlet

Recommended Action:

- Removal of debris build up around structure

Suggested Follow Up:

- Monitor Erosion Control Device in farm field for needed maintenance

Minor Maintenance Items Completed:

- Exercised Gate
- Removed minor debris on Little Green Outlet

Swamp Lake Outlet

The Swamp Lake outlet pipes under County Road 80 were visited. This location has 7 pipes under the road to convey flow. Obstructions previously noted have been removed. No concerns were noted.



Photos: Pipes leaving Swamp Lake

Recommended Action:

- None

Ivywood Outlet Structure

The culvert crossing under Ivywood Trail was visited. This site is not generally part of the outlet conveyance due to the outlet channel to Carlos Avery WMA never being fully completed. No issues noted.

Recommended Action:

- None

North Center to North Lindstrom Channel



Photo: Removed Beaver Dam near County Road 20

The channel between North Center Lake and North Lindstrom was visited. The channel was partially full of water at the time of the inspection. A beaver dam was obstructing flow at the downstream side of the County Road 20 Bridge during the previous channel inspection. The beaver dam was removed previously and further clean out of debris was performed during this inspection. Additional beaver activity was not noted. It is recommended that the dam area be monitored, and if the dam is rebuilt, it is recommended that a beaver trapper be brought in to relocate the Beaver

Recommended Action:

- None

Suggested Follow Up:

- Monitor for ongoing beaver activity

Minor Maintenance Items Completed:

- Removed additional debris from old beaver dam