



Facts about the Lake Superior Barrels

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This fact sheet provides information about the Lake Superior Barrel Disposal Sites. It describes the cooperative efforts of the Minnesota Pollution Control Agency (MPCA), the U.S. Environmental Protection Agency (EPA), and the U.S. Army Corps of Engineers (Corps) to locate and recover barrels dumped by Honeywell Corporation of Minneapolis, into Lake Superior in the 1960s.

Origin of the barrels 1959 – 1962

In 1959, the U.S. Army was responsible for supervising a contract with Honeywell to produce assemblies for anti-personnel grenades and mines at the Twin Cities Army Ammunition Plant ([TCAAP](#)) in Arden Hills/New Brighton. The designs for these munitions were classified for national security purposes, and the disposal of the waste materials and off-spec parts generated during the manufacturing of the munitions had to be handled and disposed of in a manner consistent

with the classification.

Initially, three disposal methods of the classified wastes were tried. Destruction of the material was attempted in a smelting furnace in Duluth in 1959, but discontinued for unknown reasons. Demolition of the wastes with explosives was attempted at Camp Ripley, but was unsuccessful. The munitions contractor also proposed to install a permanent [hammermill](#) to pulverize the waste material, but the Army determined it would be too expensive to purchase and operate.



A total of nine barrels have been recovered. Three from the Lester River site, four from the Talmadge River site and two from the Stony Point site. No barrels were recovered at the Knife Island site. These barrel sites are nearly two miles away from the nearest water intake location.

The Army determined the most economical and secure method of disposal was to ship the waste material to Duluth for disposal in Lake Superior. According to affidavits and available records, the classified waste material was packed into 55-gallon drums, trucked to Duluth, loaded onto Corps barges, transported to various locations and sunk in Lake Superior. The 1959 records indicated that the drums contained no “explosive or radiologic” materials. Between 1959 and 1962, the Corps disposed of classified waste material seven times in Lake Superior for a total of 1,437 drums.

1968 – First barrel discovered

In 1968, a commercial fisherman netted a barrel while trawling in an area approximately seven miles northeast of Duluth. The barrel weighed approximately 700 pounds and contained “metal parts, resembling buckshot.” After examining the barrel contents, the fisherman dumped the barrel and its contents back into the lake.

Shortly after learning of the fisherman’s discovery, MPCA staff reviewed ship’s logs and confirmed the practice of barrel dumping in the lake, and found that the source of these barrels was TCAAP. From that point, public interest in the barrels increased, and the MPCA began pressing the Army for an investigation.

1976 – First dump site located

In 1976, the Army authorized an effort to locate the barrels and a search with a [magnetometer](#) (a tool used to detect metal) was conducted. Crews aboard a search vessel were reported to have located about 20 barrels, according to Duluth media accounts. Water samples taken from around those barrels were reported to have shown “no detectable contributions from chemicals” and no radiation was detected.

1977 – Divers used in search

In response to continued public concern, the Army attempted to relocate and recover barrels in 1977 using hard-hat divers. Due to imprecise navigation instruments of the day however, they were unable to find the previously identified disposal site. After three days of diving and failing to locate a single barrel, the Army suspended the search indefinitely.

1986 - 1989 – New Corps program

In 1986 the Federal Superfund law was amended. This led to the creation of a new Corps program to examine formerly-used defense sites for contamination. At the MPCA’s request, the Corps re-evaluated the known history about the barrel disposal sites and determined that another barrel investigation could be funded under the new program.

1990 – Two barrels recovered

The Corps received funding for a limited investigation and initiated a barrel assessment effort in September 1990. The initial search involved locating barrels using [side-scan sonar technology](#).

After several days of searching suspected dump site areas with the sonar, a 105-barrel dump was located at a depth of 180 feet, about one mile off shore, due east of the mouth of the Talmadge River. **(See map.)**

A recovery effort by the Corps ensued and two barrels were retrieved intact. Analysis of barrels’ contents revealed non-hazardous metal scraps and concrete, which had been used to cap the barrel ends.

A mini-sub, manned by a single operator, was also contracted by the Corps for the 1990 barrel-recovery effort. The sub operator attempted to attach a clamping device to a barrel, however on the last descent of the day, the sub operator said that an on-board [Geiger counter](#) began to click as the sub came within 30 feet of the lake bottom. The instrument allegedly clicked about a dozen times, then stopped clicking when the sub reached the bottom. A return visit and dive to the same area the next day, with two men and two Geiger counters on board, failed to reproduce the events of the previous dive. The sub was successful in attaching a clamp, but did not retrieve a barrel.

1990 – Radiation tests conducted

Three weeks later, the Corps returned to this site accompanied by staff from the EPA Air and Radiation Laboratory in Mobile, Alabama. The EPA used a small, remotely-operated vehicle, or [ROV](#), equipped with a [gamma-ray detector](#), which is approximately 200 times more sensitive than the Geiger counter that was onboard the submarine. Over a period of five days, 24 barrels at the site were located and individually monitored for

radiation. Just as in 1976, no radioactive material in the barrels was detected.

1991 – 1992 – No available funding

For the next two years, the Corps' St. Paul District Office tried to secure funding for further investigation and location of the remaining barrels. Due to budget constraints, no funding was available.

1993 – MPCA acquires funding and identifies new sites

In 1993, the MPCA was able to use approximately \$125,000 from emergency funds to conduct a large-scale side-scan sonar project to detect and locate barrels in a three-mile by 15-mile area of Lake Superior. The sonar was pulled at the end of cable attached to the survey vessel which was guided by global positioning satellites. Recordings of the sonar signals were made on computer paper and stored on optical disks. When weather permitted, surveying was conducted around-the-clock, with crew changes and vessel refueling occurring every 12 hours.

After ten days of surveying, three new sites were identified by the sonar. One site was 6.6 miles from Duluth and east of the mouth of the Lester River at a depth of 130 feet. The second site was about 2.5 miles due south of Stony Point at a depth of 250 feet. The third site was about three miles east of Knife Island at a depth of 400 feet. **(See map.)**

A remotely-operated vehicle with video and sonar capabilities was used to visually verify the presence of barrels and to record their condition. Barrels were confirmed at the Lester River site and the Stony Point site. Bad weather however, prevented a visual confirmation of the Knife Island site, and the project contract expired before a confirmation could be determined.

By the end of the 1993 survey, the position of the barrels at the Talmadge site (located in 1990), the Lester River site and the Stony Point site had been surveyed to within plus-or-minus ten feet using satellite navigation technology. The position of targets suspected of being barrels at the Knife Island site had also been surveyed, but not verified, with underwater video.

1994 – Seven barrels recovered

Using information from the MPCA survey, the Corps began to plan a concerted effort to recover barrels during the 1994 shipping season. After securing \$200,000 in funding, the Corps contracted with a highly-specialized marine contractor equipped and experienced in recovering underwater objects for the U.S. military.

The contractor supplied a large, remotely-operated submarine capable of securing a clamp around sunken objects and hoisting them to the surface. The submarine was also equipped with sonar, video cameras, still cameras, and an instrument to measure radioactivity, if encountered. The Corps also employed a U.S. Navy salvage diving team. The 15-member team consisted of divers, technicians, officers and a doctor. The divers were capable of sustained dives to 190 feet.

For seven days in June 1994, a flotilla of contractors, divers, equipment, and Corps and MPCA staff worked on Corps' vessels to investigate the four known barrel sites **(see map)**.

The effort resulted in the recovery of seven barrels from three sites - three barrels from the Lester River site; two barrels from the Talmadge River site; and two barrels from the Stony Point site. No barrels were found at the Knife Island site. The previous sonar survey had located a widely-dispersed debris field of metal, consisting of scrap iron, buckets, cans, and other metallic items.

The three barrels from the Lester River site contained a mixture of ash and slag. Close examination revealed the presence of parts that matched the drawings of munitions being developed by the Army in the 1950s. The slag is thought to be an early attempt at melting the scrap as a means of disposal. The other five barrels contained completed timer parts packaged in cardboard boxes.

Analysis of the slag and water drained from the barrels indicated the presence of 17 contaminants including metals, volatiles, semi-volatiles and polychlorinated biphenyls.

Recovery efforts officially end

By the fall of 1994, the MPCA and Corps began to consider all the analytical data collected since 1990 and all the external factors relative to pursuing a full-scale barrel recovery. Together, the Corps and the MPCA considered a number of factors for continuing the barrel

search, and for suspending the barrel search. Finally, in December 1994, the MPCA and the Corps announced their decision to suspend continued recovery efforts because the barrels did not represent a threat to human health or the environment. The U.S. Environmental Protection Agency also reviewed the findings and supported the final decision.

For More Information

More information about the Lake Superior barrels is available on the MPCA Web site at:

www.pca.state.mn.us/water/basins/superior/l sbarrels.htm

1995 - Barrels rechecked for radiation

In response to public opinion about the MPCA/Corps joint decision to suspend activity, Congressional representatives requested the EPA to conduct another recheck of the barrels for radioactivity. The EPA authorized the investigation, and in July 1995 another team from the EPA Air and Radiation Laboratory was sent to Lake Superior.

The equipment used was the same as the 1990 investigation - a small remotely operated vehicle with a very sensitive radiation detector attached. Over a six-day period, another 24 barrels were individually monitored for radioactivity - nine barrels at the Lester River site, six barrels at the Talmadge site, and nine barrels at the Stony Point site. The team also rechecked the Knife Island site to see if any barrels could be located, but again no barrels were found.

The EPA's findings of this investigation concluded that, "None of the drums measured had activity significantly different from normal background radiation."

Current MPCA Position on the barrels

The MPCA has completed its investigation of the Lake Superior barrels. Based on current data and information, the MPCA does not believe that the barrels present a threat to human health or the environment. All the information regarding the MPCA five-year investigation of the Lake Superior barrels is public and staff will continue to provide access to this information. The Agency is also willing to cooperate with any new investigations by the federal government, local government, Tribal Governments, or others. However, there are currently no additional funds to contribute to further investigations. If any future investigations provide evidence of a threat to human health or the environment from these barrels, the MPCA would then consider the need for additional funding.