

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>TORCH LAKE</u>	ProjectID: 05-40
Last Updated:	01/24/02	
City:	Multiple	
County:	Houghton	
State:	MI	
Country:	USA	
Bodies of Water:	Torch Lake; Portage Lake; the Portage Channel; Keweenaw Waterway; Lake Superior; Boston Pond; Calumet Lake	
US EPA Region:	V	
Status (Active, Complete, or Monitoring Only):	Active	
Date On NPL:	1986	
ROD/ESD Date:	1994 (ROD)	
Operable Unit:	OU-2	
Areas of Concern (length or acres):	Approximately 1,100 acres of 2,700-acre Torch Lake.	
Other Characteristics of Water Body:	Torch Lake has a mean depth of about 56 feet and a maximum depth of about 115 feet.	
Contaminants of Concern:	Primarily copper; others are arsenic, chromium, lead, nickel, silver, PAHs, and PCBs (1254)	
Source of Contamination:	The discharge of milling wastes, primarily stampsands, to Torch Lake from copper milling and smelter operations.	
Contaminated Area Physical Characteristics:	<p>Between 1868 and 1968 an estimated 200 million tons of copper-contaminated stampsands were disposed of in Torch Lake, nearly 20% of its total volume. Deposited stampsands are found to range in thickness from 25 feet to more than 130 feet. Results of lake-bottom samples collected from 1989 to 1992 as part of the OU-2 RI indicated an apparent "hot spot" in sediment located offshore from the former Calumet and Hecla Smelter. This area contained significantly elevated levels of both organic and inorganic compounds relative to both background and samples collected from other study areas.</p> <p>Baseline sediment and water column samples were collected from the lake in 1999 and 2000. Thirty surface sediment grab samples were collected that exhibited copper concentrations ranging from 37 to 5,500 ppm (22 of 30 samples exhibited concentrations > 1,000 ppm). Other metals were also detected but typically at much lower concentrations than copper. Eight cores were collected from which 26 discrete sediment samples were recovered. Copper concentrations ranged from 635 to 5,850 ppm (22 of 26 samples exhibited concentrations > 1,000 ppm). The maximum concentration was found at a depth of 0-19 inches. Other metals were found in concentrations similar to the concentrations found in surface sediment. Additionally, four multi-core sediment samples were collected for the specific purpose of determining sediment accumulation rates and ages.</p>	
Type of Regulatory Action:	Superfund. Final. Fund-lead.	
Overall Status Summary:	Areas of Michigan's Keweenaw Peninsula in and around Torch Lake (2,700 acres) are designated as both a Great Lakes Area of Concern (AOC) and a federal Superfund site. The Torch Lake AOC encompasses the areas included under the Superfund designation, as well as other areas of the peninsula. Specifically, the AOC comprises the Keweenaw Waterway (North Entry Harbor of Refuge, Portage Lake, and Torch Lake), its watershed, portions of two other adjacent waterways (Trout River and the Eagle River Complex), and several miles of	

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western Lake Superior shoreline; about 368 sq. miles total. The Torch Lake Superfund Site encompasses Torch Lake, the Kenweenaw Waterway, the northern portion of Portage Lake, the Portage Channel, Boston Pond, Calumet Lake, and a small area of Lake Superior where the western end of the Kenweenaw Waterway empties into it. The Superfund Site also includes about 450 acres of exposed mining waste, slag piles, and debris along the western shore of Torch Lake and another 12 discrete, localized sites with similar wastes located in upland areas.

The contamination is the result of over 100 years of copper mining, milling, and smelting activities along Torch Lake and the other water bodies. Waste materials exist in three forms: as poor rock piles, as slag and slag-enriched sediments, and as stampsands. The poor rock and stampsands contain elevated levels of copper, while the slag and slag-enriched sediment contain elevated levels of copper, arsenic, lead, chromium, and other heavy metals. An estimated 200 million tons of stampsands were disposed of in Torch Lake during the years of active copper mining and smelting, comprising about 20% of the lake's original volume. The lake also reportedly contains a single sediment "hot spot" of several acres containing slag-enriched sediment contaminated with heavy metals and the only documented organic contamination (PAHs) in the lake.

The site has been separated into three Operable Units (OU): OU-1 includes the above water stampsands and slag-contaminated western shore of Torch Lake; OU-2 includes the water column, the stampsand-covered lake bottom, and associated groundwater; and OU-3 includes the 12 upland areas and Lake Superior shoreline. In OU-2, the primary impact of the lake-bottom stampsand is its toxicity (due to elevated levels of copper) to the benthic community. Reportedly the level of copper found in the stampsands is sufficiently high to have eliminated all native benthic organisms in these areas. Other ecological impacts were not observed. EPA has not found the lake-bottom contamination to be associated with any public health concerns. Additionally, restrictions on navigational dredging and the disposal of spoils are in place for many areas of the lake and nearby water bodies due to the potential ecological impact of the sediments.

RODs have been issued for all three OUs. The selected remedy for OUs-1 and -3 is to install a 6-8 inch sand and soil cap over the stampsands and slag piles, and promote vegetation of the cap. The remedy selected for OU-2 is no action. The rationale for this decision was summarized in a 1994 position paper prepared by EPA. The rationale provided two reasons for no action: 1) the extent of the lake-bottom contamination precluded the ability to select a cost-effective remedial solution; and 2) the lack of human health concerns and limited ecological health impacts did not warrant consideration of an active remediation approach. In the position paper, EPA surmised that by stopping the continued erosion of copper-contaminated waste materials into the waterways from nearshore sources, the waterways would eventually recover naturally through ongoing natural sedimentation and detoxification processes currently being observed in other water bodies in the area.

Remedial designs were completed in 1998 for all of the areas targeted under the OU-1 and OU-3 remedial actions. The estimated cost to complete these remedies is \$15.2 million. Installation of the OU-1 cap began in September 1998 and is to be completed in Spring 2002. The capping of OU-3 areas is ongoing and is anticipated to be completed by 2004. A baseline monitoring report for the lake was completed in August 2001. MDEQ has responsibility for performing long-term monitoring at the site following implementation of the OU-1 and OU-3 remedies. MDEQ is currently preparing a long-term monitoring plan.

Remedial Action Planned:



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<i>Last Updated:</i>	01/24/02	

<i>Risk Assessment:</i>	<input checked="" type="checkbox"/>
<i>Remedial Action Implemented:</i>	<input type="checkbox"/>
<i>Status of Dredging</i>	<input type="checkbox"/>
<i>PRPs:</i>	<input type="checkbox"/>
<i>Contacts:</i>	<input checked="" type="checkbox"/>
<i>References:</i>	<input checked="" type="checkbox"/>
<i>Modeling:</i>	<input type="checkbox"/>
<i>Fishing Advisory:</i>	<input checked="" type="checkbox"/>
<i>Key Conditions:</i>	capping, Great Lakes AOC, more-harm-than-good, natural recovery, post monitoring

REMEDIAL ACTION PLANNED

Project Name **TORCH LAKE**

ProjectID: 05-40

Last Updated: 01/24/02

**Target Sediment Cleanup
Standards (TSCS):**

How TSCS Established:

**Target Bank and Floodplain
Cleanup Levels (if applicable):** N/A

Other Target: N/A

**Environmental Sample Data
References:**

- **Sediment:** Reference A-738
- **Water:** Reference A-738
- **Fish:**

Estimated Target Volume: N/A

Planned Disposal Method: N/A

**Estimated Calendar Time to
Implement Remedy:**

**Estimated Time to Implement
Remedy:**

**Estimated Cost to Implement
Remedy:**

**Stated Remedial Action
Objectives (and Source):**

**Measures of Success to
be Used:**

**Planned Monitoring and
Restoration:**

The monitoring of groundwater, surface water, sediment, and general ecological monitoring are to be included in the O&M plan for OUs-1 and -3. Also included will be an evaluation of the rate and effectiveness of organic sedimentation in Torch Lake. Five-year reviews are to be performed to assess the status of Torch Lake sediments and ecology. MDEQ has responsibility for long-term monitoring and is currently preparing a long-term monitoring plan.

**Agency Position on Sediment
Removal (and Source):** Source: 1994 EPA Position Paper: Reference A-728:

“An assessment of the remedial options for OU II requires an evaluation of the scope and complexity of this portion of the site. In preparing such an evaluation, certain conditions demand recognition. A 2,700 acre lake containing 200 million tons of stampsands presents a scope which is, at the very least, formidable. So formidable, in fact, that a rudimentary consideration of the scale involved, not to mention the physical complications of working in an aquatic environment, immediately obviates the need for further consideration of traditional sediment remediation approaches for most of the study area. As a result, a statement can be made which summarizes the EPA position: the major alternatives for remediating the sediments of Torch Lake, dredging, capping, and large scale treatment are not practicable due to the nature and extent of the stampsand material.”

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“A convenient point of reference for the reasoning which supports this position is the Feasibility Study (FS) for OUs I and III. The FS, which assessed remedial alternatives for the stampsand piles in OUs I and III, quickly dismissed both the excavation and the treatment alternatives due to the nature of the material and the large volumes involved. The dredging and treatment options for OU II remediation of the stampsand sediments are sufficiently similar to the excavation and treatment alternatives evaluated in the FS to merit a corresponding conclusion (i.e., dismissal) as to their practicability, especially when the difficulties and disruptions inherent in working in the aquatic environment are considered. Arguably, capping a significant portion of 2,700 acres of this sediment, in depths up to 115 feet, would be no less difficult and disruptive.”

“Ongoing studies of sediment cores taken from Portage Lake conducted by Michigan Technological University for the Michigan Great Lakes Protection Fund indicate that historically that system recovered quickly following the periodic cessation of active stampsand deposition. The preliminary results support the supposition that, historically, areas of Portage Lake directly affected by stampsand dumping were detoxified rather quickly, following cessation of active discharging, by organic complexation and other chemical mitigative processes. Once the lake bottom reached a sufficient level of detoxification, the sedimentary record shows, benthic communities became reestablished.”

“Admittedly, Torch Lake is a different system. The sedimentary and humic and tannic inputs to Portage Lake vastly exceed Torch Lake levels. However, recent preliminary research suggests that the processes at work in Portage Lake may also be in operation in Torch Lake, although at a diminished rate. Should further research of the Torch Lake system indicate that it is sufficiently similar to the Portage Lake system, such research would provide further justification for advocacy of natural, albeit slow, sedimentation for Torch Lake. Of course, advocacy of natural sedimentation for Torch Lake based on this hypothesis would necessitate a five year review in order to verify the rate and effectiveness of organic sedimentation.”

“Therefore, having concluded impracticability with respect to comprehensive direct remedial options due to the nature and extent of the stampsand sediment contamination, the focus of this assessment turns to the identification and consideration of limited or indirect options. The most obvious object of limited action is the hot spot. Since the RI found contamination in the hot spot to consist of drastically elevated levels of metals and the only documented organic contamination (PAHs), it should be evaluated apart from the general assessment of the stampsand sediment. In doing so, it is important to reiterate that the risk assessment did not consider the hot spot as a potential source of human health risk. This conclusion was advanced after considering whether contamination associated with the hot spot could realistically reach human receptors. Since the hot spot is located offshore in approximately 30 to 75 feet of water, human contact was not deemed realistic. Additionally, the potential for biological uptake with resulting exposure to humans through consumption of biota was evaluated and considered insignificant. Consequently, U.S. EPA does not regard remedial action of the hot spot to be necessary for the protection of human health.”

“However, due to the ecological risk, further consideration of remediation of the hot spot is merited. Copper levels in the sediment of the hot spot are more than high enough to suppress the benthos which would normally be expected to reside there. High levels of arsenic and lead in the hot spot may contribute additionally to the toxic effects. Although, as mentioned above, it is arguable that copper toxicity, in suppressing the benthos, severs the link between the contaminants in the sediment and higher ecological orders thus mitigating the ecological impact of the hot spot sediment contamination. Nevertheless, due to the risk posed to the benthos, the hot spot, were it to be an isolated incidence of discrete sediment contamination, would seem to

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be an appropriate candidate for the consideration of remedial measures such as removal or capping. However, as mentioned in the previous section, copper levels in the sediment of much of Torch Lake are high enough to suppress benthos. RI sampling and analysis suggests that as much as 60% of the lake suffers from severe degradation of benthic communities. In light of this widespread sediment contamination problem, the utility of remedial measures which would address the hot spot alone is questionable.”

“Moreover, the nature and location of this material would pose significant, if not insurmountable, difficulties in any attempts to cap or remove it. The hot spot contaminants appear to be confined to, i.e. bound to, the very thin layer of light organic floc which has accumulated over the stampsand bottom. The organic contaminants especially, most of which are found exclusively at the hot spot location in Torch Lake, are likely strongly sorbed onto the organic sediment. First-hand accounts describe this material as being extremely susceptible to disturbance and dispersal by the slightest water movement. As it currently stands, the hot spot, with 30 to 75 feet of water above it, is not subject to natural disturbance. Absent some introduced source of mechanical agitation, the material could be expected to be rather immobile.”

“Given the physical nature of this organic floc, capping would be futile. Any placement of cover material, no matter how carefully done, would result in the displacement of the organic floc rather than effect a covering of the contaminated material. Similarly, dredging this material would result in more dispersal than removal. In addition, while Great Lakes National Programs Office has indicated that aquatic suction technology could potentially be an effective way to capture and remove material of this kind, some level of dispersal would undoubtedly occur. Water this deep would require divers or remotely piloted equipment, both of which would likely provide just the sort of mechanical dispersal currently absent from the reasonably stable hot spot area.”

“Taking action at the hot spot alone would therefore appear to be, at best, a questionable endeavor. First, although the ecological toxicity associated with the levels of contaminants found in the hot spot has been established, there is no discernible link between sediment contamination and ecological effects other than to the benthos. Considering this, and given the relative immobility of the contaminants and the relative ecological health of the lake in general, the necessity of remedial action is questionable. Next, the ultimate effectiveness of remedial action, given the prevalent sediment contamination which would remain in place following any remediation of the hot spot, is questionable. The implementability of remedial action, given the nature of the material and the location of the hot spot, is also questionable. Taken singly, these conditions each cast doubt upon the advisability of remedial action regarding the hot spot. Taken in the aggregate, they recommend no action.”

“The singular monolithic quality of the Torch Lake stampsand problem tends to restrain further efforts to identify effective limited remedial action possibilities. The most promising limited action option, reduction of continued large scale loading to the lake through stabilization and revegetation of the non-submerged stampsand piles, is already being addressed through the remedy to be implemented for OUs I and III. MTU and others have posited that the copper rich “slime” clay fraction produced during the copper rock stamping process and discharged along with the stampsands acted, and continues to act via stampsand pile erosion, as a primary, perhaps the primary, copper transport mechanism. Considering that the area along the western shore of Torch Lake is exposed to weathering and is subject to reworking by wave action, continued loading of new contamination to the lake via this route should be drastically reduced once the piles are stabilized and revegetated. The current contribution of contaminants via the streams and rivers which flow through or past stampsand piles and into Torch Lake is significant. However, the utility of efforts to enhance natural sedimentation in the lake or further reduce the contaminant contributions of Torch Lake tributaries does merit consideration.”

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“EPA Region V has made inquiries with other Regions, Regional Laboratories, and other organizations within the Agency for potentially applicable technologies or remediation approaches. This undertaking yielded little that was directly applicable to Torch Lake. At one mining site in Region VIII, Clear Creek, EPA Region VIII has utilized manmade wetlands to reduce extremely contaminated mine shaft runoff. Mine shaft drainage tunnels are directed so that they discharge to a manmade wetland. The organic-rich wetland neutralizes the toxic acidic mine shaft discharge, thereby inducing metal precipitation, complexation, and detoxification. On the surface, there would appear to be enough similarity between the Clear Creek site and the Torch Lake site to warrant an examination of the potential applicability of this approach to Torch Lake site conditions. However, upon closer examination, the differences outweigh the similarities. Basically, the key circumstances justifying this approach at the Clear Creek site are acidic conditions and extremely high metals levels, neither of which obtain in the Torch Lake tributaries. The copper ores milled on the shore of Torch Lake were not sulfur-bearing, and thus acid mine or tailing discharge is not a problem. The operative demonstrated environmental risk at Torch Lake is sediment copper toxicity, not water-borne copper. While the Torch Lake tributaries (primarily the Trap Rock River) appear to be a significant source of the copper which is found in the Torch Lake water column, the metal does not appear to be in a form which is toxic, as the lake continues to support plentiful phytoplankton. Toxic effects due to copper appear to be related to sediment pore space dynamics and seem not to have significant water column impact. Therefore, it is not clear how limited remedial action which targets the Torch Lake tributaries (primarily the Trap Rock River) would materially contribute to the mitigation of Torch Lake sediment toxicity.”

“This, in U.S. EPA’s review, satisfactorily settles the issue of the utility of limited remedial action. As with the issue of comprehensive remediation alternatives, the nature and extent of Torch Lake sediment would likely render attempts to actively remediate impracticable.”

RISK ASSESSMENT

Project Name **TORCH LAKE**

ProjectID: 05-40

Last Updated: 01/24/02

RA Type: Baseline Human Health & Ecological; Public Health

RA Status: Complete

RA Objectives:

***Company
Performing RA:***

RA Reference Report: 1994 ROD (Reference A-164)

***RA Summary and
Conclusions:*** “The baseline risk assessment for OU II was performed to evaluate the potential adverse health effects for both current and future residents at Torch Lake resulting from exposures to hazardous substances determined to be in the groundwater, lake sediments, and lake surface water. Since the sediment hot spot is located offshore in approximately 30 to 75 feet of water, human contact was not deemed realistic, so the hot spot was not evaluated for human health risk.”

“Exposure risks from carcinogenic health hazards (based on one-in-one million criteria) were calculated to be 1 additional case per 1,000 people exposed (1×10^{-3}) for hypothetical future child and adult residents . . . for the ingestion of (stampsands-affected) groundwater. Chemicals contributing to these risks are mainly arsenic and beryllium.”

“Carcinogenic health hazards for current residents range from 6 additional cases per 100,000 people exposed (6×10^{-5}) to 3 additional cases per 10,000 people exposed (3×10^{-4}) based on ingestion of surface water, sediments, fish from Torch Lake, and from dermal contact (swimming) in the lake. Approximately two-thirds of the estimated cancer risk from lake media is attributable to the fish ingestion pathway. The major portion of the risk from fish ingestion is contributed by PCBs (Aroclor 1254). It must be noted that Aroclor 1254 was not detected in any surface water sample at Torch Lake and it is unlikely that benthic food-chain organisms are present in the vicinity of elevated PCB sediment concentrations, due to copper toxicity. There presently is no clear link between OU II contamination and the contamination detected in Torch Lake fish. In addition, the PCB concentration in Torch Lake fish tissue (0.025 to 0.151 mg/kg) is at the low end of the average PCB levels found in Great Lakes and inland Michigan lakes fish and is considerably below the FDA advisory level for PCBs in fish of 2 mg/kg.”

“The ecological risk assessment found that levels of copper and other metals in the stampsand sediments are sufficiently high to pose significant risk to those organisms which would normally reside in the lake bottom sediments (benthic organism). In fact, for much of Torch Lake, copper levels in the stampsand sediments are high enough to be toxic to native benthic organisms and thus completely suppress benthic communities. The sediment hot spot, due to contaminant levels elevated above those of the rest of the lake, was found to pose the greatest incremental risk to exposed population. However, the actual potential of or exposure to hot spot contaminants strongly mitigates this statement of incremental ecological risk, since sediment toxicity is already high enough to suppress benthic organisms. Absent this link in the food chain, the normal transfer mechanism from sediment to higher order organisms is basically inoperative. Although the sediment effect constitutes a bona fide degradation of the Torch Lake ecology, this appears to be the sole demonstrable ecological risk-related impact, perhaps in part due to the lack of a food chain connector. Torch Lake continues to support a healthy fishery, and no impacts to eagles or gulls could be ascertained. Furthermore, supplemental to the ecological risk assessment, further study conducted by the MDNR could discern no conclusive cause for the fish tumors found in earlier studies.”

POTENTIALLY RESPONSIBLE PARTIES

Project Name **TORCH LAKE**

ProjectID: 05-40

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name **TORCH LAKE**

ProjectID: 05-40

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name **TORCH LAKE**

ProjectID: 05-40

Reference Type: A

ReferenceID: 164

Title: ***EPA Superfund Record of Decision: Torch Lake Site (O.U. 2)
Houghton County, MI
(EPA / ROD / R05-94/264)***

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: March 1993

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 728

Title: ***Operable Unit II Final Remedy Position Paper***

Location: AEM

Category: RI/FS

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For:

Date Published: February 1994

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 738

Title: ***Baseline Study Report***

Location: AEM

Category: Monitored Natural Attenuation

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:** 77 West Jackson Boulevard
Chicago, IL 60604-3590

Prepared For: Distribution

Date Published: August 2001

**Key Words and
Phrases:**

REFERENCES

Project Name **TORCH LAKE**

ProjectID: 05-40

Reference Type: B

ReferenceID: 532

Title: ***Torch Lake Area of Concern***

Location: AEM

Category: Site Update

Prepared by/Author: US EPA

Preparer/Author Address: Great Lakes National Program Office
Chicago, IL

Prepared For: General Public

Date Published: February 6, 2001

Key Words and Phrases:

Reference Type: B

ReferenceID: 633

Title: ***FIELDS Sites: Torch Lake, Houghton County, MI***

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region V

Preparer/Author Address: FIELDS Group

Prepared For: Distribution

Date Published: June 5, 2001

Key Words and Phrases:

Reference Type: B

ReferenceID: 634

Title: ***Lake Superior Lakewide Management Plan – Appendix A, Lake Superior Areas of Concern and Remedial Action Plan Summaries: Torch Lake Area of Concern***

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author Address:

Prepared For: Distribution

Date Published: April 2000

Key Words and Phrases:

REFERENCES

Project Name **TORCH LAKE**

ProjectID: 05-40

Reference Type: B

ReferenceID: 635

Title: ***EPA: \$15 Million Funding Approved for Torch Lake Cleanup***

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: September 28, 1998

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 636

Title: ***Superfund NPL Sites with Potential Environmental Justice (EI)
Concerns: Torch Lake***

Location: AEM

Category: Legal

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: June 20, 2001

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 637

Title: ***Realizing Remediation II - An Updated Summary of
Contaminated Sediment Remediation Activities at Great Lakes
Areas of Concern: Torch Lake***

Location: AEM

Category: Dredging: Remedial (Contaminated Sediments)

Prepared by/Author: US EPA

**Preparer/Author
Address:** Great Lakes National Program Office
Chicago, IL

Prepared For:

Date Published: July 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **TORCH LAKE**

ProjectID: 05-40

Reference Type: B

ReferenceID: 638

Title: ***Torch Lake NPL Fact Sheet – EPA ID # MID980901946***

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: November 2000

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 169

Title: ***EPA study shows little risk at Torch Lake***

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: December 4, 1992

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 493

Title: ***EPA Prepared to Bid Soil Cover for Next Torch Lake Parcel in January***

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: November 19, 1999

**Key Words and
Phrases:**

REFERENCES

Project Name **TORCH LAKE**

ProjectID: 05-40

Reference Type: C

ReferenceID: 799

Title: *Carcinogens and Cancers in Freshwater Fishes*

Location: AEM

Category: Fish/Biota

Prepared by/Author: (1) John J. Black, (2) Paul C. Baumann

Preparer/Author (1) Roswell Park Memorial Institute

Address: 666 Elm Street

Buffalo, NY 14263

(2) U.S. Fish and Wildlife Service

NRCRC-Field Research Station

Ohio State University, Museum of Zoology

1813 N. High Street

Columbus, OH 43210

Prepared For: Environmental Health Perspectives, Vol. 90, pp 27-33

Date Published: 1991

Key Words and Phrases: Black River, Fox River, Detroit River, Niagara River, St. Marys River

Reference Type: C

ReferenceID: 807

Title: *Mich.: Part of Lake Deleted from NPL*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Hazardous Waste/Superfund Week

Date Published: February 11, 2002

Key Words and Phrases:

REFERENCES

Project Name **TORCH LAKE**

ProjectID: 05-40

Reference Type: C

ReferenceID: 845

Title: **USDA/Superfund Site Work**

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Hazardous Waste/Superfund Week

Date Published: April 1, 2002

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 1111

Title: **NPL Deletions: EPA is deleting the Hubbell/Tamarack City
Parcel of Operable Unit 1**

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Hazardous Waste/Superfund Week

Date Published: February 2, 2004

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 162

Title: **Memo re: Torch Lake, Deer Lake, White Lake**

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:** Malvern, PA 19355

Prepared For: Distribution

Date Published: June 22, 2001

**Key Words and
Phrases:**

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 854
Extent: Houghton County
Pollutant: mercury
Species: walleye
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 855
Extent: Houghton County
Pollutant: mercury
Species: walleye
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 856
Extent: Houghton County
Pollutant: PCBs (total)
Species: walleye
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 857
Extent: Houghton County
Pollutant: PCBs (total)
Species: walleye
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 858
Extent: Houghton County
Pollutant: PCBs (total)
Species: bass-smallmouth
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 859
Extent: Houghton County
Pollutant: PCBs (total)
Species: bass-smallmouth
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 860
Extent: Houghton County
Pollutant: mercury
Species: bass-smallmouth
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Lake ***Advisory Number:*** 209

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 861

Extent: Houghton County

Pollutant: PCBs (total)

Species: walleye

Population: RSP

Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.

Advisory Type: Lake ***Advisory Number:*** 209

Status (Active or Rescinded): Rescinded ***Date Rescinded:***

Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 862

Extent: Houghton County

Pollutant: mercury

Species: bass-smallmouth

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Lake ***Advisory Number:*** 209

Status (Active or Rescinded): Rescinded ***Date Rescinded:***

Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 863
Extent: Houghton County
Pollutant: mercury
Species: bass-smallmouth
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 864
Extent: Houghton County
Pollutant: mercury
Species: sauger (also called "pikeperch" or "sand perch")
Population: NCGP
Population Definition: No Consumption-General Population: Advise against consumption by the general population.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Rescinded ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 865
Extent: Houghton County
Pollutant: mercury
Species: walleye
Population: NCGP
Population Definition: No Consumption-General Population: Advise against consumption by the general population.
Advisory Type: Lake ***Advisory Number:*** 209
Status (Active or Rescinded): Rescinded ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake

AdvisoryID: 866

Extent: Antrim County

Pollutant: PCBs (total)

Species: trout-lake

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834

Advisory: Torch Lake

AdvisoryID: 867

Extent: Antrim County

Pollutant: PCBs (total)

Species: trout-lake

Population: NCSP

Population Definition: No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834

Advisory: Torch Lake

AdvisoryID: 868

Extent: Antrim County

Pollutant: mercury

Species: trout-lake

Population: NCSP

Population Definition: No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

<i>Advisory:</i>	Torch Lake	<i>AdvisoryID:</i> 869
<i>Extent:</i>	Antrim County	
<i>Pollutant:</i>	chlordanes	
<i>Species:</i>	trout-lake	
<i>Population:</i>	NCSP	
<i>Population Definition:</i>	No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.	
<i>Advisory Type:</i>	Lake	<i>Advisory Number:</i> 3348
<i>Status (Active or Rescinded):</i>	Active	<i>Date Rescinded:</i>
<i>Contact Name:</i>	David R. Wade	<i>Contact Number:</i> 517-335-8834
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<i>Advisory:</i>	Torch Lake	<i>AdvisoryID:</i> 870
<i>Extent:</i>	Antrim County	
<i>Pollutant:</i>	PCBs (total)	
<i>Species:</i>	trout-lake	
<i>Population:</i>	RGP	
<i>Population Definition:</i>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<i>Advisory Type:</i>	Lake	<i>Advisory Number:</i> 3348
<i>Status (Active or Rescinded):</i>	Active	<i>Date Rescinded:</i>
<i>Contact Name:</i>	David R. Wade	<i>Contact Number:</i> 517-335-8834
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<i>Advisory:</i>	Torch Lake	<i>AdvisoryID:</i> 871
<i>Extent:</i>	Antrim County	
<i>Pollutant:</i>	mercury	
<i>Species:</i>	trout-lake	
<i>Population:</i>	RGP	
<i>Population Definition:</i>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<i>Advisory Type:</i>	Lake	<i>Advisory Number:</i> 3348
<i>Status (Active or Rescinded):</i>	Active	<i>Date Rescinded:</i>
<i>Contact Name:</i>	David R. Wade	<i>Contact Number:</i> 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake

AdvisoryID: 872

Extent: Antrim County

Pollutant: chlordane

Species: trout-lake

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834

Advisory: Torch Lake

AdvisoryID: 873

Extent: Antrim County

Pollutant: mercury

Species: trout-lake

Population: RSP

Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834

Advisory: Torch Lake

AdvisoryID: 874

Extent: Antrim County

Pollutant: PCBs (total)

Species: trout-lake

Population: RSP

Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 875
Extent: Antrim County
Pollutant: chlordane
Species: trout-lake
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 876
Extent: Antrim County
Pollutant: PCBs (total)
Species: trout-brown
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 877
Extent: Antrim County
Pollutant: PCBs (total)
Species: whitefish-lake
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 878
Extent: Antrim County
Pollutant: PCBs (total)
Species: bass-smallmouth
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Rescinded ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 879
Extent: Antrim County
Pollutant: PCBs (total)
Species: bass-smallmouth
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Rescinded ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 880
Extent: Antrim County
Pollutant: mercury
Species: bass-smallmouth
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Rescinded ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 881
Extent: Antrim County
Pollutant: mercury
Species: bass-smallmouth
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Lake ***Advisory Number:*** 3348

Status (Active or Rescinded): Rescinded ***Date Rescinded:***

Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 882

Extent: Antrim County
Pollutant: PCBs (total)
Species: bass-smallmouth
Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Lake ***Advisory Number:*** 3348

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 883

Extent: Antrim County
Pollutant: PCBs (total)
Species: bass-smallmouth
Population: RSP

Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.

Advisory Type: Lake ***Advisory Number:*** 3348

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake ***AdvisoryID:*** 884
Extent: Antrim County
Pollutant: mercury
Species: bass-smallmouth
Population: RSP
Population Definition: Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 885
Extent: Antrim County
Pollutant: mercury
Species: bass-smallmouth
Population: RGP
Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

Advisory: Torch Lake ***AdvisoryID:*** 886
Extent: Antrim County
Pollutant: chlordane
Species: trout-lake
Population: NCGP
Population Definition: No Consumption-General Population: Advise against consumption by the general population.
Advisory Type: Lake ***Advisory Number:*** 3348
Status (Active or Rescinded): Active ***Date Rescinded:***
Contact Name: David R. Wade ***Contact Number:*** 517-335-8834

FISH ADVISORIES

Project Name **TORCH LAKE**

ProjectID: 05-40

Advisory: Torch Lake

AdvisoryID: 887

Extent: Antrim County

Pollutant: mercury

Species: trout-lake

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Lake

Advisory Number: 3348

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: David R. Wade

Contact Number: 517-335-8834
