

State of Wisconsin  
DEPARTMENT OF NATURAL RESOURCES  
101 S. Webster Street  
Box 7921  
Madison WI 53707-7921

Scott Walker, Governor  
Cathy Stepp, Secretary  
Telephone 608-266-2621  
FAX 608-267-3579  
TTY Access via relay - 711



Ms. Tinka Hyde, Director, Water Division  
U.S. EPA, Region 5  
77 W. Jackson  
Chicago, IL 60604

Subject: Certification Statement for Approval of a Variance to Water Quality Standards  
Calumet Superior, LLC; WPDES Permit No. WI-0003085-08

Dear Ms. Hyde:

The Wisconsin Department of Natural Resources has made a final decision under Wis. Stat. s. 283.15 (4) to approve a variance to the water quality standard for mercury at the above-named facility. This decision is subject to judicial review pursuant to Wis. Stat. ss. 283.15(4)(d) and 227.52. Although the Department has issued a final decision on the mercury variance, including the permit terms and conditions of the variance, the Department recognizes that the mercury variance and related permit conditions may not be included in the final reissued WPDES permit until EPA has approved the variance.

Pursuant to §§ 40 CFR Part 131.21 and 131.6, the Department must submit a certification statement to EPA for each variance approved in the state. The statement must certify that the variance to a water quality standard was approved in accordance with state law.

Accordingly, I hereby certify that the mercury variance was reviewed and approved by Department staff in accordance with procedures in subchapter III of chapter NR 106, Wis. Adm. Code. The application for this variance was submitted on July 2, 2009, and the Department public noticed its intent to reissue the permit and grant the mercury variance on February 14, 2014, in accordance with Wis. Stat. §§ 283.15(3) and 283.39.

If you have any questions regarding the variance approval, please contact Rick Reichardt at 608-267-7894.

Sincerely,

A handwritten signature in black ink, appearing to read 'Timothy A. Andryk'.

Timothy A. Andryk  
Chief Legal Counsel

DATED IN MADISON: 3/24/2014

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Ms. Tinka Hyde, Director, Water Division  
U.S. EPA, Region 5  
77 W. Jackson  
Chicago, IL 60604

Subject: Request for Approval of a Variance from Water Quality Standards for Mercury  
Receiving Stream: Newton Creek in Douglas Co.  
Permittee: Calumet Superior, LLC; WPDES Permit No. WI-0003085-08

Dear Ms. Hyde:

In accordance with § 283.15 of the Wisconsin Statutes and Title 40, Part 131 of the Code of Federal Regulations, the Department requests U.S. EPA, Region 5 to approve a water quality standards variance for the above-referenced discharge. The water quality criterion for which the permittee is seeking a variance is contained in chapter NR 105, Wisconsin Administrative Code.

To assist your staff during their review, relevant background information pertaining to this variance is attached to this letter. The draft permit and variance were publicly noticed on February 14, 2014. The comment period has now ended. The only comments received were requests from three individuals for a public hearing to provide information on the mercury variance. These individuals were/will be provided a copy of the Fact Sheet, which discusses the mercury variance and advise that EPA must review and approve any variances. Considering no new information would be presented at a hearing and the limited public interest, the Department has made a determination not to hold a public hearing at this time.

We are committed to working with the permittee during the term of this variance to find a solution that will lead toward full compliance with the applicable water quality standard. Conditions on the variance, which are included in the WPDES permit, specify actions to be taken by the permittee and timetables for those actions. If the variance is approved by EPA, the Department will include the variance limitation and related conditions in the final WPDES permit.

We appreciate your consideration of this request. Should you have further questions regarding this matter, please contact Rick Reichardt at 608-267-7894.

Sincerely,



Kenneth G. Johnson, Administrator  
Water Division

DATED: 3/29/2014

Attachment

e-cc

Susan Sylvester - WY/3  
Tom Mugan—WW/3  
David Pfeifer - EPA, Region 5  
Diane Figiel – WY/3

Eric DeVenecia—NOR  
Dan Peerenboom—NOR  
Brian Weigel—WY/3  
Robin Nyffeler—LS/8

## **BACKGROUND INFORMATION REGARDING WATER QUALITY STANDARDS VARIANCE**

Receiving Stream and Classification: **Newton Creek in Douglas Co.; Limited Forage Fish, Non-public water supply**

Water Quality Based Effluent Limit: **1.3 ng/L as a monthly average**

Existing Permit Limit: **no limit**

Permit Limit Based on Proposed Variance: **7.8 ng/L as a daily maximum**

Duration of Variance: **From the date of permit reissuance through the proposed permit expiration date of March 31, 2019, the limit of 7.8 n/L would be in effect as a variance limit.**

### Department Rationale for Approving Variance:

S. NR 106.145, Wis. Adm. Code, outlines findings that justify expediting variances mercury. The Department intended that this provision be generally applicable to municipal and industrial dischargers, which produce large volumes of effluent with already extremely low mercury concentrations. More specifically:

- a) The Department considers treating these large volumes to produce effluent that reliably meets the water quality-based effluent limit to be prohibitively expensive. See Section VII of the Facility Specific Standard Variance Data Sheet for clarification.
- b) At the time of promulgation of s. NR 106.145 in October 2002, data on mercury concentrations in wastewater effluents were generally not available. However, after the promulgation of EPA Method 1631, and beginning in 2005, the permittee began generating low-level mercury data on samples of its effluent, showing that although the facility is properly operated and maintained, the WQBELs are not being consistently achieved.
- c) The permittee has developed a PMP which has been very effective in removing mercury from the environment.

The Department concludes that the applicant has met the requirements of Subchapter VII of ch. NR 106, Wis. Adm. Code, and s. 283.15, Wis. Stats. The Department further concludes that requiring the applicant to meet the water quality standard for mercury at this time would result in substantial and widespread adverse social and economic impacts. The Department therefore proposes to grant the variance for mercury.

Conditions to be included in WPDES Permit: **See Attached Draft Permit being sent to EPA in Electronic Format**

Attachments:

**Certification from DNR Chief Legal Council**  
**Facility Specific Standard Variance Data Sheet**

## Facility Specific Standard Variance Data Sheet

**Directions:** Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

### Section I: General Information

**A. Name of Permittee:** Calumet Superior, LLC

**B. Facility Name:** Calumet Superior

**C. Submitted by:** Wisconsin Department of Natural Resources

**D. State:** Wisconsin      **Substance:** Mercury      **Date completed:** 3/7/14

**E. Permit #:** WI-0003085-08      **WQSTS #:** (EPA USE ONLY)

**F. Duration of Variance**      **Start Date:** 4/1/14      **End Date:** 3/31/19

**G. Date of Variance Application:** 6/30/09

**H. Is this permit a:**       First time submittal for variance  
 Renewal of a previous submittal for variance (Complete Section X)

### I. Description of proposed variance:

Calumet is an oil refinery located in Superior that discharges treated process wastewaters to Newton Creek, which is tributary to Hog Island Inlet of Superior Bay of Lake Superior.

Summary of WQBELs:

Parameter	Water Quality Criteria		WQBEL
Mercury, Total Recoverable	Fish and Aquatic Life, Acute	830 ng/L	1,660 ng/L Daily Maximum
	Fish and Aquatic Life, Chronic	440 ng/L	440 ng/L Weekly Average
	Wildlife	1.3 ng/L	1.3 ng/L Monthly Average
	Human Threshold	1.5 ng/L	1.5 ng/L Monthly Average
	Human Cancer	Not Applicable	Not Applicable

An alternative mercury effluent limitation under s. 106.145, Wisconsin Administrative Code represents a variance to water quality standards authorized by s. 283.15, Wis. Stats. The Department concludes that Calumet has met the requirements of s. NR 106.145, Wis. Adm. Code, and s. 283.15, Wis. Stat. The Department further concludes that requiring Calumet to meet the water quality standard for mercury would result in substantial and widespread adverse social and economic impacts to the local community. The Department proposes a variance to the water quality standard for wildlife, which will result in an effluent limit of 7.8 ng/L daily maximum pursuant to the procedures specified in s. NR 106.145 (5), Wis. Adm. Code.

### J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Rick Reichardt	<a href="mailto:Rick.reichardt@wi.gov">Rick.reichardt@wi.gov</a>	608.267.7894	Permit Drafter
Eric DeVenecia	<a href="mailto:Eric.DeVenecia@wi.gov">Eric.DeVenecia@wi.gov</a>	715.685.2925	Basin Wastewater Engineer
Dan Peerenboom	<a href="mailto:Dan.Peerenboom@wi.gov">Dan.Peerenboom@wi.gov</a>	715.365.8953	Water Quality Limits Calculation
Lynn Singletary	<a href="mailto:lynn.singletary@wi.gov">lynn.singletary@wi.gov</a>	414.263.8632	Variance Coordinator

### Section II: Criteria and Variance Information

**A. Water Quality Standard from which variance is sought:** 1.3 ng/L Wildlife Criterion

**B. List other criteria likely to be affected by variance:** 1.5 ng/L Human Threshold Criterion

**C. Source of Substance:** The primary source is the crude oil that is refined. There are mercury containing devices in the Calumet facility. Steps have been taken through a PMP program to identify the devices, and contain or replace them.

**D. Ambient Substance Concentration:** N/A. Discharge is to the head water of the receiving stream which has a zero low flow.       Measured       Estimated  
 Default       Unknown

**E. If measured or estimated, what was the basis? Include citation.**

N/A

<b>F. Average effluent discharge rate:</b>	0.31 MGD	<b>Maximum effluent discharge rate:</b>	0.57 MGD
<b>G. Effluent Substance Concentration:</b>	Mean of 3.1 ng/L	<input checked="" type="checkbox"/> Measured	<input type="checkbox"/> Estimated
		<input type="checkbox"/> Default	<input type="checkbox"/> Unknown
<b>H. If measured or estimated, what was the basis? Include Citation.</b>			
96 effluent data points from 2008-12. See data summary in Appendix E of Permit Fact Sheet			
<b>I. Level currently achievable (LCA):</b>			
Daily maximum value	Variance Limit:	7.8 ng/L as a daily	maximum
	of 7.8 ng/L		
<b>J. What data were used to calculate the LCA, and how was the LCA derived? (Immediate compliance with LCA is required.)</b>			
96 effluent data points from 2008-12 were used to determine a P99 which is applied as a daily maximum LCA.			
Citation: s. NR 106.145(5), Wis. Adm. Code.			
<b>K. Explain the basis used to determine the variance limit (which must be <math>\leq</math> LCA). Include citation.</b>			
The variance limit = 1 Day P99. The limit is established in accordance with s. NR 106.145(5), Wis. Adm. Code.			
<b>L. Select all factors applicable as the basis for the variance provided under 40 CFR 131.10(g). Summarize justification below:</b>			
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3
	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 6
Section NR 106.145(1), Wis. Adm. Code, outlines several findings that justify variances for mercury. The Department intended that this provision to be generally applicable to all dischargers of mercury, which produce large volumes of effluent with already extremely low mercury concentrations. The Department considers treating these large volumes to produce effluent with even lower concentrations to be technically and economically infeasible.			
Citation: Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.			
<b>Section III: Location Information</b>			
<b>A. Counties in which water quality is potentially impacted:</b> Douglas			
<b>B. Receiving waterbody at discharge point:</b> Newton Creek			
<b>C. Flows into which stream/river?</b> Hog Island Inlet of Superior Bay <b>How many miles downstream?</b> 2.5			
<b>D. Coordinates of discharge point (UTM or Lat/Long):</b> N46° 41.539'; W92° 3.919'			
<b>E. What are the designated uses associated with this waterbody?</b> Limited Forage Fish			
<b>F. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the chronic criterion of the substance for aquatic life protection?</b> The current discharge level is well below the 440 ng/L aquatic life criterion.			
<b>G. Provide the equation used to calculate that distance (Include definitions of all variables, identify the values used for the clarification, and include citation):</b> See above.			
<b>H. Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody:</b> None			
Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet. See attached.			
<b>I. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below.</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown			
<b>Section IV: Pretreatment</b> (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)			
<b>A. Are there any industrial users contributing mercury to the POTW? If so, please list.</b> N/A			
<b>B. Are all industrial users in compliance with local pretreatment limits for mercury? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc)</b>			

C. When were local pretreatment limits for mercury last calculated?

D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW

**Section V: Public Notice**

- A. Has a public notice been given for this proposed variance?  Yes  No
- B. If yes, was a public hearing held as well?  Yes  No  N/A
- C. What type of notice was given?  Notice of variance included in notice for permit  
 Separate notice of variance
- D. Date of public notice: 2/14/14 Date of hearing: N/A
- E. Were comments received from the public in regards to this notice or hearing? (If yes, please attach on a separate sheet)  Yes  No

**Section VI: Human Health**

- A. Is the receiving water designated as a Public Water Supply?  Yes  No
- B. Applicable criteria affected by variance: 1.5 ng/L Human Threshold Criterion
- C. Identify any expected impacts that the variance may have upon human health, and include any citations:
- The proposed variance will not adversely affect human health directly through the drinking water.
  - Wisconsin's fish consumption advisory program is designed to mitigate the effect of any ambient mercury concentration above the 1.5 ng/L water quality criterion for the protection of the fish-consuming human population by providing advice to the public to guide them on the amounts of fish that may be consumed safely.
  - Given the lack of wastewater treatment technologies capable of reducing mercury concentrations to achieve a 1.3 ng/L effluent limit, granting a variance in this situation is consistent with protecting the public health, safety and welfare because of the substantial public health and safety benefits of providing wastewater treatment, the continued commitment towards further mercury pollutant minimization, the Wisconsin fish advisory program, and the limited impact of the elevated effluent concentrations given the background mercury concentrations.

**Section VII: Aquatic Life and Environmental Impact**

- A. Aquatic life use designation of receiving water: Limited Forage Fish
- B. Applicable criteria affected by variance: 1.3 ng/L Wildlife Criterion
- C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:
- Not Likely to Adversely Affect
- Ambient mercury concentrations resulting from the variance will be substantially less than levels that result in direct toxicity to aquatic organisms. EPA's current chronic aquatic life criterion for mercury is 0.9081 µg/L, which is approximately three orders of magnitude greater than the wildlife criteria (0.0013 µg/L). Wisconsin's criteria are 0.44 µg/L and 0.83 µg/L for chronic and acute toxicity, respectively.
    - Hine's emerald dragonfly (*Somatochlora hineana*, endangered)
    - Higgins' Eye mussel (*Lampsilis higginsii*, endangered)
    - Winged Mapleleaf mussel (*Quadrula fragosa*, endangered)
    - Spectaclecase (*Cumberlandia monodonta*, candidate)
    - Sheepnose (*Plethobasus cyphus*, candidate)
  - Low trophic level prey where mercury in prey is unlikely to accumulate to toxic levels in the organism.
    - Piping plover (*Charadrius melodus*, endangered)
    - Eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*, candidate)
- May Affect, Not Likely to Adversely Affect
- Bald eagle (*Haliaeetus leucocephalus*, Delisted due to Recovery)  
Bald eagles consume fish and waterfowl from surface waters, which puts them at risk of exposure to

toxic levels of mercury due to bioaccumulation of mercury in their prey organisms. However, despite the potential for exposure, ambient surface water data show that in recent decades, mercury levels have not increased and bald eagle populations have continued to grow. This indicates that current ambient concentrations of mercury and mercury concentrations in prey organisms do not appear to be limiting recovery of bald eagle populations in Wisconsin. Although this variance will allow permitted dischargers additional time to identify and control sources of mercury in their discharges, the pollutant minimization component of the variances should result in a net reduction in the amount of mercury discharged to Wisconsin surface waters from permitted point sources, further reducing any risk to bald eagles. In addition, the pollutant minimization programs encourage other pollution prevention efforts, which has a beneficial indirect effect of reducing the use and production of products and processes that use or contribute mercury to the environment. These efforts will also benefit bald eagles.

**D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations:** None

**Citation:** U.S. Fish & Wildlife Service – Environmental Conservation Online System (<http://www.fws.gov/endangered/>) and National Heritage Index (<http://dnr.wi.gov/topic/nhi/>)

### Section VIII: Economic Impact and Feasibility

**A. What modifications would be necessary to comply with the current limits? Include any citations.**

Unknown but source reduction measures continue to be required via implementation of a pollutant minimization plan (PMP). The Department considers treating these large volumes to produce effluent with even lower concentrations to be technically and economically infeasible.

**Citation:** Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.

**B. Identify any expected environmental impacts that would result from further treatment, and include any citations:**

See above.

**C. Is it technically and economically feasible for this permittee to modify the treatment process to reduce the level of the substance in the discharge?**  Yes  No  Unknown  
*(Provide the basis for this conclusion, including citations. If treatment is technically infeasible, provide an analysis of the factors that demonstrates technical infeasibility. If treatment is economically infeasible, provide an analysis of the economic cost to ratepayers that demonstrate economic infeasibility. Attach additional sheets if necessary.)*

The Department considers treating these large volumes to produce effluent with even lower concentrations to be technically and economically infeasible.

**Citation:** Assessing the Economic Impacts of the Proposed Ohio EPA Water Rules on the Ohio Economy, April 24, 1997, Ohio Environmental Protection Agency, Division of Surface Water and Foster Wheeler Environmental Corporation and DRI/McGraw-Hill in support of Amended and New Rules in OAC Chapters 3745-1, -2, and -33.

**D. If treatment is possible, is it possible to comply with the limits on the substance?**  Yes  No  Unknown

**E. If yes, what prevents this from being done? Include any citations.**

See above.

**F. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:**

Treating these large volumes to produce effluent with even lower concentrations is not economically technically or feasible. Pollutant Minimization Activities have been implemented. See Section IX.

### Section IX: Compliance with Water Quality Standards

**A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized or remote treatment technologies, planned research, etc. Include any citations.**

The mercury reduction efforts identified and implemented through Calumet's Pollutant Minimization Plan (PMP) include:

- Inventorying the facility to identify mercury-containing devices;

- Replacing mercury-containing thermostats whenever possible with mercury free devices and recycling the old thermostats;
- Eliminating the use of mercury-containing laboratory chemicals unless there is no alternative.
- Eliminating all non-essential mercury devices;
- Removing dissolved mercury generated during the sample analyses from the wastewater stream.
- Purchasing chemicals that contain little or no mercury.
- Continued education of employees on handling and disposal of mercury-containing products and devices.
- Exploring/evaluating mercury treatment technologies.

**B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.**  
 In addition Calumet is funding a community program in conjunction with the City of Superior to recycle light bulbs that contain mercury. As of the June 30, 2009, date of the variance request, Calumet has removed approximately 384 grams of mercury from the environment through this program. During the years of 2010-12 over 35,000 additional light bulbs were collected and recycled through this program, which conservatively would have taken over another 100 grams out of the environment. For comparison the amount of mercury that Calumet discharges at the average concentration of 3.1 ng/L and average flow of 0.31 MGD is 1.4 grams/year.

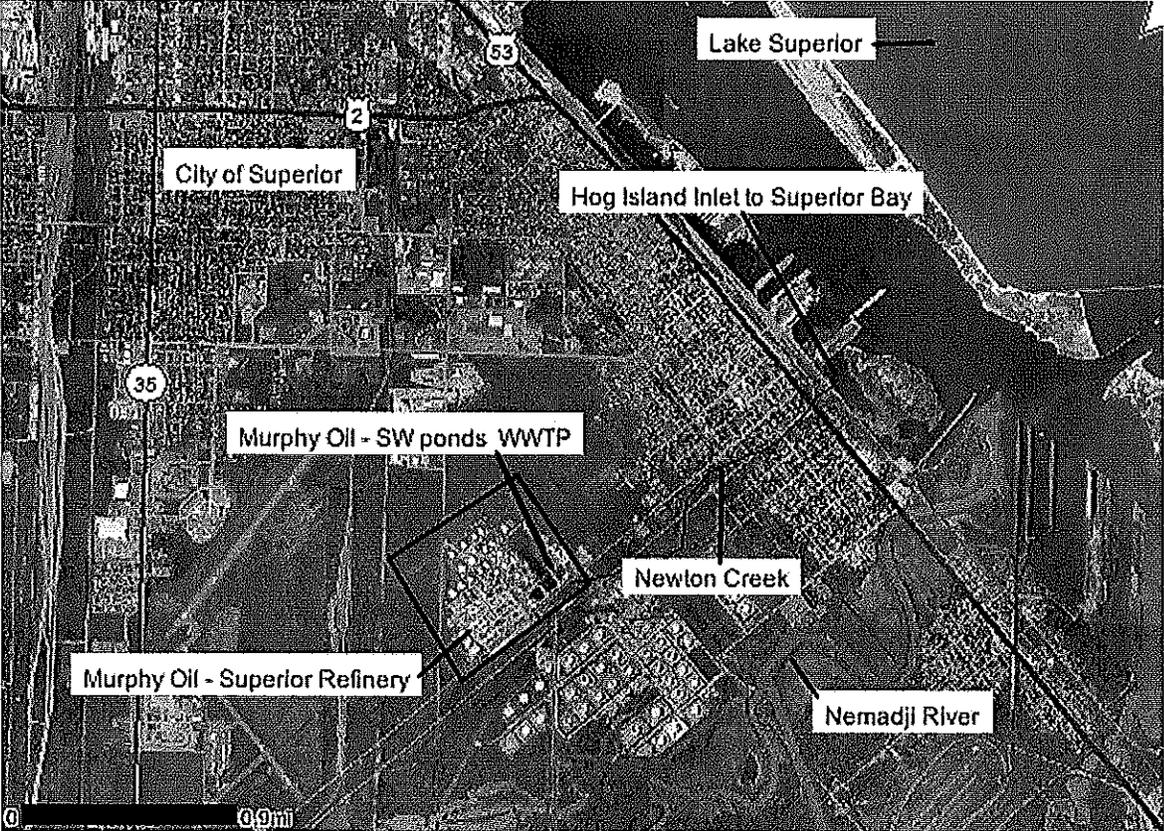
**Section X: Compliance with Previous Permit (Variance Reissuances Only)**

<b>A. Date of previous submittal:</b> <u>N/A</u>	<b>Date of EPA Approval:</b> _____
<b>B. Previous Permit #:</b> _____	<b>Previous WQSTS #:</b> _____ (EPA USE ONLY)
<b>C. Effluent substance concentration:</b> _____	<b>Variance Limit:</b> _____
<b>D. Target Value(s):</b> _____	<b>Achieved?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial

**E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.**

Condition of Previous Variance	Compliance
N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No

Discharge Location Map



# Calumet Hg Outfall 001

