



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8

1595 Wynkoop Street  
Denver, CO 80202-1129  
Phone 800-227-8917  
www.epa.gov/region8

Ref: 8SEM-EMR

**ACTION MEMORANDUM**

**SUBJECT:** Approval and Funding for an Emergency Removal Action at the Thomes Avenue Mercury Site in Cheyenne, Laramie County, Wyoming, pursuant to the On-Scene Coordinator's delegated authority under CERCLA Section 104

**FROM:** Paul R. Peronard *[Signature]* 10/21/2019  
Federal On-Scene Coordinator

**THRU:** Laura Williams, Chief *[Signature]* 10/21/19  
Response Section

Deirdre Rothery, Chief *[Signature]* 10/31/19  
Emergency Management Branch

**TO:** Betsy Smidinger, Director  
Superfund and Emergency Management Division

Site ID #: B834

**I. PURPOSE**

The purpose of this memorandum is to document the decision to initiate emergency response actions described herein for the Thomes Avenue Mercury Site (Site) located in Cheyenne, Laramie County, Wyoming, pursuant to the On-Scene Coordinator's delegated authority under CERCLA Section 104.

This emergency response involved the collection of elemental mercury from a street, sidewalk, gutter, and storm drain, located near the intersection of Thomes Avenue and 5<sup>th</sup> Street, just south of downtown Cheyenne. In addition, mercury was found to have impacted two valve boxes servicing a drinking water distribution line operated by the Cheyenne Board of Public Utilities (BOPU). Conditions existing at the Site presented a threat to public health and the environment and met the criteria for initiating a removal action under 40 CFR §300.415(b)(2) of the National Contingency Plan (NCP).

This response action involved no nationally-significant or precedent-setting issues. This emergency response does not establish any precedent for how future response actions will be taken and does not commit the United States Environmental Protection Agency (EPA) to a course of action that could have a significant impact on future responses or resources.

## II. SITE CONDITIONS AND BACKGROUND

|                                |  |
|--------------------------------|--|
| Site Name:                     | Thomes Avenue Mercury                      |
| Superfund Site ID (SSID):      | B834                                       |
| CERCLIS Number:                | WYN000820999                               |
| Site Location:                 | 5th Street and Thomes Avenue, Cheyenne, WY |
| Lat/Long:                      | 41.1217290, -104.8123080                   |
| Potentially Responsible Party: |  |
| NPL Status :                   | Non NPL                                    |
| Removal Start Date :           | 09/10/2019                                 |

### A. Site Description

#### 1. Removal Site Evaluation

The Wyoming DEQ contacted EPA on September 9, 2019, to report the discovery of beads of mercury on a city street near the intersection of West 5th Street and Thomes Avenue in Cheyenne, Wyoming. The beads were spread over approximately 100 yards of the street, including an immediately adjacent sidewalk and gutter, and continued down to a storm drain just west of Denning Avenue. The storm drain led to a culvert under Denning Avenue that feeds into Crow Creek. The local Fire Department closed the impacted area. On the evening of September 9<sup>th</sup>, EPA's response team deployed to the site to assist WDEQ and the local Fire Department and conduct further investigations. Operations began in earnest at 0600 September 10, 2019.

EPA analyzed mercury vapor levels and found high concentrations of mercury vapor (up to 220,000 nanograms per cubic meter (ng/m<sup>3</sup>)) under the storm drain cover and in the cracks of a gutter where it had accumulated. Mercury vapors were also detected along the 75-yard section of the gutter and a sidewalk where mercury was visible. Screening of the nearby Union Hall and several residential properties found no indications of either visible mercury or mercury vapor concentrations.

#### 2. Physical Location

The Site is located near the intersection of Thomes Avenue and 5<sup>th</sup> Street, just south of downtown Cheyenne. Mercury had been tracked and/or spread down 5<sup>th</sup> Street to just west of Denning Avenue.

#### 3. Site Characteristics

The Site is a busy City intersection and street in a mixed use industrial/residential area. The southeast corner of the intersection is occupied by a Union Hall. The northeast corner by an empty lot. The southwest and northwest corners are occupied by residences. There are more than two dozen homes within a quarter mile.

#### 4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant or Contaminant

The contaminant of concern at the Site is elemental mercury. Mercury is a hazardous

substance as defined by Section 101(14) of CERCLA. Mercury is the only metal that is liquid at room temperature. In its pure form (often called metallic or elemental), mercury is a shiny, silver-white, odorless liquid. At room temperature, mercury vaporizes into a toxic, colorless, odorless gas.<sup>1</sup> In its vapor form, mercury is easily inhaled and extremely toxic. For elemental mercury, the most important route of absorption is through inhalation. Because of the chemical nature of elemental mercury vapor, deposition and retention in the lungs are quite high (on the order of 80 percent in humans).<sup>2</sup>

In a 1997 Mercury Study Report to Congress the EPA states:

*Effects on the nervous system appear to be the most sensitive toxicological endpoint observed following exposure to elemental mercury. Symptoms associated with elemental mercury-induced neurotoxicity include the following: tremors, initially affecting the hands and sometimes spreading to other parts of the body; emotional lability, often referred to as "erethism" and characterized by irritability, excessive shyness, confidence loss, and nervousness; insomnia; neuromuscular changes (e.g., weakness, muscle atrophy, muscle twitching); headaches; polyneuropathy (e.g., paresthesia, stocking glove sensory loss, hyperactive tendon reflexes, slowed sensory and motor nerve conduction velocities); and memory loss and performance deficits in test of cognitive function. At higher concentrations, adverse renal effects and pulmonary dysfunction may also be observed.*

EPA's 1997 study, in reference to elemental mercury, concluded:

*Neurotoxicity is the most sensitive indicator of adverse effects in humans exposed to elemental mercury and methylmercury*

*An RfC for inhaled elemental mercury based on neurotoxic effects in exposed workers is  $3 \times 10^{-4} \text{ mg/m}^3$  ( $300 \text{ ng/m}^3$ ).*

*Elemental mercury is a developmental toxicant in experimental animals. If the mechanisms of action producing developmental toxicity in animals occur in humans, elemental mercury is very likely to produce developmental effects in exposed human populations. U.S. EPA has made no estimate of dose response for developmental effects of elemental mercury.<sup>3</sup>*

When spilled or tracked into a small or poorly ventilated room, mercury can pose significant health threats. Very small amounts of mercury, released into an enclosed space (such as a home or classroom), can raise air concentrations to harmful levels. Metallic mercury is extremely difficult to remove from shoes, clothes, furniture, carpet, and other porous items and is easily tracked and transferred. If these items are

---

<sup>1</sup> Agency for Toxic Substances and Disease Registry (ATSDR). 1999. [Toxicological Profile for Mercury](#). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service

<sup>2</sup> [Arch Environ Health](#), 1976 Nov-Dec; 31(6):302-9. Clearance of mercury (HG-197, HG-203) vapor inhaled by human subjects

<sup>3</sup> Mercury Study Report to Congress, Volume V: Health Effects of Mercury and Mercury Compounds, December 1997, <http://www.epa.gov/mercury/report.htm>

not properly disposed or cleaned, the mercury can linger for months or years, continuing to pose a health threat.

## **5. NPL Status**

This Site is neither on nor currently being considered for inclusion on the NPL.

## **6. Maps, Pictures & Other Graphic Representations**

A site map is presented in Attachment 1. Site photographs are presented in Attachment 2.

### **B. Other Actions to Date**

#### **1. Previous Actions**

There were no previous activities performed by EPA at the Site.

#### **2. Current Actions**

There are no current activities being conducted by EPA at the Site.

### **C. State and Local Authorities' Roles**

#### **1. State and Local Action to Date**

Personnel from the Cheyenne Fire Department (CFD) and Wyoming Department of Environmental Quality (WYDEQ) isolated the area from foot and automobile traffic. In addition, they placed a visqueen cover along the sidewalk over the area where visible mercury was present. This lowered mercury vapor levels and limited the spread of the mercury prior to it being removed.

#### **2. Potential for Continued State/Local Response**

Local and state governments did not have the capability or resources to remove and dispose of the mercury in a timely manner.

## **III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES**

Conditions at the Site presented a threat to public health and the environment and met the criteria for initiating a removal action under 40 CFR §300.415(b)(2) of the NCP.

EPA has considered all the factors described in 40 CFR §300.415(b)(2) of the NCP and determined that the following factors apply at the Site.

- (i) *“Actual or potential exposure to nearby human populations, animals or the food chain from hazardous substances or pollutants or contaminants;”*

Elemental mercury was the contaminant of concern at this Site. For elemental mercury, the most important route of exposure is through inhalation. The extent of the contamination was along a highly-used, public street in an area with numerous residences and businesses. Because mercury is easily tracked to other areas by foot-traffic, it was of immediate concern to remove mercury-contaminated materials and to clean impacted areas of free and residual mercury. If left unabated, mercury from the areas of the Site posed an immediate concern to residents walking through the area and could be tracked into nearby homes and buildings.

(ii) *“Actual or potential contamination of drinking water supplies or sensitive ecosystems;”*

High levels (greater than 220,000 ng/m<sup>3</sup>) of elemental mercury were discovered in the stand pipes leading to the valve boxes of the BOPU water distribution line. In addition, visible beads of elemental mercury were found in the storm drain leading into Crow Creek.

(vii) *“The availability of other appropriate federal or state response mechanisms to respond to the release.”*

No other local, state or federal agency had the capability or the resources to independently implement a timely, effective response action to address the ongoing threat presented at the Site.

#### **IV. SELECTED REMOVAL ACTIONS AND ESTIMATED COSTS**

##### **A. Planned Actions**

###### **1. Planned Action Description**

EPA's Emergency Response and Removal Services (ERRS) contractors began vacuuming visible mercury at 0800 on September 10, 2019. The Superfund Technical Assessment and Response Team (START) contractors collected water and sediment samples from Crow Creek and screened the storm drain that goes under Denning Drive and feeds into Crow Creek. START also screened the stand pipes that sit atop the valve boxes that control the water lines that run under Thomes Avenue and 5th Street. Three of these stand pipes had detectable levels of mercury vapor, two had levels well over 100,000 ng/m<sup>3</sup>. This indicated that elemental mercury was likely found in or around the valve boxes underneath.

The ERRS crew completed the collection of visible mercury by 1500 on September 10, 2019. It is estimated that roughly one pint of elemental mercury was recovered. At that time, there were no detectable levels of mercury vapors in the breathing zone and only occasional hits (up to 1,200 ng/m<sup>3</sup>) at ground level above some of the cracks in the sidewalk.

At 1600, with assistance from EPA, the BOPU began to remove the concrete and asphalt around one of the stand pipes. A hydro-excavator was then used to suck out the contaminated soil from around the pipe and the standpipe itself was

removed. However, groundwater was encountered about 4 feet below the street level, roughly 4 feet above the valve box and water line. This made further excavation impossible without setting up a system to pump and treat the water in the excavation area. Mercury vapor levels were still very elevated in the excavation area (greater than 50,000 ng/m<sup>3</sup>) and were also coming off the standpipe. (greater than 100,000 ng/m<sup>3</sup>).

It was determined during discussions amongst personnel from WYDEQ, Cheyenne FD, the BOPU, and EPA, that the best course of action at this time would be to close the excavation. EPA would develop a plan to excavate the impacted area with the capability to manage the groundwater entering the excavation. This would allow the City of Cheyenne to plan for the needed street closures and allow the BOPU to plan for replacing the impacted valve boxes.

EPA and contractor crews temporarily demobilized from the Site on September 11, 2019, and plan to return to the Site later this Fall to complete the Removal Action.

## **2. Contribution to Remedial Performance**

This effort will, to the extent practical, contribute to any future remedial effort at the Site. However, no further federal action is anticipated at this time.

## **3. Engineering Evaluation/Cost Analysis (EE/CA)**

An EE/CA is not required for an emergency response action.

## **4. Applicable or Relevant and Appropriate Requirements (ARARs)**

Removal actions conducted under CERCLA are required, to the extent practicable considering the exigencies of the situation, to attain ARARs. In determining whether compliance with an ARAR is practicable, the lead agency may consider appropriate factors including the urgency of the situation and the scope of the removal action to be conducted.

No ARARs have been identified for this removal action. RCRA requirements concerning waste analysis, manifesting, packaging, and transporting, while not ARARs, apply to off-site shipments of hazardous wastes.

## **5. Project Schedule**

This emergency response action was initiated on September 10, 2019. The second phase of excavation and all waste transportation and disposal activities are anticipated to be completed by November 15, 2019.

**B. Estimated Costs\***

|   |                     |
|---|---------------------|
| Contractor costs  |                     |
| START (Removal Site Evaluation, CERCLA 104(b))                | \$ 55,000.00        |
| ERRS  | \$ 150,000.00       |
| Contingency costs (20% of subtotal)                           | \$41,000.00         |
| <b>Total Removal Project Ceiling (including 104(b) costs)</b> | <b>\$246,000.00</b> |

\*EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this removal action. Liable parties may be held financially responsible for costs incurred by the EPA as set forth in Section 107 of CERCLA.

**V. EXPECTED CHANGE IN THE SITUATION SHOULD ACTIONS BE DELAYED OR NOT TAKEN**

A delay in action or no action at this Site would have increased the actual or potential threats to public health and the environment.

**VI. OUTSTANDING POLICY ISSUES**

None.


**VII. ENFORCEMENT**

An investigation to evaluate potential enforcement options will be undertaken. A separate Enforcement Addendum will be prepared if appropriate providing a confidential summary of potential enforcement activities.

**VIII. APPROVALS**

This decision document represents the selected response action for the Thomes Avenue Mercury Site in Cheyenne, Laramie County, Wyoming, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

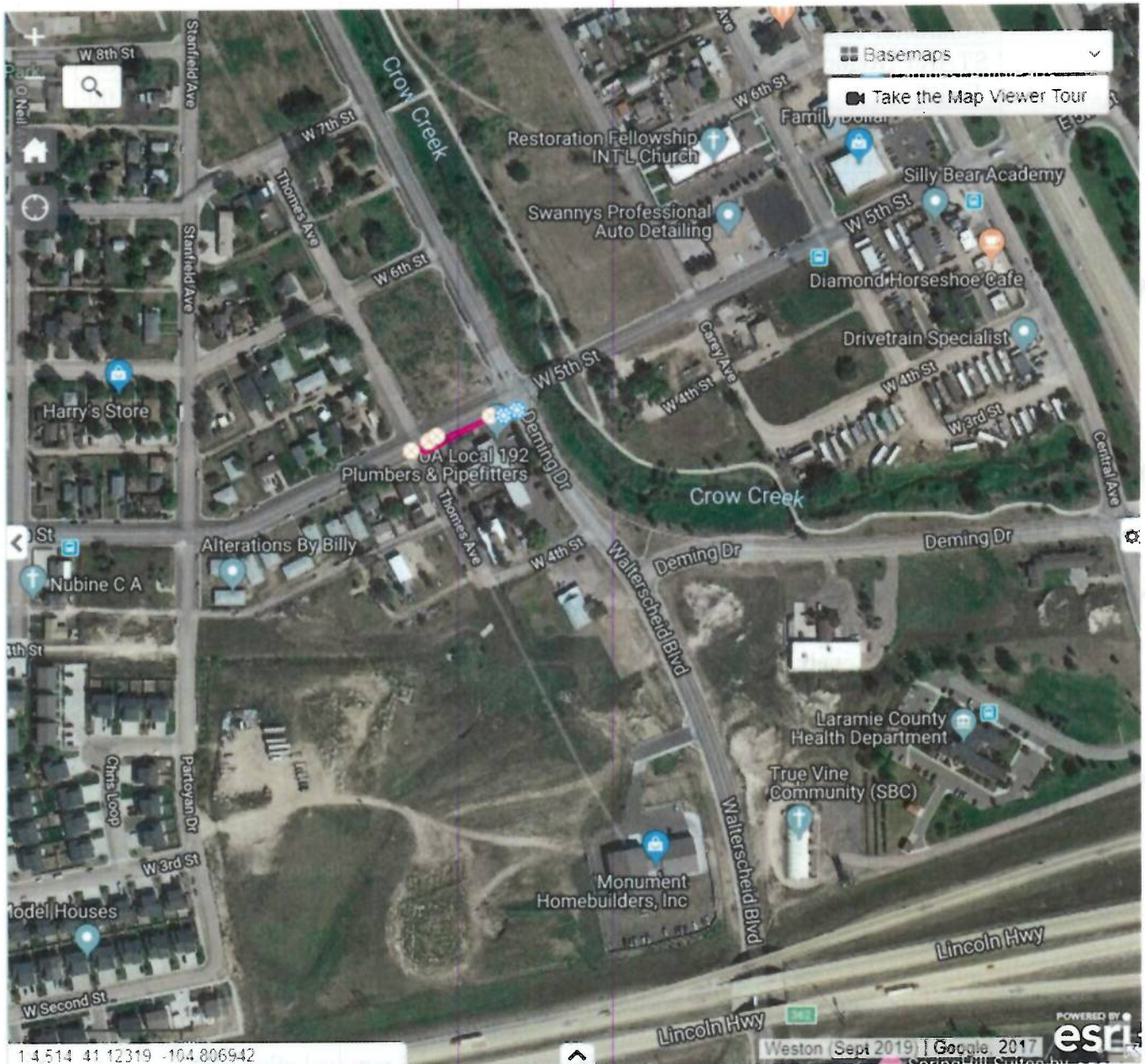
Conditions at the Site met the NCP section 300.415(b) criteria for an emergency response action, and through this document, I am approving the selected removal action. The total project ceiling is \$246,000.00; this amount will be funded from the Regional removal allowance.

  
\_\_\_\_\_  
Paul R. Peronard  
Federal On-Scene Coordinator

10/21/2019  
\_\_\_\_\_  
Date

Attachment 1: Site Map  
Attachment 2: Site Photographs

Attachment 1 – Site Map



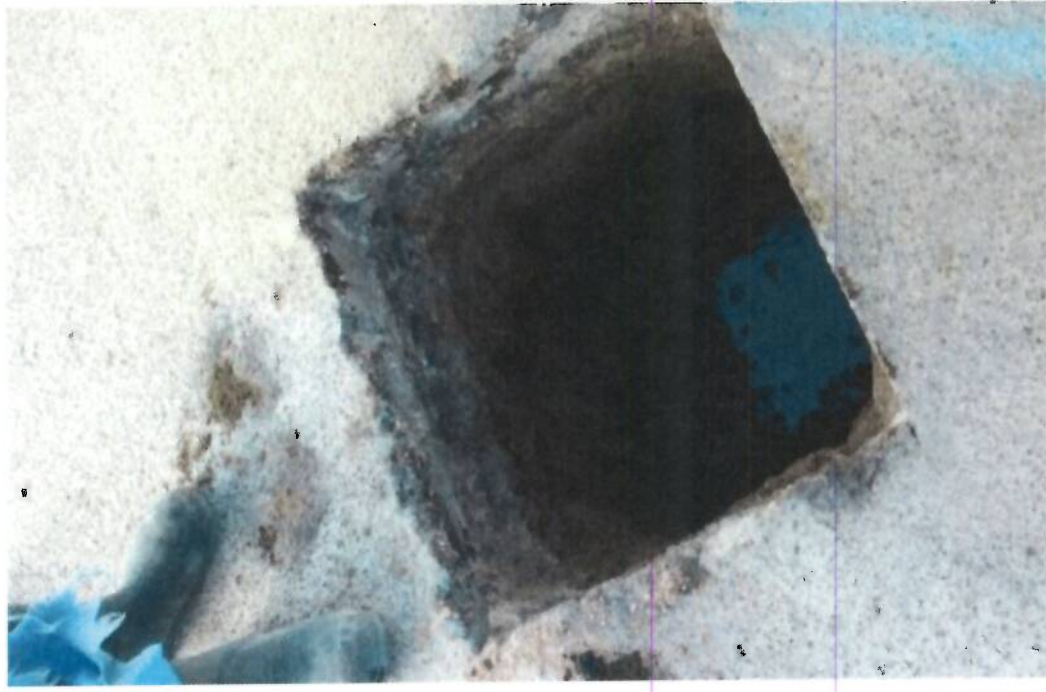
**Site Photographs**



**Figure 1.** Beads of elemental mercury in a crack in the sidewalk along 5<sup>th</sup> Street.



Figure 2. ERRS crew vacuuming visible mercury



**Figure 3.** Valve box after the removal of the stand pipe. Mercury vapor levels still exceeded 50,000 nanograms per cubic meter



**Figure 4.** START contractor screening the street for mercury vapors after the removal