

February 28, 2024

Mr. Grant Neitzel
Wisconsin Department of Natural Resources
1701 N 4th Street
Superior, WI 54880

**Re: 2023 Status Report for the Murphy Marine Terminal Site
Superior, Wisconsin
WDNR BRRTS No. 03-16-000320
Facility ID: 81600120**

Dear Grant:

On behalf of Superior Refining Company LLC (SRC), Barr Engineering Co. (Barr) is submitting this status report for the Murphy Marine Terminal (MMT) site in Superior, Wisconsin. Periodic site progress reporting to the Wisconsin Department of Natural Resources (WDNR) is required pursuant to ss. NR 700.11(1) and 724.13(3), Wisconsin Administrative Code. This report provides an update since submittal of the 2022 Status Report for the Murphy Marine Terminal Site (Barr, 2023).

1 Facility Information

The MMT site is located adjacent to a ship loading slip along the south shore of the St. Louis Bay, approximately 2,000 feet north of Winter Street in the City of Superior, Wisconsin. The location of the Site is presented on Figure 1. The site layout and adjacent properties are presented on Figure 2. The Site, and property adjacent to the Site, are currently vacant. Historically the site was used as a marine petroleum product loading facility.

The MMT site was previously operated by Murphy Oil under a lease agreement with the property owner. In October 2011, Calumet Superior LLC (Calumet) acquired the Superior Refinery from Murphy Oil, including the operations at the MMT property. In November 2017, Husky Superior Refining Holding Corp. (Husky Superior) purchased Calumet and changed its legal name to Superior Refining Company LLC (SRC). The site was originally administered by the Wisconsin Department of Commerce (DOC) between 2005 and 2011 and by the Department of Safety and Professional Services (DSPA) between 2011 and 2013 before it was transferred to the WDNR in 2013 (GF, 2019). In January 2021, Husky and Cenovus Energy Inc. (Cenovus) merged to become Cenovus; however, the refinery is still referred to as SRC. The MMT site is also known as "Murphy West Marine Terminal" and "Calumet Marine Terminal".

2 Site Background

Previous commercial and industrial activity at the MMT site includes coal storage; storage of "binding oil" used in manufacturing of coal briquettes; and a terminal for the loading of petroleum fuel products onto

ships including two underground storage tanks (UST) and one above ground storage tank (AST) for ballast water, spill containment, and oil/water separation.

The three USTs/AST previously operated by Murphy Oil were excavated in 1990 and approximately 36 cubic yards of petroleum impacted soil was disposed of at a landfill. Between 2005 and 2010, several phases of investigation were conducted to define the extent of petroleum impacts to soil and groundwater near the former USTs. Figure 3 presents details of the former UST basin excavations with field screening and sampling locations. Petroleum compounds in soil were detected above the established criteria, however, petroleum compounds were not detected in groundwater. The DOC determined that the MMT site could be conditionally closed and required that the site be included in a database of sites with residual soil contamination. However, since Murphy Oil did not own the property, Murphy Oil decided to remove approximately 5 cubic yards of soil from the remaining "hot spot" location for disposal at a landfill in an effort to obtain unconditional closure with no remaining residual contamination. However, post-excavation confirmation soil samples indicated that residual soil contamination remained following the hot spot excavation

Additional investigation and remediation details can be found in the following reports:

- *Tank Removal Report: Murphy West Marine Terminal Dock, Itasca, December 12, 1990.*
- *Tank Excavation Observation, TPT, March 15, 1991.*
- *Results of Site Investigation and Request for Site Closure, GF, September 2005.*
- *Remediation Progress Report for the Calumet Marine Terminal Release Site, GF, August 14, 2014.*
- *Remediation Progress Report for the Murphy Marine Terminal Site, GF, November 21, 2019.*

In addition, three separate Amoco petroleum release sites with documented dissolved- and free-phase hydrocarbons in the groundwater are located on and/or directly adjacent to the property. One of the Amoco sites is located approximately 300 feet to the east of MMT and the other two sites are located to the south of MMT at a distance of approximately 1,000 feet and 1,500 feet, respectively. (Figure 2). The Amoco terminal properties are being addressed by others.

3 Summary of Conceptual Site Model (CSM)

Site soil consists of at least 4 feet of industrial fill overlying native, reddish-brown clay in the vicinity of the former UST locations. Depth to groundwater is approximately 2 to 3 feet below ground surface (bgs). Shallow groundwater flow beneath the MMT site is to the north-northwest. Surficial geology was described as dense, reddish brown clay overlying a sequence of water-bearing silts and silty sands.

Primary contaminants of concern are polycyclic aromatic hydrocarbons (PAHs); the secondary contaminants of concern are petroleum volatile organic compounds (PVOCs) and lead. Potential sources of PAHs include fragments of coal and/or pitch binder used in the manufacture of coal briquettes.

Potential sources of PVOCs and lead include residual impacts from industrial fill, historical fuel loading activities, and/or the Amoco terminal sites.

As a result of changes to the NR 720 residual contaminant level (RCL) criteria in recent years, previously documented PAH and PVOOC compounds in soil no longer exceed the industrial direct contact criteria. Several PAH and PVOOC concentrations in soil exceed the NR 720 RCL for groundwater protection. PAHs and PVOCs were not detected in the groundwater samples collected at the MMT push probe boring locations in 2005 or the nearby water-table well MWBD-1 which was installed in 2013 for the adjacent Amoco terminal site (Figure 2).

4 Future Work

SRC's proposed path forward to achieve site closure:

Based on the historical information and CSM, no further field work is necessary to characterize the MMT site and no active remediation is necessary (Barr, 2023) to mitigate risk. SRC efforts to explore alternatives for site closure were delayed because they have been focused on issues related to the nearby refinery rebuild efforts. During 2024, SRC will continue to explore its alternatives to achieve final site closure in 2024.

If you have any questions or need additional information, please reach out to Joseph Pearson at SRC (joseph.pearson@cenovus.com) or me (lcarney@barr.com).

Sincerely,



Lynette M Carney
Project Manager

cc: Joseph Pearson (SRC)

Figures

- Figure 1 Site Location Map
- Figure 2 Adjacent Properties
- Figure 3 Site Layout and Monitoring Locations

References

Barr Engineering Co, 2023. *2022 Status Report for the Murphy Marine Terminal Site, Superior, Wisconsin, WDNR BRRTS No. 03-16-000320, Facility ID: 81600120.* March 2, 2023.

GF, 2019. *Remediation Progress Report for the Murphy Marine Terminal Site, Superior, Wisconsin, WDNR BRRTS No. 03-16-000320.* November 21, 2019.

CERTIFICATION

"I, Lynette M. Carney, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

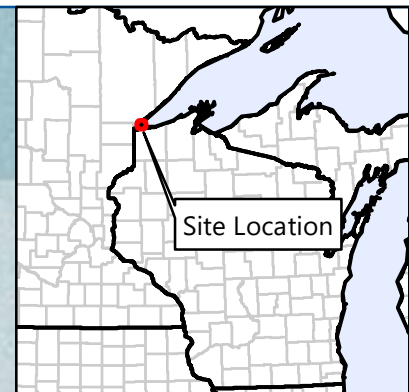
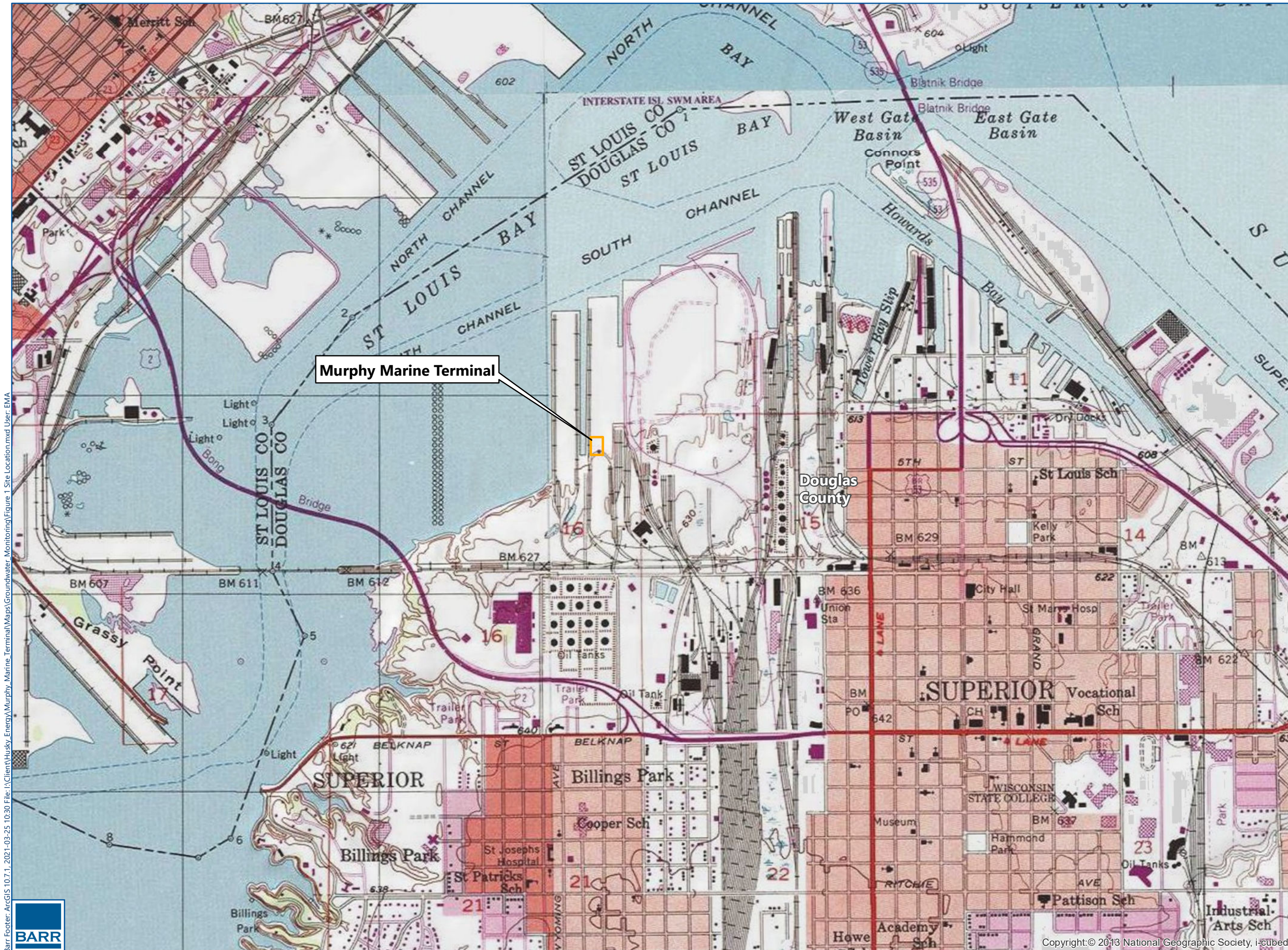



Lynette M. Carney, PG
Reg #: 1138

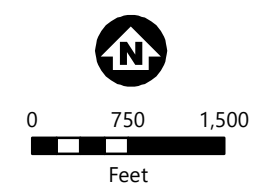
February 28, 2024

Date

Figures



 Murphy Marine Terminal



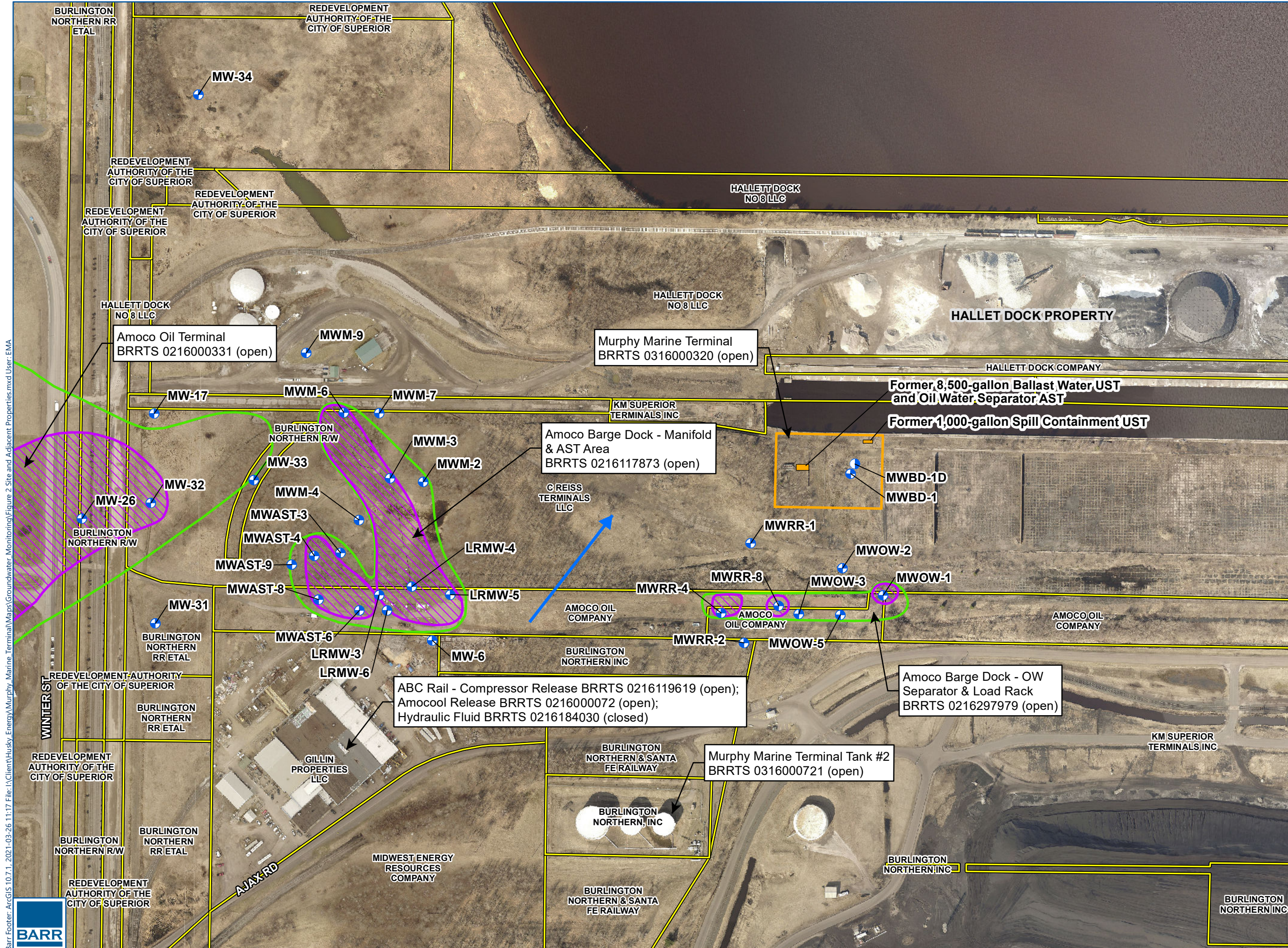
**MURPHY MARINE
TERMINAL SITE**
Superior Refining
Company LLC (SRC)
Superior, WI

FIGURE 1

Barr Footer: ArcGIS 10.7.1, 2021-03-25 10:30 File: I:\Client\Husky_Energy\Murphy_Marine_Terminal\Maps\Groundwater_Monitoring\Figure 1 Site Location.mxd User: EMA



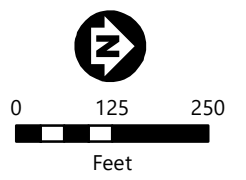
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- Murphy Marine Terminal
- Amoco Monitoring Well Location
- Amoco Piezometer Well Location
- Approximate Extent of Free Phase Hydrocarbons (FPH)-April 2004
- Approximate Extent of Dissolved-Phase Hydrocarbons Exceeding NR 140 ES-April 2004
- Parcel Boundary
- Assumed Direction of Groundwater Flow

*Bureau for Remediation and Redevelopment Tracking System (BRRTS)

Source: Gannett-Fleming, Remediation Progress Report 8/2014
 Information for Amoco Sites obtained from Delta Environmental Consultants, 2004 Status Report
 Imagery: Douglas County, WI, 2016



1 inch = 250 feet

MURPHY MARINE TERMINAL & ADJACENT PROPERTIES
 Superior Refining Company LLC (SRC)
 Superior, WI

FIGURE 2

Barr Footer: ArcGIS 10.7.1, 2021-03-26 11:17 File: I:\Client\Husky_Energy\Murphy_Marine_Terminal\Maps\Groundwater_Monitoring\Figure 2 Site and Adjacent Properties.mxd User: EMA



