

# MacMillan Ring-Free Oil (formerly Norphlet Chemical, Inc.) Facility

**NATIONAL PRIORITY LIST SITE  
NORPHLET, ARKANSAS**



ADEQ  
5301 Northshore Drive  
North Little Rock, Arkansas 72118



EPA RCRA ID No: ARD008049207  
EPA CERCLA ID No: ARN000606985  
AFIN: 70-00694  
County: Union Arkansas  
Senate District: 25  
Arkansas House District: 6  
US Congressional District: 1

## **Current Status**

Norphlet Chemical, Inc. (NCI) is an abandoned chemical manufacturing facility which specialized in producing tetrafluoroethane (R134A) refrigerant. Conversion of this former oil refinery to refrigerant production began in early 2006; however, the plant never became fully operational after its completion in 2007 and the facility has been closed since September 2008. The U.S. Environmental Protection Agency (EPA) began an Emergency Removal Action at the site on April 17, 2009 in response to concerns about the unsafe condition of tanks and piping systems containing anhydrous hydrogen fluoride (AHF) and AHF mixtures, including hydrofluoric acid. Initial actions to mitigate the site's Imminent and Substantial Endangerment status included the construction of a scrubber system, removal of AHF and AHF mixtures, and decontaminating all tanks and piping.

EPA representatives and contractors remobilized to the site from June 29 through July 2, 2009 for additional response activities. EPA transported approximately 12,000 gallons of process tank decontamination/neutralization water and approximately 27 truck loads of soil contaminated with nonhazardous total petroleum hydrocarbon (TPH) for offsite disposal. Additional site activities included discharging 69,000 gallons of carbon filtered water from four frac tanks into on-site wastewater treatment ponds and dispatching eight tanker trailers of AHF-contaminated liquid

wastes and a roll-off box containing tote tanks of spent carbon and alumina for off-site disposal. Eleven 55-gallon drums of trichloroethylene (TCE)-contaminated liquid from the Plant Chiller Units remained at the NCI until offsite disposal arrangements were made in September 2010.

EPA completed site removal activities from September 23 through 30, 2010. The frac tanks containing rinse water from tanker cleanings were neutralized with nitric acid and tested to ensure that no contaminants were present above regulatory levels prior to being discharged into the Norphlet wastewater treatment ponds. All other wastes have been transported off-site for disposal.

The Arkansas Department of Environmental Quality – Hazardous Waste Division (ADEQ) approved a Comprehensive Site Assessment (CSA) Work Plan in February 2011. The plan was implemented and the CSA Report was approved in August 2011. Norphlet Chemical was proposed to the National Priority List on December 12, 2013 as McMillan Ring Free Oil. The NPL listing for Norphlet Chemical was finalized on May 12, 2014 as MacMillan Ring Free Oil.

## **State Priority List History**

---

The Arkansas Remedial Action Trust Fund Act (A.C.A. 778-7-501 et seq.), or RATFA, provides authority and funding for identifying, investigating, and remediating hazardous substance sites throughout the State. The RATFA Hazardous Substances Site Priority List (SPL) identifies those hazardous substance sites eligible for State-funded investigation and remedial actions, if necessary, on a case-by-case basis; it is not an inclusive site inventory or historical list.

On April 23, 2010, Norphlet Chemical was added to the SPL under the Arkansas Pollution Control and Ecology Commission's (APC&EC) Regulation No. 30 (Arkansas Remedial Action Trust Fund Hazardous Substance Site Priority List). This listing has made state funds available for investigation and remediation. The site was listed due to the potential for soil, surface water, and groundwater contamination on and off-site, and the need to clean up the site to protective levels.

## **Site Description**

---

**Location:** The site is located in Norphlet, near El Dorado in Union County, Arkansas. The physical address is 600 Macmillan Road (State Highway 335), Norphlet, Arkansas, 71759. The geographical location is 33°18'37" north latitude and 92°39'28" west longitude.

**Population:** Norphlet has an estimated 788 residents. Approximately 16 persons reside within a 1-mile radius and 172 persons reside within a 2-mile radius of the NCI.

**Setting:** NCI is the location of the former MacMillan Ring-Free Oil Refinery, which closed in 1987. The facility was inactive from that time until it was refurbished as a chemical manufacturing plant in early 2006. Situated in a rural area at the end of MacMillan Road, off State Highway 335, the approximate area of the site is 100 acres. It is

MacMillan Ring-Free Oil

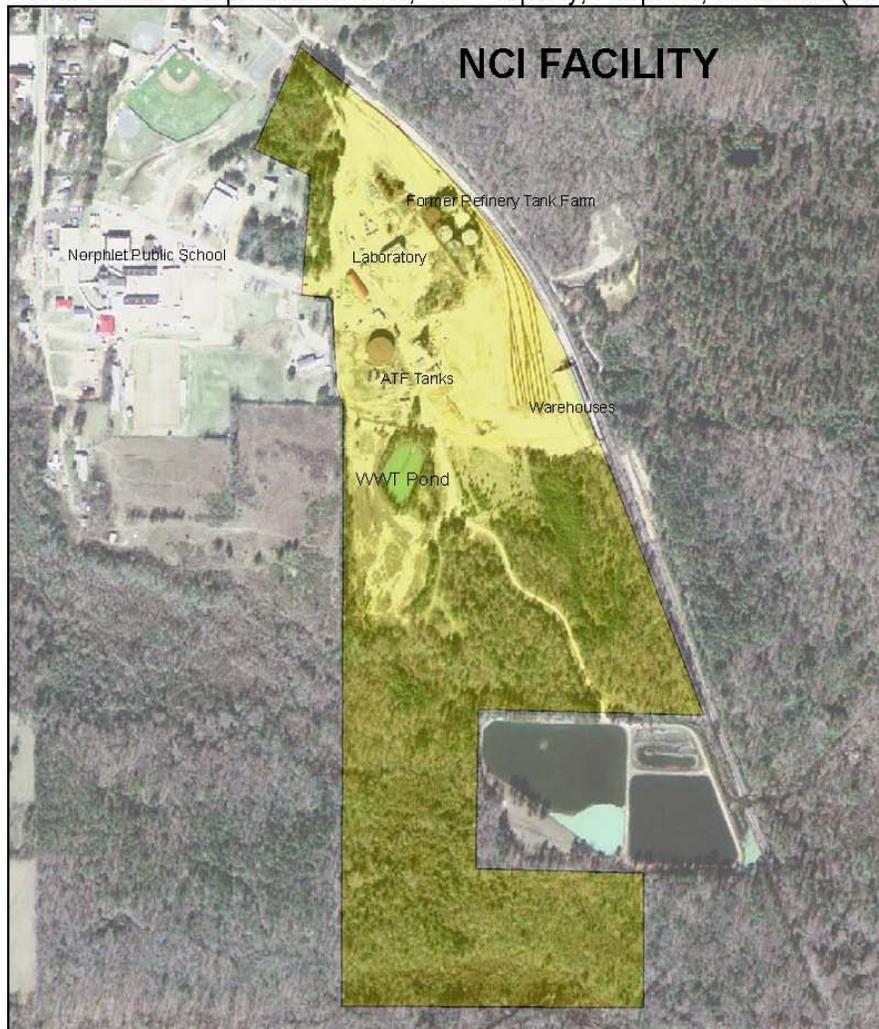
Updated: May 2016

Page 2 of 6

bordered by a residential subdivision and the Norphlet Public School on the west, Hayes Creek on the north and east, and Massey Creek and bottomlands associated with the creek to the southwest.

**Hydrology:** The site is relatively flat with primary surface water runoff to the south and east. Runoff from the site flows into Hayes Creek and Massey Creek which are tributaries of Flat Creek. The Flat Creek watershed consists of a coastal plain of rolling terrain broken by stream valleys. Streams meander and are of moderate to low gradient (all less than 10 ft/mi). Groundwater flow in the vicinity of the site is predominantly to the north. The El Dorado Aquifer is the primary drinking water source for the area. City of Norphlet residents use city water acquired from two groundwater wells completed in the El Dorado Aquifer of the Sparta sand at a depth of approximately 650 feet. These wells are located to the northwest of the site and are up gradient from the general regional direction of surface water flow which is to the south-southeast.

Aerial Photo: Norphlet Chemical, Inc. Property, Norphlet, Arkansas (2009)



## **Waste and Volumes**

---

Waste and approximate volumes removed from the site during the 2009 emergency actions include:

- 12,000 gallons of process tank decontamination/neutralization water
- 58,000 gallons of AHF-contaminated liquid wastes
- 540 cubic yards of TPH-contaminated soil
- 30 cubic yards of spent carbon and alumina
- 30 cubic yards of sodium fluoride solids
- 1,460 gallons of used oil

Additionally, 69,000 gallons of carbon-filtered water was discharged into onsite wastewater treatment ponds and 605 gallons of containerized TCE-contaminated liquid were removed from the site for disposal.

A crude oil refinery, MacMillan Ring-Free Oil, operated at the site from 1929 until 1987. The remaining wastes and volumes associated with historic oil refinery operations are currently unknown. When in operation, the daily refining capacity was approximately 4,500 barrels per day. Records indicate a history of regulatory environmental issues including water discharges, air emissions, and hazardous waste pond closures.

The bankruptcy of MacMillan Oil in 1987 led to a series of EPA Superfund removal actions for the waste oil pits and oily soils along Massey Creek. During removal operations conducted in 1992, approximately 31,500 gallons of free-floating oil materials were recovered from sand pits. During subsequent removal operations conducted in 1993, 9,600 gallons of composite waste flammable corrosive liquids and 50,080 gallons of waste oil were transported off-site.

Final Superfund removal operations were completed in 1997, and included pumping, treating, and discharging wastes from waste pits and on-site bioremediation of approximately 13,000 cubic yards of contaminated soils.

In addition to the EPA Superfund removal actions, an ADEQ Emergency Order resulted in the removal of approximately 171 cubic yards of asbestos-containing materials. Oily material was released from onsite pits during floods in 1982 and 1983 and covered approximately 150 to 200 acres of Ouachita River bottoms; however, no records of environmental damage or cleanup actions associated with these spills have been located.

The 2011 Comprehensive Site Assessment (CSA) Report detailed the investigation into the presence of Contaminants of Potential Concern (COPCs) in surface water, groundwater and soil. The following COPCs were identified and forwarded to the EPA:

Benzo(a)pyrene	Benzo(b)fluoranthene
Benzo(k)fluoranthene	Diesel range organics
Benzene	1-methylnaphthalene
2-methylnaphthalene	1,2,4-trimethylbenzene
1,3,5-trimethylbenzene	Naphthalene
Total Petroleum Hydrocarbons	Lead
<b>Total/Hexavalent chromium (main risk driver)</b>	

MacMillan Ring-Free Oil

## **Health Considerations**

---

Anhydrous hydrogen fluoride (AHF) and mixtures containing hydrogen fluoride can cause multiple health problems, including lung irritation, severe chemical burns, and death after prolonged exposure. TCE is a severe skin irritant, and short-term exposure can cause irritation of the nose, throat, and central nervous system. Long-term exposure to TCE can also cause multiple health problems, including central nervous system disruptions, and lung and other internal organ damage. The U.S. National Toxicology Program lists TCE as a substance which may be reasonably anticipated to be a carcinogen. All AFH, mixtures containing hydrogen fluoride and the drums of TCE were removed from the site in September 2010. These chemicals are no longer a health consideration to the Norphlet community.

Residual contamination at the site is suspected due to previous oil refinery operations. Potential contaminants include benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, lead, and chromium (total and hexavalent), diesel range organics, and total petroleum hydrocarbons.

The 2011 CSA included a Risk Assessment; however, additional sampling was conducted which indicated hexavalent chromium is more pervasive than originally indicated. Hexavalent Chromium was found in the soil, groundwater, and surface water at the site. Evaluation of the site and potential risks are ongoing.

## **ADEQ Response Actions**

---

The following provides a brief chronology and description of actions taken at the NCI site:

- December 1989 – ADEQ conducted a site inspection identifying violations of asbestos regulations.
- February 1990 – ADEQ issued an Emergency Order requiring the removal of asbestos-containing materials.
- January 1992 – ADEQ reviewed the Bioremediation Work Plan for proposed treatment of contaminated soil.
- April 1992 – ADEQ contacted EPA to request assistance with emergency removal and stabilization of liquids in tanks and impoundments.
- May 1992 – ADEQ conducted a site assessment in coordination with EPA determining the need for removal of oily substances contained in multiple pits.
- June 1992 – ADEQ conducted site visit to assess removal progress.
- December 1992 – ADEQ conducted site visit to assess removal progress.
- July 1994 – ADEQ conducted site visit to monitor additional removal operations; provided EPA with a letter of concerns regarding incomplete actions.
- 1997 – ADEQ verified EPA completion of removal operations.
- October 2005 – ADEQ issued letter to NCI to notify acceptance of application for participation in the Arkansas Brownfields Program.

MacMillan Ring-Free Oil

- March 2009 – ADEQ conducted a site inspection of facility operations and noted corrosion on the relief valves of hydrofluoric acid tanks.
- April 2009 – ADEQ requested EPA’s assistance in responding to emergency conditions at the site.
- April 2010 – The Site was placed on the SPL.
- December 2010 – Comprehensive Site Assessment Work Plan was submitted to ADEQ.
- February 2011 – Comprehensive Site Assessment was implemented.
- August 2011 – ADEQ approved Comprehensive Site Assessment Report.
- January 2012 – ADEQ participated in a Site Inspection with the EPA to evaluate the site for the National Priorities List (NPL).
- June 2012 – A site visit was conducted by the EPA and ADEQ to plan sampling event for reassessment.
- August 2012 – EPA sampling event was conducted.
- December 2012 – EPA provided ADEQ with passive soil gas sampling results which indicated that volatile organic compounds are not volatilizing from the groundwater.
- January 2013 – The EPA's groundwater and soil sampling results have not been finalized; however, a preliminary report indicates that contaminated groundwater is flowing away from the high school.

## **ADEQ Anticipated Future Activities**

Norphlet Chemical was proposed to the National Priority List (NPL) on December 12, 2013 as MacMillan Ring Free Oil. A site meeting was held on January 23, 2014 with the EPA Region 6, the ADEQ, and the city mayor of Norphlet. The NPL listing for Norphlet Chemical was finalized on May 12, 2014 as MacMillan Ring Free Oil. A potentially responsible party (PRP) search has been conducted and an RP was not retained. A site visit was made on February 18, 2015 by the EPA Region 6, their contractor and the ADEQ in preparation for a work plan for the remedial investigation (RI). The work plan for the RI was finalized on June 25, 2015. The RI sampling event took place during July through September 2015. An RI results report will be submitted in 2016.

## **Site Contact**

Project Coordinator: Annette Cusher (501) 682-0841; e-mail: [cusher@adeq.state.ar.us](mailto:cusher@adeq.state.ar.us)