Health Consultation

PAB Oil & Chemical Service, Inc.

Review of Groundwater Monitoring Data

Abbevile

Vermilion Parish, Louisiana

EPA Identification Number: LAD980749139

July 12, 2013

Prepared by

Louisiana Department of Health and Hospitals
Office of Public Health
Section of Environmental Epidemiology and Toxicology
Under a Cooperative Agreement With the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

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List of Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
COC	contaminant of concern
CV	comparison value
EMEG	environmental media evaluation guide
ft bgs	feet below ground surface
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
LDNR	Louisiana Department of Natural Resources
OPH	Office of Public Health
PAHs	polycyclic aromatic hydrocarbons
ppm	parts per million
RMEG	reference dose media evaluation guide
SEET	Section of Environmental Epidemiology and Toxicology
SVOC	semivolatile organic compound
US EPA	United States Environmental Protection Agency
VOC	volatile organic compound

Summary and Statement of Issues

INTRODUCTION

The PAB Oil & Chemical Service, Inc. site formerly operated as a disposal facility for oil field drilling mud and saltwater and a waste oil skimmer for resale to reclaimers. Complaints brought against the site resulted in investigations by multiple state agencies and the United States Environmental Protection Agency. Due to wastes spilled and disposed of onsite during its operation, the site was placed on the National Priorities List (NPL) on March 31, 1989. Following a series of remedial activities, the site was deleted from the NPL on January 3, 2000. Groundwater monitoring is conducted annually at the site as part of the operation and maintenance phase of the Superfund process.

Through our cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), the Louisiana Department of Health and Hospitals/Office of Public Health/Section of Environmental Epidemiology and Toxicology (LDHH/OPH/SEET) has evaluated groundwater samples collected during routine monitoring in 2012 to determine whether residual contaminants in the site's groundwater pose harm to public health.

CONCLUSION

Under current site conditions, groundwater at the PAB Oil site poses no harm to public health.

BASIS FOR DECISION

Under current site conditions, the public will not be exposed to residual groundwater contaminants at the PAB Oil site. Groundwater at the site is not part of the public water supply.

NEXT STEPS

If future evidence suggests that the groundwater at the site is entering the public water supply, groundwater at the PAB Oil site should be reevaluated.

The information produced within this health consultation will be made available to the community members and stakeholders in Abbeville, LA.

FOR MORE INFORMATION

If you have further concerns about the PAB Oil & Chemical Service, Inc. site, questions may be directed to DHH/OPH/SEET at 1-888-293-7020.

Background and Site History

The PAB Oil & Chemical Service, Inc. site (the PAB Oil site) consists of 16.7 acres of land along Highway 167, approximately 3 miles north of the city of Abbeville in Vermilion Parish, Louisiana (see Figure A-1) [1]. From 1978 to 1983, the site operated as a disposal facility for oil field drilling mud and saltwater. Waste oil was also skimmed from the drilling mud in pits located in the northeast part of the site and sold to waste oil reclaimers [1, 2].

The facility initially operated under the authority of Statewide Order 29-B, which regulated the drilling, production, and operation of oil and gas wells in the state of Louisiana, including provisions for pollution control [3]. In 1980, Louisiana passed an amendment with new requirements for off-site drilling mud and saltwater disposal facilities. That same year, a citizen reported a discharge from the PAB Oil site into an off-site drainage ditch. The complaint resulted in site investigations by the Louisiana Department of Natural Resources (LDNR), the Louisiana Department of Environmental Quality (LDEQ), and the United States Environmental Protection Agency (US EPA) [1].

In March 1982, PAB Oil was sold to Worldwide Services, Inc., which later tried unsuccessfully to cancel its purchase due to impending lawsuits [2]. PAB Oil stopped receiving oil field waste in August 1982 because the facility was unable to meet the requirements of Statewide Order 29-B. The company's authority to operate the disposal site was revoked by LDNR in November 1982, and the company was ordered to proceed with a closure plan for the site [3].

In January 1983, PAB Oil officials were notified that the gates to the facility had been sealed by LDNR agents because of leakage from pits and petroleum wastes found in a tank on-site. Lacking the funds for a proper closure, the company ceased operations in 1983, leaving most of the wastes on-site. The land owner, Edward Mouton, assumed control of the property in November 1984 [3].

The EPA conducted investigations at the PAB Oil site in 1984, 1985, and 1987. Concern about potential contamination to the underlying Chicot Aquifer led to the proposal of the site for the National Priorities List (NPL) on June 24, 1988. The site was placed on the NPL on March 31, 1989. EPA started a Remedial Investigation/Feasibility Study at the site in June 1990 to determine the nature and extent of contamination onsite and to develop and evaluate cleanup alternatives [2, 3]. During this study and following investigations, elevated levels of polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons such as toluene and xylene, and heavy metals such as barium and arsenic were found in wastes and soils at the site. All of the contaminants were found to be a direct result of the drilling mud and fluids and other wastes the facility received from oil and gas exploration and production [1, 2].

Remedial activities performed at the site included treatment and discharge of onsite surface water; excavation and on-site solidification/stabilization of contaminated soil, sludge, and sediment from the pits used to separate oil from wastes; on-site disposal of treated material; placement of a clay cap over the disposal unit; and long-term groundwater monitoring [1]. The site was deleted from NPL on January 3, 2000.

On April 20, 2005, SEET released a public health assessment, "PAB Oil and Chemical Services, Incorporated", to address community health concerns related to the site's potential impact on the safety of local groundwater sources and the Vermilion River. The public health assessment

reviewed data collected by the EPA at the PAB Oil site in the late 1980's and early 1990's. SEET concluded that the levels of contaminants detected in shallow soil, sediment, and surface water sampled from the PAB Oil site and in water sampled from residential wells surrounding the site were unlikely to pose harm to public health. Compounds detected in water from residential wells were not believed to be site-related [3].

On September 19, 2006, SEET released a public health consultation, "Hurricane Response Sampling Assessment for PAB Oil & Chemical Service, Inc." to assess the impact of the 2005 landfall of Hurricane Rita at the site and to determine whether any public health actions were needed as a response to this potential impact. SEET concluded that the storm did not alter the site in a way that would cause it to pose harm to public health [4].

Demographics

Census 2010 results reported a population of 12,257 in Abbeville, LA. The largest ethnic group reported for the city was Caucasian (or White, 50%), followed by African-American (or Black, 41%), Asian (5.2%), those identifying themselves as belonging to 2 or more races (2.0%), and American Indian and Alaska Native (0.3%). Three point one percent (3.1%) of the population identified themselves as Hispanic or Latino. Sixty-seven point eight percent (67.8%) of the population age 25 years or older had earned at least a high school diploma. The median household income was $30,021 [5]. The largest employers were in the educational, health, and social services sectors; the retail sector; and in agriculture, forestry, fishing and hunting, and mining [6].

Usage of the land surrounding the PAB Oil site is primarily agricultural and residential. Following a site inspection on March 29, 2012, EPA staff noted that the community surrounding the site is undergoing an increase in residential development [1].

Discussion

Data Used

In September 2011, groundwater sampling procedures at the PAB Oil site were modified to include assessment of the water's turbidity (the amount of cloudiness present) before collecting groundwater samples. The groundwater data assessed in this health consultation is limited to samples collected in 2012, after the changes to the sampling procedures. Monitoring wells sampled following these changes include MW-2, MW-6, MW-8, and MW-9. A duplicate sample, or a field duplicate, was also collected from MW-8 (identified as MW-8FD) [1].

Water samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals. Table B-1 lists all analytes included in the analyses of the groundwater samples [1].

Exposure Pathways

An exposure pathway consists of five elements: a source of contamination, transport through an environmental medium (air, water, or soil), a point of exposure, a route of human exposure (ingestion, dermal exposure, or inhalation), and a population. Completed pathways require that all five necessary elements exist and that exposure to a contaminant has occurred in the past, is presently occurring, or will occur in the future. An exposure pathway can be eliminated if at least one of the five elements is missing and will never be present.

The groundwater flow direction under the PAB Oil site has been observed to be west-northwest, with a gradient of 0.0002 feet per foot. The zone of groundwater beneath the site begins at approximately 30 feet below ground surface (ft bgs) in the Abbeville Unit of the uppermost part of the Chicot Aquifer System. The Chicot Aquifer underlies a large portion of southwest Louisiana and serves as the principal source of groundwater supply within the Abbeville area. Three city wells in Abbeville provide drinking water to approximately 18,000 people. Private wells within 3 miles of the PAB Oil site serve an additional 2,100 people [1].

The monitoring wells at the site draw water from depths of 30 to 40 ft bgs. Private wells near the site draw water from depths of 80 to 200 ft bgs. Private wells sampled during the EPA's Remedial Investigation of the PAB Oil site (before remedial activities began) were found not to be impacted by contaminants from the site [1, 7]. There is no pathway of exposure between groundwater contaminants under the PAB Oil site and the public.

A conveyance notice filed with Vermilion Parish in October 2007 restricts excavation, drilling, and other activities that could result in exposure to residual contamination at the site. The notice also restricts the extraction of groundwater from under the site for any use other than groundwater monitoring or remediation [1].

Evaluation Process

The evaluation process used to assess groundwater samples collected from the PAB Oil site monitoring wells is described in Appendix B. Contaminant concentrations were initially screened using comparison values (CVs) appropriate for their media. These conservative screening values are only used to determine which environmental contaminants need further evaluation. Contaminants requiring further evaluation are identified as contaminants of concern (COCs). CVs are not used to predict adverse human health effects.

Health Effects Evaluation

No VOCs or SVOCs were detected in groundwater sampled from the PAB Oil site monitoring wells. The metals detected in the samples are listed in Table B-2. None of the metals detected were identified as COCs.

The public is unlikely to come into contact with water from the monitoring wells at the PAB Oil site. Groundwater from the site therefore poses no harm to public health. If future evidence suggests that the groundwater at the site is entering the public water supply, groundwater at the PAB Oil site should be reevaluated.

Child Health Considerations

The physical differences between children and adults demand special emphasis in assessing public health hazards. Children may be at greater risk than are adults from exposures to hazardous substances. Children play outdoors and engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than adults and breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate result in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage.

Because there is currently no exposure pathway between groundwater contaminants of concern at the PAB Oil site and the public, groundwater at the site poses no harm to children's health.

Conclusions

SEET and ATSDR are committed to addressing community concerns about the risks involved in exposure to environmental contaminants. Our agencies are committed to providing the residents of Abbeville, LA with the best science-based information available to keep the community safe.

Under current site conditions, the public will not be exposed to residual groundwater contaminants at the PAB Oil site. Groundwater at the site therefore poses no harm to public health. If future evidence suggests that the groundwater at the site is entering the public water supply, groundwater contaminants at the PAB Oil site should be reevaluated.

If you have further concerns about the PAB Oil & Chemical Service, Inc. facility, questions may be directed to DHH/OPH/SEET at 1-888-293-7020.

Recommendations

SEET will be available to assess any additional samples collected from the PAB Oil site or to reassess the current data following any changes in usage of or access to the site.

Public Health Action Plan

The information produced within this health consultation will be disseminated to the community members and stakeholders in Abbeville, LA.

Report Preparation

This "PAB Oil & Chemical Service, Inc. Review of Groundwater Monitoring Data" Health Consultation was prepared by the Louisiana Department of Health and Hospitals under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR).

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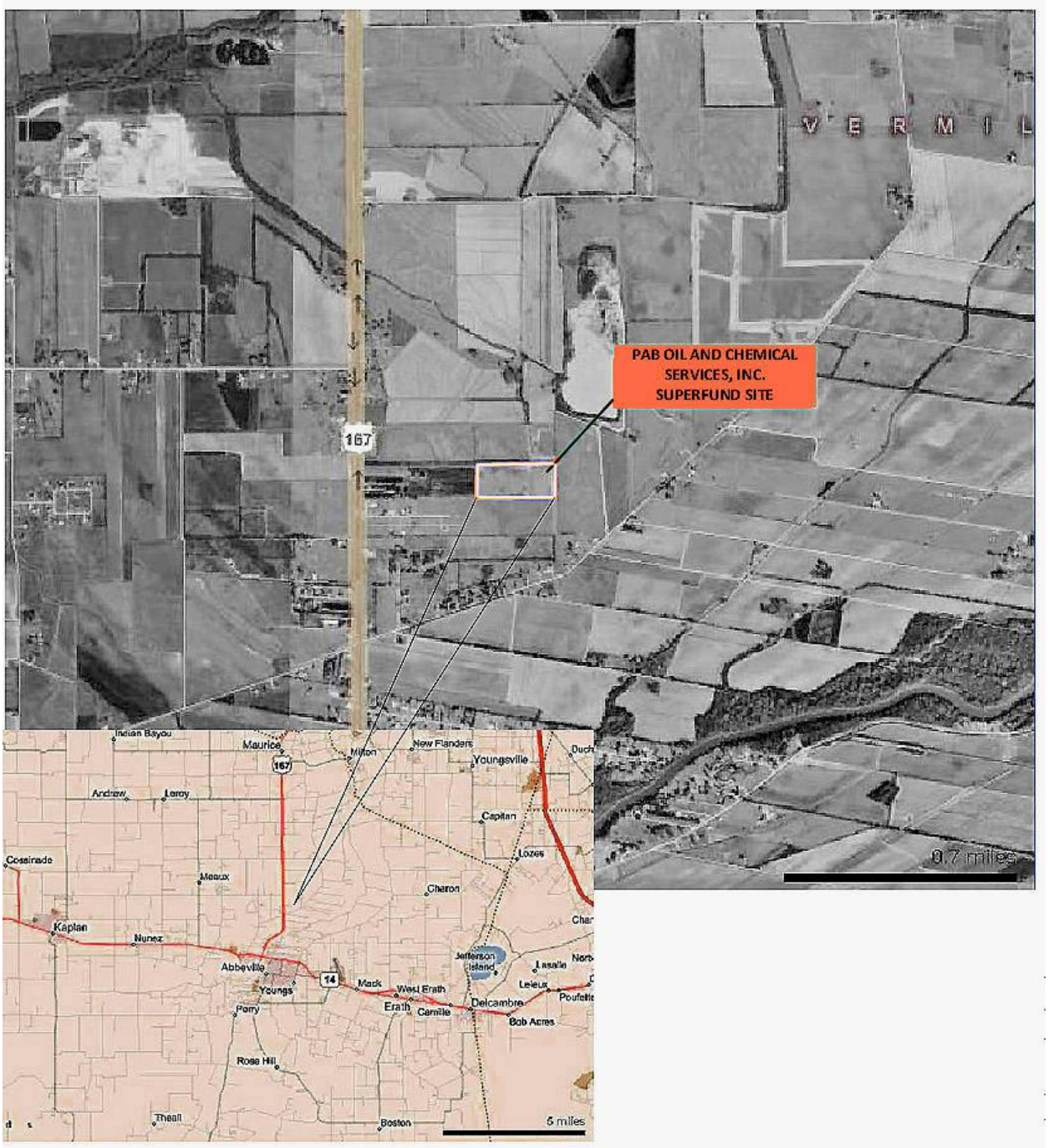
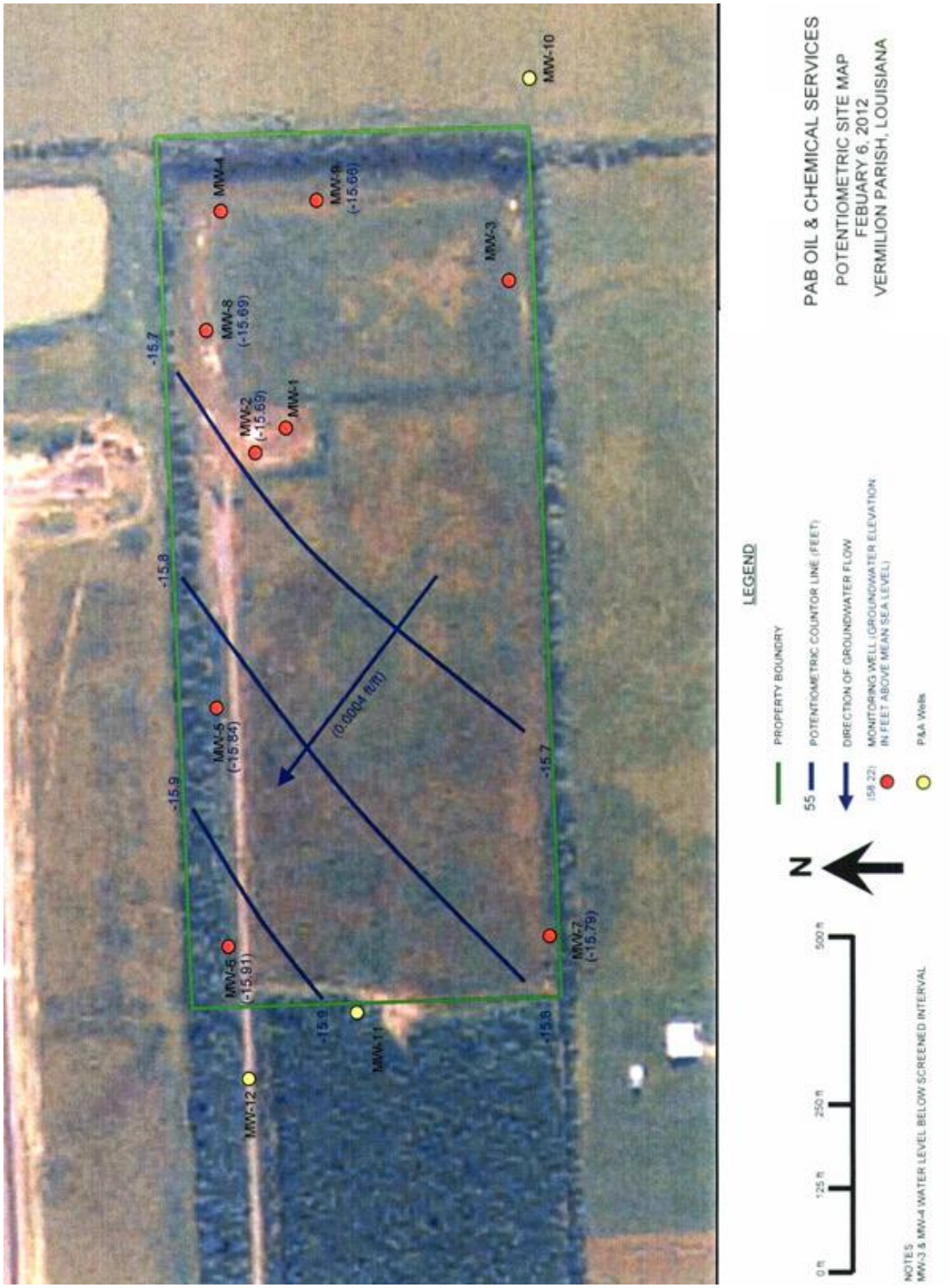
APPENDIX A: Maps

Figure A-1: The PAB Oil and Chemical Services, Inc. Site



Adapted from: United States Environmental Protection Agency, Region 6. Third Five-Year Review Report for PAB Oil and Chemical Services, Inc. Superfund Site, Abbeville, Vermilion Parish, Louisiana. EPA ID # LAD980749139. 2012 Jul 19.

Figure A-2: Monitoring Well Locations and Groundwater Flow at the PAB Oil site



Adapted from: Project Navigator, LTD. for United States Environmental Protection Agency. 2012 Annual Inspection and Monitoring Report, Operations and Maintenance Activities, PAB Oil & Chemical Services, Inc. Site, Abbeville, LA. 2012 Feb 28.

APPENDIX B: Data Evaluation

Table B-1: Contaminants assessed in water samples collected during the 2012 PAB Oil & Chemical Services, Inc. groundwater sampling events

SVOCs

1,1-Biphenyl
1,2,4,5-Tetrachlorobenzene
1,2,4-Trichlorobenzene
1,3-Dinitrobenzene
2,3,4,6-Tetrachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnaphthalene
2-Nitroaniline
3,3´-Dichlorobenzidine
3-Nitroaniline
4-Chloroaniline
4-Nitroaniline
4-Nitrophenol
Acenaphthene
Acenaphthylene
Aniline
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Chrysene
Dibenz(a,h)anthracene
Dibenzofuran
Diethyl phthalate
Dimethyl phthalate
Di-n-octyl phthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Indeno(1,2,3-cd)pyrene
Isophorone
Naphthalene
Nitrobenzene
N-Nitrosodi-n-propylamine
N-Nitrosodiphenylamine
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

VOCs

1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dibromo-3-chloropropane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2-Butanone
4-Methyl-2-pentanone

VOCs, continued

Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Dibromochloromethane
Ethylbenzene
Hexachloroethane
Isobutyl alcohol
Methyl tert-butyl ether
Methylene chloroide
Styrene
Tetrachloroethene
Toluene
Trichloroethene
Trichlorofluoromethane
Vinyl chloride
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
m,p-Xylene
o-Xylene
1,3-Dichloropropene,Total
1,2-Dichloroethene
Xylenes,Total

Metals

Arsenic
Silver
Barium
Beryllium
Cadmium
Chromium
Copper
Mercury
Lead
Nickel
Antimony
Selenium
Thallium
Zinc

Screening Process

Drinking water comparison values were used in the initial screening process to determine which groundwater samples needed to be closely evaluated. Comparison values are media-specific concentrations of chemicals that are used by health assessors to screen environmental contaminants for further evaluation. These values are not used to predict adverse health effects. The following comparison values were used to screen contaminants detected in groundwater from the PAB Oil site:

> *Environmental media evaluation guides* (EMEGs) are estimated contaminant concentrations at which noncarcinogenic (meaning not related to cancer) health effects are unlikely. They are calculated from the Agency for Toxic Substances and Disease Registry's (ATSDR) minimal risk levels (MRLs). EMEGs apply to acute (14 days or less), intermediate (15–365 days) and chronic (365 days or more) exposures. Chronic and intermediate EMEGs were used for the PAB Oil data screening process.
>
> *Reference dose Media Evaluation Guides* (RMEGs) were developed by ATSDR for soil and drinking water using EPA's reference doses (RfDs) and default exposure assumptions. EPA's reference concentrations (RfCs) serve as RMEGs for air exposures. Like EMEGs, RMEGs represent concentrations of substances (in water, soil, and air) to which humans may be exposed without experiencing non-cancerous, adverse health effects. RfDs and RfCs consider lifetime exposures; therefore, RMEGs apply to chronic exposures.

Contaminants that were not detected at concentrations above the method detection limits are identified as "non-detects" (ND). Table B-1 lists the contaminants that were detected in groundwater sampled from monitoring wells at the PAB Oil site.

Table B-2: Contaminants detected in groundwater sampled from the PAB Oil & Chemical Service, Inc. site during groundwater monitoring events in 2012

Contaminant	Range of concentrations detected (ppm*) Minimum	Maximum	Location, Maximum	CV† (ppm)	CV reference
Barium	0.125	0.256	MW-2, 2/7/2012	2	Child chronic EMEG‡
Nickel	0.00368	0.118	MW-2, 2/7/2012	0.2	Child RMEG§
Selenium	ND**	0.0108	MW-2, 2/7/2012	0.05	Child chronic EMEG

* ppm= parts per million
† CV = comparison value
‡ EMEG = Environmental Media Evaluation Guide
§ RMEG = Reference dose Media Evaluation Guide
** ND = not detected