

Chapter 3. Lake Erie

3.1. Buffalo River AOC, Erie County, NY

The Buffalo River AOC is within the City of Buffalo, in western New York State. The AOC extends from the mouth of the Buffalo River approximately 6 miles to the east and includes the adjoining land. The Buffalo River flows west into Lake Erie, near the head of the Niagara River. (see AOC map at end of chapter and in Appendix 1)

3.1.1. Hazardous Waste Sites Relevant to the Buffalo River AOC

ATSDR identified six hazardous waste sites in Erie County, NY that during the public health assessment process were identified as posing either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. Table 3.1-A summarizes these conclusions, together with information regarding the type and location of the site, and the date and type of assessment document.

Table 3.1-A. Hazardous waste sites in Erie County, NY

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remedial Status
Abby Street Hickory Wood Subdivision, Buffalo NYSFN0204229	HC	1999	2	Non NPL	Ongoing
	HC	2001	3		
	HC	2004	n.s.		
	HC	2004	n.s.		
Diarsenol Company, Buffalo NYD981187040	HC	1994	2	Non NPL	Completed
	HA				
Ernst Steel, Buffalo NYD980508246	HC	1990	2	Non NPL	Completed
Newstead Site, Newstead NYD986883387	HV	1989	1	Non NPL	Completed
	LI	1992			
Pfohl Brothers Landfill, Cheektowaga NYD980507495	HA	1995	3	NPL	Completed
NL Industries, Depew NYD980531636	SRU	2003	2	Non NPL	Ongoing
	HC	2004	4		

1=Urgent Public Health Hazard, 2=Public Health hazard, 3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard

HA=Public Health Assessment, HC=Health Consultation, HV=Health Advisory, SRU=Site Review and Update, LI=Lead Initiative

n.s.=Not stated

ATSDR provides further evaluation of these data in the public health assessments and other health-related documents listed in Table 3.1-A. Evaluations for the five sites with Public Health Hazard Categories of 1–3 are discussed in the following subsections.

3.1.1.1 Abby Street/Hickory Woods Subdivision

This subdivision is within the AOC, near a former steel and coke manufacturing property and within ½ mile of the river, which lies to the north and west of the subdivision. The area includes about 80 homes, three vacant lots, and a playground. Most of the homes are built on fill. Information on this site is taken from the 1999, 2001, and 2004 ATSDR health consultations for this site.

Public Health Outcome Data: to investigate potential exposures and health conditions, NYSDOH conducted a self-reported survey of the residents. Among the 201 residents who participated:

- Of those who had lived in the subdivision for at least 5 years (average 10 years), ten (or 5%) reported thyroid disease (primarily hypothyroid);
- Six of the affected residents were under age 45. Among the general U.S. population of all ages, the rate of thyroid disease was 1.7%.

Because in comparison with the general population the prevalence of thyroid conditions among Hickory Woods residents was elevated, ATSDR recommended follow-up. A subsequent ATSDR health consultation (April 2004) conducted with the NYSDOH focused primarily on medical records. The health consultation showed that most of those who were initially found to have had a thyroid condition also had predisposing factors for that thyroid condition. The assessor concluded therefore, that further investigation of the elevated thyroid condition was not warranted.

The rates and types of cancer reported among the participants did not reveal an unusual pattern of cancer incidence.

In its analysis of childhood blood lead levels NYSDOH analyzed data from the universal screening of children under the age of 6. Of the 49 children in the subdivision who were screened during 1994-2000, 31 had values lower than 5 µg/dL, 12 had values of 5-9.9 µg/dL, and 6 had values more than or equal to 10 µg/dL. Further analyses revealed a significant correlation between blood lead levels for children in older homes and soil lead levels at their homes; the age of housing was highly predictive of soil lead levels.

ATSDR Conclusions: In 1999, ATSDR concluded that several unfenced vacant lots in the subdivision posed a *Public Health Hazard* (Category 2). The lots were covered with crushed stone over geo-textile mats, apparently due to a concern for elevated B(a)P equivalents in soil. Three residential lots and one undeveloped lot were excavated to remove PAH-contaminated soil, assessed as B(a)P equivalents. Additional monitoring was undertaken of soil and of sump

water in the subdivision. In 2001, ATSDR concluded that the levels of arsenic contamination in surface soil at a playground posed a public health hazard.

Although not explicitly discussed, completed exposure pathways appeared to be soil ingestion and soil contact in yards, in vacant lots, and in a playground. The contaminants in soil were PAHs, arsenic, cadmium, and lead. Aldrin and dieldrin were detected in single samples requiring further investigation. The source of lead was thought to be lead paint, possible past contributions from leaded gasoline, and emissions from industry. Levels of lead and PAHs were comparable to or lower than those of two other Buffalo area neighborhoods. Arsenic levels in soil at the playground were, however, considered high enough to constitute a public health hazard. U.S. EPA, in coordination with local, county, and state governments, has conducted several removal activities, and continues to coordinate soil removals.

Because of an elevated thyroid prevalence in comparison with the general population, ATSDR recommended follow-up on the thyroid conditions among Hickory Woods residents. A subsequent ATSDR health consultation of medical records conducted with the NYSDOH (April 2004) showed predisposing factors for the thyroid condition in most of the residents initially surveyed at this site.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues the IJC critical pollutants PAHs, aldrin, dieldrin, and lead, as well as other contaminants previously discussed, were identified at this site.

3.1.1.2 Diarsenol Company (Kingsley Park)

This site is the grounds of the former Diarsenol Company pharmaceutical manufacturing plant, approximately 2½ miles north of the AOC. From 1930 to 1948 the pharmaceutical plant produced an arsenic-based medication and reportedly stored waste materials and unused product on open ground adjacent to the facility. The City of Buffalo purchased the property in 1968 and until 1988 used it as a public recreation area (Kingsley Park), when the park was closed because of concerns regarding contamination. Information for this site is taken from the 1994 ATSDR public health assessment.

Demographic Data: Kingsley Park is in census tract 33.02 and borders 32.02. The combined total population for these tracts is 9,517, of whom 16% was under 10 years of age and another 16% was 65 or older.

Public Health Outcome Data:

Although the Erie County Health Department offered a blood lead and urinary arsenic screening program for all community residents of all ages, participation was limited.

The screening blood lead level was 25 µg/dL (previous CDC guideline).

Only 2 of the 305 samples showed elevated blood lead: one child, born after the park was closed, had 25 µg/dL, and one older person had 29 µg/dL.

Testing of 304 community residents for urinary arsenic revealed that all had levels below 10 µg/L—the health-based screening value was 50 µg/L.

ATSDR Conclusions: In 1994, ATSDR concluded that prior to 1991 this site posed a *Public Health Hazard* (Category 2) because nearby residents and park users may have been exposed to levels of arsenic, lead, and PAHs that exceed health-based values. Completed exposure pathways

were ingestion, skin contact and, possibly, inhalation of contaminants in surface soil and ingestion of leafy vegetables grown on contaminated soil. Arsenic was also considered site-related. The source of lead, which was higher offsite than onsite, was thought to be lead paint on older buildings and leaded gasoline. PAHs were found at levels typical of urban soils and were thought to be related to urban air quality and combustion of fossil fuels. In 1991, remediation was performed by excavation and removal of soil to a minimum of 1-foot depth from the site and the bordering yards and replacement with clean soil and seeding with grass. ATSDR concluded that because of the remediation present or future exposure to site-related contaminants was unlikely.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants PAHs and lead, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure-related issues.

3.1.1.3 Ernst Steel Site

This site is approximately 2 miles north of the AOC. The western portion of the 10-acre site reportedly contained paint sludge, metal shavings, machine cutting oil, and other waste dumped there until 1980. Access to this area is not restricted. Information regarding this site is taken from the 1990 ATSDR health consultation.

Because nearby residents—including children who may have frequently traversed the site or may have played onsite—could have ingested lead and chromium and could have inhaled dust. The lead and chromium contamination was considered site-related. Insufficient data were available to determine whether offsite migration was occurring through runoff, air dispersion, or groundwater contamination. In 1992, additional sampling revealed 11,000 tons of lead-contaminated paint waste material.

ATSDR Conclusions: ATSDR concluded that this site posed a *Public Health Hazard* (Category 2) because of levels of lead and chromium found on-site and the potential for on-site trespassing. Insufficient data were available to determine whether contaminants had migrated from the site. In 1998, EPA reported that the Ernst Steel site was successfully remediated by removing contaminated soil, constructing buildings, and installing an asphalt parking lot, all of which reduced the potential for future, direct-contact exposure.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues the IJC-critical pollutant lead, as well as other contaminants previously discussed, were identified at this site.

3.1.1.4 Newstead Site

The Newstead housing site is a 6-acre parcel of land on Fletcher Road in Newstead, Erie County, NY, several miles northeast of the AOC. It consists of a residence and associated play area and barn, plus a fallow field, a garden, and an area that had reportedly been used for disposal of old chemicals and paints from a Buffalo paint manufacturing firm. In 1985, a site inspection revealed protruding 55 gallon drums and waste material of tar-like and resinous consistency on surface soil. Information regarding this site is taken from the 1989 Health Advisory and the 1992 ATSDR lead initiative summary report. A further assessment in 1992 did not provide a health hazard category, but recommended that further actions await the results of a Remedial Investigation/Feasibility Study.

Demographic Data: Two adults and two children under 5 years of age formerly resided on the site. The area is relatively rural, but there are some neighbors.

Public Health Outcome Data: in 1991 the NYSDOH tested former site residents—who had been relocated sometime after 1985 and before 1989—for blood lead and cadmium levels and for urinary cadmium levels. The levels of contaminants were reported to be within the range of the general population.

ATSDR Conclusions: In 1989, because of high levels of lead, cadmium, barium, and chromium in soil, and physical hazards, ATSDR issued a public health advisory (Category 1, *Urgent Public Health Hazard*) In the past, when people were living at the site, exposure to soil contaminated with high concentrations of the IJC-critical pollutant, lead, and also high concentrations of cadmium, barium, and chromium probably occurred during routine domestic activities (e.g., playing, lawn care, and gardening). Although the site has been fenced, a concern for exposure to trespassers remained. In 2007, EPA completed excavation and off-site disposal of contaminated soils through the joint efforts of local, county, and state governments.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutant lead, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues.

3.1.1.5 NL Industries

The former NL Industries site is an inactive lead processing facility. According to state and local records, operations at this location started in 1872 and ceased in 1972. Past on-site activities have included brass foundry operations, smelting, and processing of metal alloys used for ball bearing surfaces. The 7.5 acre site included a lagoon for the disposal of lead contaminated sludges. Lead is the only contaminant of concern at this site.

Demographic Data: According to 2000 U. S. Census Bureau data, approximately 16,500 persons live in the Village of Depew. Of those 16,500, 98.7% are Caucasian, with less than 1 percent each African-American, Native American, Asian, multi-racial, Hispanic, and classified as other.

ATSDR Conclusions: In 2003, ATSDR concluded that this site posed a *Public Health Hazard* (Category 2) because of the potential for exposure through incidental ingestion to lead-contaminated soils in nearby residential yards. In 2007, EPA reported the site had been fenced, and that EPA had completed excavation and off-site disposal of contaminated soils. A small area of the site will be capped in 2008. These remedial activities will be completed through the joint efforts of local, county, and state governments.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues the IJC critical pollutant lead, as well as other contaminants previously discussed, were identified at this site.

3.1.1.6 Pfohl Brothers Landfill

The Pfohl Brothers Landfill is a 120-acre site located in the northeastern portion of Erie County, NY, several miles northeast of the Buffalo River AOC. It is near Ellicott Creek, which drains into the Niagara River rather than into the Buffalo River. It was in operation from 1932 to 1971, and accepted both municipal and industrial wastes. The industrial wastes included pine tar pitch,

waste paints and thinners, waste cutting oils, phenolic tar, and PCB-laden oil and capacitors. Information regarding this site was taken from the 1995 ATSDR public health assessment.

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	389
Females aged 15-44	942
Adults 65 and older	1,157

Public Health Outcome Data: NYSDOH surveys conducted in 1990 included the 60 residents of 20 nearby households, 35% of whom were children age 17 or younger, and a few former area residents and former and current employees of the town of Cheektowaga who may have come into contact with site contaminants. The NYSDOH concluded that the survey did not reveal any unusual illness patterns.

1991 NYSDOH blood lead screenings of 20 children living near the site found a maximum blood lead level of 8 µg/dL, which was below the CDC action level of 10 µg/dL.

NYSDOH conducted initial and follow-up studies of cancer incidence for 1978–1987 in three census tracts that comprise both the site and the Ellicott Creek area. For all cancers in women, for breast cancer in women, and for prostate cancer in men, observed rates were significantly greater than expected, based on other NY areas with similar population densities. Most of the excess cancer in women was accounted for by breast cancer (130 versus 105 expected), and that breast cancer excess occurred in the landfill census tract (100.01). Yet geographic analysis revealed no clustering around the landfill. Thus ATSDR concluded that the cancer occurrence was probably not site-related.

ATSDR Conclusions: In 1995, ATSDR concluded that this site is an *Indeterminate Public Health Hazard* (Category 3) because data for groundwater, including onsite and offsite monitoring wells and private drinking water wells, were not adequate to determine whether contaminants—and particularly PCBs and metals—have migrated offsite. In 2002, EPA reported the completion of drum removals and containment of landfill wastes through the joint efforts of local, county, and state governments. Removal and remedial activities have substantially reduced the likelihood of exposure to site-related contamination.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants dibenzofuran, aldrin, dieldrin, PAHs, PCB, lead, and mercury, as well as other contaminants previously discussed, were identified at this site during ATSDR’s assessment of exposure related issues. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.1.2. TRI Data for the Buffalo River AOC

The TRI onsite chemical releases for Erie County, NY are summarized in Table 3.1-B. Total onsite releases in 2001 were 5,269,495 pounds, the majority of which were released to air, followed by releases to water—little was released to soil.

Of the total onsite releases, IJC-critical pollutants accounted for 9,387 pounds (0.2%). The IJC-critical pollutants released onsite were PCDDs and PCDFs (to air), lead and lead compounds (to

air and water), and mercury and mercury compounds (to air). The facilities releasing these pollutants are listed in Table 3.1-C.

The major releases ($\geq 500,000$ pounds total onsite) of non-IJC chemicals were of hydrochloric acid aerosols, ammonia, and carbon disulfide (primarily to air). Other non-IJC chemicals released in substantial onsite quantities (300,000–499,999 pounds) were sulfuric acid aerosols, toluene, and hydrogen fluoride (primarily to air).

3.1.3. NPDES Data for the Buffalo River AOC

The NPDES-permitted discharges for Erie County, NY are summarized in Table 3.1-D. The total average annual permitted discharges in 2004 were 691,036 pounds, the majority of which was nitrogen (as ammonia).

Lead was the one IJC-critical pollutant, accounting for only 124 pounds. The facility permitted to discharge this pollutant is listed in Table 3.1-E.

3.1.4. Summary and Conclusions for the Buffalo River AOC, Erie County, NY

3.1.4.1 Hazardous Waste Sites

ATSDR has categorized six Erie County, NY sites at some time in their assessment history in health hazard categories 1–3. Four of these sites have either been remediated by removal of contaminated soil and waste-containing barrels, or institutional controls (e.g., fencing, covering contaminated soil) thus preventing exposure to site contaminants.

In the past, these hazardous waste sites may have contributed to the environmental burden of the IJC-critical pollutants PCBs, B[a]P, lead, and mercury.

3.1.4.2 TRI Data

Onsite TRI releases in Erie County, NY, totaled 5,269,495 pounds, the majority of which were released to air, followed by releases to water; considerably less was released to soil.

The IJC-critical pollutants accounted for 9,387 pounds or 0.2% of the total onsite releases. The released IJC-critical pollutants were PCDDs and PCDFs (to air), lead and lead compounds (to air and water), and mercury and mercury compounds (to air).

Major releases ($\geq 500,000$ pounds total onsite) of non-IJC chemicals were of hydrochloric acid aerosols, ammonia, and carbon disulfide (primarily to air).

3.1.4.3 NPDES Data

The NPDES permitted discharges for Erie County, NY are summarized in Table 3.1-D. The total average annual permitted discharges in 2004 were 691,036 pounds, the majority of which was nitrogen (as ammonia).

The only IJC critical pollutant was lead, accounting for only 124 pounds. The facility permitted to discharge this pollutant is listed in Table 3.1-E.

3.1.4.4 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish consumption were the only BUI listed as impaired at this AOC site. According to the EPA, restrictions on fish consumption were based on lake wide advisories due to PCB and chlordane contamination. Further information is available at the EPA Web site (<http://www.epa.gov/glnpo/aoc/>).

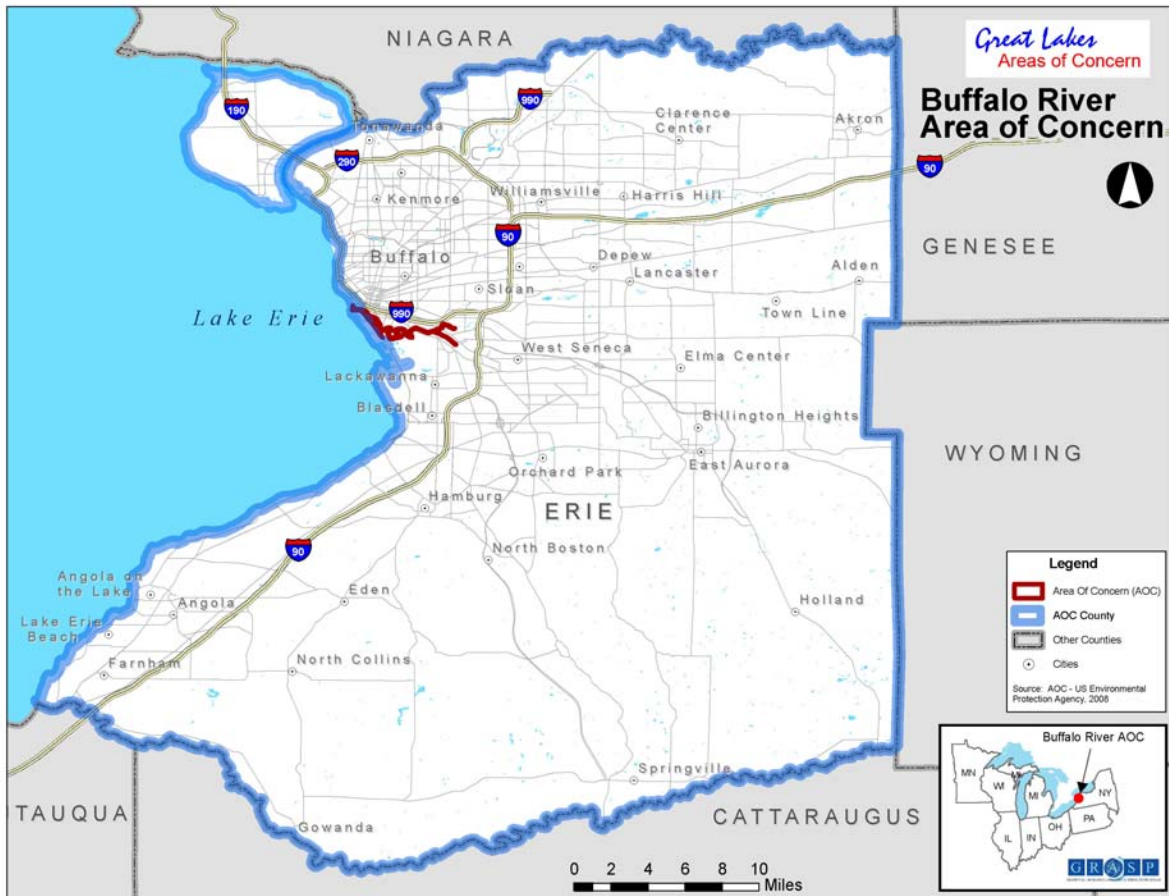


Table 3.1-B TRI Releases (in pounds, 2001) for the Buffalo River AOC

Chemical	IJC Tracking Number	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total Onsite Releases	Total Offsite Releases	Total On- and Offsite Releases
POLYCHLORINATED BIPHENYLS	1	0	0	0	0	0	0.43	0.43
DIOXIN AND DIOXIN-LIKE COMPOUNDS <i>(PCDDs and PCDFs)</i>	2	0.00059535	No data	0	0	0.000595	0	0.00059535
LEAD	8	758.37	0	0	0	758.37	1676.6	2434.97
LEAD COMPOUNDS	8	3947.3164	4311.41	0	48	8306.726	48134.46	56441.1864
MERCURY	9	0.01	0	0	0	0.01	0	0.01
MERCURY COMPOUNDS	9	322	0	0	0	322	18	340
	Total IJC	5027.696995	4311.41	0	48	9387.106	49829.49	59216.597
1,1-DICHLORO-1-FLUOROETHANE		13756	No data	0	0	13756	0	13756
1,2,4-TRIMETHYLBENZENE		704	1	0	0	705	50	755
1,3-BUTADIENE		13	0	0	0	13	0	13
ACETONITRILE		383	No data	0	0	383	0	383
AMMONIA		707047	13158	0	0	720205	250	720455
ANILINE		6247	193	0	0	6440	0	6440
ANTHRACENE		2	No data	0	0	2	0	2
ANTIMONY COMPOUNDS		0	No data	0	0	0	4556	4556
ARSENIC COMPOUNDS		585	8	0	0	593	14000	14593
BARIUM COMPOUNDS		895	74000	0	0	74895	19000	93895
BENZENE		17948	751	0	0	18699	39	18738
BENZO(G,H,I)PERYLENE		21.7414289	0	0	0	21.74142	1.64	23.3814289
BROMOMETHANE		10898	No data	0	0	10898	0	10898
BUTYL ACRYLATE		34	No data	0	0	34	0	34
CARBON DISULFIDE		671000	No data	0	0	671000	1800	672800
CERTAIN GLYCOL ETHERS		25803	0	0	0	25803	0	25803
CHLORINE		252	No data	0	0	252	0	252
CHROMIUM		1277	0	0	0	1277	313	1590
CHROMIUM COMPOUNDS (EXCEPT		1086	24000	0	1026	26112	10300	36412

CHROMITE ORE MINED IN THE TRANSVAAL REGION)								
COBALT COMPOUNDS	3	2	0	0	5	110	115	
COPPER	1270	3	0	0	1273	11604	12877	
COPPER COMPOUNDS	0	No data	0	0	0	107	107	
CREOSOTE	83	No data	0	0	83	0	83	
CUMENE	15	0	0	0	15	0	15	
CYANIDE COMPOUNDS	29763	777	0	0	30540	0	30540	
CYCLOHEXANE	84	0	0	0	84	0	84	
DI(2-ETHYLHEXYL) PHTHALATE	117	No data	0	0	117	0	117	
DIBUTYL PHTHALATE	4	No data	0	0	4	0	4	
DICHLOROMETHANE	29255	No data	0	0	29255	8700	37955	
DIISOCYANATES	11	No data	0	0	11	2	13	
ETHYLBENZENE	1265	1	0	0	1266	35	1301	
ETHYLENE	1993	0	0	0	1993	0	1993	
ETHYLENE GLYCOL	1	5	0	0	6	0	6	
FORMALDEHYDE	1009	0	0	0	1009	0	1009	
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	2224000	No data	0	0	2224000	0	2224000	
HYDROGEN FLUORIDE	170005	No data	0	0	170005	0	170005	
MALEIC ANHYDRIDE	23	0	0	0	23	0	23	
MANGANESE	1401	250	0	0	1651	3791	5442	
MANGANESE COMPOUNDS	1483	32000	0	2048	35531	11100	46631	
METHANOL	7990	0	0	0	7990	0	7990	
METHYL ETHYL KETONE	66492	0	0	0	66492	0	66492	
METHYL ISOBUTYL KETONE	518	No data	0	0	518	0	518	
METHYL METHACRYLATE	111160	No data	0	0	111160	250	111410	
METHYL TERT-BUTYL ETHER	6014	5	0	0	6019	0	6019	
N,N-DIMETHYLANILINE	19	11	0	0	30	750	780	
N,N- DIMETHYLFORMAMIDE	170	No data	0	0	170	0	170	

NAPHTHALENE		7331	750	0	0	8081	0	8081
N-BUTYL ALCOHOL		169	No data	0	0	169	0	169
N-HEXANE		15284	5	0	0	15289	56	15345
NICKEL		1191	0	0	0	1191	1987	3178
NICKEL COMPOUNDS		1163	17000	0	9488	27651	6634	34285
NITRATE COMPOUNDS		0	27160	0	0	27160	1430	28590
NITRIC ACID		1179	No data	0	0	1179	0	1179
PERACETIC ACID		4000	0	0	0	4000	0	4000
PHENANTHRENE		1397	No data	0	0	1397	0	1397
PHENOL		24000	1200	0	0	25200	0	25200
POLYCYCLIC AROMATIC COMPOUNDS		1399.279526	14.75	0	0	1414.029	32.8	1446.82952
PROPYLENE		587	No data	0	0	587	0	587
SODIUM NITRITE		584	No data	0	0	584	6960	7544
STYRENE		24556	5	0	0	24561	6850	31411
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		430393	0	0	0	430393	0	430393
TOLUENE		395405	2	0	0	395407	5232	400639
TRICHLOROETHYLENE		8400	No data	0	0	8400	No data	8400
URETHANE		0	No data	0	0	0	195	195
VANADIUM COMPOUNDS		475	0	0	0	475	39000	39475
VINYL ACETATE		64	No data	0	0	64	0	64
XYLENE (MIXED ISOMERS)		9679	3	0	0	9682	139	9821
ZINC COMPOUNDS		4597	12288	0	0	16885	400863	417748
	Total Non-IJC	5043953.021	203592.75	0	12562	5260107.7	556137.4	5816245.21
	Total	5048980.718	207904.16	0	12610	5269494.8	605966.9	5875461.80

Table 3.1-C TRI Facilities Releasing IJC Critical Pollutants Onsite for the Buffalo River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	None			
Erie County				
Lead and lead compounds	12			
Erie County, NY	12	BETHLEHEM STEEL CORP. GALVANIZED PRODS. DIV.	14218BTHLHGALVA	BLASDELL
		BUFFALO CHINA INC.	14210BFFLCHAYES	BUFFALO
		DERRICK CORP.	14225DRRCK590DU	CHEEKTOWAGA
		FEDCO AUTOMOTIVE COMPONENTS CO.	14207FDCTM57TON	BUFFALO
		FRONTIER HOT DIP GALVANIZING INC.	14207FRNTR1740E	BUFFALO
		GIBRALTAR STEEL CORP.	14225GBRLT2555W	BUFFALO
		GMC POWERTRAIN DIV. TONAWANDA NY	14240CHVRLRIVER	BUFFALO
		ITT STANDARD	14227TTSTN175ST	CHEEKTOWAGA
		L.D. MCCAULEY INC.	14127LDMCC3875C	ORCHARD PARK
		POHLMAN FNDY. CO. INC.	14206PHLMN205BA	BUFFALO
		REPUBLIC TECHS. INTL. L.L.C.	14218BTHLHBARRO	BLASDELL
		WILLIAMS ADVANCED MATERIALS INC.	14214WLLMS2978M	BUFFALO
Mercury and mercury compounds	1			
Erie County, NY	1	BETHLEHEM STEEL CORP. LACKAWANNA COKE DIV.	14218BTHLHPOBOX	LACKAWANNA

Table 3.1-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Buffalo River AOC

Chemical	IJC Tracking Number	Discharge
LEAD, TOTAL (AS PB)	8	124.10
	Total IJC	124.10
BENZENE		277.40
CHLOROBENZENE		474.50
CHLOROFORM		270.10
CHROMIUM, HEXAVALENT (AS CR)		10.95
CYANIDE, TOTAL (AS CN)		7957
DI-N-BUTYL PHTHALATE		277.40
IRON, TOTAL (AS FE)		38325
METHYLENE CHLORIDE		930.75
NITROGEN, AMMONIA TOTAL (AS N)		10110.50
NITROGEN, AMMONIA, TOTAL (AS NH3)		610280
PHENOLICS, TOTAL RECOVERABLE		2263
PHENOLS		16571
TETRACHLOROETHYLENE		2445.50
TOLUENE		277.40
XYLENE		277.40
ZINC, TOTAL (AS ZN)		164.25
	Total Non-IJC	690912.15
	Total	691036.25

Table 3.1-E NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Buffalo River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	NPDES	City
Lead	1			
Erie County, NY	1	IVACO STEEL PROCESSING (NY)LLC	NY0083623	TONAWANDA

3.2. Presque Isle Bay AOC, Erie County, PA

The Presque Isle Bay AOC is in northwest Pennsylvania, on the southern shore of Lake Erie. The watershed primarily includes urban and industrial areas within the City of Erie and Millcreek Township. The primary tributaries are Millcreek (including Garrison Run) and Cascade Creek, which account for about two-thirds of the water flowing into the bay (see AOC map at end of chapter and in Appendix 1).

3.2.1. Hazardous Waste Sites Relevant to the Presque Isle Bay AOC

ATSDR identified three hazardous waste sites and one industrial facility in Erie County, PA that during the public health assessment process were determined to pose either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. These conclusions, together with information regarding the type and location of the site and the date and type of assessment document, are summarized in Table 3.2-A:

Table 3.2-A. Hazardous Waste Sites in Erie County, PA

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remedial Status
Foamex Products Site (Corry Area Middle-High School) PAD005029517	HC	2001	3	Non NPL	Not Needed
	HC	2004	4		
Hammermill – Scott Run Site, Harborcreek Township PAD981114648	HC	1998	2	Non NPL	Ongoing
Lord-Shope Landfill, Girard Township PAD980508931	HA	1989	3	NPL	Completed
	SRU	1995	4		
Millcreek Dump, Erie PAD980231690	HA	1989	3	NPL	Completed
	SRU	1993			

2=Public Health hazard, 3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard

HA=Public Health Assessment, HC=Health Consultation, SRU=Site Review and Update

In the public health assessment documents listed in the table, ATSDR conducted further evaluation of the data for the Public Health Hazard Category 1–3. Those evaluations are discussed in the following subsections.

3.2.1.1 Foamex Products Site (Corry Area Middle-High School)

The Foamex Products Site is an active manufacturing facility in Corry, Erie County, PA. It is located near a school and residential areas. ATSDR was asked to evaluate whether air emissions from this facility presented a public health hazard to students of Corry Area Middle-High

School, located approximately 2,000 feet west of the plant, and to nearby residents. Information regarding this site is taken from the 2001 and the 2004 ATSDR health consultations on this site

ATSDR Conclusions: In 2001, ATSDR concluded that the air sampling and monitoring data from 4 consecutive days in April 2000 were not adequate to be representative of long-term or peak exposure patterns, and that the site posed an *Indeterminate Public Health Hazard* (Category 3). The data indicated a completed exposure pathway (inhalation) to methylene chloride for residents near the plant and possibly for high school students. Time-integrated concentrations were below ATSDR's MRLs for intermediate and chronic exposure. In addition, peak air concentrations of methylene chloride for residents near the plant, exceeded ATSDR's acute MRL. Toluene diisocyanate isomers in air were not above detection limits. In 2004, ATSDR examined methylene chloride levels in the air, determined they were below levels of health concern, and classified this specific issue as *No Apparent Public Health Hazard*. (Category 4). ATSDR reported that Foamex Products voluntarily eliminated methylene chloride from their manufacturing process in 2004.

IJC Critical Pollutants Identified within ATSDR Documents: No IJC critical pollutants were identified at this site during ATSDR's assessment of exposure related issues. Because the Foamex Products Site is an active manufacturing facility rather than a hazardous waste site, its releases are included in the TRI section of this report.

3.2.1.2 Hammermill – Scott Run Site

This site is approximately 10 miles east of the City of Erie, in Harborcreek Township, Erie County, PA. In the 1960s the Hammermill Paper Company used this 5-acre, heavily wooded site for disposal of pulp and paper waste. Wood mulch was stored/piled on the site, and various wastes, including drummed waste, were dumped into two lagoons. In 1988 the number of drums was estimated at 50 and in 2001 at 27. Some were partially buried and in various stages of decay; others may not have been visible due to the thick vegetation or sediment deposition. The site is currently part of a recreational park. Information regarding this site was taken from the 1998 ATSDR health consultation for this site.

ATSDR Conclusions: Because of physical dangers for visitors from drowning (lagoons) and from falling (foot bridge), in 1998 ATSDR concluded that the site posed a *Public Health Hazard* (Category 2). The contaminants of the discarded drums had not been adequately characterized. Contaminants from the Hammermill-Scott Run site did not appear to be migrating offsite. The deteriorating drums may, however, release additional as-yet-unknown chemicals, and the monitoring data are old (1988) and incomplete. Remedial activities at this site included the removal of 79 drums. The state committed to conduct additional clean up activities when resources allow.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutant lead was detected on-site.

3.2.1.3 Lord Shope Landfill

This approximately 30-acre NPL site is about 17 miles west of Erie, PA. It consists of a 4-acre landfill and adjacent areas of contaminated surface soil and groundwater. From about 1954 to 1979, wastes from Lord Corporation were dumped at the landfill. These wastes consisted primarily of debris, but included rubber scrap, organic and inorganic chemicals, solvents, cooling oils, acids, and caustics. Remedial actions in 1982–1983 included removal of exposed drums, containment and removal of 20,000 gallons of leachate, regrading and capping of the landfill, construction of an upgradient subsurface groundwater diversion wall, and site fencing.

Additional remediation, initiated after the 1989 public health assessment, included removal of VOCs from the landfill and surrounding soils through vapor stripping and extraction, removal of VOCs from groundwater by vapor stripping, and discharge of treated groundwater to a tributary of Elk Creek. Information regarding this site was taken from the 1989 ATSDR public health assessment.

Demographic Data: demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	26
Females aged 15-44	75
Adults 65 and older	35

ATSDR Conclusions: In 1989, ATSDR concluded that because the characterization of on-site and off-site contamination was incomplete, the site posed an *Indeterminate Public Health Hazard* (Category 3). The available data indicated that long-term oral exposure to lead from private well water and dermal exposure to arsenic in offsite surface water were of public health concern. In 1995 ATSDR's Site Review and Update concluded that the site posed *No Apparent Public Health Hazard* (Category 4). Remedial actions, including a groundwater pump and treat system, were determined to be effective at controlling the off-site migration of groundwater contaminants.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutant lead, as well as other contaminants previously discussed, were identified during ATSDR's assessment of exposure related issues. For a more complete listing of hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.2.1.4 Millcreek Dump

This approximately 124.3 -acre site is 2 miles west of the City of Erie and is less than 2 miles from Presque Isle Bay. Originally a wetland, between 1941 and 1981 most of the site was filled with foundry sand and other industrial and municipal wastes containing VOCs, PCBs, PAHs, and heavy metals during its use as an unpermitted landfill. Drums of hazardous liquids were removed from the site in 1983, and some fencing was completed, but access to most of the site was unrestricted. Information regarding this site was taken from the 1989 ATSDR public health assessment, the 1993 ATSDR Site Review and Update.

Demographic Data: The demographic profile from the 2000 U.S. Census identified the following vulnerable populations living within 1 mile of this site:

Children 6 years and younger	90
Females aged 15-44	2,289
Adults 65 and older	2,055

ATSDR Conclusions: ATSDR concluded in the 1989 public health assessment that the site was an *Indeterminate Public Health Hazard* (Category 3) because of potential migration of contaminated groundwater to an upgradient public water supply well field during extended droughts. In the 1993 Site Review and Update, ATSDR concluded that the site was a *Public Health Hazard* (Category 2) to area residents, workers, and site intruders because of exposure to contaminated soil, sediment, and surface water, airborne dust from operation of recreational vehicles, and contaminated groundwater during flooding of basements. Not all of the contaminated groundwater was determined to be site-related.

During the last 9 years, Responsible Parties (RP) operated the treatment plant, and during this time the clean-up standards were met. In December, 2006 the state discussed with the PRP how to replace the RPs in October 2007 and continue plant operations.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants lead, PCBs, and PAHs were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.2.2. TRI Data for the Presque Isle Bay AOC

The TRI onsite chemical releases for Erie County, PA are summarized in Table 3.2-D. Total onsite releases in 2001 were 3,688,175 pounds, primarily to air. Considerably less was released to land, and very little to surface water.

IJC-critical pollutants only accounted for 7,974 pounds (0.2%) of this total. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (to air and land), and mercury (to air and land). The facilities that released these IJC-critical pollutants are listed in Table 3.2-C.

The major onsite releases ($\geq 500,000$ pounds) of non-IJC chemicals were of dichloromethane, methanol, and hydrochloric acid aerosols (primarily to air). No chemicals were released in the 300,000-499,999 pound range.

3.2.3. NPDES Data for the Presque Isle Bay AOC

The NPDES permitted discharges for Erie County, PA are summarized in Table 3.2-D. The total average annual permitted discharges in 2004 were 388,803 pounds, the majority of which was phosphorus and ammonia nitrogen. No IJC-critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

3.2.4. Summary and Conclusions for the Presque Isle Bay AOC, Erie County, PA

3.2.4.1 Hazardous Waste Sites

Only four sites in Erie County, PA, at some time in their assessment history have been categorized by ATSDR in health hazard Categories 1–3. One such site was an active manufacturing facility (Foamex Products site) rather than a hazardous waste site, and Foamex did not release IJC-critical pollutants.

Two of the sites have been remediated and are not expected to contribute to human or environmental exposure. One of the remediated sites, the Millcreek Dump, may in the past have contributed to human exposure and to the environmental burden of the IJC-critical pollutants, PCBs and lead. The other remediated site (Lord Shope Landfill) was in the past a potential but unconfirmed source of lead in offsite residential well water.

The fourth site, the Hammermill-Scott Run site, has been the subject of several remedial activities, including the removal of 79 drums. State officials will conduct any additional remediation at this site when resources allow.

3.2.4.2 Public Health Outcome Data

Not reported for any of the four sites. Presque Isle Bay AOC is the first AOC designated in the Recovery Stage after remediation as reported by EPA (June 2004).

3.2.4.3 Issues for Follow-Up

The Hammermill-Scott Run site has not been completely remediated but will be done so under the guidance of state officials.

3.2.4.4 TRI Data

In 2001, the TRI total onsite chemical releases for Erie County, PA were 3,688,175 pounds.

IJC-critical pollutants only accounted for 0.2% of this total. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (to air and land), and mercury (to air and land).

The major onsite releases ($\geq 500,000$ pounds) of non-IJC chemicals were of dichloromethane, methanol, and hydrochloric acid aerosols (primarily to air).

3.2.4.5 NPDES Data

The NPDES permitted discharges for Erie County, PA are summarized in Table 3.2-D. The total average annual permitted discharges in 2004 were 388,803 pounds, the majority of which was phosphorus and ammonia nitrogen. No IJC-critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

3.2.4.6 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, no BUI was listed as impaired at this AOC site. Further information is available at the EPA Web site (<http://www.epa.gov/glnpo/aoc/>).

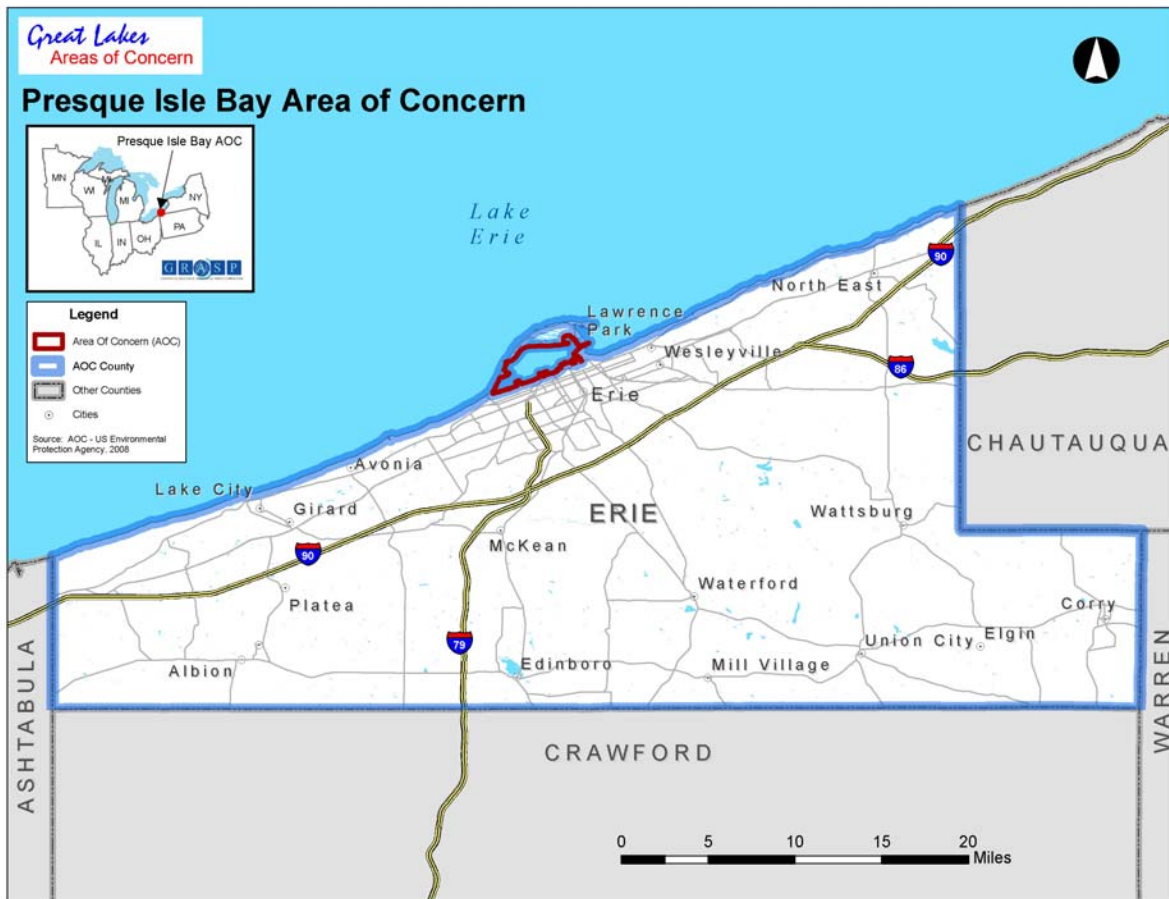


Table 3.2-B TRI Releases (in pounds, 2001) for Presque Isle Bay AOC

Chemical	IJC Tracking Number	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total Onsite Releases	Total Offsite Releases	Total On- and Offsite Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.0018612	No data	0	1.90292	0.002051	0	0.0020515
<i>(PCDDs and PCDFs)</i>	3							
LEAD	8	4585.96	103	0	0	4688.96	11233	15921.96
LEAD COMPOUNDS	8	213.6502	No data	0	3024.8	3238.450	7951.1	11189.5502
MERCURY	9	12	No data	0	0	12	0	12
MERCURY COMPOUNDS	9	24	No data	0	11	35	0	35
	Total IJC	4835.612061	103	0	3035.800	7974.412	19184.1	27158.51225
1,2,4-TRIMETHYLBENZENE		2590	0	0	0	2590	0	2590
ACETALDEHYDE		39000	No data	0	9	39009	0	39009
ALUMINUM (FUME OR DUST)		500	No data	0	0	500	2950	3450
ALUMINUM OXIDE (FIBROUS FORMS)		0	No data	0	0	0	187725	187725
AMMONIA		64533	5	0	0	64538	250	64788
ANTHRACENE		3	No data	0	0	3	0	3
ANTIMONY COMPOUNDS		0	No data	0	0	0	500	500
ASBESTOS (FRIABLE)		250	No data	0	0	250	848380	848630
BARIUM COMPOUNDS		5161	250	0	35005	40416	28345	68761
BENZENE		2529	No data	0	0	2529	0	2529
BENZO(G,H,I)PERYLENE		1.0004	No data	0	0	1.0004	37.7278	38.7282
CATECHOL		0	No data	0	1	1	0	1
CERTAIN GLYCOL ETHERS		41044	No data	0	0	41044	0	41044
CHLORINE		1105	No data	0	0	1105	0	1105
CHLORINE DIOXIDE		5905	No data	0	0	5905	0	5905
CHROMIUM		1539	5	0	0	1544	15492	17036
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)		1005	0	0	0	1005	157171	158176
COPPER		8589.6	505	0	772.4	9867	13325.4	23192.4
COPPER COMPOUNDS		5470	250	0	3705	9425	22673	32098

CYANIDE COMPOUNDS	471	No data	0	0	471	0	471
DI(2-ETHYLHEXYL) PHTHALATE	0	No data	0	0	0	17000	17000
DICHLOROMETHANE	1245087	No data	0	0	1245087	0	1245087
ETHYLENE GLYCOL	4	No data	0	0	4	0	4
ETHYLENE OXIDE	500	No data	0	0	500	0	500
FORMALDEHYDE	5	No data	0	0	5	0	5
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	507164	No data	0	0	507164	0	507164
HYDROGEN FLUORIDE	69250	0	0	0	69250	0	69250
MANGANESE	6011	250	0	5	6266	172466	178732
MANGANESE COMPOUNDS	150	No data	0	50000	50150	28082	78232
METHANOL	1156000	No data	0	31000	1187000	0	1187000
METHYL ETHYL KETONE	762	0	0	0	762	0	762
MOLYBDENUM TRIOXIDE	5	No data	0	0	5	500	505
NAPHTHALENE	874	No data	0	0	874	0	874
N-BUTYL ALCOHOL	5590	0	0	0	5590	0	5590
N-HEXANE	2475	0	0	0	2475	0	2475
NICKEL	6170	260	0	461	6891	266100	272991
NICKEL COMPOUNDS	1000	5	0	0	1005	19485	20490
NITRATE COMPOUNDS	0	5	0	0	5	250	255
NITRIC ACID	4097	No data	0	0	4097	0	4097
PHENANTHRENE	10	No data	0	0	10	0	10
POLYCYCLIC AROMATIC COMPOUNDS	262.2199	No data	0	0	262.2199	254.2716	516.4915
SEC-BUTYL ALCOHOL	25650	No data	0	0	25650	0	25650
STYRENE	89105	0	0	0	89105	0	89105
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)	166924	No data	0	0	166924	0	166924
TETRACHLORO- ETHYLENE	51557	No data	0	0	51557	0	51557
TOLUENE	4578	No data	0	0	4578	0	4578
TOLUENE DIISOCYANATE (MIXED ISOMERS)	446	No data	0	0	446	0	446

VANADIUM COMPOUNDS		500	No data	0	0	500	63890	64390
XYLENE (MIXED ISOMERS)		23450	0	0	0	23450	0	23450
ZINC (FUME OR DUST)		755	No data	0	0	755	160000	160755
ZINC COMPOUNDS		930	No data	0	8700	9630	63706	73336
	Total Non-IJC	3549006.82	1535	0	129658.4	3680200.2	2068582.3	5748782.62
	Total	3553842.432	1638	0	132694.2	3688174.6	2087766.5	5775941.132

Table 3.2-C TRI Facilities Releasing IJC Critical Pollutants Onsite for the Presque Isle Bay AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	2			
Erie County, PA	2	GE ERIE PLANT GETS	16531GNRLL2901E	ERIE
		INTERNATIONAL PAPER ERIE MILL	16533HMRRM1540E	ERIE
Lead and lead compounds	20			
Erie County, PA	20	AMERICAN METER CO.	16503MRCNM920PA	ERIE
		AMERICAN TINNING & GALVANIZING CO.	16501MRCNT522WE	ERIE
		BUILDING MATERIALS MFG. CORP.	16507BLDNG128WB	ERIE
		ELECTRIC MATERIALS CO.	16428LCTRC50SWA	NORTH EAST
		ENGELHARD CORP.	16503CLSCT1707G	ERIE
		ERIE BRONZE & ALUMINUM	16506RBRNZ6300W	ERIE
		ERIE COKE CORP.	16512RCKCRFOOTO	ERIE
		ERIE FORGE & STEEL INC.	16502NTNLF1341W	ERIE
		GE ERIE PLANT GETS	16531GNRLL2901E	ERIE
		GUNITE EMI PLANT	16501MC 603W1	ERIE
		INTERNATIONAL PAPER ERIE MILL	16533HMRRM1540E	ERIE
		KEYSTONE FNDY. DIV.	16512KYSTN944WE	ERIE
		LAMSON & SESSIONS	16505PYRMD1422I	ERIE
		LINCOLN FNDY. INC.	16505LNCLN1600I	ERIE
		LORD CORP.	16514LRDCR1635W	ERIE
		PENN-UNION CORP.	16412TLDYN229WA	EDINBORO
		PHB DIE CASTING DIV.	16415PRKRW7900W	FAIRVIEW
		SNAP TITE INC. AUTOCLAVE ENGINEERS DIV.	16506SNPTT2930W	ERIE
		SNAP TITE INC. UNION CITY SITE	16438SNPTT201TI	UNION CITY
		URICK FNDY.	16501RCKFN15THC	ERIE
Mercury and mercury compounds	2			
Erie County, PA	2	GE ERIE PLANT GETS	16531GNRLL2901E	ERIE

	INTERNATIONAL PAPER ERIE MILL	16533HMMRM1540E	ERIE
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Table 3.2-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Presque Isle Bay AOC

Chemical	IJC Tracking Number	Discharge
	Total IJC	0
CHLOROFORM		315.73
COPPER, TOTAL (AS CU)		542.03
DICHLORODIBROMOMETHANE		104.03
NITROGEN, AMMONIA TOTAL (AS N)		174681.70
PHOSPHORUS, TOTAL (AS P)		213160
	Total Non-IJC	388803.49
	Total	388803.49

3.3. Ashtabula River AOC, Ashtabula County, OH

As it flows through northeastern Ohio, the Ashtabula River enters Lake Erie at the city of Ashtabula. The river's drainage basin covers an area of 137 square miles, and its major tributaries include Fields Brook, Hubbard Run, and Ashtabula Creek. The Ashtabula AOC is defined as the lower 2 miles of the Ashtabula River, Ashtabula Harbor, and the near shore of adjacent Lake Erie (see AOC map at end of chapter and in Appendix 1).

Recent AOC remediation projects that have been initiated under the Legacy Act Sediment Cleanup include the Ashtabula River AOC. This project began in September of 2006 and is expected to remove over 600,000 cubic yards of PCB-contaminated sediment.

3.3.1. Hazardous Waste Sites Relevant to the Ashtabula River AOC

ATSDR identified four hazardous waste sites in Ashtabula County, OH that during the public health assessment process were determined to pose either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. These conclusions, together with information regarding the type and location of the site and the date and type of assessment document, are summarized in Table 3.3-A.

Table 3.3 -A. Hazardous waste sites in Ashtabula County, OH

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remedial Status
Big D Campground, Kingsville OHD980611735	HA	1989	3	NPL	Completed
	SRU	1993	4		
Fields Brook, Ashtabula OHD980614572	HA	1986	3	NPL	Ongoing
	HA	1996	4		
Laskin/Poplar Oil Co., Jefferson Township OHD061722211	HA	1987	3	Deleted from NPL	Completed
	SRU	1992	3		
New Lyme Landfill, New Lyme OHD980794614	HA	1986	3	NPL	Completed
	SRU	1993	4		

3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard

HA=Public Health Assessment, SRU=Site Review and Update

Further evaluation of the data for the sites with Public Health Hazard Categories of 1–3 is discussed in the following subsections.

3.3.1.1 Big D Campground

This site includes a former sand and gravel pit used as a landfill for waste products. It is bordered by the Conneaut Creek to the south, open land to the west, and a swamp, farm land, and residential area to the north and east. It was no longer in operation as a landfill, and before ATSDR began work at the site in 1989, it was capped. According to the EPA fact sheet, the

wastes the landfill accepted included drums containing halogenated and nonhalogenated solvents, caustics, oily wastes, toluene diisocyanate (TDI), TDI residue contaminated with monochlorobenzene and carbon tetrachloride, and monoethylamine. The soils were contaminated with many of these compounds. Groundwater was contaminated with volatile organic compounds and with heavy metals, including barium, chromium, and lead.

Demographic Data: The demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site is as follows:

Children 6 years and younger	56
Females aged 15-44	119
Adults 65 and older	82

ATSDR Conclusions: In 1989 ATSDR concluded that because of the potential threat to human health from exposure to contaminants and the lack of monitoring data, this site posed an *Indeterminate Public Health Hazard* (Category 3). Potential pathways included ingestion and direct contact with contaminated groundwater, surface water, soil, and possible ingestion of bioaccumulated contaminants in the food chain, as well as inhalation of volatilized contaminants or contaminants entrained in air.

A subsequent 1993 ATSDR Site Review and Update categorized the site as posing *No Apparent Public Health Hazard* (Category 4). In 1992 remedial actions were implemented at the site, including the excavation and on-site incineration of the landfill contents and capping of the site in 1994.

IJC Critical Pollutants Identified within ATSDR Document: None of the IJC Critical Pollutants were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.3.1.2 Fields Brook

The Fields Brook site is the 6 square-mile watershed of Fields Brook, which flows through the City of Ashtabula. Fields Brook then flows into Ashtabula River, which discharges into Lake Erie, the source of drinking water for the city of Ashtabula. The brook flows through an industrial area that is one of the largest and most diversified concentrations of chemical plants in Ohio and is the principal receiving stream for many industrial discharges. The site extends from within the City of Ashtabula to east of the city. Sediments from Fields Brook were contaminated with PCBs, VOCs, PAHs, heavy metals (including mercury and lead), phthalates, and low-levels of radionuclides. VOCs and PCBs were detected in fish from Fields Brook.

The EPA Reported (2006) that the Reactive Metals Incorporated facility (referred to by USEPA as RMI Extrusion), though included as part of the Fields Brook site, is being addressed through actions by the Department of Energy. Those actions are coordinated through the Ohio Department of Health Bureau of Radiation Protection and state and federal RCRA programs.

Demographic Data: The demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of the Fields Brook site is as follows:

Children 6 years and younger	1,122
Females aged 15-44	2,508
Adults 65 and older	2,123

Public Health Outcome Data: In 1988 the Ohio Department of Health completed an epidemiological study of cancers associated with the Fields Brook site. The final document found no evidence of excess cancer mortalities.

ATSDR Conclusions: In 1986, ATSDR’s public health assessment concluded that this site was an *Indeterminate Public Health Hazard* (Category 3). In 1996, ATSDR released a public health assessment that evaluated a single industrial site, Reactive Metals Incorporated, located within the Fields Brook site. ATSDR concluded that the Reactive Metals, Inc. site constitutes *No Apparent Public Health Hazard* (Category 4). Fencing prevents exposure to onsite uranium-contaminated soil. Slight uranium contamination of soil is present immediately outside the fence, but the levels are too low to present a human health risk from either chemical toxicity or radiological effects.

The EPA reported (2006) that in December 2002 excavation of brook sediment and floodplain soil from the Fields Brook site was completed. Some 53,094 cubic yards of contaminated sediment and floodplain soil had been removed. In 2005 and 2006, small pockets of dense nonaqueous phase liquid were found, and the source of the contamination is being investigated. The affected material will be excavated. The health concerns from exposure to contaminants were primarily from PCBs and hexachlorobenzene.

The EPA also reported (2006) that the Reactive Metals Incorporated facility (referred to by USEPA as RMI Extrusion), though part of the Fields Brook site, is being addressed through actions by the Department of Energy and coordinated through the Ohio Department of Health-Bureau of Radiation Protection and state and federal RCRA programs.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants hexachlorobenzene, B[a]A, B[a]P, I[123cd]P, mercury, PCBs, and lead, as well as other contaminants previously discussed, were identified at this site during ATSDR’s assessment of exposure related issues. For a more complete listing of hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.3.1.3 Laskin Poplar Oil

The Laskin Poplar Oil company site is a 9-acre site located in Jefferson Township of Ashtabula County, OH. It is a former waste oil storage site, with 37 aboveground, inground, and underground oil storage tanks or pits. The oil was contaminated with PCBs and other hazardous substances. Fluid was removed from the tanks in 1981, but sludge residues in the tanks and pits were a concern. The owners formerly used the oil to heat a greenhouse on the property, and for road oiling.

Demographic Data: The demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	331
Females aged 15-44	714
Adults 65 and older	553

ATSDR Conclusions: In 1989 ATSDR concluded that contaminated sludge remaining in the tanks and pits—which could potentially be released by fire or by some act of nature and which was not well characterized—posed an *Indeterminate Public Health Hazard* (Category 3). In addition, soil and the boiler house where the oil was burned were contaminated, and those contaminants may have had an effect on the local creek. A subsequent ATSDR Site Review and Update also categorized the site as an *Indeterminate Public Health Hazard*. Contaminants of

concern included PCBs, 2, 3, 7, 8-TCDD, lead, and mercury in soil and sediment. PAHs and VOCs also were of concern in soil, sediments, and groundwater. Potential onsite exposure pathways included soil ingestion, dermal absorption, or inhalation of dust, contact with sediments or surface water, and the food chain. Although the contaminated groundwater was not a drinking water source, it could flow into nearby Cemetery Creek. EPA reports that ongoing environmental monitoring activities indicate that removal and remedial activities conducted at this site in the early 1990s have been effective.

IJC Critical Pollutants Identified within ATSDR Document:

The IJC critical pollutants lead, mercury, polychlorinated biphenyls (PCB), polyaromatic hydrocarbons (PAH), chlorinated dioxins, and chlorinated furans, as well as other contaminants previously discussed, were identified during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.3.1.4 New Lyme Landfill

This 40-acre landfill was in operation from 1969 to 1978, with most of waste coming from industrial and commercial sources. It is located about 20 miles south of the city of Ashtabula, in Ashtabula County, OH. Potential onsite exposure pathways included groundwater ingestion, direct contact with leachate or inhalation exposure to leachate, and inhalation, ingestion, and direct contact with soil.

Demographic Data: The demographic profile, from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site is as follows:

Children 6 years and younger	14
Females aged 15-44	24
Adults 65 and older	10

ATSDR Conclusions: In 1986 ATSDR concluded that the site was an *Indeterminate Public Health Hazard* (Category 3). The major concern appeared to be possible future exposure were the site to be developed residentially. In 1993 Site Review and Update ATSDR concluded that the site posed *No Apparent Health Hazard* (Category 4). Contaminants of concern for potential exposure to benzo(a)pyrene, and other chemicals such as VOCs and chrysotile asbestos. EPA reports that effective remedial activities were completed in the mid 1990s. Thus, further releases of contaminants and exposure of human populations are unlikely.

IJC Critical Pollutants Identified within ATSDR Document:

During ATSDR's assessment of exposure-related issues the IJC critical pollutants lead, mercury, and polychlorinated biphenyls (PCB), as well as other contaminants previously discussed, were identified at this site. For a more complete listing of the hazardous substances found at this site please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.3.2. TRI Data for Ashtabula River AOC

The TRI onsite chemical releases for Ashtabula County are summarized in Table 3.3-B. Total onsite releases in 2001 were 6,138,371 pounds, primarily to air.

IJC-critical pollutants accounted for only 1,970 pounds (0.03%) of this total. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to land), lead and lead compounds (to air

and land), and mercury and mercury compounds (primarily to air). The facilities that released these IJC-critical pollutants are listed in Table 3.3-C.

The major release (5,400,000 pounds) of non-IJC chemicals was carbonyl sulfide (88% of total onsite releases) to air. No other non-IJC releases of 300,000 pounds magnitude or greater occurred. The next highest releases of non-IJC chemicals (in the range of 150,000–299,999 pounds) were styrene and hydrochloric acid aerosols, also released to air.

3.3.3. NPDES Data for the Ashtabula River AOC

The NPDES permitted discharges for Ashtabula County, OH are summarized in Table 3.3-D. The total average annual permitted discharges in 2004 were 187,488 pounds, the majority of which was cyanide, phosphorus, and ammonia nitrogen.

The IJC-critical pollutants lead and mercury were permitted to be discharged in relative modest amounts. Facilities permitted to release these pollutants are listed in Table 3.3-E.

3.3.4. Summary and Conclusions for the Ashtabula River AOC

3.3.4.1 Hazardous Waste Sites

ATSDR has categorized at some time in their assessment history four sites in Ashtabula County, OH, in health hazard categories 1–3. Using these assessments and updated information from www.epa.gov/superfund/sites/npl/npl.htm, most of the sites have been remediated, no longer release contaminants, nor represent a public health risk. The Fields Brook site (Section 3.3.1.2)—a very large site affected by many industrial releases—was remediated for PCB-contaminated soil and sediment and for mining residuals. It is now under remediation for low-level radionuclides and for dense nonaqueous phase liquid. The site was contaminated with the IJC-critical pollutants PCBs, mercury, and lead but, as reported by EPA (June 2004), has subsequently been remediated.

The EPA reported (2006) that a large mass of dense, nonaqueous phase liquid (DNAPL) is present below the Detrex Corporation facility (see Table 3.3-E). An extraction system is in place to remove DNAPL, but the system will need to operate for an extended period, given that the volume of DNAPL is so large. To speed the removal of product, the extraction system will be expanded. In addition, to prevent subsurface movement of DNAPL south to Fields Brook, in late 2006 Detrex will install an interceptor trench between its facility and Fields Brook.

The EPA reported (2006) that the dredging of the Ashtabula River is ongoing. In addition, excavation work in Fields Brook was completed in 2002, but follow-up work is necessary to address pockets of contamination found during O&M sampling in the Fields Brook industrial area.

3.3.4.2 TRI Data

The TRI onsite chemical releases for Ashtabula County in 2001 were 6,138,371 pounds, primarily to air. IJC-critical pollutants accounted for only 1,970 pounds (0.03%) of this total. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to land), lead and lead compounds (to air and land), and mercury and mercury compounds (primarily to air).

The major release (5,400,000 pounds) of non-IJC chemicals was of carbonyl sulfide (88% of total onsite releases) to air. No other non-IJC releases of a 300,000-pound magnitude or greater occurred.

3.3.4.3 NPDES Data

The NPDES permitted discharges for Ashtabula County, OH, are summarized in Table 3.3-D. The total average annual permitted discharges in 2004 were 187,488 pounds, the majority of which was cyanide, phosphorus, and ammonia nitrogen.

The IJC-critical pollutants lead and mercury were permitted to be discharged in relative modest amounts. Facilities permitted to release these pollutants are listed in Table 3.3-E.

3.3.4.4 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish consumption was the only BUI listed as impaired at this AOC site. Fish advisories have been posted for this AOC since 1983. Chemical pollutants of concern include a variety of heavy metals and chlorinated organic compounds. Further information is available at the EPA Web site (<http://www.epa.gov/glnpo/aoc/>).

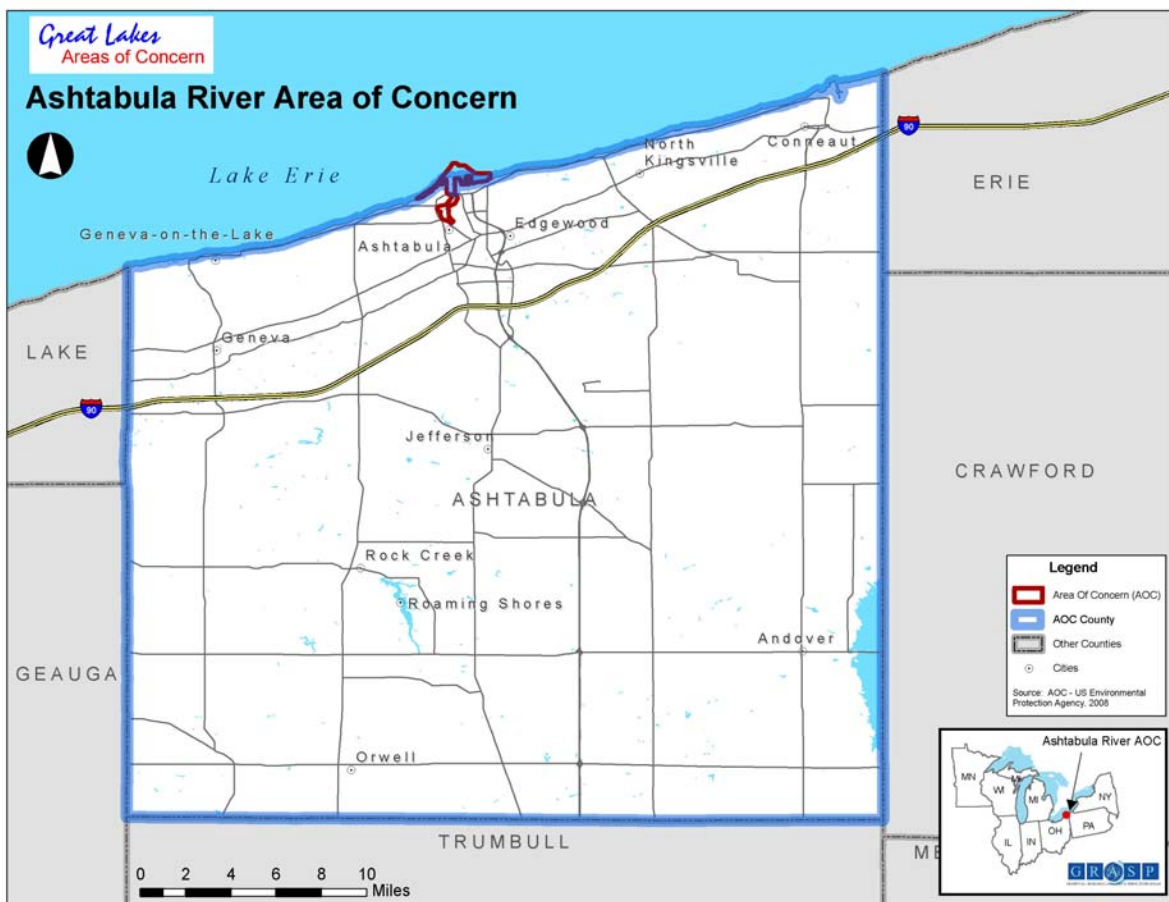


Table 3.3-B TRI Releases (in pounds, 2001) for the Ashtabula River AOC

Chemical	IJC Tracking Number	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total Onsite Releases	Total Offsite Releases	Total On- and Offsite Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.00062688	0.000583443	0	0.2855034	0.28671372	0.037485	0.32419872
<i>(PCDDs and PCDFs)</i>	3							
LEAD	8	20.1	No data	0	304	324.1	40	364.1
LEAD COMPOUNDS	8	78.4	40	0	0	118.4	6076	6194.4
MERCURY	9	1396.57	0	0	0	1396.57	217	1613.57
MERCURY COMPOUNDS	9	130	0.5	0	0	130.5	22	152.5
Total IJC		1625.07062	40.5005834	0	304.28550	1969.85671	6355.0374	8324.89419
1,3-DICHLOROPROPYLENE		511	No data	0	0	511	0	511
ALUMINUM (FUME OR DUST)		904	17	0	0	921	574189	575110
ALUMINUM OXIDE (FIBROUS FORMS)		250	No data	0	0	250	31300	31550
ANTIMONY COMPOUNDS		6	No data	0	0	6	7425	7431
BARIUM COMPOUNDS		2102	640	0	0	2742	139146	141888
CARBON DISULFIDE		53400	No data	0	0	53400	0	53400
CARBONYL SULFIDE		5400000	No data	0	0	5400000	0	5400000
CHLORINE		3333	0	0	0	3333	0	3333
CHLOROPICRIN		527	No data	0	0	527	0	527
CHROMIUM		10	1	0	0	11	9	20
COBALT		5	No data	0	0	5	4	9
COPPER		765	1	0	5	771	22	793
COPPER COMPOUNDS		255	250	0	0	505	750	1255
DECABROMODIPHENYL OXIDE		0	No data	0	0	0	8926	8926
EPICHLOROHYDRIN		409	0	0	0	409	0	409
ETHYLBENZENE		308	No data	0	0	308	0	308
FORMALDEHYDE		241	No data	0	0	241	0	241
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		193550	0	0	0	193550	0	193550
HYDROGEN FLUORIDE		35000	No data	0	0	35000	0	35000

LITHIUM CARBONATE	47	No data	0	0	47	6458	6505	
MANGANESE COMPOUNDS	1314	12799	0	5	14118	51739	65857	
METHANOL	5468	0	0	0	5468	0	5468	
METHYL ETHYL KETONE	2605	No data	0	0	2605	0	2605	
METHYL ISOBUTYL KETONE	254	No data	0	0	254	0	254	
N-BUTYL ALCOHOL	2250	No data	0	0	2250	0	2250	
NICKEL	265	1	0	0	266	8	274	
PHENOL	1415	No data	0	0	1415	0	1415	
POLYCYCLIC AROMATIC COMPOUNDS	4.838	No data	0	0	4.838	119.7	124.538	
STYRENE	253981	0	0	0	253981	228273	482254	
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)	111000	No data	0	0	111000	0	111000	
TERT-BUTYL ALCOHOL	8405	0	0	0	8405	0	8405	
TITANIUM TETRACHLORIDE	596	No data	0	0	596	0	596	
TOLUENE	21161	0	0	0	21161	0	21161	
TRANS-1,3-DICHLOROPROPENE	511	No data	0	0	511	0	511	
XYLENE (MIXED ISOMERS)	21273	No data	0	0	21273	0	21273	
ZINC COMPOUNDS	551	5	0	0	556	131080	131636	
	Total Non-IJC	6122676.83	13714	0	10	6136400.83	1179448.7	7315849.53
	Total	6124301.90	13754.5005	0	314.28550	6138370.69	1185803.7	7324174.43

Table 3.3-C TRI Facilities Releasing IJC Critical Pollutants Onsite for the Ashtabula River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	3			
Ashtabula County, OH	3	ASHTABULA	44004FRSTN2133L	ASHTABULA
		MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 1	44004SCMCH2900M	ASHTABULA
		MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 2	44004SCMCH2426M	ASHTABULA
Lead and lead compounds	5			
Ashtabula County, OH	5	ASHTABULA	44004FRSTN2133L	ASHTABULA
		ELKEM METALS CO. ASHTABULA L.P.	44004LKMMT2700L	ASHTABULA
		GENERAL ALUMINUM MFG. CO.	44030GNRLL1043C	CONNEAUT
		PLASTICOLORS INC.	44004PLSTC2600M	ASHTABULA
		ROCK CREEK ALUMINUM INC.	44084RCKCR2639E	ROCK CREEK
Mercury and mercury compounds	3			
Ashtabula County, OH	3	ASHTA CHEMICALS INC.	44004LCPCH3509M	ASHTABULA
		ASHTABULA	44004FRSTN2133L	ASHTABULA
		MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 2	44004SCMCH2426M	ASHTABULA

Table 3.3-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Ashtabula River AOC

Chemical	IJC Tracking Number	Discharge
LEAD TOTAL RECOVERABLE	8	106.24
LEAD, TOTAL (AS PB)	8	75.65
MERCURY TOTAL RECOVERABLE	9	0.14
MERCURY, TOTAL LOW LEVEL	9	0.67
	Total IJC	182.70
1,1,1-TRICHLOROETHANE		8.85
1,1,2,2-TETRACHLOROETHANE		3.22
1,1,2-TRICHLOROETHANE		11.27
1,1-DICHLOROETHANE		6.92
1,1-DICHLOROETHYLENE		8.85
1,2,4-TRICHLOROBENZENE		46.68
1,2-DICHLOROBENZENE		7.24
1,2-DICHLOROETHANE, TOTAL WEIGHT		46.68
1,2-DICHLOROPROPANE		46.68
1,2-TRANS-DICHLOROETHYLENE		5.63
1,3 DICHLOROPROPENE		0.80
1,3-DICHLOROBENZENE		17.71
1,4-DICHLOROBENZENE		5.63
2,4-DIMETHYLPHENOL		3.22
2,4-DINITROPHENOL		288.13
2-NITROPHENOL		15.29
4-NITROPHENOL		23.34
ACENAPHTHENE		4.83
ACENAPHTHYLENE		4.83
ACRYLONITRILE		1.61
ANTHRACENE		0.08
ANTIMONY, TOTAL RECOVERABLE		77.26
ARSENIC, TOTAL RECOVERABLE		40.24

BARIUM, TOTAL RECOVERABLE	20.76
BENZENE	14.49
BENZO(A)ANTHRACENE	3.22
BENZO(B)FLUORANTHENE(3,4-BENZO)	1.61
BENZO(K)FLUORANTHENE	4.83
BIS (2-ETHYLHEXYL) PHTHALATE	57.14
CADMIUM TOTAL RECOVERABLE	36.22
CADMIUM, TOTAL (AS CD)	33
CARBON TETRACHLORIDE	12.07
CHLORINE, TOTAL RESIDUAL	199.11
CHLOROBENZENE	17.71
CHLOROETHANE, TOTAL WEIGHT	25.75
CHLOROFORM	32.19
CHROMIUM TOTAL RECOVERABLE	5251.89
CHROMIUM, TOTAL (AS CR)	218.11
CHRYSENE	2.41
COBALT, TOTAL RECOVERABLE	48.29
COPPER TOTAL RECOVERABLE	291.47
COPPER, TOTAL (AS CU)	263.98
CYANIDE, FREE-WATER PLUS WASTEWATERS	67.61
CYANIDE, TOTAL (AS CN)	67652.78
DIETHYL PHTHALATE	10.46
DIMETHYL PHTHALATE	4.83
DI-N-BUTYL PHTHALATE	4.83
ETHYLBENZENE	37.02
FLUORANTHENE	0.48
FLUORENE	4.83
HEXACHLOROBUTADIENE	0.16
HEXACHLOROETHANE	4.02
IRON, SUSPENDED	45.07

IRON, TOTAL (AS FE)	90.95
MANGANESE, SUSPENDED	45.07
MANGANESE, TOTAL (AS MN)	1620.11
METHYL CHLORIDE	27.04
METHYLENE CHLORIDE	14.16
NAPHTHALENE	4.83
NICKEL TOTAL RECOVERABLE	56.34
NICKEL, TOTAL (AS NI)	303.42
NITROBENZENE	220.52
NITROGEN, AMMONIA TOTAL (AS N)	51667.81
PHENANTHRENE	4.83
PHENOL, SINGLE COMPOUND	4.83
PHENOLICS, TOTAL RECOVERABLE	40.24
PHOSPHORUS, TOTAL (AS P)	57335.73
PYRENE	4.83
SELENIUM, TOTAL RECOVERABLE	153.72
SILVER TOTAL RECOVERABLE	18.27
SILVER, TOTAL (AS AG)	30.58
TETRACHLOROETHYLENE	14.97
TIN, TOTAL (AS SN)	48.29
TOLUENE	7.24
TRICHLOROETHYLENE	10.95
VANADIUM, TOTAL RECOVERABLE	24.14
VINYL CHLORIDE	18.99
ZINC TOTAL RECOVERABLE	280.08
ZINC, TOTAL (AS ZN)	216.50
	Total Non-IJC
	187305.77
	Total
	187488.47

Table 3.3-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants Ashtabula River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	NPDES	City
Lead	2			
Ashtabula County, OH	2	ESAB WELDING PRODUCTS, INC.	OH0063789	ASHTABULA
		RESERVE ENVIRONMENTAL SERV	OH0098540	ASHTABULA
Mercury	5			
Ashtabula County, OH	5	ASHTA CHEMICALS, INC.	OH0000752	ASHTABULA
		CITY OF ASHTABULA	OH0023914	ASHTABULA
		CITY OF GENEVA	OH0020109	GENEVA
		DETREX CORP.	OH0001872	ASHTABULA
		RESERVE ENVIRONMENTAL SERV	OH0098540	ASHTABULA

3.4. Cuyahoga River AOC, Cuyahoga and Summit Counties, OH

The Cuyahoga River AOC includes the lower 45 miles of the river from the Ohio Edison Dam to the mouth of the river, where it drains into Lake Erie at Cleveland. The AOC also includes approximately 10 miles of Lake Erie shoreline (see AOC map at end of chapter and in Appendix 1).

3.4.1. Hazardous Waste Sites Relevant to the Cuyahoga River AOC

ATSDR identified two hazardous waste sites in Cuyahoga County and Summit County, OH that were found to pose either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard during the public health assessment process. These conclusions, together with information regarding the type and location of the site and the date and type of assessment document, are summarized in Table 3.4-A.

Table 3.4 -A. Hazardous waste sites in Cuyahoga and Summit Counties, OH

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remediation Status
Cady Road, Cuyahoga, North Royalton OHD980614572	HC	2003	1	Non NPL	Ongoing
Copley Square Plaza, Copley OH000561322	HA	2007	2	NPL	Ongoing

1=Urgent Public Health Hazard, 2=Public Health hazard
HC=Health Consultation

Further evaluation of the data for the Cady Road and Copley Square Plaza sites were conducted by ATSDR in the documents listed in Table 3.4-A. These evaluations are discussed in the following subsections.

3.4.1.1 Cady Road, Cuyahoga County, OH

This site is a residential neighborhood with 25 houses that use private wells for drinking and for household water. The residents complained of gases and odors in the water, oily appearance and taste, explosions at the wellheads, and gas bubbling up through the ground. Between 1954 and 1958, oil and gas wells were drilled about 3,000 feet deep at varying elevations along Cady Road. At the time of the 2002 health consultation, the area included approximately 13 oil and gas production wells and one former saltwater injection well about ¼–½ mile from the nearest private water well. Many of these wells had a history of violations for maintenance and accidents. Whether the contamination of the water wells was due to 1) the nearby oil and gas extraction wells and saltwater injection well, or 2) a fault line that caused a major fracture in the shale that underlies the drinking water aquifer thus allowing the migration of underlying oil and gas to the upper water-bearing zones is unclear.

Demographic Data: The demographic profile, from the 1990 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	128
Females aged 15-44	334
Adults 65 and older	192

This population distribution, however, included people who are not exposed, because they do not use private water wells as their drinking water and household water source. Only the residents in the 25 houses on the west half of Cady Road are affected.

ATSDR Conclusions: A 2001 health consultation classified the site as *No Apparent Public Health Hazard* (Category 4). In the 2002 and 2003 health consultations, ATSDR concluded that because of the explosive hazard of combustible gases, the well water presented an *Urgent Public Health Hazard* (Category 1). The dissolved gases found in the well water (e.g., methane, sulfides) were consistent with an oil and gas deposit origin. The urgent public health hazard is due to outgassing of combustible gases—including methane—from the private well water such that concentrations near two wellheads were at explosive levels, and levels in two basements were near the explosive level. In addition, hydrogen sulfide in the private well water presents a public health hazard because the resulting indoor air concentrations could cause adverse health effects from inhalation exposure. Ingestion of sodium at the levels found in the well water may be harmful to residents with high blood pressure or who are on low sodium diets

IJC Critical Pollutants Identified within ATSDR Documents: None of the IJC critical pollutants were identified at this site during ATSDR's assessment of exposure related issues.

3.4.1.2 Copley Square

Copley Square Plaza is a former dry cleaning establishment located about 5 miles west of Akron, in Copley, Ohio. The site was developed into a shopping center in the 1950s and included a dry cleaning facility, which operated from 1962 to 1994. The dry cleaning operation used various solvents common to the industry during the time of operations. These solvents contaminated groundwater beneath the site and affected nearby workers and residents.

ATSDR Conclusions: In 2007, ATSDR concluded that in the past the site posed a *Public Health Hazard* (Category 2) to nearby residents and workers because of elevated levels of TCE, PCE, DCE, and vinyl chloride in their drinking water. Although current exposures to drinking water pose *No Apparent Public Health Hazard* (Category 4), vapor intrusion poses an *Indeterminate Public Health Hazard* (Category 3) to nearby residents. Investigations by EPA and state regulatory agencies are ongoing.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues none of the IJC critical pollutants were identified at this site. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.4.2. TRI Data for the Cuyahoga AOC

The TRI onsite chemical releases for Cuyahoga and Summit Counties (combined) are summarized in Table 3.4-B. Total onsite releases in 2001 were 5,037,090 pounds, the majority of which were released to air, followed by releases to soil. Very little was released to surface water. Cuyahoga County accounted for 68% and Summit County accounted for 32% of the total onsite releases.

IJC-critical pollutants accounted for only 75,042 pounds (1.5%) of the total onsite releases. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.4-C.

The major releases ($\geq 500,000$ pounds) of non-IJC chemicals were of zinc compounds (primarily to land) and 1-chloro-1,1-difluoroethane (primarily to air). Other non-IJC chemicals released onsite in substantial quantities (300,000–499,999 pounds) were hydrochloric acid, toluene, methyl ethyl ketone, sulfuric acid, and trichloroethylene (primarily to air), and manganese compounds (primarily to land)

3.4.3. NPDES Data for the Cuyahoga River AOC

The NPDES permitted discharges for Cuyahoga and Summit Counties, OH are summarized in Table 3.4-D. The total average annual permitted discharges in 2004 were 4,924,341 pounds, the majority of which was ammonia nitrogen and phosphorous. Nickel also was permitted to be discharged in substantial amounts (approximately 189,000 pounds).

The IJC-critical pollutants lead (approximately 16,000 pounds) and mercury (only 1.58 pounds) was permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.4-E.

3.4.4. Summary and Conclusions for the Cuyahoga River AOC

3.4.4.1 Hazardous Waste Sites

Two hazardous waste sites in Cuyahoga and Summit Counties have been categorized by ATSDR with a public health hazard category in the range of 1–3. The Cady Road site in Cuyahoga County has well water contaminated with dissolved gases consistent with an origin from oil and gas deposits, which present an explosive hazard (methane) and an inhalation hazard (hydrogen sulfide). The residents' water supply in this area will be transferred to municipal water. The Copley Square Plaza site in Summit County also has groundwater contamination with a number of VOCs associated with dry cleaners. Investigations at this site are ongoing. No IJC-critical pollutants are associated with these sites.

3.4.4.2 TRI Data

The TRI onsite chemical releases for Cuyahoga and Summit Counties (combined) in 2001 were 5,037,090 pounds, the majority of which was released to air, followed by releases to soil. Cuyahoga County accounted for 68% and Summit County accounted for 32% of the total onsite releases.

Only 75,042 pounds (1.5%) of the total onsite releases were IJC-critical pollutants. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.4-B.

The major releases ($\geq 500,000$ pounds) of non-IJC chemicals were of zinc compounds (primarily to land) and 1-chloro-1,1-difluoroethane (primarily to air). Other non-IJC chemicals released in substantial onsite quantities (300,000–499,999 pounds) were hydrochloric acid, toluene, methyl ethyl ketone, sulfuric acid, and trichloroethylene (primarily to air), and manganese compounds (primarily to land).

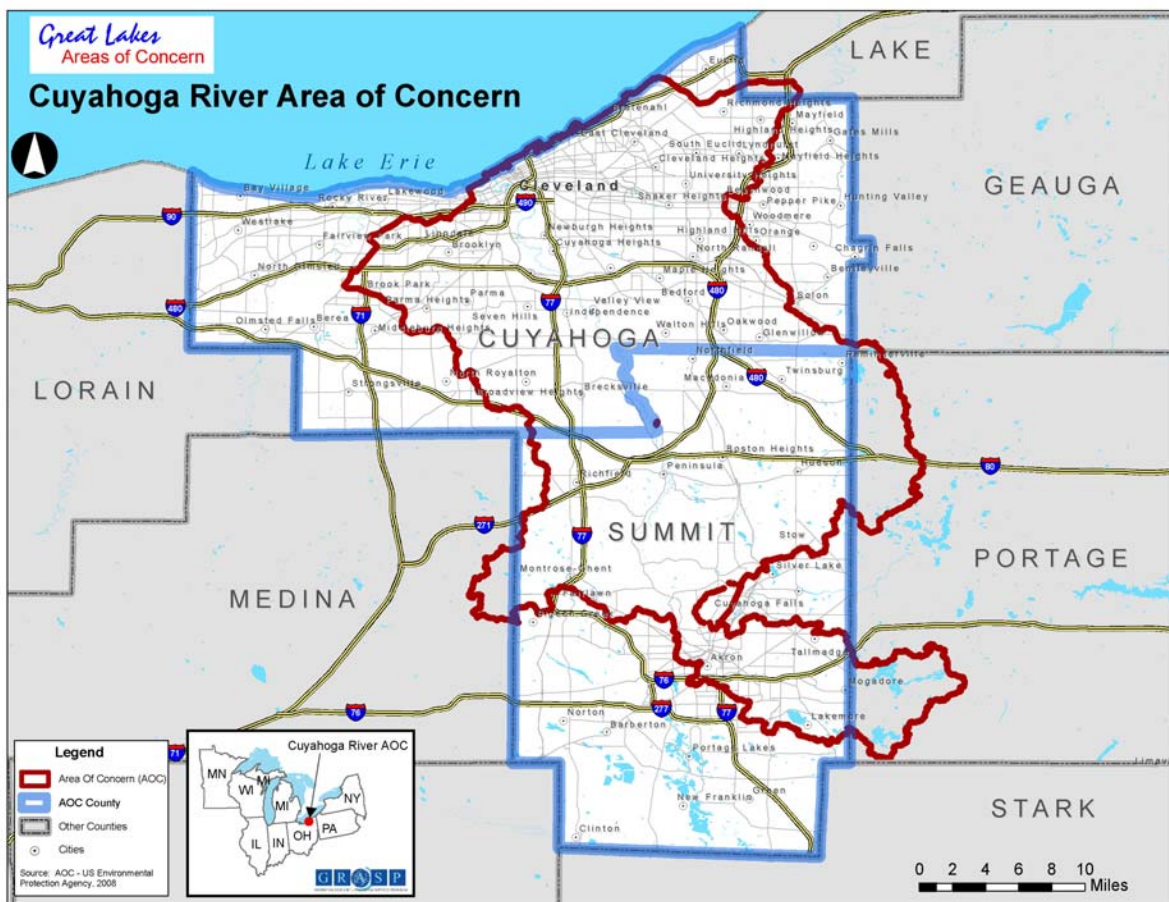
3.4.4.3 NPDES Data

The NPDES permitted discharges for Cuyahoga and Summit Counties, OH are summarized in Table 3.4-D. The total average annual permitted discharges in 2004 were 4,924,341 pounds, the majority of which was ammonia nitrogen and phosphorous. Nickel also was permitted to be discharged in substantial amounts (approximately 189,000 pounds).

The IJC-critical pollutants lead (approximately 16,000 pounds) and mercury (only 1.58 pounds) was permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.4-E.

3.4.4.4 Beneficial Use Impairments (BUIs)

Restrictions on fish and wildlife consumption are listed as impaired at this AOC site. No specific information regarding this indicator was found at the EPA site. Further information is available at the EPA Web site at <http://www.epa.gov/glnpo/aoc/>.



Chemical	IJC Tracking Number	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total Onsite Releases	Total Offsite Releases	Total On- and Offsite Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.006514673	0	0	0	0.006514673	0.06370245	0.070217123
<i>(PCDDs and PCDFs)</i>	3							
LEAD	8	6448.830016	30.64	0	5.1	6484.570016	236809.474	243294.044
LEAD COMPOUNDS	8	24518.78246	89.1	0	43891	68498.88246	84424.09	152922.9724
MERCURY	9	0.1	0.006	0	0	0.106	67.5	67.606
MERCURY COMPOUNDS	9	58.74	0.1	0	0	58.84	11.5	70.34
	Total IJC	31026.45899	119.846	0	43896.1	75042.40499	321312.6277	396355.0326
1,1-DICHLORO-1-FLUOROETHANE	5868	0	0	0	5868	0	5868	
1,2,4-TRIMETHYLBENZENE		19247	0	0	0	19247	0	19247
1,3-BUTADIENE		10843	0	0	0	10843	0	10843
1,4-DICHLOROBENZENE		540	0	0	0	540	0	540
1-CHLORO-1,1-DIFLUOROETHANE	781687	0	0	0	781687	0	781687	
2-MERCAPTOBENZO-THIAZOLE	10	0	0	0	10	750	760	
4,4'-ISOPROPYLIDENE-DIPHENOL	28	0	0	0	28	1828	1856	
ACRYLIC ACID		13	0	0	0	13	1	14
ACRYLONITRILE		2998	0	0	0	2998	623	3621
ALLYL ALCOHOL		7959	0	0	0	7959	0	7959
ALUMINUM (FUME OR DUST)	3749	300	0	0	4049	30783	34832	
AMMONIA		107113	134	0	0	107247	12000	119247
ANILINE		4740	0	0	0	4740	0	4740
ANTIMONY		50	0	0	0	50	5707	5757
ANTIMONY COMPOUNDS		3610	191	0	583	4384	27687	32071
BARIUM		204	0	0	0	204	0	204
BARIUM COMPOUNDS		2240	438	0	0	2678	188309	190987
BENZENE		24016	8	0	0	24024	0	24024
BENZO(G,H,I)PERYLENE		232.225	0.3	0	0	232.525	204	436.525
BUTYL ACRYLATE		339	0	0	0	339	36	375

CADMIUM		21	0	0	0	21	1000	1021
CADMIUM COMPOUNDS		79	0	0	0	79	25836	25915
CARBON DISULFIDE		6	0	0	0	6	0	6
CERTAIN GLYCOL ETHERS		61991	0	0	0	61991	10034	72025
CHLORINE		3022	498	0	0	3520	0	3520
CHLORODIFLUOROMETHANE	5867	0	0	0	5867	0	5867	
CHLOROETHANE		2166	0	0	0	2166	0	2166
CHROMIUM		1880	102	0	0	1982	330145.3	332127.3
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	589	111	0	24039	24739	128318	153057	
COBALT		10	0	0	0	10	250	260
COBALT COMPOUNDS		292	0	0	0	292	5318	5610
COPPER		7035	279	0	0	7314	176210	183524
COPPER COMPOUNDS		1683	305	0	0	1988	105857	107845
CUMENE		209	0	0	0	209	0	209
CYANIDE COMPOUNDS		578	0	0	0	578	250	828
CYCLOHEXANE		2539	0	0	0	2539	0	2539
DECABROMODIPHENYL OXIDE	57	0	0	0	57	50327	50384	
DI(2-ETHYLHEXYL) PHTHALATE	510	0	0	0	510	4280	4790	
DICHLOROMETHANE		110482	0	0	0	110482	317	110799
DIETHANOLAMINE		157	0	0	0	157	2505	2662
DIISOCYANATES		29	0	0	0	29	21656	21685
EPICHLOROHYDRIN		1510	0	0	0	1510	0	1510
ETHYLBENZENE		9686	2	0	0	9688	573	10261
ETHYLENE		1135	0	0	0	1135	0	1135
ETHYLENE GLYCOL		835	0	0	37	872	1509	2381
FORMALDEHYDE		39615	0	0	0	39615	97	39712
FORMIC ACID		28	0	0	0	28	774	802
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	352996	0	0	0	352996	0	352996	

HYDROQUINONE		6	0	0	0	6	0	6
MALEIC ANHYDRIDE		22	0	0	0	22	128	150
MANGANESE		1090	171	0	0	1261	152058	153319
MANGANESE COMPOUNDS		15720	1623	0	328016	345359	884801	1230160
METHANOL		63062	0	0	76012	139074	3564	142638
METHYL ETHYL KETONE		263954	0	0	0	263954	884	264838
METHYL ISOBUTYL KETONE		8018	0	0	0	8018	0	8018
METHYL METHACRYLATE		23138	0	0	0	23138	0	23138
MOLYBDENUM TRIOXIDE		562	0	0	0	562	252	814
N,N-DIMETHYLFORMAMIDE		7846	0	0	0	7846	0	7846
NAPHTHALENE		20831	3	0	0	20834	0	20834
N-BUTYL ALCOHOL		7073	0	0	0	7073	87	7160
N-HEXANE		27526	0	0	0	27526	0	27526
NICKEL		2850	27	0	0	2877	175837.6	178714.6
NICKEL COMPOUNDS		746	74	0	3571	4391	30651	35042
NITRATE COMPOUNDS		5518	101722	0	0	107240	52290	159530
NITRIC ACID		20505	33	0	0	20538	42830	63368
N-METHYL-2-PYRROLIDONE		32001	0	0	0	32001	0	32001
PHENOL		24964	30	0	0	24994	550	25544
PHOSGENE		14	0	0	0	14	0	14
POLYCHLORINATED ALKANES	0	0	0	0	0	585	585	
POLYCYCLIC AROMATIC COMPOUNDS	2220.379	1	0	0	2221.379	1334.6	3555.979	
PROPYLENE		2188	0	0	0	2188	0	2188
SODIUM NITRITE		4208	0	0	0	4208	41818	46026
STYRENE		34661	0	0	0	34661	262	34923
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)	157490	0	0	0	157490	0	157490	
TETRACHLORO-ETHYLENE		114976	5	0	0	114981	0	114981
THIRAM		25	0	0	0	25	2530	2555
TOLUENE		330191.77	16	0	0	330207.77	1207	331414.77
TRICHLOROETHYLENE		155347	0	0	0	155347	555	155902

VANADIUM COMPOUNDS	62	38	0	16112	16212	12687	28899	
VINYL ACETATE	1710	0	0	0	1710	0	1710	
XYLENE (MIXED ISOMERS)	147122.91	27	0	0	147149.91	3479	150628.91	
ZINC (FUME OR DUST)	30356	300	0	0	30656	1232	31888	
ZINC COMPOUNDS	22988	4500	0	1269695	1297183	1810561.2	3107744.2	
	Total Non-IJC	3133044.284	110938.3	0	1718065	4962047.584	4353687.7	9315735.284
	Total	3164070.743	111058.146	0	1761961.1	5037089.989	4675000.328	9712090.317

Table 3.4-B TRI Facilities Releasing IJC Critical Pollutants Onsite for the Cuyahoga River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	5			
Cuyahoga County, OH	4	FORD MOTOR CO. CLEVELAND CASTING	44142FRDMT5600H	BROOK PARK
		FORD MOTOR CO. CLEVELAND ENGINE PLANTS	44142FRDMT17601	BROOK PARK
		LAKESHORE PLANT	44103FRSTN6800S	CLEVELAND
		WABASH ALLOYS L.L.C.	44109WBSHL4365B	CLEVELAND
Summit County, OH	1	GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER	44309GDYRT200SM	AKRON
Lead and lead compounds	59			
Cuyahoga County, OH	41	ALCOA CLEVELAND WORKS	44105LMNMC1600H	CUYAHOGA HEIGHTS
		AMERICAN BRONZE CORP.	44115MRCNB2941E	CLEVELAND
		AMERICAN SPRING WIRE CORP.	44146MRCNS26300	BEDFORD HEIGHTS
		AMERICAN STEEL & WIRE CORP. (CLEVELAND DIV.)	44125MRCNS4300E	CUYAHOGA HEIGHTS
		ART GALVANIZING WORKS INC.	44109THRTG3935V	CLEVELAND
		BASIC ALUMINUM CASTINGS CO.	44110BSCLM1325E	CLEVELAND
		CAST SPECIALTIES INC.	44128CSTSP26711	WARRENSVILLE HEIGHTS
		COOPER-STANDARD AUTOMOTIVE	44102STNDR2130W	CLEVELAND
		CSM INDS. INC.	44117CLMXS21801	EUCLID
		DU PONT CLEVELAND REFINISH SERVICE CENTER	44125DPNTC9200M	GARFIELD HEIGHTS
		FEDERAL METAL CO.	44146THFDR7250D	OAKWOOD VILLAGE
		FERRO CORP. 130CLEVELAND130	44105FRRRCR4150E	CLEVELAND
		FORD MOTOR CO. CLEVELAND CASTING	44142FRDMT5600H	BROOK PARK
		FORD MOTOR CO. CLEVELAND ENGINE PLANTS	44142FRDMT17601	BROOK PARK
		FOSECO METALLURGICAL INC.	44142FSCNC20200	CLEVELAND
		GE EUCLID LAMP PLANT	44103GNRLL1814E	CLEVELAND

		GENERAL ENVIRONMENTAL MANAGEMENT L.L.C.	44115RSRCH2655T	CLEVELAND
		GMC METAL FABRICATING DIV.	44130CHVRL5400C	PARMA
		GO/DAN INDS.	44142DNLRD15600	CLEVELAND
		I. SCHUMANN & CO.	44146SCHMN22500	OAKWOOD VILLAGE
		LAKESHORE PLANT	44103FRSTN6800S	CLEVELAND
		LINCOLN ELECTRIC CO.	44117LNCLN22801	EUCLID
		LTV STEEL CO. CLEVELAND WORKS	44127LTVST3100E	CLEVELAND
		METALDYNE INC. BEDFORD HEIGHTS PLANT	44146TTLST25661	BEDFORD HEIGHTS
		MODINE AFTERMARKET HOLDINGS INC.	44136MDNGR20137	STRONGSVILLE
		MORGAN ELECTRO CERAMICS	44146MRGNM232FO	BEDFORD
		NORTH AMERICAN WIRE PRODS. INC.	44139NRTHM30000	OLON
		OATEY CO.	44135TYCMP4700W	CLEVELAND
		PPG INDS. OHIO INC. (CL)	44111PPGND3800W	CLEVELAND
		REPUBLIC ANODE FABRICATORS	44136RPBLC11288	STRONGSVILLE
		REPUBLIC METALS	44105RPBLC7930J	CLEVELAND
		RIVER RECYCLING INDS. INC.	44109RVRRRC4195B	CLEVELAND
		S. K. WELLMAN CORP.	44142SNTRM5372W	BROOKPARK
		SAINT-GOBAIN CRYSTALS & DETECTORS	44139NGLHR6801C	OLON
		SHERWOOD	44102SHRWD1201W	CLEVELAND
		STANLEY WORKS	44143STNLY700BE	CLEVELAND
		TDE GROUP INC.	44139TLDNG28850	OLON
		VENTURE LIGHTING INTL. INC.	44139VNTRL3200A	OLON
		VICTORY WHITE METAL CO.	44127VCTRY6100R	CLEVELAND
		WABASH ALLOYS L.L.C.	44109WBSHL4365B	CLEVELAND
		WYMAN-GORDON FORGINGS (CLEVELAND) INC.	44127DRPDF3097E	CLEVELAND
Summit County, OH	18	AMERICHEM INC.	44221MRCHM225BR	CUYAHOGA FALLS
		CARGILL INC. SALT DIV.	44314KZSLT2065M	AKRON
		CHEMIONICS CORP.	44278CHMNC390MU	TALLMADGE

		COMMERCIAL ALLOYS CORP.	44087CMMRC1831E	TWINSBURG
		GOODYEAR TIRE & RUBBER CO. AKRON MIX CENTER	44309GDYRT1080R	AKRON
		GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER	44309GDYRT200SM	AKRON
		GOODYEAR TIRE & RUBBER STOW MODEL SHOP	44224GDYRT1549C	STOW
		HARWICK STANDARD DISTRIBUTION CORP.	44305RPBLC60SOU	AKRON
		LANCER DISPERSIONS INC.	44305LNCRD1680E	AKRON
		LOCKHEED MARTIN N.E. & S.S.	44315LRLCR1210M	AKRON
		METALDYNE	44087TTTMT8001B	TWINSBURG
		METALLIC RESOURCES INC.	44087MTLLC2116E	TWINSBURG
		MOTOR PRODS. - OHIO CORP.	44203MTRPR65ERO	BARBERTON
		NOVEON INC.	44301BFGDR240WE	AKRON
		POLYMERICS INC.	44221PLYMR2828S	CUYAHOGA FALLS
		REVLIS CORP.	44203RVLSC2845N	NORTON
		ROCKWELL AUTOMATION INC.	44087RCKWL8440D	TWINSBURG
		STRUKTOL CO. OF AMERICA	44224STRKT201ES	STOW
Mercury and mercury compounds	3			
Cuyahoga County, OH	2	LAKESHORE PLANT	44103FRSTN6800S	CLEVELAND
		VENTURE LIGHTING INTL. INC.	44139VNTRL3200A	SOLON
Summit County, OH	1	GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER	44309GDYRT200SM	AKRON

Table 3.4-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Cuyahoga River AOC

Chemical	IJC Tracking Number	Discharge
LEAD TOTAL RECOVERABLE	8	8165.96
LEAD, TOTAL (AS PB)	8	7876.02
MERCURY, TOTAL LOW LEVEL	9	1.58
	Total IJC	16043.56
ARSENIC, TOTAL RECOVERABLE		594.77
CADMIUM TOTAL RECOVERABLE		599.33
CADMIUM, TOTAL (AS CD)		641.45
CHLORINE, TOTAL RESIDUAL		1561.36
CHROMIUM TOTAL RECOVERABLE		199.60
CHROMIUM, HEXAVALENT DISSOLVED (AS CR)		3400.39
CHROMIUM, TOTAL (AS CR)		761.36
COPPER TOTAL RECOVERABLE		32120.83
COPPER, TOTAL (AS CU)		4213.26
CYANIDE, FREE-WATER PLUS WASTEWATERS		11114.10
CYANIDE, TOTAL (AS CN)		5955.71
CYANIDE, FREE (AMEN. TO CHLORINATION)		107.04
NICKEL TOTAL RECOVERABLE		94164.53
NICKEL, TOTAL (AS NI)		95224.48
NITROGEN, AMMONIA TOTAL (AS N)		2844114.26
PHENOLICS, TOTAL RECOVERABLE		197.99
PHOSPHORUS, TOTAL (AS P)		1703210.91
SILVER, TOTAL (AS AG)		26.56
ZINC TOTAL RECOVERABLE		70790.19
ZINC, TOTAL (AS ZN)		39299.60
	Total Non-IJC	4908297.69
	Total	4924341.25

Table 3.4-E NPDES Facilities Permitted to Discharge IJC Critical Pollutants Cuyahoga River AOC

	<i>Facilities</i>	<i>Facility Name</i>	<i>NPDES</i>	<i>City</i>
Lead	7			
Cuyahoga County, OH	6	AMERICAN STEEL & WIRE	OH0002160	CUYAHOGA HEIGHTS
		ARGO TECH CORPORATION	OH0000281	CLEVELAND
		ISG CLEVELAND	OH0000957	CLEVELAND
		CITY OF BEDFORD HEIGHTS	OH0024058	BEDFORD HEIGHTS
		CITY OF NORTH ROYALTON	OH0026794	NORTH ROYALTON
		ZACLON INC	OH0000990	CLEVELAND
Summit County, OH	1	CITY OF AKRON	OH0023833	AKRON
Mercury	6			
Cuyahoga County, OH	4	CITY OF BEDFORD	OH0024040	BEDFORD
		CITY OF BEDFORD HEIGHTS	OH0024058	BEDFORD HEIGHTS
		CITY OF NORTH OLMSTED	OH0026778	NORTH OLMSTED
		OLON CITY CENTRAL	OH0027430	OLON
Summit County, OH	2	CITY OF BARBERTON	OH0024007	BARBERTON
		CITY OF TWINSBURG	OH0027863	TWINSBURG

3.5. Black River AOC, Lorain County, OH

The Black River AOC encompasses the entire Black River watershed, located primarily in Lorain County. The east and west branches of the river flow north, joining to form the mainstream of the Black River, which flows 16 miles farther north to discharge into Lake Erie at the City of Lorain (see AOC map at end of chapter and in Appendix 1).

3.5.1. Hazardous Waste Sites Relevant to the Black River AOC

ATSDR identified three hazardous waste sites in Lorain County, OH, that were found to pose either a public health hazard or an indeterminate public health hazard during the public health assessment process. These conclusions, together with information regarding the type and location of the site and the date and type of assessment document, are summarized in Table 3.5-A.

Table 3.5 -A. Hazardous waste sites in Lorain County, OH

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remedial Status
Ford Rd Industrial Landfill, Elyria OHD980510002	HC	2002	3	Non NPL	Ongoing
Republic Steel Corp. Quarry, Elyria OHD980903447	HA SRU	1989 1993	3 4	Deleted from NPL	Completed
Forest City Technologies OHR000018382	HC	2005	3	Non NPL	Ongoing

3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard,
HA=Public Health Assessment, HC=Health Consultation, SRU=Site Review and Update

ATSDR provides further evaluation of these data in the public health assessment and other health-related documents listed in Table 3.5-A. These evaluations are discussed in the following subsections.

3.5.1.1 Ford Road Industrial Landfill

This site is an inactive 15-acre landfill in Elyria, bordering on the Black River. The landfill was originally a ravine, which was filled with disposed wastes. From the 1950s until 1974 the site was used for the disposal of industrial wastes. EPA reported that the wastes from several local industries included organics, inorganics, heavy metals, pesticides, catalysts, sanitary sewage sludges, paint sludges, latex sludges, and small quantities of other, unknown hazardous wastes. After the wastes were dumped they were frequently burned; several areas of exposed ash are visible. At the time of ATSDR's assessment, the site was not fenced; was accessible from all sides, and was within 1 mile of several residences. Surface water at the site flows as runoff into the Black River. The surface water also flows into an intermittent stream that drains into the Black River and into a ravine, from where the runoff enters a wetland that drains into the Black River. In addition, groundwater flows toward the Black River. Closing and capping of the

landfills was not completed under EPA supervision or guidelines. The cap is now sagging, a number of drums and other wastes including ash are visible, and the landfill is unlined. The EPA reported (2006) that in early 2006 Ohio EPA formally approved a landfill gas monitoring system, which was implemented. Sampling results have shown that no landfill gas currently migrates through the existing cap.

The EPA reported (2006) that after a review of the RI/FS findings and of the risk assessment conducted at the site, the following contaminants of potential concern (COPCs) were identified:

- For soil and sediment, COPCs are PAHs, PCBs, and metals;
- For surface water the COPCs are one SVOC (bis[2-ethyl]phthalate) and five metals (aluminum, antimony, arsenic, iron, and thallium);
 - For groundwater, the COPCs are two VOCs (benzene and vinyl chloride), one SVOC (bis[2-ethyl]phthalate), PCBs, and several metals; and
 - For leachate, the COPCs are two VOCs (benzene and chloroform), one SVOC (bis[2-ethyl]phthalate), three pesticides (beta-BHC, dieldrin, and heptachlor), and several metals.

ATSDR Conclusions: In 2002 ATSDR concluded that the site posed an *Indeterminate Public Health Hazard* (Category 3) because of the lack of current environmental monitoring data and the fact that the available data did not provide a complete picture of the extent of contamination. With the completion of the RI/FS and the ROD, however, ATSDR should reevaluate this site to determine its correct category placement. Moreover, exposed drums and wastes on the northern and southern banks of the landfill may pose a threat to site visitors.

The EPA reported (2006) that the Black River adjacent to the site may be used for recreational activities such as fishing, wading, and swimming. Therefore, recreational receptors (i.e., children and adults) may be exposed to sediment and surface water within the Black River via incidental ingestion and via dermal contact exposure pathways. The intermittent stream adjacent to the site is, however, relatively small and is only filled during significant rain events. This precludes its use for recreational activities such as fishing, swimming, or wading. Thus surface water from the ditch adjacent to the site is not expected to present significant exposure pathways. Still, because of the ephemeral nature of the intermittent stream, recreational receptors may be exposed to substrate (i.e., soil/sediment) within the stream channel. The Ford Road Industrial Landfill is currently being addressed under the USEPA Superfund Program.

IJC Critical Pollutants Identified within ATSDR Documents: No IJC critical pollutants were identified at this site during ATSDR's assessment of exposure-related issues.

3.5.1.2 Republic Steel Corp. Quarry

Before 1950 this 4-acre site was a sandstone quarry. From 1950 to 1975 the site was used for the disposal of pickle liquor from a steel mill. From 1950 to 1975, Republic Steel Corp. used the quarry as a disposal site for waste pickle liquor consisting of sulfuric acid and dissolved metal oxides, and for rinse water from pickling operations. The waste traveled from the plant to the quarry in a ditch.

Demographic Data: The demographic profile, from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	1,400
Females aged 15–44	2,469

Adults 65 and older

1,539

ATSDR Conclusions: In 1989 ATSDR identified this site as an *Indeterminate Public Health Hazard* (Category 3) because of the potential threat to human health from exposure to contaminants in quarry water and sediment, soil, and dust, and possibly in fish. Contaminants of concern included VOCs and SVOCs. A subsequent ATSDR Site Review and Update concluded, however, that the site poses *No Apparent Public Health Hazard* (Category 4). The site was remediated in 1990 through the removal of contaminated soil. EPA (2006) reported that the city of Elyria passed an ordinance to prohibit groundwater and quarry use for recreational purposes. In addition, the property zoning will be maintained as heavy industrial use only.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants PAHs, mercury, and lead were identified at this site during ATSDR's assessment of exposure-related issues. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.5.1.3 Forest City Technologies

Forest City Technologies is one of four industries located in the village of Wellington located in north-central Ohio, six miles south of Oberlin. Other local industries include the Sterling Foundry, the Erie Street Landfill, and LESCO, Inc. The village is located in an agricultural area which is drained by tributaries of the Black River.

Demographic Data: The village of Wellington has a population of 4,500 residents.

Public Health Outcome Data: In 1998, the Ohio Department of Health and Lorain County Health Department evaluated the village of Wellington and Wellington Township for the possible occurrence of an MS cluster. The state identified 25 definite and probably cases of MS in the community of 4,200 people, or a crude rate of 595 cases per 100,000 people.

ATSDR Conclusions: In 2005, ATSDR determined that the industries within the village of Wellington posed an *Indeterminate Public Health Hazard* (Category 3). Although human exposures to contaminants at levels of concern were not identified, environmental monitoring data were limited.

IJC Critical Pollutants Identified within ATSDR Documents: None of the IJC critical pollutants were identified at this site during ATSDR's assessment of exposure related issues.

3.5.2. TRI Data for the Black River AOC

The TRI onsite chemical releases for Lorain County, OH, are summarized in Table 3.5-C. Total onsite releases in 2001 were 2,940,334 pounds, the majority of which was released to air. Small amounts were released to surface water.

Only 9,594 pounds (0.3% of the total onsite releases) were IJC-critical pollutants. The IJC-critical pollutants released were PCDDs and PCDFs (to air), aldrin (to air), lead and lead compounds (to air and surface water), mercury and mercury compounds (primarily to air), toxaphene (to air), and hexachlorobenzene (to air). The facilities that released these pollutants are listed in Table 3.5-D.

The major releases ($\geq 500,000$ pounds) of non-IJC chemicals were of hydrochloric acid and sulfuric acid aerosols (to air). No releases occurred in the 300,000–499,999 pound range. Xylene was the one chemical released in the 150,000–299,999 pound range: (primarily to air).

3.5.3. NPDES Data for the Black River AOC

The NPDES-permitted discharges for Lorain County, OH are summarized in Table 3.5-E. The total average annual permitted discharges in 2004 were 238,315 pounds, the majority of which was phosphorus and ammonia nitrogen.

The IJC-critical pollutants lead (approximately 620 pounds) and mercury (<1 pound) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.5-F.

3.5.4. Summary and Conclusions for the Black River AOC, Lorain County, OH

3.5.4.1 Hazardous Waste Sites

ATSDR has categorized three Lorain County hazardous waste sites in health hazard Categories 2–3. An analysis in Section 3.1.1 of the documents for these sites reveals no clear evidence that human exposure to site-related IJC-critical pollutants is currently occurring at concentrations or at doses that exceed health-based screening values. The Republic Steel Quarry Site has been remediated by removal of contaminated soil and exposure is prevented by restriction of access. Although contaminants remain in the quarry sediment, they are below the mixing zone. In the past, this site may have contributed to the environmental burden of the IJC-critical pollutants B(a)P and lead, and it may act as a reservoir for these contaminants.

The Ford Road Industrial Landfill has not been adequately investigated. It is situated on the Black River, and surface water and groundwater flow are toward the Black River. This site may have contributed and may continue to contribute to the Black River AOC's environmental burden of IJC-critical pollutants, including PCBs. The EPA (2006) reported that pursuant to an anticipated Consent Decree it will implement the clean up alternatives outlined in the ROD. This will prevent any further contamination of the Black River by the Ford Road Site.

3.5.4.2 TRI Data

Onsite TRI releases in Lorain County totaled 2,940,333.5 pounds, primarily to air. Of this, 9,594 pounds (0.3%) were IJC-critical pollutants. The IJC-critical pollutants were PCDDs and PCDFs (to air), aldrin (to air), lead and lead compounds (to air and surface water), mercury and mercury compounds (primarily to air), toxaphene (to air), and hexachlorobenzene (to air).

3.5.4.3 NPDES Data

The NPDES permitted discharges for Lorain County, OH are summarized in Table 3.5-D. The total average annual permitted discharges in 2004 were 238,315 pounds, the majority of which was phosphorus and ammonia nitrogen.

The IJC-critical pollutants lead (approximately 620 pounds) and mercury (<1 pound) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.5-E.

3.5.4.4 Beneficial Use Impairments (BUIs)

At this AOC site, fish, wildlife, and drinking water consumption restrictions are listed as impaired. Specific advisories have changed over time at this site, and specific fish species are identified as restricted. Consumption advisories include fish and turtles along the mainstream and East and West Branches of Findley Lake.

Because of excess sediment loads from upstream, the drinking water source for two communities that obtain water from the West Branch subwatershed is seasonally impacted. Further information is available at the EPA Web site at: <http://www.epa.gov/glnpo/aoc/>.

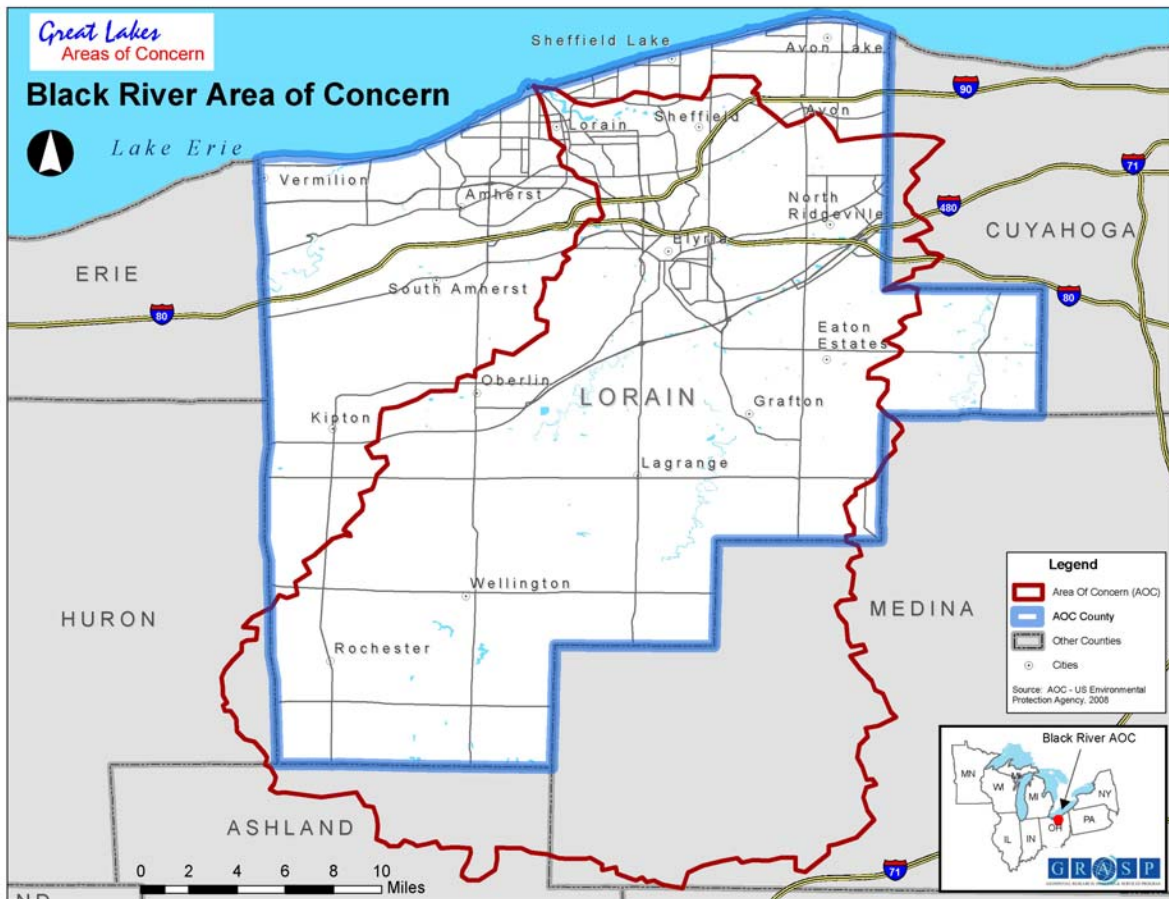


Table 3.5-C TRI Releases (in pounds, 2001) for the Black River AOC

Chemical								
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.00507877	No data	0	0	0.0050787	0	0.00507877
<i>(PCDDs and PCDFs)</i>	3							
ALDRIN	6	0.03	No data	0	0	0.03	0	0.03
LEAD	8	6790.8587	2260	0	0	9050.8587	105199.916	114250.775
LEAD COMPOUNDS	8	212.85	0.82	0	0	213.67	47719	47932.67
MERCURY	9	1.1	0.14	0	0	1.24	2.3	3.54
MERCURY COMPOUNDS	9	328.27	0.02	0	0	328.29	216	544.29
TOXAPHENE	10	0.1	No data	0	0	0.1	0	0.1
HEXACHLOROBENZENE	11	0.23	No data	0	0	0.23	0	0.23
Total IJC		7333.44377	2260.98	0	0	9594.4237	153137.216	162731.640
1,1,1-TRICHLOROETHANE		64	No data	0	0	64	5	69
1,1,2-TRICHLOROETHANE		3	No data	0	0	3	0	3
1,2,4-TRIMETHYLBENZENE		24676	0	0	0	24676	0	24676
1,2-DICHLOROBENZENE		4	No data	0	0	4	0	4
1,2-DICHLOROETHANE		5	No data	0	0	5	0	5
1,2-PHENYLENEDIAMINE		28	No data	0	0	28	0	28
1,3-PHENYLENEDIAMINE		28	No data	0	0	28	0	28
1,4-DIOXANE		3	No data	0	0	3	0	3
2,4,6-TRICHLOROPHENOL		9	No data	0	0	9	0	9
2,4-DINITROTOLUENE		3	No data	0	0	3	0	3
ACETONITRILE		76	No data	0	0	76	27	103
ACRYLAMIDE		1289	No data	0	0	1289	0	1289
ACRYLIC ACID		1647	No data	0	0	1647	0	1647
ACRYLONITRILE		3634	No data	0	0	3634	0	3634
ALACHLOR		5	No data	0	0	5	0	5
ALLYL ALCOHOL		18	No data	0	0	18	0	18
ALUMINUM (FUME OR DUST)		5148	37	0	0	5185	1120	6305
AMMONIA		10519	0	0	0	10519	0	10519

ANILINE	39	No data	0	0	39	0	39
ANTIMONY COMPOUNDS	500	5	0	0	505	12192	12697
ARSENIC	0	No data	0	0	0	12034	12034
ARSENIC COMPOUNDS	369	5	0	0	374	21684	22058
ATRAZINE	5	No data	0	0	5	0	5
BARIUM COMPOUNDS	1265	255	0	0	1520	199172	200692
BENZENE	141	3	0	0	144	0	144
BENZOYL CHLORIDE	267	0	0	0	267	0	267
BIPHENYL	3	No data	0	0	3	0	3
BUTYL ACRYLATE	1756	No data	0	0	1756	0	1756
CARBON DISULFIDE	116500	No data	0	0	116500	0	116500
CARBON TETRACHLORIDE	19	No data	0	0	19	0	19
CERTAIN GLYCOL ETHERS	62212	No data	0	0	62212	0	62212
CHLORDANE	1	No data	0	0	1	0	1
CHLORINE	1857	No data	0	0	1857	0	1857
CHLOROBENZENE	29	No data	0	0	29	0	29
CHLOROFORM	22	No data	0	0	22	0	22
CHROMIUM	371	395	0	0	766	1725	2491
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSSVAAL REGION)	1353	255	0	0	1608	103912	105520
COBALT COMPOUNDS	500	5	0	0	505	2063	2568
COPPER	940	2405	0	0	3345	15003	18348
COPPER COMPOUNDS	959	255	0	0	1214	69819	71033
CREOSOTE	9	No data	0	0	9	0	9
CRESOL (MIXED ISOMERS)	7	No data	0	0	7	0	7
CYANIDE COMPOUNDS	14	No data	0	0	14	0	14
CYCLOHEXANE	62	No data	0	0	62	0	62
CYCLOHEXANOL	10	No data	0	0	10	0	10
DI(2-ETHYLHEXYL) PHTHALATE	3	No data	0	0	3	755	758
DIBUTYL PHTHALATE	3	No data	0	0	3	0	3

DICHLOROMETHANE	19126	No data	0	0	19126	5	19131
DIISOCYANATES	74	No data	0	0	74	5	79
DIMETHYL PHTHALATE	24	No data	0	0	24	0	24
DIMETHYL SULFATE	24	No data	0	0	24	0	24
EPICHLOROHYDRIN	4	No data	0	0	4	0	4
ETHYL ACRYLATE	5486	No data	0	0	5486	0	5486
ETHYLBENZENE	26811	3	0	0	26814	5	26819
ETHYLENE GLYCOL	83	No data	0	0	83	48	131
FORMALDEHYDE	50	No data	0	0	50	0	50
FORMIC ACID	4	No data	0	0	4	0	4
HEPTACHLOR	1	No data	0	0	1	0	1
HYDRAZINE	15	No data	0	0	15	0	15
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	1495678	No data	0	0	1495678	0	1495678
HYDROGEN FLUORIDE	96202	0	0	0	96202	0	96202
MALEIC ANHYDRIDE	4	No data	0	0	4	0	4
MANGANESE	3737	14000	0	0	17737	124000	141737
MANGANESE COMPOUNDS	1070	10	0	0	1080	58381	59461
METHANOL	26021	No data	0	0	26021	58	26079
METHOXYCHLOR	0.72	No data	0	0	0.72	0	0.72
METHYL ETHYL KETONE	13368	No data	0	0	13368	1887	15255
METHYL ISOBUTYL KETONE	8714	No data	0	0	8714	5	8719
METHYL METHACRYLATE	3230	No data	0	0	3230	5	3235
METHYL TERT-BUTYL ETHER	400	No data	0	0	400	0	400
MOLYBDENUM TRIOXIDE	2015	5	0	0	2020	2975	4995
N,N-DIMETHYLFORMAMIDE	44	No data	0	0	44	0	44
NAPHTHALENE	110	No data	0	0	110	0	110
N-BUTYL ALCOHOL	13352	No data	0	0	13352	5	13357
N-HEXANE	4210	0	0	0	4210	5	4215
NICKEL	899	200	0	0	1099	420	1519

NICKEL COMPOUNDS	787	255	0	0	1042	36582	37624
NITRATE COMPOUNDS	81	24000	0	0	24081	0	24081
NITRIC ACID	46	0	0	0	46	6211	6257
NITROBENZENE	3	No data	0	0	3	0	3
N-METHYL-2-PYRROLIDONE	10	No data	0	0	10	0	10
N-METHYLOLACRYLAMIDE	1260	No data	0	0	1260	0	1260
PHENOL	34616	No data	0	0	34616	0	34616
PHTHALIC ANHYDRIDE	34	No data	0	0	34	0	34
POLYCYCLIC AROMATIC COMPOUNDS	9.534	0	0	0	9.534	0	9.534
P-PHENYLENEDIAMINE	28	No data	0	0	28	0	28
PYRIDINE	9	No data	0	0	9	0	9
SELENIUM COMPOUNDS	152	220	0	0	372	891	1263
STYRENE	7813	No data	0	0	7813	5	7818
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)	621287	0	0	0	621287	0	621287
TERT-BUTYL ALCOHOL	13201	0	0	0	13201	0	13201
TETRACHLORO-ETHYLENE	57465	No data	0	0	57465	8	57473
TOLUENE	8637	21	0	0	8658	2041	10699
TOLUENE DIISOCYANATE (MIXED ISOMERS)	7	No data	0	0	7	0	7
TOLUENE-2,4-DIISOCYANATE	79	No data	0	0	79	5	84
TRICHLOROETHYLENE	5541	No data	0	0	5541	5	5546
TRIFLURALIN	0.87	No data	0	0	0.87	0	0.87
URETHANE	91	No data	0	0	91	5	96
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)	47	170	0	0	217	452	669
VANADIUM COMPOUNDS	325	5	0	0	330	38107	38437
VINYL ACETATE	36	No data	0	0	36	0	36
XYLENE (MIXED ISOMERS)	164881	15	0	0	164896	156	165052
ZINC (FUME OR DUST)	7693	No data	0	0	7693	0	7693
ZINC COMPOUNDS	2389	4555	0	0	6944	89206	96150

Total Non-IJC	2883660.12	47079	0	0	2930739.1	800989	3731728.12
Total	2890993.56	49339.98	0	0	2940333.5	954126.216	3894459.76

Table 3.5-D TRI Facilities Releasing IJC Critical Pollutants Onsite

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	2			
Lorain County, OH	2	AVON LAKE POWER PLANT	44012FRSTN33570	AVON LAKE
		ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON
Aldrin	1			
Lorain County, OH	1	ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON
Lead and lead compounds	9			
Lorain County, OH	9	AVON LAKE POWER PLANT	44012FRSTN33570	AVON LAKE
		BECOTEK MFG. INC. FORMERLY JOHNSON METALL INC.	44052MRCNC3050B	LORAIN
		FORD MOTOR CO. OHIO ASSEMBLY PLANT	44012FRDMT650MI	AVON LAKE
		INSERVCO INC.	44050NSRVC110CO	LAGRANGE
		NATIONAL BRONZE & METALS (OHIO) INC.	44055NTNLB5311W	LORAIN
		NEW NGC INC.	44052NWNCG1901H	LORAIN
		REPUBLIC TECHS. INTL. LORAIN PLANT	44055SSLRN1807E	LORAIN
		ROCK CREEK ALUMINUM INC.	44035RCKCR320HU	ELYRIA
		ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON
Mercury and mercury compounds	3			
Lorain County, OH	3	AVON LAKE POWER PLANT	44012FRSTN33570	AVON LAKE
		REPUBLIC TECHS. INTL. LORAIN PLANT	44055SSLRN1807E	LORAIN
		ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON
Toxaphene	1			
Lorain County, OH	1	ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON
Hexachlorobenzene	1			
Lorain County, OH	1	ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON

Table 3.5-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Black River AOC

Chemical	IJC Tracking Number	Discharge
Lead Total Recoverable	8	193.16
Lead, Total	8	427.36
Mercury Total Recoverable	9	0.62
Mercury, Total Low Level	9	0.01
	Total IJC	621.15
Cadmium Total Recoverable		59.56
Copper Total Recoverable		1068
Cyanide, Free-Water Plus Waste Waters		1046.27
Cyanide, Total (AS CN)		3822.92
Nickel Total Recoverable		548.89
Nitrogen, Ammonia Total (AS N)		89649.86
Phenolics, Total Recoverable		127.16
Phosphorus, Total (AS P)		140731.70
Zinc, Total (AS ZN)	Total Non-IJC	237694.20
	Total	238315.35

Table 3.5-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Black River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	NPDES	City
Lead	3			
Lorain County, OH	3	City of Amherst	OH0021628	Amherst
		Oberland Water Env. Protection	OH0020427	Oberlin
		Republic Engineered Products	OH0001562	Lorain
Mercury	4			
Lorain County, OH	4	Avon Lake Wastewater Plant	OH0023981	Avon Lake
		City of Amherst	OH0021628	Amherst
		City of Lorain	OH0026093	Lorain
		Oberlin Water Env. Protection	OH0020427	Oberlin

3.6. Maumee River AOC, Lucas, Ottawa, and Wood Counties, OH

The Maumee River AOC includes all of Lucas County and substantial portions of Ottawa County and Wood County, and approximately 23 miles of the Maumee River, the Maumee Bay, and several creeks and the Ottawa and Toussaint Rivers (see AOC map at end of chapter and in Appendix 1).

3.6.1. Hazardous Waste Sites Relevant to the Maumee River AOC

ATSDR has categorized one hazardous waste site in Lucas, Ottawa, and Wood Counties, OH, in public health hazard category 3 (Indeterminate Public Health Hazard).

Table 3.6 -A. Hazardous waste sites in Ottawa County, OH

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remediation Data
Brush Wellman, Elmore OHD004212999	HC	2002	3	Non NPL	Not Needed
	EI	2003	NA		
	HC	2006	3		

3-Indeterminate Public Health Hazard

HC=Health Consultation, EI=Exposure Investigation

NA=Not applicable

3.6.1.1 Brush Wellman Elmore Plant

The Brush Wellman plant is on 470 acres in a semi-rural area between the villages of Elmore and Oak Harbor, OH. The plant is the principal producer of beryllium, beryllium alloy, and beryllium oxide in the United States. In well water samples collected near the site, beryllium was not found.

Article I. Public Health Outcome Data: In July 2006, ATSDR offered testing for beryllium sensitivity for citizens who lived with beryllium workers; worked with beryllium metals in a local machine shop; lived 1.25 miles or less from the Brush Wellman plant; or, had a diagnosis of sarcoidosis. Eighteen persons were tested. All 18 had normal beryllium lymphocyte proliferation test results, and no one was considered sensitive to beryllium. However, the possibility remains that other residents in the community who do not work with beryllium have been sensitized.

ATSDR Conclusions: In 2006, ATSDR concluded that in the past, short term releases posed an *Indeterminate Public Health Hazard* (Category 3) to residents near the plant. Current beryllium emissions from the plant are below levels expected to cause adverse health effects and did not pose a public health hazard. The levels of beryllium in well-water samples collected from private residences near the plant presented *No Public Health Hazard* (Category 5).

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues, no IJC critical pollutants were identified at this site.

3.6.2. TRI Data for the Maumee River AOC

The TRI onsite chemical releases for Lucas, Ottawa, and Wood Counties, OH (combined), summarized in Table 3.6-B, were 16,694,945 pounds, the majority of which was released to land, followed by releases to soil; minimal amounts were released to surface water. Lucas County accounted for 96.4%, Ottawa County accounted for 1.7%, and Wood County accounted for 1.9% of the total onsite releases.

Of the total onsite releases (in pounds), 2,240,392 (13.4%) was released as IJC-critical pollutants. The IJC-critical pollutants released were PCBs (to land), PCDDs and PCDFs, (primarily to air and land), lead and lead compounds (2,239,778 pounds, primarily to land), and mercury and mercury compounds (primarily to air and land). Lead releases accounted for >2,000,000 pounds. The facilities that released these pollutants are listed in Table 3.6-C.

The major releases (\geq 500,000 pounds) of non-IJC chemicals were of zinc fume or dust, manganese, copper, and chromium (primarily to land); and methyl ethyl ketone (primarily to air).

3.6.3. NPDES Data for the Maumee River AOC

The NPDES permitted discharges for Lucas County, OH are summarized in Table 3.6-D. The total average annual permitted discharges in 2004 were 7,178,272 pounds—mostly ammonia nitrogen. Phosphorus also was permitted to be discharged in substantial amounts (approximately 519,000 pounds).

The IJC-critical pollutants lead (approximately 10,700 pounds) and mercury (12 pounds) was permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.6-E.

3.6.4. Summary and Conclusions for the Maumee River AOC

3.6.4.1 Hazardous Waste Site Data

In 2006 ATSDR concluded that because of the potential for past exposures to beryllium emissions, the Brush Wellman Elmore Plant presented an *Indeterminate Public Health Hazard* (Category 3).

3.6.4.2 TRI Data

Onsite TRI releases in Lucas, Ottawa, and Wood Counties (combined) totaled 16,694,945 pounds, the majority of which was released in Lucas County and to land. Of this, about 13.4% (2,240,392 pounds) were IJC-critical pollutants, mainly lead. The IJC-critical pollutants released were PCBs (to land), PCDDs and PCDFs, (primarily to air and land), lead and lead compounds (primarily to land), and mercury and mercury compounds (to air and land).

3.6.4.3 NPDES Data

The NPDES permitted discharges for Lucas County, OH are summarized in Table 3.6-C. The total average annual permitted discharges in 2004 were 7,178,272 pounds—mostly ammonia nitrogen. Phosphorus also was permitted to be discharged in substantial amounts (approximately 519,000 pounds).

The IJC-critical pollutants lead (approximately 10,700 pounds) and mercury (12 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.6-D.

3.6.4.4 Beneficial Use Impairments (BUIs)

In 9 of 12 watersheds, restrictions on fish and wildlife consumption are impaired. No additional information was found at the EPA Web site.

A summary box on the EPA Web site states that at this site, drinking water restrictions are an impairment. Additional information in a summary table listing the various watersheds indicates,

however, that drinking water restrictions are either not applicable or not affected. Further information is available at the EPA Web site at <http://www.epa.gov/glnpo/aoc/>.

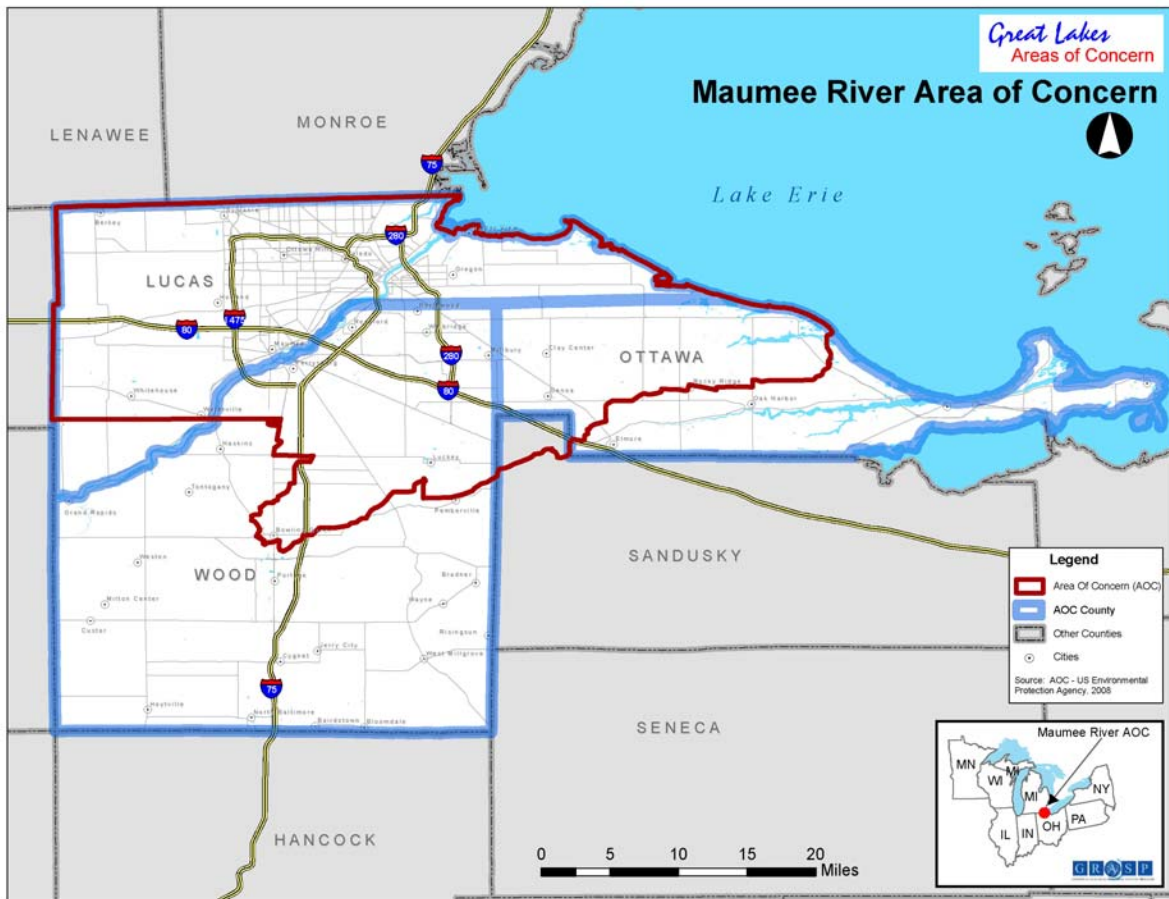


Table 3.6-B TRI Releases (in pounds, 2001) for the Maumee River AOC

POLYCHLORINATED BIPHENYLS	1	0.0000001	0	0	51	51.0000001	0	51.0000001
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.00237699	0.0007938	0	0.004851	0.00802179	0	0.00802179
LEAD	8	430.1	2.3	0	2234245.4	2234677.8	7915.64	2242593.44
LEAD COMPOUNDS		1345.6	355	0	3400	5100.6	4837.583	9938.183
MERCURY	9	0.1	0	0	30	30.1	0.791	30.891
MERCURY COMPOUNDS	9	254.4	5.35	0	273.1	532.85	7.2	540.05
	Total IJC	2030.202377	362.6507938	0	2237999.505	2240392.358	12761.214	2253153.572
1,2,4-TRIMETHYLBENZENE		30563	17	0	250	30830	816	31646
1,2-DIBROMOETHANE		3005	0	0	0	3005	0	3005
1,3-BUTADIENE		350	0	0	0	350	0	350
1,4-DICHLOROBENZENE		1004	0	0	0	1004	0	1004
ACETALDEHYDE		1300	0	0	0	1300	0	1300
ALUMINUM (FUME OR DUST)		255	0	0	357000	357255	250	357505
ALUMINUM OXIDE (FIBROUS FORMS)		500	250	0	0	750	5	755
AMMONIA		121006	5100	0	0	126106	1220	127326
ANTIMONY COMPOUNDS		2864	5	0	0	2869	19260	22129
BARIUM		10	0	0	121000	121010	260	121270
BARIUM COMPOUNDS		2492	185	0	130000	132677	158454	291131
BENFLURALIN		385	0	0	0	385	0	385
BENZENE		22150	19	0	250	22419	10	22429
BENZO(G,H,I)PERYLENE		2.1076608	0	0	0	2.1076608	3	5.1076608
BERYLLIUM		241	25	0	54580	54846	796	55642
BROMOCHLORO-DIFLUOROMETHANE		1000	0	0	0	1000	0	1000
BROMOTRIFLUOROMETHANE		4653	0	0	0	4653	0	4653
BUTYL ACRYLATE		218	0	0	0	218	0	218

BUTYRALDEHYDE	1200	0	0	0	1200	0	1200
CADMIUM	10	0	0	56000	56010	15	56025
CADMIUM COMPOUNDS	0	1	0	0	1	1753	1754
CARBON DISULFIDE	56851	0	0	0	56851	0	56851
CARBONYL SULFIDE	7	0	0	0	7	0	7
CERTAIN GLYCOL ETHERS	474072	250	0	750	475072	15992	491064
CHLORODIFLUOROMETHANE	2512	0	0	0	2512	0	2512
CHROMIUM	506	0	0	523000	523506	1990	525496
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	306	51	0	7100	7457	7352	14809
COPPER	810	84	0	605858	606752	14349	621101
COPPER COMPOUNDS	22	0	0	0	22	2050	2072
CUMENE	502	5	0	250	757	0	757
CYCLOHEXANE	13226	5	0	250	13481	0	13481
DI(2-ETHYLHEXYL) PHTHALATE	0	0	0	0	0	250	250
DIAZINON	5100	0	0	0	5100	0	5100
DICHLORODIFLUOROMETHANE	2716	0	0	0	2716	0	2716
DICHLOROMETHANE	9718	0	0	0	9718	0	9718
DIETHANOLAMINE	500	0	0	0	500	0	500
DIISOCYANATES	1	0	0	0	1	0	1
ETHYLBENZENE	59225	18	0	250	59493	260	59753
ETHYLENE	5902	0	0	0	5902	0	5902
ETHYLENE GLYCOL	3433	250	0	5	3688	974	4662
FORMALDEHYDE	51378	0	0	0	51378	6753	58131
FORMIC ACID	1750	0	0	0	1750	0	1750
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	53968	0	0	0	53968	0	53968
HYDROGEN FLUORIDE	56022	0	0	0	56022	0	56022
MANGANESE	330	106	0	2420000	2420436	3516	2423952
MANGANESE COMPOUNDS	310	6600	0	13000	19910	5560	25470
METHANOL	89737	0	0	0	89737	2228	91965
METHYL ACRYLATE	184	0	0	0	184	0	184
METHYL ETHYL KETONE	711912	250	0	0	712162	3700	715862

METHYL ISOBUTYL KETONE	109170	0	0	0	109170	0	109170
METHYL METHACRYLATE	1884	0	0	0	1884	0	1884
METHYL TERT-BUTYL ETHER	4075	0	0	0	4075	0	4075
MOLYBDENUM TRIOXIDE	0	0	0	0	0	250	250
NAPHTHALENE	2121	29	0	0	2150	52	2202
N-BUTYL ALCOHOL	362737	0	0	0	362737	5	362742
N-HEXANE	38015	5	0	250	38270	0	38270
NICKEL	25	23	0	36032	36080	4361	40441
NICKEL COMPOUNDS	1606	937	0	71000	73543	16112	89655
NITRATE COMPOUNDS	0	0	0	0	0	32	32
NITRIC ACID	3521	0	0	0	3521	0	3521
N-METHYL-2-PYRROLIDONE	25750	5	0	0	25755	250	26005
OXYDIAZON	335	0	0	0	335	0	335
O-XYLENE	10	0	0	0	10	0	10
PHENANTHRENE	6	0	0	0	6	33	39
PHENOL	5601	0	0	0	5601	10440	16041
POLYCHLORINATED ALKANES	0	0	0	0	0	247	247
POLYCYCLIC AROMATIC COMPOUNDS	809.578738	0.005	0	1.1	810.683738	10532	11342.68374
PROPYLENE	13454	0	0	0	13454	0	13454
SODIUM NITRITE	5	0	0	0	5	257	262
STYRENE	68937	0	0	0	68937	33292	102229
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)	179950	0	0	0	179950	0	179950
TETRACHLORO- ETHYLENE	61961	0	0	0	61961	0	61961
TOLUENE	118234	269	0	750	119253	1867	121120
TRICHLOROETHYLENE	16420	0	0	0	16420	250	16670
TRICHLOROFLUOROMETHANE	165	0	0	0	165	0	165
TRIFLURALIN	1110	0	0	0	1110	0	1110
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)	10	0	0	13500	13510	505	14015
VANADIUM COMPOUNDS	7103	13	0	330000	337116	4900	342016
XYLENE (MIXED ISOMERS)	344110	279	0	750	345139	280	345419
ZINC (FUME OR DUST)	1000	0	0	6520000	6521000	6505	6527505

ZINC COMPOUNDS		3212	5001	0	7400	15613	729396	745009
	Total Non-IJC	3165544.686	19782.005	0	11269226.1	14454552.79	1067382	15521934.79
	Total	3167574.889	20144.65579	0	13507225.6	16694945.15	1080143.214	17775088.36

Table 3.6-C TRI Facilities Releasing IJC Critical Pollutants Onsite

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Polychlorinated biphenyls	1			
Lucas County, OH	1	ENVIROSAFE SERVICES OF OHIO INC.	43616NVRSF876OT	OREGON
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	3			
Lucas County, OH	3	BAYSHORE PLANT	43616FRSTN4701B	OREGON
		BP AMERICA INC. TOLEDO REFY.	43616SHLCM4001C	OREGON
		ENVIROSAFE SERVICES OF OHIO INC.	43616NVRSF876OT	OREGON
Lead and lead compounds	15			
Lucas County, OH	12	BAYSHORE PLANT	43616FRSTN4701B	OREGON
		BP AMERICA INC. TOLEDO REFY.	43616SHLCM4001C	OREGON
		CREATIVE PRODS. INC.	43528CRTVP1430K	HOLLAND
		ENVIROSAFE SERVICES OF OHIO INC.	43616NVRSF876OT	OREGON
		GM POWERTRAIN TOLEDO TRANSMISSION	43692GNRLM1455W	TOLEDO
		JOHNS MANVILLE	43566MNVLL6050R	WATERVILLE
		JOHNSON CONTROLS INC. BATTERY GROUP	43528JHNSN10300	HOLLAND
		LIBBEY GLASS INC.	43611LBBYG940AS	TOLEDO
		POWERLAB INC.	43537PWRLB370WD	MAUMEE
		SEM-COM CO. INC.	43607SMCMC1040N	TOLEDO
		SUNOCO INC. (R&M)	43616SNRFN1819W	OREGON
		TEXTILEATHER CORP.	43608DVRST3729T	TOLEDO
Ottawa County, OH	2	GRAYMONT DOLIME OH INC.	43430GRYMN21880	GENOA
Wood County, OH	1	TECHNEGLAS INC.	43551NGTVP25875	PERRYSBURG
Mercury and mercury compounds	4			
Lucas County, OH	2	BAYSHORE PLANT	43616FRSTN4701B	OREGON
		BP AMERICA INC. TOLEDO REFY.	43616SHLCM4001C	OREGON
Ottawa County, OH	2	GRAYMONT DOLIME OH INC.	43430GRYMN21880	GENOA
		UNITED STATES GYPSUM CO.	43433NTDSTGYPSU	GYPSUM

Table 3.6-D NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Maumee River AOC

Chemical		
LEAD TOTAL RECOVERABLE	8	19.32
LEAD, TOTAL (AS PB)	8	10704.90
MERCURY, TOTAL (AS HG)	9	12.07
	Total IJC	10736.29
BERYLLIUM, TOTAL RECOVERABLE (AS BE)		5955.71
CADMIUM TOTAL RECOVERABLE		2301.80
CADMIUM, TOTAL (AS CD)		1666.16
CHROMIUM, HEXAVALENT (AS CR)		1835.00
CHROMIUM, HEXAVALENT DISSOLVED (AS CR)		7629.74
CHROMIUM, TOTAL (AS CR)		16581.29
COPPER TOTAL RECOVERABLE		17376.17
COPPER, TOTAL (AS CU)		13883.88
CYANIDE, FREE-WATER PLUS WASTEWATERS		660.04
NICKEL TOTAL RECOVERABLE		11267.55
NICKEL, TOTAL (AS NI)		4.02
NITROGEN, AMMONIA TOTAL (AS N)		6556864.47
PHENOLICS, TOTAL RECOVERABLE		5376.23
PHOSPHORUS, TOTAL (AS P)		518999.45
SILVER TOTAL RECOVERABLE		1115.81
SILVER, TOTAL (AS AG)		869.21
SULFIDE, TOTAL (AS S)		5142.83
ZINC, TOTAL (AS ZN)		6.04
	Total Non-IJC	7167535.40
	Total	7178271.69

Table 3.6-E NPDES Facilities Permitted to Discharge IJC Critical Pollutants Maumee River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	NPDES	City
Lead	3			
Lucas County, OH	1	CITY OF TOLEDO	OH0027740	TOLEDO
Mercury	1			
Lucas County, OH	1	CITY OF TOLEDO	OH0027740	TOLEDO

3.7. River Raisin AOC, Monroe County, MI

The River Raisin AOC, located in the southeastern part of Michigan's Lower Peninsula, is defined as the lower (2.6 mile) portion of the River Raisin, downstream from Dam #6 at Winchester Bridge in the City of Monroe. The AOC extends for 1 mile along the near shore, both north and south, and it extends ½ mile into Lake Erie (see AOC map at end of chapter and in Appendix 1).

ATSDR has evaluated the data for one hazardous waste site in Monroe County, MI, and 18 hazardous waste sites in Wayne County, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, together with information regarding the type and location of the site, and the date and type of public health assessment product, are summarized in Table 3.7-A.

Table 3.7 -A. Hazardous waste sites in Monroe County, MI

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remedial Status
Consolidated Packaging Corp., Monroe MID980999882	HC	1995	3	Non NPL	Ongoing

3=Indeterminate Public Health Hazard

HC=Health Consultation

3.7.1. Hazardous Waste Sites Relevant to the River Raisin AOC

ATSDR has evaluated the data for one hazardous waste site in Monroe County, MI, and reached conclusions regarding the public health threat posed by this site. These conclusions, together with information regarding the type and location of the site and the date and type of assessment document, are summarized in Table 3.7-A.

3.7.1.1 Consolidated Packaging Corp.

This 97-acre site, located on the east side of the city of Monroe, Monroe County, MI was formerly occupied by a paper and paperboard plant that operated from 1898 through 1978. The plant structures have been demolished. The site includes seven lagoons formerly used for waste water disposal, storage, and treatment; these lagoons constitute a large proportion of the site. Overflow from the lagoons formerly traveled through drainage ditches into the nearby River Raisin. The site was originally wetlands, and then before construction of the plant, it was filled with various materials, including commercial and industrial wastes. The site is bordered by a waste water treatment plant, a closed industrial landfill, and a residential area. The Raisin River flows east-southeast fewer than 200 feet north of the site, emptying into Lake Erie approximately 2 miles away. Another industrial facility is on the opposite bank of the river, and two hazardous waste sites with PCB and heavy metal contaminated sediments are slightly downstream, also on the opposite bank of the river. Information regarding this site is taken from the 1995 ATSDR health consultation.

ATSDR Conclusions: In 1995, ATSDR concluded that due to the potential threat to human health from exposure to contaminants and incomplete monitoring data, this site was categorized

as an *Indeterminate Public Health Hazard* (Category 3). Trespassers may be exposed to soil, sediments, and surface water containing PCBs and metals at concentrations potentially of human health concern. Data are, however, unavailable on concentrations of contaminants in surface soil. Available soil data (at depths greater than 3 inches) do not indicate a significant health hazard to occasional trespassers.

Concentrations of PAHs, including B(a)P, were comparable to background concentrations in urban soil. The sediment in the lagoons is contaminated with the IJC-critical pollutant, PCBs. Before the lagoons were fenced, children reportedly fished in them, and fish and turtles have been seen in the drainage ditch. No data were available on contaminant concentrations in fish from the lagoons and the ditch, but fish taken from the River Raisin near the site contained elevated concentrations of PCBs. The Consolidated Packaging Corporation is one of many possible sources for the PCB contamination of the fish. Groundwater at the site contains various contaminants, including PCBs, at concentrations above health-based screening values, but the site contains no producing wells. Groundwater flow is toward the northeast, and is thought to discharge into the River Raisin.

The Visteon plant adjacent to the Raisin River has been identified as a source of PCBs in the river, and, as reported by EPA (June 2004), PCB wastes are now stored in an onsite disposal cell. EPA also reports that bacterial levels in the waters have led to beach closings. Site remediation is ongoing.

IJC Critical Pollutants Identified within ATSDR Document: During ATSDR's assessment of exposure related issues the IJC critical pollutants PCBs, dioxins, furans, lead, B[a]A, B[a]P, B[b]F B[k]F, I[123cd]P, and mercury, as well as other contaminants previously discussed, were identified at this site.

3.7.2. TRI Data for the River Raisin AOC

The TRI onsite chemical releases for Monroe County, MI are summarized in Table 3.7-B. Total onsite releases in 2001 were 16,700,032 pounds, the majority of which was released to air, followed by releases to soil; very little was released to surface water.

Of the total onsite releases, 66,177 pounds (0.4%) were IJC-critical pollutants. The IJC-critical pollutants released were PCDDs and PCDFs (to air), lead and lead compounds (primarily to land), mercury and mercury compounds (to air and land), and hexachlorobenzene (to air). The facilities that released these pollutants are listed in Table 3.7-C.

The major onsite releases ($\geq 500,000$ pounds) of non-IJC chemicals were of hydrochloric acid, ethylene, sulfuric acid, and hydrogen fluoride (to air); and barium compounds (primarily to land).

3.7.3. NPDES Data for the River Raisin AOC

The NPDES permitted discharges for Monroe County, MI are summarized in Table 3.7-D. The total average annual permitted discharges in 2004 were 1,008,051 pounds, the majority of which was ammonia nitrogen (approximately 783,000 pounds), and also phosphorus and strontium (slightly more than 100,000 pounds each). No IJC-critical pollutants were the subject of permitted (i.e., quantity average limit) discharge amounts.

3.7.4. Summary and Conclusions for the River Raisin AOC, Monroe County, MI

3.7.4.1 Hazardous Waste Sites

ATSDR evaluated one hazardous waste site in Monroe County MI with a Public Health Hazard Category of from 1 to 3: Consolidated Packaging Corp. The soil and sediment at this site is contaminated with the IJC-critical pollutants PCBs, B(a)P, lead, and mercury. Onsite groundwater, contaminated with PCBs, may discharge into the River Raisin. Because monitoring data are inadequate to determine whether chemicals in completed exposure pathways pose a public health hazard, the site is considered an Indeterminate Public Health Hazard (Category 3).

Issues for Follow-Up

Consolidated Packaging Corporation: In its 2002 health consultation, ATSDR recommended additional monitoring to determine concentrations of surface soil contaminants. Additional issues for follow-up include determining whether groundwater contaminated with PCBs actually is discharging to the River Raisin.

3.7.4.2 TRI Data

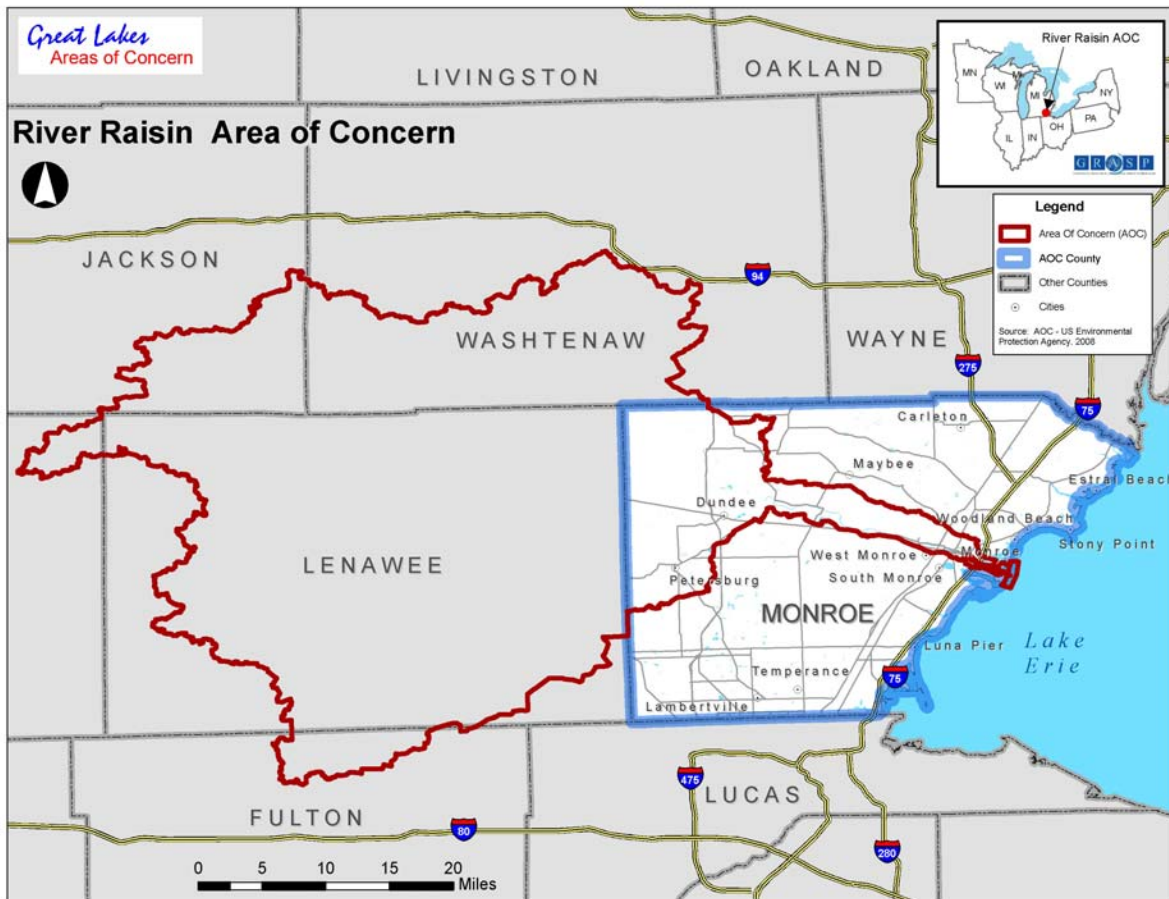
Onsite TRI releases in Monroe County MI totaled 16,700,032 pounds, the majority of which was released to air, followed by releases to soil. Releases to water were minimal. Of these releases, only 66,177 pounds (0.4%) were IJC-critical pollutants. The IJC-critical pollutants included PCDDs and PCDFs (released to air), lead and lead compounds (primarily to land), mercury and mercury compounds (to air and land), and hexachlorobenzene (to air). The major onsite releases ($\geq 500,000$ pounds) of non-IJC chemicals were of hydrochloric acid, ethylene, sulfuric acid, and hydrogen fluoride (to air); and barium compounds (primarily to land).

3.7.4.3 NPDES Data

The NPDES permitted discharges for Monroe County, MI are summarized in Table 3.7-D. The total average annual permitted discharges in 2004 were 1,008,051 pounds—mostly ammonia nitrogen (approximately 783,000 pounds)—and phosphorus and strontium (slightly more than 100,000 pounds each). No IJC-critical pollutants were the subject of permitted (i.e., quantity average limit) discharge amounts.

3.7.4.4 Beneficial Use Impairments (BUIs)

Restrictions on fish and wildlife consumption at this site are listed as impaired. Several specific restrictions are in force as well as general advisories for mercury at inland lakes and rivers. Further information is available at the EPA Web site (<http://www.epa.gov/glnpo/aoc/>).



Chemical	IJC Tracking Number	Total Air Emissions	Surface Water Discharges	Underground Injection	Releases to Land	Total Onsite Releases	Total Offsite Releases	Total On- and Offsite Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.007667447	No data	0	0	0.007667447	0	0.007667447
LEAD	8	3.79	No data	0	1160.5	1164.29	1	1165.29
LEAD COMPOUNDS	8	965	161	0	62622	63748	5911.75	69659.75
MERCURY	9	58	No data	0	0	58	0	58
MERCURY COMPOUNDS	9	879.6	1	0	313	1193.6	0.1	1193.7
HEXACHLOROBENZENE	11	13.6	0	0	0	13.6	0	13.6
	Total IJC	1919.997667	162	0	64095.5	66177.49767	5912.85	72090.34767
1,2,4-TRIMETHYLBENZENE		24250	No data	0	0	24250	0	24250
1,3-BUTADIENE		90717	No data	0	0	90717	0	90717
AMMONIA		89097	980	0	0	90077	0	90077
ANTIMONY COMPOUNDS		250	No data	0	0	250	500	750
ARSENIC COMPOUNDS		406	1200	0	40000	41606	0	41606
BARIUM COMPOUNDS		8937	8800	0	1750000	1767737	0	1767737
BENZENE		137898	No data	0	0	137898	0	137898
BENZO(G,H,I)PERYLENE		3136.2	0	0	0	3136.2	0	3136.2
BERYLLIUM COMPOUNDS		48	0	0	12000	12048	0	12048
CERTAIN GLYCOL ETHERS		47598	No data	0	0	47598	0	47598

CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	2478	2320	0	78800	83598	12842	96440		
COMPOUNDS	250	49	0	28000	28299	0	28299		
DIISOCYANATES	41	493022	0	0	41	0	41		
ETHYLBENZENE	53100	No data	0	0	53100	0	53100		
ETHYLENE	1524027	No data	0	0	1524027	0	1524027		
ETHYLBENZENEETH YLENE		531001524027	No data	0	0	53100152 4027	0	53100152 4027	
	551000	No data	0	0	551000	0	551000		
MANGANESE	245	No data	0	461	706	53	759		
MANGANESE COMPOUNDS	3279	6729	0	0	96008	0	96008		
METHANOL	27300	No data	0	0	27300	0	27300		
METHYL ETHYL KETONE	24250	No data	0	0	24250	0	24250		
METHYL ISOBUTYL KETONE	17250	No data	0	0	17250	0	17250		
NAPHTHALENE	35053	No data	0	0	35053	0	35053		
N-BUTYL ALCOHOL	30250	No data	0	0	30250	0	30250		
NICKEL	635	No data	0	0	670	0	2571		
NICKEL COMPOUNDS	1019	863	0	0	60882	6	60888		
POLYCYCLIC AROMATIC COMPOUNDS	15693.5	0	0	39	15732.5	0	15732.5		
SELENIUM COMPOUNDS	9000	2800	0	6900	18700	0	18700		
NICKEL COMPOUNDS		1019		863		0	59000	608 82	6 88
POLYCYCLIC AROMATIC COMPOUNDS		15693.5	0	0	39		15732.5	0	15732.5

VANADIUM COMPOUNDS	6084	4200	0	175300	185584	0	185584
XYLENE (MIXED ISOMERS)	367313	No data	0	0	367313	0	367313
TRICHLOROETH YLENE	121	No data	0	0	718	0	718
ZINC COMPOUNDS	6994	4528	0	130005	141527	0	214299
	13877691. 7	35491	0	175300	16633854 .7	0	16725424.7
	367313121	35653	0	0597	36731371 8	0	367313718

Table 3.7- C TRI Releases (in pounds 2001) for River Raisin AOC

DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2 3	0.007667447	No data	0	0	0.007667447	0	0.007667447
LEAD	8	3.79	No data	0	1160.5	1164.29	1	1165.29
LEAD COMPOUNDS	8	965	161	0	62622	63748	5911.75	69659.75
MERCURY	9	58	No data	0	0	58	0	58
MERCURY COMPOUNDS	9	879.6	1	0	313	1193.6	0.1	1193.7
HEXACHLOROBENZENE	11	13.6	0	0	0	13.6	0	13.6
Total IJC		1919.997667	162	0	64095.5	66177.49767	5912.85	72090.34767
1,2,4-TRIMETHYLBENZENE		24250	No data	0	0	24250	0	24250
1,3-BUTADIENE		90717	No data	0	0	90717	0	90717
AMMONIA		89097	980	0	0	90077	0	90077
ANTIMONY COMPOUNDS		250	No data	0	0	250	500	750
ARSENIC COMPOUNDS		406	1200	0	40000	41606	0	41606
BARIUM COMPOUNDS		8937	8800	0	1750000	1767737	0	1767737
BENZENE		137898	No data	0	0	137898	0	137898
BENZO(G,H,I)PERYLENE		3136.2	0	0	0	3136.2	0	3136.2
BERYLLIUM COMPOUNDS		48	0	0	12000	12048	0	12048
CERTAIN GLYCOL ETHERS		47598	No data	0	0	47598	0	47598
CHROMIUM		2661	No data	0	35	2696	458	3154
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANVAAL REGION)		2478	2320	0	78800	83598	12842	96440
COBALT COMPOUNDS		250	49	0	28000	28299	0	28299
COPPER COMPOUNDS		2222	3022	0	353500	358744	3038	361782
DIISOCYANATES		41	No data	0	0	41	0	41
ETHYLBENZENE		53100	No data	0	0	53100	0	53100

ETHYLENE		1524027	No data	0	0	1524027	0	1524027
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		9901000	No data	0	0	9901000	0	9901000
HYDROGEN FLUORIDE		551000	No data	0	0	551000	0	551000
MANGANESE		245	No data	0	461	706	53	759
MANGANESE COMPOUNDS		3279	6729	0	86000	96008	0	96008
METHANOL		27300	No data	0	0	27300	0	27300
METHYL ETHYL KETONE		24250	No data	0	0	24250	0	24250
METHYL ISOBUTYL KETONE		17250	No data	0	0	17250	0	17250
NAPHTHALENE		35053	No data	0	0	35053	0	35053
N-BUTYL ALCOHOL		30250	No data	0	0	30250	0	30250
NICKEL		635	No data	0	35	670	1901	2571
NICKEL COMPOUNDS		1019	863	0	59000	60882	6	60888
POLYCYCLIC AROMATIC COMPOUNDS		15693.5	0	0	39	15732.5	0	15732.5
SELENIUM COMPOUNDS		9000	2800	0	6900	18700	0	18700
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		777000	No data	0	0	777000	0	777000
TOLUENE		102089	No data	0	0	102089	0	102089
TRICHLOROETHYLENE		15000	No data	0	0	15000	0	15000
VANADIUM COMPOUNDS		6084	4200	0	175300	185584	0	185584
XYLENE (MIXED ISOMERS)		367313	No data	0	0	367313	0	367313
ZINC (FUME OR DUST)		121	No data	0	597	718	0	718
ZINC COMPOUNDS		6994	4528	0	130005	141527	72772	214299
	Total Non-IJC	13877691.7	35491	0	2720672	16633854.7	91570	16725424.7
	Total	13879611.7	35653	0	2784767.5	16700032.2	97482.85	16797515.05

Table 3.7-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the River Raisin AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	3			
Monroe County, MI	3	DETROIT EDISON MONROE POWER PLANT	48161DTRTD3500E	MONROE
		HOLCIM (US) INC. - DUNDEE PLANT	48131DNDCM6211N	DUNDEE
		J. R. WHITING GENERATING PLANT	48157JRWHT4525E	ERIE
Lead and lead compounds	6			
Monroe County, MI	6	DETROIT EDISON FERMI 2 PLANT	48166DTRTD6400N	NEWPORT
		DETROIT EDISON MONROE POWER PLANT	48161DTRTD3500E	MONROE
		DIAMOND ELECTRIC MFG. CORP.	48131DMNDL110RE	DUNDEE
		HOLCIM (US) INC. - DUNDEE PLANT	48131DNDCM6211N	DUNDEE
		J. R. WHITING GENERATING PLANT	48157JRWHT4525E	ERIE
		NORTH STAR STEEL CO. MICHIGAN DIV.	48161NRTHS3000E	MONROE
Mercury and mercury compounds	4			
Monroe County, MI	4	DETROIT EDISON MONROE POWER PLANT	48161DTRTD3500E	MONROE
		HOLCIM (US) INC. - DUNDEE PLANT	48131DNDCM6211N	DUNDEE
		J. R. WHITING GENERATING PLANT	48157JRWHT4525E	ERIE
		NORTH STAR STEEL CO. MICHIGAN DIV.	48161NRTHS3000E	MONROE
Hexachlorobenzene	1			
Monroe County, MI	1	DETROIT EDISON MONROE POWER PLANT	48161DTRTD3500E	MONROE

Table 3.7-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, River Raisin AOC

	Total IJC	0
BARIUM, TOTAL (AS BA)		401.50
COPPER, TOTAL (AS CU)		390.55
HYDROGEN SULFIDE		1.10
NITROGEN, AMMONIA TOTAL (AS N)		783477.25
PHOSPHORUS, TOTAL (AS P)		108458.66
SELENIUM, TOTAL (AS SE)		1416.20
SILVER, TOTAL (AS AG)		80.30
STRONTIUM, TOTAL (AS SR)		113150
THALLIUM, TOTAL (AS TL)		675.25
	Total Non-IJC	1008050.81
	Total	1008050.81

3.8. Rouge River AOC, Wayne and Oakland Counties, MI

The Rouge River has four main branches that flow primarily through Wayne and Oakland Counties, discharging into the Detroit River near the south end of Zug Island. Oakland County is relevant not only to the Rouge River AOC, but also to the Clinton River AOC, discussed in Section 3.9 of this document (see AOC map at end of chapter and in Appendix 1).

3.8.1. Hazardous Waste Sites Relevant to the Rouge River AOC

ATSDR has evaluated the data for hazardous waste sites in Wayne and Oakland Counties, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions—for sites that had public health hazard Categories of 1–3 at some point during their assessment history—together with information regarding the type and location of the site and the date and type of assessment document, are summarized in Tables 3.8-A and 3.8-B. The total number of sites is 23—17 in Wayne County and 6 in Oakland County.

Table 3.8-A Hazardous Waste Sites in Wayne County, Michigan

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remediation Status
Carter Industrial, Inc., Detroit MID980274179	HA	1992	2	Deleted from NPL	Completed
Ford Motor Co. Allen Park Clay Mine, Allen, Park MID980568711	HA	1994	3	Non NPL	Completed
Gratoit Trailer Park, Detroit MISFN0507941	HC	1999	2	Non NPL	Ongoing
Joy Road Dump/Holiday Park/Holiday Nature Preserve, Westland MISFN0507950	HC	2000	2	Non NPL	Ongoing
Lower Ecorse Creek Sump, Wyandotte MID985574227	HV HA	1993 1995	1 4	Deleted from NPL	Completed
Master Metals Inc. #2, Detroit MID039108824	HC HC	1997 2005	2 5	Non NPL	Completed
Packard Plant, Detroit	HC	1998	2	Non NPL	Ongoing

MIR000037689					
Proposed Beard Street School, Detroit	HC	2001	3	Non NPL	Ongoing
MIXCRA704000	HC	2002	5		
Wholesale Russell/Mack	HC	1997	2	Non NPL	Completed
MIXCRA327000, MISFN0507878					
Old World Trade Center, Detroit	HC	1997	2	Non NPL	Ongoing
MI0001094465					
EQ Resource Recovery Fire, Romulus	HC	2006	1	Non NPL	Completed
MID060975844					
FWS-Detroit River, Wayne County	HC	2007	2	Non NPL	Ongoing
MIN000509205					
Grand Haven, Hamtramck	HC	2006	2	Non NPL	Completed
MIDCRA05D000					
Michigan Industrial Finishers, Hamtramck	HC	2005	1	Non NPL	Completed
MIN000509131					
Mill Street Plant Brownfield Redevelopment, Ecorse	HC	2005	3	Non NPL	Ongoing
MIXCRA973000					
WorldMed Mercury, Detroit	HC	2006	2	Non NPL	Completed
MIN000509958					
Zonolite Co/W.R. Grace, Dearborn	HC	2005	2	Non NPL	Completed
MIXCRA822000					
Federal Marine Terminal Riverview,	HC	2003	2	Non NPL	Ongoing
MID980504765					

3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard, 5=No Public Health Hazard
 HA=Public Health Assessment, HC=Health Consultation, SRU=Site Review and Update

In the public health assessment and in other health-related documents listed in the table, ATSDR conducted further evaluation of the data for the Public Health Hazard Category 1–3 sites. These evaluations are discussed in the following subsections, in the same order as in Tables 3.8-A and 3.8-B, with the Wayne County sites discussed first, followed by the Oakland County sites, which as stated are relevant to the Clinton River AOC as well as to the Rouge River AOC.

3.8.1.1 Carter Industrials, Inc.

This site is a former scrap metal yard in Detroit (Wayne County was extensively contaminated with PCBs (from electrical capacitors and transformers salvaged at the site) and metals, including lead. The sewers that drained the site contained PCBs in their sediments, and the sewer effluent drained into the Detroit River. As of 1992, PCB-contaminated surface soils from nearby properties had been piled on the Carter site, and the piles of waste had been covered. The site was eventually fenced, and the transformers and barrels containing PCBs were removed. A surface water runoff collection and activated carbon treatment system had been installed. According to ATSDR, EPA estimated that the total amount of PCBs in the soils on the site could be nearly 17 tons. Information regarding this site is taken from the 1992 ATSDR public health assessment and the 2003 EPA NPL fact sheet.

Demographic Data: The Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	1,444
Females aged 15-44	3,199
Adults 65 and older	1,734

Public Health Outcome Data: ATSDR noted that in future public health assessments of the site it will conduct an evaluation of health outcome data. The results of a 1986 Michigan Department of Public Health study of 235 blood samples from people living in the residential area surrounding the site showed no remarkably high PCB concentrations compared with the general population. Blood lead was checked in 60 subjects. Levels were higher than the then-CDC 25- $\mu\text{g}/\text{DL}$ level of concern in only 5 of those subjects; and 3 of them were 3 years or less in age and therefore unlikely to have been on the site.

ATSDR Conclusions: In 1992, ATSDR concluded that due to the presence of hazardous substances on the site and the difficulty of maintaining site security, this site was categorized as a *Public Health Hazard* (Category 2). Inhalation of PCB-contaminated fugitive dusts was considered a principal route of exposure—PCBs were found in particulates in the rain gutters of nearby-homes. The sampling, however, appears to have preceded the removal of PCB-contaminated soil from yards adjacent to the site and the covering of the mounds of soil. Although PCBs also were found in the storm sewers that drain the site and empty into the Detroit River, the greatest concern was for direct exposure of trespassers to the onsite PCB-contaminated soil. Nevertheless, blood samples from the surrounding residents, taken before any remediation of the site and the surrounding area, did not indicate that the residents' exposures exceeded those of the general population.

As reported in the EPA fact sheet, extensive remediation of the site, including removal of the contaminated soils and disposal offsite in a TSCA landfill and cleanup of the sewer line, was conducted and completed in 1996. The site was deleted from the NPL in 1997. The site therefore no longer releases contaminants or acts as a contaminant reservoir.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants PCBs and lead, as well as other contaminants previously discussed were identified at this site during ATSDR's assessment of exposure-related issues. For a more complete listing of the hazardous substances that were found at the site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.1.2 Ford Motor Co. Allen Park Clay Mine

The Allen Park Clay Mine landfill, located in Allen Park (Wayne County, MI) is operated by the Ford Motor company, which developed a clay mine on the site before 1956. Starting in 1956, the area has been filled with wastes from the Ford Motor Company Rouge River Plant. EPA classified some of these wastes (e.g., electric arc furnace dust and decanter tank tar sludge) as hazardous. From 1980 to 1986 the hazardous wastes were deposited separately in a hazardous waste management area at the site. This area was closed in 1986, the leachate collection system was expanded, and a clay cap was installed. Information regarding this site is taken from the 1994 ATSDR public health assessment.

Public Health Outcome Data: The Michigan Cancer Foundation conducted two studies of cancer incidence for the communities surrounding the site, and ATSDR performed an evaluation and follow up:

- **1983 Cancer Study:** The occurrence of cancer from 1973 to 1981 was evaluated in two census tracts that comprised the Snow Woods area of Dearborn. In comparison with rates for the City of Dearborn, Wayne County, and the tri-county area (Wayne, Oakland, and Macomb Counties), the only statistically significant excesses of cancer were brain cancer in both men and women and liver cancer in women. Because the neighborhoods were predominantly white, comparisons were made by age and sex for the white population only. Risk factors such as occupational history, smoking, alcohol use, and residential history were not taken into account.
- **1989 Cancer Study:** This study was a follow-up and expansion of the 1983 study. The study included a total of 10 census tracts in the communities of Snow Woods, Melvindale, and Allen Park, all of which surround the Allen Park Clay Mine, and considered cancer occurrence from 1973 to 1986. The comparison communities were the City of Dearborn (excluding Snow Woods) and Wayne County (excluding the three study communities). Methods of comparison were similar to the 1983 study, except that the brain cancer cases, occupational, smoking, and residential histories were obtained from relatives by telephone interview. The total numbers of cancer cases for the study area were lower than expected, based on rates for the comparison populations of City of Dearborn and Wayne County. The only higher-than-expected cancer rate was in Snow Woods residents, with 16 cases of brain cancer over the 14-year study period versus 6 expected. Although histories for 2 of the 16 cases could not be determined, 9 of the 16 were found to have lived near the site for 20 years or more. All but one of the 7 men with brain cancer smoked, and 5 of the 7 had worked in occupations with exposure to car engine exhaust. Only one of the women with brain cancer smoked, however, and no consistent occupational history appeared among the women.

ATSDR evaluated the two previous studies and concluded that from 1973 to 1986 the results indicate a consistent, higher-than-expected number of cases of brain cancer in Snow Woods. ATSDR evaluated the current information on the number of brain and liver cancers in the study communities from 1973 to 1990. An excess in brain cancer rates occurred in Snow Woods from

1973 to 1990, but liver cancer rates in the three study communities were comparable to those in Wayne County and to the other surrounding counties, Macomb and Oakland. The excess brain cancers could not, however, be attributed to the Allen Park Clay Mine site: no completed environmental and human exposure pathways were found for the site, the information about potential pathways does not indicate lead, and carcinogenic PAHs are not at concentrations that could account for the incidence of brain cancer. Some occupational exposures, however, might be related to brain cancer.

ATSDR Conclusions. In 1994, ATSDR concluded that because additional information was needed to evaluate possible air exposure pathways, particularly with regard to past exposures to airborne carcinogenic PAHs, this site was categorized as an *Indeterminate Public Health Hazard* (Category 3).

No completed exposure pathways for human populations have been identified, however, and the elevated occurrence of brain tumors seen in one of the communities near the site is not attributable to site contaminants. Remediation at this site has been completed.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants PAHs and lead, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues.

3.8.1.3 Gratiot Trailer Park

The Gratiot Trailer Park was an abandoned 16-acre trailer park in northeast Detroit (Wayne County). The property contained three abandoned buildings and was strewn with 20 collapsed, overturned, and burned trailers, with abandoned cars and boats, abandoned above-ground storage tanks, and trash from unauthorized dumping. Although the site was partially fenced, access to the site was not effectively restricted. The site was surrounded by industrial properties, airport property, and a park. The information on this site is taken from the 1999 health consultation performed by ATSDR as part of a Brownfields project.

ATSDR Conclusion: In 1999 ATSDR concluded that because of the physical hazards from the trash, trailers, tanks, and other debris, and the lack of effective restriction of access, this site was categorized as a *Public Health Hazard* (Category 2). Also, some contaminants in soil were present at concentrations high enough to be of concern. Abandoned buildings definitely contained asbestos in amounts that require removal, and likely contain lead paint. Exposure to soil containing antimony, arsenic, benzo(a)pyrene, copper, dibenz(a,h)anthracene, lead, manganese, or PCBs was also possible.

In general, trespassers were considered unlikely to be exposed to doses that would cause adverse health effects. If, however, the site were developed for residential use, exposure to these contaminants might pose health risks. An interim remedial response is in progress.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC-critical pollutants PCBs, lead, and B(a)P, and other contaminants such as arsenic, copper, and manganese, were identified at this site during ATSDR's assessment of exposure related issues.

3.8.1.4 Joy Road Dump/Holiday Park/Holiday Nature Preserve

The Joy Road/Holiday Park Dump is in the City of Westland (Wayne County), where unauthorized and undocumented dumping of household waste occurred. Rainwater runoff flows from the property into Tonquish Creek, which in turn empties into the Middle Branch of the

Rouge River approximately 1 mile from the property. The information on this site was taken from the 2000 health consultation performed by ATSDR as part of a Brownfields project.

ATSDR Conclusions: : Because of the physical hazards presented when rubbish and waste surface, as well as the lack of monitoring data, this site was categorized as a *Public Health Hazard* (Category 2). This site is an area of a park where unauthorized dumping of household waste occurred. As of March 2008, remediation had been completed.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC-critical pollutant lead, as well as arsenic and copper were at concentrations above ATSDR's health-based screening values.

3.8.1.5 Master Metals Inc. #2

From 1965 to 1983, the now-abandoned Master Metals property was used as a lead smelter. In the late 1980s, ferrous sulfate heptahydrate was produced on the property. The site (size not reported) is surrounded by industrial/commercial properties, a correctional facility, and a residential development. The information on this site is taken from the 1997 health consultation prepared by ATSDR as part of a Brownfields project.

ATSDR Conclusions: In 1997 ATSDR concluded that because of very high concentrations of lead (10,000–100,000 ppm) in surface soil on the property, this site was categorized as a *Public Health Hazard* (Category 2). Also, abandoned buildings on the property pose physical hazards from deterioration and partial collapse and from containers of laboratory chemicals labeled as sodium hydroxide pellets, hydrofluorosilic acid, carbon tetrachloride, nitric acid, formaldehyde, and other chemicals. Lead in very high concentrations was found in soil throughout the property. Trespassers and workers from the neighboring trucking operation who use the area for materials storage could, if spending a major portion of the day on the property, incidentally ingest enough lead from soil to pose a health hazard. Also, cadmium levels in soil are high enough that anyone spending a major portion of the day on the property might incidentally ingest cadmium at doses of health concern.

As of 1997, no clean-up of the highly contaminated soil had been performed, and containers of hazardous chemicals were located in the deteriorating buildings on the site, which were not secure from trespassers. An adjacent firm used a portion of the site for materials storage. In 2005 the site was updated to a *No Apparent Public Health Hazard* (Category 4), because of no human exposure and off-site lead contamination had been remediated.

IJC Critical Pollutants Identified within ATSDR Documents

During ATSDR's assessment of exposure related issues the IJC critical pollutant lead, as well as other contaminants previously discussed, were identified at this site.

3.8.1.6 Packard Plant

The Packard Plant property is a complex of buildings in Detroit (Wayne County) used from 1907 to 1956 for automobile and truck manufacturing. Since 1960 the property has served as an industrial park. Large sections remain vacant, however, and are subject to continued deterioration and trash accumulation. The information regarding this site is taken from the ATSDR 1998 health consultation, prepared as part of a Brownfields project.

ATSDR Conclusions: In 1998 ATSDR concluded that because of the physical hazards from the waste materials (including old tires and bundled plastic) and the decay of the buildings, this site was a *Public Health Hazard* (Category 2).

Lead-containing paint and asbestos-containing insulation were present in the buildings. Proper handling of these materials is necessary to prevent exposure to workers or nearby residents. Concentrations of lead in soil were within the range typically found in urban areas near buildings the age of the Packard Plant buildings. Paint chips collected within the complex during a site inspection visit in July 1997 contained lead. An interim remedial response is in progress.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues the IJC critical pollutants PCBs and lead, as well as other contaminants previously discussed, were identified at this site.

3.8.1.7 Proposed Beard Street School/New Beard Elementary School

The site of the New Beard Elementary School, a 6.45-acre property in Detroit (Wayne County), has a long history of industrial use that deposited contaminants in the soil. The information on this site is taken from the 2002 health consultation by ATSDR that was performed as part of the Brownfields Redevelopment Assessment of the property.

ATSDR Conclusions: In 2002, ATSDR originally concluded that this site was an *Indeterminate Public Health Hazard* (Category 3) because subsurface soil samples contained contaminants at levels potentially of health concern, and adequate data on surface soil were not available. Yet after a review of the additional soil data obtained after the original assessment, and taking into account the physical barriers to exposure, ATSDR concluded that the property posed *No Public Health Hazard* (Category 5).

During ATSDR's assessment PCBs, B(a)P, and lead, as well as other contaminants including arsenic, were identified at this site. Site remediation included removal of the existing surface soil, removal of remaining PCB-contaminated soil, and installation of a site cap on all areas of the site not covered by pavement or the school's slab foundation. The contaminants remaining in the soil under the cap/pavement/slab at concentrations exceeding health-based screening values were arsenic, B(a)P, and cyanide. ATSDR determined that there was no completed exposure pathway. The property is to be inspected regularly to ensure that the protective coverings remain effective.

IJC Critical Pollutants Identified within ATSDR Documents

During ATSDR's assessment of exposure related issues the IJC critical pollutants B[a]P, PCBs, and lead, as well as other contaminants previously discussed, were identified at this site.

3.8.1.8 Wholesale Russell/Mack

The Wholesale Russell/Mack property is a former industrial and residential block in Detroit (Wayne County). All buildings have been removed, and the surrounding blocks are primarily industrial and commercial, with one block of condominiums. The information on this site is taken from the ATSDR 1997 health consultation as part of a Brownfields project.

ATSDR Conclusions: In 1997, ATSDR concluded that this site was a *Public Health Hazard* (Category 2) primarily because of food waste dumped on the property, which could present health risks from decay and which could attract disease-carrying insects and rodents. Chemical contamination in one area of the property was also of concern.

During ATSDR's assessment of exposure issues The IJC-critical pollutant lead and B(a)P were identified at this site. The site has subsequently been redeveloped for commercial use and no longer presents an imminent health hazard.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues the IJC critical pollutants B[a]P, DDT, lead, mercury, and PCBs were identified at this site.

3.8.1.9 Old World Trade Center

The approximately 10-acre Old World Trade Center (Kelsey-Hayes) property is a former Detroit (Wayne County) industrial plant. From 1955 to 1977, the Kelsey-Hayes Company machined cast-iron brake components there. After 1977 the remaining machinery and stock were removed and the buildings vacated. Parts of the property were then used for flea markets, storage, and warehousing. But many thousands of drums containing corrosive, volatile, or flammable chemicals remained on the property. Despite a substantial removal effort in 1996, many drums still remained on the site and were open or on their sides—evidence of spills and leaks was also present. Information regarding this site is taken from the 1997 ATSDR health consultation performed as part of a Brownfields project.

ATSDR Conclusions: In 1997, ATSDR concluded that this site was a *Public Health Hazard* (Category 2) due to the physical hazards posed by the collapsing building, broken glass, and other debris. In addition, although soil concentrations of contaminants did not present an imminent health hazard, they were considered a potential long-term health hazard. Groundwater was not tested, but it was not used for drinking water in the area. As of March 2008, remedial actions are ongoing.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants lead and B[a]P, as well as other contaminants previously discussed were identified at this site during ATSDR's assessment. .

3.8.1.10 Mill St. Plant Brownfield Redevelopment

The site was the Mill Street Plant Brownfield in Ecorse, Wayne County, MI. The property is a former 58-acre steel mill built in 1923 and in operation until the 1960s. The City of Ecorse plans to redevelop the site into an office complex and subdivision with up to 30 new homes. In April 2004 the Michigan Department of Environmental Quality conducted a property reconnaissance to gather information to be used in the development of a sampling plan for redevelopment assessment. Old buildings, storage tanks, a pump house, electrical transformers and a scale house were identified as physical hazards. Information on this site is taken from the 2005 ATSDR health consultation.

ATSDR Conclusions: In 2005 ATSDR concluded that this site posed an *Indeterminate Public Health Hazard* (Category 3) because the physical hazards at this site present a public health hazard. Access to the site was not restricted as evidenced by the refuse and the graffiti. People accessing the site are not likely to be exposed to elevated concentrations of chemicals for a period of time that would result in adverse health effects. Although at the time of the assessment the environmental contamination at this site posed no apparent public health hazard, construction workers and future residents could be exposed to concentrations of chemicals in the soils, and such exposure could result in adverse health effects. Contamination that may be in the soil under the buildings has not been assessed. A possibility remains that drums are still buried on the

property. Therefore, until the property is further characterized, the environmental contamination at this site poses a future *Indeterminate Public Health Hazard* (Category 3)..

In July 2004 Ecorse, MI, the site owner, began processes to improve the environmental safety of the site. The city agreed to follow through with MDCH oversight to complete work as needed, and remediation is ongoing.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants lead, PAHs, and mercury, as well as other contaminants previously discussed were identified at this site during ATSDR's assessment.

3.8.1.11 Zonolite Co/WR Grace

The site was the former W.R. Grace (WRG) Dearborn Plant in Dearborn, Wayne County, MI. The WRG Dearborn plant is located at 14300 Henn Street in Dearborn, consists of 2.72 acres, and has a single 16,000-square foot building used to process vermiculite into attic insulation and lightweight concrete and aggregate. The original site consisted of a railroad spur, where vermiculite was off-loaded, two storage silos, exfoliation furnaces, and bagging/processing space. This plant probably started processing vermiculite in the early 1950s and continued until its closing in 1989. The site is currently owned and operated by Die, Mold & Automation Components, Inc. (DMACI), which produces N-Forcer nitrogen gas springs and wear plates. DMACI had operated their light industrial facility on a site west of WRG, but expanded their operations onto former WRG property in 1992. The storage silos and exfoliation furnaces that were on the site have been dismantled, and the railroad spur is no longer used. A walk-through revealed no evidence of the exfoliation process anywhere on the property. The WRG Dearborn plant is being studied as a part of the National Asbestos Exposure Review (NAER) Phase I investigation because of the high volume of vermiculite processed there and the high levels of Libby asbestos (LA) fibers likely released during the exfoliation process. Information from this site is taken from 2005 ATSDR health consultation.

ATSDR Conclusions: In 2005 ATSDR concluded that this site posed a *Public Health Hazard* (Category 2). The Michigan Department of Community Health (MDCH) concluded that former workers at the WRG Dearborn plant were exposed to airborne levels of Libby asbestos (LA) above then-current occupational standards. Consistent and repeated exposure to airborne LA at these elevated levels would increase the risk of asbestos-related diseases and therefore posed a public health hazard to former employees. Former workers may have exposed household members to asbestos fibers if they did not shower or change clothes before leaving work. Although data are insufficient to assess household contact exposure, it is likely that these contacts were also exposed.

This pathway therefore posed a past public health hazard. The presence of asbestos-contaminated material (ACM) within the main building posed an indeterminate public health hazard to current workers at the Dearborn site before ACM was removed in December 2003. Likewise, exposure of household contacts of DMACI workers before December 2003 posed an indeterminate public health hazard. It is likely that this pathway has been eliminated and therefore represents no apparent health hazard to workers or their household contacts; however, efforts are ongoing to verify this conclusion. Areas of residual LA contamination remain in the soil on the site of the former WRG facility. Exposure of workers, visitors, trespassers, and contractors to LA contaminated soil on the site poses an indeterminate public health hazard. Changes in the condition or use of the property may exacerbate on-site exposure.

ATSDR concluded the following for the community surrounding the Dearborn site. The people in the community around the site during the time the Dearborn plant processed Libby vermiculite could have been exposed to LA fibers by disturbing or playing in on-site soil or waste piles, from plant emissions, from waste rock brought home for personal use, or from indoor household dust that contained Libby asbestos from one or more outside sources. Insufficient information is available to determine whether these exposures occurred, how often they may have occurred, or in what concentrations of airborne LA may have been present during potential exposures. Because critical information is lacking, these past exposure pathways for community members are considered to be indeterminate public health hazard. Plans to perform sampling in the surrounding neighborhood are ongoing and may lead to a reevaluation of this hazard category as appropriate.

The Dearborn plant no longer process vermiculite at the site. The pathways for current or future community exposure to airborne LA from facility emissions and to on-site piles have been eliminated, yet there remains an indeterminate health hazard from on-site soil. A small but potential risk still remains from residual vermiculite contamination in the on-site soil, either from off-site migration of the soil or from resident exposure to unrestricted areas of the DMACI property. Plans to perform sampling in the surrounding neighborhood are ongoing and may lead to a reevaluation of this hazard category.

Residential indoor exposure to household dust containing LA fibers from past plant emissions or waste rock brought home for personal use is considered no apparent health hazard for present and future community members. A small but potential risk still exists from off-site migration of the residual vermiculite contamination in the on-site soil. Plans to perform sampling in the surrounding neighborhood are ongoing and may lead to a reevaluation of this hazard category.

Currently, persons in the community could be exposed to airborne LA from waste rock used as fill material, for gardening, or for paving driveways. This exposure pathway is an indeterminate public health hazard because insufficient information is available to determine the extent of the use of waste material in the community. Ongoing interviews and data collection from the neighborhood may lead to a reevaluation of this hazard category.

The remedial actions have been completed.

IJC Critical Pollutants Identified within ATSDR Documents: No IJC critical pollutants were identified at this site during ATSDR's assessment of exposure related issues.

3.8.1.12 FWS-Detroit River International Wildlife (aka Grassy Island)

Grassy Island is a 72-acre artificial island in the Detroit River, east of the city of Wyandotte, MI. In 1959, the U.S. Army Corps of Engineers (COE) constructed a 6-foot confining dike around the island and, in 1960 began disposing of sediments from the Rouge River collected during maintenance dredging. The major industrial facilities along the Rouge River in the 1960s produced steel fabricated metals, heavy chemicals, pulp and paper, cement, and meat-rendering products. The primary wastes released to the river were iron, oxygen-demanding material, bacteria, suspended solids, oil, pickling liquor, phenols, chlorides, cyanides, toxic metals and ammonia. Other contaminant sources to the Rouge River included sewage treatment plant effluent and stormwater outfalls. Over a 22-year period, Grassy Island received over 3 million cubic yards of dredge materials. In 1987, the U.S. Fish and Wildlife Service (FWS) took over the management of Grassy Island, but the only active management of the island consisted of posting signs on the property and conducting various surveys. In March 2006 FWS requested assistance

from the Michigan Department of Community Health (MDCH) to determine what public health issues, if any, the contamination on the island presents, currently or in the future. Information for this site is taken from the 2007 ATSDR health consultation.

ATSDR Conclusions: In 2007 ATSDR concluded that contamination of Grassy Island posed *No Apparent Public Health Hazard* (Category 4) for exposures to persons who access the island no more than once a week. Exposure to the average concentration of the various contaminants in the soil is not expected to cause adverse health effects. Yet physical hazards remain on Grassy Island: steep dike walls, treacherous riprap, and dense vegetation with no established foot-trails. The integrity of the dike walls remains in question, since the exterior 6-foot dike was not built with engineering controls. Eating deer taken from Grassy Island poses an *Indeterminate Public Health Hazard* (Category 3). Current contaminant levels in these animals are not known. Eating fish taken from the Detroit River near Grassy Island poses *No Apparent Public Health Hazard* (Category 4) if people adhere to the advice in the MDCH Family Fish Consumption Guide.

The FWS placed and maintains warning signs around the perimeter of the island. FWS is also working with MDCH to address the contamination and routinely to inspect and ensure the stability of the dike.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues, the IJC critical pollutants B(a)P, DDT, PCBs, lead and mercury, as well as other contaminants previously discussed, were identified at this site.

3.8.1.13 Michigan Industrial Finishes (MIF)

This site is at 9045 Vincent Street in the City of Hamtramck, Wayne County, MI. The property is located in an area of mixed residential and light industrial land uses. MIF manufactured industrial paint finishes. In October 2004 ATSDR determined that hazardous wastes stored on the MIF property presented an Urgent Public Health Hazard. Approximately 4,000 deteriorating or leaking drums containing paint and solvent wastes were stored on-site without protection from weather or fire. Testing the contents of these drums indicated that the waste material was ignitable, was corrosive, or was both. Information on this site is taken from the 2005 ATSDR health consultation.

ATSDR Conclusions: In 2005 ATSDR concluded that the site posed an *Urgent Public Health Hazard* (Category 1) in the past and a *Public Health Hazard* (Category 2) currently. Access to the MIF site was not adequately restricted. The condition of the northeast gate and the west fence suggested that trespassers were entering the site. Trespassers, particularly children, could have vandalized the barrels or caused a fire or explosion. Additionally, contact with corrosive materials in drums stored outside the building could have posed a hazard. At the time of the Department of Community Health site visit, VOC air contaminants emanating from the MIF property posed an *Indeterminate Public Health Hazard* (Category 3). Since production has ceased at the MIF site, this pathway currently poses *No Public Health Hazard* (Category 5).

Removal action to address chemical drum disposal and clean-up of contamination was completed in June 2005.

IJC Critical Pollutants Identified within ATSDR Documents: No IJC critical pollutants were identified at this site during ATSDR's assessment of exposure related issues.

3.8.1.14 EQ Resource Recovery Explosion and Fire

In 2005, a hazardous waste tank at the EQ Resource Recovery plant in Romulus, Michigan exploded and burned, setting off fires in surrounding tanks. USEPA assisted the local hazmat team with response activities and with containment assessments. USEPA and the Local Wayne County Health Department requested an assessment of the air, soot, and fire-related debris. Michigan Department of Community Health and ATSDR provided toxicological expertise in assessing public health implications of the contamination. The explosion and fire at the facility posed an urgent public health hazard warranting an evacuation that local officials in fact ordered. Today, concentrations of volatile organic compounds (VOCs) in the air, polycyclic aromatic hydrocarbons (PAHs) in soot, and metals in soot and debris pose no apparent short-term public health hazard. Additionally, any residual contaminant concentrations posed no apparent current or future public health hazard.

ATSDR Conclusions: In 2006, Michigan Department of Community Health and ATSDR concluded that the August 2005 explosion at the EQ Resource Recovery facility posed an *Urgent Public Health Hazard* (Category 1). The fire and the release of chemicals from the facility threatened the immediate safety and welfare of residents and businesses downwind from the site. The evacuation that occurred was prudent and necessary. Once the fire was contained to the facility, the physical hazard was reduced. VOCs and PAHs were present below screening levels for short-term exposure. Weathering, along with cleaning, has removed much of the soot in the soil. While chemicals from soot may still be present in some areas of people's yards, the concentrations should not pose a public health concern. Metals did not exceed screening levels.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues the IJC critical pollutants heavy metals and PAHs as well as other contaminants previously discussed were identified at this site.

3.8.1.15 City of Riverview Boat Launch Ramp (aka Federal Marine Terminals)

The City of Riverview boat launch is an approximately 4-acre parcel located in the city of Riverview, Wayne County, MI. The ramp is on the west bank of the Detroit River's Trenton Channel. The boat launch area includes an asphalt-paved parking lot and three boat docks. The Wyandotte Chemicals Corporation (now owned by BASF AG of Germany) was opened in 1951, and in the 1950s and 1960s used a 30-acre parcel north of the boat launch ramp to dispose of laboratory wastes, cinders, construction debris, rock, clay, and general plant refuse. In 1998 the Michigan Department of Environmental Quality (MDEQ) determined that previously conducted remedial actions were not sufficient to prevent migration of contaminants from the property, particularly through groundwater discharging to the Detroit River. The MDEQ and BASF are continuing negotiations about the proper remedy for the property. Several studies of the BASF Riverview property have established that the groundwater is heavily contaminated with metal, ammonia, cyanide, volatile organic chemicals (VOCs), semi-volatile organic chemicals (SVOCs) polychlorinated biphenyls (PCBs) and chlorinated dibenzo-p-dioxins and dibenzofurans. The groundwater emanating from the BASF property discharges directly into the Detroit River, upstream of the boat launch ramp. Arsenic, benzo(a)pyrene, dibenzo(a,h)anthracene, PCBs, and total dioxin total equivalencies (TEQs) have been detected in sediment samples taken from the boat launch at concentrations exceeding MDEQ residential direct contact criteria (DCC). Data on human consumption of sport-caught fish show that total dioxin TEQs were detected in surface water at concentrations that exceed the applicable MDEQ ambient water quality criteria

(AWQC). Mercury concentrations in surface water in the Detroit River near the boat launch may present a human health hazard via ingestion of sport caught fish.

Information on this site is taken from the 2003 ATSDR health consultation.

ATSDR Conclusions: In 2003, ATSDR concluded that sediment and surface water at the city of Riverview boat launch, Riverview, MI, present No Public Health Hazard under current site conditions. Recreational users of the ramp would not be exposed to contaminants at levels expected to cause adverse health effects. Surface water samples taken from the Detroit River near the boat launch, however, exceed the water quality standard for mercury protective of human consumption of sport fish. Fish samples from the Detroit River have been shown to contain levels of mercury that could be harmful to human health. Therefore, the site poses a *Public Health Hazard* (Category 2). Fish consumption advisories are in places that recommend limiting the amount of fish eaten from this area. Thus if existing fish advisories are followed, mercury concentrations in fish will not pose a health hazard.

MDCH continues to evaluate fish from the area and makes updates to the fish advisory as needed.

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues the IJC critical pollutants B(a)P, dibenzo(a,h)anthracene, dioxins, PCBs, and mercury, as well as other contaminants previously discussed, were identified at this site.

3.8.1.16 Hamtramck Site (Grand Haven Area in the neighborhood of Hamtramck)

The I-75/Caniff "Grand Haven" Area is located in the City of Hamtramck, MI, bordering Detroit and Highland Park. The neighborhood lies on both sides of Interstate 75, between Interstate 94 and Davison Highway. Three metals smelters operated historically near this site: Continental Metals, Federated Metals, and Commodity Metals. Continental Metals and Federated Metals are on Russell Street. Commodity Metals was not on the original list investigated by Michigan Department of Environmental Quality (MDEQ). The presence of lead-based paint is a significant component of this hazard. Information for this site is taken from a 2006 ATSDR evaluation.

Public Health Outcome Data: To determine the proportion of children with elevated blood lead levels (BLLs) in the I-75/Canniff area, existing data from 2000 to 2004 was compiled for children under 6 years old. For the Hamtramck area (ZIP code 48212), 5050 children were tested. Of those, 444 (or 9%) confirmed cases of elevated BLLs were found. For the one-half mile radius circle centered on the I-75/Caniff area, 755 children were tested. Of those, 79 (or 10.6%) confirmed cases of elevated BLLs were found. Several exposures are probably involved, including exposure to contaminated soil and lead-based paints.

Article II. **Demographic Data:** Children 6 years old or under in the "Grand Haven" Area from the ZIP Code 48212 were tested for Blood Lead Levels (BLLs). The sensitive subpopulations include

Children 6 years and younger	22,132
Females aged 15-44	Not Reported
Adults 65 and older	Not Reported

ATSDR Conclusions: In 2006, ATSDR concluded that ongoing exposure to lead in the "Grand Haven" area is putting residents, especially children 6 years old and younger, at risk of experiencing lead-related health effects and poses a *Public Health Hazard* (Category 2). The

combined exposure to contaminated soil, lead-based paints, and other potential sources of lead has likely contributed to elevated blood lead levels seen in residents of Hamtramck and the surrounding areas. Remediation of contaminated soil should be concurrent with remediation of home environments to be effective in lowering blood lead levels.

In March 2008, EPA reported that the Grand Haven site has been successfully remediated through the joint efforts of local, county, and state governments.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutant, lead, was identified at this site during ATSDR's assessment of exposure related issues.

3.8.1.17 Worldmed Mercury Spill Site

World Medical Relief (WMR) is a nonprofit organization that owned and operated a building in Detroit, MI. In June 2005, mercury beads and pools from past breakage of mercury-bearing medical devices were discovered in a room. An environmental contractor was hired to remove the visible mercury beads. The Michigan Department of Community Health (MDCH) offered to screen the cleaned-up area, and the first measurements revealed an average mercury concentration of 22,000 ng/m³ in the breathing zone at a location 10 feet outside a closed door. Inside the room, the levels rose to 50,000 ng/m³ and continued to climb. The floor of the building had very few windows. After sealing the room, the USEPA was contacted and mobilized a team to screen the building for mercury. The mercury vapor concentrations inside the room ranged from 20,000 to 200,000 ng/m³. EPA determined that removal was necessary, and after this was accomplished, the reported breathing zone levels ranged from 1000 to 3200 ng/m³ in the equipment room and from 1,800 to 24,000 ng/m³ in the adjacent areas within the room. WMR was advised to seal the floor to suppress residual mercury vapor sources and to do follow-up screening of the building in the winter. WMR offered free mercury urine testing for the employees, and of the 22 persons tested, only 3 had detectable levels. Information on this site is taken from the 2006 ATSDR health consultation.

ATSDR Conclusions: In 2006 ATSDR concluded that the mercury vapor levels measured in the equipment storage and repair room posed a *Public Health Hazard* (Category 2). In addition, the vapors emanating from the room could result in unacceptable air concentrations at a distance from the room, especially when one or both of its doors were open. This indoor air quality was exacerbated by the scarcity of windows and other fresh outside air sources. After remedial activities were conducted, the concentrations of mercury in the air were greatly reduced. WMR had floors sealed as recommended. A follow-up sampling in February 2006 indicated an average concentration of about 1000 ng/m³ in the breathing zone with floor level readings of from 1000 ng/m³ to 24,000 ng/m³ on the floor. As of March 2006, the room is not being actively used, but anyone who enters must wear shoe covering to prevent track-out. MDCH will resample the room when the outside temperature is warm enough to determine if any change in concentrations would necessitate additional recommendations. Removal actions were completed in July 2005.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutant mercury was identified at this site during ATSDR's assessment of exposure related issues.

Table 3.8-B Hazardous Waste Sites in Oakland County, MI

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remediation Status
Cemetery Dump, Rose Center MID980794663	HA	1988	3	Deleted from NPL	Completed
	HA	1992	4		
Continental Aluminum Corp., New Hudson MI0001941699	HC	2003	3	Non NPL	Ongoing
	HC	2005	5		
Hi-Mill Manufacturing Co., Highland MID005341714	HA	1991	3	NPL	Completed
J & L Landfill, Rochester Hills MID980609440	HA	1989	3	NPL	Completed
	HA	1993	4		
	SRU	1996	5		
Rose Township Dump, Rose Township MID980499842	HA	1988	3	NPL	Ongoing
Springfield Township Dump, Davisburg MID980499966	HA	1988	3	NPL	Completed

3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard, 5=No Public Health Hazard

HA=Public Health Assessment, HC=Health Consultation, SRU=Site Review and Update

3.8.1.18 Cemetery Dump

The 10-acre Cemetery Dump, located ½ mile south of Rose Center (Oakland County), is a former sand and gravel pit where illegal dumping occurred, including the burying of an estimated 250 barrels of industrial hazardous wastes. In 1988 these drums were excavated, along with the surrounding contaminated soil, and disposed of at a RCRA-approved landfill. Information regarding this site is taken from the 1992 ATSDR public health assessment.

Demographic Data: Approximately 1,000 persons resided within 1 mile of the site.

ATSDR Conclusions: This site was originally categorized as an *Indeterminant (formerly potential) Public Health Hazard (Category 2)*. A subsequent 1992 health assessment concluded that the site poses *No Apparent Public Health Hazard (Category 4)*. Several rounds of monitoring of residential wells, and of onsite monitoring wells, starting in 1981 and continuing through 1989 (post-remediation), have not detected elevated contaminant levels. The IJC-critical

pollutant PCBs and lead as well as benzene were detected in the contents of some of the deteriorated drums and contaminated soil, but concentrations were not exceptionally high, and those materials were removed during site remediation. No contaminants were detected in the groundwater sampled. In April, 1995 the site was deleted from the National Priorities List (NPL) after the completion of site remediation.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants lead 4,4' -DDE, polychlorinated biphenyls (PCBs – including Aroclors 1242, 1248, 1254, and 1260), as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.1.19 Continental Aluminum Company

The Continental Aluminum Corporation is an active aluminum recycling foundry in New Hudson (Oakland County), MI. This facility reports releases through TRI, and its emissions are thus included in that section of this document. Residential communities are located north, northeast, and southwest of the plant, and an elementary school is located ½ mile northeast of the plant. The information regarding this site is taken from the 2003 and 2005 ATSDR health consultations for this site.

ATSDR Conclusions: Because levels of chemical emission during possible high release events (odor events) have not been determined, because of the presence of a potentially exposed population, and because of a plausible relationship between community health concerns and the chemicals released by the facility, this site was categorized as an *Indeterminate Public Health Hazard* (Category 3).

Stack testing and air dispersion modeling performed by the Michigan Department of Environmental Quality (MDEQ) indicates that emission of chlorine, hydrogen chloride, and hydrogen fluoride were below health-based screening levels for air. These data are not adequate, however, because concentrations during odor events may be higher. In addition, emissions data for other chemicals, including the IJC-critical pollutants PCDDs and PCDFs, have not yet been provided for evaluation.

Community members reported health effects that appeared episodic, and thus possibly occurred during breaches of Continental Aluminum's pollution control devices. These effects included irritation to the mucous membranes, nose bleeds, sore throat, coughing, difficult breathing, burning eyes, headache, and nausea. A metallic or varnish taste and burnt plastic odor also have been reported during odor events.

In 2005, ATSDR concluded that although aluminum, barium, beryllium, cadmium, chromium, copper, lead, manganese, selenium, and lead were present in air from emissions, the levels were not of health concern. Consequently the site posed *No Apparent Public Health Hazard* (Category 4).

IJC Critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure related issues the IJC critical pollutants lead and mercury, as well as other contaminants previously discussed, were identified at this site. For a more complete listing of hazardous substances found at this site please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.1.20 Hi-Mill Manufacturing Company

The Hi-Mill Manufacturing Company is on a 4 ½-acre site west of Highland Township, Oakland County, MI. It borders on a state recreation area and is adjacent to a pond and wetlands that may connect to Waterbury Lake. The company has been fabricating tubular aluminum, copper, and brass components for the air conditioning and refrigeration industries since 1946. Before 1983 the company deposited wastewater from pickling operations in an onsite seepage lagoon, and also used spray evaporation as a means of disposal. After October 1983 the waste disposal methods shifted to recycling rinse water and offsite disposal of the remaining waste in a RCRA hazardous waste facility—after neutralization and storage in underground tanks. Following the discovery of elevated levels of chromium, aluminum, copper, nickel, and zinc in lagoon water and sludge, the contaminated water, sludge, and adjacent soil were removed. The lagoon was filled with sand, and in 1988 the pickling operation was eliminated. The information regarding this site was taken from the 1991 health assessment conducted by ATSDR.

Demographic Data: Demographic profile, from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	138
Females aged 15–44	292
Adults 65 and older	167

ATSDR’s Conclusions: In 1991, ATSDR concluded that this site posed an *Indeterminate Public Health Hazard* (Category 3) due to the potential threat to human health from exposure to contaminants and because of inadequate data regarding the contaminant levels and duration of exposure. Trichloroethylene at concentrations above the EPA drinking water standard was found in onsite wells used for the plant’s drinking water and manufacturing processes. The employees were given bottled water because of complaints about the quality of the well water before discovery of the trichloroethylene. However, the well water was used for other purposes until the end of 1988, at which time the wells were sealed. Thus before 1988, inhalation and dermal exposures to trichloroethylene were possible. Although groundwater concentrations of trichloroethylene and chromium in onsite monitoring of the shallow groundwater aquifer exceeded the EPA standard for drinking water, the shallow aquifer has never been used for drinking water. Residential drinking water wells were not contaminated.

In November 1983, Hi-Mill removed 142 cubic yards of contaminated soil; 34,400 gallons of contaminated sludge; and 63,300 gallons of contaminated water. The lagoons were backfilled with clean sand. In 1989, a new well was installed to provide Hi-Mill employees with safe drinking water. On February 21, 1990, the site was placed on the United States Environmental Protection Agency's (U.S. EPA's) National Priorities List. Between 1989 and 1992, Hi-Mill conducted a remedial investigation (RI), and a feasibility study (FS) under an Administrative Order on Consent signed in October 1988. On September 28, 1993, U.S. EPA issued a ROD, which, to prevent use of the shallow groundwater beneath the Hi-Mill property, required 30 years of groundwater monitoring and institutional controls. A Consent Decree was entered on December 7, 1994, and institutional controls put in place on December 22, 1994. Quarterly monitoring of groundwater began in October 1995, and in July 2000, U.S. EPA approved the PRP's request for a monitoring reduction. In September 2005, U.S. EPA evaluated site conditions and concluded that in the short-term the cleanup decision continues to be protective of human health and the environment.

IJC Critical Pollutants Identified within ATSDR Document:

The IJC critical pollutants lead and mercury, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.1.21 J & L Landfill

The J & L Landfill is in Avon Township (Oakland County), MI. Two other landfills are adjacent to the site and at least seven others are within ½ mile of the site. The approximately 17-acre site was originally mined for sand and gravel. Starting in 1951, the pits were used for disposal of slag from steel manufacturing and other wastes, followed by dust from electric arc furnace operations. By 1980, the site had been filled to grade, and the landfill was closed. Approximately 455,000 cubic yards of material has been estimated for this landfill. Drainage ditches from the site eventually flow into the Clinton River, 1 mile northeast of the site. As of 1993, the landfill had no liner and was covered with an inadequate clay cap. Subsequent remediation included installation of an improved cap, fencing, and restriction of groundwater use. The information regarding this site was taken from the 1989 and 1993 ATSDR public health assessments, a 1996 ATSDR Site Review and Update, and the 2003 EPA NPL fact sheet and Record of Decision (ROD).

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	489
Females aged 15–44	997
Adults 65 and older	346

ATSDR Conclusions: In 1989 ATSDR categorized this site as an *Indeterminate (formerly potential) Public Health Hazard* (Category 2) because metals were found in waste piles, but no data were available to evaluate possible exposures. Because site access was restricted and institutional controls deterred the use of groundwater in the site area, in 1993 ATSDR concluded that the site poses *No Apparent Public Health Hazard* (Category 4). Site contaminants included alpha-chlordane, arsenic, benzene, lindane, manganese, and thallium. A subsequent 1995 ATSDR Site Review and Update concluded that exposures were not likely to exceed health concerns, although trespassers could contact contaminants in soil. Vegetation on the contaminated areas should, however, decrease exposure. The site has been remediated through capping, fencing, and restriction of groundwater use.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical pollutant, DDT and PAHs, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessments. For a more complete listing of the hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.1.22 Rose Township Dump

The Rose Township Dump (Rose Township/Demode Road site) is a 110-acre site in the northwest corner of Oakland County, MI. From 1966 to 1968, paint sludges and other wastes from Detroit area industries were discharged onto surface soil and into shallow lagoons, and

drums containing wastes were left on the surface or buried. In 1988, ATSDR conducted a public health assessment, which is the source of much of the information presented here.

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	66
Females aged 15–44	138
Adults 65 and older	41

ATSDR Conclusions: In 1988 ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3) because of limited offsite monitoring. Soil and water were contaminated with metals, PCBs, VOCs, ketones, phthalate esters, and pesticides. An important note is that groundwater is used for drinking water in the area, and future exposure is possible.

MDEQ initiated a removal action at the site in 1980, removing over 5,000 drums for the site. In July 1982, the site was placed on the National Priorities List (NPL). In 1985 and 1986, EPA removed an additional 31 drums of wastes and about 20 cubic yards of PCB-bearing soil and fenced portions of the site. The Agency issued a Record of Decision (ROD) in 1987, and reached a cleanup agreement (Consent Decree) with 12 Detroit area companies in 1989. During 1992 and 1993, the 12 companies constructed and operated a mobile incinerator at the site to treat PCB-bearing surface soils. Over 21,000 cubic yards (38,000 tons) of soil were treated by incineration. In March 1992, an interim groundwater pump and treatment system was constructed and operated to contain the groundwater contaminant plume while incineration was ongoing. A soil vapor extraction (SVE) unit was constructed and began operating in February 1996. The SVE system treated approximately 123,000 cubic yards of contaminated soils using 91 SVE wells. A four-week SVE spike test was implemented in October 2005, and the SVE system had removed and treated over 6,800 pounds of VOCs. In January 2006, EPA and MDEQ granted approval to shut down the SVE system based on the results of the spike test. The system was shut down on January 20, 2006. The EPA, in consultation with MDEQ, completed the first 5-year review of the cleanup in September 1997, the second 5-year review in June 2002, and a third 5-year review in June 2007. Steps have been taken to optimize the pumping capacity of the groundwater extraction system to achieve complete hydraulic capture. Extraction wells were fitted with larger pumps and pumping rates were increased. Analysis of the changes is expected to be completed by June 2008. Vinyl chloride had been consistently detected in one residential well, and to mitigate this problem, a treatment system was installed at that residence in April 2005. The treatment system has been successful in reducing the vinyl chloride concentration to nondetectable levels.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical pollutants lead and mercury, as well as other contaminants previously discussed, were identified at this site during ATSDR's assessment of exposure related issues. For a more complete listing of the hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.1.23 Springfield Township Dump

This 4-acre site is in Oakland County MI, approximately 35 miles northwest of Detroit. Between 1966 and 1968, liquid wastes and sludges were dumped into an onsite pit, and approximately 1,500 drums of waste materials were also deposited on the site. Drum contents included paint sludges, solvents, PCBs, oils, and grease. In 1979–1980 the drums were removed and disposed

of offsite. In 1983 approximately 711 tons of contaminated soil were removed for offsite disposal. Public access to the site was restricted by fencing, and no signs of trespass were evident. The information on this site is taken from the 1988 ATSDR public health assessment and the 2003 EPA NPL fact sheet for this site.

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this NPL site:

Children 6 years and younger	149
Females aged 15–44	278
Adults 65 and older	65

ATSDR Conclusions: In 1988, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). ATSDR concluded that because of the lack of monitoring data for a potential exposure pathway and because of consumption of potentially contaminated wildlife, populations were possibly at risk. Onsite soil was contaminated with the IJC-critical pollutants PCBs and lead, as well as other contaminants including VOCs and cadmium. No exposure pathway was completed for soil and sludges, and offsite monitoring indicated that migration to adjacent wetlands was not significant. Onsite groundwater in the area of the former disposal pit was contaminated with trichloroethene and 1,1-dichloroethene, but offsite monitoring and domestic wells were not contaminated with site-related chemicals. Given the apparent direction of groundwater flow toward a cluster of residences northeast of the site, future migration to residential wells is possible. Because of the potential for some of the site contaminants to bioaccumulate (e.g., PCBs), ATSDR was concerned about the lack of data regarding contaminant levels in tissues of game animals.

In September 1990, EPA issued a Record of Decision (ROD) for the soil and groundwater. The PRP group installed the groundwater cleanup system in 1994 and has been operating it since. Beginning in summer 1999, the PRPs excavated the PCB-laden surface soils and treated them using an on-site soil washing system. A soil cover was then placed over the treated area and grass was planted. An ISVE and air sparging equipment installation was completed in early August 2000. An inspection on August 22, 2000, determined the systems were operating properly. The PRPs asked to use *in-situ* chemical oxidation (ISCO) to accelerate the breakdown of VOCs in the groundwater. The ISCO process was completed in 2005. A 5-year review for the Springfield site was completed in 2004.

IJC Critical Pollutants Identified within ATSDR Document: The IJC critical pollutants lead, dieldrin, polychlorinated biphenyls (PCBs— including Aroclor 1242, 1250, and 1254) and polyaromatic hydrocarbon (PAH)-fluoranthene—as well as other contaminants previously discussed, were identified during ATSDR’s assessment of exposure related issues. For a more complete listing of the hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.8.2. TRI Data for the Rouge River AOC

The TRI onsite chemical releases for Wayne and Oakland Counties (combined) are summarized in Table 3.8-C. Total onsite releases in 2001 were 24,621,119 pounds, the majority of which were released to air and land. Little was released to surface water. Wayne County accounted for 89% and Oakland County accounted for 11% of the total onsite releases.

Of the total onsite releases, 1,693,551 pounds (6.9%) were IJC-critical pollutants. The IJC-critical pollutants released included PCDDs and PCDFs (primarily to air), and PCBs (>1,000,000 pounds), lead and lead compounds (> 400,000 pounds), mercury and mercury compounds, toxaphene, and hexachlorobenzene (primarily to land). The facilities that released these pollutants are listed in Table 3.8-D.

The major releases (\geq 500,000 pounds) of non-IJC chemicals were of hydrochloric acid aerosols, xylenes, certain glycol ethers, n-butyl alcohol, and toluene (primarily to air); and nickel compounds, selenium, and arsenic compounds (primarily to land).

3.8.3. NPDES Data for the Rouge River AOC

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.8-E. The total average annual permitted discharges in 2004 were 4,665,607 pounds, the majority of which was phosphorus. Ammonia nitrogen also was permitted to be discharged in substantial amounts (approximately 602,000 pounds).

The IJC-critical pollutants PCBs (0.08 pound), lead (approximately 5530 pounds) and mercury (102 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.8-F.

3.8.4. Summary and Conclusions for the Rouge River AOC

Two Michigan counties are relevant to this AOC: Wayne County and Oakland County. Oakland County also includes the Clinton River AOC (Section 3.9).

3.8.4.1 Hazardous Waste Sites

Wayne County: Seven of the 17 waste sites in Wayne County (reviewed in Sections 3.8.1.1 through 3.8.1.17) were assessed by ATSDR as part of Brownfields projects. One of the new sites added was also part of the Brownfields projects. For three of these sites, the major health concerns were not chemical exposure. The remaining five sites were contaminated with lead, some were contaminated with B(a)P, and one with PCBs. The extent of lead contamination was high at only one of these sites, the Master Metals Inc. #2 site, but the removal of lead has been completed. The Proposed Beard Street School has been cleaned up. The remedial responses for the Packard Plant and the Gratiot Trailer Park are in progress. The Wholesale Russell/Mack site has been successfully redeveloped for commercial use.

The two Wayne County hazardous waste sites (Carter Industrials, Inc., Ford Motor Co. Allen Park Clay Mine) have been remediated through clean-up or institutional controls. Human exposure to site-related contaminants is not currently occurring at concentrations or doses that exceed health-based screening values.

The Zonolite Co/W.R Grace site has been remediated. The FWS-Detroit River International Wildlife site has warning signs around the perimeter of the island, and FWS is working with the MDCH to address the contamination and to routinely inspect and ensure the stability of the dike. For the Michigan Industrial Finishes site, a removal action to address chemical drum disposal and clean-up of contamination was completed in 2005. For the EQ Resource Explosion and Fire, response to the explosion occurred in 2006. MDCH continues to evaluate fish from the City of Review Boat Launch Ramp (aka Federal Marine Terminals). Removal action for Worldmed Mercury Spill Site was completed in July 2005.

In the past, two of those hazardous waste sites may have contributed to the environmental burden of IJC-critical pollutants, particularly PCBs, B(a)P, and lead. Exposure may have included inhalation of fugitive dust and incidental ingestion and dermal contact with soil. Exposure at the third site (Lower Ecorse Creek) was to a cyanide compound.

Public health outcome data, available for the three hazardous waste sites, generally did not indicate unusual rates of health conditions, nor did they indicate an association with site-related exposures.

Oakland County: Of the six Oakland County sites, five have undergone remediation, and no evidence indicates that human exposure is occurring to site-related contaminants at levels of concern. Groundwater at two sites is, however, still undergoing extraction and treatment, and vapor extraction of subsurface soil is ongoing at one site.

In the past, three of the waste sites may have contributed to the environmental burden of the IJC-critical pollutants, lead (all 3 sites) and PCBs (2 sites); these pollutants were found primarily in soil.

The sixth site in this county was an active manufacturing facility that reports through TRI.

3.8.4.2 TRI Data

Onsite TRI releases in Wayne and Oakland Counties (combined) totaled 24,621,119 pounds in 2001, primarily to air and land. Wayne County accounted for 89% and Oakland County accounted for 11% of the total onsite releases.

Of the total onsite releases, 1,693,551 pounds (6.9%) were IJC-critical pollutants, mainly PCBs and lead compounds. The IJC-critical pollutants released were PCDDs and PCDFs (primarily to air), and PCBs, lead and lead compounds, mercury and mercury compounds, toxaphene, and hexachlorobenzene (primarily to land).

The major releases ($\geq 500,000$ pounds) of non-IJC chemicals were of hydrochloric acid aerosols, xylenes, certain glycol ethers, n-butyl alcohol, and toluene (primarily to air); and nickel compounds, selenium, and arsenic compounds (primarily to land).

3.8.4.3 NPDES Data

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.8-D. The total average annual permitted discharges in 2004 were 4,665,607 pounds, mostly phosphorus. Ammonia nitrogen also was permitted to be discharged in substantial amounts (approximately 602,000 pounds).

The IJC-critical pollutants PCBs (0.08 pound), lead (approximately 5530 pounds) and mercury (102 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.8-E.

3.8.4.4 Beneficial Use Impairments (BUIs)

Restrictions on fish and wildlife consumption are listed as impaired. PCB contamination has resulted in fish advisories in portions of all branches of the river. Lakes and impoundments also have advisories for mercury contamination which is reported to be a region-wide problem. Further information is available at the EPA Web site (<http://www.epa.gov/glnpo/aoc/>).

Table 3.8-C TRI Releases (in pounds, 2001) for the Rouge River AOC

POLYCHLORINATED BIPHENYLS	1	95	0	0	1247638	1247733	1974	1249707
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.003542994	0	0	0.0001764	0.003719394	0.0001764	0.003895794
LEAD	8	490.28628	1	0	6	497.28628	26664.5571	27161.84338
LEAD COMPOUNDS	8	18281.872	1036.8	0	405710.3	425028.972	961000.165	1386029.137
MERCURY	9	354.9	0	0	0	354.9	877.4	1232.3
MERCURY COMPOUNDS	9	428.633	0.003	0	13492.8	13921.436	6163.2	20084.636
TOXAPHENE	10	39	0	0	1690	1729	825	2554
HEXACHLOROENZENE	11	98	0	0	4189	4287	2467	6754
Total IJC		19787.6948	1037.803	0	1672726.1	1693551.598	999971.3223	2693522.92
1,1-DICHLORO-1-FLUOROETHANE		3491	0	0	0	3491	250	3741
1,2,3-TRICHLOROPROPANE		282	0	0	12084	12366	5887	18253
1,2,4-TRICHLOROBENZENE		180	0	0	7710	7890	3757	11647
1,2,4-TRIMETHYLBENZENE		430903	0	0	0	430903	296	431199
1,2-DIBROMOETHANE		50	0	0	0	50	0	50
1,2-DICHLOROETHANE		250	0	0	0	250	0	250
1,2-DICHLOROPROPANE		144	0	0	6529	6673	3180	9853
1,3-BUTADIENE		1390	0	0	0	1390	0	1390
1,4-DIOXANE		1469	0	0	60633	62102	29549	91651
2,4-DINITROPHENOL		1566	0	0	65046	66612	31712	98324
2,4-DINITROTOLUENE		1381	0	0	57203	58584	27871	86455
2,6-DINITROTOLUENE		229	0	0	9959	10188	4850	15038
2-ACETYLAMINO-FLUORENE		1195	0	0	49468	50663	29128	79791
2-CHLORO-1,1,1,2-TETRAFLUOROETHANE		28416	0	0	0	28416	0	28416
4,6-DINITRO-O-CRESOL		1359	0	0	56960	58319	33291	91610
4-NITROPHENOL		273	0	0	11712	11985	5704	17689
5-NITRO-O-TOLUIDINE		229	0	0	9959	10188	4850	15038

ACRYLAMIDE	212	0	0	9035	9247	4402	13649
ACRYLONITRILE	1342	5	0	34014	35361	19976	55337
ALUMINUM (FUME OR DUST)	2765	5	0	0	2770	18211	20981
ALUMINUM OXIDE (FIBROUS FORMS)	0	0	0	11515	11515	2803	14318
AMMONIA	211276	9433	0	0	220709	9358	230067
ANTHRACENE	4317	0	0	0	4317	0	4317
ANTIMONY	88	7200	0	0	7288	327150	334438
ANTIMONY COMPOUNDS	0	0	0	35010	35010	10994	46004
ARSENIC COMPOUNDS	0	0	0	2339396	2339396	1156116	3495512
ASBESTOS (FRIABLE)	0	0	0	137504	137504	21683	159187
BARIUM	0	0	0	0	0	96500	96500
BARIUM COMPOUNDS	112907	2283	0	90151	205341	1136062	1341403
BENZENE	87323	120	0	11829	99272	5826	105098
BENZO(G,H,I)PERYLENE	639.655761	0	0	1089	1728.655761	636.1001	2364.755861
BERYLLIUM COMPOUNDS	0	0	0	14185	14185	391	14576
BIPHENYL	1229	0	0	0	1229	0	1229
BROMOMETHANE	141	0	0	6036	6177	2941	9118
BUTYRALDEHYDE	7808	0	0	0	7808	37	7845
CADMIUM COMPOUNDS	750	0	0	72994	73744	351920	425664
CERTAIN GLYCOL ETHERS	957900	0	0	0	957900	41613	999513
CHLORDANE	5	0	0	277	282	219	501
CHLORINE	1934	328	0	0	2262	0	2262
CHLOROMETHANE	283	0	0	12120	12403	5905	18308
CHLOROPHENOLS	151	0	0	6364	6515	3097	9612
CHROMIUM	256	33	0	0	289	30133	30422
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	1780	264	0	325546	327590	556647	884237
COBALT COMPOUNDS	250	5	0	0	255	5	260
COPPER	5884	260	0	8	6152	37276	43428
COPPER COMPOUNDS	961	2292	0	56804	60057	215557	275614
CREOSOTE	5787	0	0	0	5787	0	5787
CRESOL (MIXED)	1312	0	0	0	1312	0	1312

ISOMERS)								
CUMENE	6666	0	0	0	6666	5	6671	
CYANIDE COMPOUNDS	505	0	0	8045	8550	3405	11955	
CYCLOHEXANE	52195	0	0	0	52195	0	52195	
DI(2-ETHYLHEXYL) PHTHALATE	374	0	0	14950	15324	7553	22877	
DIAMINOTOLUENE (MIXED ISOMERS)	8	90	0	5	103	0	103	
DIBENZOFURAN	6022	0	0	0	6022	0	6022	
DIBUTYL PHTHALATE	372	0	0	15711	16083	7662	23745	
DICHLOROMETHANE	26866	0	0	13652	40518	6650	47168	
DIETHANOLAMINE	4123	0	0	0	4123	0	4123	
DIISOCYANATES	1576	0	0	33275	34851	52956	87807	
DIMETHYL PHTHALATE	291	0	0	12366	12657	6027	18684	
DIMETHYLAMINE	1135	128	0	0	1263	0	1263	
ETHYLBENZENE	337881	2	50	13003	350936	6599	357535	
ETHYLENE	82199	0	0	0	82199	0	82199	
ETHYLENE GLYCOL	13893	23200	0	119538	156631	292823	449454	
ETHYLENE OXIDE	7083	240	0	11	7334	0	7334	
FORMALDEHYDE	300	0	0	0	300	0	300	
FREON 113	349	0	0	15165	15514	7384	22898	
HEPTACHLOR	0	0	0	23	23	0	23	
HEXACHLOROETHANE	542	0	0	12560	13102	6120	19222	
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)	3871400	0	0	0	3871400	0	3871400	
HYDROGEN FLUORIDE	237010	0	0	0	237010	0	237010	
ISODRIN	0	0	0	19	19	15	34	
ISOPROPYL ALCOHOL (MANUFACTURING, STRONG-ACID PROCESS ONLY,NO SUPPLIER)	250	0	0	0	250	3559	3809	
MALEIC ANHYDRIDE	19	0	0	0	19	0	19	
MANGANESE	2027	33	0	0	2060	15529	17589	
MANGANESE COMPOUNDS	15399	1588	0	112364	129351	3497278	3626629	
METHACRYLONITRILE	50	0	0	0	50	0	50	
METHANOL	213913	5	0	5	213923	104	214027	
METHYL ETHYL KETONE	175935	0	0	22559	198494	18968	217462	
METHYL IODIDE	532	0	0	23136	23668	11267	34935	

METHYL ISOBUTYL KETONE	266696	0	0	17568	284264	9322	293586
METHYL METHACRYLATE	1559	0	0	64735	66294	31535	97829
METHYL TERT-BUTYL ETHER	147376	0	0	0	147376	10	147386
NAPHTHALENE	29917	0	0	17710	47627	4560	52187
N-BUTYL ALCOHOL	751522	18828	0	0	770350	10	770360
N-HEXANE	88473	0	0	0	88473	51	88524
NICKEL	7262	36	0	0	7298	32019	39317
NICKEL COMPOUNDS	5883	443	0	3959913	3966239	2151900	6118139
NITRATE COMPOUNDS	267	110000	0	0	110267	639367	749634
NITRIC ACID	3767	0	0	9947	13714	58031	71745
NITROBENZENE	152	0	0	6469	6621	3151	9772
N-METHYL-2-PYRROLIDONE	306052	5	0	14361	320418	25222	345640
N-NITROSODIETHYLAMINE	229	0	0	9959	10188	0	10188
N-NITROSOPIPERIDINE	286	0	0	12453	12739	6065	18804
P-CHLOROANILINE	203	0	0	17425	17628	8513	26141
PHENANTHRENE	1941	0	0	0	1941	0	1941
PHENOL	3134	0	0	12243	15377	26056	41433
PTHALIC ANHYDRIDE	453	0	0	27546	27999	13447	41446
P-NITROANILINE	229	0	0	9959	10188	4850	15038
POLYCHLORINATED ALKANES	0	0	0	0	0	740	740
POLYCYCLIC AROMATIC COMPOUNDS	18539.30174	0	0	15169.8	33709.10174	11485.5	45194.60174
PROPYLENE	73880	0	0	0	73880	0	73880
PROPYLENE OXIDE	311	240	0	51	602	0	602
PYRIDINE	187	0	0	8274	8461	4032	12493
QUINOLINE	1674	0	0	0	1674	0	1674
SAFROLE	180	0	0	7821	8001	3809	11810
SEC-BUTYL ALCOHOL	480	5	0	1	486	0	486
SELENIUM	0	0	0	2552938	2552938	1247917	3800855
SILVER	0	0	0	64523	64523	31529	96052
SODIUM DICAMBA	1	0	0	0	1	0	1
SODIUM DIMETHYLDITHIO-CARBAMATE	203	0	0	17425	17628	8513	26141
SODIUM NITRITE	1262	0	0	5	1267	322	1589

STYRENE		15913	240	0	5	16158	870	17028
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		309917	0	0	0	309917	0	309917
TERT-BUTYL ALCOHOL		307	0	0	0	307	0	307
TETRACHLORO-ETHYLENE		382	0	0	0	382	0	382
TOLUENE		535035	9	0	13384	548428	12353	560781
TOLUENE DIISOCYANATE (MIXED ISOMERS)		338.5	0	0	18	356.5	0	356.5
TOLUENE-2,4-DIISOCYANATE		10	0	0	0	10	0	10
TRANS-1,3-DICHLOROPROPENE		147	0	0	6372	6519	3115	9634
TRICHLORFON		235	0	0	8313	8548	5251	13799
TRICHLOROETHYLENE		11611	0	0	11949	23560	6254	29814
TRICHLOROFLUORO-METHANE		365	0	0	15568	15933	7571	23504
TRIETHYLAMINE		27855	3104	0	0	30959	1500	32459
URETHANE		1000	0	0	0	1000	24018	25018
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)		58	0	0	0	58	10095	10153
VANADIUM COMPOUNDS		235	157	0	2968	3360	78003	81363
VINYL ACETATE		27569	0	0	0	27569	0	27569
VINYLDENE CHLORIDE		250	0	0	0	250	0	250
XYLENE (MIXED ISOMERS)		1874810	0	50	44538	1919398	22257	1941655
ZINC (FUME OR DUST)		757	0	0	249242	249999	33827	283826
ZINC COMPOUNDS		139458	8491	0	14622	162571	26293044	26455615
	Total Non-IJC	11597393.46	189072	100	11141001.8	22927567.26	39000301.6	61927868.86
	Total	11617181.15	190109.80	100	12813727.9	24621118.86	40000272.92	64621391.78

Table 3.8-D TRI Facilities Releasing IJC Critical Pollutants Onsite

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Polychlorinated biphenyls	1			
Wayne County, MI	1	WAYNE DISPOSAL INC.	48111WYNDS49350	BELLEVILLE
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	6			
Wayne County, MI	6	CARMEUSE LIME	48218DTRTL25MAR	RIVER ROUGE
		CARMEUSE LIME INC.	48217DTRTL310FO	DETROIT
		DETROIT EDISON RIVER ROUGE POWER PLANT	48218DTRTD1BELA	RIVER ROUGE
		DETROIT EDISON-TRENTON CHANNEL POWER PLANT	48183DTRTD4695W	TRENTON
		GMC MLCG HAMTRAMCK ASSEMBLY	48211CDLLC2500E	DETROIT
		MARATHON ASHLAND PETROLEUM L.L.C.	48217MRTHN1300S	DETROIT
Lead and lead compounds	31			
Oakland County, MI	7	AKZO NOBEL COATINGS INC.	48053KZCTN30BRU	PONTIAC
		AKZO NOBEL COATINGS INC. CAR REFINISHES & DECORATIVE COAT.	48341KZCTN2527B	PONTIAC
		CONTINENTAL ALUMINUM	48165CNTNN29201	NEW HUDSON
		DEBRON INDL. ELECTRONICS INC.	48083DBRNN591EX	TROY
		EATON CORP.	48308TNCRP1400S	ROCHESTER HILLS
		GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION
		GM PONTIAC ASSEMBLY CENTER	48058GMCTR8200P	PONTIAC
Wayne County, MI	24	AUTOALLIANCE INTL. INC.	48134MZDMT1MAZD	FLAT ROCK
		CARMEUSE LIME	48218DTRTL25MAR	RIVER ROUGE
		CARMEUSE LIME INC.	48217DTRTL310FO	DETROIT
		DCI AEROTECH	48238DCRTC7515L	DETROIT
		DETROIT EDISON RIVER ROUGE POWER PLANT	48218DTRTD1BELA	RIVER ROUGE
		DETROIT EDISON-TRENTON CHANNEL POWER PLANT	48183DTRTD4695W	TRENTON
		FORD MOTOR CO. DEARBORN ASSEMBLY PLANT	48121FRDM23001M	DEARBORN
		FORD MOTOR CO. LIVONIA TRANSMISSION PLANT	48150FRDMT36200	LIVONIA

		FORD MOTOR CO. MICHIGAN TRUCK PLANT	48184FRDMT38303	WAYNE
		FORD MOTOR CO. WAYNE ASSEMBLY	48184FRDMT37625	WAYNE
		FORD MOTOR CO. WAYNE INTEGRAL STAMPING	48184FRDMT37500	WAYNE
		GM PT ROMULUS ENGINE	48174GMCCP36880	ROMULUS
		GMC MLCG HAMTRAMCK ASSEMBLY	48211CDLLC2500E	DETROIT
		MARATHON ASHLAND PETROLEUM L.L.C.	48217MRTHN1300S	DETROIT
		MCLAREN PERFORMANCE TECHS.	48152MCLRN32233	LIVONIA
		NATIONAL STEEL CORP. GREATLAKES OPS.	48229GRTLKNO1QU	ECORSE
		PERMA-FIX OF MICHIGAN INC.	48192PRMFX18550	BROWNSTOWN
		ROUGE STEEL CO.	48121RGSTL3001M	DEARBORN
		TOWER AUTOMOTIVE PRODS. CO. INC.	48170TWRTM43955	PLYMOUTH
		UNISTRUT CORP.	48184NSTRT35660	WAYNE
		UNITED STATES GYPSUM CO. DETROIT PLANT	48218NTDST2DIVI	RIVER ROUGE
		VOIGHT & SCHWEITZER GALVANIZERS INC.	48239GLVNZ25425	REDFORD
		WAYNE DISPOSAL INC.	48111WYNDS49350	BELLEVILLE
		WYANDOTTE DEPARTMENT OF MUNICIPAL SERVICES	48192WYNNDT2555V	WYANDOTTE
Mercury and mercury compounds	12			
Oakland County, MI	1	GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION
Wayne County, MI	11	CARMEUSE LIME	48218DTRTL25MAR	RIVER ROUGE
		CARMEUSE LIME INC.	48217DTRTL310FO	DETROIT
		DETROIT EDISON RIVER ROUGE POWER PLANT	48218DTRTD1BELA	RIVER ROUGE
		DETROIT EDISON-TRENTON CHANNEL POWER PLANT	48183DTRTD4695W	TRENTON
		MARATHON ASHLAND PETROLEUM L.L.C.	48217MRTHN1300S	DETROIT
		NATIONAL STEEL CORP. GREATLAKES OPS.	48229GRTLKNO1QU	ECORSE
		PERMA-FIX OF MICHIGAN INC.	48192PRMFX18550	BROWNSTOWN

		ROUGE STEEL CO.	48121RGSTL3001M	DEARBORN
		UNITED STATES GYPSUM CO. DETROIT PLANT	48218NTDST2DIVI	RIVER ROUGE
		WAYNE DISPOSAL INC.	48111WYNDS49350	BELLEVILLE
		WYANDOTTE DEPARTMENT OF MUNICIPAL SERVICES	48192WYNNT2555V	WYANDOTTE
Toxaphene	1			
Wayne County, MI	1	WAYNE DISPOSAL INC.	48111WYNDS49350	BELLEVILLE
Hexachlorobenzene	1			
Wayne County, MI	1	WAYNE DISPOSAL INC.	48111WYNDS49350	BELLEVILLE

Table 3.8-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Rouge River AOC

Chemical	IJC Tracking Number	Discharge
OLYCHLORINATED BIPHENYLS (PCBS)	1	0.08
LEAD, TOTAL (AS PB)	8	5530.46
MERCURY, TOTAL (AS HG)	9	102.36
	Total IJC	5632.90
BARIUM, TOTAL (AS BA)		1237.35
BENZOIC ACIDS-TOTAL		3.65
BORON, TOTAL (AS B)		80300
CADMIUM, TOTAL (AS CD)		292
COPPER, TOTAL (AS CU)		7169.70
CYANIDE, TOTAL (AS CN)		9490
CYANIDE, FREE (AMEN. TO CHLORINATION)		266.45
HYDROGEN SULFIDE		0.62
NITROGEN, AMMONIA TOTAL (AS N)		601759.68
OCTYLPHENOL		73
P-CRESOL		1.10
PHENOLS		1388.10
PHOSPHORUS, TOTAL (AS P)		3945760.72
SELENIUM, TOTAL (AS SE)		146
SILVER, TOTAL (AS AG)		10.59
STRONTIUM,TOTAL (AS SR)		4653.75
TERPINEOL-ALPHA		1.10
THALLIUM, TOTAL (AS TL)		18.25
ZINC, TOTAL (AS ZN)		7403.01
	Total Non-IJC	4659975.07
	Total	4665607.97

Table 3.8-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Rouge River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	NPDES	City
Polychlorinated Biphenyls (PCBs)	2			
Wayne County, MI	1	DETROIT WWTP	MI0022802	DETROIT
Oakland County, MI	1	GM-PONTIAC NORTH CAMPUS	MI0056031	PONTIAC
Lead	5			
Wayne County, MI	5	DSC LTD-GIBRALTAR	MI0004227	GIBRALTAR
		DSC-TRENTON PLANT	MI0002399	TRENTON
		ROUGE STEEL CO	MI0043524	DEARBORN
		UNITED STATES STEEL-ECORSE	MI0002313	ECORSE
		UNITED STATES STEEL-ZUG ISLAND	MI0026786	RIVER ROUGE
Mercury	9			
Wayne County, MI	9	BASF-WYANDOTTE	MI0000540	WYANDOTTE
		DECO-RIVER ROUGE PLT	MI0001724	RIVER ROUGE
		DECO-SIBLEY QUARRY	MI0001953	TRENTON
		DETROIT WWTP	MI0022802	DETROIT
		GROSSE ILE TWP WWTP	MI0026191	GROSSE ILE
		S HURON VALLEY UA WWTP	MI0043800	ROCKWOOD
		TRENTON WWTP	MI0021164	TRENTON
		WAYNE CO-WYANDOTTE WWTP	MI0021156	WYANDOTTE
		WYANDOTTE ELECTRIC PLANT & WFP	MI0038105	WYANDOTTE

3.9. Clinton River AOC, Oakland and Macomb Counties, MI

The Clinton River, in southeastern Michigan just north of Detroit, flows into Lake St. Clair near the city of Mt. Clemens. The Clinton River AOC includes the Clinton River watershed, primarily in Oakland and Macomb Counties. Lake St. Clair is located between Lake Huron and Lake Erie, and is connected to Lake Erie by the Detroit River. The direction of flow is toward Lake Erie. About half of the Clinton River's flow is treated wastewater from six municipal wastewater treatment plants.

3.9.1. Hazardous Waste Sites Relevant to the Clinton River AOC

ATSDR has evaluated the data for hazardous waste sites in Oakland and Macomb Counties, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, together with information regarding the type and location of the site, and the date and type of assessment document, are summarized above in Tables 3.8-B and Table 3.9-A (Macomb County), for sites that at some point during their assessment history were categorized as public health hazard categories 1–3. Oakland County is relevant to both the Rouge River AOC and the Clinton River AOC.

Table 3.9 -A Hazardous Waste Sites in Macomb County, MI

Site Name, City, and CERCLIS ID	ATSDR Document Type	Year of Document	ATSDR Hazard Category	Site Type	Remedial Status
G & H Landfill, Utica MID980410823	HA	1989	3	NPL	Completed
Liquid Disposal, Ind., Utica MID67340711	HA SRU	1987 1992	3 3	NPL	Completed
South Macomb Disposal Authority, Macomb Township MID069826170	HA HA	1989 1995	3 2	NPL	Completed
Ten Mile/Lange/Revere Drainage System Site, St. Clair Shores, MI	HC	2003	3	Non-NPL	Completed

2=Public Health Hazard, 3=Indeterminate Public Health Hazard

HA=Public Health Assessment, SRU=Site Review and Update

Further evaluation of the data for the sites with public health hazard categories of 1–3 was conducted by ATSDR in the public health assessment and in other health-related documents listed in the table. The evaluations for Oakland County, MI were already discussed in Sections 3.8.1.18 through 3.8.1.23. The evaluations for waste sites in Macomb County are discussed in the following subsections.

3.9.1.1 G & H Landfill

The G & H Landfill is an approximately 70-acre site located in Shelby Township, Macomb County, MI, between the cities of Utica and Rochester. The landfill was a waste oil recovery facility from 1955 to 1967, and it was also used as an industrial and municipal landfill from 1955 to 1974. Waste oil containing PCBs was dumped into unlined ponds, and waste solvents and paint sludges were landfilled along with municipal waste. The site is bordered by the Clinton River; groundwater flow is towards the river. The information regarding this site is taken from the 1989 and 1992 public health assessments conducted by ATSDR, and from the 2003 EPA NPL fact sheet for this site.

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	594
Females aged 15-44	1,455
Adults 65 and older	564

Public Health Outcome Data: A 1982 health outcome data review compared infant mortality, low birth weight, age-adjusted death rates from cancer, heart disease, stroke, and accidents in Shelby Township—where the G & H Landfill is located—to state and county rates. It was determined that rates in Shelby Township were either comparable or lower than comparison populations.

ATSDR Conclusions: Because of the potential threat to human health from exposure to contaminants at concentrations that may result in adverse health effects, in a 1989 public health assessment ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). This conclusion was confirmed in the 1992 public health assessment. In the past this site may have contributed to the environmental burden of the IJC-critical pollutants, PCBs and lead, as well as other contaminants including VOCs. Because the site was fenced, onsite exposure was considered unlikely, except for remediation workers. The 1989 health assessment raised concerns that nearby residents and business might be exposed through the use of contaminated groundwater for potable and nonpotable purposes and through the consumption of fish and game from the Clinton River Fish (carp) in the Clinton River have high PCB levels, but other sources in addition to the G & H Landfill contribute to the pollution. EPA issued a cleanup decision in 1990, following completion of the RI/RS. Between 1982 and 1987, EPA performed several removal actions, including installing a site fence and removing small quantities of PCB-laden oil. Construction on the cleanup remedy began in September 1996. In 1993 through 1994, approximately 30 residences and four small businesses adjacent to the site were attached to the municipal water supply. Construction was completed in September 1999. The groundwater extraction system will be operated for at least 30 years. PRPs completed wetlands restoration work in September 1999. The site is now in the Operations and Maintenance phase. A second Five-Year Review of the site was completed in September 2006; the remedy remained protective of human health and the environment.

IJC Critical Pollutants Identified within ATSDR Documents: Contaminants of concern included the IJC-critical pollutants PCBs, lead, and PAHs. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.9.1.2 Liquid Disposal, Inc.

This former sand and gravel pit, located in Shelby Township, Macomb County, MI, is bordered by wetlands, the Clinton River, and an auto junkyard. From 1964 to 1968 it was used as a landfill. From 1968 through 1982 the site was used as a liquid waste incineration facility for volatile and semi-volatile chemicals including paint thinners, sludges, contaminated oils, and greases. Before incineration, wastes were stored in a lagoon, in below- and above-ground tanks, and in drums. As of 1987, the contents of the lagoons had been removed or stabilized, and the storage tanks and other containers were removed from the site. A crude leachate collection system was used with a sump pump to direct leachate back into the incinerator pit. Information regarding this site is taken from the 1987 ATSDR health assessment, and the 2003 EPA NPL fact sheet for the site.

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	364
Females aged 15–44	856
Adults 65 and older	477

ATSDR Conclusions: Because of inadequate information to assess the threat to human health from potential exposure to contaminants in soils and leachate in recreation areas near the site, the 1987 health assessment categorized this site as an *Indeterminate Public Health Hazard* (Category 3). A subsequent site review and update reached the same conclusion regarding the public health hazard category. In the past, this site probably contributed to the environmental burden of the IJC-critical pollutants PCBs, aldrin, and lead, as well as other contaminants, including VOCs. Although fencing prevented onsite exposure, because of potential offsite migration of contaminants. ATSDR remained concerned about exposure of people who used nearby recreational areas. More recently the site has been remediated by solidification of highly contaminated soil and debris with concrete, construction of an underground slurry wall, clay cap, and extraction wells, and soil replacement and revegetation of wetlands and other adjoining areas. USEPA determined that as of 1998, no evidence indicated that contaminants are migrating from the site.

All remedial construction activities were completed in 1997. Changes to the O & M plan have been formulated to better monitor the contamination within the slurry wall. The next Five-year review is scheduled to be completed by September, 2008.

IJC Critical Pollutants Identified within ATSDR Documents: Contaminants in onsite soil included the IJC-critical pollutants PCBs and lead. Onsite groundwater contained the IJC-critical pollutant aldrin at concentrations above the health-based screening values. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.9.1.3 South Macomb Disposal Authority

This 159-acre site is in Macomb Township, Macomb County, MI. It consists of two adjacent former municipal landfills. Approximately 680,000 cubic yards of municipal wastes were disposed of in one landfill, followed by approximately 1,200,000 cubic yards of wastes in the other landfill. Onsite groundwater and leachate are contaminated with organic and inorganic chemicals. The leachate formerly discharged from the landfill to McBride Drain, which flowed

to the North Branch of the Clinton River. Information on this site is taken from the 1995 ATSDR public health assessment and the 2003 EPA NPL fact sheet.

Demographic Data: Demographic profile from the 2000 U.S. Census for vulnerable populations living within 1 mile of this site:

Children 6 years and younger	301
Females aged 15–44	477
Adults 65 and older	89

Public Health Outcome Data: An ATSDR physician evaluated a “death survey” conducted by area residents. The data were considered insufficient due to the lack of information on the geographic boundaries of the survey, types of cancers, and important risk factors. The survey did not provide any clear connections between reported adverse health effects (hepatitis and skin rash in one person and cirrhosis in another) and possible exposure to landfill contamination.

ATSDR Conclusions: In the 1989 health assessment, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). In the 1995 health assessment, because exposures to contaminated environmental media have occurred, may potentially be occurring, and may occur in the future, ATSDR categorized this site as a *Public Health Hazard* (Category 2). This site may have contributed to the environmental burden of the IJC-critical pollutant lead, as well as other contaminants including VOCs, ammonia, cadmium, and nitrates. In addition, these contaminants were present in residential wells at levels exceeding health-based screening values. Arsenic was present at levels associated with an increased cancer risk. Completed exposure pathways (i.e., ingestion, inhalation, and dermal exposure to residential well water) have occurred in the past. Bottled water was supplied to 12 residences during 1983–1988, and in 1988 some residences were connected to the municipal water system. Monitoring data did not indicate contamination of their wells through 1995, but future contamination was a concern, as the leachate collection system reportedly did not capture the entire plume. Some leachate controls were in place, as well as a slurry wall on the north side to contain and collect contaminated groundwater.

The Remedial Design and Remedial Action were completed in the summer of 2005 and documented in EPA’s preliminary close-out report dated October 31, 2005. Five Year Reviews for the site will be on-going since the remedy does not allow for unlimited use and unrestricted exposure. By 2010, EPA will prepare the first five year to determine the ongoing short-term and long-term protectiveness of the site remedy.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC pollutant lead was identified during ATSDR’s assessment of exposure-related issues. For a more complete listing of hazardous substances that were found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.9.1.4 Ten Mile/Lange/Revere Drainage System Site, St. Clair Shores, MI

The site consists of a sanitary and storm water sewer system and a canal connected to the Ten Mile/Lange/Revere Drainage System (Ten Mile Drainage System) in St. Clair Shores, Macomb County, Michigan. An analysis of canal sediments prior to a dredging project in St. Clair Shores, Macomb County, Michigan, revealed high levels of polychlorinated biphenyls (PCBs). The storm water sewer of the Ten Mile/Lange/Reverse Drainage System, which discharges to the

tested canal, had been contaminated by what was likely an unpermitted release of the chemicals into a storm drain. Water and sediment samples from the storm sewers, catch basins, sanitary sewers, and the Lange/Revere Canal had PCBs and lead at levels of concern. Water sampled from a pond that occasionally receives canal water had a high concentration of PCBs. The highest sediment concentrations for lead in the Canal were located at the western most end of the Canal.

ATSDR Conclusions: In 2003 ATSDR concluded that this site presented an *Indeterminate Health Hazard* (Category 3) due to the potential for future exposures to site-related PCB and lead. At that time there were no known completed exposure pathways. The main chemicals of concern in water and sediments from the Ten Mile Drainage System and the Canal are PCBs and lead. The other chemicals evaluated do not pose a health hazard primarily because they were present only in the sewers and exposure is not expected to occur. Air concentrations of PCBs pose no apparent health hazard. The levels of arsenic found in soil samples of a residential yard along the Canal pose an indeterminate health hazard.

In 2003, EPA completed remediation for PCBs. Remedial action (cleaning PCBs out of the storm sewers) was completed by the Macomb County Drainage Commission by spring 2004.

IJC Critical Pollutants Identified within ATSDR Documents: The IJC critical pollutants PCBs and lead as well as other contaminants were identified at this site during ATSDR's assessment of exposure related issues.

3.9.2. Summary and Conclusions for the Clinton River AOC

3.9.2.1 Hazardous Waste Sites

In 2003 ATSDR concluded that the Ten Mile/Lange/Revere Drainage System site posed an *Indeterminate Health Hazard* (Category 3) due to the potential for future exposures to site-related PCB and lead. At that time there were no known completed exposure pathways. The main chemicals of concern in the water, and sediments from the Ten Mile Drainage System and the Canal are PCBs and lead. The other chemicals evaluated do not pose a health hazard primarily because these chemicals were present only in the sewers and exposure is not expected to occur. Air concentrations of PCBs pose no apparent health hazard. The levels of arsenic found in soil samples of a residential yard along the Canal pose an indeterminate health hazard. In 2003, EPA completed remediation for PCBs. Remedial action (clean out storm sewer for PCBs) completed by Macomb County Drainage Commission by spring 2004.

3.9.2.2 TRI Data for the Clinton River AOC

The TRI onsite chemical releases for Oakland and Macomb Counties (combined) are summarized in Table 3.9-B. Total onsite releases in 2001 were 3,580,901 pounds, primarily released to air. Very little was released to surface water or land. Oakland County accounted for 76% and Macomb County accounted for 24% of the total onsite releases.

Only 298.7 pounds (0.008 %) of the total onsite releases were accounted for by IJC-critical pollutants. The IJC-critical pollutants released were lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.9-C.

The major release of non-IJC chemicals ($\geq 500,000$ pounds) was of xylenes (to air). Other non-IJC chemicals released in substantial onsite quantities (150,000–499,999 pounds) were certain glycol ethers, n-butyl alcohol, toluene, ethylbenzene, and methyl isobutyl ketone (to air).

3.9.2.3 NPDES Data for the Clinton River AOC

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.9-D. The total average annual permitted discharges in 2004 were 1,170,862 pounds, the majority of which was ammonia nitrogen and phosphorus.

The IJC-critical pollutants PCBs (0.01 pound), lead (1,022 pounds) and mercury (2.95 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.9-E.

3.9.3. Summary and Conclusions for the Clinton River AOC

Two Michigan counties are relevant to this AOC: Oakland County and Macomb County. Oakland County also affects the Rouge River AOC (Section 3.8).

3.9.3.1 Hazardous Waste Sites

Oakland County: Five of the six hazardous waste sites in Oakland County have undergone remediation, and no evidence indicates that human exposure is occurring to site-related contaminants of concern. Groundwater at two sites, is, however, still undergoing extraction and treatment, and vapor extraction of subsurface soil is ongoing at one site.

In the past, three of the waste sites may have contributed to the environmental burden of the IJC-critical pollutants lead (all 3 sites) and PCBs (2 sites); these pollutants were found primarily in soil.

The sixth site in this county was an active manufacturing facility that reports through TRI.

Macomb County: The three hazardous waste sites in Macomb County have undergone remediation. One site, the South Macomb Disposal Authority, may still be releasing contaminants, as the leachate plume (to groundwater) was not contained.

In the past these waste sites may have contributed to the environmental burden of the IJC-critical pollutants lead (3 sites), PCBs (2 sites), and aldrin (1 site).

Rose Township Dump (Oakland County): Complete capture of the groundwater plume was not occurring as of 2002, but residential wells were not yet affected. The potential remains, however, for residential wells to be affected in the future.

South Macomb Disposal Authority (Macomb County): As of 1995, leachate controls did not capture the entire plume, so there was concern for future contamination of residential wells. Additional remedial action is underway.

3.9.3.2 TRI Data

The TRI onsite chemical releases for Oakland and Macomb Counties (combined) in 2001 were 3,580,901 pounds, primarily released to air. Very little was released to surface water or land. Oakland County accounted for 76% and Macomb County accounted for 24% of the total onsite releases.

Only 298.7 pounds (0.008 %) of the total onsite releases were accounted for by IJC-critical pollutants. The IJC-critical pollutants released were lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.9-E.

The major release of non-IJC chemicals ($\geq 500,000$ pounds) was of xylenes (to air).

3.9.3.3 NPDES Data

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.9-F. The total average annual permitted discharges in 2004 were 1,170,862 pounds, the majority of which was ammonia nitrogen and phosphorus.

The IJC-critical pollutants PCBs (0.01 pound), lead (1,022 pounds) and mercury (2.95 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.9-G.

3.9.3.4 Beneficial Use Impairments (BUIs)

Restrictions on fish and wildlife consumption are affected. Because of contaminated sediments, a PCB advisory specific to carp was issued. Further information is available at the EPA Web site (<http://www.epa.gov/glnpo/aoc/>).



Table 3.9-B TRI Releases (in pounds, 2001) for the Clinton River AOC

Chemical	IJC Tracking Number	Total Air Emissions	Surface Water Discharges	Under-ground Injection	Releases to Land	Total Onsite Releases	Total Offsite Releases	Total On- and Offsite Releases
LEAD	8	22.59128	0	0	1	23.59128	386.5	410.09128
LEAD COMPOUNDS	8	263.102	0	0	0	263.102	4993.931	5257.033
MERCURY	9	0	0	0	0	0	0.1	0.1
MERCURY COMPOUNDS	9	12	0	0	0	12	0	12
	Total IJC	297.69328	0	0	1	298.69328	5380.531	5679.22428
XYLENE (MIXED ISOMERS)		1341515	0	0	0	1341515	0	1341515
CERTAIN GLYCOL ETHERS		392474	0	0	0	392474	1117	393591
N-BUTYL ALCOHOL		383820	0	0	0	383820	0	383820
TOLUENE		265481	0	0	0	265481	5728	271209
ETHYLBENZENE		246208	0	0	0	246208	250	246458
METHYL ISOBUTYL KETONE		206587	0	0	0	206587	750	207337
N-METHYL-2-PYRROLIDONE		143360	0	0	0	143360	8800	152160
1,2,4-TRIMETHYLBENZENE		132910	0	0	0	132910	0	132910
METHYL ETHYL KETONE		128487	0	0	0	128487	6250	134737
METHANOL		124179	0	0	0	124179	0	124179
TRICHLOROETHYLENE		40553	0	0	0	40553	0	40553
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		34000	0	0	0	34000	0	34000
AMMONIA		33772	0	0	0	33772	0	33772
2-CHLORO-1,1,1,2-TETRAFLUOROETHANE		28416	0	0	0	28416	0	28416
N-HEXANE		18038	0	0	0	18038	0	18038
STYRENE		14121	0	0	0	14121	0	14121
TRIETHYLAMINE		6629	0	0	0	6629	1500	8129
NICKEL		5314	36	0	0	5350	1810	7160
DICHLOROMETHANE		4464	0	0	0	4464	0	4464
NICKEL COMPOUNDS		3572	262	0	0	3834	112920	116754
NITRIC ACID		3683	0	0	0	3683	0	3683

ETHYLENE GLYCOL	3482	0	0	0	3482	0	3482
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)	2994	0	0	0	2994	0	2994
CYANIDE COMPOUNDS	2771	5	0	0	2776	250	3026
MANGANESE COMPOUNDS	1696	70	0	0	1766	49793	51559
ZINC COMPOUNDS	1484	152	0	8	1644	289202	290846
METHYL TERT-BUTYL ETHER	1444	0	0	0	1444	0	1444
1,1-DICHLORO-1-FLUOROETHANE	1020	0	0	0	1020	250	1270
SODIUM NITRITE	962	0	0	5	967	316	1283
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)	943	5	0	0	948	76607	77555
MANGANESE	790	33	0	0	823	3965	4788
ALUMINUM (FUME OR DUST)	750	5	0	0	755	18211	18966
CHLORINE	505	0	0	0	505	0	505
DIISOCYANATES	350	0	0	0	350	14301	14651
CUMENE	301	0	0	0	301	0	301
NITRATE COMPOUNDS	299	0	0	0	299	156184	156483
FORMALDEHYDE	298	0	0	0	298	0	298
TERT-BUTYL ALCOHOL	295	0	0	0	295	0	295
COPPER COMPOUNDS	270	10	0	0	280	7465	7745
COBALT COMPOUNDS	250	5	0	0	255	5	260
DIETHANOLAMINE	255	0	0	0	255	0	255
PROPYLENE	250	0	0	0	250	0	250
COPPER	181	0	0	8	189	5011	5200
CHROMIUM	120	33	0	0	153	3968	4121
1,2-BUTYLENE OXIDE	149	0	0	0	149	0	149
NAPHTHALENE	106	0	0	0	106	0	106
CYCLOHEXANE	91	0	0	0	91	0	91
BUTYL ACRYLATE	78	0	0	0	78	0	78
BENZENE	77	0	0	0	77	0	77
TOLUENE-2,4-DIISOCYANATE	76	0	0	0	76	0	76
DICYCLOPENTADIENE	33	0	0	0	33	0	33

BARIUM COMPOUNDS		22	0	0	0	22	85718	85740
METHYL METHACRYLATE		16	0	0	0	16	0	16
TOLUENE-2,6- DIISOCYANATE		16	0	0	0	16	0	16
HYDROGEN FLUORIDE		5	0	0	0	5	0	5
ZINC (FUME OR DUST)		2	0	0	0	2	2298	2300
VANADIUM COMPOUNDS		1	0	0	0	1	22	23
BENZO(G,H,I)PERYLENE		0.22	0	0	0	0.22	0	0.22
POLYCYCLIC AROMATIC COMPOUNDS		0.2	0	0	0	0.2	0	0.2
BARIUM		0	0	0	0	0	96500	96500
CADMIUM		0	0	0	0	0	14	14
SODIUM DIMETHYLDITHIO- CARBAMATE		0	0	0	0	0	10560	10560
	Total Non-IJC	3579965.42	616	0	21	3580602.42	959765	4540367.42
	Total	3580263.113	616	0	22	3580901.113	965145.531	4546046.644

Table 3.9-E TRI Facilities Releasing IJC Critical Pollutants Onsite

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Lead and lead compounds	11			
Macomb County, MI	3	TOWER AUTOMOTIVE TOOL INC.	48036TWRM44850	CLINTON TOWNSHIP
		DU PONT MT. CLEMENS PLANT	48043DPNTM400GR	MOUNT CLEMENS
		TI GROUP AUTOMOTIVE SYSTEM	48090BNDYT12345	WARREN
Oakland County, MI	8	AKZO NOBEL COATINGS INC.	48053KZCTN30BRU	PONTIAC
		AKZO NOBEL COATINGS INC. CAR REFINISHES & DECORATIVE COAT.	48341KZCTN2527B	PONTIAC
		CONTINENTAL ALUMINUM	48165CNTNN29201	NEW HUDSON
		DEBRON INDL. ELECTRONICS INC.	48083DBRNN591EX	TROY
		EATON CORP.	48308TNCRP1400S	ROCHESTER HILLS
		GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION
		GM PONTIAC ASSEMBLY CENTER	48058GMCTR8200P	PONTIAC
		MOLEX AUTOMOTIVE	48326CRDLL2025T	AUBURN HILLS
Mercury and mercury compounds	1			
Oakland County, MI	1	GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION

Table 3.9-F NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Clinton River AOC

Chemical	IJC Tracking Number	Discharge
POLYCHLORINATED BIPHENYLS (PCBS)	1	0.01
LEAD, TOTAL (AS PB)	8	1022
MERCURY, TOTAL (AS HG)	9	2.95
	Total IJC	1024.96
BARIUM, TOTAL (AS BA)		1168
COPPER, TOTAL (AS CU)		594.95
CYANIDE, FREE (AMEN. TO CHLORINATION)		52.93
NITROGEN, AMMONIA TOTAL (AS N)		716664.73
PHOSPHORUS, TOTAL (AS P)		446449.75
SILVER, TOTAL (AS AG)		12.05
STRONTIUM, TOTAL (AS SR)		4653.75
ZINC, TOTAL (AS ZN)		240.90
	Total Non-IJC	1169837.06
	Total	1170862.02

Table 3.9-G NPDES Facilities Permitted to Discharge IJC Critical Pollutants,

IJC Critical Pollutant	No. of Facilities	Facility Name	NPDES	City
Polychlorinated Biphenyls (PCBs)	1			
Oakland County, MI	1	GM-PONTIAC NORTH CAMPUS	MI0056031	PONTIAC
Lead	2			
Oakland County, MI	2	COMMERCE TWP WWTP	MI0025071	COMMERCE
		MICH SEAMLESS TUBE LLC	MI0001902	SOUTH LYON
Mercury	5			
Macomb County, MI	1	NEW BALTIMORE WWTP	MI0023680	NEW BALTIMORE
Oakland County, MI	4	HOLLY WWTP	MI0020184	HOLLY
		OAKLAND CO WALLED LK/NOVI WWTP	MI0024287	NOVI
		PONTIAC WWTP	MI0023825	PONTIAC
		WIXOM WWTP	MI0024384	WIXOM