Chapter 3. Lake Erie

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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 the AOC map at the end of this section and in Appendix 2.

3.1.1. Hazardous Waste Sites Relevant to the Buffalo River AOC

ATSDR evaluated six hazardous waste sites in Erie County, NY that were identified during the public health assessment process as posing either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. Table 3.1-A summarizes ATSDR's site activities, including 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*	*Document Year*	*ATSDR Hazard Category*	*Site Type*	*Remedial Status*
Abby Street Hickory Wood Subdivision, Buffalo NYSFN0204229	HC HC HC HC	1999 2001 2004 2004	2 2 N.S. N.S.	Non NPL	Ongoing
Diarsenol Company, Buffalo NYD981187040	HA	1994	2	Non NPL	Completed
Ernst Steel, Buffalo NYD980508246	HC	1990	2	Non NPL	Completed
Newstead Site, Newstead NYD986883387	HV LISR	1989 1992	1 N.S.	Non NPL	Completed
NL Industries, Depew NYD980531636	HC HC	2003 2004	2 4	Non NPL	Ongoing
Pfohl Brothers Landfill, Cheektowaga NYD980507495	HA	1995	3	NPL	Ongoing

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, LISR=Lead Initiative Summary Report, 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 categorized as

either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard are discussed in the following subsections.

3.1.1.1 Abby Street/Hickory Woods Subdivision

This subdivision is within the AOC. It is near a former steel and coke manufacturing property and within ½ mile of the river, which is to the north and west of the subdivision. The area includes about 80 homes, three vacant lots, and a playground. Most of the homes were built on fill. Information on this site is taken from the 1999, 2001, and 2004 ATSDR health consultations for this site and from the State of New York 2008 site update.

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,

- all had lived in the subdivision for at least 5 years (average 10 years), and 10 (or 5%) reported thyroid disease (primarily hypothyroid); and
- 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 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 condition. The assessor therefore concluded that further investigation of the apparent elevated prevalence of thyroid disease was not warranted. Indeed, 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 screened between 1994 and 2000, 31 had values lower than 5µg/dL, 12 had values of 5–9.9µg/dL, and 6 had values more than or equal to 10µg/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). Apparently due to a concern for elevated B(a)P equivalents in soil, the lots were covered with crushed stone over geo-textile mats. Three residential lots and one undeveloped lot were excavated to remove PAH-contaminated soil, assessed as B(a)P equivalents. Subdivision soil and of sump water received additional monitoring. In 2001, ATSDR also concluded that the levels of arsenic contamination in surface soil at a playground posed a public health hazard.

Although not explicitly discussed, soil ingestion and soil contact in yards, in vacant lots, and in a playground were considered completed exposure pathways. The contaminants in soil were PAHs, arsenic, cadmium, and lead. Aldrin and dieldrin were detected in single samples and thus required further investigation. Lead sources were thought to be lead paint, possible past contributions from leaded gasoline, and emissions from industry. Although lead levels and PAHs were comparable to or lower than those of two other Buffalo area neighborhoods, arsenic levels

in soil at the playground were sufficiently high to constitute a public health hazard. In coordination with local, county, and state governments, U.S. EPA conducted several removal activities.

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.

U.S. EPA Update: The Abby Road/Hickory Woods Subdivision site is now a Removal Action site only—no site assessment work or remedial action is necessary. Available at: http://oaspub.epa.gov/enviro/multisys2.get_list?facility_uin=110022431386 [cited 2008 Oct 8].

The New York State Department of Health Update: At the Abby Street/Hickory Woods site, the City of Buffalo has agreed to compensate homeowners for the loss in value of their homes. The money given to the homeowners was for the loss in value of their homes—not a straight out buyout. Many of the homeowners were happy with the settlement, but it seemed that the money given to the homeowners could be taxable. Also, the three covered and fenced parcels the City of Buffalo was supposed to have remediated several years ago are still not remediated (Cameron H. O'Connor, New York State Department of Health, 2008 Aug 21 email). See also NYSDOH Hickory Woods Fact Sheet. Available at: http://www.health.state.ny.us/environmental/investigations/hickory_woods/fact_sheet.htm. [cited 2008 Oct 29].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PAHs, aldrin, dieldrin, and lead were identified at this site.

3.1.1.2 Diarsenol Company (Kingsley Park)

This site is approximately 2½ miles north of the AOC. It is the former Diarsenol Company pharmaceutical manufacturing plant. 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 from ATSDR's 1994 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:

- 2 of the 305 samples showed blood lead levels ≥ 25µg/dL.
- Testing of 304 community residents for urinary arsenic revealed that all had levels below 10 µg/L—the health-based screening value was 50µg/L.

ATSDR Conclusions: In 1994, ATSDR concluded that because prior to 1991 nearby residents and park users may have been exposed to levels of arsenic, lead, and PAHs that exceed health-based values, this site posed a *Public Health Hazard* (Category 2). 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—levels were 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 by excavation to a minimum 1-foot depth, removal of soil from the site and from the bordering yards, and replacement with clean soil and seeding with grass appeared to have restored the site. ATSDR concluded that because of the remediation, present or future exposure to site-related contaminants was unlikely.

U.S. EPA Update: Diarsenol/Kingsley Park is a non-NPL site for which no further remedial action is planned. Available at: http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm. [cited 2008 Jul 29].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PAHs and lead were identified at this site.

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. At the time of ATSDR's site evaluation, access to this area was not restricted. Information regarding this site is from a 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. But insufficient data were available to determine whether runoff, air dispersion, or groundwater contamination resulted in offsite migration. In 1992, additional sampling revealed 11,000 tons of lead-contaminated paint waste material.

ATSDR Conclusions: ATSDR concluded that because of levels of lead and chromium found onsite and the potential for onsite trespassing, this site posed a *Public Health Hazard* (Category 2). Insufficient data were available to determine whether contaminants had migrated from the site. In 1998, U.S. 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.

U.S. EPA Update: Ernst Steel is a non-NPL site for which no further remedial action is planned. Available at: http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm. [cited 2008 Jul 29].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues the IJC-critical pollutant lead was 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 paint from a Buffalo paint manufacturing firm. In 1985, a site inspection revealed protruding 55 gallon drums and, on surface soil, waste material of tar-like and resinous consistency. Information regarding this site is from the 1989 health advisory and the 1992 ATSDR lead initiative summary report. Although a further assessment in 1992 did not provide a health hazard category, it did recommend 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 some families do live nearby.

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 lead, an IJC-critical pollutant, and 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, with the assistance of local, county, and state governments, U.S. EPA completed excavation and off-site disposal of contaminated soils.

U.S. EPA Update: Newstead is now a non-NPL Superfund Alternative Site. Available at: http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm. [cited 2008 Jul 29].

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

3.1.1.5 NL Industries

The former NL Industries site is an inactive lead processing facility. According to state and local records, lead processing began at this location in 1872 and ceased in 1972. Past onsite activities 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. At this site, lead was the one contaminant of concern.

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

ATSDR Conclusions: In 2003, ATSDR concluded that because of the potential for incidental ingestion exposure to lead-contaminated soils in nearby residential yards, this site posed a *Public Health Hazard* (Category 2).

U.S. EPA Update: NL Industries is a non-NPL site that does not appear in the CERCLIS database.

New York State Department of Health Update: In 2007, U.S. EPA reported the site had been fenced. In 2005, U.S. EPA excavated and disposed of off-site the contaminated soils from the residential yards immediately downwind of the facility. Site remediation started in 2007 and is continuing, with final capping anticipated in 2008. Starting in 2008, U.S. EPA will remediate a second residential area farther downwind of the facility. (Matthew J. Forcucci, New York State Department of Health, 2008 Aug 13 email)

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

3.1.1.6 Pfohl Brothers Landfill

The Pfohl Brothers Landfill is a 120-acre site 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. Pfohl Brothers 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 and the U.S. EPA 2005 five-year site review.

Demographic Data: The 2000 U.S. Census reported the following demographic profile for vulnerable populations who lived 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 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 the survey did not reveal any unusual illness patterns.

In 1991, NYSDOH blood lead screenings of 20 children living near the site found a maximum blood lead level of 8 µg/dL, 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 New York areas with similar population densities. Most of the excess cancer in women was accounted for by breast cancer (130 versus 105 expected), and that the breast cancer excess occurred in the landfill census tract (100.01). Yet geographic analysis revealed no clustering around the landfill. ATSDR therefore concluded that the cancer occurrence was in all likelihood not site-related.

ATSDR Conclusions: In 1995, ATSDR concluded that 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, this site is an *Indeterminate Public Health Hazard* (Category 3).

U.S. EPA Update: In 2002, U.S. EPA reported that through the joint efforts of local, county, and state governments drum removal was complete and landfill wastes were contained. Removal and remedial activities have substantially reduced the likelihood of exposure to site-related contamination. In its latest (March 2006) 5-year review of the Pfohl Brothers Landfill site, U.S. EPA concluded that

- The caps and vegetative covers are intact and in good condition;
- The landfill gas system is operating properly;
- The monitoring wells are securely locked and functional;
- The leachate collection system is functional;
- There is no evidence of trespassing or vandalism; and
- No additional measures are needed to protect public health.

U.S. EPA will conduct its next 5-year review sometime after March 2011.

Available at: http://www.epa.gov/superfund/sites/fiveyear/f06-02016.pdf. 2006 Mar [cited 2008 Jul 10].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants dibenzofuran, aldrin, dieldrin, PAHs, PCB, lead, and mercury were identified at this site. For a more complete list of hazardous substances found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

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

3.1.2.1 Hazardous Waste Sites

ATSDR categorized six sites in Erie County, NY, as either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard at some time in their assessment history. Three of these sites have either been remediated by removal of contaminated soil and waste-containing barrels, or by institutional controls (e.g., fencing, covering contaminated soil) thus preventing exposure to site contaminants. Three other sites are undergoing remediation.

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.

3.1.2.2 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. See Table 4.1-B.

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 (≥ 500,000 pounds total onsite) of non-IJC critical chemicals were hydrochloric acid aerosols, ammonia, and carbon disulfide (primarily to air). Facilities releasing these pollutants are listed in Table 3.1-C.

3.1.2.3 NPDES Data

The NPDES permitted discharges for Erie County, NY are summarized in Table 4.1-D. The average annual permitted discharges in 2004 totaled 691,036 pounds, the majority of which was nitrogen (as ammonia).

The one IJC-critical pollutant was lead, accounting for 124 pounds. The facility permitted to discharge this pollutant is listed in Table 4.1-E.

3.1.2.4 Beneficial Use Impairments (BUIs)

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

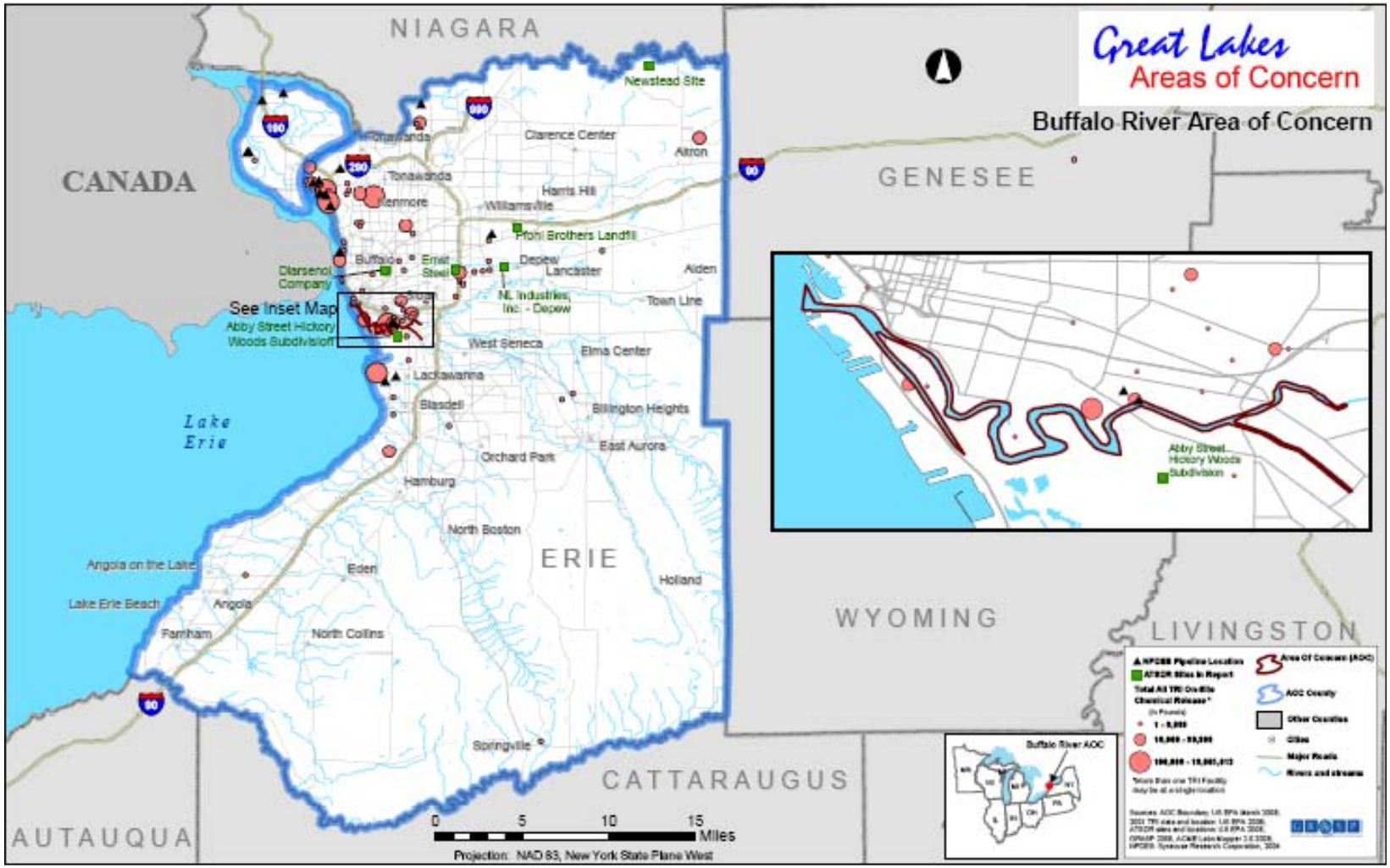
Great Lakes
Areas of Concern
Buffalo River Area of Concern
NIAGARA
CANADA
GENESEE
WYOMING
LIVINGSTON
ERIE
CATTARAUGUS
AUTAUQUA
Lake Erie
See Inset Map
Abby Street Hickory Woods Subdivision
Newstead Site
Clarence Center
Akron
Tonawanda
Kenmore
Harris Hill
Williamsville
Pfohl Brothers Landfill
Buffalo
Ernst Steel
Depew
Lancaster
Alden
Town Line
Diamond Company
NL Industries, Inc. - Depew
West Seneca
Elma Center
Lackawanna
Blasdell
Billington Heights
Orchard Park
East Aurora
Hamburg
North Boston
Eden
Holland
Angola on the Lake
Lake Erie Beach
Angola
Farnham
North Collins
Springville
Abby Street Hickory Woods Subdivision
Buffalo River AOC
0 5 10 15 Miles
Projection: NAD 83, New York State Plane West

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	2	0.00059535	No data	0	0	0.000595	0	0.00059535
(PCDDs and PCDFs)	3							
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			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	704	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

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
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			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 CHROMITE ORE MINED IN THE TRANSVAAL REGION)	25803	1086	24000	0	1026	26112	10300	36412
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			No data	0	0	117	0	117

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
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			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	1483		No data	0	0	518	0	518
METHYL METHACRYLATE		111160	No data	0	0	111160	250	111410
METHYL TERT-BUTYL ETHER			5	0	0	6019	0	6019
N,N-DIMETHYLANILINE	518	19	11	0	0	30	750	780
	6014							

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
N,N-DIMETHYLFORMAMIDE			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	170	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

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
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)			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 principal 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 2).

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 found 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*	*Document Year*	*ATSDR Hazard Category*	*Site Type*	*Remedial Status*
Foamex Products Site (Corry Area Middle-High School) PAD005029517	HC HC	2001 2004	3 4	Non NPL	Active site; RCRA supervised
Hammermill – Scott Run Site, Harborcreek Township PAD981114648	HC	1998	2	Non NPL	Completed
Lord-Shope Landfill, Girard Township PAD980508931	HA LISR SRU	1989 1992 1995	2 4 4	NPL	Ongoing
Millcreek Dump, Erie PAD980231690	HA SRU	1989 1993	3 2	NPL	Ongoing

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

HA=Public Health Assessment, HC=Health Consultation, LISR = Lead Initiative Summary Report, SRU=Site Review and Update

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 near a school and near residential areas. ATSDR was asked to evaluate whether air emissions from this facility presented a public health hazard to nearby residents and 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 from the relevant 2001 and the 2004 ATSDR health consultations and a Pennsylvania Department of Environmental Protection update.

ATSDR Conclusions: In 2001, ATSDR concluded that the air sampling and monitoring data from 4 consecutive days in April 2000 were not adequately representative of long-term or peak exposure patterns. Consequently, ATSDR classified the site as an *Indeterminate Public Health*

Hazard (Category 3). Although 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 intermediate and chronic exposure MRLs. In addition, for residents near the plant, peak air concentrations of methylene chloride exceeded ATSDR's acute MRL, and toluene diisocyanate isomers in air were not above detection limits. In 2004, ATSDR again 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 also reported that in 2004, Foamex Products voluntarily eliminated methylene chloride from its manufacturing process.

U.S. EPA Update: Foamex Products does not appear in the CERCLIS database. It is an operating facility with discharge permits overseen by the Pennsylvania Department of Environmental Protection.

Pennsylvania Department of Environmental Protection Update. The Department of Environmental Protection's Air Quality program inspected the facility in December 2007 and found no violations. As mentioned in the report, in 2003 Foamex stopped using methylene chloride, a known carcinogen, as the blowing agent used to create the bubbles in the foam. Foamex completed a 100% substitution of the methylene chloride with carbon dioxide. This represented a reduction in air pollution of over 600 tons per year from previous years. Erie County went from being near the top of the list of releases of known carcinogens to the air to not "making the list" because of this one change by Foamex (Lori Boughton, Chief, Office of Great Lakes, PDEP, 2008 June 26 letter).

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, no IJC-critical pollutants were identified at this site. 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; in 2001, they were estimated at 27. Some were partially buried and in various stages of decay. Others, due to thick vegetation or sediment deposition, may not have been visible. The site is currently part of a recreational park. Information regarding this site was taken from the 1998 ATSDR health consultation and the 2008 Pennsylvania Department of Environmental Protection update.

ATSDR Conclusions: Because the lagoons posed a drowning risk for visitors who could fall off a foot bridge that spanned the lagoons, in 1998 ATSDR concluded that the site posed a *Public Health Hazard* (Category 2). Although the contaminants in the discarded drums had not been adequately characterized, the contaminants did not appear to have migrated offsite. But the deteriorating drums might have released additional, as-yet-unknown chemicals, and the monitoring data were both 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 allowed.

U.S. EPA Update: Hammermill Scott Run has been deleted from the NPL.

Pennsylvania Department of Environmental Protection Update: The site has been clean-closed. The owner of the site, International Paper, removed all of the drums and impacted soils, identified a mercury issue in the wetlands at the site, removed the mercury-contaminated media, and restored the site. Monitoring is ongoing to ensure the wetlands are established and maintained. This site is no longer releasing any contaminants (Lori Boughton, Chief, Office of Great Lakes, PDEP, 2008 June 26 letter).

IJC-critical Pollutants Identified within ATSDR Documents: The IJC-critical pollutant lead was detected onsite.

3.2.1.3 Lord Shope Landfill

Located some 17 miles west of Erie, PA, the 4-acre Lord Shope Landfill is an NPL site situated on an approximate 30-acre parcel, which consists of a landfill and adjacent areas of contaminated surface soil and groundwater. From about 1954 to 1979, Lord Corporation dumped wastes into the landfill. Although primarily debris, these wastes also 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, and groundwater through vapor stripping and extraction, removal of VOCs from groundwater by vapor stripping, and through discharge of treated groundwater to a tributary of Elk Creek. Information regarding this site was taken from the 1989 ATSDR public health assessment, the 1992 lead initiative summary report, the 1995 site review and update, U.S. EPA's 2004 five-year review, and a 2008 Pennsylvania Department of Environmental Protection update.

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	26
Females aged 15–44	75
Adults 65 and older	35

ATSDR Conclusions: In 1989, ATSDR concluded that because of incomplete on- and offsite contamination characterization, the site posed a *Public Health Hazard* (Category 2). The available data indicated that 1) long-term oral exposure to lead from private well water, and 2) dermal exposure to arsenic from offsite surface water, were of public health concern. The 1992 lead initiative summary report and the 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 effective in controlling the off-site migration of groundwater contaminants.

U.S. EPA Update: In its September 2004 five-year review, U.S. EPA concluded that

> The constructed remedy is functioning as intended by the ROD [Record of Decision]. The landfill cap and Site fencing provide two lines of defense to prevent any potential for direct contact with contaminated soil. The ground water extraction system is functioning as designed and the discharge of treated effluent to the unnamed tributary of Elk Creek

consistently meets or exceeds NPDES standards. There are no exposures to Site-related ground water contaminants. The vapor extraction system is also functioning as designed. The institutional controls are in place and are being maintained on the deed to the property thereby providing an effective warning to any potential future owners of the property regarding the contamination. Because there are no current exposures and because the potential for future exposures is minimal, the remedy at the Site remains protective of human health and the environment.

The next 5-year review of the Lord Shope Landfill site will occur on or after September 2009. Available at: http://www.epa.gov/superfund/sites/fiveyear/f04-03019.pdf. 2004 Sep [cited 2008 Jul 10].

Pennsylvania Department of Environmental Protection Update. This landfill site is in Girard Township, which is not in the Presque Isle Bay watershed. In 1982, Lord Corporation (a site responsible party), removed 81 exposed drums of waste, installed a composite cap over the landfill, and installed a low permeability groundwater cutoff wall upgradient of the landfill. Lord then selected a remedy consisting of a groundwater pump-and-treat system in conjunction with an *in-situ* vapor stripping system. Remedial activities were completed in August 1996. The site is currently in the Operation and Maintenance (O&M) phase (Lori Boughton, Chief, Office of Great Lakes, PDEP, 2008 June 26 letter).

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutant lead was identified. 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

Millcreek Dump covers some 124.3 acres. It is 2 miles west of the City of Erie and fewer than 2 miles from Presque Isle Bay. Originally a wetland, between 1941 and 1981 the site was an unpermitted landfill and was mostly filled with foundry sand and other industrial and municipal wastes containing VOCs, PCBs, PAHs, and heavy metals. In 1983, drums filled with hazardous liquids were removed from the site, and some fences were added. Access to most of the site, however, remained unrestricted. Information regarding this site was taken from the 1989 ATSDR public health assessment, the 1993 ATSDR site review and update, the U.S. EPA 2006 five-year site review, and the 2008 Pennsylvania Department of Environmental Protection 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 because of potential migration of contaminated groundwater to an upgradient public water supply well field during extended droughts, the site was an *Indeterminate Public Health Hazard* (Category 3). In the 1993 Site Review and Update, because of exposure to contaminated soil, sediment, and surface water, airborne dust from operation of recreational vehicles, and contaminated groundwater during flooding of basements, ATSDR reclassified the site as a *Public Health*

Hazard (Category 2) for area residents, workers, and site intruders. In that same site review and update ATSDR concluded, however, that not all of the contaminated groundwater was 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 of Pennsylvania discussed with the PRP (Principal Responsible Party) how to replace the RPs by October 2007 and continue plant operations. In September of 2007, the state assumed responsibility for the operation and maintenance of the Groundwater Extraction and Treatment System.

U.S. EPA Update: In its latest 5-year review of the Mill Creek Dump site, dated September, 2006, U.S. EPA concluded

> The remedy is functioning as designed and is considered protective of human health and the environment in the short term as the groundwater is extracted from the Site and treated. Groundwater leaving the Site meets the discharge limitations imposed by the National Pollution Discharge Elimination System (NPDES) permit for discharge to Marshalls Run, which borders the eastern edge of the Site. The cap is functioning as intended and is protective of human and ecological receptors. The plans for expansion of the EIA onto the Site have been evaluated, and it has been determined that it will not have a significant impact on the remedy. Short-term protectiveness will be maintained during construction of the airport expansion through controls placed during construction that will not allow excavation through the cap. Construction will occur on top of the cap.
>
> To ensure long-term protectiveness, EPA will confirm that air emissions from the treatment plant are within EPA's acceptable risk range. In addition, the potential for vapor intrusion will be assessed, and 1,4-dioxane will be added to the list of sampled contaminants. The ROD did not require institutional controls to be implemented to prevent use of groundwater or disturbance of soil. However, ICs in the form of deeds conveying interest in real property are in place. Long-term protectiveness of the remedy is expected to be achieved through the continued operation of the treatment system until cleanup goals are met and compliance with the institutional controls (ICs). Sampling and monitoring of groundwater is expected to continue until cleanup standards are met.

The next 5-year review will occur on or after September 2011. Available at: http://www.epa.gov/superfund/sites/fiveyear/f2006030001083.pdf. 2006 Sep [cited 2008 Jul 10].

Pennsylvania Department of Environmental Protection Update. This site is located in Millcreek Township, discharging to Marshall Run, which is also not in the AOC watershed. U.S. EPA completed construction of a groundwater treatment system at the site in 1992. Construction of a cap, a golf course, wetlands and a flood retention basin was completed in September 2001. A nine-hole golf course was built over the former industrial and municipal waste dump. The final inspection and grand opening of the golf course was in June 2002. A five-year review was conducted in July 2007. The Department of Environmental Protection assumed operation and maintenance of the treatment plant in October 2007 and continues to monitor (Lori Boughton, Chief, Office of Great Lakes, PDEP, 2008 June 26 letter).

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants lead, PCBs, and PAHs 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.

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

3.2.2.1 Hazardous Waste Sites

During the entirety of its health assessment activities in Erie County, PA, ATSDR categorized four sites as either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. One such site, Foamex, is an active manufacturing facility (Foamex Products site) that as of the date of this report did not release IJC-critical pollutants.

One of the sites has been remediated and is not expected to contribute to human or environmental exposure. Remediation is ongoing at two sites.

3.2.2.2 Public Health Outcome Data

No health outcome data has been reported for any of the four sites. As reported by U.S. EPA (June 2004), Presque Isle Bay is the first AOC designated in the post-remediation Recovery Stage.

3.2.2.3 TRI Data

In 2001, the TRI total onsite chemical releases for Erie County, PA were 3,688,175 pounds. See Table 3.2-B. IJC-critical pollutants 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 (≥ 500,000 pounds) of non-IJC chemicals were dichloromethane, methanol, and hydrochloric acid aerosols (primarily to air). Facilities releasing these pollutants are listed in Table 3.2-C.

3.2.2.4 NPDES Data

The NPDES permitted discharges for Erie County, PA are summarized in Table 3.2-D. The average annual permitted discharges in 2004 totaled 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.

3.2.2.5 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 U.S. EPA Web site (http://www.epa.gov/glnpo/aoc/).

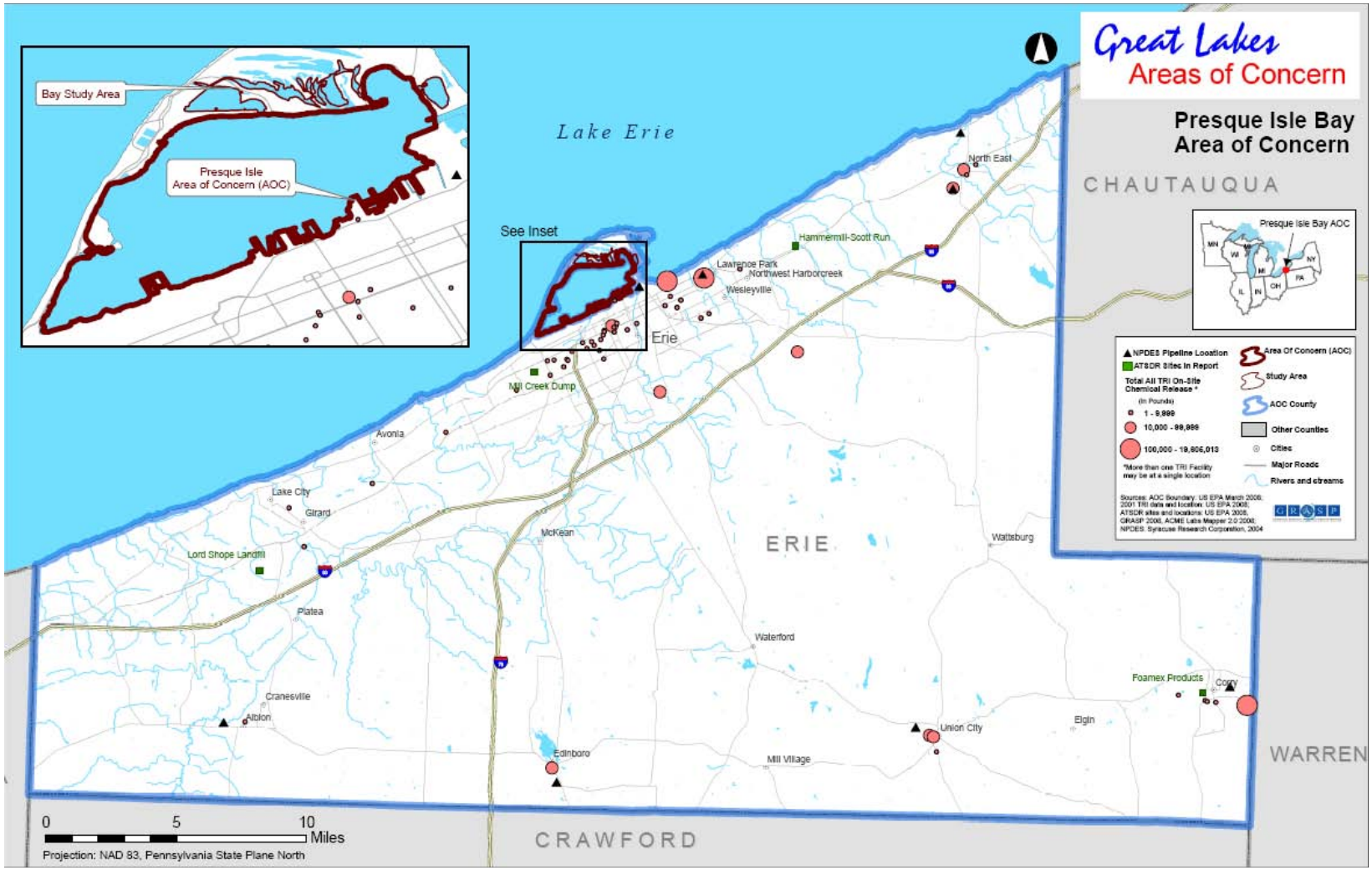
Great Lakes
Areas of Concern
Presque Isle Bay
Area of Concern
Bay Study Area
Presque Isle
Area of Concern (AOC)
See Inset
Lake Erie
CHAUTAUQUA
ERIE
CRAWFORD
WARREN
North East
Hammermill-Scott Run
Lawrence Park
Northwest Harborcreek
Wesleyville
Erie
Mill Creek Dump
Avonia
Lake City
Girard
McKean
Lord Shope Landfill
Platea
Cranesville
Albion
Edinboro
Waterford
Mill Village
Wattsburg
Union City
Elgin
Foamex Products
Corry
Presque Isle Bay AOC
NPDES Pipeline Location
ATSDR Sites in Report
Total All TRI On-Site Chemical Release *
(In Pounds)
1 - 9,999
10,000 - 99,999
100,000 - 19,806,013
*More than one TRI Facility may be at a single location
Area Of Concern (AOC)
Study Area
AOC County
Other Counties
Cities
Major Roads
Rivers and streams
0
5
10
Miles
Projection: NAD 83, Pennsylvania State Plane North

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
(PCDDs and PCDFs)	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

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
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

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
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

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
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	16533HMMRM1540E	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	16533HMMRM1540E	ERIE
		KEYSTONE FNDY. DIV.	16512KYSTN944WE	ERIE
		LAMSON & SESSIONS	16505PYRMD1422I	ERIE

IJC-critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
		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

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

The Ashtabula River flows through northeastern Ohio and enters Lake Erie at the City of Ashtabula. The river's drainage basin covers 137 square miles. 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 2).

The Ashtabula River AOC project is among the recent AOC remediation projects initiated under the Legacy Act Sediment Cleanup. Begun in September of 2006, the project is expected to remove over 600,000 cubic yards of PCB-contaminated sediment from the Ashtabula River AOC.

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

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

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

3.3.1.1 Big D Campground

This site, which includes a former sand and gravel pit used as a landfill for waste products, 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. Big D Campground no longer operates as a landfill, and before ATSDR began work at the site in 1989, it was capped. U.S. EPA reported that the landfill accepted wastes such as drums containing halogenated and nonhalogenated solvents, caustics,

oily wastes, toluene diisocyanate (TDI), TDI residue contaminated with both monochlorobenzene and carbon tetrachloride, and monoethylamine. Many of these compounds contaminated adjacent soil, and volatile organic compounds and heavy metals, including barium, chromium, and lead, contaminated groundwater.

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

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 contract 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 recategorized the site as posing *No Apparent Public Health Hazard* (Category 4). Remedial actions at the site included the 1994 excavation and onsite incineration of the landfill contents and capping of the site.

U.S. EPA Update: In an October 2006 Fact Sheet, U.S. EPA stated that with regard to the Big D Campground site,

> The second five-year review dated August 27, 2004 found that the remedy was constructed in accordance with the requirements of the ROD. An additional possible pathway had been located at the site: human exposure to indoor air from ground water. U.S. EPA is reviewing information the PRPs submitted regarding indoor air exposure for residences near the Big D Campground. U.S. EPA continues to evaluate groundwater collected at the site to determine if MNA [monitored natural attenuation] will a viable remedy for the site.

Available at: http://www.epa.gov/region5superfund/npl/ohio/OHD980611735.htm. 2006 Oct [cited 2008 Jul 11].

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 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. The site extends from within the City of Ashtabula to east of the city. Fields Brook flows into the Ashtabula River, which discharges into Lake Erie—the City of Ashtabula's drinking water source. It then flows through an industrial area that comprises one of the largest and most diversified concentrations of chemical plants in Ohio. Fields Brook became, therefore, the principal receiving stream for many industrial discharges. 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 Fields Brook fish.

The U.S. EPA reported in 2006 that the Department of Energy would assume control of remediation activities at Reactive Metals Incorporated facility (referred to by U.S. EPA as RMI Extrusion), despite the fact that Reactive Metals/RMI Extrusion was part of the Fields Brook site. DOE coordinated its activities through the Ohio Department of Health Bureau of Radiation Protection and state and federal RCRA programs.

Demographic Data: The 2000 U.S. Census reported the following demographic profile for vulnerable populations living within 1 mile of the Fields Brook site:

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 Fields Brook 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 because fences prevented exposure to onsite uranium-contaminated soil, the Reactive Metals, Inc. site constituted No *Apparent Public Health Hazard* (Category 4). Although a slight uranium contamination of soil was present immediately outside the fence, the levels were too low to present a human health risk from either chemical toxicity or radiological effects.

U.S. EPA Update: In its February 2007 Fields Brook Fact Sheet, U.S. EPA further reported: that

> In 2005, O&M monitoring in the brook identified additional pockets of Dense Non-Aqueous Phase Liquid (DNAPL) contamination in Exposure Units (EU) 6 and 8 and in portions of the DS Tributary. EPA is evaluating the source of the DNAPL and is working with Detrex and the Fields Brook PRPs to resolve issues of responsibility implement additional measures to protect the brook, and clean up the identified contamination.
>
> In EU8, Detrex has installed an interceptor trench to cut off a potential subsurface pathway between the DNAPL source area and Fields Brook. EPA is evaluating whether DNAPL seen in EU8 is material missed during the cleanup or the result of continuous subsurface movement of contamination from the Detrex source area. Additional sampling in EU8 has also identified areas of elevated PCBs in brook sediment and floodplain soil. Plans are underway to delineate the additional PCB material that's been uncovered and to remove material with DNAPL and/or PCB concentrations above cleanup levels.
>
> In EU6, investigations in the area of the old North Sewer outfall have not found a continuing source of DNAPL. Therefore it appears that the material in this area (primarily under the old outfall structure) was material missed during the original cleanup. Plans are being prepared to excavate the DNAPL contamination as soon as weather allows. Detrex is also continuing the investigation of DNAPL now seen in the DS Tributary

> to the northwest of its facility. EPA will use this information to determine whether engineering measures already in place are sufficiently protective.

Available at: http://www.epa.gov/region5superfund/npl/ohio/OHD980614572.htm. 2007 Nov [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues at this site, it identified the IJC-critical pollutants hexachlorobenzene, B[a]A, B[a]P, I[123cd]P, mercury, PCBs, and lead. 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 in Jefferson Township (Ashtabula County) OH. It is a former waste oil storage site, which at one time included 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 remained a concern. The owners formerly used the oil to heat a greenhouse on the property and for road oiling.

Demographic Data: The 2000 U.S. Census reported the following demographic profile 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 found that contaminated sludge remaining in the tanks and pits could potentially be released by fire or by some act of nature and was not well characterized. ATSDR therefore concluded this sludge posed an *Indeterminate Public Health Hazard* (Category 3). In addition, ATSDR found that the surrounding soil and the boiler house where the oil was burned were contaminated, and that the 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 migrate into nearby Cemetery Creek. U.S. EPA nonetheless reported that ongoing environmental monitoring activities indicated that removal and remedial activities conducted at this site in the early 1990s were effective.

U.S. EPA Update: In its November 2007 Laskin/Poplar Oil Fact Sheet, U.S. EPA stated that

> The final RA included construction of a groundwater diversion trench and slurry cut-off walls, which have successfully lowered the water table to below the contaminated soil. The soils are further isolated by a low-permeability cap over the site, which has successfully eliminated the direct contact threat and reduced infiltration. Since 1993, private parties have been conducting maintenance and monitoring activities, which has verified that the final RAs have remained effective.

Available at: http://www.epa.gov/region5superfund/npl/ohio/OHD061722211.htm. 2007 Nov [cited 11 Jul 2008].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, it identified the IJC-critical pollutants lead, mercury, polychlorinated biphenyls (PCB), polyaromatic hydrocarbons (PAH), chlorinated dioxins, and chlorinated furans. For a more complete list 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. The landfill is about 20 miles south of the City of Ashtabula, (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 2000 U.S. Census reported the following demographic profile for vulnerable populations living within 1 mile of this site:

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 was possible future exposure resulting from residential development. In its 1993 Site Review and Update ATSDR concluded that the site posed *No Apparent Health Hazard* (Category 4). Contaminants of concern for potential exposure included benzo(a)pyrene and other chemicals such as VOCs and chrysotile asbestos. U.S. EPA reported that effective remedial activities were completed in the mid 1990s. Further releases of contaminants and exposure of human populations are therefore unlikely.

U.S. EPA Update: The U.S. EPA January 2007 Fact Sheet for the New Lyme site states in part that

> The second five-year review for the site was completed on March 5, 2003, The five-year review indicated that the site had some issues which included the following:
>
> - low spots or subsidence of the landfill cap along the eastern portion of the site;
> - inadequate monitoring data to determine migration of contaminants within the deep aquifer;
> - high arsenic level at the site; and,
> - lack of analytical projections to predict the length of time until groundwater cleanup goals will be achieved.
>
> To address these site issues, U.S. EPA planned to take the necessary steps to ensure that the low spots along the landfill cap were repaired. These repairs were completed in 2004.
>
> The sampling program for some ground water monitoring wells will be modified. Analytical projections to determine the length of time until

ground water cleanup goals are achieved will be conducted. Also, the high arsenic levels at the site will be further investigated.

The next 5-year review for the New Lyme site should be available sometime in 2008.

Available at: http://www.epa.gov/region5superfund/npl/ohio/OHD980794614.htm. 2007 Jan [cited 2008 Jul 11].

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) 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. Summary and Conclusions for the Ashtabula River AOC

3.3.2.1 Hazardous Waste Sites

During the entirety of its health assessment activities in Ashtabula County, OH, ATSDR categorized four sites as posing either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. According to ATSDR assessments and updated information from www.epa.gov/superfund/sites/npl/npl.htm, two of the sites have been remediated; the remaining two sites are undergoing remediation. The Fields Brook site (Section 3.3.1.2)—a very large site affected by many industrial releases—was remediated for mining residuals and PCB-contaminated soil and sediment and for mining residuals. Additional remediation is, however, necessary for low-level radionuclides and for dense nonaqueous phase liquid. The site was contaminated with the IJC-critical pollutants PCBs, mercury, and lead.

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

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

3.3.2.2 TRI Data

The TRI onsite chemical releases for Ashtabula County in 2001 totaled 6,138,371 pounds, primarily to air. IJC-critical pollutants accounted for 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). See Table 3.3-B.

The major release (5,400,000 pounds) of non-IJC-critical chemicals was of carbonyl sulfide (88% of total onsite releases) to air. No other non-IJC-critical chemical releases of a 300,000-pound magnitude or greater occurred. See Table 3.3-C.

3.3.2.3 NPDES Data

The NPDES permitted discharges for Ashtabula County, OH, are summarized in Table 3.3-D. The average annual permitted discharges in 2004 totaled 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.

3.3.2.4 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, fish consumption restrictions was the one impairment 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 U.S. EPA Web site (http://www.epa.gov/glnpo/aoc/).

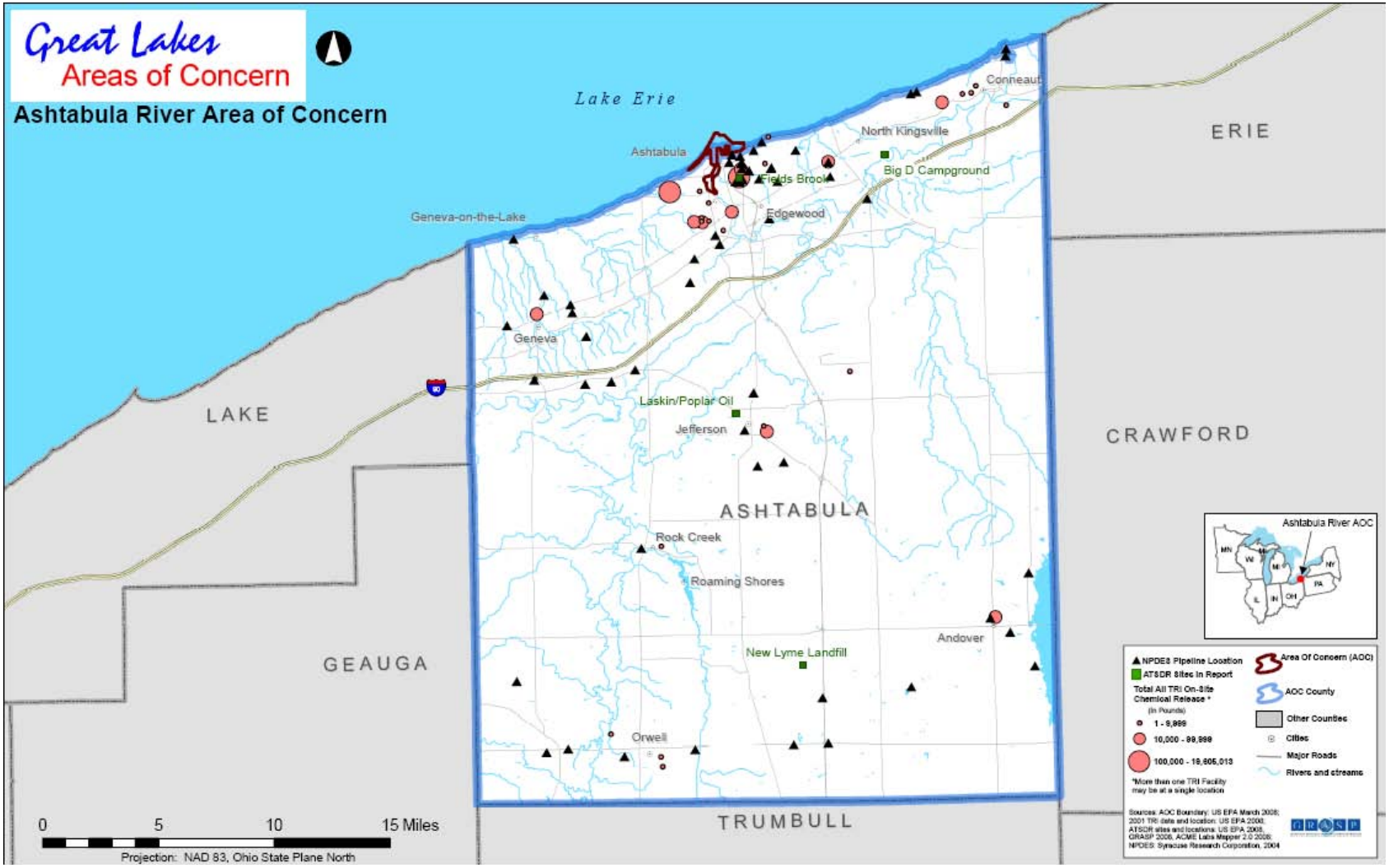
Great Lakes
Areas of Concern
Ashtabula River Area of Concern
Lake Erie
Conneaut
North Kingsville
Ashtabula
Big D Campground
Fields Brook
Edgewood
Geneva-on-the-Lake
Geneva
ERIE
LAKE
Laskin/Poplar Oil
Jefferson
CRAWFORD
ASHTABULA
Rock Creek
Roaming Shores
Andover
New Lyme Landfill
GEAUGA
Orwell
TRUMBULL
0
5
10
15 Miles
Projection: NAD 83, Ohio State Plane North
Ashtabula River AOC
NPDES Pipeline Location
ATSDR Sites in Report
Total All TRI On-Site Chemical Release *
(In Pounds)
1 - 9,999
10,000 - 99,999
100,000 - 19,605,013
*More than one TRI Facility may be at a single location
Area Of Concern (AOC)
AOC County
Other Counties
Cities
Major Roads
Rivers and streams

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
(PCDDs and PCDFs)	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

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
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

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
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

Chemical	IJC Tracking Number	Discharge
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

Chemical	IJC Tracking Number	Discharge
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

Chemical	*IJC Tracking Number*	*Discharge*
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-E. 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 comprises the lower 45 miles of the river from the Ohio Edison Dam to Cleveland, where the river drains into Lake Erie. The AOC also includes approximately 10 miles of Lake Erie shoreline (see AOC map at end of chapter and in Appendix 2).

3.4.1. Hazardous Waste Sites Relevant to the Cuyahoga River AOC

During the public health assessment process ATSDR identified two hazardous waste sites in Cuyahoga County and Summit County, OH that posed either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. Table 3.4-A summarizes these conclusions, together with information regarding the type and location of the site and the date and type of the 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*	*Document Year*	*ATSDR Hazard Category*	*Site Type*	*Remediation Status*
Cady Road, Cuyahoga, North Royalton OHD980614572	HC	2003	1	Non NPL	To be determined
Copley Square Plaza, Copley OH000561322	HA	2007	2	NPL	Ongoing

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

The documents listed in Table 3.4-A further evaluate the data for the Cady Road and Copley Square Plaza sites. These evaluations are discussed in the following subsections.

3.4.1.1 Cady Road, Cuyahoga County, OH

This site is a 25-home residential neighborhood. The homes rely on private wells to supply water for drinking and for other household uses. Between 1954 and 1958, at various elevations along Cady Road, oil and gas wells were drilled to a depth of some 3,000 feet. Thereafter the residents complained of gases and odors in the water, the water's oily appearance and taste, of explosions at the wellheads, and of gas bubbling up through the ground. At the time of ATSDR's 2002 health consultation, the area included approximately 13 oil and gas production wells—one former saltwater injection well was about ¼–½ mile from the nearest private water well. Many of these wells had a history of violations for maintenance and accidents. Nevertheless, what remains unclear is whether 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 subterranean oil and gas to the upper water-bearing zones.

Demographic Data: The 1990 U.S. Census reported the following 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 were not exposed—their household water did not come from private water wells. Such wells only supplied the residents in the 25 homes on the west half of Cady Road.

ATSDR Conclusions: In the 2003 health consultation, 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 was due to outgassing of combustibles gases—including methane—from the private well water such that concentrations near two wellheads were at explosive levels. Concentrations and levels in two basements were also near the explosive level. In addition, hydrogen sulfide in the private well water posed a public health hazard because inhalation exposure from the resulting indoor air concentrations might have caused adverse health effects. Moreover, ingestion of sodium at the levels found in the well water could have been harmful to residents who had high blood pressure or who were on low sodium diets.

U.S. EPA Update: Cady Road is an ATSDR petition site. It does that does not appear in the CERCLIS database, and no regulatory action has been taken.

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 during ATSDR's assessment of exposure-related issues.

3.4.1.2 Copley Square Plaza

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

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

U.S. EPA Update: In its February 2007 Fact Sheet for the Copley Square Plaza site, the U.S. EPA stated

> A passive ground water collection system was installed to collect ground water leaving the eastern side of the dry cleaner and water treatment systems were installed in homes with contaminated wells during the mid-1990s. Ohio EPA has been maintaining the water treatment systems since their installation.
>
> Currently, U.S. EPA is conducting a Remedial Investigation and Feasibility Study (RI/FS) of the site, which will determine the nature and extent of the contamination. Sampling has already been completed, and a

report detailing the results of the Remedial Investigation is expected to be completed by February 28, 2007.

Available at: http://www.epa.gov/region5superfund/npl/ohio/OH0000563122.htm. 2007 Jan [cited 2008 Jul 11].

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. Summary and Conclusions for the Cuyahoga River AOC

3.4.2.1 Hazardous Waste Sites

ATSDR identified two hazardous waste sites in Cuyahoga and Summit Counties as either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. Well water contaminated with dissolved gases consistent with an origin from oil and gas deposits was found at the Cady Road site in Cuyahoga County. These gasses presented an explosive hazard (methane) and an inhalation hazard (hydrogen sulfide). The groundwater under the Copley Square Plaza site in Summit County also had groundwater contaminated with a number of VOCs associated with dry cleaning. Site investigation at Copley Square Plaza is ongoing. No IJC-critical pollutants were associated with either of these sites.

3.4.2.2 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.

As few as 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 (≥ 500,000 pounds) of non-IJC-critical chemicals were of zinc compounds (primarily to land) and 1-chloro-1,1-difluoroethane (primarily to air). Other non-IJC-critical 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). See Table 3.4-C.

3.4.2.3 NPDES Data

The NPDES permitted discharges for Cuyahoga and Summit Counties, OH are summarized in Table 4.4-D. The average annual permitted discharges in 2004 totaled 4,924,341 pounds, the majority of which was ammonia nitrogen and phosphorous. Nickel also was permitted for discharge in substantial amounts (approximately 189,000 pounds).

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

3.4.2.4 Beneficial Use Impairments (BUIs)

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

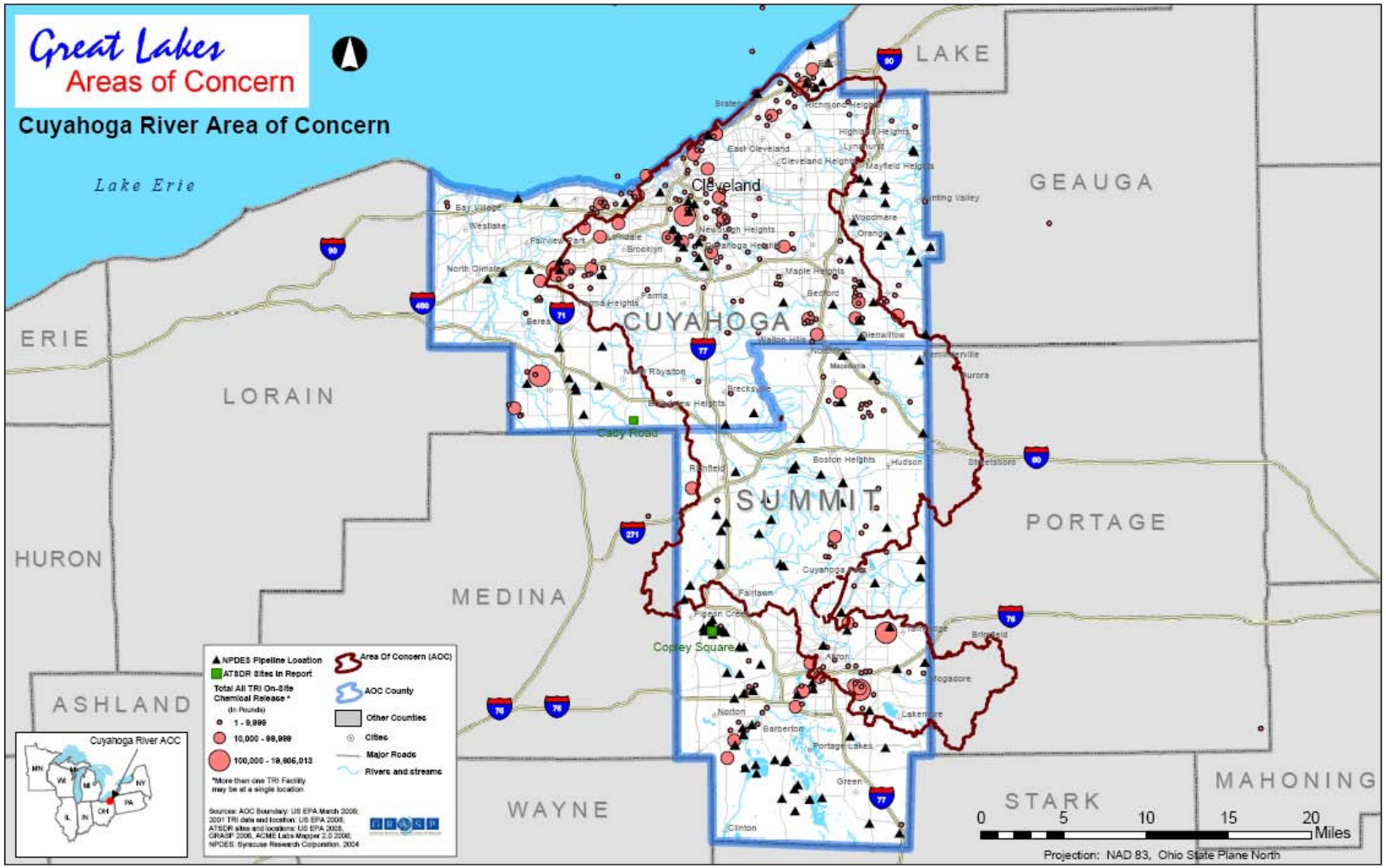
Great Lakes
Areas of Concern
Cuyahoga River Area of Concern
Lake Erie
LAKE
GEAUGA
ERIE
LORAIN
CUYAHOGA
SUMMIT
PORTAGE
HURON
MEDINA
ASHLAND
WAYNE
STARK
MAHONING
Cleveland
Cady Road
Copley Square
NPDES Pipeline Location
ATSDR Sites in Report
Total All TRI On-Site Chemical Release *
(In Pounds)
1 - 9,999
10,000 - 99,999
100,000 - 19,606,013
*More than one TRI Facility may be at a single location
Area Of Concern (AOC)
AOC County
Other Counties
Cities
Major Roads
Rivers and streams
Cuyahoga River AOC
0 5 10 15 20 Miles
Projection: NAD 83, Ohio State Plane North

Table 3.4-B. TRI Releases (in pounds, 2001) for the Cuyahoga 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	0.006514673	0	0	0	0.006514673	0.06370245	0.070217123
(PCDDs and PCDFs)	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

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
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
BUTYRALDEHYDE		20	0	0	0	20	0	20
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	589	111	0	24039	24739	128318	153057	

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
MINED IN THE TRANSVAAL REGION)								
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	352996	0	0	0	352996	0	352996	

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
AND AFTER 'ACID AEROSOLS' ONLY)								
HYDROGEN FLUORIDE		8149	0	0	0	8149	320	8469
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

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
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
TRIETHYLAMINE		15390	0	0	0	15390	0	15390
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

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
	Total	3164070.743	111058.146	0	1761961.1	5037089.989	4675000.328	9712090.317

Table 3.4-C. 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

IJC-critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
		CSM INDS. INC.	44117CLMXS21801	EUCLID
		DU PONT CLEVELAND REFINISH SERVICE CENTER	44125DPNTC9200M	GARFIELD HEIGHTS
		FEDERAL METAL CO.	44146THFDR7250D	OAKWOOD VILLAGE
		FERRO CORP. 130CLEVELAND130	44105FRRCR4150E	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

IJC-critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
		NORTH AMERICAN WIRE PRODS. INC.	44139NRTHM30000	SOLON
		OATEY CO.	44135TYCMP4700W	CLEVELAND
		PPG INDS. OHIO INC. (CL)	44111PPGND3800W	CLEVELAND
		REPUBLIC ANODE FABRICATORS	44136RPBLC11288	STRONGSVILLE
		REPUBLIC METALS	44105RPBLC7930J	CLEVELAND
		RIVER RECYCLING INDS. INC.	44109RVRRC4195B	CLEVELAND
		S. K. WELLMAN CORP.	44142SNTRM5372W	BROOKPARK
		SAINT-GOBAIN CRYSTALS & DETECTORS	44139NGLHR6801C	SOLON
		SHERWOOD	44102SHRWD1201W	CLEVELAND
		STANLEY WORKS	44143STNLY700BE	CLEVELAND
		TDE GROUP INC.	44139TLDNG28850	SOLON
		VENTURE LIGHTING INTL. INC.	44139VNTRL3200A	SOLON
		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

IJC-critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
		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

IJC-critical Pollutant	*Number of Facilities*	*Facility Name*	*NPDES*	*City*
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
		SOLON CITY CENTRAL	OH0027430	SOLON
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, OH. The east and west branches of the river flow north. They join to form the mainstream of the Black River, which flows 16 miles farther north, to discharging into Lake Erie at the City of Lorain (see AOC map at end of this section and in Appendix 2).

3.5.1. Hazardous Waste Sites Relevant to the Black River AOC

During the public health assessment process ATSDR identified three hazardous waste sites in Lorain County, OH, found to pose either a public health hazard or an indeterminate public health hazard. Table 3.5-A summarizes 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*	*Document Year*	*ATSDR Hazard Category*	*Site Type*	*Remedial Status*
Ford Rd Industrial Landfill, Elyria OHD980510002	HC	2002	3	Non NPL	Ongoing
Forest City Technologies OHR000018382	HC	2005	3	Non NPL	Active site; RCRA supervised
Republic Steel Corp. Quarry, Elyria OHD980903447	HA SRU	1989 1993	3 4	Deleted from NPL	Completed

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, OH, that borders on the Black River. The landfill was originally a ravine that became filled with disposed wastes. From the 1950s until 1974, the site accepted industrial wastes. U.S. EPA reported that several local industries dumped into the landfill organics, inorganics, heavy metals, pesticides, catalysts, sanitary sewage sludges, paint sludges, latex sludges, and small quantities of other, unknown hazardous wastes. Often the wastes were then burned; several areas of exposed ash are visible at the site. As of ATSDR's 2002 health consultation the site was not fenced; it was accessible from all sides and was within 1 mile of several residences.

Onsite surface water flows as runoff into the Black River. Surface water also flows into an intermittent stream that drains both into the Black River and into a ravine, from whence the runoff enters a wetland that drains into the Black River. Groundwater flows toward the Black

River as well. Closing and capping of the landfills was not completed under U.S. EPA supervision or guidelines. Sampling results have shown, however, that no landfill gas currently migrates through the existing cap.

In 2006, the U.S. EPA reported that after a review of the Remedial Investigation/Feasibility Study (RI/FS) findings and of the risk assessment conducted at the site, it identified the following contaminants of potential concern (COPCs):

- 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 because of the lack of current environmental monitoring data and the fact that the available data did not provide a complete picture of the contamination's extent of contamination, the site posed an *Indeterminate Public Health Hazard* (Category 3). In that regard, exposed drums and wastes on the northern and southern banks of the landfill may have posed a threat to site visitors.

In 2006, the U.S. EPA reported that people might use that part of the Black River adjacent to the site for recreational activities such as fishing, wading, and swimming. A ditch near the site also intermittently filled with surface water. Consequently, through incidental ingestion and dermal contact exposure pathways, children and adults could have been exposed to Black River sediment and surface water, as well as to onsite pollutants carried into the adjacent ditch by runoff within the Black River. But the small, intermittent stream adjacent to the site only fills with water during significant rain events. This precluded its use for recreational activities such as fishing, swimming, or wading. Similarly, surface water from the ditch did not present significant exposure pathways. Yet the stream's ephemeral nature notwithstanding, substrate (i.e., soil/sediment) within the stream channel could have exposed children and adults to contaminants. On the other hand, surface water from the ditch adjacent to the site was not expected to present significant exposure pathways.

U.S. EPA Update: Ford Road Industrial Landfill is a non-NPL site that does not appear in the CERCLIS database. In its June 2006 Fact Sheet, however, U.S. EPA stated in part that

> U.S. Environmental Protection Agency is proposing to collect and dispose of debris found on the southern and northern side slopes of the Ford Road Industrial Landfill. The Agency also wants to regrade and improve the current landfill cover to ensure all waste remains buried under at least two feet of clean clay or soil cap material. These steps are part of a cleanup plan EPA has proposed to stop landfill pollution from contaminating the nearby Black River, soil and underground water supplies. The proposed cleanup would also protect people and wildlife from coming into contact with landfill pollutants.

Available at: http://www.epa.gov/Region5/sites/fordroad/pdfs/ford-road-proposed-plan-200606.pdf. [cited 29 Jul 2008]. See also Ford Road Landfill Community Involvement Plan.

Available at: http://www.epa.gov/region5/sites/fordroad/pdfs/cic-plan-final-072004.pdf. 2004 Jul [cited 2008 Oct 29].

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

3.5.1.2 Forest City Technologies

Forest City Technologies was one of four industries within the north-central Ohio Village of Wellington, 6 miles south of Oberlin. Other local industries include the Sterling Foundry, the Erie Street Landfill, and LESCO, Inc. The village is in an agricultural area drained by tributaries of the Black River.

Demographic Data: 2000 census data reported the Village of Wellington population as 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 a possible MS cluster. The state identified 25 definite and probable cases of MS in the community of then-4,200 persons, or a crude rate of 595 cases per 100,000.

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, thus necessitating the indeterminate finding.

U.S. EPA Update: Forest City Technologies is an ATSDR petition site that does not appear in the CERCLIS database, and no regulatory action has been taken with respect to it.

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.

3.5.1.3 Republic Steel Corp. Quarry

The 4.9-acre site includes a water-filled quarry; 7.4 acres of densely vegetated land surround the site itself. Before 1950, the principal onsite activity was a sandstone quarry. From 1950 to 1975, Republic Steel Corp. used the quarry to dispose of waste pickle liquor (sulfuric acid and dissolved metal oxides) and rinse water from pickling operations. The waste flowed in a ditch from the plant to the quarry.

Demographic Data: The 2000 U.S. Census reported the following demographic profile 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, because of the potential threat to human health from exposure to contaminants in quarry water and in sediment, soil, and dust, and possibly in fish, ATSDR identified this site as an *Indeterminate Public Health Hazard* (Category 3). Contaminants of concern included VOCs and SVOCs. A subsequent 1993 ATSDR site review and update concluded, however, that the site posed *No Apparent Public Health Hazard* (Category 4). In 1990, through the removal of contaminated soil, the site was remediated. In 2006, U.S. EPA

reported that the City of Elyria adopted an ordinance to prohibit groundwater and quarry use for recreational purposes. In addition, the property zoning would remain exclusively heavy industrial.

U.S. EPA Update: In its December 2007 Fact Sheet for the Republic Steel Quarry site, the U.S. EPA stated in part that

> The U.S. EPA finalized the deletion of the RSQ site from the NPL on November 12, 2002, after receiving concurrence from the State of Ohio and no public comments on the proposal for deletion. U.S. EPA, with assistance from Ohio Environmental Protection Agency, completed the second five-year review for the site on June 27, 2003. The review included sampling of groundwater and Black River surface water in early 2003. Sampling of the on-site soil, quarry sediment, surface water, and fish tissue were postponed until August, a more optimum time for fish tissue sampling. The second five-year review report indicated that there were no exposure pathways to groundwater contaminants, limited exposures to the quarry media, and that the Black River was not contaminated. The protectiveness statement was deferred, however, until the remaining data could be analyzed. Due to data quality review issues with the August 2003 data, the release of an addendum incorporating these data has been delayed.
>
> The next five-year review is scheduled for completion in June 2008. The five-year review site inspection was conducted on November 8, 2007 by U.S. EPA, OEPA and the city of Elyria. The August 2003 data will be included as part of the upcoming five-year review report.

Available at: http://www.epa.gov/region5superfund/npl/ohio/OHD980903447.htm. 2007 Dec [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PAHs, mercury, and lead 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.

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

3.5.2.1 Hazardous Waste Sites

ATSDR has categorized three Lorain County hazardous waste sites as a public health hazard or an indeterminate public health hazard. An analysis of the site documents reveals no clear evidence of ongoing human exposure to site-related IJC-critical pollutants 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 restriction of access prevents exposure. Although contaminants remain in the quarry sediment, they are below the mixing zone. In the past, however, this site may have contributed to the environmental burden of the IJC-critical pollutants B(a)P and lead, and it may still act as a reservoir for these contaminants.

The Ford Road Industrial Landfill is 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. In 2008, U.S. EPA reported that a Remedial Investigation and Feasibility Study (RI/FS) and a Record of Decision (ROD) were completed. Implementation of the clean up alternatives as outlined in the ROD is forthcoming. This will prevent the Ford Road Site from contributing to any further contamination of the Black River.

3.5.2.2 TRI Data

Onsite TRI releases in Lorain County totaled 2,940,333.5 pounds, primarily to air. See Table 3.5-B. 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).

3.5.2.3 NPDES Data

The NPDES permitted discharges for Lorain County, OH are summarized in Table 3.5-C. The average annual permitted discharges in 2004 totaled 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-D.

3.5.2.4 Beneficial Use Impairments (BUIs)

At the Black River AOC, fish, wildlife, and drinking water consumption restrictions are listed as impaired. Specific advisories have changed over time, and specific fish species are identified as restricted. Consumption advisories include fish and turtles along the mainstream and along the 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 affected. Further information is available at the U.S. EPA Web site at: http://www.epa.gov/glnpo/aoc/.

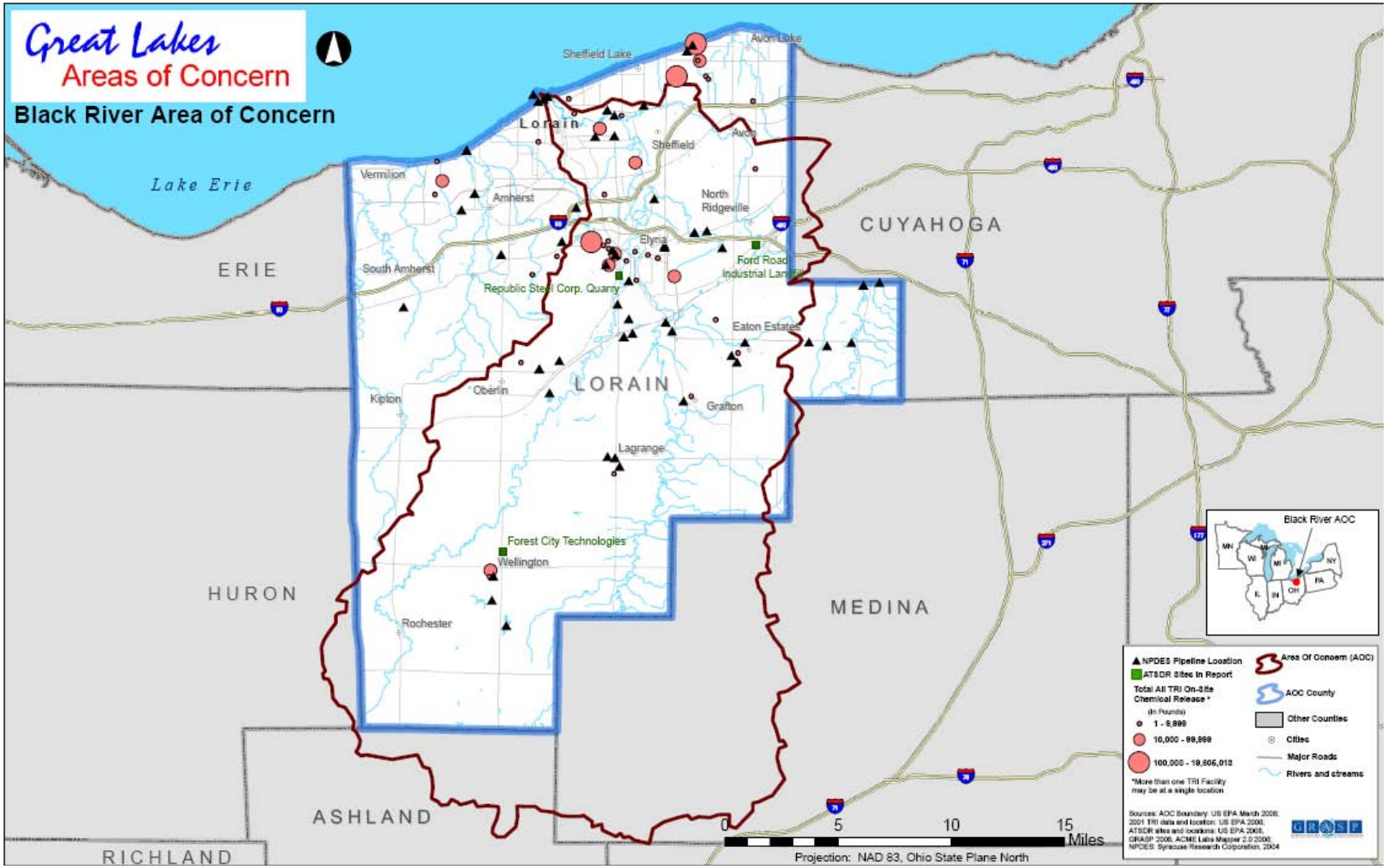
Great Lakes
Areas of Concern
Black River Area of Concern
Lake Erie
Sheffield Lake
Avon Lake
Lorain
Sheffield
Avon
Vermilion
Amherst
North Ridgeville
Elyria
South Amherst
Ford Road Industrial Landfill
Republic Steel Corp. Quarry
Eaton Estates
Kipton
Oberlin
LORAIN
Grafton
Lagrange
Forest City Technologies
Wellington
Rochester
ERIE
CUYAHOGA
HURON
MEDINA
ASHLAND
RICHLAND
0 5 10 15 Miles
Projection: NAD 83, Ohio State Plane North
Black River AOC
NPDES Pipeline Location
ATSDR Sites in Report
Total All TRI On-Site Chemical Release *
(in Pounds)
1 - 9,999
10,000 - 99,999
100,000 - 19,606,013
*More than one TRI Facility may be at a single location
Area Of Concern (AOC)
AOC County
Other Counties
Cities
Major Roads
Rivers and streams
GRASP

Table 3.5-B. TRI Releases (in pounds, 2001) for the Black 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	0.00507877	No data	0	0	0.0050787	0	0.00507877
(PCDDs and PCDFs)	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			No data	0	0	64	5	69
1,1,2-TRICHLOROETHANE			No data	0	0	3	0	3
1,2,4-TRIMETHYLBENZENE	64		0	0	0	24676	0	24676
1,2-DICHLOROBENZENE	3	4	No data	0	0	4	0	4
1,2-DICHLOROETHANE		5	No data	0	0	5	0	5
1,2-PHENYLENEDIAMINE	24676	28	No data	0	0	28	0	28
1,3-PHENYLENEDIAMINE		28	No data	0	0	28	0	28

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
1,4-DIOXANE		3	No data	0	0	3	0	3
2,4,6-TRICHLOROPHENOL			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	9	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

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
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			No data	0	0	19	0	19
CERTAIN GLYCOL ETHERS			No data	0	0	62212	0	62212
CHLORDANE	19	1	No data	0	0	1	0	1
CHLORINE		1857	No data	0	0	1857	0	1857
CHLOROBENZENE	62212	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 TRANSVAAL 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)			No data	0	0	7	0	7

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
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

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
MALEIC ANHYDRIDE		4	No data	0	0	4	0	4
MANGANESE		3737	14000	0	0	17737	124000	141737
MANGANESE COMPOUNDS			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	1070	13368	No data	0	0	13368	1887	15255
METHYL ISOBUTYL KETONE			No data	0	0	8714	5	8719
METHYL METHACRYLATE			No data	0	0	3230	5	3235
METHYL TERT-BUTYL ETHER	400 8714		No data	0	0	400	0	400
MOLYBDENUM TRIOXIDE	3230	2015	5	0	0	2020	2975	4995
N,N-DIMETHYLFORMAMIDE			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	44	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

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
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			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 1260		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			No data	0	0	57465	8	57473
TOLUENE		8637	21	0	0	8658	2041	10699
TOLUENE DIISOCYANATE (MIXED ISOMERS)	7 57465		No data	0	0	7	0	7

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
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)			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 164881	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-C. 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.	44052MRCNC305OB	LORAIN
		FORD MOTOR CO. OHIO ASSEMBLY PLANT	44012FRDMT650MI	AVON LAKE
		INSERVCO INC.	44050NSRVC110CO	LAGRANGE
		NATIONAL BRONZE & METALS (OHIO) INC.	44055NTNLB5311W	LORAIN
		NEW NGC INC.	44052NWNGC1901H	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

IJC-critical Pollutant	*Number of Facilities*	*Facility Name*	*TRIF ID*	*City*
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-D. 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-E. 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
		Oberlin 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, substantial portions of Ottawa and Wood Counties, and approximately 23 miles of the Maumee River, the Maumee Bay, the Ottawa and Toussaint Rivers, and several creeks (see AOC map at end of chapter and in Appendix 2).

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, as an indeterminate public health hazard.

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

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

3-Indeterminate Public Health Hazard, HC=Health Consultation, EI=Exposure Investigation, NA=Not applicable

3.6.1.1 Brush Wellman Elmore Plant

Situated on 470 acres in a semi-rural area between the villages of Elmore and Oak Harbor, OH, the Brush Wellman plant is the principal U. S. producer of beryllium, beryllium alloy, and beryllium oxide. Recent well water samples collected near the site did not, however, contain beryllium.

Public Health Outcome Data: In July 2006, ATSDR offered testing for beryllium sensitivity for citizens who lived with beryllium workers, who worked with beryllium metals in a local machine shop, who lived within 1.25 miles of the Brush Wellman plant, or who had been diagnosed with sarcoidosis. Eighteen persons responded; all 18 had normal beryllium lymphocyte proliferation test results, with no one diagnosed as beryllium-sensitive. The possibility remains, however, that other community residents who do not work with beryllium have been sensitized.

ATSDR Conclusions: In 2002 and 2006, ATSDR concluded that in the past, short term beryllium releases posed an *Indeterminate Public Health Hazard* (Category 3) to residents near the plant. That said, current beryllium emissions from the plant were below levels expected to cause adverse health effects and did not pose a public health hazard. Similarly, the beryllium levels in wellwater samples collected from private residences near the plant posed *No Apparent Public Health Hazard* (Category 5).

U.S. EPA Update: This Brush Wellman site is an ATSDR petition site. It is an operating facility under RCRA oversight. Brush Wellman is not a federal site. Available at: http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0504151 [cited 2008 Oct 8]. See also Order Denying Review, RCRA Appeal 92-17. Available at: http://www.epa.gov/eab/disk1/brush.pdf [cited 2008 Oct 29].

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. Summary and Conclusions for the Maumee River AOC

3.6.2.1 Hazardous Waste Site Data

In 2002 and 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). But current beryllium emissions from the plant pose no public health hazard.

3.6.2.2 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. See Table 3.6-B. 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).

3.6.2.3 NPDES Data

The NPDES permitted discharges for Lucas County, OH are summarized in Table 3.6-C. The average annual permitted discharges in 2004 totaled 7,178,272 pounds—mostly ammonia nitrogen. Permitted phosphorus discharges also occurred in substantial amounts (approximately 519,000 pounds).

Permitted discharges included the IJC-critical pollutants lead (approximately 10,700 pounds) and mercury (12 pounds). Facilities permitted to release these pollutants are listed in Table 3.6-D.

3.6.2.4 Beneficial Use Impairments (BUIs)

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

A summary box on the U.S. EPA Web site states that at in this AOC, 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 U.S. EPA Web site at http://www.epa.gov/glnpo/aoc/.

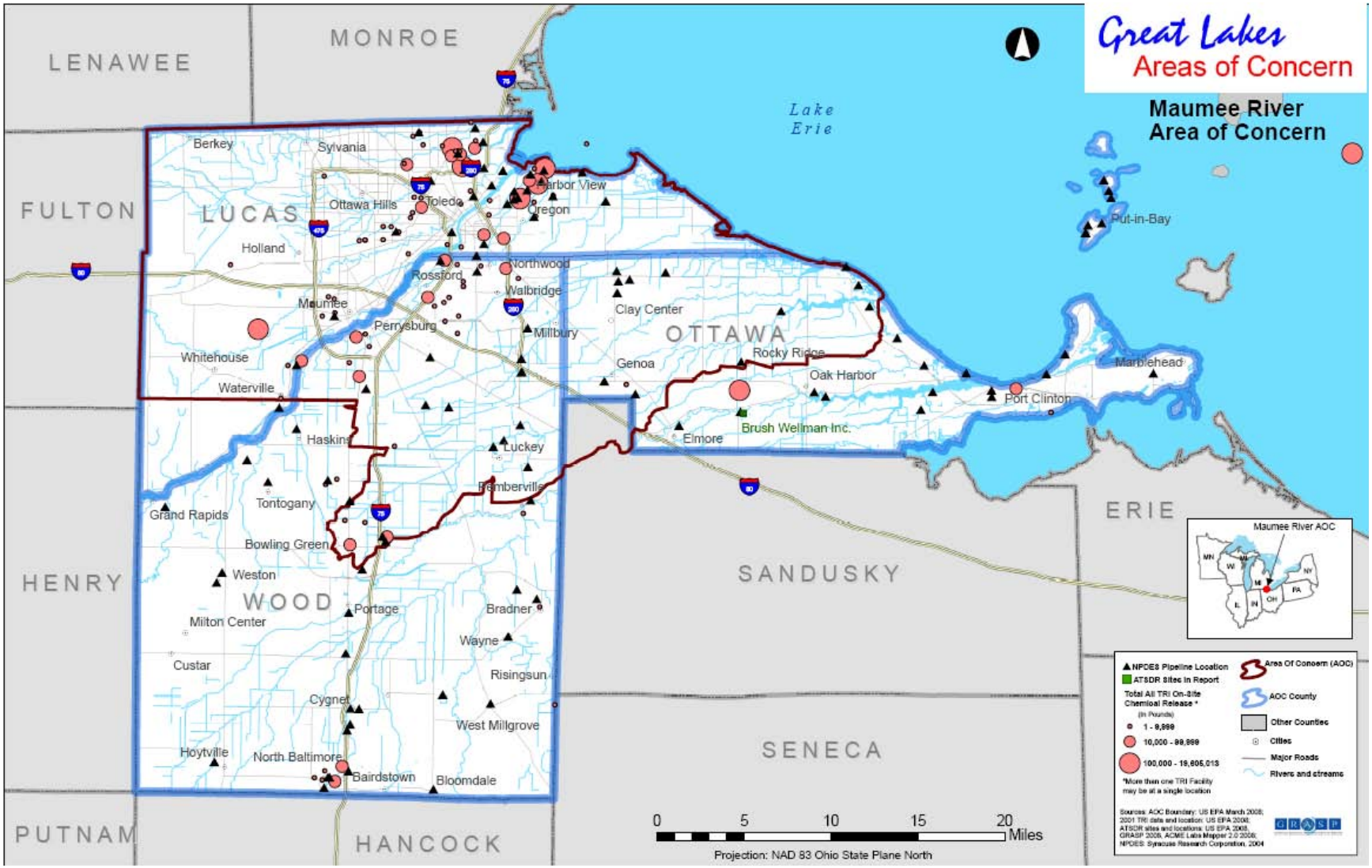
Great Lakes
Areas of Concern
Maumee River
Area of Concern
Lake
Erie
LENAWEE
MONROE
FULTON
LUCAS
HENRY
WOOD
OTTAWA
SANDUSKY
ERIE
SENECA
PUTNAM
HANCOCK
Berkey
Sylvania
Toledo
Harbor View
Oregon
Ottawa Hills
Holland
Northwood
Rossford
Walbridge
Maumee
Perrysburg
Millbury
Clay Center
Whitehouse
Waterville
Genoa
Rocky Ridge
Oak Harbor
Marblehead
Port Clinton
Put-in-Bay
Brush Wellman Inc.
Elmore
Haskins
Luckey
Bremerville
Tontogany
Grand Rapids
Bowling Green
Weston
Milton Center
Portage
Bradner
Wayne
Custar
Risingsun
Cygnet
West Millgrove
Hoytville
North Baltimore
Bairdstown
Bloomdale
0 5 10 15 20
Miles
Projection: NAD 83 Ohio State Plane North
Maumee River AOC
NPDES Pipeline Location
ATSDR Sites in Report
Total All TRI On-Site Chemical Release *
(In Pounds)
1 - 9,999
10,000 - 99,999
100,000 - 19,605,013
*More than one TRI Facility may be at a single location
Area Of Concern (AOC)
AOC County
Other Counties
Cities
Major Roads
Rivers and streams

Table 3.6-B. TRI Releases (in pounds, 2001) for the Maumee 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	0.0000001	0	0	51	51.0000001	0	51.0000001
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.00237699	0.0007938	0	0.004851	0.00802179	0	0.00802179
(PCDDs and PCDFs)	3							
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

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
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	306		51	0	7100	7457	7352	14809

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
TRANSVAAL REGION)								
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

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
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

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 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

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
	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

IJC-critical Pollutant	*Number of Facilities*	*Facility Name*	*TRIF ID*	*City*
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	*IJC Tracking Number*	*Discharge*
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 is in the southeastern part of Michigan's Lower Peninsula and 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 both north and south along the near shore and extends ½ mile into Lake Erie (see AOC map at end of chapter and in Appendix 2).

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 18 hazardous waste sites in Wayne County, MI, and has reached conclusions regarding public health threats these sites posed or still pose. Table 3.7-A summarizes the conclusions for the one Monroe county site, together with information regarding the type and location of the site and the date and type of public health assessment product.

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

Site Name, City, and CERCLIS ID	*ATSDR Document Type*	*Document Year*	*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

3.7.1.1 Consolidated Packaging Corp.

This 97-acre site is on the east side of the City of Monroe (Monroe County) MI. A paper and paperboard plant formerly occupied the site. Originally wetlands, the site was filled in with various materials, including commercial and industrial waste. Consolidated Packaging operated at the site for 80 years, from 1898 through 1978. The plant structures have since been demolished; all that remains are seven lagoons formerly used for waste water disposal, storage, and treatment. These lagoons take up a large part of the site. While the plant was operating, overflow from the lagoons traveled through drainage ditches into nearby River Raisin.

A waste water treatment plant, a closed industrial landfill, and a residential area border the site. The River Raisin 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 and the U.S. EPA 2005 site update.

ATSDR Conclusions: In 1995, because of the potential threat to human health from exposure to contaminants and because of incomplete monitoring data, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). Trespassers could be exposed to soil, sediments, and surface water containing PCBs and metals at concentrations potentially of human health concern. Data are unavailable on concentrations of surface soil contaminants, but 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 was contaminated with the IJC-critical pollutant, PCBs. Fish and turtles had been seen in the drainage ditch, and before the lagoons were fenced, children reportedly fished in them. 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 had elevated PCB concentrations. The Consolidated Packaging Corporation is, however, one of many possible sources for the PCB contamination of the fish. Although groundwater at the site contains various contaminants— including PCBs—at concentrations above health-based screening values, the site has 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 U.S. EPA (in June 2004). PCB wastes are now stored in an onsite disposal cell. U.S. EPA also reports reported that bacterial levels in the waters have led to beach closings. Site remediation is ongoing.

U.S. EPA Update: In its Brownfields 2005 Fact Sheet, U.S. EPA stated in part that

> EPA has selected the City of Monroe for a brownfields revolving loan fund grant. The grant will be used to capitalize a revolving loan fund from which the City of Monroe will provide loans and subgrants to support cleanup activities for sites contaminated with hazardous substances. The grant will target the 45-acre former Consolidated Packaging Corporation Northside Plant located at 921 East Elm Avenue, within the Mason Run development area.

Available at**:** http://www.epa.gov/swerosps/bf/05grants/monroe.htm. [cited 29 Jul 2008].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PCBs, dioxins, furans, lead, several PAHs, including B[a}A, B[a]P, B[b]F B[k]F, I[123cd]P, and mercury were identified at this site.

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

3.7.2.1 Hazardous Waste Sites

Consolidated Packaging Corporation was the one hazardous waste site in Monroe County, MI, categorized as either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard. The soil and sediment at this site was contaminated with the IJC-critical pollutants PCBs, PAHs, dioxin, furans, lead, and mercury. Onsite groundwater, contaminated with PCBs, could have discharged into the River Raisin. Because monitoring data are were inadequate to determine whether chemicals in completed exposure pathways pose a public health hazard, the site was considered an *Indeterminate Public Health Hazard* (Category 3).

Issues for Follow-Up

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

3.7.2.2 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. See Table 3.7-B. Releases to water were minimal. Of these releases, some 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 (≥500,000 pounds) of non-IJC-critical chemicals were of hydrochloric acid, ethylene, sulfuric acid, and hydrogen fluoride (to air); and barium compounds (primarily to land). Table 3.7-C lists the facilities that released these pollutants.

3.7.2.3 NPDES Data

The NPDES permitted discharges for Monroe County, MI, are summarized in Table 3.7-D. The average annual permitted discharges in 2004 totaled 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.

3.7.2.4 Beneficial Use Impairments (BUIs)

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

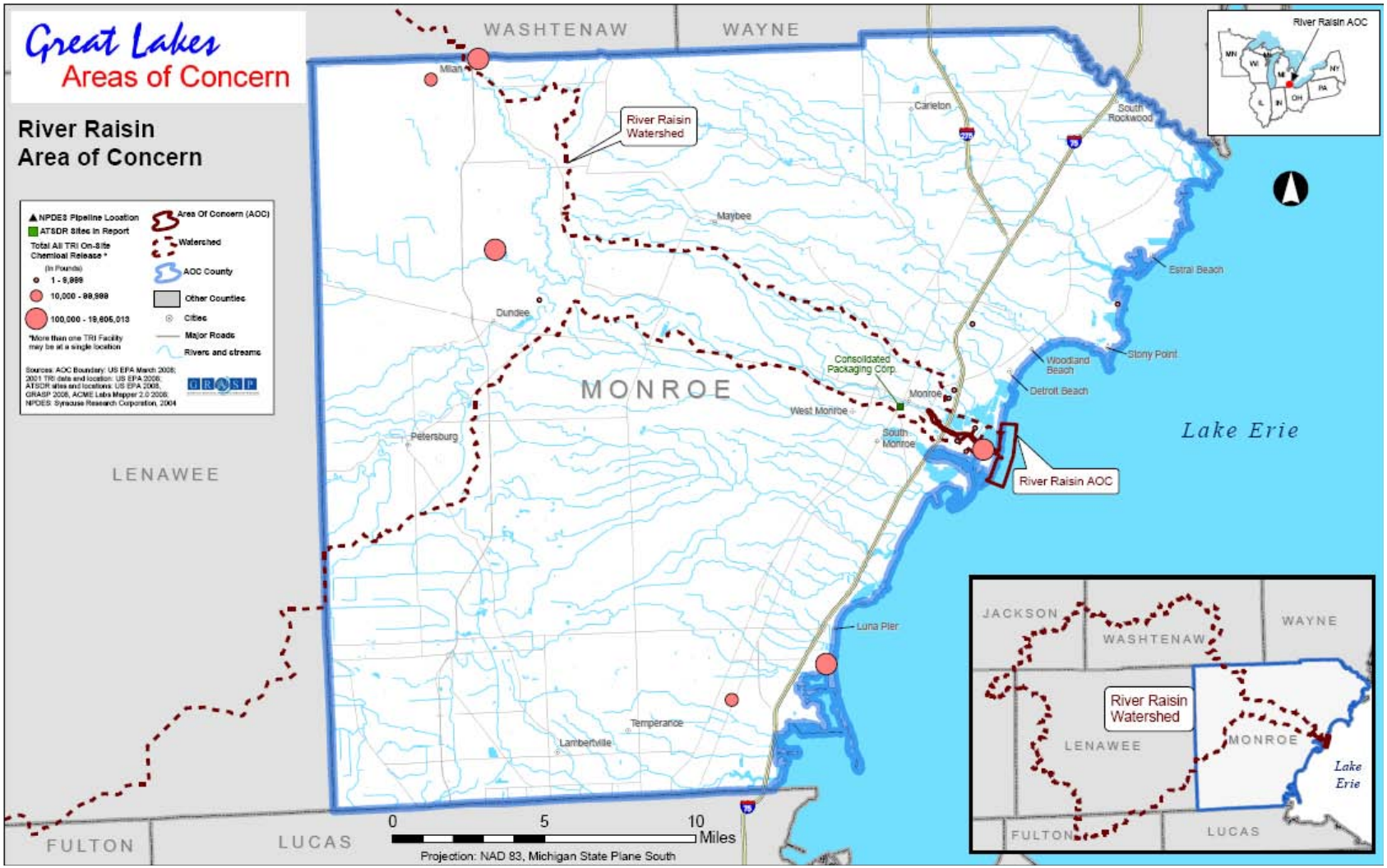
Great Lakes
Areas of Concern
River Raisin
Area of Concern
NPDES Pipeline Location
ATSDR Sites in Report
Total All TRI On-Site Chemical Release *
(In Pounds)
1 - 9,999
10,000 - 99,999
100,000 - 19,605,013
*More than one TRI Facility may be at a single location
Area Of Concern (AOC)
Watershed
AOC County
Other Counties
Cities
Major Roads
Rivers and streams
Sources: AOC Boundary: US EPA March 2008; 2001 TRI data and location: US EPA 2008; ATSDR sites and locations: US EPA 2008; GRASP 2008; ACME Labs Mapper 2.0 2008; NPDES: Syracuse Research Corporation, 2004
GRASP
WASHTENAW
WAYNE
MONROE
LENAWEE
FULTON
LUCAS
JACKSON
Milan
Dundee
Petersburg
Maybee
Carleton
South Rockwood
Estral Beach
Stony Point
Woodland Beach
Detroit Beach
Consolidated Packaging Corp.
Monroe
West Monroe
South Monroe
Luna Pier
Temperance
Lambertville
River Raisin Watershed
River Raisin AOC
Lake Erie
0
5
10
Miles
Projection: NAD 83, Michigan State Plane South
River Raisin AOC
MN
WI
MI
NY
IL
IN
OH
PA

Table 3.7-B. TRI Releases (in pounds, 2001) for the River Raisin 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	0.007667447	No data	0	0	0.007667447	0	0.007667447
(PCDDs and PCDFs)	3							
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

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
CHROMIUM		2661	No data	0	35	2696	458	3154
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
ETHYLBENZENEETHYLENE		531001524027	No data	0	0	531001524027	0	531001524027
		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

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
SELENIUM COMPOUNDS		9000	2800	0	6900	18700	0	18700
NICKEL COMPOUNDS	1019		863	0	59000	60882	6	60888
POLYCYCLIC AROMATIC COMPOUNDS	15693.5			0	0	39	0	15732.5
		9000	2800	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
TRICHLOROETHYLENE		121	No data	0	0	718	0	718
ZINC COMPOUNDS		6994	4528	0	130005	141527	0	214299
	Total Non-IJC	13877691.7	35491	0	175300	16633854.7	0	16725424.7
	Total	367313121	35653	0	0597	367313718	0	367313718

Table 3.7-C. TRI Releases (in pounds 2001) for River Raisin 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	0.007667447	No data	0	0	0.007667447	0	0.007667447
(PCDDs and PCDFs)	3							
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			No data	0	0	47598	0	47598

47598

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
CHROMIUM		2661	No data	0	35	2696	458	3154
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL 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			No data	0	0	1524027	0	1524027
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)			No data	0	0	9901000	0	9901000
HYDROGEN FLUORIDE		551000	No data	0	0	551000	0	551000
MANGANESE	9901000	245	No data	0	461	706	53	759
MANGANESE COMPOUNDS			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	3279		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	17250	635	No data	0	35	670	1901	2571

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
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

Chemical	*IJC Tracking Number*	*Discharge*
	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 2).

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 categorized as either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard 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 25: 19 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*	*Document Year*	*ATSDR Hazard Category*	*Site Type*	*Remediation Status*
Carter Industrial, Inc., Detroit MID980274179	HA	1992	2	Deleted from NPL	Completed
EQ Resource Recovery Fire, Romulus MID060975844	HC	2006	1	Non NPL	Completed
Federal Marine Terminal Riverview, MID980504765	HC	2003	2	Non NPL	Ongoing
Ford Motor Co. Allen Park Clay Mine, Allen, Park MID980568711	HA	1994	3	Non NPL	Active site; RCRA supervised
FWS-Detroit River, Wayne County MIN000509205	HC	2007	2	Non NPL	Ongoing
Globe Building Property Detroit	HC	2005	3	Non NPL	Ongoing
Grand Haven, Hamtramck MIDCRA05D000	HC	2006	2	Non NPL	Completed
Gratiot 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	Completed

Site Name, City, and CERCLIS ID	ATSDR Document Type	Document Year	ATSDR Hazard Category	Site Type	Remediation Status
Lower Ecorse Creek Dump, Wyandotte MID985574227	HC HV HC HC HA	1990 1993 1994 1994 1995	1 1 N.S. N.S. 4	Deleted from NPL	Completed
Master Metals Inc. #2, Detroit MID039108824	HC HC	1997 2005	2 4	Non NPL	Completed
Michigan Industrial Finishes, Hamtramck MIN000509131	HC	2005	1	Non NPL	Completed
Mill Street Plant Brownfields Redevelopment, Ecorse MIXCRA973000	HC	2005	3	Non NPL	Ongoing
Old World Trade Center, Detroit MI0001094465	HC	1997	2	Non NPL	Ongoing
Packard Plant, Detroit MIR000037689	HC	1998	2	Non NPL	Ongoing
Proposed Beard Street School, Detroit MIXCRA704000	HC HC	2001 2002	3 5	Non NPL	Completed
Wholesale Russell/Mack MIXCRA327000, MISFN0507878	HC	1997	2	Non NPL	Completed
WorldMed Mercury, Detroit MIN000509958	HC	2006	2	Non NPL	Completed
Zonolite Co/W.R. Grace, Dearborn MIXCRA822000	HC	2005	2	Non NPL	Ongoing

1=Urgent Public Health Hazard, 2=Public Health Hazard, 3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard, 5=No Public Health Hazard

HA=Public Health Assessment, HC=Health Consultation, HV = Health Advisory, SRU=Site Review and Update, N.S. = Not Stated

The Wayne County sites are discussed first, followed by the Oakland County sites, which are relevant to the Clinton River AOC as well as to the Rouge River AOC.

3.8.1.1 Carter Industrials, Inc.

Metals and PCBs from electrical capacitors and transformers extensively contaminated this former scrap metal yard in Detroit (Wayne County) MI. PCB-laden sediment appeared in the sewers that drained the site, and that sewer effluent flowed into the Detroit River. As of 1992, PCB-contaminated surface soils from nearby properties had been piled onto 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 was installed. U.S. EPA estimated that the total amount of PCBs in the onsite soils could have been as much as 17 tons. Information regarding this site is from ATSDR's 1992 public health assessment and the 2007 U.S. EPA NPL site Fact Sheet.

Demographic Data: the 2000 U.S. Census reports the following demographic profile 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: 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 CDC's then-operable 25-µg/DL level of concern in 5 subjects; but 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 a *Public Health Hazard* (Category 2). Inhalation of PCB-contaminated fugitive dusts was considered a principal route of exposure—PCBs were, for example, found in particulates in the rain gutters of nearby homes. But that sampling appears to have preceded the removal of PCB-contaminated soil from yards adjacent to the site and the covers over the soil mounds. Although PCBs also were found in the storm sewers that drain the site and that empty into the Detroit River, the greatest concern was for trespassers' direct exposure to the onsite PBC-contaminated soil. Blood samples from nearby residents, taken before any remediation of either the site or the surrounding area, did not, however, indicate that the residents' exposures exceeded those of the general population.

U.S. EPA Update: U.S. EPA states in its October 2007 Carter Industrials, Inc. Fact Sheet that

> The site cleanup commenced in August 1996 and was completed by December 1996. During the negotiations for Remedial Design and Remedial Action, the potentially responsible parties would not agree to cleanup the 1.25 miles of combined sewers that were contaminated with as much as 20,000 ppm PCBs. They argued that there were other additional sources of PCBs to the sewers, and these parties should also be held liable. U.S. EPA refused to delete the site from the National Priorities List (NPL) until the sewer cleanup was completed. The respondents acquiesced, and the sewer line cleanup occurred during summer and fall 1996. The site was deleted from the NPL on March 25, 1997.

Success Story

> The Site was cleaned up and deleted from the NPL and the US EPA recovered most of the moneys that it had expended as well as securing the PRPs agreement to implement a $12 million cleanup.
>
> **Property Reuse**
>
> The site is ready for unrestricted re-use.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID980274179.htm. 2007 Oct [cited 2008 Jul 11].

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

3.8.1.2 EQ Resource Recovery Explosion and Fire

In 2005, a hazardous waste tank at the EQ Resource Recovery plant in Romulus (Wayne County) MI, exploded and burned. The explosion ignited fires in surrounding tanks. U.S. EPA assisted the local hazmat team with response activities and with containment assessments. As the fires were brought under control, U.S. EPA and the 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. ATSDR and MDCH found that the explosion and fire at the facility posed an urgent public health hazard warranting an evacuation, which local officials in fact ordered. Today, however, concentrations of volatile organic compounds (VOCs) in the air, polycyclic aromatic hydrocarbons (PAHs) in soot, and metals in soot and debris posed no apparent short-term public health hazard. Additionally, any residual contaminant concentrations likewise 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). At the time, the fire and the sudden release of chemicals threatened the immediate safety and welfare of residents and businesses downwind from the site. Evacuation was prudent and necessary. Since 2006, however, VOCs and PAH levels have been below screening levels for short-term exposure, and weathering, together with cleaning, has removed much of the soot. While chemicals from soot may still be present in some residential yards, the concentrations should not pose a public health concern—metals did not exceed screening levels.

U.S. EPA Update: In the Onscene Coordinator Site File for EQ Resource Recovery Explosion and Fire, U.S. EPA states in part that

> Continuous air monitoring of the perimeter of the facility and in the neighborhood downwind of the facility was conducted utilizing Area Raes, which were monitoring for VOCs, hydrogen sulfide, carbon monoxide, oxygen and lower explosive limit. U.S. EPA [Superfund Technical Assessment & Response Team] START and [Response Engineering and Analytical Contract] REAC contractors continued investigating the residential area impacted by the plume by collecting four wipe samples from twenty residential properties, two from the upwind and downwind side facing the fire. The EPA-ERT laboratory analyzed the wipe forty samples (with additional samples for field and laboratory

blanks) for BNAs and metals. Laboratory results were shared with the health agencies, which determined that levels were below health concern.

Available at: http://epaosc.net/site_profile.asp?site_id=1785%20. [cited 2008 Jul 29]. See also the MDCH 2005 Sep 26 Fact Sheet on the EQ explosion at: http://www.michigan.gov/documents/EQ_Data_Results_Factsheet_137513_7.pdf [cited 2008 Oct 15].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutant PAHs was identified at this site.

3.8.1.3 Federal Marine Terminal Riverview

The 4-acre City of Riverview boat launch ramp is in Wayne County, MI, on the west bank of the Detroit River's Trenton Channel. The boat launch area comprises an asphalt-paved parking lot and three boat docks. Since 1951 and through the 1950s and 1960s, the Wyandotte Chemicals Corporation (now owned by Germany's BASF AG) 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 past remedial actions were not sufficient to prevent migration of pollutants from the property, and particularly not sufficient to prevent contamination of the groundwater that discharged to the Detroit River. In 2003, as MDEQ and BASF were continuing negations about the proper remedy for the property, several studies of the BASF Riverview property established that the groundwater was 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.

As stated, the groundwater from under the BASF property discharged 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) at concentrations exceeding MDEQ residential direct contact criteria (DCC) were detected in sediment samples taken from the boat launch area. Data on human consumption of sport-caught fish showed that total dioxin TEQs were detected in surface water at concentrations above the applicable MDEQ ambient water quality criteria (AWQC). Consequently, mercury concentrations in Detroit River surface water near the boat launch presented a human health hazard via ingestion of sport-caught fish. Information on this site is taken from the ATSDR's 2003 health consultation.

ATSDR Conclusions: In 2003, ATSDR concluded that under current site conditions, sediment and surface water at the City of Riverview boat launch presented *No Public Health Hazard* (Category 5). Recreational ramp users 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, exceeded the mercury water quality standard for human consumption of sport fish. And Detroit River fish samples contained levels of mercury possibly harmful to human health. Accordingly, the site posed a *Public Health Hazard* (Category 2). Fish consumption advisories were placed in river locations where state authorities recommended limits on the amount of fish eaten. Thus if existing fish advisories were followed, mercury concentrations in fish would not pose a health hazard.

U.S. EPA Update: The City of Riverview Boat Launch site is not a federal site and is not included in the CERCLIS database.

The Michigan Department of Community Health Update: On August 9, 2006, the Michigan Department of Environmental Quality entered into a Consent Order with BASF to conduct Interim Response Activities, including:

- removal of the contaminated sediments (completed January 31, 2007),
- installation of steel sheet pile to wall off the site from the Detroit River (completed January 31, 2007), and
- construction of a groundwater interception trench and a groundwater remediation system.

The groundwater system will be completed by September 30, 2008. After an initialization period, the system will be turned on and run indefinitely. BASF is required to submit progress reports to the MDEQ on a regular basis for the duration of the remedy. (Beth Vens, Michigan Department of Environmental Quality, personal communication, 2008 August 20).

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 were identified at this site.

3.8.1.4 Ford Motor Co. Allen Park Clay Mine

Before 1956, the Ford Motor Company's Allen Park (Wayne County) MI, Clay Mine landfill was exclusively a clay mine. Beginning in 1956, Ford deposited wastes from its Rouge plant in the clay mine pits. U.S. EPA classified some of these wastes as hazardous (e.g., electric arc furnace dust and decanter tank tar sludge). From 1980 to 1986, Ford disposed of the hazardous wastes separately, depositing them in an onsite hazardous waste management area. By 1986, Ford also closed this area, expanded the site's leachate collection system, and covered the landfill areas with a clay cap. Information regarding this site is from ATSDR's 1994 public health assessment.

Public Health Outcome Data: The Michigan Cancer Foundation conducted two studies of cancer incidence for the communities surrounding the site, which ATSDR evaluated and followed 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, MI. In comparison with rates for the City of Dearborn, for Wayne County, and for the tri-county area (Wayne, Oakland, and Macomb Counties), 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 followed up and expanded the 1983 effort. The study area grew to 10 census tracts in the communities of Snow Woods, Melvindale, and Allen Park, all of which surround the Allen Park Clay Mine. The data 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 telephone interviews with relatives collected information on brain cancer cases and on occupational, smoking, and residential histories. A review of cancer rate data for the comparison populations of City of Dearborn and Wayne County and for the study area revealed that the total number of study area cancer cases was lower than expected. The one 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. One of the women with brain cancer smoked, and among the women, no consistent occupational history appeared.

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 then evaluated the current information (1973–1990) on the number of brain and liver cancers in the study area. From 1973 to 1990, a brain cancer rate excess did occur in Snow Woods, but liver cancer rates in all three study communities were comparable to those in Wayne County and to those in adjacent Macomb and Oakland Counties.

ATSDR concluded that the Allen Park Clay Mine site was not the cause of the excess brain cancers. No completed environmental and human exposure pathways were found for the site, the information about potential pathways did not indicate lead, and carcinogenic PAHs were not at concentrations that could account for an elevated brain cancer incidence. Some occupational exposures, however, might have been 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 posed an *Indeterminate Public Health Hazard* (Category 3).

No completed exposure pathways for human populations have ever been identified, 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.

U.S. EPA Update: The Ford Motor Co. Allen Park site is not a federal site. It is an ATSDR petition site and an operating facility under RCRA oversight.

Available at: http://oaspub.epa.gov/enviro/multisys2.get_list?facility_uin=110001102627. [cited 2008 Oct 8].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PAHs and lead were identified at this site.

3.8.1.5 FWS-Detroit River International Wildlife (a/k/a Grassy Island)

Grassy Island is a 72-acre artificial island in the Detroit River, east of Wyandotte, MI. In 1959, the U.S. Army Corps of Engineers (COE) constructed a 6-foot confining dike around the island. Beginning in 1960, the Corps used the island as a repository for 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 materials, bacteria, suspended solids, oil, pickling liquor, phenols, chlorides, cyanides, toxic metals, and ammonia. Other Rouge River contaminant sources included sewage treatment plant effluent and stormwater outfalls. Over a 22-year period, some 3 million cubic yards of dredge materials were dumped onto Grassy Island. In 1987, the U.S. Fish and Wildlife Service (FWS) took over the management of Grassy Island, but FWS management only extended to 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 island contamination presented, currently or in the future. Information for this site is taken from ATSDR's 2007 health consultation.

ATSDR Conclusions: In 2007 ATSDR concluded that insofar as exposures to for persons who accessed the island no more than once a week, were concerned, of Grassy Island contamination posed *No Apparent Public Health Hazard* (Category 4). Exposure to the average concentration of the various contaminants in the soil was not expected to cause adverse health effects. Yet Grassy Island physical hazards remained: steep dike walls, treacherous riprap, and dense vegetation with no established foot-trails. The integrity of the dike walls remained in question, given that the exterior 6-foot dike was not built with engineering controls.

Because as of 2007 contaminant levels in deer taken from Grassy Island were not known, eating these animals posed an *Indeterminate Public Health Hazard* (Category 3). If, however, people adhered to the advice in the MDCH Family Fish Consumption Guide, eating fish taken from the Detroit River near Grassy Island posed *No Apparent Public Health Hazard* (Category 4).

The FWS placed and, as of 2007, maintained warning signs around the perimeter of the island. FWS was also working with MDEQ to address the contamination and to inspect the dike routinely to ensure its stability.

U.S. EPA Update: The FWS-Detroit River International Wildlife site is a non-NPL site classified as Federal-Facility Lead Cleanup. In July of 2008 the FWS stated that

> The Service is currently moving forward on plans to more fully characterize the risks from the identified contaminants and evaluate the feasibility of several approaches to both remediate contaminant risks and enhance long-term benefits of the area for fish and wildlife. The process the Service is using is the CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) framework for conducting remedial activities.

Available at: http://www.fws.gov/midwest/GrassyIsland/ [cited 2008 Jul 29].

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 were identified at this site.

3.8.1.6 Globe Building Property

Between 1884 and 1950, the Globe Building on Atwater Street in the City of Detroit housed various metals works and machine shops. Between 1950 and 1991, the building was a warehouse, but by 1999 it was abandoned. At some point, four 20,000-gallon underground storage tanks had been installed at the property. Although no information on installation dates was found, two of these tanks were removed in 1990. No available record indicates when the other two tanks were removed. The Globe Building Property and 107 surrounding parcels were historically used for industrial purposes and collectively comprised the 67-acre proposed Waterfront Reclamation and Casino Development Project.

ATSDR Conclusion: In 2005, ATSDR concluded that at the time of its evaluation the site presented an *Indeterminate Public Health Hazard* (Category 3) for future exposures. At the time a reclamation plan for the property had not been determined, environmental monitoring data was insufficient to rule out onsite contamination at levels of health concern, and the two 20,000-gallon underground storage tanks had not been located. Although onsite soils were contaminated with PAHs, PCBs, arsenic, cadmium, chromium, cobalt, copper, lead, and vanadium at levels above comparison values, these chemicals did not rise to levels of concern for short-term exposures. The abandoned onsite building did, however, contain asbestos.

U.S.EPA Update: The Globe Building Property site is not a federal site and is not included in the CERCLIS database. But see Brownfields 2007 Grant Fact Sheet. Available at: http://www.epa.gov/brownfields/07arc/r05_mi_detroit.htm [cited 2008 Nov 5].

3.8.1.7 Grand Haven Hamtramck

The I-75/Caniff Street "Grand Haven" Area is in the City of Hamtramck, MI, between Detroit and Highland Park and between Interstate 94 and Davison Highway. In the past, three metals smelters—Continental Metals, Federated Metals, and Commodity Metals—operated near this site. Commodity Metals was not on the original list investigated by Michigan Department of Environmental Quality (MDEQ), but U.S. EPA refers to the site as "Commodity Metals." Lead-based paint is a significant component of the onsite hazards. Information for this site is taken from ATSDR's 2006 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 of age. For the Hamtramck area (ZIP code 48212), 5050 children were tested. Of those, 444 (or 9%) confirmed cases of elevated BLLs were found. Within a ½-mile radius centered on the I-75/Caniff Street area, 755 children were tested. Of those, 79 (or 10.6%) confirmed cases of elevated BLLs were found. In these instances, however, several exposures were probably involved, including exposures to contaminated soil and lead-based paints.

Demographic Data: Children 6 years of age 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 put residents—especially children 6 years of age and younger—at risk of lead-related health effects and therefore posed a *Public Health Hazard* (Category 2). The combined exposure to contaminated soil, lead-based paint, and other potential lead sources likely contributed to the elevated blood lead levels seen in Hamtramck residents of and in residents of surrounding areas. To be effective in lowering blood lead levels, remediation of contaminated soil and remediation of home environments should occur concurrently.

U.S. EPA Update: U.S. EPA identified this site as "Commodity Metals," CERCLIS number MIN000510097. In September 2006, U.S. EPA reported that

> Michigan Department of Environmental Quality tested soil in the area in 2003 and 2004 and found high lead levels. MDEQ asked for EPA's assistance in removing and replacing the contaminated soil. These current properties are expected to be finished this fall with additional work to be done next spring and summer.
>
> Before the additional work can be completed, however, EPA and MDEQ need help from residents within the project area *(see map back page).* Written permission is needed from the property owners before any tests or soil removal can be done. Samples are needed from around 150 yards in the area.

Available at: http://www.epa.gov/region5/sites/commodity-metals-fs-20060922.pdf [cited 2008 Nov 4]. See also Final Community Involvement Plan for the Commodity Metals Site, Hamtramck, Michigan, July, 2007. Available at: http://www.epa.gov/region5/sites/final_commoditymetals_cip_plan_20070726.pdf [cited 2008 Nov 4].

The Michigan Department of Community Health Update: In 2008, MDCH conducted a Program Assessment Rating Tool (PART) review for the site. Follow-up analysis of blood lead data indicated that fewer children were diagnosed as lead-poisoned but, due to multiple sources of lead, the site remained a *Public Health Hazard* (Category 2). The health consultation for the PART review is available at: http://www.atsdr.cdc.gov/HAC/pha/Grand%20HavenI75CaniffUpdate/GrandHaven%20HC%202-7-2008.pdf [cited 2008 Aug 22].

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

3.8.1.8 Gratiot Trailer Park

The Gratiot Trailer Park was an abandoned 16-acre trailer park in northeast Detroit (Wayne County) MI, that devolved into a dumpsite. Together with three derelict buildings, 20 collapsed, overturned and burned trailers, a few vagrant cars and boats, deteriorated above-ground storage tanks, and illicitly dumped trash littered the grounds. The site was partially fenced, but access was not effectively restricted. Industrial properties, airport property, and a park adjoined the site. This information is from ATSDR's 1999 health consultation, conducted 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 effectively restricted access, this site was a *Public Health Hazard* (Category 2). Also, some contaminants in soil were present at concentrations high enough to be of concern. The abandoned buildings definitely contained asbestos in amounts that required removal, and likely contained 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.

U.S. EPA Update: The Gratiot Trailer Park site is not a federal site and is not included in the CERCLIS database.

The Michigan Department of Community Health Update: The area around Gratiot Trailer Park is being redeveloped commercially. A new bank is on the northeast corner of the site. See http://www.maps.live.com [cited 2008 August 21]. The rest of the site has yet to be addressed. MDEQ lists the site as "Airport Trailer Park, Former." Available at: http://www.deq.state.mi.us/part201ss/sites.jsp?county=82&qby=city&city=detroit&pollutant=null&source=null&submit=Submit [cited 2008 August 28].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PCBs, lead, and B(a)P, were identified at this site.

3.8.1.9 Joy Road Dump/Holiday Park/Holiday Nature Preserve

The Joy Road/Holiday Park Dump is in the City of Westland (Wayne County) MI. Over time, this site was the recipient of unauthorized and undocumented household waste. Rainwater runoff flowed from the property into Tonquish Creek, which in turn emptied into the Middle Branch of the Rouge River, approximately 1 mile from the property. The site itself is an area within a park where unauthorized dumping of household waste occurred. The information on this site is from ATSDR's 2000 health consultation conducted as part of a brownfields project.

ATSDR Conclusions: Because of the physical hazards evinced by the rubbish and waste strewn about the site, as well as the lack of monitoring data, ATSDR categorized this site as a *Public Health Hazard* (Category 2).

U.S. EPA Update: The Joy Road Dump/Holiday Park/Holiday Nature Preserve site is not a federal site and is not included in the CERCLIS database.

The Michigan Department of Community Health Update: As of March 2008, remediation was complete (Southeast Michigan District office, MDEQ Remediation and Redevelopment Division, personal communication, March 2008).

IJC-critical Pollutants Identified within ATSDR Documents: The IJC-critical pollutant lead was detected onsite.

3.8.1.10 Lower Ecorse Creek Dump

This site was originally Ecorse River wetlands that drained into the Detroit River. Before development, the wetlands were filled with construction debris and other material. The site originally consisted of 11 residential lots, covering approximately 2.25 acres. Groundwater below the lots was shallow and, due to cyanide contamination, the soil was blue. Ferric ferrocyanide or Prussian blue dye was tentatively identified as the source of the unusual soil color. Eventually, the number of lots on the site grew to about 16. This information is from ATSDR's 1990 health consultation, 1993 public health advisory, and 1995 public health assessment, and from the 2008 EPA NPL site Fact Sheet.

ATSDR Conclusions: In the 1990 health consultation, ATSDR concluded that the levels of cyanide found in the onsite soils posed an *Urgent Public Health Hazard* (Category 1). In the 1993 public health advisory, because of cyanide levels found in the site's surface and subsurface soils, ATSDR again characterized this site as an *Urgent Public Health Hazard* (Category 1). A pair of ATSDR health consultations issued in 1994 advised U.S. EPA on specific issues, but did not identify any health hazard categories. In the 1995 public health assessment, however, ATSDR concluded that remedial actions had been completed, and at that time the site posed *No Apparent Public Health Hazard* (Category 4).

U.S. EPA Update: In its April 2008 Fact Sheet for the Lower Ecorse Creek Site, U.S. EPA stated in part that

> In late 1989, United States Environmental Protection Agency (U.S. EPA) covered the stained soil with clean top soil. In August 1993, Agency for Toxic Substances and Disease Registry (ATSDR) issued a Public Health Advisory on the hazards at the site, after the capping proved to be ineffective. In late 1993, U.S. EPA excavated about 100 cubic yards of the stained soil for disposal offsite and applied a sealant to the basement walls of the house where the contamination was originally found. U.S. EPA also made structural repairs to the walls, due to damage which may have been

caused by the acidic nature of the waste. The same excavation and repairs were performed at a residence across the street from the originally identified property. In 1993, U.S. EPA temporarily relocated the residents of one home while the basement was being waterproofed. The residents returned to the home, and the properties were restored to their original conditions. Following the emergency cleanup actions, ATSDR determined that the site no longer poses a health threat.

In March 1994, U.S. EPA began a Remedial Investigation and Feasibility Study (RI/FS) for the four-block area, surrounding the lots addressed in the removal. The studies were completed in July 1996 when a Record of Decision (ROD) was issued, calling for the excavation and offsite disposal of approximately 300 cubic yards of soil, contaminated with cyanide, arsenic and PAHs. This involved approximately 16 residential lots, including areas of contamination remaining on the lots addressed in the emergency cleanup actions. After two potentially responsible parties refused to comply with a Unilateral Administrative Order (UAO), issued in September 1996, U.S. EPA initiated a fund-financed Remedial Design and Remedial Action. The design was completed in August 1997.

On-site construction began in April 1998. In September 2000, all excavation and site restoration was complete. A total of approximately 3,000 cubic yards of contaminated soil were excavated and disposed of offsite. On July 13, 2001, U.S. EPA signed a ROD Amendment to address a layer of general refuse found in a park at the site. The ROD Amendment called for implementation of deed restrictions on the park property to prevent exposure of the waste material. The waste is located beneath three feet of clean soil.

In February 2002, U.S. EPA issued a UAO to the city of Wyandotte, requiring the city to implement the deed restrictions and maintenance of the soil cover in the park. The city has complied with the UAO. In May 2002, additional cyanide contamination was found beneath the porch of one home where work has previously been performed. In October 2002, U.S. EPA's contractor mobilized to the site, excavated the contamination, and waterproofed the basement wall. Drainage tile repair at the home was completed in February 2003.

The Superfund Final Close Out Report was signed on January 28, 2005. The site was deleted from the National Priorities List in July, 2005.

On June 1, 2006, U.S. EPA completed the first Five-Year Review for the site. The review specially addressed only the Park area of the site. The selected remedy for the Park area, institutional controls and monitoring and maintenance of the clean fill cover, was evaluated in the review. Institutional controls are legal or administrative controls which, in this case, protect the remedy and control the use of the Park area. U.S. EPA has a legal agreement with the City of Wyandotte, Michigan to implement the institutional controls and to maintain the clean cover.

As part of the Five-Year Review, U.S. EPA met with City of Wyandotte officials and performed an inspection of the site on March 23, 2006. U.S.

> EPA also performed a title commitment to determine if the institutional controls (restrictive covenants) are in place. Based on a review of all relevant documents, the results of the title commitment and the results of the site inspection, the remedy is functioning as intended by the 2001 Record of Decision Amendment #1. There are no changes in the physical conditions, standards or exposure pathways. Therefore, U.S. EPA considers the remedy to be protective because all remedial actions are protective of human health and the environment. The cover on the Park area remains in place and prevents exposure to underlying contamination.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID985574227.htm [cited 2008 Aug 20].

IJC-critical Pollutants Identified within ATSDR Document: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutant PAHs 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.

3.8.1.11 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 from ATSDR's 1997 health consultation conducted 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 posed physical hazards from deterioration and partial collapse and from containers of laboratory chemicals, including but not limited to those labeled as sodium hydroxide pellets, hydrofluorosilic acid, carbon tetrachloride, nitric acid, and formaldehyde. Throughout the property high lead concentrations were found in soil. Trespassers and workers from the neighboring trucking operation who accessed the area for materials storage could, if they spent a major potion of the day on the property, incidentally ingest enough lead from soil to pose a health hazard. Also, cadmium levels in soil were sufficiently high that anyone who spent a major portion of the day on the property might incidentally ingest cadmium at doses of health concern.

As of 1997, the highly contaminated soil had not been cleaned up. Containers of hazardous chemicals were inside the deteriorating onsite buildings, which were not secure from trespassers. An adjacent firm used a portion of the site for materials storage. Nevertheless, in 2005, because of no human exposure and because of remediation of the offsite lead contamination, the site category was updated to *No Apparent Public Health Hazard* (Category 4).

U.S. EPA Update: The Master Metals #2 site is a non-NPL site for which no further remedial action is planned. Available at: http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm. [cited 2008 Jul 29]. See also Region Enters into CERCLA 106, 107 and 122 Administrative Order on Consent for Removal at Master Metals Site, Detroit, MI. Available at: http://www.epa.gov/reg5oorc/enfactions/enfactions2003/law-cercla.htm#masters. 2007 Sep 25. [cited 2008 Oct 29].

IJC-critical Pollutants Identified within ATSDR Documents. During ATSDR's assessment of exposure-related issues, the IJC-critical pollutant lead was identified at this site.

3.8.1.12 Michigan Industrial Finishes (MIF)

Located at 9045 Vincent Street in the City of Hamtramck (Wayne County) MI, Michigan Industrial Finishes (MIF) manufactured industrial paint finishes in a mixed residential and light industrial area. 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 onsite without protection from weather or fire. Tests showed that the waste material in these drums was ignitable, corrosive, or both. Information on this site is taken from ATSDR's 2005 health consultation.

ATSDR Conclusions: In 2005, ATSDR concluded that because of onsite physical hazards, the MIF site posed an *Urgent Public Health Hazard* (Category 1) in the past and a then-present *Public Health Hazard* (Category 2). Access to the site was not adequately restricted; the condition of the northeast gate and the west fence suggested that trespassers—particularly children—were in fact entering the site. These trespassers could have vandalized the barrels, which could have led lead to a fire or explosion. Additionally, contact with corrosive materials in drums stored outside the building could have posed a hazard. Consequently, 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 ceased at the MIF site, however, this pathway currently poses *No Public Health Hazard* (Category 5).

A removal action to address chemical drum disposal and contamination clean up was completed in June 2005.

U.S. EPA Update: In the (undated) Onscene Coordinator Site File for Michigan Industrial Finishes, U.S. EPA states that

> The U.S. EPA initiated a removal action at the MIF Site on December 6, 2004 to address the immediate threat to human health and the environment posed by the presence of the numerous 55-gallon drums, 250-gallon totes, mixing tanks, vessels, above ground storage tanks, and small containers on site. The removal action will involve the inventorying, characterization, removal, and disposal at approved disposal facilities of all identified hazardous materials from the site.

Available at: http://epaosc.net/site_profile.asp?site_id=B58W%20. [cited 2008 Jul 29]. See also U.S. EPA's January 2005 MIG Fact Sheet at http://www.epa.gov/region5/sites/mi-industrial-finishes200501.pdf [cited 2008 Oct 15].

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

3.8.1.13 Mill St. Plant Brownfields Redevelopment

The Mill Street Plant Brownfields Redevelopment in Ecorse (Wayne County) MI, is a former 58-acre steel mill built in 1923. It remained in operation until the 1960s. The City of Ecorse planned 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 for a redevelopment assessment sampling plan. During that reconnaissance MDEQ identified as physical hazards old buildings, storage tanks, a pump house, electrical transformers and a scale house. Information on this site is from ATSDR's 2005 health consultation.

ATSDR Conclusions: In 2005, ATSDR concluded that because of physical hazards present at the time, this site posed a *Public Health Hazard* (Category 2). As evidenced by the refuse and the graffiti, site access was not restricted. Still, people who did access the site were unlikely to remain there long enough to experience adverse health effects from exposure to elevated chemical concentrations. In July, 2004, the City of Ecorse began processes to improve the environmental safety of the site. The city agreed to follow through with MDEQ oversight to complete work as needed.

Although at the time of the assessment, the onsite environmental contamination—as opposed to the physical hazards—posed no apparent public health hazard, construction workers and future residents could be exposed to concentrations of chemicals in the soils. Such exposure could result in adverse health effects. Additionally, possible soil contamination under the buildings awaits assessment, and buried drums might remain on the property. Thus until the property is further characterized, onsite environmental contamination poses a future *Indeterminate Public Health Hazard* (Category 3).

U.S. EPA Update: The Mill St. Plant/Brownfields Redevelopment site is a state brownfields site and is not included in the CERCLIS database.

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment the IJC-critical pollutants lead**,** PAHs**,** and mercury were identified at this site.

3.8.1.14 Old World Trade Center

The approximately 10-acre Old World Trade Center (a/k/a Kelsey-Hayes) property is a former industrial plant site in Detroit (Wayne County) MI. From 1955 to 1977, the Kelsey-Hayes Company machined cast-iron brake components in an onsite factory. After 1977 the remaining machinery and stock were removed and the factory buildings vacated. Parts of the buildings and property became flea markets, storage areas, and warehouses. Many thousands of drums, however, remained on the property. These drums contained corrosive, volatile, or flammable chemicals. Despite a substantial 1996 removal effort, many drums remained onsite—many were open, tipped over, or both. Spills and leaks were clearly evident. Information regarding this site is from ATSDR's 1997 health consultation conducted as part of a brownfields project.

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

U.S. EPA Update: The Old World Trade Center site is a targeted brownfields assessment site. Available at: http://oaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?pgm_sys_id_in=MI0001094465&pgm_sys_acrnm_in=CERCLIS. [cited 2008 Nov 18].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment, the IJC-critical pollutants lead and B[a]P were identified at this site.

3.8.1.15 Packard Plant

The Packard Plant property was a complex of buildings in Detroit (Wayne County) MI, where from 1907 to 1956 automobiles and trucks were manufactured. Beginning in 1960, the property was transformed into an industrial park. But large sections remained vacant and subject to

continued deterioration and trash accumulation. The information regarding this site is from the ATSDR's 1998 health consultation, conducted 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).

The old factory buildings were saturated with lead-based paint and asbestos-based insulation. Proper handling of these materials was 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 buildings. Paint chips collected within the complex during a July, 1997, site inspection visit contained lead.

U.S. EPA Update: The Packard Plant site is an inactive RCRA site for which no further remedial action is planned.

The Michigan Department of Community Health Update: The Michigan Department of Environmental Quality (MDEQ) began an interim remedial response in 1998, however legal issues with the City of Detroit halted the activities in 1999. Following court litigation, the land reverted back to City of Detroit ownership. The city requested that funding for the site be redirected to another remedial project of higher priority. The MDEQ granted the request, informing the city that a new application for funding would be required when the city chose to continue the remedial work at the Packard Plant. At least 32 buildings remain onsite, with abatable quantities of asbestos, lead paint, capacitors, and flooring impacted with PCBs. A large tank battery occupies the northwestern end of the site (Patricia Thornton, MDEQ Remediation and Redevelopment Division, 2008 Aug 13 email).

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues the IJC-critical pollutants PCBs and lead were identified at this site.

3.8.1.16 Proposed Beard Street School/New Beard Elementary School

The New Beard Elementary School site was a 6.45-acre property in Detroit (Wayne County) MI, with a long history of industrial use. Not surprisingly, this industrial use resulted in soil contamination. The information on this site is from ATSDR's 2001 and 2002 health consultations conducted as part of a brownfields redevelopment assessment.

ATSDR Conclusions: In 2001, because subsurface soil samples contained contaminants at levels potentially of health concern and because adequate data on surface soil were unavailable, ATSDR concluded that this site was an *Indeterminate Public Health Hazard* (Category 3). But after a review of the additional soil data obtained subsequent to the original assessment and after taking into account the physical barriers to exposure, ATSDR concluded in 2002 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 by 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 because extensive barriers had been installed that would prevent human exposure now and in the foreseeable future, no exposure pathway had been completed.

U.S. EPA Update: The Proposed Beard Street School site is a state brownfields site and is not included in the CERCLIS database.

The Michigan Department of Community Health Update: The school has been renamed as the Roberto Clemente Learning Center. Under a Due Care Plan approved by the Michigan Department of Environmental Quality, the Detroit Public Schools must conduct monthly inspections of the site cap, paved areas, the concrete building floor, and other exposure barriers to ensure that these barriers remain effective. Repairs to the exposure barriers are completed as necessary. Monthly, annual, and site repair reports are submitted to the Michigan Department of Environmental Quality for continued oversight (Patricia Thornton, Michigan Department of Environmental Quality, personal communication, 2008 August 19). See also Environmental Justice Case Study: Beard Elementary School Sitting on Contaminated Property. Available at: http://www.umich.edu/~snre492/Jones/beard.htm [cited 2008 Oct 29].

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 were identified at this site.

3.8.1.17 Wholesale Russell/Mack

The Wholesale Russell/Mack property is a former industrial and residential block in Detroit, (Wayne County) MI. All buildings have been removed; the surrounding area was primarily industrial and commercial, but one block contained condominiums. The information on this site is from ATSDR's 1997 health consultation conducted as part of a brownfields project.

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

U.S. EPA Update: The Wholesale Russell/Mack site is a state brownfields site and is not included in the CERCLIS database.

The Michigan Department of Community Health Update: The site has subsequently been redeveloped for commercial use and no longer presents a health hazard (Patricia Thornton, MDEQ Remediation and Redevelopment Division, personal communication; 2008 Aug 19).

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.

3.8.1.18 Worldmed Mercury Spill Site

In June 2005, the Detroit, MI-based nonprofit World Medical Relief (WMR) discovered mercury in its office building. The beads and pools of mercury had originated from past breakages of medical devices. WMR hired an environmental contractor to remove the visible mercury beads, and the Michigan Department of Community Health (MDCH) offered to screen the cleaned-up area.

The first measurements revealed a breathing zone average mercury concentration 10 feet outside a closed door of 22,000 ng/m^3. Inside the room, the levels rose to 50,000 ng/m^3 and continued to climb. The floor of the building had very few windows. After MDCH sealed the room, it contacted the U.S. EPA and mobilized a team to screen the building. Mercury vapor concentrations inside the room ranged from 20,000 to 200,000 ng/m^3. U.S. EPA determined that

removal was necessary. After completion of removal operations, the reported breathing zone levels ranged from 1000 to 3200 ng/m^3 in the equipment room and from 1,800 to 24,000 ng/m^3 in the adjacent areas. WMR was advised to seal the floor to suppress residual mercury vapor sources and, in the winter, to do follow-up screening. WMR offered free mercury urine testing for its employees; of the 22 persons tested, 3 had detectable levels. Information on this site is from ATSDR's 2006 health consultation.

ATSDR Conclusions: In 2006, ATSDR concluded that the mercury vapor levels measured in the WMR 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 therefrom, especially when one or both doors were open. The scarcity of windows and the lack of other outside, fresh-air sources exacerbated the indoor air quality. A February, 2006, follow-up sampling indicated an average concentration in the breathing zone was still about 1000 ng/m^3, with floor level readings of from 1000 ng/m^3 to 24,000 ng/m^3. As of March, 2006, the room was not actively used—but to prevent track-out, anyone who entered had to wear shoe covering.

U.S. EPA Update: In the Onscene Coordinator Site File for the World Med Mercury Spill site, U.S. EPA states that

> At the request of the Michigan Department of Community Health, U.S. EPA responded to a mercury spill at the World Medical Relief building in Detroit. The removal was completed on July 22, 2005.

Available at: http://epaosc.net/site_profile.asp?site_id=1777%20. [cited 2008 Jul 29].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutant mercury was identified at this site.

3.8.1.19 Zonolite Co/WR Grace

The site was the former W.R. Grace (WRG) plant in Dearborn (Wayne County) MI. The 2.72-acre site at 14300 Henn Street consisted of a single 16,000-square foot building in which vermiculite was processed into attic insulation and into lightweight concrete and aggregate. The original site included a railroad spur where vermiculite was off-loaded, as well as two storage silos, exfoliation furnaces, and bagging/processing space. This plant probably began processing vermiculite in the early 1950s and continued until its 1989 closure. Die, Mold & Automation Components, Inc. (DMACI) currently owns the site, at which it produces N-Forcer nitrogen gas springs and wear plates. DMACI began operations in a light industrial facility west of WRG, but in 1992 expanded onto the former WRG property. The storage silos and exfoliation furnaces formerly 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. As of 2005, because of the high volume of vermiculite processed there and the high levels of Libby asbestos (LA) fibers likely released during the exfoliation process, the WRG Dearborn plant was under study as a part of the National Asbestos Exposure Review (NAER) Phase I investigation. Information from this site is taken from ATSDR's 2005 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 also posed a public health hazard to former employees. If former workers did not shower or change clothes

before leaving work, they might have exposed household members to asbestos fibers. Although data are insufficient to assess household contact exposure, these contacts were likely exposed.

Thus without question this pathway posed a past public health hazard. Moreover, before ACM was removed in December 2003, its presence within the main building posed an indeterminate public health hazard to then-current workers there. Likewise, exposure of household contacts of DMACI workers before December 2003 posed an indeterminate public health hazard. This pathway has likely been eliminated and now represents no apparent health hazard to workers or their household contacts; efforts to verify this conclusion are, however, ongoing. Areas of residual LA contamination remain in the onsite soil of the former WRG facility. In 2005, exposure of workers, visitors, trespassers, and contractors to LA-contaminated soil posed an indeterminate public health hazard. Subsequent changes in the condition or use of the property may, however, exacerbate onsite exposure.

For the community surrounding the Dearborn site, ATSDR concluded that residents near the site during the time the plant processed Libby vermiculite could have been exposed to LA fibers by disturbing or playing in onsite soil or waste piles, by breathing in plant emissions, by handling waste rock brought home for personal use, or by breathing in from one or more outside sources indoor household dust that contained Libby asbestos. But insufficient information is available to determine whether these exposures occurred, how often they occurred, or 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 an indeterminate public health hazard. As of 2005, plans to sample in the surrounding neighborhood were ongoing and could have led to a reevaluation of this hazard category as appropriate.

In any event, the Dearborn plant no longer processes vermiculite onsite. The pathways for current or future community exposure to airborne LA from facility emissions and to onsite piles have been eliminated, but an indeterminate public health hazard remains from onsite soil. Moreover, a small but potential risk still remains from residual vermiculite contamination in the onsite soil, either from offsite soil migration or from resident exposure to the DMACI property's unrestricted areas. As of 2005, plans to perform sampling in the surrounding neighborhood were ongoing and again, could have led to a reevaluation of this hazard category. As of the date of this report, however, no reevaluation had occurred.

For present and future community members, residential indoor exposure to LA fiber-laced household dust from past plant emissions or from waste rock brought home for personal use is classified as no apparent public health hazard. As stated, a small but potential risk remains that the residual vermiculite contamination in the onsite soil could migrate off-site. The planned sampling in the surrounding neighborhood could also have led to a reevaluation of this hazard category.

As of the 2005 health consultation, community residents could have been exposed to airborne LA from waste rock used as fill material, as a garden additive, or as driveway pavement. Because, however, insufficient information was available to determine the extent of the use of waste material in the community, this exposure pathway remains an indeterminate public health hazard. Still, As with the indeterminate public health hazards referenced earlier, ongoing interviews and data collection from the neighborhood could result in a reevaluation of this hazard category.

U.S. EPA Update: As of the date of this report U**.**S**.** EPA was conducting a removal action at the Zonolite Co/WR Grace site**.** Available at: http://epaosc.net/site_profile.asp?site_id=1498%20. [cited 2008 Jul 29].

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

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

Site Name, City, and CERCLIS ID	ATSDR Document Type	Document Year	ATSDR Hazard Category	Site Type	Remediation Status
Cemetery Dump, Rose Center MID980794663	HA HA	1988 1992	3 4	Deleted from NPL	Completed
Continental Aluminum Corp., New Hudson MI0001941699	HC HC	2003 2006	3 5	Non NPL	Active site; RCRA supervised
Hi-Mill Manufacturing Co., Highland MID005341714	HA	1991	3	NPL	Completed
J & L Landfill, Rochester Hills MID980609440	HA HA SRU	1989 1993 1996	3 4 5	NPL	Completed
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

3.8.1.20 Cemetery Dump

The 10-acre Cemetery Dump, located ½ mile south of Rose Center in Oakland County, MI, is a former sand and gravel pit where illegal activities included burial of an estimated 250 barrels of industrial hazardous wastes. In 1988, these drums and the surrounding contaminated soil were excavated and disposed of at a RCRA-approved landfill. Information regarding this site is taken from the ATSDR's 1992 public health assessment.

Demographic Data: 1990 census data cited in the health assessment showed that approximately 1,000 persons resided within 1 mile of the site.

ATSDR Conclusions: This site was originally categorized as an *Indeterminate (formerly potential) Public Health Hazard* (Category 3). A subsequent 1992 health assessment concluded that the site posed *No Apparent Public Health Hazard* (Category 4). Several rounds of residential

and onsite well monitoring that began in 1981 and continued through 1989 (post-remediation), did not detect elevated contaminant levels. The IJC-critical pollutants PCBs and lead, as well as benzene, were detected in the contents of some of the deteriorated drums and contaminated soil. Still, concentrations were not exceptionally high, and those materials were removed during site remediation. In the sampled groundwater, no contaminants were detected. After remediation in April, 1995, the site was deleted from the National Priorities List (NPL).

U.S. EPA Update: In its September 2006 Fact Sheet the U.S. EPA stated that

> In 1985, the state selected a remedy to control the source of the contamination by excavating approximately 250 drums and drum fragments and 10,000 cubic yards of contaminated soils. These drums were disposed of at a federally-approved facility. A fence was installed in 1988, to limit public access. The state completed the cleanup activities in 1989.
>
> In 1989, the state, after extensive sampling and analysis, determined that the removal of the source of contamination had corrected the soil and groundwater contamination; therefore, "No Further Actions" were required. The state monitored the groundwater for five years after completion of the cleanup activities to ensure there were no further health threats to the public or the environment. No contaminants were detected in the groundwater sampled. The site was deleted from the National Priorities List on April 19, 1995.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID980794663.htm. 2006 Sep [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants lead, 4,4' –DDE,, and polychlorinated biphenyls (PCBs – including Aroclors 1242, 1248, 1254, and 1260) 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.

3.8.1.21 Continental Aluminum Company

The Continental Aluminum Corporation (CAC) is an active New Hudson (Oakland County) MI, aluminum recycling foundry. As such, it reports its releases through TRI—its 2001 TRI data are included in this report. Residential communities are north, northeast, and southwest of the plant, and an elementary school is ½ mile northeast. Information regarding this site is from ATSDR's 2003 and 2005 health consultations.

ATSDR Conclusions: As of the dates of the health consultations, levels of chemical emission during possible high release events (i.e., odor events) had not been determined. But a potentially exposed population was present, and a plausible relationship was established between community health concerns and the chemicals released by the facility. Consequently, in 2003 ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). In 2005 the site was reclassified as *No Public Health Hazard* (Category 5).

The Michigan Department of Environmental Quality's (MDEQ) stack testing and air dispersion modeling indicated that emission of chlorine, hydrogen chloride, and hydrogen fluoride were below health-based screening levels for air. But these data were determined inadequate—during odor events, concentrations could have been higher. In addition, at the time the modeling

occurred, emissions data for other chemicals had not been provided for evaluation, including the IJC-critical pollutants PCDDs and PCDFs.

But health effects reported by community members appeared episodic; they could, for example, have occurred during breaches of CAC's pollution control devices. Reported health effects included mucous membrane irritation, nose bleed, sore throat, coughing, breathing difficulty, burning eyes, headache, and nausea. During odor events, a metallic or varnish taste and burnt plastic odor was also reported.

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

U.S. EPA Update: Continental Aluminum is an ATSDR petition site that does not appear in the CERCLIS database. U.S. EPA has taken no regulatory action at this site.

The Michigan Department of Community Health Update: Following the health consultation conducted in 2006, which concluded in a finding of *No Apparent Public Health Hazard* (Category 4), there has been no further state health department involvement at this site.

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants lead and mercury were identified at this site.

3.8.1.22 Hi-Mill Manufacturing Company

On a 4½-acre site west of Highland Township (Oakland County) MI, Hi-Mill Manufacturing Company has since 1946 fabricated tubular aluminum, copper, and brass components for the air conditioning and refrigeration industries since 1946. The Hi-Mill site borders on a state recreation area and is adjacent to a pond and wetlands that may connect to Waterbury Lake. Before 1983, the company used spray evaporation to dispose of some pickling wastewater, but also deposited quantities of that wastewater in an onsite seepage lagoon. After October 1983, however, Hi-Mill's waste disposal methods shifted to recycled rinse water and—after neutralization and storage in underground tanks—offsite disposal in a RCRA-approved hazardous waste facility.

Elevated levels of chromium, aluminum, copper, nickel, and zinc were detected in the onsite seepage lagoon water and sludge. The contaminated water, sludge, and adjacent soil were thereafter removed. The lagoon was filled with sand, and in 1988 the pickling operation was eliminated. The information regarding this site was taken from ATSDR's 1991 health assessment.

Demographic Data: The 2000 U.S. Census reported the following demographic profile 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 Conclusions: In 1991, ATSDR concluded that due to 1) the potential human health threat from exposure to contaminants, and 2) the inadequate contaminant-level and exposure-duration data, this site posed an *Indeterminate Public Health Hazard* (Category 3). Trichloroethylene at concentrations above the U.S. EPA drinking water standard was found in

onsite wells used for the plant's drinking water and manufacturing processes. Because of complaints about the quality of the well water before the trichloroethylene discovery, the employees received bottled water. Well water was, however, still used for other purposes until the end of 1988, at which time all the wells were sealed. Thus before 1988, inhalation and dermal exposures to trichloroethylene were possible. Onsite monitoring of the shallow groundwater aquifer showed that groundwater concentrations of trichloroethylene and chromium did exceed U.S. EPA drinking water standards, but the shallow aquifer was never used for drinking water. Moreover, area residential drinking water wells were never contaminated.

In November 1983, Hi-Mill removed from its site 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. Nevertheless, on February 21, 1990, the site was placed on the U.S. EPA's National Priorities List. Between 1989 and 1992, Hi-Mill conducted a remedial investigation (RI) and feasibility study (FS) under an earlier, 1988 Administrative Order on Consent. 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. In July, 2000, U.S. EPA approved the PRP's request for a monitoring reduction.

U.S. EPA Update: In its April 2008 Fact Sheet for the Hi-Mill Manufacturing site, the U.S. EPA stated that

> In September 2005, U.S. EPA evaluated site conditions and reviewed the 1993 cleanup decision to make sure the decision continued to be effective. The conclusions of this review were that the cleanup decision continues to be protective of human health and the environment in the short-term. To be protective in the long term, use restrictions to prohibit the use of contaminated groundwater that has migrated beyond the Hi-Mill property boundaries will need to be implemented. In addition, additional monitoring wells in the intermediate aquifer will be installed to ensure that the groundwater is being adequately monitored.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID005341714.htm. 2008 Apr [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Document: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants lead and mercury 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.

3.8.1.23 J & L Landfill

The J & L Landfill in Avon Township (Oakland County) MI, is one of several landfills interspersed through that area of the county. Two landfills are adjacent to the site, and at least seven others are within ½ mile. The 17-acre J & L site was originally mined for sand and gravel. Beginning in 1951, however, the pits became disposal sites for slag from steel manufacturing and for other wastes, then and later for dust from electric arc furnace operations. By 1980, the site had been filled to grade, and the landfill was closed. This landfill holds an estimated 455,000 cubic yards of material. Drainage ditches from the site eventually flow into the Clinton River, 1 mile northeast.

As of 1993, the landfill had no liner and had an inadequate clay cap. Subsequent remediation included an improved cap, new fences, and restriction of groundwater use. The information regarding this site is from ATSDR's 1989 and 1993 public health assessments, a 1996 ATSDR Site Review and Update, and the 2003 U.S. EPA NPL Fact Sheet and Record of Decision (ROD).

Demographic Data: The 2000 U.S. Census reports the following demographic profile 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, metals were found in waste piles, but no data were available to evaluate possible exposures. Consequently, ATSDR categorized the J & L Landfill site as an *Indeterminate (formerly potential) Public Health Hazard* (Category 3). After site access was restricted and institutional controls implemented for groundwater use in the site area, ATSDR concluded in 1993 that the site posed *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 although trespassers could contact contaminants in soil, exposures were not likely to exceed health concerns. Vegetation on the contaminated areas should help to decrease exposure as well. Through adequate landfill caps and fences and through groundwater use restrictions, the site has been remediated.

U.S. EPA Update: The November 2007 U.S. EPA Fact Sheet for the J & L Landfill states in part that

> Construction activities to address the soil contamination issues were completed in summer 1997. A "No Action" Record of Decision was signed on September 30, 1997, documenting that no action was required to address the groundwater. A water supply survey was completed during 2000 to locate potential candidates for public water hook-up. A five-year review was signed on September 10, 2001, and found that the remedy remains protective of human health and the environment. A public water supply extension was completed in August 2002. LTV Steel, the only PRP at the J&L Landfill Site, completed bankruptcy court procedures in August 2003. Based on the bankruptcy, USEPA received a cash settlement to continue work on the Site operation and maintenance program. A second five-year review was completed in August 2006.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID980609440.htm. 2007 Nov [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Document: During ATSDR's assessments, the IJC-critical pollutants DDT and PAHs 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.

3.8.1.24 Rose Township Dump

The Rose Township Dump (Rose Township/Demode Road site) is another 110-acre landfill, this one 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.

Some waste-filled drums were buried onsite, others simply left on the surface. In 1988, ATSDR conducted a public health assessment, the source of much of the information presented here.

Demographic Data: The 2000 U.S. Census reported the following demographic profile 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, because of limited offsite monitoring, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). Soil and water were contaminated with metals, PCBs, VOCs, ketones, phthalate esters, and pesticides. And because the area depended on groundwater for its potable water needs, future exposure was possible.

U.S. EPA Update: In its February 2008 Fact Sheet regarding the Rose City Dump site, the U.S. EPA stated in part

> The Agency, in consultation with MDEQ, completed the first five-year review of the cleanup in September 1997, the second five-year review in June 2002, and a third five year review in June 2007. Based on the data review between 2002 and 2007, the Agency and MDEQ determined that additional monitoring wells were necessary to evaluate migration of the contaminant plume and possibly reconfigure the groundwater extraction system. Specifically, in 2006, an independent EPA capture zone analysis, along with data from wells at the edge of the plume, showed that complete capture is not occurring.
>
> 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. Data and subsequent capture zone analysis is underway to determine if the optimization of the groundwater extraction system, noted above, is successful in achieving complete capture. This analysis is expected to be completed by June 2008.
>
> To date, the groundwater extraction system has treated over 441 pounds of VOCs.
>
> 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 treating the vinyl chloride concentration to non-detectable levels.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID980499842.htm. 2008 Feb [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Document: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants lead and mercury 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.

3.8.1.25 Springfield Township Dump

Another in a series of Oakland County, MI, industrial waste repositories, this 4-acre site is approximately 35 miles northwest of Detroit. During a 2-year period between 1966 and 1968, dumpsite patrons poured liquid wastes and sludges into a site pit and left some 1,500 drums on the site grounds. Drum contents included paint sludges, solvents, PCBs, oils, and grease. In 1979–1980, the drums were removed and disposed of offsite. In 1983, another 711 tons of contaminated soil were removed for offsite disposal. Fences restricted public access to the site, and no signs of trespass were evident. The information on this site is from ATSDR's 1988 public health assessment and from the 2006 U.S. EPA NPL site Fact Sheet.

Demographic Data: The 2000 U.S. Census reported the following demographic profile 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 concluded that because of the lack of monitoring data for a potential exposure pathway and because consumption of potentially contaminated wildlife posed a possible health risk, this site was an *Indeterminate Public Health Hazard* (Category 3). Onsite soil was contaminated with the IJC-critical pollutants PCBs and lead, as well as other contaminants, including VOCs and cadmium. Still, no exposure pathway was completed for soil and sludges, and offsite monitoring indicated no significant migration to adjacent wetlands. Moreover, although trichloroethene and 1,1-dichloroethene contaminated onsite groundwater in the former disposal pit area, no site-related chemicals appeared in offsite monitoring and domestic wells. But given the apparent direction of groundwater flow toward a cluster of residences northeast of the site, future migration to residential wells was possible, and . 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 game animal tissues.

U.S. EPA Update: In its October 2006 Fact Sheet for the Springfield Dump site, U.S. EPA stated in part that

> The PRPs began installation of the ISVE [in-situ soil vapor extraction] equipment in May 2000. In addition, the PRPs decided to construct and operate an air sparging system to augment the groundwater pump and treat system in an effort to speed up the restoration of the groundwater at the site. The ISVE and air sparging equipment installation was completed in early August 2000 and the PRPs began operating the systems shortly thereafter. U.S. EPA conducted an inspection of the SVE and air sparging systems on August 22, 2000, and determined that the systems were operating as designed, thus the Springfield site remedial action qualifies as construction complete.
>
> In October 2003 the PRPs submitted a supplemental remedial action workplan outlining a proposal to use in-situ chemical oxidation (ISCO) to accelerate the breakdown of VOCs in the groundwater. ISCO has emerged as a cost-effective and viable remediation technology for the treatment of VOCs in groundwater, soils, and sediments. Complete decomposition to carbon dioxide and water is the desired endpoint of an ISCO process. The ISCO process was completed in 2005.

A five-year review for the Springfield site was completed in 2004 and can be found at: http://www.epa.gov/region5/superfund/fiveyear/fyr_index.html. Available at: http://www.epa.gov/region5superfund/npl/michigan/MID980499966.htm. 2006 Oct [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants lead, dieldrin, polychlorinated biphenyls (PCBs— including Aroclor 1242, 1250, and 1254) and polyaromatic hydrocarbon (PAH)-fluoranthene were identified. 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. Summary and Conclusions for the Rouge River AOC

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

3.8.2.1 Hazardous Waste Sites

Wayne County: ATSDR assessed 19 waste sites in Wayne County. Remedial activities have been completed at 10 of these sites. At eight of the sites, remediation is ongoing. The remaining site is an active site under RCRA oversight.

Oakland County: Of the six Oakland County sites, four have undergone remediation. No evidence indicates that humans were exposed to site-related contaminants at levels of concern. Groundwater at one site is, however, still undergoing extraction and treatment.

3.8.2.2 TRI Data

In 2001, onsite TRI releases in Wayne and Oakland Counties (combined) totaled 24,621,119 pounds, primarily to air and land. Wayne County accounted for 89% and Oakland County accounted for 11% of the total onsite releases. See Table 3.8-C.

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 (≥ 500,000 pounds) of non-IJC-critical 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). Facilities that released these pollutants are listed in Table 3.8-D.

3.8.2.3 NPDES Data

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.8-E. The average annual permitted discharges in 2004 totaled 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.

3.8.2.4 Beneficial Use Impairments (BUIs)

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


Great Lakes
Areas of Concern
Rouge River
Area of Concern
LAPEER
GENESEE
OAKLAND
MACOMB
ST. CLAIR
LIVINGSTON
Lake
St. Clair
WASHTENAW
WAYNE
LENAWEE
MONROE
Rouge River AOC
0 5 10 20 Miles
Projection: NAD 83, Michigan State Plane South

Table 3.8-C. TRI Releases (in pounds, 2001) for the Rouge 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	95	0	0	1247638	1247733	1974	1249707
DIOXIN AND DIOXIN-LIKE COMPOUNDS	2	0.003542994	0	0	0.0001764	0.003719394	0.0001764	0.003895794
(PCDDs and PCDFs)	3							
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
HEXACHLOROBENZENE	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

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
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

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
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	1780		264	0	325546	327590	556647	884237

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
COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)								
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 ISOMERS)		1312	0	0	0	1312	0	1312
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

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
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

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
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

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
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
PHTHALIC 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

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
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			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	10	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
VINYLIDENE 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

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
	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	48058GMCTR820OP	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

IJC-critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
		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	48192WYNDT2555V	WYANDOTTE
Mercury and mercury compounds	12			

IJC-critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
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	48192WYNDT2555V	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*
POLYCHLORINATED 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 is in southeastern Michigan, just north of Detroit. The river enters Lake St. Clair near the City of Mt. Clemens. Lake St. Clair and the Detroit River link Lake Huron and Lake Erie. The Clinton River AOC includes the Clinton River watershed, which is primarily in Oakland and Macomb Counties. The Clinton River flows toward Lake Erie. About half of that 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 selected hazardous waste sites in Oakland and Macomb Counties, MI, and reached conclusions regarding any public health threat they might pose or might have posed. Oakland County is relevant to both the Rouge River AOC and the Clinton River AOC. For Clinton River AOC sites that at some point during their assessment history were categorized as either an urgent public health hazard, a public health hazard, or an indeterminate public health hazard, conclusions are summarized above in Tables 3.8-B (Oakland County) and below in Table 3.9-A (Macomb County). Included is information regarding the type and location of the site and the date and type of the relevant assessment document.

Table 3.9–A. Hazardous Waste Sites in Macomb County, MI

Site Name, City, and CERCLIS ID	*ATSDR Document Type*	*Document Year*	*ATSDR Hazard Category*	*Site Type*	*Remedial Status*
G & H Landfill, Utica MID980410823	HA HA	1989 1992	3 3	NPL	Ongoing
Liquid Disposal, Inc., Utica MID67340711	HA SRU	1987 1992	3 3	NPL	Ongoing
South Macomb Disposal Authority, Macomb Township MID069826170	HA HA	1989 1995	3 2	NPL	Ongoing
Ten Mile/Lange/Revere Drainage System Site, St. Clair Shores, MI	HC HC	2003 2007	3 4	Non-NPL	Ongoing

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

ATSDR conducted further data evaluation for urgent public health hazard, public health hazard, or indeterminate public health hazard sites in the public health assessments and other health-related documents listed in the table. The evaluations for Oakland County, MI, were already discussed in Sections 3.8.1.20 through 3.8.1.25. The evaluations for Macomb County waste sites are discussed in the following subsections.

3.9.1.1 G & H Landfill

The G & H Landfill is an approximately 70-acre site in Shelby Township (Macomb County) MI, between the cities of Utica and Rochester. The Clinton River borders the site, and groundwater flow is toward the river. From 1955 to 1967, the landfill was a waste oil recovery facility; from 1955 to 1974 it also became an industrial and municipal landfill. PCB-laden waste oil was dumped into unlined ponds, and waste solvents, paint sludges, and municipal waste were landfilled. The information regarding this site is from ATSDR's 1989 and 1992 public health assessments and from the 2006 U.S. EPA NPL Fact Sheet for this site.

Demographic Data: The 2000 U.S. Census reported the following demographic profile 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 collected infant mortality, low birth weight, and age-adjusted death rates for cancer, heart disease, stroke, and accidents in Shelby Township—where the G & H Landfill is located—and compared them with state and county rates. The health outcome data review found that Shelby Township rates were either comparable to or lower than comparison populations.

ATSDR Conclusions: In a 1989 public health assessment, ATSDR concluded that the potential human health threat from contaminant exposure at adverse-health-effect concentrations rendered G & H Landfill an *Indeterminate Public Health Hazard* (Category 3). The 1992 public health assessment confirmed this conclusion. 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, except for remediation workers, considered unlikely. The 1989 health assessment also raised concerns that contaminated groundwater and consumption of fish and game from the Clinton River might expose nearby residents and businesses. Of note, however, is that although fish (i.e., principally carp) in the Clinton River had high PCB levels, sources other than the G & H Landfill contributed to that pollution.

U.S. EPA Update: In its September 2006 Fact Sheet regarding the G & L Landfill site, U.S. EPA stated in part

> In 1993, U.S. EPA reached a cleanup agreement (Consent Decree) with 14 Detroit area companies under which the 14 companies began to construct the cleanup remedy in September 1996. In 1993 through 1994, the 14 companies arranged to have approximately 30 residences and four small businesses adjacent to the site attached to the municipal water supply as a precaution. The cleanup consists of a containment remedy, which includes construction of a landfill cover (cap), an impermeable underground slurry wall, and a groundwater extraction and treatment system to physically and hydraulically contain the contaminants onsite. Groundwater extracted from within the site is treated to remove the organic compounds. Construction was completed in September 1999. The groundwater

> extraction system will be operated for at least 30 years. The 14 companies taking responsibility for the site have also agreed to create and maintain new wetland areas to replace wetlands that were degraded by the contaminants, or that were destroyed in developing the cleanup remedy. The wetlands restoration work was completed 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 and determined that the remedy remained protective of human health and the environment.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID980410823.htm. 2006 Sept [cited 2008 Jul 11].

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 found at this site, please refer to www.epa.gov/superfund/sites/npl/npl.htm.

3.9.1.2 Liquid Disposal, Inc.

Liquid Disposal, Inc. is a former sand and gravel pit in Shelby Township (Macomb County) MI. From 1964 to 1968, a landfill operated on the site, which was surrounded by wetlands, the Clinton River, and an auto junkyard surrounds the site on which, from 1964 to 1968, a landfill operated. From 1968 through 1982, the landfill became 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 had also been removed from the site. A crude sump-pump leachate collection system directed leachate back into the incinerator pit. Information regarding this site is from ATSDR's 1987 public health assessment, 1992 site review and update, and the 2008 U.S. EPA NPL site Fact Sheet.

Demographic Data: The 2000 U.S. Census reports the following demographic profile 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 in recreation areas near the site and because of the threat to human health from potential exposure to soil and leachate contaminants in soils, ATSDR's 1987 health assessment categorized this site as an *Indeterminate Public Health Hazard* (Category 3). A subsequent 1992 site review and update reached the same conclusion. 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. Fences prevented onsite exposure, but the potential for offsite contaminant migration remained, and ATSDR remained concerned about exposure of those who used nearby recreational areas.

U.S. EPA Update: In its April 2008 Fact Sheet regarding the Liquid Disposal, Inc. site, U.S. EPA stated in part that

A Five-year Review report was issued on February 23, 1998 and concluded that the remedy selected remains protective of human health and the environment. A second Five-year Review was completed in 2003 and concluded that the remedy is expected to be fully protective of long term human health and the environment upon attainment of groundwater cleanup goals. Although the CD requirement of a specific inward gradient from the extraction wells has not been achieved, natural processes are occurring with only two contaminants exceeding cleanup standards in water tested side and downgradient of the site. Natural processes and groundwater extraction as well as continued groundwater monitoring and clay cap maintenance will continue to provide protectiveness to human health and the environment until the cleanup goals are met. 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.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID067340711.htm. 2008 Apr [cited 2008 Jul 11].

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 list of hazardous substances 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 in Macomb Township (Macomb County) MI, consists of two adjacent, former municipal landfills. In one landfill, approximately 680,000 cubic yards of municipal wastes were disposed of; the other landfill received approximately 1,200,000 cubic yards of wastes. Onsite groundwater and leachate became contaminated with organic and inorganic chemicals. Initially, the leachate discharged from the landfill to McBride Drain, which flowed into the North Branch of the Clinton River. Information on this site is from ATSDR's 1989 and 1995 public health assessments and from the 2006 U.S. EPA NPL site Fact Sheet.

Demographic Data: The 2000 U.S. Census reports the following demographic profile 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. Lack of information on the geographic boundaries of the survey, the types of cancers, and important risk factors rendered the data insufficient. In any event, the survey did not provide any clear connection 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, ATSDR found that exposures to contaminated environmental media had occurred, could then be occurring, and could occur in the future. ATSDR thus recategorized the site as a *Public Health Hazard* (Category 2). This site possibly contributed to the environmental burden of the IJC-critical pollutant lead, as well as other contaminants including VOCs, ammonia, cadmium, and nitrates. These contaminants appeared in residential wells at levels exceeding health-based screening values—arsenic was even at a level 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.

Site remediation began in the late 70s and early 80s, when leachate controls were installed, and a north side slurry wall began to contain and collect contaminated groundwater. Still, as late as 1983–1988, local authorities were distributing bottled water to 12 residences. By 1988, municipal water was extended to some of these residences. Through 1995, monitoring data showed that the remaining residential wells were uncontaminated. But future contamination concerns persisted, given that the leachate collection system reportedly had not captured the entire plume.

U.S. EPA Update: In its September 2006 Fact Sheet regarding the South Macomb Disposal Authority site, U.S. EPA stated in part that

> The Remedial Design and Remedial Action were completed in the summer of 2005, and documented in U.S. 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, U.S. EPA shall prepare the first five year [review] to determine the ongoing short-term and long-term protectiveness of the Site remedy.

Available at: http://www.epa.gov/region5superfund/npl/michigan/MID069826170.htm. 2006 Sep [cited 2008 Jul 11].

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC pollutant lead was identified. For a more complete listing of hazardous substances 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 comprises a sanitary and storm water sewer system and a canal that connects to the Ten Mile/Lange/Revere Drainage System (a/k/a Ten Mile Drainage System) in St. Clair Shores, (Macomb County) Michigan. A sediment analysis precedent to a St. Clair Shores canal-dredging project revealed high levels of polychlorinated biphenyls (PCBs). The storm water sewer of the Ten Mile/Lange/Revere Drainage System, which discharged to the tested canal, had been contaminated by what was likely an unpermitted chemical release into a storm drain. Water and sediment samples from the storm sewers, catch basins, sanitary sewers, and the Lange/Revere Canal contained PCBs and lead at levels of concern. Water sampled from a pond that occasionally received canal water also had a high PCB concentration. But the highest lead-in-sediment concentrations were at the canal's westernmost boundary.

ATSDR Conclusions: In 2003, ATSDR concluded that because of the potential for future exposures to site-related PCB and lead, this site posed an *Indeterminate Public Health Hazard* (Category 3). In 2003, no completed exposure pathways were known. The main chemicals of concern in water and sediments from the Ten Mile Drainage System and the Canal were PCBs and lead. The other chemicals evaluated did not pose a public health hazard—they were present only in the sewers, where exposure was unlikely. Air concentrations of PCBs similarly posed no apparent public health hazard. Yet levels of arsenic found in soil samples of a residential yard adjacent to the canal did pose an indeterminate health hazard.

In 2003, U.S. EPA completed remediation for PCBs. By spring 2004, the Macomb County Drainage Commission completed its remedial action (i.e., cleaning PCBs out of the storm sewers). In 2007, ATSDR concluded that the site posed *No Apparent Public Health Hazard* (Category 4).

U.S. EPA Update: In the (undated) Onscene Coordinator Site File for the Ten Mile/Lange/Revere Drainage System site, U.S. EPA states that

> Some PCBs have been found in surface areas of the site and will be addressed during the removal action. U.S. EPA previously conducted work in this area at the 10 Mile Drain Site. U.S. EPA conducted a removal of PCBs from sediments in two canals and cleaned the storm sewer system as part of this cleanup. At the time of the original cleanup, U.S. EPA assumed the PCBs were from an illegal dump into the sewer system. Subsequent re-contamination of the sewer suggested that a PCB source may be present and causing re-contamination of the areas previously cleaned by U.S. EPA.

Available at: http://epaosc.net/site_profile.asp?site_id=2082%20. [cited 2008 Jul 29].

Michigan Department of Community Health Update: Continued site monitoring led to the discovery of PCB-contaminated soils in residential soils near the beginning of the drain system. U.S. EPA conducted an emergency removal action of soils of concern (* * *). The Michigan Department of Environmental Quality (MDEQ) planned to collect additional data in 2008 to work toward proposing the site for the NPL (email from Joseph Walczak, MDEQ Remediation and Redevelopment Division; 2008 Jan 17).

IJC-critical Pollutants Identified within ATSDR Documents: During ATSDR's assessment of exposure-related issues, the IJC-critical pollutants PCBs and lead were identified at this site.

3.9.2. Summary and Conclusions for the Clinton River AOC

3.9.2.1 Hazardous Waste Sites

Two Michigan counties, Oakland and Macomb, are relevant to this AOC. A part of Oakland County is also in the Rouge River AOC (see Section 3.8).

3.9.2.2 Hazardous Waste Sites in Oakland and Macomb Counties

Oakland County: Of the six Oakland County sites, four have undergone remediation. No evidence indicates that humans were exposed to site-related contaminants at levels of concern. Groundwater at one site is, however, still undergoing extraction and treatment.

Macomb County: The four Macomb County hazardous waste sites are undergoing remediation. Because the leachate plume (to groundwater) was not contained, the South Macomb Disposal Authority may still be releasing contaminants.

3.9.2.3 TRI Data

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

IJC-critical pollutants accounted for as few as 298.7 pounds (0.008 %) of the total onsite releases. 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 (≥ 500,000 pounds) was of xylenes (to air).

3.9.2.4 NPDES Data

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.9-D. The average annual permitted discharges in 2004 totaled 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.

3.9.2.5 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 U.S. EPA Web site (http://www.epa.gov/glnpo/aoc/).

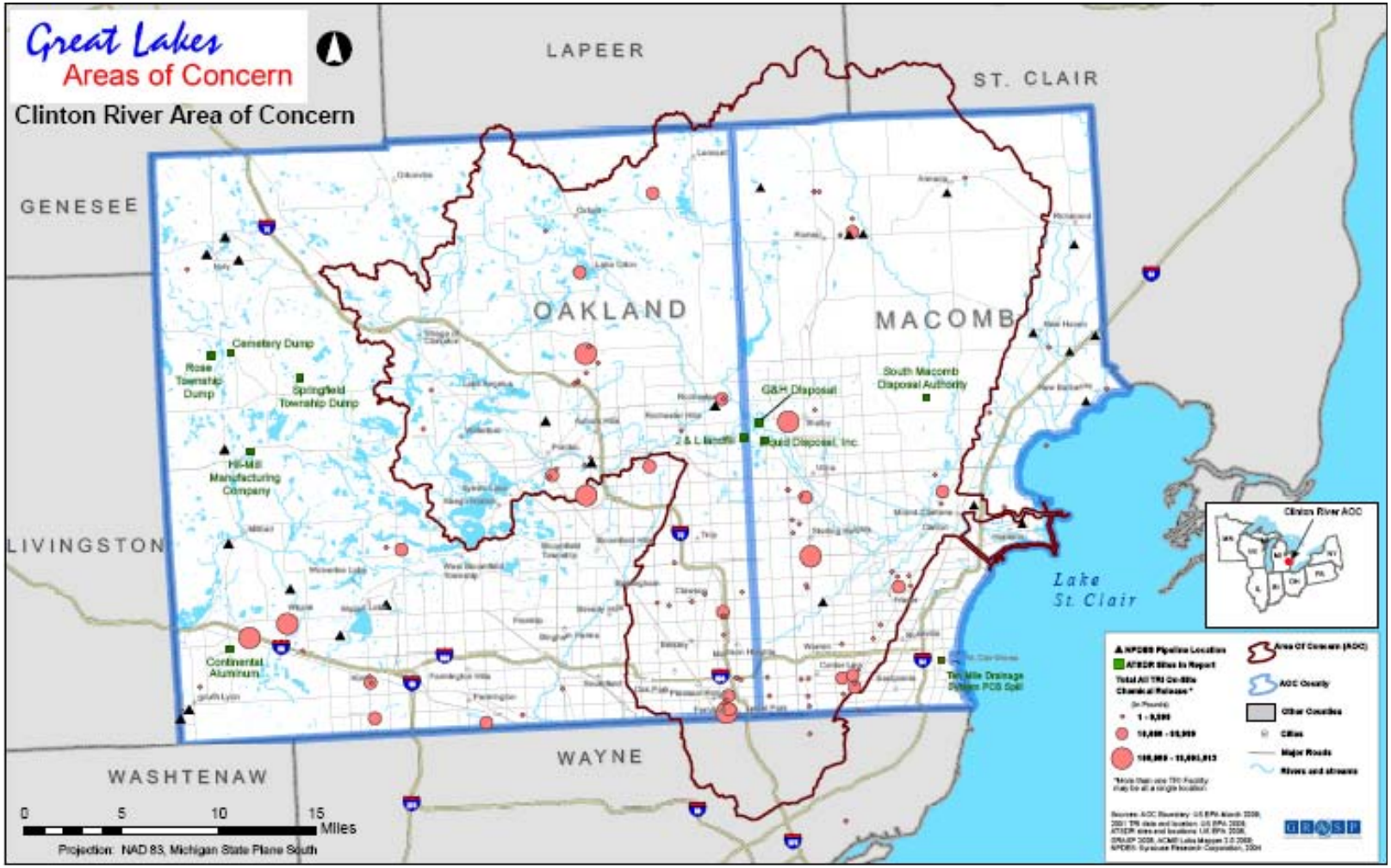
Great Lakes
Areas of Concern
Clinton River Area of Concern
LAPEER
ST. CLAIR
GENESEE
OAKLAND
MACOMB
LIVINGSTON
WAYNE
WASHTENAW
Cemetery Dump
Rose Township Dump
Springfield Township Dump
Hi-Mill Manufacturing Company
Continental Aluminum
G&H Disposal
South Macomb Disposal Authority
Lake St. Clair
Clinton River AOC
0 5 10 15 Miles
Projection: NAD 83, Michigan State Plane South

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

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
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

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
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

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
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-C. 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.	48036TWRTM44850	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	48058GMCTR820OP	PONTIAC
		MOLEX AUTOMOTIVE	48326CRDLL2025T	AUBURN HILLS
Mercury and mercury compounds	1			
Oakland County, MI	1	GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION

Table 3.9-D. 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-E. 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